

DONALD WELLS PFAFF

January, 2017

The Rockefeller University  
1230 York Avenue  
New York, New York 10021  
Born December 9, 1939, in Rochester, New York.

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## **EDUCATION**

Monroe High School, Rochester, New York. Graduated 1957.  
Harvard College, 1957-61, A.B., 1961.  
Massachusetts Institute of Technology, 1961-1965, Ph.D., 1965.

## **PROFESSIONAL EXPERIENCE**

Research Associate, M.I.T., Dept. of Psychology, 1965-1966.  
Trainee, Marine Biological Laboratory (Woods Hole) Course in Nerve-Muscle Physiology  
(Dr. S. W. Kuffler, Director), 1966.  
Postdoctoral Fellow, Rockefeller University, 1966-1968.  
Staff Scientist, Biomed. Division of the Population Council at Rockefeller Univ, 1968-1969.  
Fellow, Intensive Study Program, Neurosciences Research Program, Summer, 1969.  
Assistant Professor, Rockefeller University, 1969-1971.  
Associate Professor, Rockefeller University, 1971-1973.  
Associate Professor with tenure, Rockefeller University, 1973-1978.  
Professor, Rockefeller University, 1978-

## **ACADEMIC HONORS AND FELLOWSHIPS**

Harvard College, A.B. *magna cum laude*  
Fellow, American Academy of Arts and Sciences (elected 4/92)  
Member, U.S.A. National Academy of Sciences (elected 4/94)  
National Merit Scholarship, 1957-1961.  
Harvard National Scholarship, 1957-1961.  
Woodrow Wilson Fellowship, 1961-1962.  
M.I.T. President's Award Fellowship, 1962-1963.  
National Institutes of Health, Predoctoral Fellowship, 1963-1965.  
National Science Foundation, Postdoctoral Fellowship, 1966-1968.  
ISI Highly Cited Researcher, 2000, 2001, 2003, 2007, 2008, 2009.  
Asso. Amer. Publishers Award, Best Medical Science book, 2005.  
MERIT NIH grant award, 2003-2013.  
Nominated, NIH Director's Pioneer Award 2004, 2005  
The Harvey Society (elected 2004).  
Fellow, New York Academy of Sciences (Elected 2006).  
Fellow, Collegium Internationale Neuro-Psychopharmacologicum. (Elected 2007).  
Honorary Doctorate, Pace University, 2008.  
IPSEN Foundation Prize in Neural Plasticity, Paris, 2010  
Lehrman Memorial Prize, Soc. Behav. Neuroendocrinology, 2011

Honorary Professor, Medical School, Wuhan University, Wuhan, China, 2013

### **EDITORIAL, ADVISORY, PLENARY**

Associate Editor, Hormones and Behavior, 1972-1986; Editorial Board, 1997-  
Editorial Board, Neuroendocrinology, 1983-1987, 1994-  
Editorial Board, Series on Perspectives in Neuroendocrine Research, 1971-1980.  
Fellow, Division 6, APA.

Editor, Series on Current Topics in Neuroendocrinology (Springer-Verlag).

Co-editor, Experimental Brain Research, 1980-1992.

Editorial Board, Handbook of Behavioral Neurobiology (1980- ).

Consulting Editor, Behavioral Neuroscience.

Editorial Board, Brain Research Bulletin, 1989-1995

Editorial Board, J. Neuroendocrinology, 1989-1999

Editorial Board, J. Neurophysiology, 1989-1992

Associate Editor, Molecular & Cellular Neurosciences, 1990-1995

Editorial Board, Synapse, 1994-2004

Editorial Board, Developmental Neuroscience, 1994-2009

Editorial Board, Neuroscience-Net, 1996-

Associate Editor, Encyclopedia of Reproduction, 1998

Editorial Board, Stress, 2000-2016.

Editorial Board, Endocrinology, 2000-2003.

Editorial Board, Endocrine Reviews, 2001-2004

Editorial Board, Regulatory Peptides, 2003-2016

Editorial Board, Endocrine, 2003-

Editorial Board, Frontiers in Neuroendocrinology, 2004-

NIH Biochemical Endocrinology Study Section, 1983-1987.

NSF, Cellular and Molecular Neurobiology Study Section, 1987-1990.

NIMH Neuroscience & Mental Health Advisory Panel, 1988 & 1993.

NIH/NCRR Study Section, 2000.

NICHHD Study Section (Underrepresented Schools, 2001).

Society for Neuroscience Public Information Committee (1985-1988)

NICHHD 5-year Planning Committee, 1985.

MIT Visiting Committee (Whitaker College) 1986-1989.

Burroughs-Wellcome Fund Career Awards Board (1994- 2001 ), Co-chair (1999- 2000).

Scientific Advisory Board, Oregon National Primate Research Center (1999- ).

AAAS, Science & Policy (Law/CNS) Program, 2003-

Wolf Foundation Prize in Medicine, International Committee, 2004

Advisory Board, NSF Cntr. for Behav. Neuroscience (Atlanta), 2007-

NSF Advisory, Brain Science/Physical Science Interface, 2007

Society for Behavioral Neuroendocrinology, Board, 2007-

Scientific Advisory Board, Hope for Depression Foundation, 2007-2011.

Plenary Lecture, Internat. Congress Physiol. Sciences Vancouver, 1986.

Plenary Lecture, Internat. Study Group on Steroid Hormones Vienna, Austria, 1993.

Pincus Lecturer, Laurentian Hormone Conference, 1993.

Plenary Lecture, Gottingen Neurobiology Conference, 1994.  
Plenary Lecture, European Pediatric Endocrine Society, Maastricht, 1994.  
Plenary Lecture, International Society for Neuroendocrinology, Budapest, 1994.  
Plenary Lecture, NIAAA Conference on Stress, Gender and Alcohol Addiction, 1994.  
Plenary Lecture, International Congress on Steroid Hormones, Dallas Texas, 1994.  
Greenblatt Memorial Lecturer, University of Georgia, 1994  
Lindner Memorial Lecturer, Weizmann Institute, 1994  
Plenary Lecture, Int. Cong. Comp. Endo./GnRH, Tokyo, 1997  
Cuozzo Memorial lecturer, University of Pennsylvania, 1997  
Organon Lecture, The Physiological Society (U.K.), 1998  
Miller Distinguished Lecture, Univ. of Illinois Coll. of Medicine, Chicago, 1999  
Hopkins/U. Maryland Lectureship in Reproductive Biology, 1999  
Plenary Lecture, Berlin (Germany) Neuroscience Forum, 1999  
Plenary Lecture, Internat. Narcotics Research Congress, 1999  
Nobel Symposium on Hormone Action, Speaker, Stockholm, 1999  
Plenary Lecture, The Physiological Society (U.K.), London, 2000  
Plenary Lecture, Internat. Soc. Study Women's Health, Berlin, 2001  
Plenary Lecture, Soc. for Biological Psychiatry, 2002  
Gordon Research Conf. on Environmental Endocrine Disruptors, 2002  
Plenary, European Comm. Expert Conf. on Hormone.Gene Relns, Ulm 2002  
Plenary, NIH Workshop, Emerging Technologies in Neuroendo., 2002  
Plenary, Dutch Obstetrics/Gynecology Conference, Arnhem, 2002  
Rudolf Magnus Lecturer, Utrecht, Netherlands, 2003  
Plenary, European J. of Pharmacology, Spring Meeting, 2003  
Plenary, World Cong. On Post.Pituitary Hormones, Kyoto, 2003  
Nobel Symposium on Gender Medicine, Stockholm, Speaker, 2003  
Gordon Research Conf. on Genes and Behavior, Speaker, 2004  
Plenary, Women's Health Research Conf., North Carolina, 2004  
Plenary, University of Cologne, Germany, Fall Meeting, 2004  
Nobel Symposium on CNS Sexual Differentiation, Stockholm, Speaker, 2005  
Gordon Research Conf. on Chronobiology, Speaker, 2005  
Plenary, Soc. Study of Ingestive Behavior, Pittsburgh, 2005  
Plenary, International Society of Neuroendocrinology, 2006  
Plenary, International Congress for Neuropsychiatry, 2006  
Speaker, Cold Spring Harbor Banbury Conf. on Biology of Social Cognition, 2006  
Speaker, Cold Spring Harbor Labs Conf. on Engineering Principles in Biology, 2006  
Co-organizer, Banbury Conf. on Molecular Mechanisms of CNS Arousal, 2007  
Plenary, Physiological Society of Japan, Tokyo, 2008  
Nobel Symposium on Hormone Action, Stockholm, Speaker, 2008  
J.W. Jones Distinguished Science Lecture, Rochester Institute Of Technology, 2009.  
Keynote lecture, United Nations, Meeting on "Neuroscience, Law, and Morality" 2009.  
Roger Guillemin Nobel Lecture, Salk Institute, 2009.  
Plenary lecture, International Society for Research on Aggression, 2010.  
Keynote lecture, EMBO meeting, "Science and Society" (Sex Differences) Heidelberg, 2010.  
Distinguished lecturer in Neuroscience, University of Toronto, 2012.  
Pioneer Lecture, Genomic Biology, University of Illinois, 2012.  
State Key Lecture, University of Hong Kong, 2013.

Cheah Distinguished Lecture, Monash University (Malaysia), 2013.  
Plenary Lecture, Turkish Neuroscience Society, 2013.  
McGovern Lecturer, Peking University, Beijing, China, 2014.  
Sir John Monash Lecture, Monash Univ., Kuala Lumpur, Malaysia, 2015  
Distinguished Lecture, MIND Institute, U. California Davis, 2016.  
'Pioneer in Endocrinology' lecture, Rutgers University, 2016  
Plenary, Jinan University, Guangzhou, China, 2016.

Internat. Union Physiol. Sciences, Commission on Endocrinology, Chairman, 1990-1996  
Internat. Union Physiol. Sciences, Commission on Molecular Biology  
International Congress of Physiol. Sciences, St. Petersburg, Russia, 1997, Program Committee.  
International Soc. of Neuroendocrinology, Council, 1988-2000  
Steering Committee for Recent Progress in Hormone Research, 1994-1998  
MacArthur Foundation Network on Psychopathology and Development, 1994-1995  
Endocrine Society Program Committee, 1996-1997  
Nat. Acad. Sci. Neurosciences Award Selection Committee, 1998, Chair, 2001  
Amer. Acad. Arts & Sciences, Neuroscience Selection Panel, 2001-2002  
Advisory Workgroup, NIMH Council, Future Priorities, 2004  
Advisory Workgroup, NIH, Blueprint for the Neurosciences, 2004  
Advisor, Board of Scientific Counselors, NIMH, 2005  
Member, Dana Alliance for Brain Initiatives, 2006-  
Board, Fordham Univ. Law School Center for Neuroscience and Law, 2015-.

### **SOCIETIES:**

American Physiological Society; Endocrine Society; International Brain Research Organization;  
Society For Neuroscience; International Society for Neuroendocrinology; New York Academy  
of Sciences; American Association for the Advancement of Science; Behavior Genetics  
Association; American Society for Pharmacology and Experimental Therapeutics.

### **SOME THEMES IN PUBLICATIONS TO DATE, WITH SELECTED REFERENCES (1/2017)**

#### **Lab's Major Accomplishments:**

- 1.** First localization of hormone target neurons in the brain: discovery of estrogen-binding neurons in a limbic/hypothalamic system (CV #3, 6, 38, Books 1, 3). The discovery initially was made in rat brain, but our work on fish CNS *through* monkey CNS showed it to be a general vertebrate system (95, 264). We followed up the histochemical findings to demonstrate consequences of hormone binding for electrophysiological activity (61) and neuronal growth (132,179,185, 205, 242, 327).
- 2.** We worked out the first neural circuit for a vertebrate behavior, the estrogen-dependent lordosis behavior (Books 2, 3). The lordosis behavior circuit proved that it is possible to explain how mechanisms for a mammalian behavior work.
- 3.** First demonstration of hormone-dependent genes in the brain (279, 328, 452). Their induction has temporal, spatial and gender specificities appropriate to reproductive behavior (326, 396, Book 8).
- 4.** Some of these hormone-dependent genes are required for, or foster, hormone-dependent behavior (588, Books 8, 9).

*Taken together, Points 1., 2., 3., and 4. showed exactly how specific neurochemical reactions in specific parts of the brain determine a specific mammalian behavior.*

5. Demonstration of a neuropeptide (LHRH, GnRH) driving a behavior in a manner consonant with its peripheral physiological effects (40).
6. Discovery that the neurons that control reproduction (GnRH neurons) are born not in the brain, but in the olfactory pit, and migrate into the basal forebrain (336, 391, 423, 427, 524). Explains loss of libido in X-linked Kallmann's syndrome (363).
7. First use of a viral vector to express a foreign gene in a mammalian brain (405, 406, 443, 461, 517).
8. Generalized CNS Arousal ("GA"): The lab has accomplished the concept, an operational definition, a precise assay, and several units of data about GA, thought of as the most primitive, powerful and essential function in the vertebrate CNS. We have results indicating that giant nerve cells in the medullary reticular formation play an essential role in producing GA.

### **Some current interests:**

1. Genetic and hormonal influences on brain arousal -- both sexual and generalized arousal (GA) in mice. For example, we follow mouse responsivity during the light-to-dark ( low-to-high arousal) transition, measuring behavioral arousal with 20 millisecond resolution. Is this a physically defined phase transition? What mathematical function are these animals following? Why is there a sex difference?
2. The "master cells" for generalized CNS arousal are certain large medullary reticular neurons (nucleus gigantocellularis , NGC). We have determined the transcriptome of the specific set of NGC neurons with axons projecting to the thalamus (for activating the cortex). We believe these neurons are responsible for 'waking up' the brain from zero states: e.g. coma, deep sleep, deep anesthesia.
3. Molecular, biophysical and behavioral studies of GA-related transmitter actions on nerve cells. Our studies include opioid peptides, hypocretin/orexin, histamine and norepinephrine. Regarding specific channels, in NGC neurons we are testing the hypothesis that fully functioning delayed rectifier potassium channels are crucial for high levels of NGC excitability and therefore, perhaps, required for entry into consciousness.
4. The genes for the glucocorticoid receptor (GR) and mineralocorticoid receptor (MR) are expressed in these NGC neurons. Since GR and MR are ligand-activated transcription factors, effects of stresses on these neurons can be studied at the transcriptional and epigenetic levels.
5. Exactly when and where are NGC neurons born and how do they migrate to their final functional positions? These experiments will determine the transcription factor (hox gene) spatiotemporal patterning that produces the NGC neurons we need to understand.
6. We have preliminary data indicating that at least some NGC neurons are outside the blood-brain-barrier. If we can replicate that evidence then NGC neurons would be unusually susceptible to blood-borne influences.

7. Use of viral vectors to alter gene expression in NGC neurons and measure behavioral consequences: for GA and for specific motivated behaviors.
8. Follow up microarray studies of steroid hormone effects on gene expression in specific regions of the adult brain; and of sex differences in the developing brain. Follow-up at RNA and protein levels. Predictions for epigenetic studies.

## **PUBLICATIONS - D. W. PFAFF**

### **BOOKS**

1. Pfaff, D. W. (Editor) Hormonal Factors in Brain Function. Cambridge, Mass.: The MIT Press, 1975.
2. Adler, N., Pfaff, D. W. and Goy, R. (Editors) Neurobiology of Reproduction (Handbook of Behavioral Neurobiology). New York: Plenum, 1985.
3. Pfaff, D. W. Estrogens and Brain Function: Neural Analysis of a Hormone-Controlled Mammalian Reproductive Behavior. New York: Springer-Verlag, 1980.
4. Pfaff, D. W. (Editor) The Physiological Mechanisms of Motivation. Heidelberg; New York: Springer-Verlag, 1982.
5. Pfaff, D. W. (Editor) Ethical Questions in Brain and Behavior: Problems and Opportunities. New York: Springer-Verlag, 1983.
6. Pfaff, D. W. (Editor) Taste, Olfaction and the Central Nervous System. New York: Rockefeller University Press, 1985.
7. Strauss, G. and Pfaff, D. (Editors) Molecular Neurobiology: Endocrine Approaches. New York: Academic Press, 1987.
8. Pfaff, D.W. Drive: Neurobiological and Molecular Mechanisms of Sexual Motivation. Cambridge: The M.I.T. Press, 1999.
9. Pfaff, D.W., Berrettini, W., Joh, T. and Maxson, S. (Editors) Genetic Influences on Neural and Behavioral Functions. Boca Raton: CRC Press, 1999.
10. Bodnar, R., Commons, K. and Pfaff, D.W. Central Neural States Relating Sex and Pain. Baltimore: The Johns Hopkins University Press, 2002.
11. Pfaff, D.W., (Editor in Chief). Hormones, Brain and Behavior. (a 5 volume reference treatise). San Diego: Academic Press, 2002 .

12. Pfaff, D.W., Phillips, M.I. and R.T. Rubin. Principles of Hormone/Behavior Relations. San Diego: Elsevier/Academic Press, (2004).
13. Pfaff, D.W. Associate Editor, Knobil & Neill's The Physiology of Reproduction. (2 volumes). 3<sup>rd</sup> Edition. San Diego: Elsevier/Academic Press, (2005). 2<sup>nd</sup> edition, 1994; 1<sup>st</sup> edition, 1988.
14. Devine, J., Gilligan, J., Miczek, K., Shaikh, R. and Pfaff, D. (Editors). Scientific Approaches to the Prevention of Youth Violence. Annals, New York Academy of Sciences, v.1036, (2004).
15. Pfaff, D.W. Brain Arousal and Information Theory: Neural and Genetic Mechanisms. Cambridge, Mass.: Harvard University Press, (2006).
16. Pfaff, D.W., Nelson, R. and Keverne, E.B. (G. Bock & J. Goode, Editors). Molecular Mechanisms Influencing Aggressive Behaviours. (a Novartis Foundation Symposium). London: Wylie, (2005).
17. Pfaff, D.W. The Neuroscience of Fair Play. Washington: Dana Press (2007).
18. Pfaff, D.W. and Kieffer, B.L. (Eds.) Molecular and biophysical mechanisms of arousal, alertness and attention. Annals, New York Academy of Sciences, Vol. 1129 (2008).
19. Pfaff, D., Kordon, C., Chanson, P. and Christen, Y. (Eds.) Hormones and Social Behavior. Heidelberg: Springer-Verlag (2008).
20. Pfaff, D.W., (Editor in Chief). Hormones, Brain and Behavior (Second edition). San Diego: Academic Press/Elsevier, (2009).
21. Pfaff, D.W. Man and Woman: An Inside Story. New York: Oxford University Press, (2010).
22. Martini, L. et al. (Pfaff, Associate Editor). Neuroendocrinology. Progress in Brain Research Amsterdam: Elsevier. (2011).
23. Fotopoulou, A. Pfaff, D. & Conway, M. (Eds) From the Couch to the Lab: Trends in Psychodynamic Neuroscience. Oxford, UK: Oxford University Press. (2012).
24. Schenck-Gustafsson, K.; DeCola, P.R.; Pfaff, D.W.; Pisetsky, D.S. (Eds) Handbook of Clinical Gender Medicine. Basel: Karger AG. (2012).
25. Fink, G., Pfaff, D and Levine, J., Handbook of Neuroendocrinology. San Diego: Academic Press/Elsevier, (2012).
26. Choleris, E., Pfaff, D. and Kavaliers, M. Oxytocin, Vasopressin and Related Peptides in the Regulation of Behavior. Cambridge: Cambridge University Press, (2013).

27. Pfaff, D.W. (Editor-in-Chief). Neuroscience in the 21<sup>st</sup> Century: From Basic to Clinical. Heidelberg: Springer Verlag (2012). (*5-volume text free electronically in developing countries*).
28. Pfaff, D.W., Christen, Y. (Eds.). Multiple origins of sex differences in brain. Neuroendocrine functions and their pathologies. Springer, Heidelberg (Fondation Ipsen), 2013.
29. Pfaff, D.W. with Sherman, S. The Altruistic Brain: How we are naturally good. New York: Oxford University Press (2014).
30. Pfaff, D.W. with Sherman, S. A Neuroscientist Looks at Robots. Singapore: World Scientific Press (2015).
31. Pfaff, D.W. and Volkow, N.D., (Editors-in-Chief). Neuroscience in the 21<sup>st</sup> Century: From Basic to Clinical. (2<sup>nd</sup> edition). Heidelberg: Springer Verlag (2016). (*5-volume text free electronically in developing countries*).
32. Pfaff, D.W. and Joels, M., (Editors-in-Chief). Hormones, Brain and Behavior. (a 5 volume reference treatise).(3<sup>rd</sup> edition). Cambridge: Elsevier ( 2017) .
33. Pfaff, D.W., Schneider, J., Head, G. and R.T. Rubin. Principles of Hormone/Behavior Relations. (2<sup>nd</sup> edition) San Diego: Elsevier/Academic Press, (2017, in press).
32. Pfaff, D.W., Christen, Y. (Eds.). Stem cells in neuroendocrinology. Springer, Heidelberg (Foundation Ipsen), 2016.
33. Pfaff, D.W. How the vertebrate brain regulates behavior: Direct from the lab. Cambridge, Mass: Harvard University Press, (2017, in press).

## **RESEARCH REPORTS AND REVIEW CHAPTERS**

1. Freedman, S. J. and Pfaff, D. W. The effect of dichotic noise on auditory localization. J. Auditory Research, 2: 305-310, 1962.
2. Freedman, S. J. and Pfaff, D. W. Trading relations between dichotic time and intensity differences in auditory localization. J. Auditory Research. 2: 311-318, 1962.
3. Pfaff, D. W. Cerebral implantation and autoradiography studies of sex hormones. In Sex Research: New Developments, J. Money (Ed.) New York: Holt, Rinehart & Winston, 1965, pp. 219-234.
4. Pfaff, D. W. Morphological changes in the brains of adult male rats after neonatal castration. J. Endocrinology, 36: 415-416, 1966.



5. Pfaff, D. W. Effects of body temperature and time of day on time judgments. J. Exp. Psychol., 76: 419-422, 1968.
6. Pfaff, D. W. Uptake of estradiol-17B-H3 in the female rat brain. An autoradiography study. Endocrinology. 82: 1149-1155, 1968.
7. Pfaff, D. W. Autoradiography localization of heterologous sex hormones in the rat brain. Experientia. 24: 958-959, 1968.
8. Pfaff, D. W. Autoradiographic localization of radioactivity in rat brain after injection of tritiated sex hormones. Science, 161: 1355-1356, 1968.
9. Pfaff, D. W. Parsimonious biological models of memory and reinforcement. Psychological Review, 76: 70-81, 1969.
10. Pfaff, D. W. and Pfaffmann, C. Olfactory and hormonal influences on the basal forebrain of the male rat. Brain Research. 15: 137-156, 1969.  
  
Pfaff, D. W., Scott, J. and Pfaffmann, C. Olfactory input to the medial forebrain bundle of the rat. Psychonomic Bull., 1: 22 (abstract), 1967.
11. Pfaff, D. W. Sex differences in food intake changes following pituitary growth hormone or prolactin injections. Proc. Amer. Psychol. Assn., 4: 211-212, 1969.
12. Pfaff, D. W. Histological differences between ventromedial hypothalamic neurons of well-fed and underfed rats. Nature. 223: 77-78, 1969.
13. Pfaff, D. W. and Pfaffmann, C. Behavioral and electrophysiological responses of male rats to female rat urine odors. In Olfaction and Taste, C. Pfaffmann (Ed.). Rockefeller University Press, New York, 1969, pp. 258-267.
14. Scott, J. and Pfaff, D. W. Behavioral and electrophysiological responses of female mice to male mouse urine odors. Physiology and Behavior. 5: 407-411, 1970.
15. Pfaff, D. W. Mating behavior of hypophysectomized rats. J. Comp. Physiol. Psychol., 72: 45-50, 1970.
16. Pfaff, D. W. Nature of sex hormone effects on rat sex behavior: Specificity of effects and individual patterns of response. J. Comp. Physiol. Psychol., 73: 349-358, 1970.  
  
Pfaff, D. W. Behavioral responses of rats to sex hormones: Specificity of hormone effects and individual patterns of response. Amer. Zoologist, 9: 1066 (Abstract), 1969.
17. McEwen, B. and Pfaff, D. W. Factors influencing sex hormone uptake by rat brain regions: I. Effects of neonatal treatment, hypophysectomy, and competing steroid on estradiol uptake. Brain Research, 21: 1-16, 1970.

18. McEwen, B., Pfaff, D. W. and Zigmond, R. E. Factors influencing sex hormone uptake by rat brain regions: II. Effects of neonatal treatment and hypophysectomy on testosterone uptake. Brain Research, 21: 17-28, 1970.
19. McEwen, B. S., Pfaff, D. W. and Zigmond, R. E. Factors influencing sex hormone uptake by rat brain regions: III. Effects of competing steroids on testosterone uptake. Brain Research, 21: 29-38, 1970.
20. Pfaff, D. W. Synergistic and antagonistic effects of sex hormones on female rat sex behavior. Amer. Zoologist, 10: no. 23 (Abstract), 1970.
21. Pfaff, D. W. and Gregory, E. Olfactory coding in olfactory bulb and medial forebrain bundle of normal and castrated male rats. J. Neurophysiol., 34: 208-216, 1971.
22. Pfaff, D.W. and Zigmond, R.E. Neonatal androgen effects on sexual and nonsexual behavior of adult rats tested under various hormone regimes. Neuroendocrinol., 7: 129-145, 1971.
23. Gregory, E. and Pfaff, D. W. Development of olfactory-guided behavior in infant rats. Physiology and Behavior, 6: 573-576, 1971.
24. Pfaff, D. W. Statistical effects of sensitivity differences among neurophysiological preparations. J. Theoretical Biol., 31: 159-160, 1971.
25. Pfaff, D. W. Steroid sex hormones in the rat brain: Specificity of uptake and physiological effects. In Steroid Hormones and Brain Function. C. H. Sawyer and R. A. Gorski (Eds.). Los Angeles: University of California Press, 1971, pp. 103-112.
26. Pfaff, D. W., Gregory, E. and Silva, M. T. A. Testosterone and corticosterone effects on single unit activity in the rat brain. In The Influence of Hormones on the Nervous System, D. H. Ford (Ed.). Basel: Karger, 1971, pp. 269-281.
27. Pfaff, D. W. and Gregory, E. Correlation between preoptic area unit activity and the cortical EEG: Difference between normal and castrated male rats. Electroenceph. Clin. Neurophysiol., 31: 223- 230, 1971.
28. Pfaff, D. W., Silva, M. T. A. and Weiss, J. M. Telemetered recording of hormone effects on hippocampal neurons. Science, 172: 394-395, 1971.
29. Pfaff, D. W. Mating behavior of adrenalectomized rats. Amer. Zoologist, 11: #2, 1971 (Abstract).
30. Pfaff, D. W. and Keiner, M. Estradiol-concentrating cells in the rat amygdala as part of a limbic-hypothalamic hormone-sensitive system. In The Neurobiology of the Amygdala, B. Eleftheriou (Ed.). New York: Plenum, 1972, pp. 775-785.

- Pfaff, D. Keiner, M. and Waren, E. Estradiol-H3 concentration by cells in a limbic-hypothalamic system in the female rat brain. An autoradiography study. Proc Soc for Neurosci, 1971 (Abstract)
31. Pfaff, D. W., Lewis, C., Diakow, C. and Keiner, M. Neurophysiological analysis of mating behavior responses as hormone-sensitive reflexes. In Progress in Physiological Psychology, E. Stellar and J. M. Sprague (Eds.), vol. 5, 1972, pp. 253-297.  
Pfaff, D. W., Diakow, C., Malsbury, C. and Kelley, D. Physiological analysis of lordosis in the female rat as a hormone-sensitive reflex. Hormones, 3: 280, 1972 (Abstract).
32. Malsbury, C., Kelley, D. R. and Pfaff, D. W. Responses of single units in the dorsal midbrain to somatosensory stimulation in female rats. In Progress in Endocrinology. Proc. IV International Congress Endocrinology, C. Gaul (Ed.). Excerpta Medica Internat. Congress Series #273, 1972, pp. 205-209.
33. Pfaff, D. W. Interactions of steroid sex hormones with brain tissue: Studies of uptake and physiological effects. In The Regulation of Mammalian Reproduction, S. Segal et al. (Eds.). Springfield, Ill.: Thomas, 1973, pp. 5-22.
34. Pfaff, D. W. Mechanisms of sexual motivation. Discussion in Neural Control of Motivated Behavior. Edited by E. Stellar and J. D. Corbit. Neurosciences Research Program Bulletin, Vol. 11, 1973, pp. 368-375.
35. Zigmond, R. E., Nottebohm, F. and Pfaff, D. W. Androgen-concentrating cells in the midbrain of a songbird. Science, 179: 1005-1007, 1973.  
  
Zigmond, R. E., Nottebohm, F. and Pfaff, D. W. Distribution of androgen- concentrating cell in the brain of the chaffinch. Proc. IV International Congress Endocrinology, Washington, D.C., 1972, Excerpta Medica Internat. Congress Series No. 256 (Abstract #340).
36. McEwen, B. S. and Pfaff, D. W. Chemical and physiological approaches to neuroendocrine mechanisms: Attempts at integration. In Frontiers in Neuroendocrinology, W. F. Ganong and L. Martini (Eds.). New York: Oxford University Press, 1973, pp. 267-335.
37. Pfaff, D. W., Diakow, C., Zigmond, R. E. and Kow, L.-M. Neural and hormonal determinants of female mating behavior in rats. In The Neurosciences, Vol. III, F. O. Schmitt and F. G. Worden (Eds.). Cambridge: M.I.T. Press, 1973, pp. 621-646.
38. Pfaff, D. W. and Keiner, M. Atlas of estradiol-concentrating cells in the central nervous system of the female rat. J. Comp. Neurol., 151: 121-158, 1973
39. Diakow, C., Pfaff, D. W. and Komisaruk, B. Sensory and hormonal interactions in eliciting lordosis. Fed. Proc., 32: 241 (Abstract), 1973.
40. Pfaff, D. W. Luteinizing hormone releasing factor (LRF) potentiates lordosis behavior in hypophysectomized ovariectomized female rats. Science, 182: 1148-1149, 1973.

41. Kow, L.-M. and Pfaff, D. W. Effects of estrogen treatment on the size of receptive field and response threshold of pudendal nerve in the female rat. Neuroendocrinology, 13: 299-313, 1973.

Kow, L.-M. and Pfaff, D. W. Estrogen effect on pudendal nerve receptive field size in the female rat. Anat. Rec., 175: 362-363, 1973 (Abstract).

42. Malsbury, C. and Pfaff, D. W. Neural and hormonal determinants of mating behavior in adult male rats. A review. In Limbic and Autonomic Nervous Systems Research, L. DiCara (Ed.). New York: Plenum, 1974, pp. 85-136.

43. Floody, O. and Pfaff, D. W. Steroid hormones and aggressive behavior: Approaches to the study of hormone-sensitive brain mechanisms for behavior. Research Publications, Assn. for Research in Nervous and Mental Disease, 52: 149-185, 1974.

Floody, O. and Pfaff, D. W. Hormonal modulation Or aggressive behavior in female hamsters. Proceedings, Society for Neuroscience, 1973 (Abstract), p. 121.

44. Pfaff, D. W. and Lewis, C. Film analyses of lordosis in female rats. Hormones and Behavior, 5: 317-335, 1974.

45. Conrad, L., Leonard, C. and Pfaff, D. W. Connections of the median and dorsal raphe nuclei in the rat: An autoradiography and degeneration study. J. Comp. Neurol., 156: 179-206, 1974.

Conrad, L., Leonard, C. and Pfaff, D. W. An autoradiography and degeneration study of the projections of the median and dorsal raphe nuclei in the rat. Anat. Rec., 178: 334, 1974 (Abstract).

46. Kow, L.-M., Malsbury, C. and Pfaff, D. W. Effects of progesterone on female reproductive behavior in rats: Possible modes of action and role in behavioral sex differences. In Reproductive Behavior, W. Montagna and W. Sadler (Eds.). New York: Plenum, 1974, pp. 179-210.

47. Pfaff, D. W. Theoretical consideration of cross-fiber pattern coding in the neural signaling of pheromones and other chemical stimuli. Psychoneuroendocrinology, 1: 79-93, 1975.

48. Gregory, E., Engel, K. and Pfaff, D. W. Male hamster preference for odors of female hamster vaginal discharges: Studies of experiential and hormonal determinants. J. Comp. Physiol. Psychol., 89: 442-446, 1975.

49. Zemlan, F. and Pfaff, D. W. Lordosis after cerebellar damage in female rats. Hormones and Behavior, 6: 27-33, 1975.

50. Kow, L.-M. and Pfaff, D. W. Dorsal root recording relevant for mating reflexes in female rats: Identification of receptive fields and effects of peripheral denervation. J. Neurobiol., 6: 23-37, 1975.

51. Kelley, D. B., Morrell, J. I. and Pfaff, D. W. Autoradiographic localization of hormone-concentrating cells in the brain of an amphibian, Xenopus laevis. I. Testosterone. J. Comp. Neurol., 164: 47-62, 1975.

Kelley, D. B., Pfaff, D. W. and Morrell, J. I. Radioactivity in the brain of male South African clawed frogs (Xenopus laevis) following injection of H<sup>3</sup>-testosterone. An autoradiography study. Amer. Zoologist, 13: 1287-1288, 1973 (Abstract).

52. Morrell, J. I., Kelley, D. B. and Pfaff, D. W. Autoradiographic localization of hormone-concentrating cells in the brain of an amphibian, Xenopus laevis. II. Estradiol. J. Comp. Neurol., 164: 63-78, 1975.

53. Kow, L.-M. and Pfaff, D. W. Induction of lordosis in female rats: Two modes of estrogen action and the effect of adrenalectomy. Hormones and Behavior, 6: 259-276, 1975.

54. Zasorin, N., Malsbury, C. and Pfaff, D. W. Suppression of lordosis in the hormone-primed female hamster by electrical stimulation of the septal area. Physiology and Behavior, 14: 595-599, 1975.

55. Conrad, L. A. and Pfaff, D. W. Axonal projections of medial preoptic and anterior hypothalamic neurons. Science, 190: 1112-1114, 1975.

Conrad, L. A. and Pfaff, D. W. Autoradiography tracing of projections from preoptic area and anterior hypothalamus in the rat. Proceedings, Society for Neuroscience, 1974 (Abstract #136), p. 176.

56. Morrell, J., Kelley, D. and Pfaff, D. W. Sex steroid binding in the brains of vertebrates: Studies with light microscopic autoradiography. In Brain-Endocrine Interaction II, K. Knigge, D. Scott, H. Robayashi and S. Ishii (Eds.). Basel: Karger, 1975, pp. 230-256.

57. McEwen, B., Pfaff, D. W., Chaptal, C. and Luine, V. Brain cell nuclear retention of 3H-estradiol doses able to promote lordosis: Temporal and regional aspects. Brain Research, 86: 155-161, 1975.

58. Gerlach, J., McEwen, B., Pfaff, D., Moskovitz, S., Ferin, M., Carmel, P. and Zimmerman, E. Cells in regions of rhesus monkey brain and pituitary retain radioactive estradiol, corticosterone and cortisol differentially. Brain Research, 103: 603-612, 1976.

Gerlach, J., Pfaff, D. W., McEwen, B. S., Ferin, M., Carrel, P. and Zimmerman, E. Binding of radioactive estradiol and corticosterone in the brain of the female Rhesus monkey. Proceedings, Endocrine Society, 1974 (Abstract).

59. Kelley, D. B. and Pfaff, D. W. Hormone effects of male sex behavior in adult South African clawed frogs, Xenopus laevis. Hormones and Behavior, 7: 159-182, 1976.

60. Kow, L.-M. and Pfaff, D. W. Sensory requirements for the lordosis reflex in female rats. Brain Research, 101: 47-66, 1976.

61. Bueno, J. and Pfaff, D. W. Single unit recording in hypothalamus and preoptic area of estrogen-treated and untreated ovariectomized female rats. Brain Research, 101: 67-78, 1976.

62. Kow, L.-M., Malsbury, C. and Pfaff, D. W. Lordosis in the male golden hamster elicited by manual stimulation: Characteristics and hormonal sensitivity. J. Comp. Physiol. Psychol., 90: 26-40, 1976.

Malsbury, C., Kow, L.-M. and Pfaff, D. W. The lordosis response in the intact male hamster elicited by manual stimulation. Proceedings, Eastern Psychological Association, 1974 (Abstract).

63. Pfaff, D. W. The neuroanatomy of sex hormone receptors in the vertebrate brain. In Neuroendocrine Regulation of Fertility, T. C. A. Kumar (Ed.). Basel: Karger, 1976, pp. 30-45.

64. Modianos, D. and Pfaff, D. W. Brain stem and cerebellar lesions in female rats. I. Tests of posture and movement. Brain Research, 106: 31-46, 1976.

Modianos, D. and Pfaff, D. W. Brain stem lesions and lordosis in female rats. Fed. Proc., 34: 396, 1975 (Abstract).

65. Modianos, D. and Pfaff, D. W. Brain stem and cerebellar lesions in female rats. II. Lordosis reflex. Brain Research, 106: 47-56, 1976.

66. Arnold, A., Nottebohm, F. and Pfaff, D. W. Hormone-concentrating cells in vocal control and other areas of the brain of the zebra finch (*Poephila guttata*). J. Comp. Neurol., 165: 487-512, 1976.

67. Conrad, L. C. A. and Pfaff, D. W. Efferents from medial basal forebrain and hypothalamus in the rat. I. An autoradiography study of the medial preoptic area. J. Comp. Neurol., 169: 185-220, 1976.

Conrad, L. C. A. and Pfaff, D. W. Projections from the nuclei of the diagonal bands: An autoradiography study in the albino rat. Proceedings, Society for Neuroscience, 1975, New York (Abstract #1048), p. 678.

68. Conrad, L. C. A. and Pfaff, D. W. Efferents from medial basal forebrain and hypothalamus in the rat. II. An autoradiography study of the anterior hypothalamus. J. Comp. Neurol., 169: 221-262, 1976.

69. Conrad, L. C. A. and Pfaff, D. W. Autoradiography tracing of nucleus accumbens efferents in the rat. Brain Research, 113: 589-596, 1976.

70. Pfaff, D. W., Montgomery, M. and Lewis, C. Somatosensory determinants of lordosis in female rats: Behavioral definition of the estrogen effect. J. Comp. Physiol. Psychol., 91: 134-145, 1977.

71. Modianos, D., Delia, H. and Pfaff, D. W. Lordosis in female rats following medial forebrain bundle lesions. Behavioral Biology, 18: 135-141, 1976.

72. Kow, L.-M., Montgomery, M. and Pfaff, D. W. Effects of spinal cord transections on lordosis reflex in female rats. Brain Research, 123: 75-88, 1977.

Kow, L.-M. and Pfaff, D. W. Spinal tract transections and the lordosis reflex in female rats. Physiologists, 16: 367, 1973 (Abstract).

73. Pfaff, D. W., Gerlach, J., McEwen, B. S., Ferin, M., Carmel, P. and Zimmerman, E. Autoradiographic localization of hormone-concentrating cells in the brain of the female rhesus monkey. J. Comp. Neurol., 170: 279-294, 1976.

Pfaff, D. W., Moskovitz, S., Gerlach, J., McEwen, B., Ferin, M., Carmel, P. and Zimmerman, E. Autoradiography localization of cells which bind estradiol or corticosterone in the brain and pituitary of the female rhesus monkey. Proceedings, XXVI International Congress of Physiological Sciences, New Delhi, 1974 (Abstract #843), p. 281.

74. Modianos, D. and Pfaff, D. Steroid and peptide hormones, and the neural mechanisms for reproductive behavior. In Proceedings of the V International Congress of Endocrinology, Hamburg, July 1976, Vol. 1, V. H. T. James (Ed.). Amsterdam: Excerpta Medica, 1976, pp. 67-71.

75. Davis, R. E., Morrell, J. I. and Pfaff, D. W. Autoradiography localization of sex steroid-concentrating cells in the brain of the teleost *Macropodus opercularis* (Osteichthyes: Belontiidae). General and Comparative Endocrinology, 33: 496-505, 1977.

Morrell, J. I., Davis, R. E. and Pfaff, D. W. Autoradiographic localization of sex steroid concentrating cells in the brain of the paradise fish after 3H-estradiol or 3H-testosterone administration. In Proceedings of the V International Congress of Endocrinology, Hamburg, July 1976. (Abstract #278), p. 114.

76. Kow, L.-M. and Pfaff, D. W. Sensory control of reproductive behavior in female rodents. In Tonic Functions of Sensory Systems, B. Wenzel and H. P. Zeigler (Eds.). Annals, New York Academy of Sciences, 290: 72-97, 1977.

77. Floody, O. R. and Pfaff, D. W. Aggressive behavior in female hamsters: The hormonal basis for fluctuations in female aggressiveness correlated with estrous state. J. Comp. Physiol. Psychol., 91: 443-464, 1977.

78. Floody, O. R. and Pfaff, D. W. Communication among hamsters by high-frequency acoustic signals: I. Physical characteristics of hamster calls. J. Comp. Physiol. Psychol., 91: 794-806, 1977.

79. Floody, O. R., Pfaff, D. W. and Lewis, C. D. Communication among hamsters by high-frequency acoustic signals: II. Determinants of calling by females and males. J. Comp. Physiol. Psychol., 91: 807-819, 1977.

80. Floody, O. R. and Pfaff, D. W. Communication among hamsters by high-frequency acoustic signals: III. Responses evoked by natural and synthetic ultrasounds. J. Comp. Physiol. Psychol., 91: 820-829, 1977.

81. Krieger, M. S., Morrell, J. I. and Pfaff, D. W. Autoradiographic localization of estradiol-concentrating cells in the female hamster brain. Neuroendocrinology, 22: 193-205, 1976.

Krieger, M., Morrell, J. and Pfaff, D. W. Autoradiography localization of estradiol-concentrating cells in female hamster brain. Anatomical Record, 184: 453 (Abstract), 1976.

82. Malsbury, C., Kow, L.-M. and Pfaff, D. W. Effects of medial hypothalamic lesions on the lordosis response and other behaviors in female golden hamsters. Physiology and Behavior, 19: 223-237, 1977.

Kow, L.-M., Malsbury, C. W. and Pfaff, D. W. Effects of medial hypothalamic lesions on the lordosis response in female hamsters. Proceedings, Society for Neuroscience, 1974 (Abstract #365), p. 291.

83. Morrell, J. I., Ballin, A. and Pfaff, D. W. Autoradiographic demonstration of the pattern of 3H-estradiol concentrating cells in the brain of a carnivore, the mink, Mustela vison. Anat. Rec., 189: 609-624, 1977.

Morrell, J. and Pfaff, D. W. Autoradiography localization of 3H-estradiol uptake in the brain of the female mink, Mustela vison. Anat. Rec., 181: 430-431, 1975 (Abstract).

84. Modianos, D. T. and Pfaff, D. W. Facilitation of the lordosis reflex in female rats by electrical stimulation of the lateral vestibular nucleus. Brain Research, 134: 333-345, 1977.

Modianos, D. and Pfaff, D. W. Facilitation of the lordosis reflex by electrical stimulation of the lateral vestibular nucleus. Proceedings, Society for Neuroscience, 1975, New York (Abstract #710), p. 457.

85. Pfaff, D. W. Hormone-binding, olfactory pathways and hormone-controlled behaviors. In Aspects of Behavioral Neurobiology, Vol. III, Ferrendelli, James A. (Ed.), Bethesda: Society for Neuroscience, 1977, pp. 226-229.



86. Barfield, R. J., Ronay, G. and Pfaff, D. W. Autoradiographic localization of androgen-concentrating cells in the brain of the male domestic fowl. Neuroendocrinology, 26: 297-311, 1978.
87. Pfaff, D. W., Diakow, C., Montgomery, M. and Jenkins, F. A. X-ray cinematographic analysis of lordosis in female rats. Journal of Comparative and Physiological Psychology, 92 (5): 937-941, 1978.
88. Kelley, D. B. and Pfaff, D. W. Generalizations from comparative studies on neuroanatomical and endocrine mechanisms of sexual behaviour. In Biological Determinants of Sexual Behavior, J. Hutchison (Ed.), Chichester, England: Wiley, 1978, pp. 225-254.
89. Kelley, D. B., Lieberburg, I., McEwen, B. S. and Pfaff, D. W. Autoradiography and biochemical studies of steroid hormone-concentrating cells in the brain of Rana Pipiens. Brain Research, 140: 287-305, 1978.
- Kelley, D. B. and Pfaff, D. W. Locations of steroid hormone-concentrating cells in the central nervous system of Rana Pipiens. Society for Neuroscience, 1975, New York (Abstract #681), p. 438.
90. Pfaff, D. W. and Conrad, L. C. A. Hypothalamic neuroanatomy: Steroid hormone binding and patterns of axonal projections. In International Review of Cytology, Vol. 54. G. Bourne (Ed.), New York: Academic Press, 1978, pp. 245-265.
91. Pfaff, D. W. Hypothalamic mechanisms of reproductive behavior control: Participation of steroid and peptide hormones. In The Hypothalamus S, Reichlin et al. (Eds.), Research Publications, Assn. Res. Nerv. & Mental Disease, New York: Raven Press, 1978, pp. 245-253.
92. Kow, L.-M., Grill, H. and Pfaff, D. W. Elimination of lordosis in decerebrate female rats: Observations from acute and chronic preparations. Physiology and Behavior, 20: 171-174, 1978.
93. Krieger, M. S., Morrell, J. I. and Pfaff, D. W. Neuroanatomical connections of steroid concentrating cell groups. In Brain-Endocrine Interaction III, Neural Hormones and Reproduction, D. Scott, G. Kozlowski and A. Weindl (Eds.), Basel: Larger, 1978, pp. 197-211.
94. Zemlan, F. P., Leonard, C. M., Kow, L.-M. and Pfaff, D. W. Ascending tracts of the lateral columns of the rat spinal cord: A study using the silver impregnation and horseradish peroxidase techniques. Exptl. Neurology, 62: 298-334, 1978.
95. Morrell, J. I. and Pfaff, D. W. A neuroendocrine approach to brain function: Localization of sex steroid concentrating cells in vertebrate brains. Amer. Zoology, 18: 447-460, 1978.
96. Kow, L.-M., Montgomery, M. O. and Pfaff, D. W. Triggering of lordosis reflex in female rats with somatosensory stimulation: Quantitative determination of stimulus parameters. J. Neurophysiol. 42: 195-202, 1979.

97. Kow, L.-M. and Pfaff, D. W. Responses of single units in sixth lumbar dorsal root ganglion of female rats to mechanostimulation relevant for lordosis reflex. J. Neurophysiol. 42: 203-213, 1979.

Kow, L.-M. and Pfaff, D. W. Responses of single dorsal root ganglion (DRG) units to mechanostimulation relevant for lordosis reflex in rats. Fed. Proc., 31: 398 (Abstract #978), 1978.

98. Modianos, D. and Pfaff, D. W. Medullary reticular formation lesions and lordosis reflex in female rats. Brain Research, 171: 334-338, 1979.

99. Krieger, M. S., Conrad, L. C. A. and Pfaff, D. W. An autoradiographic study of the efferent connections of the ventromedial nucleus of the hypothalamus. J. Comp. Neurol., 183: 785-816, 1979.

Krieger, M. S., Conrad, L. C. A. and Pfaff, D. W. Axonal projections from the ventromedial nucleus of the hypothalamus. Anat. Rec., 187: 770-771, 1977 (Abstract).

100. Zemlan, F., Kow, L.-M., Morrell, J. I. and Pfaff, D. W. Descending tracts of the lateral columns of the rat spinal cord: a study using the horseradish peroxidase and silver impregnation techniques. J. Anat., 128: 489-512, 1979.

101. Pfaff, D. W. and Sakuma, Y. Facilitation of the lordosis reflex of female rats from the ventromedial nucleus of the hypothalamus. J. Physiol., 288: 189-202, 1979.

102. Pfaff, D. W. and Sakuma, Y. Deficit in the lordosis reflex of female rats caused by lesions in the ventromedial nucleus of the hypothalamus. J. Physiol., 288: 203-210, 1979.

103. Morrell, J. I., Crews, D., Ballin, A. Morgentaler, A. and Pfaff, D. W. 3H-estradiol, 3H-testosterone and 3H-dihydrotestosterone localization in the brain of the lizard anolis carolinensis: An autoradiographic study. Journal of Comparative Neurology, 188: 201-224, 1979.

Morrell, J. I., Crews, D., Ballin, A. and Pfaff, D. W. Autoradiographic localization of 3H-estradiol, 3H-testosterone and 3H-dihydrotestosterone in the brain of the lizard, anolis carolinensis. Society for Neuroscience Abstracts (Abstract #1130), p. 352, 1977.

104. McEwen, B. S., Davis, P. G., Parsons, B. and Pfaff, D. W. The brain as a target for steroid hormone action. In Annual Review of Neuroscience, Vol. 2, W. M. Cowan, Z. W. Hall and E. R. Kandel (Eds.), Palo Alto: Annual Reviews Inc., 1979, pp. 65-112. \* Citation Classic

105. Pfaff, D. W. Effect of steroid hormones on vertebrate reproductive behavior: Programs and circuitry. In Cellular Mechanisms in the Selection and Modulation of Behavior. Neurosciences Research Program Bulletin, E. R. Kandel et al. (Eds.), Cambridge, Mass.: MIT Press Journals, Vol. 17, 1979, pp. 624-633.

106. Sakuma, Y. and Pfaff, D. W. Facilitation of female reproductive behavior from mesencephalic central gray in the rat. American Journal of Physiology, 237: R278-R284, 1979.

Sakuma, Y. and Pfaff, D. W. Facilitation of lordosis behavior from hypothalamic and mesencephalic electrical stimulation. Society for Neuroscience Abstracts, 4: 354 (Abstract #1131), 1978.

107. Sakuma, Y. and Pfaff, D. W. Mesencephalic mechanisms for integration of female reproductive behavior in the rat. American Journal of Physiology, 237: R285-R290, 1979.

108. Davis, Paula G., McEwen, Bruce and Pfaff, Donald W. Localized behavioral effects of tritiated estradiol implants in the ventromedial hypothalamus of female rats. Endocrinology, 104: 898-903, 1979.

Davis, P. G., McEwen, B. S. and Pfaff, D. W. Localized behavioral effects of tritiated estradiol implants in the ventromedial hypothalamus of female rats. Society for Neuroscience Abstracts, 4: 343, 1978 (Abstract #1086).

109. Parsons, B., MacLusky, N. J., Krieger, M. S., McEwen, B. S. and Pfaff, D. W. The effects of long-term estrogen exposure on the induction of sexual behavior and measurements of brain estrogen and progesterin receptors in the female rat. Hormones and Behavior, 13: 301-313, 1979.

Parsons, B., MacLusky, N. J., Krieger, M. S., McEwen, B. S. and Pfaff, D. W. Effects of estrogen priming on sexual behavior and on steroid receptors in the female rat brain. Society for Neuroscience Abstracts, 4: 351, 1978 (Abstract # 1120).

110. Brink, Emily E., Morrell, Joan I. and Pfaff, Donald W. Localization of lumbar epaxial motoneurons in the rat. Brain Research, 170: 23-41, 1979.

111. Zemlan, Frank P. and Pfaff, Donald W. Topographical organization in medullary reticulospinal systems as demonstrated by the horseradish peroxidase technique. Brain Research, 174: 161-166, 1979.

112. Kow, L.-M., Zemlan, F. P. and Pfaff, D. W. Attempts to reinstate lordosis reflex in estrogen-primed spinal female rats with monoamine agonists. Hormones and Behavior, 13: 232-240, 1979.

113. Malsbury, C. W., Pfaff, D. W. and Malsbury, A. M. Suppression of sexual receptivity in the female hamster: Neuroanatomical projections from preoptic and anterior hypothalamic electrode sites. Brain Research, 181: 267-284, 1980.

Malsbury, C. and Pfaff, D. W. Suppression of sexual receptivity in the hormone-primed female hamster by electrical stimulation of the medial preoptic area. Proceedings, Society for Neuroscience, 1973 (Abstract), p. 122.

114. Brink, E. E. and Pfaff, D. W. Vertebral muscles of the back and tail of the albino rat (Rattus norvegicus albinus). Brain Behav. Evol., 17: 1-47, 1980.

115. Brink, E., Modianos, D. T. and Pfaff, D. W. Ablations of lumbar epaxial musculature: Effects on lordosis behavior of female rats. Brain Behav. Evol., 17: 67-88, 1980.

116. Pfaff, D. W. and Modianos, D. Neural mechanisms of female reproductive behavior. In Neurobiology of Reproduction (Handbook of Behavioral Neurobiology), Adler, N., Pfaff, D. W. and Goy, R. (Eds.), pages 423-494. New York: Plenum, 1985.

117. Zigmond, R. E., Detrick, R. A. and Pfaff, D. W. An autoradiographic study of the localization of androgen concentrating cells in the chaffinch. Brain Research, 182: 369-381, 1980.

118. Kow, L.-M., Zemlan, F. P. and Pfaff, D. W. Responses of lumbosacral spinal units to mechanical stimuli related to analysis of lordosis reflex in female rats. Journal of Neurophysiology, 43: 27-45, 1980.

Kow, L.-M., Zemlan, F. P. and Pfaff, D. W. Effects of somatosensory stimulus modalities on single spinal units in rats: Implications for lordosis behavior. Society for Neuroscience Abstracts, 4: 567 (Abstract #1819), 1978.

119. Parsons, B., MacLusky, N. J., Krey, L., Pfaff, D. W. and McEwen, B. S. The temporal relationship between estrogen-inducible progesterin receptors in the female rat brain and the time course of estrogen activation or mating behavior. Endocrinology, 107: 774-779, 1980.

Parsons, B., MacLusky, N. J., Krey, L., Pfaff, D. W. and McEwen, B.S. The temporal relationship between estrogen-inducible progesterin receptors in the brain and the time course of estrogen activation of mating behavior. Society for Neuroscience Abstracts, 5: 455, 1979 (Abstract #1544).

120. Manogue, K., Kow, L.-M. and Pfaff, D. W. Selective brain stem transections affecting reproductive behavior of female rats: The role of hypothalamic output to the midbrain. Hormones and Behavior, 14: 277-302, 1980.

121. Sakuma, Y. and Pfaff, D. W. Cells of origin of medullary projections in central gray of rat mesencephalon. Journal of Neurophysiology, 44: 1002-1011, 1980.

122. Sakuma, Y. and Pfaff, D. W. Convergent effects of lordosis-relevant somatosensory and hypothalamic influences on central gray cells in the rat mesencephalon. Experimental Neurology, 70: 269-281, 1980.

123. Morrell, J. I., Rhodes, C. H. and Pfaff, D. W. Modern neuroanatomical approaches to neuroendocrine control systems. In E. E. Muller (Editor), Neuroactive Drugs in Endocrinology, Amsterdam: Elsevier/North-Holland Biomedical Press, 1980, pp. 3-18.

124. Schwartz-Giblin, S. and Pfaff, D. W. Implanted strain gauge and EMG amplifier to record motor behavior in unrestrained rats. Physiology and Behavior, 25: 475-479, 1980.

125. Sakuma, Y. and Pfaff, D. W. Excitability of female rat central gray cells with medullary projections: Changes produced by hypothalamic stimulation and estrogen treatment. Journal of Neurophysiology, 44: 1012-1023, 1980.

126. Sakuma, Y. and Pfaff, D. W. LH-RH in the mesencephalic central gray can potentiate lordosis reflex of female rats. Nature, 283: 566-567, 1980.

127. Morrell, J. I. and Pfaff, D. W. Autoradiographic technique for steroid hormone localization: Application to the vertebrate brain. In Neuroendocrinology of Reproduction (Physiology and Behavior), N.T. Adler (Ed.), New York: Plenum Press, 1981, pp. 519-531.

128. Pfaff, D. W. Electrophysiological effects of steroid hormones in brain tissue. In Neuroendocrinology of Reproduction (Physiology and Behavior), N. T. Adler (Ed.), New York: Plenum Press, 1981, pp. 533-544.

129. Pfaff, D. W. Theoretical issues regarding hypothalamic control of reproductive behavior. In Handbook of the Hypothalamus. Volume 3 - Part B. Behavioral Studies of the Hypothalamus, P. J. Morgane and J. Panksepp (Eds.), New York and Basel: Dekker, 1981, pp. 241-258.

130. Morrell, J. I., Greenberger, L. M. and Pfaff, D. W. Comparison of horseradish peroxidase visualization methods: Quantitative results and further technical specifics. Journal of Histochemistry and Cytochemistry, 29: 903-916, 1981.

Morrell, J. I., Greenberger, L. M. and Pfaff, D. W. Projections to mesencephalic central gray related to estrogenic control of reproductive behaviors. Society for Neuroscience Abstracts, 4:226 (Abstract #706), 1978.

131. Brink, E. E. and Pfaff, D. W. Supraspinal and segmental input to lumbar epaxial motoneurons in the rat. Brain Research, 226: 43-60, 1981.

Brink, E. and Pfaff, D. W. Supraspinal and segmental influence on medial and lateral longissimus nerve activity in rats. Society for Neuroscience Abstracts, 5: 364, 1979 (Abstract #1214).

132. Cohen, R. and Pfaff, D. W. Ultrastructure of neurons in the ventromedial nucleus of the hypothalamus in ovariectomized rats with or without estrogen treatment. Cell and Tissue Research, 217: 451-470, 1981.

Cohen, R. and Pfaff, D. W. Ultrastructure of neurons of the ventromedial nucleus of ovariectomized and estrogen-treated female rats. Society for Neuroscience Abstracts, 5: 230, 1979 (Abstract #747).

133. Morrell, J. I., Greenberger, L. M. and Pfaff, D. W. Hypothalamic, other diencephalic, and telencephalic neurons that project to the dorsal midbrain. Journal of Comparative Neurology, 201: 589-620, 1981.

Morrell, J. I., Greenberger, L. and Pfaff, D. W. Forebrain neurons which project to the dorsal midbrain. Third World Congress on Pain of the International Association for the Study of Pain (Edinburgh, Scotland, Sept. 4-11, 1981) (Abstract).

134. Rhodes, C. H., Morrell, J. I. and Pfaff, D. W. Immunohistochemical analysis of magnocellular elements in rat hypothalamus: Distribution and numbers of cells containing neurophysin, oxytocin, and vasopressin. Journal of Comparative Neurology, 198: 45-64, 1981.

Rhodes, C. H., Morrell, J. I. and Pfaff, D. W. Immunocytochemical analysis of magnocellular elements in rat hypothalamus: Distribution and numbers of neurophysin, oxytocin, and vasopressin cells. Society for Neuroscience Abstracts, 6: 30 (Abstract #14.6), 1980.

135. Rhodes, C. H., Morrell, J. I. and Pfaff, D. W. Changes in oxytocin content in the magnocellular neurons of the rat hypothalamus following water deprivation or estrogen treatment. Quantitative immunohistological studies. Cell and Tissue Research, 216: 47-55, 1981.

136. Rhodes, C. H., Morrell, J. I. and Pfaff, D. W. Distribution of estrogen-concentrating, neurophysin-containing magnocellular neurons in the rat hypothalamus as demonstrated by a technique combining steroid autoradiography and immunohistology in the same tissue. Neuroendocrinology, 33: 18-23, 1981.

137. Parsons, B., Rainbow, T. C., Pfaff, D. W. and McEwen, B. S. Oestradiol, sexual receptivity and cytosol progesterin receptors in rat hypothalamus. Nature, 292: 58-59, 1981.

Parsons, B., Pfaff, D. W. and McEwen, B. S. A discontinuous pattern of nuclear estradiol binding in brain is sufficient to activate the lordosis reflex and increase progesterin receptors in the rat. Society for Neuroscience Abstracts, 6: 323 (Abstract #117.4), 1980.

138. Kow, L.-M. and Pfaff, D. W. Physiology of somatosensory and estrogenic control over the lordosis reflex. In Experimental Brain Research, Supplementum 3, Gonadal Steroids and Brain Function, W. Wuttke and R. Horowski (Eds.), New York: Springer-Verlag, 1981, pp. 262-273.

139. Kow, L.-M., Paden, C. M. and Pfaff, D. W. Dispensability of spinal monoaminergic systems in mediating the lordosis reflex of the female rat. Pharmacology Biochemistry & Behavior, 14: 707-711, 1981.

140. Shivers, B. D., Harlan, R. E., Morrell, J. I. and Pfaff, D. W. Maximization of LHRH visualization in frozen rat brain. Journal of Histochem & Cytochem, 29: 901 (Abst #65), 1981.

141. Sakuma, Y. and Pfaff, D. W. Electrophysiologic determination of projections from ventromedial hypothalamus to midbrain central gray: Differences between female and male rats. Brain Research, 225: 184-188, 1981.

142. Zemlan, F. P., Corrigan, S. A. and Pfaff, D. W. Noradrenergic and serotonergic mediation of spinal analgesia mechanisms. European Journal of Pharmacology, 61: 111-124, 1980.

Zemlan, F., Kow, L.-M. and Pfaff, D. W. Effect of noradrenergic and serotonergic receptor agonists and antagonists on nociceptive and non-nociceptive reflexes in the spinal rat. Fed. Proc., 37: 323 (Abstract #593), 1978.

143. Halpern, M., Morrell, J. I. and Pfaff, D. W. Cellular 3H-estradiol and 3H-testosterone localization in the brains of garter snakes: An autoradiographic study. General and Comparative Endocrinology, 46: 211-224, 1982.

Halpern, M., Morrell, J. I. and Pfaff, D. W. Autoradiographic localization of labeled cells in the brains of garter snakes (genus *Thamnophis*) following 3H-estradiol or 3H-testosterone administration. The Endocrine Society, p. 102 (Abstract #110), Washington, DC, 1980.

144. Sakuma, Y. and Pfaff, D. W. Properties of ventromedial hypothalamic neurons with axons to midbrain central gray. Experimental Brain Research, 46: 292-300, 1982.

145. Harlan, R. E., Shivers, B. D., Kow, L.-M. and Pfaff, D. W. Intrahypothalamic colchicine infusions disrupt lordotic responsiveness in estrogen-treated female rats. Brain Research, 238: 153-167, 1982.

Harlan, R. E., Shivers, B. D., Kow, L.-M. and Pfaff, D. W. Axoplasmic transport is required for estrogenic action on lordosis. Federation Proceedings, 40: 862 (Abstract #3590), 1981.

146. Kow, L.-M. and Pfaff, D. W. Responses of medullary reticulospinal and other reticular neurons to somatosensory and brainstem stimulation in anesthetized or freely-moving ovariectomized rats with or without estrogen treatment. Experimental Brain Research, 47: 191-202, 1982.

Kow, L.-M. and Pfaff, D. W. Single-unit recording from medullary reticular formation (MRF) neurons in acute and chronic rats regarding the control of lordosis behavior. Federation Proceedings, 40: 307 (Abstract #417), 1981.

147. Morrell, J. I. and Pfaff, D. W. Characterization of estrogen-concentrating hypothalamic neurons by their axonal projections. Science, 217: 1273-1276, 1982.

Morrell, J. I. and Pfaff, D. W. Combination of retrograde fluorescent dye tracing with steroid autoradiography to characterize estradiol concentrating hypothalamic neurons by their axonal projections. Journal of Histochemistry & Cytochemistry, 29: 894 (Abstract #37), 1981.

148. Parsons, B., McEwen, B. S. and Pfaff, D. W. A discontinuous schedule of estradiol treatment is sufficient to activate progesterone-facilitated feminine sexual behavior and to increase cytosol receptors for progestins in the hypothalamus of the rat. Endocrinology, 110: 613-619, 1982.

149. Parsons, B., Rainbow, T., Pfaff, D. W. and McEwen, B. S. Hypothalamic protein synthesis essential for the activation of the lordosis reflex in the female rat. Endocrinol. 110:620-4, 1982.

150. Pfaff, D. W. Motivational concepts: Definitions and distinctions. In The Physiological Mechanisms of Motivation, D. W. Pfaff (Ed.), Heidelberg; New York: Springer-Verlag, 1982, pp. 3-24.
151. Halperin, R. and Pfaff, D. W. Brain-stimulated reward and control of autonomic function: Are they related? In The Physiological Mechanisms of Motivation, D. W. Pfaff (Ed.), Heidelberg; New York: Springer-Verlag, 1982, pp. 337-375.
152. Fahrbach, S. and Pfaff, D. W. Hormonal and neural mechanisms underlying maternal behavior in the rat. In The Physiological Mechanisms of Motivation, D. W. Pfaff (Ed.), Heidelberg; New York: Springer-Verlag, 1982, pp. 253-285.
153. Pfaff, D. W. Neurobiological mechanisms of sexual motivation. In The Physiological Mechanisms of Motivation, D. W. Pfaff (Ed.), Heidelberg; New York: Springer-Verlag, 1982, pp. 287-317.
154. Morrell, J. I., Wolinsky, T. D., Krieger, M. S. and Pfaff, D. W. Autoradiographic identification of estradiol-concentrating cells in the spinal cord of the female rat. Experimental Brain Research, 45: 144-150, 1982.
155. Rhodes, C. H., Morrell, J. I. and Pfaff, D. W. Cytoplasmic peptide content and nuclear estrogen binding of magnocellular neurons in the hypothalamus of Long-Evans and Brattleboro rats. In The Brattleboro Rat. Annals of the New York Academy of Sciences. Vol. 394, H. W. Sokol and H. Valtin (Eds.), 1982, pp. 767-775.
156. Rhodes, C. H., Morrell, J. I. and Pfaff, D. W. Estrogen- Neurophysin-Containing Hypothalamic Magnocellular Neurons in the Vasopressin-Deficient (Brattleboro) Rat: A Study Combining Steroid Autoradiography and Immunocytochemistry. Journal of Neuroscience, 2: 1718-1724, 1982.
157. Davis, P. G., Krieger, M. S., Barfield, R. J., McEwen, B. S. and Pfaff, D. W. The site of action of intrahypothalamic estrogen implants in feminine sexual behavior: An autoradiography analysis. Endocrinology, 111: 1581-1586, 1982.
158. Zemlan, Frank P., Kow, L.-M. and Pfaff, Donald W. Spinal serotonin (5-HT) receptor subtypes and nociception. Journal of Pharmacology and Experimental Therapeutics, 226: 477-485, 1983.
- Sautter, F., Kow, L.-M., Pfaff, D. W. and Zemlan, F. P. Denervation supersensitivity of the bulbospinal serotonin system: 5-HT<sub>2</sub> receptor binding and functional data. Society for Neuroscience Abstracts, 7: 8 (Abstract #6.8), 1981.
159. Zemlan, F. P., Kow, L.-M. and Pfaff, D. W. Effect of interruption of bulbospinal pathways on lordosis, posture, and locomotion. Experimental Neurology, 81: 177-194, 1983.



Kow, L.-M., Pfaff, D. W. and Zemlan, F. P. Autoradiography HRP, and behavioral data suggest that n.r. magnocellularis modulates pain while n.r. gigantocellularis controls posture and locomotion. Society for Neuroscience Abstracts, 7: 734 (Abstract #237.1), 1981.

160. Sakuma, Y. and Pfaff, D. W. Modulation of the lordosis reflex of female rats by LHRH, its antiserum and analogs in the mesencephalic central gray. Neuroendocrinology, 36: 218-224, 1983.

161. Morrell, J. I. and Pfaff, D. W. Retrograde HRP identification of neurons in the rhombencephalon and spinal cord of the rat that project to the dorsal mesencephalon. American Journal of Anatomy, 167: 229-240, 1983.

162. Shivers, B. D., Harlan, R. E. and Pfaff, D. W. Reproduction: The central nervous system role of luteinizing hormone releasing hormone. In Brain Peptides, D. Krieger, M. Brownstein and J. Martin (Eds.), New York: Wiley, 1983, pp. 389-412.

163. Harlan, R., Shivers, B. D., Kow, L.-M. and Pfaff, D. W. Estrogenic Maintenance of Lordotic Responsiveness: Requirement for Hypothalamic Action Potentials. Brain Research, 268: 67-78, 1983.

Harlan, R. E., Shivers, B. D. and Pfaff, D. W. Requirement of hypothalamic sodium currents for the lordosis reflex. Society for Neuroscience Abstracts, 7: 615 (Abstract #201.1), 1981.

164. Shivers, B. D., Harlan, R., Morrell, J. I. and Pfaff, D. W. Immunocytochemical Localization of Luteinizing Hormone-Releasing Hormone in Male and Female Rat Brains. Neuroendocrinology, 36: 1-12, 1983.

Shivers, B. D., Harlan, R. E., Morrell, J. I. and Pfaff, D. W. Immunocytochemical localization of LHRH in male and female rat brain: A quantitative comparison. Society for Neuroscience Abstracts, 7: 20 (Abstract #10.4), 1981.

165. Pfaff, D. W. and McEwen, B. S. Actions of Estrogens and Progestins on Nerve Cells. Science, 219: 808-814, 1983.

166. Schwartz-Giblin, S., Rosello, L. and Pfaff, D. W. A Histochemical Study of Lateral Longissimus Muscle in Rat. Experimental Neurology, 79: 497-518, 1983.

167. Rothfeld, J.M., Harlan, R.E., Shivers, B.D. and Pfaff, D.W. Reversible disruption of lordosis via midbrain infusions of procaine and tetrodotoxin. Pharmacology Biochemistry & Behavior, 25: 857-863, 1986.

Harlan, R. E., Shivers, B. D. and Pfaff, D. W. Dorsal midbrain sodium currents are required for the lordosis reflex in female rats. Society for Neuroscience Abstracts, 8: 930 (Abstract #267.1), 1982.

168. Harlan, R., Shivers, B. and Pfaff, D. W. Midbrain-microinfusions of prolactin increase the estrogen-dependent behavior, lordosis. Science, 219: 1451-1453, 1983.

Shivers, B. D., Harlan, R. E. and Pfaff, D. W. Midbrain microinfusions of prolactin facilitate the lordosis reflex of female rats. Society for Neuroscience Abstracts, 8: 930 (Abstract #267.2), 1982.

169. Pfaff, D. W. Impact of estrogens on hypothalamic nerve cells: Ultrastructural, chemical, and electrical effects. Recent Progress in Hormone Research, 39: 127-179, 1983.

170. Schwanzel-Fukuda, M., Morrell, J. I. and Pfaff, D. W. Polyacrylamide gel provides slow release delivery of wheat germ agglutinin (WGA) for retrograde neuroanatomical tracing. Journal of Histochemistry and Cytochemistry, 31: 831-836, 1983.

Schwanzel-Fukuda, M., Morrell, J. I. and Pfaff, D. W. Wheat germ agglutinin-gel implants in the medulla and spinal cord of the rat reveal long-projecting diencephalic neurons. Society for Neuroscience Abstracts, 8: 835 (Abstract #240.2), 1982.

171. Morrell, J. I. and Pfaff, D. W. Immunocytochemistry of steroid hormone receiving cells in the central nervous system. In Methods in Enzymology, vol. 103, "Hormone Action; Neuroendocrine Peptides" (ed., P. M. Conn). New York: Academic Press, 1983, pp. 639-662.

172. Femano, P. A. and Pfaff, D. W. Time-interval acquisition on a 6502-based microcomputer. Behavior Research Methods & Instrumentation, 15: 521-529, 1983.

173. Shivers, B., Harlan, R., Morrell, J. and Pfaff, D. W. Absence of oestradiol concentration in cell nuclei of LHRH-immunoreactive neurones. Nature, 304: 345-347, 1983.

174. Schachter, B., Shivers, B., Harlan, R. and Pfaff, D. W. Evidence for prolactin messenger RNA in the rat brain. Endocrine Society Abstracts, #346, p. 167, 1983.

175. Femano, P. A., Schwartz-Giblin, S. and Pfaff, D. W. Brain stem reticular influences on lumbar axial muscle activity. I. Effective sites. Am. J. Physiol., 246: R389-R395, 1984.

Femano, P. A., Schwartz-Giblin, S. and Pfaff, D. W. Stimulation of medullary reticular formation drives lumbar back muscle EMG in the rat. Society for Neuroscience Abstracts, 7: 80 (Abstract #27.4), 1981.

176. Fahrbach, S. E., Morrell, J. I. and Pfaff, D. W. Temporal pattern of HRP spread from an iontophoretic deposit site and description of a new HRP-gel implant method. J. Comp. Neurology, 225: 605-619, 1984.

Fahrbach, S. E., Morrell, J. I. and Pfaff, D. W. Temporal pattern of HRP spread from a CNS iontophoretic deposit site: 24 hrs greatly underestimates maximum spread. Anatomical Record, 202: 53A, 1982.

177. Femano, P. A., Schwartz-Giblin, S. and Pfaff, D. W. Brain stem reticular influences on lumbar axial muscle activity. II. Temporal aspects. Am. J. Physiol., 46: R396-R401, 1984.

Femano, P. A., Schwartz-Giblin, S. and Pfaff, D. W. Strength of input from rat brainstem reticular formation to lumbar axial muscles. Federation Proceedings, 41: 1758 (Abstract #8701), 1982.

178. Pfaff, D. Neurobiological Origins of Human Values. In Ethical Questions in Brain and Behavior, D. W. Pfaff (Ed.), Ch. 10, pp. 141-151, New York, Springer-Verlag, 1984.

179. Cohen, R. S., Chung, S. R. and Pfaff, D. W. Alteration by estrogen of the nucleoli in nerve cells of the rat hypothalamus. Cell & Tissue Research, 235: 485-489, 1984.

Cohen, R. S. and Pfaff, D. W. Estrogen alters nerve cells nucleoli in rat hypothalamus. Society for Neuroscience Abstracts, 8: 531 (Abstract #148.2), 1982.

180. Schwanzel-Fukuda, M., Morrell, J. I. and Pfaff, D. W. Localization of forebrain neurons which project directly to the medulla and spinal cord of the rat by retrograde tracing with wheat germ agglutinin. Journal of Comparative Neurology, 226: 1-20, 1984.

181. Schwartz-Giblin, S., Halpern, M. and Pfaff, D. W. Segmental organization of rat lateral longissimus, a muscle involved in lordosis behavior: EMG and muscle nerve recordings. Brain Research, 299: 247-257, 1984.

Schwartz-Giblin, S., Halpern, M. and Pfaff, D. W. Trans-segmental responses of muscle nerves supplying lateral longissimus. Society for Neuroscience Abstracts, 8: 950 (Abstract #272.19), 1982.

182. Zemlan, F. P., Kow, L.-M. and Pfaff, D. W. Analgesia after lesions of nucleus reticularis magnocellularis: differential effect on supraspinal versus spinal pain reflexes. Pain, 18: 221-237, 1984.

183. Schwartz-Giblin, S., Femano, P. and Pfaff, D. W. Axial electromyogram and intervertebral length gauge responses during lordosis behavior in rats. Exp. Neurol., 85: 297-315, 1984.

184. Harlan, R., Shivers, B. and Pfaff, D. W. Lordosis as a sexually dimorphic neural function. In Progress in Brain Research, 61: 239-254, 1984.

185. Chung, S. R., Cohen, R. S. and Pfaff, D. W. Ultrastructure and enzyme digestion of nucleoli and associated structures in hypothalamic nerve cells viewed in resinless sections. Biologie Cellulaire, 51: 23-34, 1984.

Chung, S. R., Cohen, R. S. and Pfaff, D. W. Ultrastructure of ventromedial hypothalamic nucleoli and nuclei revealed by enzyme digestions in de-embedded thin sections. Society for Neuroscience Abstracts, 9: 91 (Abstract #27.5), 1983.

186. Kow, L.-M. and Pfaff, D. W. Suprachiasmatic neurons in tissue slices from ovariectomized rats: Electrophysiological and neuropharmacological characterization and the effects of estrogen treatment. Brain Research, 297: 275-286, 1984.

187. Morrell, J. I., Schwanzel-Fukuda, M., Fahrbach, S. E. and Pfaff, D. W. Axonal projections and peptide content of steroid hormone concentrating neurons. In Peptides, 5: 227-239, 1984.

188. Kow, L.-M. and Pfaff, D. W. Neuronal responses to somatosensory and neuropharmacological stimuli in vivo and in vitro: Effects of hormonal conditions. In Modulation of Sensorimotor Activity During Alterations in Behavioral States: (ed.) R. Bandler, New York: Liss, 1984, pp. 217-230.

189. Meisel, R. and Pfaff, D. W. RNA and protein synthesis inhibitors: Effects on sexual behavior in female rats. Brain Research Bulletin, 12: 187-193, 1984.

190. Fahrbach, S., Morrell, J. I. and Pfaff, D. W. Oxytocin induction of short-latency maternal behavior in nulliparous, estrogen-primed female rats. Hormones and Behavior, 18: 267-286, 1984.

191. Fahrbach, S., Morrell, J. I. and Pfaff, D. W. Roles for oxytocin in the onset of estrogen-facilitated maternal behavior. In Oxytocin, J.A. Amico and A.G. Robinson (Eds.). Amsterdam: Excerpta Medica (#666) 1985, pp. 372-388.

192. Harlan, R. E., Pfaff, D. W. and Shivers, B. D. Cellular products related to estrogen effects on hypothalamic neurons and reproductive behavior. Endocrinology. Proc. 7th International Congress of Endocrinology, F. Labrie and L. Proulx (eds.), Excerpta Medica, Amsterdam, 1984, pp. 117-120.

193. Cohen, M. S. and Pfaff, D. W. On-line data acquisition system using an Apple™ Computer: ISI and PST histograms. Brain Research Bulletin, 13: 205-223, 1984.

194. Schachter, B. S., Durgerian, S., Harlan, R. E., Pfaff, D. W. and Shivers, B. D. Prolactin mRNA exists in rat hypothalamus. Endocrinology, 114: 1947-1949, 1984.

Schachter, B., Durgerian, S., Harlan, R., Pfaff, D. and Shivers, B. Prolactin-like mRNA in rat brain. Abstracts, 7th International Congress of Endocrinology, 1984.

195. Pfaff, D. W., Rosello, L. and Blackburn, P. Proteins synthesized in medial hypothalamus and transported to midbrain in estrogen-treated female rats. Experimental Brain Research, 57: 204-208, 1984.

196. Kow, L.-M., Harlan, R. E., Shivers, B. D. and Pfaff, D. W. Inhibition of lordosis reflex in rats by intrahypothalamic infusion of neural excitatory agents: Evidence that the hypothalamus contains separate inhibitory and facilitatory elements. Brain Research, 341: 26-34, 1985.

197. Nishizuka, M. and Pfaff, D. W. Intrinsic synapses in the ventromedial nucleus of the hypothalamus: An ultrastructural study. J. Comp. Neurol., 286: 260- 268, 1989.

Nishizuka, M. and Pfaff, D. W. Pattern of synapses on ventromedial hypothalamic neurons in the female rat: An electron microscopic study. Society for Neuroscience Abstracts, 9: 317 (Abstract #96.2), 1983.

198. Meisel, R. L. and Pfaff, D. W. Specificity and neural sites of action of anisomycin in the reduction or facilitation of female sexual behavior in rats. Hormones and Behavior, 19: 237-251, 1985.

Meisel, R. L. and Pfaff, D. W. Protein synthesis and the regulation of sexual behavior and neuronal ultrastructure by estrogen in the female rat. Society for Neuroscience Abstracts, 9: 1078 (Abstract #314.7), 1983.

199. Fahrbach, S. E., Morrell, J. I. and Pfaff, D. W. Identification of medial preoptic neurons that concentrate estradiol and project to the midbrain in the rat. J. Comp. Neurology, 247: 364-382, 1986.

Fahrbach, S. E., Morrell, J. I. and Pfaff, D. W. Estrogen-concentrating neurons in the medial preoptic area send axons to the ventral tegmental area and amygdala. Society for Neuroscience Abstracts, 9: 516 (Abstract #150.11), 1983.

200. Morrell, J. I., McGinty, J. F. and Pfaff, D. W. A subset of B-endorphin- or dynorphin-containing neurons in the medial basal hypothalamus accumulates estradiol. Neuroendocrinology, 41: 417-426, 1985.

Morrell, J. I., McGinty, J. and Pfaff, D. W. Some steroid hormone concentrating cells in the medial basal hypothalamus (MBH) and anterior pituitary contain B-endorphin or dynorphin. Society for Neuroscience Abstracts, 9: 90 (Abstract #27.1), 1983.

201. Numan, M., Morrell, J. I. and Pfaff, D. W. Anatomical identification of neurons in selected brain regions associated with maternal behavior deficits induced by knife cuts of the lateral hypothalamus in rats. J. Comparative Neurology, 237: 552-564, 1985.

Numan, M., Morrell, J. I. and Pfaff, D. W. Preoptic area connectivity relevant for maternal behavior in the rat. Society for Neuroscience Abstracts, 9: 978 (Abstract #286.2), 1983.

202. Cohen, M. S., Schwartz-Giblin, S. and Pfaff, D. W. The pudendal nerve-evoked response in axial muscle. Experimental Brain Research, 61: 175-185, 1985.

Cohen, M. S., Schwartz-Giblin, S. and Pfaff, D. W. Responses of epaxial muscles and motor nerves to electrical stimulation of the pudendal nerve in the rat. Society for Neuroscience Abstracts, 9: 1085 (Abstract #316.15), 1983.

203. Parsons, B. and Pfaff, D. W. Progesterone receptors in CNS correlated with reproductive behavior. In: Actions of Progesterone on the Brain, Current Topics in Neuroendocrinology Vol. 5, (D. Ganten and D. W. Pfaff, Eds.) Heidelberg: Springer-Verlag, pp. 103-140, 1985.

204. Fahrbach, S. E., Morrell, J. I. and Pfaff, D. W. Possible role for endogenous oxytocin in estrogen-facilitated maternal behavior in rats. Neuroendocrinology, 40: 526-532, 1985.

Fahrbach, S., Morrell, J. I. and Pfaff, D. W. Oxytocin antisera and antagonists reduce maternal behavior in rats. Internat. Congress of Endocrinology Abstracts, Quebec, Canada 1984.

205. Jones, R. J., Pfaff, D. W. and McEwen, B. S. Early estrogen-induced nuclear changes in rat hypothalamic ventromedial neurons: An Ultrastructural and Morphometric Analysis. J. Comparative Neurology, 239: 255-266, 1985.

Jones, K. J., Pfaff, D. W. and McEwen, B. S. Early estradiol-induced changes in nuclei of ventromedial neurons of rat hypothalamus. Abstracts, Society for Neuroscience, #62.9, vol. 10, 1984.

Jones, K. J., Pfaff, D. W. and McEwen, B. S. Estrogen-induced structural relationships in nuclei of ventromedial neurons of rat hypothalamus. Proc. Cell Biology Society, 1984.

206. Schwanzel-Fukuda, M., Morrell, J. I. and Pfaff, D. W. Ontogenesis of neurons producing luteinizing hormone-releasing hormone (LHRH) in the nervus terminalis of the rat. J. Comparative Neurology, 238: 348-364, 1985.

Schwanzel-Fukuda, M., Morrell, J. I. and Pfaff, D. W. Immunocytochemical localization of luteinizing hormone-releasing hormone (LHRH) in the nervus terminalis (NT) of the fetal rat. Abstracts, Society for Neuroscience, #129.14, vol. 10, p. 437, 1984.

Schwanzel-Fukuda, M., Morrell, J. I. and Pfaff, D. W. Production of luteinizing hormone-releasing hormone (LHRH) by cells in the developing rat nervous system. Proceedings, Amer. Soc. Developmental Biology, 1984.

207. Cohen, R. S., Chung, S. R. and Pfaff, D. W. Immunocytochemical localization of actin in dendritic spines of the cerebral cortex using colloidal gold as a probe. Cellular and Molecular Neurobiology, 5: No. 3, 271-284, 1985.

Cohen, R. S., Chung, S. R. and Pfaff, D. W. Actin in the spine apparatus of neurons: electron microscopic-immunocytochemical evidence. Proceedings, Cell Biology Society, 1984.

208. Cohen, R. S. and Pfaff, D. W. Cell biological and math-logical theories of the neural circuit for steroid-dependent female reproductive behavior. Integrative Psychiatry, 3: 262-279, 1985.

209. Schwartz-Giblin, S., McEwen, B. S. and Pfaff, D. W. Mechanisms of female reproductive behavior. In Psychoendocrinology, edited by R. Brush and S. Levine. Academic Press: CA, Chap. 2, 1989, p. 41-104.

210. Harlan, R. E., Shivers, B. D., Fox, S. R., Kaplove, R. A., Schachter, B. S. and Pfaff, D. W. Distribution and partial characterization of immunoreactive prolactin in the rat brain. Neuroendocrinology, 49: 7-22, 1989.

Shivers, B. D., Harlan, R. E. and Pfaff, D. W. Immunocytochemical mapping of immunoreactive prolactin in female rat brain. Society for Neuroscience Abstracts, 9: 1018. Abstract #294.18, 1983.

211. Moreines, J., Melton, M., Luine, V.N., Pfaff, D.W. and McEwen, B. S. Hypothalamic serotonin lesions unmask hormone responsiveness of lordosis behavior in adult male rats. Neuroendocrinology, 47: 453-458, 1988.

Moreines, J., Pfaff, D. and McEwen, B.S. Serotonergic inhibition of female rat sexual behavior in the basomedial hypothalamus. Abstracts, Society for Neuroscience, #245.7, vol. 10: 823, 1984.

Moreines, J., Pfaff, D.W. and McEwen, B. Serotonin in medial basal hypothalamus mediates sex differences in hormone-facilitated lordosis of male rats. Society for Neuroscience Abstracts, 11: p. 737 (Abstract #216.6), 1985.

212. Morrell, J. I. and Pfaff, D. W. Hypothalamic and limbic system estradiol (E2) concentrating neurons that project to the amygdala. Abstracts, Society for Neuroscience, #62.10, vol. 10, p. 210, 1984.

213. Nishizuka, M., Shivers, B. D., Leranth, C. and Pfaff, D. W. Ultrastructural characterization of prolactin-like immunoreactivity in rat medial basal hypothalamus. Neuroendocrinology, 51: 249-254, 1990.

Nishizuka, M., Shivers, B. D. and Pfaff, D. W. Electron-microscopic identification of prolactin-like immunoreactivity in medial basal hypothalamus. Abstracts, Society for Neuroscience, #128.18, vol. 10, p. 434, 1984.

214. Chung, S. R., Pfaff, D. W. and Cohen, R. S. Projections of ventromedial hypothalamic neurons to the midbrain central gray: An ultrastructural study. Neuroscience, 1990, 38: 395-407.

Chung, S. R., Pfaff, D. W. and Cohen, R. W. Projections of ventromedial hypothalamic neurons to the midbrain central gray: An ultrastructural study. Abstracts, Society for Neuroscience, #62.11 # vol. 10, p. 211, 1984.

215. Harlan, R. E., Shivers, B. D., Ralamaridis, M. and Pfaff, D. W. Synthesis of Immunoreactive Prolactin in the Rat Hypothalamus. Abstracts, Society for Neuroscience, #86.11, vol. 10, p. 286, 1984.

216. Shivers, B. D., Harlan, R. E. and Pfaff, D. W. A subset of neurons containing immunoreactive prolactin is a target for estrogen regulation of gene expression in rat hypothalamus. Neuroendocrinology, 49: 23-27, 1989.

Shivers, B. D., Harlan, R. E. and Pfaff, D. W. Hypothalamic immunoreactive prolactin neurons are targets for estrogenic action. Abstracts, Society for Neuroscience, #47.10, vol. 10: 156, 1984.

217. Kaufman, L. S., McEwen, B. S. and Pfaff, D. W. Cholinergic mechanisms of lordotic behavior in rats. Physiology & Behavior, 43: 507-514, 1988.

Kaufman, L. S., Pfaff, D. W. and McEwen, B. S. Cholinergic mechanisms of lordosis in rats in the basomedial hypothalamus as revealed by intracranial application of scopolamine. Abstracts, Society for Neuroscience, #245.4, vol. 10: 822, 1984.

218. Morrell, J. I., Krieger, M. S. and Pfaff, D. W. Quantitative autoradiographic analysis of estradiol retention by cells in the preoptic area, hypothalamus and amygdala. Exp. Brain Research, 62: 343-354, 1986.

Krieger, M. S., Morrell, J. I. and Pfaff, D. W. Quantitative autoradiography analysis of estrogen concentrating cells in hypothalamus, preoptic area and amygdala. Society for Neuroscience Abstracts, 4: 347 (Abstract #1105), 1978.

219. Eberhart, J. A., Morrell, J. I., Krieger, M. S. and Pfaff, D. W. An autoradiographic study of projections ascending from the midbrain central gray, and from the region lateral to it, in the rat. J. Comparative Neurology, 241: 285-310, 1985.

Eberhart, J. A., Morrell, J. I. and Pfaff, D. W. Efferents ascending from midbrain central gray in the rat revealed by sensitive use of tritiated amino acid autoradiography. Society for Neuroscience Abstracts, 8: 835 (Abstract #240.1), 1982.

220. McEwen, B. S. and Pfaff, D. W. Hormone action on hypothalamic neurons: Gene expression and neuromodulator action. Trends in Neuroscience, 8: 105-111, 1985.

221. Meisel, R. and Pfaff, D. W. Brain region specificity in estradiol effects on neuronal ultrastructure in rats. Molecular and Cellular Endocrin., 40: 159-166, 1985.

222. Meisel, R., Dohanich, G., McEwen, B. and Pfaff, D. W. Antagonism of sexual behavior in female rats by ventromedial hypothalamic implants of antiestrogen. Neuroendocrinology, 45: 201-207, 1987.

Meisel, R. L., Dohanich, G. P., McEwen, B. S. and Pfaff, D. W. Brain region specificity in antiestrogen inhibition of lordosis in female rats. Society for Neuroscience Abstracts, 11: p. 161 (Abstract #52.9), 1985.

223. Fahrbach, S. E., Meisel, R. L. and Pfaff, D. W. Preoptic implants of estradiol increase wheel running but not the open field activity of female rats. Physiology and Behavior, 35: 985-992, 1985.

224. Moreines, J., McEwen, B. S. and Pfaff, D. Sex differences in response to discrete estradiol injections. Hormones and Behavior, 20: 445-451, 1986.

225. Kow, L.-M. and Pfaff, D. W. Estrogen effects on neuronal responsiveness to electrical and neurotransmitter stimulation: an in vitro study on the ventromedial nucleus of the hypothalamus. Brain Research, 347: 1-10, 1985.



226. Kow, L.-M. and Pfaff, D. W. Actions of feeding-relevant agents on hypothalamic glucose-responsive neurons in vitro. Brain Research Bulletin, 15: 509-513, 1985.
227. Kow, L.-M. and Pfaff, D. W. Neuropeptides TRH and cyclo (His-Pro) share neuromodulatory, but not stimulators action on hypothalamic neurons in vitro: implication for the regulation of feeding. Exp. Brain Research, 67: 93-99, 1987.
- Kow, L.-M., Pan, J.-T. and Pfaff, D. W. Neuromodulatory actions of peptides, TRH, cHP (cyclo histidyl-prolyl), and LHRH. Society for Neuroscience Abstracts, Vol. 12: p. 151 (Abstract #41.9), 1986.
228. Kow, L.-M. and Pfaff, D. W. CCK-8 stimulation of ventromedial hypothalamic neurons in vitro: A feeding-relevant event? Peptides, 7: 473-479, 1986.
229. McCabe, J. T., Morrell, J. I., Richter, D. and Pfaff, D. W. Localization of neuroendocrinologically relevant RNA in brain by in situ hybridization. In Frontiers in Neuroendocrinology, Vol. 9, edited by W. F. Ganong and L. Martini, pp. 149-167. New York: Raven Press: New York, 1986.
230. Pfaff, D. W. and S. Schwartz-Giblin. Cellular mechanisms of female reproductive behaviors. In The Physiology of Reproduction, Editors: Knobil, E. and Neill, J. New York: Raven Press, Chapter 35, 1988, pp. 1487-1568.
231. Shivers, B. D., Schachter, B. S. and Pfaff, D. W. In situ hybridization for the study of gene expression in the brain. In Methods in Enzymology, Vol. 124, pp. 497-510, P. M. Conn, editor. New York: Academic Press, 1986.
232. McCabe, J. T., Morrell, J. I., Ivell, R., Schmale, H., Richter, D. and Pfaff, D. W. In situ hybridization technique to localize rRNA and mRNA in mammalian neurons. J. Histochemistry and Cytochemistry, 34: 45-50, 1986.
- McCabe, J., Morrell, J. I. and Pfaff, D. W. Detection of rRNA and mRNA in rat hypothalamic neurons by An situ hybridization. J. Histochemistry and Cytochemistry, (Abstract #S13), 1985.
233. Sullivan, J. M., Schwartz-Giblin, S. and Pfaff, D. W. Correlations between EEG state and spontaneous and evoked axial muscle EMG. Brain Research, 368: 197-200, 1986.
- Sullivan, J., Schwartz-Giblin, S. and Pfaff, D. Lumbar axial muscle activity is correlated with electroencephalogram arousal. Society for Neuroscience Abstracts, 11: p. 882 (Abstract #258.10), 1985.
234. Cottingham, S. L., Femano, P. A. and Pfaff, D. W. Vestibulospinal and reticulospinal interactions in the activation of back muscle EMG in the rat. Exp. Brain Research, 73: 198-208, 1988.

Cottingham, S. L., Femano, P. A. and Pfaff, D. W. Vestibulospinal and reticulospinal interactions in activating axial muscle EHG in the rat. Society for Neuroscience Abstracts, 11: p. 25 (Abstract #12.8), 1985.

235. Schwartz-Giblin, S. and Pfaff, D. W. Intrathecal bicuculline in rats evokes hyperalgesia and exaggerates avoidance of contact by other rats. Society for Neuroscience Abstracts, 11: p. 286 (Abstract #83.5), 1985.

236. Jones, K. J., McEwen, B. S. and Pfaff, D. W. Quantitative assessment of early and discontinuous estradiol-induced effects on ventromedial hypothalamic and preoptic area proteins in female rat brain. Neuroendocrinology, 48: 561-568, 1988.

Jones, K. J., McEwen, B. S. and Pfaff, D.W. Effects of estradiol (E2) on protein synthesis in vitro, in the ventromedial hypothalamic nucleus (VHN) and preoptic area (POA) of the female rat. Society for Neuroscience Abstracts, 11: p. 738 (Abstract #216.10), 1985.

237. Kaufman, L. S., McEwen, B. S. and Pfaff, D. W. Cholinergic mechanisms of lordotic behavior in rats. Physiology & Behavior, 43: 507-514, 1988.

Kaufman, L. S., Pfaff, D. W. and McEwen, B. S. Effects of intracranial application of various cholinergic drugs and estrogen on lordotic behavior in Long Evans rats. Society for Neuroscience Abstracts, 11: p. 1294 (Abstract #378.5), 1985.

238. Harlan, R. E., Shivers, B. D., Romano, G. J., Howells, R. D. and Pfaff, D. W. Localization of preproenkephalin mRNA in the rat brain and spinal cord by in situ hybridization. J. Comp. Neurol., 258: 159-184, 1987.

Harlan, R. E., Shivers, B. D., Romano, G. J., Howells, R. D. and Pfaff, D. W. Localization of cells containing preproenkephalin mRNA in the rat forebrain by in situ hybridization. Society for Neuroscience Abstracts, 11: p. 143 (Abstract #46.10), 1985.

239. Shivers, B. D., Harlan, R. E., Hejtmancik, J. F., Conn, P. M. and Pfaff, D. W. Localization of cells containing LHRH-like mRNA in rat forebrain using in situ hybridization. Endocrinology, 118: 883-885, 1986.

Shivers, B. D., Harlan, R. E., Hejtmancik, J. F., Conn, P. M. and Pfaff, D. W. Localization of cells containing LHRH-like mRNA in rat brain. Society for Neuroscience Abstracts, 11: p. 143 (Abstract #46.11), 1985.

240. McCabe, J. T., Morrell, J. I., Ivell, R., Schmale, H., Richter, D. and Pfaff, D. W. Brattleboro rat hypothalamic neurons transcribe vasopressin gene: Evidence from in situ hybridization. Neuroendocrinology, 44: 361-364, 1986.

McCabe, J. T., Morrell, J. I., Schmale, H., Ivell, R., Richter, D. and Pfaff, D. W. Brattleboro rat transcribes vasopressin mRNA in hypothalamus: evidence from in situ hybridization. Society for Neuroscience Abstracts, 11: p. 141 (Abstract #46.2), 1985.

241. Shivers, B. D., Harlan, R. E., Pfaff, D. W. and Schachter, B. S. Combination of immunocytochemistry and in situ hybridization in the same tissue section of rat pituitary. J. Histochemistry and Cytochemistry, 34: 39-43, 1986.

Shivers, B., Harlan, R., Pfaff, D. and Schachter, B. Combination of immunocytochemistry (ICC) and in situ hybridization in the same tissue section. J. Histochemistry and Cytochemistry, (Abstract #S11), 1985.

Schachter, B., Harlan, R., Pfaff, D. and Shivers, B. A practical guide to in situ hybridization. J. Histochemistry and Cytochemistry, (Abstract # S10), 1985.

242. Jones, K. J., Chikaraishi, D. M., Harrington, C. A., McEwen, B. S. and Pfaff, D. W. In situ hybridization detection of estradiol-induced changes in ribosomal RNA levels in rat brain. Molecular Brain Research, 1: 145-152, 1986.

Jones, K. J., Chikaraishi, D. M., Harrington, C. A., McEwen, B. S. and Pfaff, D. W. Estradiol (E2)-induced changes in rRNA levels in rat hypothalamic neurons detected by in situ hybridization. Proceedings, Cell Biology Society, 1985.

243. Mobbs, C. V., Harlan, R. E., Burrous, M. R. and Pfaff, D. W. An estradiol-induced protein synthesized in the ventral medial hypothalamus and transported to the midbrain central gray. Journal of Neuroscience, 8: 113-118, 1988.

Mobbs, C. V., Harlan, R. E. and Pfaff, D. W. An estradiol-induced protein in the hypothalamus. Abstracts, Endocrine Society, p. 199, (Abstract #794), 1985.

Mobbs, C. V., Harlan, R. E. and Pfaff, D. W. An estradiol-induced protein synthesized in the ventral medial hypothalamus (VMH) and transported to the midbrain central gray (MCG). Society for Neuroscience Abstracts, 11: P. 1271 (Abstract #372.10), 1985.

244. Cohen, M. S., Schwartz-Giblin, S. and Pfaff, D. W. Effects of total and partial spinal transections on the pudendal nerve-evoked response in rat lumbar axial muscle. Brain Research, 401: 103-112, 1987.

245. Cohen, M. S., Schwartz-Giblin, S. and Pfaff, D. W. Brainstem reticular stimulation facilitates back muscle motoneuronal responses to pudendal nerve input. Brain Research, 405: 155-158, 1987.

246. Jones, K. J., McEwen, B. S. and Pfaff, D. W. Regional specificity in estradiol effects on [3H]uridine incorporation in rat brain. Molecular and Cellular Endocrinology, 45: 57-63, 1986.

247. Fahrbach, S. E. and Pfaff, D. W. Effect of preoptic region implants of dilute estradiol on the maternal behavior of ovariectomized nulliparous rats. Hormones and Behavior, 20: 354-363, 1986.

248. Fahrbach, S. E., Morrell, J. I. and Pfaff, D. W. Effect of varying the duration of pre-test cage habituation on oxytocin induction of short-latency maternal behavior. Physiology and Behavior, 37: 135-139, 1986.
249. McCabe, J., Morrell, J. I. and Pfaff, D. W. Measurement of expression of the vasopressin and oxytocin genes in single neurons by in situ hybridization. In Neuroendocrine Molecular Biology, edited by G. Fink, A. J. Harmar and K. W. Modems. N.Y.: Plenum, 1986, PP . 219-230.
250. Kow, L.-M. and Pfaff, D. W. Behavioral Effects of Neuropeptides: Some Conceptual Considerations. In Peptide Hormones: Effects and Mechanisms of Action, Negro-Vilar, A. and Conn, P.M. (Eds.), Vol. I: pp. 141-164, CRC Press, 1988.
251. Pan, J.-T., Kow, L.-M. and Pfaff, D.W. Single-unit activity of hypothalamic arcuate neurons in brain tissue slices. Neuroendocrinology, 43: 189-196, 1986.
252. Mobbs, C.V. and Pfaff, D.W. Estrogen regulated neuronal plasticity. In Strauss, G. and Pfaff, D. Molecular Neurobiology: Endocrine Approaches. New York: Academic Press, (Current Topics in Membranes and Transport, Vol. 31, pp. 191-215), 1987.
253. Shivers, B.D., Harlan, R.E., Romano, G.J., Howells, R.D. and Pfaff, D. W. Cellular localization of proenkephalin mRNA in rat brain; Gene expression in the caudate-putamen and cerebellar cortex. Proceedings of the National Academy of Sciences, USA, 83:6221-6225, 1986.
254. Morrell, J.I., McCabe, J.T., Harrington, C., Chikaraiki, D.M. and Pfaff, D.W. Neuronal and chromaffin cell localization of tyrosine hydroxylase-like mRNA using in situ hybridization. J. Histochemistry and Cytochemistry, (Abstract), 34: 1365, 1986.
255. Lustig, R.H., Pfaff, D.W. and Fishman, J. Opioidergic modulation of the oestradiol-induced LH surge in the rate: roles of ovarian steroids. Journal of Endocrinology, 116:55-69, 1988.
- Lustig, R. H., Pfaff, D. W. and Fishman, J. Opioidergic (OP) antagonism advances the timing of the onset of the rat proestrus LH surge. Endocrine Society Abstracts, p. 227, (Abstract #784), 1986.
256. Fox, S., Harlan, R., Shivers, B. and Pfaff, D.W. Chemical characterization of neuroendocrine targets for progesterone in the female rat brain and pituitary, Neuroendocrinology, 51:276-283, 1990.
- Fox, S., Harlan, R., Shivers, B. and Pfaff, D.W. Progesterone receptors in the female rate are localized within dopaminergic neurons of the hypothalamic arcuate nucleus, but not within pituitary lactotrophs. Endocrine Society Abstracts, p. 139, (Abstract #434), 1986.
257. Fox, S., Shivers, B., Harlan, R. and Pfaff, D.W. Gonadotrophs but not LHRH neurons have nuclear progestin receptors. Abstract, Society for the Study of Reproduction, 1986.

258. McCabe, J.T., Morrell, J.I. and Pfaff, D.W. In situ hybridization as a quantitative autoradiographic method: Vasopressin and oxytocin gene transcription in the Brattleboro rat. In In Situ Hybridization in Brain, (ed. by G.R. Uhl), New York: Plenum Press, pp. 73-95, 1986.
259. Shivers, B., Harlan, R., Romano, G., Howells, R. and Pfaff, D.W. Cellular location and regulation of proenkephalin mRNA in rat brain. In In Situ Hybridization in Brain, (ed. by G.R. Uhl), New York: Plenum Press, pp. 3-20, 1986.
260. Pan, J.-T., Kow, L.-M. and Pfaff, D.W. Modulatory actions of luteinizing hormone-releasing hormone on electrical activity of preoptic neurons in brain slices. Neuroscience, 27:623-628, 1988.
261. Pan, J.-T., Kow, L.-M., Kendall, D.A., Kaiser, E.T. and Pfaff, D.W. Electrophysiological test of an amphiphilic B-structure in LHRH action. Molecular and Cellular Endocrinology, 48:161-166, 1986.
262. Kow, L.-M. and Pfaff, D.W. Vasopressin excites ventromedial hypothalamic glucose-responsive neurons in vitro. Physiology and Behavior, 37:153-158, 1986.
263. Kow, L.-M. and Pfaff, D.W. Responses of ventromedial hypothalamic neurons in vitro to norepinephrine; dependence on dose and receptor type. Brain Research, 413:220-228, 1987.
264. Cottingham, S.L. and Pfaff, D.W. Interconnectedness of steroid hormonebinding neurons: Existence and implications. In Current Topics of Neuroendocrinology, (eds. D. Ganten and D.W. Pfaff), Vol. 7, pp. 223-250, 1986.
265. Schwanzel-Fukuda, M., Garcia, M.S., Morrell, J.I. and Pfaff, D.W. Distribution of luteinizing hormone-releasing hormone in the nervus terminalis and brain of the mouse detected by immunocytochemistry. J. Comparative Neurology, 255:231-244, 1987.
- Schwanzel-Fukuda, M., Garcia, M.S., Morrell, J.I. and Pfaff, D.W. The immunocytochemical localization of luteinizing hormone-releasing hormone (LHRH) in the nervus terminalis (NT) of the mouse. Society for Neuroscience Abstracts, (Abstract #81.4), 12:200, 1986.
266. Schwanzel-Fukuda, M., Morrell, J.I. and Pfaff, D.W. Localization of choline acetyltransferase and vasoactive intestinal polypeptide-like immunoreactivity in the nervus terminalis of the fetal and neonatal rat. Peptides, 7:899-906, 1986.
267. Schwanzel-Fukuda, M. and Pfaff, D.W. Passive immunization of fetal rats with antiserum to luteinizing hormone-releasing hormone (LHRH) or transection of the central roots of the nervus terminalis does not affect rat pups' preference for home nest. Physiology & Behavior, 41: 613-619, 1987.
268. Rothfeld, J.M., Hejtmancik, J.F., Conn, P.M. and Pfaff, D.W. LHRH messenger RNA in neurons in the intact and castrate male rat forebrain studied by in situ hybridization. Experimental Brain Research, 67:113-118, 1987.

Rothfeld, J.M., Shivers, B.D., Hejtmancik, J.F., Conn, P.M. and Pfaff, D.W. Quantitation of LHRH mRNA in neurons in the intact and castrate male rat forebrain. Society for Neuroscience Abstracts, (Abstract #4.8), 12:3, 1986.

269. Rothfeld, J., Hejtmancik, J.F., Conn, P.M. and Pfaff, D.W. In situ hybridization for LHRH mRNA following estrogen treatment. Molecular Brain Research, 6:121-125, 1989.

Rothfeld, J.M., Hejtmancik, J.F. and Pfaff, D.W. Quantitation of LHRH mRNA within the female rat forebrain following estrogen treatment. Anatomical Record, 218:117A, 1987.

270. Pfaff, D.W. Gene expression for behaviorally relevant peptides in hypothalamic neurons. In Neuropeptides and Brain Function. (E. R. de Kloet, V. M. Wiegant and D. de Wied, Editors). Progress in Brain Research, Vol. 72, Ch. 12, pp. 129-136. Amsterdam: Elsevier Science Publishers, 1987.

271. Pfaff, D.W. and Cohen, R.S. Estrogen acting on hypothalamic neurons may have trophic effect on those neurons and the cells on which they synapse. In Endocrinology & Physiology of Reproduction (P.C.K. Leung et al., Editors), pp. 1-11. New York: Plenum Publishing Corp., 1987.

272. Pfaff, D.W. and Mobbs, C.V. Some concepts deriving from the neural circuit for a hormone-driven mammalian reproductive behavior. In Advances in Physiological Research (H. McLennan et al., Editors) pp. 233-251. New York: Plenum Publishing Corp., 1987.

273. Cottingham, S.L., Femano, P.A. and Pfaff, D.W. Electrical stimulation of the midbrain central gray facilitates reticulospinal activation of axial muscle EMG. Experimental Neurology, 97:704-724, 1987.

274. Cottingham, S.L. and Pfaff, D.W. Electrical stimulation of the midbrain central gray facilitates lateral vestibulospinal activation of back muscle EMG in the rat. Brain Research, 421:397-400, 1987.

275. McEwen, B.S., Jones, K.J. and Pfaff, D.W. Hormonal control of sexual behavior in the female rat: molecular, cellular and neurochemical studies. Biology of Reproduction, 36:37-45, 1987.

276. Canonaco, M., O'Connor, L.H., Pfaff, D.W. and McEwen, B.S. GABA(A) receptor level changes in female hamster forebrain following in vivo estrogen, progesterone and benzodiazepine treatment: a quantitative autoradiography analysis. Exp. Brain Res., 75:644-652, 1989.

Canonaco, M., Valenti, A., O'Connor, L.H., McEwen, B.S. and Pfaff, D.W. The GABA(A) receptor levels in the female hamster forebrain following in vivo acute and chronic progesterone treatment: Quantitative autoradiography. Neuroscience, 22: (suppl.), p. S159 (Abstract #474P), 1987.

277. Schwartz-Giblin, S., Canonaco, M., McEwen, B.S. and Pfaff, D.W. Effects of in vivo estradiol and progesterone on tritiated flunitrazepam binding in rat spinal cord. Neuroscience, 25:249-257, 1988.

Schwartz-Giblin, S., Canonaco, M., McEwen, B.S. and Pfaff, D.W. Effects of in vivo estradiol (E) and progesterone (P) on 3H flunitrazepam binding in rat spinal cord. Society for Neuroscience Abstracts, (Abstract #9.5), 12:18, 1986.

278. Romano, G.J., Shivers, B.D., Harlan, R.E., Howells, R.D. and Pfaff, D.W. Haloperidol increases proenkephalin mRNA levels in the caudate-putamen of the rat: a quantitative study at the cellular level using in situ hybridization. Molecular Brain Research, 2:33-41, 1987.

279. Romano, G.J., Harlan, R.E., Shivers, B.D., Howells, R.D. and Pfaff, D.W. Estrogen increases proenkephalin messenger ribonucleic acid levels in the ventromedial hypothalamus of the rat. Molecular Endocrinology, 2: 1320-1328, 1988.

Romano, G.J., Harlan, R.E., Shivers, B.D., Howells, R.D. and Pfaff, D.W. Estrogen increases proenkephalin mRNA levels in the mediobasal hypothalamus of the rat. Society for Neuroscience Abstracts, (Abstract #188.17) 12:692, 1986.

280. Fraile, I.G., McEwen, B.S. and Pfaff, D.W. Progesterone inhibition of aggressive behavior in hamsters. Physiology & Behavior, 39:225-229. 1987.

281. Fraile, I.G., Pfaff, D.W. and McEwen, B.S. Progestin receptors with and without estrogen induction in male and female hamster brain. Neuroendocrinology, 45:487-491, 1987.

282. Fraile, I.G., McEwen, B.S. and Pfaff, D.W. Comparative effects of progesterone and alphaxalone on aggressive, reproductive and locomotor behaviors. Pharmacology, Biochemistry & Behavior, 30:729-735, 1987.

Fraile, I.G., McEwen, B.S. and Pfaff, D.W. Comparative behavioral effects of progesterone and alphaxalone. Society for Neuroscience Abstracts, (Abstract #68.17), 13:226, 1987.

283. Fraile, I.G., Pfaff, D.W. and McEwen, B.S. Progestin receptors with and without estrogen induction in male and female hamster brain. Neuroendocrinology, 45:487-491, 1987.

284. Pfaff, D.W. Gene expression in hypothalamic neurons: Luteinizing hormone releasing hormone. J. Neuroscience Research, 16:109-115, 1986.

285. Chung, S.R., Pfaff, D.W. and Cohen, R.S. Transneuronal degeneration in the midbrain central gray following chemical lesions in the ventromedial nucleus: A qualitative and quantitative analysis. Neuroscience, 38:(2):409-426, 1990.

Chung, S.R., Pfaff, D.W. and Cohen, R.S. Transsynaptic degeneration in midbrain central gray after VMN lesions: A qualitative and quantitative analysis. Society for Neuroscience Abstracts, (Abstract #168.11), 12:606, 1986.

286. Jones, K.J., McEwen, B.S. and Pfaff, D.W. Quantitative assessment of the synergistic and independent effects of estradiol and progesterone on ventromedial hypothalamic and preoptic-area proteins in female rat brain. Metabolic Brain Disease, 2:271-281, 1987.

Jones, K.J., McEwen, B.S. and Pfaff, D.W. Estradiol (E2) and progesterone (P) effects on protein synthesis in the ventromedial hypothalamic nucleus (VMN) and preoptic area (POA) of the female rat. Society for Neuroscience Abstracts, (Abstract #232.7), 12:839, 1986.

287. Schachter, B.S., Pfaff, D.W. and Shivers, B.D. Quantitative in situ hybridization for studying estrogen's effect on hypothalamic endorphin gene expression. Society for Neuroscience Abstracts, (Abstract #4.4), 12:2, 1986.

288. Morrell, J.I., Rosenthal, M.F., McCabe, J.T., Harrington, C.A., Chikaraishi, D.M. and Pfaff, D.W. Tyrosine hydroxylase mRNA in the neurons of the tuberoinfundibular region and zona incerta examined after gonadal steroid hormone treatment. Molecular Endocrinology, 3:1426-1433, 1989.

Morrell, J.I., McCabe, J.T., Harrington, C., Chikaraishi, D.M., Rosenthal, M. and Pfaff, D.W. Neuronal and chromaffin cell localization of tyrosine hydroxylase-like mRNA using in situ hybridization. Society for Neuroscience Abstracts, (Abstract #4.1), 12:1, 1986.

289. Meisel, R.L., Fraile, I.G. and Pfaff, D.W. Hypothalamic sites of progestin action on aggression and sexual behavior in female Syrian hamsters. Physiol. & Behav., 47:219-223, 1990.

Meisel, R.L., Fraile, I.G. and Pfaff, D.W. Differences in hypothalamic sites of progestin action on aggression and lordosis in female hamsters. Society for Neuroscience Abstracts, (Abstract # 316.7), 12:1159, 1986.

290. Mobbs, C.V., Rothfeld, J.M. and Pfaff, D.W. Cysteamine injected systemically inhibits lordosis. Society for Neuroscience Abstracts, (Abstract #316.8), 12:1159, 1986.

291. Kawata, M., McCabe, J.T., Harrington, C., Chikaraishi, D. and Pfaff, D.W. In situ hybridization analysis of osmotic stimulus-induced changes in ribosomal RNA in rat supraoptic nucleus. J. Comparative Neurology, 270: 528-536, 1988.

Kawata, M., McCabe, J.T., Harrington, C., Chikaraishi, D. and Pfaff, D.W. In situ hybridization analysis of osmotic stimulus-induced changes in rRNA in rat supraoptic nucleus. Society for Neuroscience Abstracts, (Abstract #379.5), 12:1397, 1986.

292. Manogue, K., Kow, L.-M. and Pfaff, D.W. Investigations of sensory and reflex components of lordosis behavior in the female hamster. Hormones and Behavior, revised but never resubmitted.

293. Modianos, D., Pfaff, D.W. and Kow, L.-M. Reflex fatigue in an estrogen sensitive behavior system. Manuscript completed but never submitted for publication.



294. McCabe, J.T., Almasan, K., Lehmann, E., Hanze, J., Lang, R.E., Pfaff, D.W. and Ganten, D. Vasopressin gene expression hypertensive, normotensive, and diabetes insipidus rats. Clin. & Exp. Hypertension, 113: 585-593, 1989.
295. Eberhart, J.A., Morrell, J.I. and Pfaff, D.W. Efferents descending from rat midbrain central gray. Manuscript was prepared, but never submitted.
296. Kaufman, L.S., McEwen, B.S. and Pfaff, D.W. Oxytocin in ventromedial hypothalamus facilitates lordosis behavior. Manuscript completed but never submitted for publication.
297. DiMeglio, M., Morrell, J.I. and Pfaff, D.W. Localization of steroid concentrating cells in the central nervous system of the frog *Rana esculenta*. General & Comparative Endocrinology, 67:149-154, 1987.
298. diMeglio, M., Schwanzel-Fukuda, M., Morrell, J. and Pfaff, D.W. LHRH immunoreactive neurons in the CNS of *Rana esculenta*. Manuscript was prepared, but never submitted.
299. Schwartz-Giblin, S. and Pfaff, D.W. Hypothalamic outputs controlling reticulospinal and vestibulospinal systems important for emotional behavior. Internat. J. Neurology, 19-20:89-110, 1985-1986.
300. Schwartz-Giblin, S. and Pfaff, D.W. Progestin actions distinct from estrogen-dependent nuclear changes can explain alterations in aversive responses, sociosexual behaviors and pain thresholds. Integrative Psychiatry, 5:258-273, 1987.
301. Kow, L.-M. and Pfaff D.W. Neuromodulatory actions of peptides. Annual Review of Pharmacology & Toxicology, 28:163-188, 1988.
302. Schwanzel-Fukuda, M., Fadem, B.H., Garcia, M.S. and Pfaff, D.W. The immunocytochemical localization of luteinizing hormone-releasing hormone in the brain of the gray short-tailed opossum (*Monodelphis Domestica*). Annals of the New York Academy of Sciences, 519:213-228, 1987.
303. Pfaff, D.W., Jorgenson, K. and Kow, L.-M. Luteinizing hormone-releasing hormone in rat brain: Gene expression, role as neuromodulator, and functional effects. Annals of the New York Academy of Sciences, 519:323-333, 1987.
304. Mobbs, C.V. and Pfaff, D.W. Estrogen-regulated behavior: Possible roles of synaptosomal secretary-vesicle-uncoating protein, enkephalin and protein kinases. In The Brain and Female Reproductive Function, (A. R. Genazzani, U. Montemagno, C. Nippi and F. Petraglia, eds.) Carnforth, Lanes, England: Parthenon, pp. 87-100, 1988.
305. Romano, G.J., Mobbs, C.V., Howells, R.D. and Pfaff, D.W. Estrogen regulation of proenkephalin gene expression in the ventromedial hypothalamus of the rat: temporal qualities and synergism with progesterone. Molecular Brain Research, 5:51-58, 1989.

Romano, G.J., Howells, R.D. and Pfaff, D.W. Proenkephalin mRNA levels in the ventromedial hypothalamus of the rat increase rapidly after estrogen treatment. Endocrine Society Abstracts, (Abstract #436), p. 130, 1987.

306. Chung, S.R. and Pfaff, D.W. and Cohen, R.S. Estrogen-induced alterations in synaptic morphology in the midbrain central gray. Experimental Brain Research, 69:522-530, 1988.

Cohen, R.S., Chung, S.R. and Pfaff, D.W. Estrogen-induced alterations in synaptic morphology in the midbrain central gray. Society for Neuroscience Abstracts, (Abstract #462.2), 13:1660, 1987.

307. Schwanzel-Fukuda, M., Fadem, B.H., Garcia, M.S. and Pfaff, D.W. Immunocytochemical localization of luteinizing hormone-releasing hormone (LHRH) in the brain and nervus terminalis of the adult and early neonatal gray short-tailed opossum (*Monodelphis domestica*). J. Comp. Neurol., 276:44-60, 1988.

Schwanzel-Fukuda, M., Fadem, B., Garcia, M.S. and Pfaff, D.W. Luteinizing hormone-releasing hormone in the brain and nervus terminalis of the gray short-tailed opossum (*Monodelphis domestica*). Society for Neuroscience Abstracts, (Abstract #437.19), 13:1580, 1987.

308. McCabe, J.T., Almasan, K., Lehmann, E., Hanze, J., Lang, R.E., Pfaff, D.W. and Ganten, D. In situ hybridization demonstrates vasopressin gene transcription in hypothalamic neurons of crossbred hypertensive X diabetes insipidus rats. Neuroscience, 27:159-167, 1988.

McCabe, J. T., Almasan, K., Lehmann, E., Hanze, J., Lang, R.E., Pfaff, D.W. and Ganten, D. In situ hybridization demonstrates vasopressin gene transcription in hypothalamic neurons of crossbred hypertensive X diabetes insipidus rats. Society for Neuroscience Abstracts, (Abstract #165.2), 13:583, 1987.

309. Mobbs, C.V., Rothfeld, J.M., Saluja, R. and Pfaff, D.W. Phorbol esters and forskolin infused into midbrain central gray facilitate lordosis. Pharm. Biochem. & Behav., 34:665-667, 1989.

Mobbs, C.V. and Pfaff, D.W. Stimulators of adenylate cyclase and protein kinase C in midbrain central gray facilitate lordosis. Society for Neuroscience Abstracts, (Abstract #450.10), 13:1622, 1987.

310. Fox, S.R. and Pfaff, D.W. Differential expression within neurons and glia of mRNA encoding a putative thyroid hormone receptor (cErb1). Society for Neuroscience Abstracts, (Abstract #107.4), 13:376, 1987.

311. Romano, G.J., Bonner, T.I. and Pfaff, D.W. Preprotachykinin gene expression in the mediobasal hypothalamus of estrogen-treated and ovariectomized control rats. Exp. Brain Res., 76:21-26, 1989.

Romano, G.J., Bonner, T.I. and Pfaff, D.W. Substance P gene expression in ventromedial hypothalamic neurons of estrogen-treated and control rats analyzed by in situ hybridization. Society for Neuroscience Abstracts, (Abstract #165.6) 13:584, 1987.

312. Kow, L.-M. and Pfaff, D.W. Responses of hypothalamic paraventricular neurons in vitro to norepinephrine and other feeding-relevant agents. Physiology & Behavior, 46:265-271, 1989.

Kow, L.-M. and Pfaff, D.W. Responses of different types of paraventricular neurons in vitro to norepinephrine (NE) and other feeding-relevant transmitters. Society for Neuroscience Abstracts, (Abstract #9.11), 13:17, 1987.

313. Robbins, A., Schwartz-Giblin, S. and Pfaff, D.W. Ascending and descending projections to medullary reticular formation sites which activate deep lumbar back muscles in the rat. Experimental Brain Res., 80:463-474, 1990.

Robbins, A., Schwartz-Giblin, S. and Pfaff, D.W. Ascending and descending projections to medullary reticular sites which activate epaxial muscles in the rat. Society for Neuroscience Abstracts, (Abstract #21.3), 13:59, 1987.

314. Jorgenson, K.L., Kow, L.-M. and Pfaff, D.W. Histamine excites arcuate neurons in vitro through H1 receptors. Brain Res., 502:171-179, 1989.

Jorgenson, K.L., Kow, L.-M. and Pfaff D.W. Electrophysiological actions of histamine on arcuate nucleus neurons in vitro. Society for Neuroscience Abstracts, (Abstract #115.6), 13:402, 1987.

315. Jones, K.J., Pfaff, D.W. and McEwen, B.S. Ultrastructural and morphometric analysis of neurons in the arcuate nucleus of the female rat hypothalamus following estradiol. Brain Res. Bull., 26:181-184, 1991.

Jones, K.J., Pfaff, D.W. and McEwen, B.S. An ultrastructural and morphometric study of the arcuate nucleus in female rat brain following estradiol treatment. Society for Neuroscience Abstracts, (Abstract #68.4), 13:222, 1987.

316. McCabe, J.T., Desharnais, R.A. and Pfaff, D.W. Graphical and statistical approaches to data analysis for in situ hybridization. From Methods in Enzymology, Vol. 168: hormone Action, Part L-"Neuroendocrine Peptides", P. M. Conn (ed.), p. 822-848, 1989.

McCabe, J.T., Desharnais, R.A. and Pfaff, D.W. Graphical and statistical approaches to data analysis for quantitative in situ hybridization. Journal of Histochemistry and Cytochemistry. 36:847 (Abstract #27), 1988.

317. Lustig, R. H., Fishman, J. and Pfaff, D. W. Ovarian steroids and endogenous opioid peptide action in control of the rat LH surge. In Dyer, R. G. and Bicknell, R. J. (Eds.), Brain Opioid Systems in Reproduction. Oxford: Oxford University Press, pp. 3-26, 1989.

318. Canonaco, M., O'Connor, L.H., Pfaff, D.W. and McEwen, B.S. Longer term progesterone treatment induces changes of GABA A receptor levels in forebrain sites in the female hamster: Quantitative autoradiography study. Exp. Brain Res., 77:407-411, 1989.
319. Kawata, M., McCabe, J.T. and Pfaff, D.W. In situ hybridization Histochemistry with oxytocin synthetic oligonucleotide: Strategy for making the probe and its application. Brain Res. Bull., 20:693-697, 1988.
320. Lustig, R.H., Pfaff, D.W. and Mobbs, C.V. Two-dimensional gel autoradiographic analysis of the acute effects of estradiol on protein synthesis in the female rat ventromedial nucleus in vivo. Endocrinology, 124:1863-1869, 1989.
- Lustig, R.H., Pfaff, D.W. and Mobbs, C.W. Effects of estradiol on protein synthesis in the rat ventromedial nucleus (VMN) in vivo: Densitometric analysis. The Endocrine Society, (Abstract #1294) p.344, 1988.
321. Kow, L.-M. and Pfaff, D.W. Transmitter and peptide actions on hypothalamic neurons in vitro: Implications for lordosis. Brain Research Bulletin, 20:857-861, 1988.
322. Lustig, R.H., Pfaff, D.W. and Fishman, J. Induction of LH hypersecretion in cyclic rats during the afternoon of oestrus by oestrogen in conjunction with progesterone antagonism or opioidergic blockade. J. Endocrinol., 117:229-235, 1988.
323. Schwartz-Giblin, S., Korotzer, A., and Pfaff, D.W. Steroid hormone effects on picrotoxin-induced seizures in female and male rats. Brain Res., 476:240-247, 1989.
324. Schwanzel-Fukuda, M. and Pfaff, D.W. Neuron-specific enolase immunoreactivity in the developing gray short-tailed opossum brain and nervus terminalis. J. Histochem. & Cytochem., 36:853, (Abstract #49), 1988.
325. Fahrbach, S.E., Morrell, J.I. and Pfaff, D.W. Studies of ventromedial hypothalamic afferents in the rat using three methods of HRP application. Experimental Brain Research, 77:221-233, 1989.
326. Romano, G.J., Mobbs, C.V., Lauber, A., Howells, R.D. and Pfaff, D.W. Differential regulation of proenkephalin gene expression by estrogen in the ventromedial hypothalamus of male and female rats: implications for the molecular basis of a sexually differentiated behavior. Brain Research, 536:63-68, 1990.
327. Jones, K.J. Harrington, C.A. Chikaraishi, D.M. and Pfaff, D.W. Steroid hormone regulation of ribosomal RNA in rat hypothalamus: Early detection using in situ hybridization and precursor-product ribosomal DNA probes. J. Neuroscience, 10(5):1513-1521, 1990.
- Jones, K. J. Harrington, C.A. Chikaraishi, D. M. and Pfaff, D. W. Estradiol (E) regulation of ribosomal RNA (rRNA) processing in rat ventromedial hypothalamic (VMN) neurons: Early detection by quantitative in situ hybridization. Society for Neuroscience Abstracts, (Abstract #174.17), 14:436, 1988.

328. Romano, G.J., Krust, A. and Pfaff, D.W. Expression and estrogen regulation of progesterone receptor mRNA in neurons of the mediobasal hypothalamus: An in situ hybridization study. Molecular Endocrinology, 3:1295-1300, 1989.

Romano, G.J., Chambon, P. and Pfaff, D.W. Estrogen increases progesterone receptor mRNA levels in the hypothalamus of the rat. Society for Neuroscience Abstracts, (Abstract #11.11), 14:18, 1988.

329. Lustig, R.H., Mobbs, C.V., Pfaff, D.W. and Fishman, J. Temporal actions of 16 $\alpha$ -hydroxyestrone in the rat: Comparisons of lordosis dynamics with other estrogen metabolites and between sexes. J. Steroid Biochemistry, 33:417-421, 1989.

Lustig, R.H., Mobbs, C.V., Pfaff, D.W. and Fishman, J. Sex differences in lordosis effects of estrogen metabolites: implications for rat brain estrogen receptor dynamics. Society for Neuroscience Abstracts, (Abstract #193.1), 14:468, 1988.

330. Fraile, I., Hobbs, C.V. and Pfaff, D.W. Sex difference in the regulation of 70Kd hypothalamic proteins by estrogen. Society for Neuroscience Abstracts, (Abstract #193.3), 14:469, 1988.

331. Robbins, A., Pfaff, D.W. and Schwartz-Giblin, S. Reticulospinal and reticuloreticular pathways for activating the lumbar back muscles in the rat. Experimental Brain Research, 92:46-58, 1992.

Robbins, A., Schwartz-Giblin, S. and Pfaff, D.W. Reticulo-reticular and reticulo-spinal connections affecting EMG activity in rat back muscles. Society for Neuroscience Abstracts, (Abstract #79.11), 14:184, 1988.

332. Schwartz-Giblin, S. and Pfaff, D.W. Ipsilateral and contralateral effects on cutaneous reflexes in a back muscle of the female rat: Modulation by steroids relevant for reproductive behavior. J. Neurophysiol., 64(3):835-846, 1990.

Schwartz-Giblin, S. and Pfaff, D.W. Control of amplitude in a cutaneous reflex subserving lordosis: A role for a progesterone metabolite. Society for Neuroscience Abstracts, (Abstract #79.14), 14:184, 1988.

333. Ogawa, S., Kow, L.-M. and Pfaff, D. W. Effects of GABA and related agents on the electrical activity of hypothalamic ventromedial nucleus neurons in vitro. Experimental Brain Research, 85:85-92, 1991.

Ogawa, S., Kow, L.-M. and Pfaff, D. W. Effects of GABA antagonists on the electric activity of hypothalamic arcuate (ARC) and ventromedial (VMN) nuclei neurons in vitro. Society for Neuroscience Abstracts, (Abstract #144.13), 14:349, 1988.

334. Jorgenson, K.L. and Pfaff, D.W. Cell cultures of luteinizing hormone-releasing hormone neurons from embryonic mouse olfactory placode and nasal septum. Manuscript completed but never submitted for publication.

Jorgenson, K.L., MacLeish, P.R. and Pfaff, D.W. Serum-free cell culture of postnatal rat hypothalamic neurons. Society for Neuroscience Abstracts, (Abstract #346.12), 14:868, 1988.

335. Gibbs, R.B., McCabe, J.T., Buck, C.R., Chao, M.V. and Pfaff, D.W. Expression of NGF receptor in the rat forebrain detected with in situ hybridization and immunohistochemistry. Mol. Brain Res., 6:275-287, 1989.

Gibbs, R.B., McCabe, J.T., Buck, C.R., Chao, M.V. and Pfaff, D.W. Localization of NGF receptor mRNA in the rat forebrain using in situ hybridization. Society for Neuroscience Abstracts, (Abstract #331.2), 14:824, 1988.

336. Schwanzel-Fukuda, M. and Pfaff, D.W. Origin of luteinizing hormone-releasing hormone neurons. Nature, 338:161-164, 1989.

Schwanzel-Fukuda, M. and Pfaff, D.W. A proposed migratory route for luteinizing hormone-releasing hormone (LHRH)-immunoreactive neurons from the medial olfactory placode to the forebrain in the mouse. A study using tritiated thymidine and LHRH immunocytochemistry. Society for Neuroscience Abstracts, (Abstract #395.9), 14:984, 1988.

337. Kow, L.-M. and Pfaff, D.W. Cyclo (His-Pro) potentiates the reduction of food intake induced by amphetamine, fenfluramine, or serotonin. Pharmacology Biochemistry and Behavior, 38:365-369, 1991.

Kow, L.-M., Shiosaki, K., Nadzan, A. and Pfaff, D.W. Potentiation of transmitter-related food intake reduction by cyclo(His-Pro). Society for Neuroscience Abstracts, (Abstract #307.11), 14:762, 1988.

338. Mobbs, C., Fink, G. Johnson, M., Welch, W. and Pfaff, D.W. Similarity of an estrogen-induced protein and a luteinizing hormone releasing hormone induced protein. Molecular & Cellular Endocrinology, 62:297-306, 1989.

Mobbs, C., Fink, G., Johnson, M., Welch, W. and Pfaff, D.W. Co-migration on 2-D gels of an estrogen-induced brain protein, an LHRH-induced pituitary protein, and an uncoupling ATPase/heat-shock 70Kd protein. Society for Neuroscience Abstracts, (Abstract #193.2), 14:468, 1988.

339. Pfaff, D. W. Multiplicative responses to hormones by hypothalamic neurons. In Recent Progress in Posterior Pituitary Hormones, 1988, S. Yoshida and L. Share (Eds.), Elsevier Science Publishers B. V. (Biomedical Division), Excerpta Medica, Amsterdam, International Congress Series No. 797, pp. 257-267.

340. Kawata, M., McCabe, J.T., Pfaff, D.W. and Sano, Y. Gene expression for posterior pituitary hormones studied by in situ hybridization histochemistry. In Recent Progress in Posterior Pituitary Hormones, 1988, S. Yoshida and L. Share (Eds.), Elsevier Science Publishers B. V. (Biomedical Division), Excerpta Medica, Amsterdam, International Congress Series No. 797, pp. 249-255.
341. Mobbs, C., Berman, J., Marquardt, M. and Pfaff, D.W. Comprehensive polypeptide analysis of microdissected rat brain areas: Combining 2 dimensional gel electrophoresis with 2-dimensional HPLC and immunoanalysis and sequencing procedures. J. Neurosci. Methods, 29:5-15, 1989.
342. Lustig, R.H., Pfaff, D.W. and Mobbs, C.V. Considerations in the quantitative analysis of autoradiograms from 2-dimensional gels. J. Neurosci. Methods, 29:17-26, 1989.
343. Mobbs, C.V., Romano, G.J., Schwartz-Giblin, S. and Pfaff, D.W. Biochemistry of a steroid-regulated mammalian mating behavior: Heat shock proteins and secretion, enkephalin and GABA. (1988) In Neural Control of Reproductive Function, J. M. Lakoski, R. J. Perez-Polo and F D. K. Rassin (eds.), Alan R. Liss, Inc., 1989, New York, pp. 95-116.
344. Hejtmancik, J.F., Conn, P.M. and Pfaff, D.W. In situ hybridization for detecting gonadotropin-releasing hormone messenger RNA and measuring physiologically stimulated changes. In Methods in Neurosciences, (Vol. I, Gene Probes), P. Michael Conn (Ed.). pp. 208-222, Academic Press, 1989.
345. McCabe, J. and Pfaff, D.W. In situ hybridization: A Methodological Guide. In Methods in Neurosciences, (Vol. I, Gene Probes), P. Michael Conn (Ed.). pp. 98-126, Academic Press, 1989.
346. Schwanzel-Fukuda, M. and Pfaff, D.W. Combination of tritiated thymidine autoradiography and neuropeptide immunocytochemistry to determine birth dates and migration routes of luteinizing hormone-releasing hormone neurons. In Methods in Neurosciences, (Vol. III), P. Michael Conn (Ed.). Academic Press, 1990, pp. 90-106.
347. Zheng, L.-M., Pfaff D.W. and Schwanzel-Fukuda, M. Synaptology of luteinizing hormone-releasing hormone (LHRH)-immunoreactive cells in the nervus terminalis of the gray short-tailed opossum (*Monodelphis domestica*). J. Comp. Neurol., 295(2): 327-337, 1990.
348. Zheng, L.-M., Pfaff, D.W. and Schwanzel-Fukuda, M. Terminations of LHRH immunoreactive fibers in the subfornical organ of the opossum: An ultrastructural study. Neuroendocrinology, 51:413-424, 1990.
349. Meisel, R.L. and Pfaff, D.W. Progesterone effects on sexual behavior and neuronal ultrastructure in female rats. Brain Research, 463:53-157, 1988.
350. Jones, K.J. and Pfaff, D.W. Emerging tenets in the mechanism of gonadal steroid action on hypothalamic neurons. In Brain Endocrinology 2nd ed., (Ed. M. Motta.) New York: Raven Press, 1991.

351. Pfaff, D.W. and Robbins, A. Hypothalamic growth-related cellular phenomena and brain stem-cord motor control phenomena in a well-defined vertebrate neuroendocrine circuit. In The Menstrual Cycle and Its Disorders (K. M. Pirke, W. Wuttke and U. Schweiger, eds.). Berlin: Springer-Verlag, p.217, 1989.

352. Pfaff, D.W. Features of a Hormone-Driven Defined Neural Circuit for a Mammalian Behavior. Principles Illustrated, Neuroendocrine Syllogisms, and Multiplicative Steroid Effects. In: Modulation of Defined Vertebrate Neural Circuits. M. Davis, B. L. Jacobs and R. I. Schoenfeld (editors). Annals N.Y. Academy of Sciences, Vol. 563, pp. 131-147, 1989.

353. Nishizuka, M. and Pfaff, D.W. Medial preoptic islands in the rat brain: Electron microscopic evidence for intrinsic synapses. Experimental Brain Res., 77:295-301, 1989.

354. Pfaff, D.W., Jorgenson, K. and Gibbs, R.B. Evidence bearing on possible neuroendocrine trophic phenomena in adult rat hypothalamus and midbrain. In Growth Factors in Reproductive Endocrinology (Edited by W. Sadler et al.). New York: Plenum, 1989.

355. Mobbs, C.V., O'Malley, K.L., Lauber, A., Romano, J.G. and Pfaff, D.W. Heat-shock-70 mRNA induced by estrogen in uterine secretory cells: Analysis by northern and slot blots and in situ hybridization. Endocrine Society Abstracts, (Abstract #727), p. 204, 1989.

356. Pfaff, D.W. Patterns of steroid hormone effects on electrical and molecular events in hypothalamic neurons. Molecular Neurobiology, 3:135-154, 1989.

357. Pfaff, D.W., Korotzer, A., Schwartz-Giblin, S. and Cottingham, S.L. Hypothalamic effects on medullary reticular activation of deep back muscle EMG. Physiol. & Behav., 47:185-196, 1990.

Pfaff, D.W., Cottingham, S.L., Korotzer, A. and Schwartz-Giblin, S. Hypothalamic effects on medullary reticular activation of deep back muscle EMG. Society for Neuroscience Abstracts, (Abstract #207.2), 115:504, 1989.

358. Mobbs, C.V., Fink, G. and Pfaff, D.W. HIP-70: A protein induced by estrogen in the brain and LH-RH in the pituitary. Science, 247:1477-1479, 1990.

359. Lauber, A.H., Romano, G.J., Mobbs, C.V., Howells, R.D. and Pfaff, D.W. Estradiol induction of proenkephalin messenger RNA in hypothalamus: dose-response and relation to reproductive behavior in the female rat. Molecular Brain Research, 8:47-54, 1990.

360. Zheng, L.-M, Pfaff, D.W. and Schwanzel-Fukuda, M. Electron microscopic identification of luteinizing hormone-releasing hormone-immunoreactive neurons in the medial olfactory placode and basal forebrain of embryonic mice. Neuroscience, 46(2):407-418, 1992.

Zheng, L.-M, Pfaff, D.W. and Schwanzel-Fukuda, M. Electron microscopic identification of luteinizing hormone-releasing hormone (LHRH) immunoreactivity in olfactory placode-derived neurons. Society for Neuroscience Abstracts, (Abstract #404.1), 15:1015, 1989.



361. Schwanzel-Fukuda, M., Zheng, L.-M, Bergen, H., Weesner, G., Pfaff, D. W. LHRH neurons: Functions and development. Progress in Brain Research, 93:189-203, 1992.

362. Schwanzel-Fukuda, M., Jorgenson, K., Bergen H., Weesner, G., Pfaff D. W. Biology of normal LHRH neurons during and after their migration from olfactory placode. Endocrine Reviews, 13(4):623-633, 1992.

363. Schwanzel-Fukuda, M., Bick, D. and Pfaff, D. W. Luteinizing hormone-releasing hormone (LHRH)-expressing cells do not migrate normally in an inherited hypogonadal (Kallmann) syndrome. Molecular Brain Research, 6:311-326, 1989.

Schwanzel-Fukuda, M., Bick, D. and Pfaff, D. W. Luteinizing hormone-releasing hormone (LHRH) cells do not migrate normally in Kallmann's syndrome (hypogonadotropic hypogonadism with anosmia). Society for Neuroscience Abstracts, (Abstract #526.1), 15:1333, 1989.

364. Lustig, R. H., Mobbs, C. V., Bradlow, H. L., McEwen, B. S. and Pfaff, D. W. Differential effects of estradiol and 16 $\alpha$ -hydroxyestrone on pituitary and preoptic estrogen receptor regulation. Endocrinology, 125:2701-2709, 1989.

365. McCabe, J. T., Kawata, M., Sano, Y., Pfaff, D. W. and Desharnais, R. A. Quantitative in situ hybridization to measure single-cell changes in vasopressin and oxytocin mRNA levels after osmotic stimulation. Cellular & Molecular Neurobiology, 10:59-71, 1990.

366. Pfaff, D. W. Molecular approaches to steroid hormone effects on hypothalamic nerve cells. Biomedical Research, 10:87-94, 1989.

367. Ronchi, E., Krey, L. C., and Pfaff, D. Steady state analysis of hypothalamic GnRH mRNA levels in male Syrian hamsters: Influences of photoperiod and gonadal steroids. Neuroendocrinology, 55:146-155, 1992.

368. Schwartz-Giblin, S. and Pfaff, D. W. Sensorimotor actions of ovarian steroid hormones on spinal cord and brainstem. Function: Membrane effects relevant for a range of behaviors. In Ovarian Secretions and Cardiovascular and Neurological Function, Naftolin, F. et al. (Eds.). Sero Symposia Vol 80, New York: Raven Press, 1990, pp. 179-197.

369. Lauber, A.H., Romano, G.J., Mobbs, C.V. and Pfaff, D.W. Estradiol regulation of estrogen receptor messenger ribonucleic acid in rat mediobasal hypothalamus: an in situ hybridization study. J. Neuroendocrinology, 2(5):605-611, 1990.

Lauber, A.H., Romano, G.J., Mobbs, C.V., Chambon, P. and Pfaff, D.W. Estradiol regulation of estrogen receptor mRNA in rat hypothalamus. Society for Neuroscience Abstracts, (Abstract #393.1), 15:984, 1989.

370. Mobbs, C.V., O'Malley, K.L., Lauber, A.H. and Pfaff, D.W. Constitutive heat-shock-70 mRNA in brain is primarily neuronal and is increased by estrogen in hypothalamus. Society for Neuroscience Abstracts, (Abstract #451.5) 15:1128, 1989.

Kleopoulos, S.P., Olazabal, U.E., Lauber, A.H., Pfaff, D.W., Mobbs, C.V. Heat-shock proteins 90Kd and 70Kd in rat brain and uterus:cellular localization by immunocytochemistry and in situ hybridization. Society for Neuroscience Abstracts, (Abstract #176.12), 17:432, 1991.

371. Ronchi, E., Aoki, C., Krey, L.C., and Pfaff, D.W. Immunocytochemical study of GnRH and GAP in male Syrian hamsters as a function of photoperiod and gonadal alterations. Neuroendocrinology, 55:134-145, 1992.

Ronchi, E, Krey, L. and Pfaff, D.W. LHRH and GAP immunocytochemistry and LHRH in situ hybridization in golden hamsters exposed to different photoperiods. Society for Neuroscience Abstracts, (Abstract #375.4), 15:950, 1989.

372. McCabe, J.T., Lehmann, E., Chastrette, N., Hanze, J., Lang, R.E., Ganten, D., and Pfaff, D.W. Detection of vasopressin mRNA in the neurointermediate lobe of the rat pituitary. Molecular Brain Research, 8:325-329, 1990.

McCabe, J.T., Lehmann, E., Hanze, J., Lang, R., Ganten, D. and Pfaff, D. W. Detection of vasopressin mRNA in the posterior pituitary by solution hybridization and northern blotting. Society for Neuroscience Abstracts, (Abstract #142.8), 15:344, 1989.

373. Bergen, H., Hejtmancik, J.F. and Pfaff, D.W. Effects of gamma-aminobutyric acid receptor agonists and antagonist on LHRH-synthesizing neurons as detected by immunocytochemistry and in situ hybridization. Experimental Brain Research, 87:46-56, 1991.

Bergen, H. and Pfaff, D.W. Luteinizing hormone-releasing hormone (LHRH) neurons following exposure to gamma-aminobutyric acid (GABA) agonists. Society for Neuroscience Abstracts, (Abstract #528.9), 15:1340, 1989.

374. Gibbs, R.B., Mobbs, C.V. and Pfaff, D.W. Sex steroids and Fos expression in rat brain and uterus. Molecular & Cellular Neurosciences, 1:29-40, 1990.

Gibbs, R.B., Mobbs, C.V. and Pfaff, D.W. Sex steroids and fos expression in the rat brain and uterus. Society for Neuroscience Abstracts, (Abstract #142.9), 15:344, 1989.

375. Ogawa, S., Kow, L.-M. and Pfaff, D.W. In vitro electrophysiological characterization of midbrain periaqueductal neurons in female rats: responses to GABA and Met-enkephalin-related agents. Brain Research, 666: 239-249, 1994.

Ogawa, S., Kow, L.-M. and Pfaff, D.W. Neuronal activity of dorsal periaqueductal gray neurons of female rats: responsiveness to GABA and enkephalin. Society for Neuroscience Abstracts, (Abstract #62.2), 15:146, 1989.

376. Kow, L.-M., and Pfaff, D.W. Thyrotropin-releasing hormone (TRH) has independent excitatory and modulatory actions on lamina IX neurons of lumbosacral spinal cord slices from adult rats. Peptides, 17(1):131-138, 1996.

Kow, L.-M. and Pfaff, D.W. Single-unit recording of lumbar lamina IX neurons in spinal cord slices from adult rats. Society for Neuroscience Abstracts, (Abstract #365.8), 15:920, 1989.

377. Schwartz-Giblin, S., Blackett, J.J. and Pfaff, D.W. Estrogen and progesterone effects on reproductive behavior when the female rat can avoid socio-sexual contact. Society for Neuroscience Abstracts, (Abstract #435.7), 15:1100, 1989.

378. Olazabal, U.E., Lustig, R.H., Pfaff, D.W. and Mobbs, C.V. Protein kinase C isoforms in rat hypothalamus and midbrain central gray. Society for Neuroscience Abstracts, (Abstract #336.4), 15:832, 1989.

379. Schumacher, M., Coirini, H., Pfaff, D.W. and McEwen, B.S. Light-dark differences in behavioral sensitivity to oxytocin. Behavioral Neuroscience, 105(3):487-492, 1991.

Schumacher, M., Coirini, H., Pfaff, D.W. and McEwen, B.S. Sensitivity of brain oxytocin receptors to ovarian steroids. Society for Neuroscience Abstracts, (Abstract #425.10), 15:1071, 1989.

380. Pfaff, D.W., Kow, L.-M, Bergen, H. and Schwanzel-Fukuda, M. Luteinizing hormone-releasing hormone (LHRH, GnRH) neurons as they develop and affect other neurons. In: Neuroendocrine Regulation of Reproduction, (Eds. S. Yen and W. Vale.) Norwell: Serono Press, 1990, pp. 71-94.

381. Lauber, A., and Pfaff, D. Estrogen regulation of mRNAs in the brain and relationship to lordosis behavior. Current Topics in Neuroendocrinology, 10:115-147, 1990.

382. Schumacher, M., Coirini, H., Pfaff, D.W. and McEwen, B.S. Behavioral effects of progesterone associated with rapid modulation of oxytocin receptors. Science, 250:691-694, 1990.

383. Chung, S.R., McCabe, J.T. and Pfaff, D.W. Estrogen influences on oxytocin mRNA expression in preoptic and anterior hypothalamic regions studied by in situ hybridization. J. Comp. Neurol., 307:281-295, 1991.

Chung, S.R. and Pfaff, D.W. Estrogen (E) influences on oxytocin mRNA expression in preoptic and anterior hypothalamic regions studied by in situ hybridization. Society for Neuroscience Abstracts, (Abstract #526.1), 16:1275, 1990.

384. McCarthy, M.M., Pfaff, D.W. and Schwartz-Giblin, S. Midbrain central gray GABA, receptor activation enhances, and blockade reduces, sexual behavior in the female rat. Exp. Brain Research, 86:108-116, 1991.

McCarthy, M.M., Pfaff, D.W. and Schwartz-Giblin, S. GABA in the midbrain central gray facilitates lordosis in the female rat. Society for Neuroscience Abstracts, (Abstract #380.3), 16:922, 1990.

385. Kaplitt, M.G., Kleopoulos, S.P., Pfaff, D.W. and Mobbs, C.V. Expression in brain and other tissues of mRNA for an estrogen-induced protein (HIP70), an isoform of phospholipase C-alpha. Endocrinology, 133:99-104, 1993.

Kaplitt, M.G., Kleopoulos, S.P., Pfaff, D.W. and Mobbs, C.V. Expression in brain and other tissues of mRNA for an estrogen-induced protein (HIP70), an isoform of phospholipase C-alpha. Society for Neuroscience Abstracts, (Abstract #204.5), 16:471, 1990.

386. Mobbs, C.V., Fink, G. and Pfaff, D.W. HIP-70: An isoform of phosphoinositol-specific phospholipase C-alpha. Science, 249:566, 1990.

Mobbs, C.V., Olazabal, U.E. and Pfaff, D.W. An estrogen-induced hypothalamic protein, HIP-70, is an isoform of the phosphoinositolspecific phospholipase C-alpha isoenzyme. Society for Neuroscience Abstracts, (Abstract #204.4), 16:471, 1990.

387. Lauber, A.H., Mobbs, C.V., Muramatsu, M. and Pfaff, D.W. Estrogen receptor mRNA expression in rat hypothalamus as a function of genetic sex and estrogen dose. Endocrinology, 129(6):3180-3186, 1991.

Lauber, A.H., Mobbs, C.V., Muramatsu, M. and Pfaff, D.W. Estrogen receptor mRNA expression in rat hypothalamus as a function of sex and estrogen dose. Society for Neuroscience Abstracts, (Abstract #277.4), 16:661, 1990.

388. Ogawa, S., Kow, L.-M. and Pfaff, D.W. Effects of lordosis-relevant neuropeptides on midbrain periaqueductal gray neuronal activity in vitro. Peptides, 13(5): 965-975, 1992.

Ogawa, S., Kow, L.-M. and Pfaff, D.W. Electrophysiological responses of periaqueductal gray neurons of female rats to LHRH, substance P, oxytocin, and TRH in vitro. Society for Neuroscience Abstracts, (Abstract #114.7), 16:266, 1990.

Ogawa, S., Kow, L.-M., Schwartz-Giblin, S. and Pfaff, D.W. LHRH and substance P modulate in vitro electrophysiological responses of periaqueductal gray neurons to GABA agonists and norepinephrine in estrogen-treated female rats. Society for Neuroscience Abstracts, (Abstract #420.2) 17:1061, 1991.

389. Kow, L.-M., Johnson, A.E., Ogawa, S. and Pfaff, D.W. Electrophysiological actions of oxytocin on hypothalamic neurons, in vitro: neuropharmacological characterization and effects of ovarian steroids. Neuroendocrinology, 54:526-535, 1991.

Kow, L.-M., Johnson, A.E., Ogawa, S. and Pfaff, D.W. Effects of ovarian hormones on electrophysiological actions of oxytocin on hypothalamic neurons in vitro. Society for Neuroscience Abstracts, (Abstract #204.3), 16:471, 1990.

390. Zheng, L.-M., Schwanzel-Fukuda, M., Hejtmancik, J.F. Gibbs, R.B. and Pfaff, D.W. Properties of neuroendocrine cells migrating from olfactory placode into basal forebrain. Society for Neuroscience Abstracts, (Abstract #393.10), 16:953, 1990.

391. Schwanzel-Fukuda, M., Abraham, S., Crossing K.L., Edelman, G.M. and Pfaff, D.W. Immunocytochemical demonstration of neural cell adhesion molecule (NCAM) along the migration route of luteinizing hormone-releasing hormone (LHRH) neurons in mice. J. Comp. Neurology, 321:1-18, 1992.

Schwanzel-Fukuda, M., Abraham, S., Crossin, K.L., Edelman, G.M. and Pfaff, D.W. Immunocytochemical demonstration of neural cell adhesion molecule (NCAM) along the migration route of luteinizing hormone-releasing hormone (LHRH) neurons in mice. Society for Neuroscience Abstracts, (Abstract #168.14), 16:398, 1990.

392. Gibbs, R.B., Chao, M.V. and Pfaff, D.W. Effects of fimbria-fornix and angular bundle transection on expression of the p75NGFR mRNA by cells in the medial septum and diagonal band of broca: correlations with cell survival, synaptic reorganization and sprouting. Molecular Brain Research, 11:207-219, 1991.

Gibbs, R.B., Chao, M.V. and Pfaff, D.W. Effects of fimbria-fornix and angular bundle transection on expression of the NGFR mRNA-expressing cells located in the medial septum and diagonal band of broca. Society for Neuroscience Abstracts, (Abstract #12.11), 17:20, 1991.

393. Koibuchi, N., Gibbs, R.B., Suzuki, M. and Pfaff, D.W. Thyroidectomy induces fos-like immunoreactivity within thyrotropin-releasing hormone-expressing neurons located in the paraventricular nucleus of the adult rat hypothalamus. Endocrinology, 129(6):3208-3216, 1991.

Koibuchi, N., Gibbs, R.B., Suzuki, M. and Pfaff, D.W. Thyroidectomy induces fos-like immunoreactivity in the parvocellular paraventricular hypothalamic nucleus of the rat. Society for Neuroscience Abstracts, (Abstract #42.16), 16:95, 1990.

394. Schwanzel-Fukuda, M. and Pfaff, D.W. The migration of luteinizing hormone-releasing hormone (LHRH) neurons from the medial olfactory placode into the medial basal forebrain. Experientia, 46:956-962, 1990.

395. Abraham, S., Pfaff, D.W. and Schwanzel-Fukuda, M. Ontogenesis of neurons producing luteinizing hormone-releasing hormone (LHRH) in the brain and nervus terminalis and luteinizing hormone (LH) in the anterior pituitary of the gray short-tailed opossum (*Monodelphis domestica*). Manuscript completed but was never submitted.

396. Lauber, A.H., Romano, G.J. and Pfaff, D.W. Sex difference in estradiol regulation of progesterin receptor mRNA in rat mediobasal hypothalamus as demonstrated by in situ hybridization. Neuroendocrinology, 53:608-613, 1991.

397. Lustig, R.H., Sudol, M., Pfaff, D.W. and Federoff, H.J. Estrogenic regulation and sex dimorphism of growth-associated protein 43 kDa (GAP-43) messenger RNA in the rat. Molecular Brain Research, 11:125-132, 1991.

Lustig, R.H., Sudol, M., Pfaff, D.W. and Federoff, H.J. Estrogen regulation of neuronal growth-associated protein 43 kDa (GAP-43) mRNA in the ventromedial hypothalamus (VMH) of the female rat. Endocrine Society Abstracts, 1990.

398. Kow, L.-M. and Pfaff, D.W. The effects of the TRH metabolite cyclo (His-Pro) and its analogs on feeding. Pharmacology Biochemistry and Behavior, 38:359-364, 1991.

399. Ogawa, S., Kow, L.-M., McCarthy, M.M., Pfaff, D.W. and Schwartz-Giblin, S. Midbrain PAG control of female reproductive behavior: In vitro electrophysiological characterization of actions of lordosis-relevant substances. In The Midbrain Periaqueductal Gray Matter. Edited by A. Depaulis and R. Bandler, Plenum Press, NY, pp. 211-235, 1991.

400. Lauber, A.H., Romano, G.J. and Pfaff, D.W. Gene expression for estrogen and progesterone receptor mRNAs in rat brain and possible relations to sexually dimorphic functions. J. Steroid Biochem. Molec., 40(1-3):53-62, 1991.

401. McCarthy, M.M., Chung, S.R., Ogawa, S., Kow, L.-M. and Pfaff, D.W. Behavioral effects of oxytocin: Is there a unifying principle? In Vasopressin, S. Jard, R. Jamison (ed.), Colloque INSERM/John Libbey Eurotext Ltd. vol. 208, pp. 195-212, 1991.

402. McCarthy, M.M., Pfaff, D.W. and Schwartz-Giblin, S. The role of steroid modulation of amino acid transmitters in the regulation of female reproduction. American Zoologist, 33:275-284, 1993.

403. Mobbs, C.V., Kaplitt, M., Kow, L.-M. and Pfaff, D.W. PLC-a: a common mediator of the action of estrogen and other hormones? Molecular and Cellular Endocrinology, 80:C187-C191, 1991.

404. Weesner, G.D., Bergen, H.T. and Pfaff, D.W. Alpha-1 adrenergic regulation of luteinizing hormone-releasing hormone (LHRH) gene expression in the rat. J. Neuroendocrinology, 4(3):331-336, 1992.

Weesner, G.D., Bergen, H.T. and Pfaff, D.W. Alpha-1 adrenergic regulation of luteinizing hormone-releasing hormone (LHRH) gene expression in the rat. Endocrine Society Abstracts, (Abstract #1019), p. 285, 73rd Annual Meeting, 1991.

405. Kaplitt, M.G., Pfaus, J.G., Kleopoulos, S.P., Hanlon, B.A., Rabkin, S.D. and Pfaff, D.W. Expression of a functional foreign gene in adult mammalian brain following in vivo transfer via a herpes simplex virus type 1 defective viral vector. Molecular and Cellular Neurosciences, 2:320-330, 1991.

Kaplitt, M.G., Pfaus, J.G., Kleopoulos, S.P., Hanlon, B.A., Rabkin, S.D. and Pfaff, D.W. Expression of a functional foreign gene in adult mammalian brain following in vivo transfer

via a herpes simplex virus defective viral vector. Society for Neuroscience Abstracts, (Abstract #513.3), 17:1285, 1991.

406. Kaplitt, M.G., Rabkin, S. and Pfaff, D.W. Molecular alterations in nerve cells: Direct manipulation and physiological mediation. In Current Topics in Neuroendocrinology (ed., M. Imura), Vol. II, Berlin: Springer-Verlag, pp. 169-191, 1993.

407. Gibbs, R.B., Lombardino, A. and Pfaff, D.W. Sex steroids and fos expression in the CNS of prepubertal and newborn rats. Molecular and Cellular Neurosciences, 1:250-261, 1990.

408. Schwanzel-Fukuda, M. and Pfaff, D.W. Theories of luteinizing hormone-releasing hormone (LHRH) neuronal migration: mechanisms and biological importance. In Modes of Action of GnRH and GnRH Analogs (eds., P. M. Conn and W. Crowley), pp. 131-143, New York: Springer-Verlag, 1992.

409. Pfaff, D.W., Haldar, J. and Chung, S.R. In situ hybridization for showing hormone effects on oxytocin mRNA in specific populations of hypothalamic neurons and their possible participation in multiplicative hormonal responses. In Annals, New York Academy of Sciences, vol. 652, Oxytocin in Maternal, Sexual, and Social Behavior (eds., C. Pederson et al.), pp. 347-356, 1992.

410. McCarthy, M.M., Kow, L.-M. and Pfaff, D.W. Speculations concerning the physiological significance of central oxytocin in maternal behavior. In Annals, New York Academy of Sciences, vol. 652, Oxytocin in Maternal, Sexual, and Social Behaviors (eds., C. Pederson et al.), pp. 70-82, 1992.

411. Cohen, R.S. and Pfaff, D.W. Ventromedial hypothalamic neurons in the mediation of long-lasting effects of estrogen on lordosis behavior. Progress in Neurobiology, 38:423-453, 1992.

412. Olazabal, U.E., Pfaff, D.W. and Mobbs, C.V. Estrogenic regulation of heat shock protein 90 kDa in the rat ventromedial hypothalamus and uterus. Molecular & Cellular Endocrinology, 84:175-183, 1992.

Olazabal, U.E., Pfaff, D.W. and Mobbs, C.V. Estrogenic regulation of heat shock protein 90Kd and 70Kd in the rat ventromedial hypothalamus and uterus. Society for Neuroscience Abstracts, (Abstract #176.11), 17:432, 1991.

413. Holtzman, D.A., Pfaff, D.W. and Schwartz-Giblin, S. Axial muscle EMG responses evoked by cutaneous flank nerves in the female rat: effects of spinal transection, steroid hormones, and anesthesia. Brain Research, 595:39-49, 1992.

Holtzman, D.A., Pfaff, D.W. and Schwartz-Giblin, S. Back muscle EMG responses evoked by cutaneous flank nerves in rats: effects of spinal transection, anesthesia and steroid hormones. Society for Neuroscience Abstracts, (Abstract #84.6), 17:197, 1991.

414. Kaplitt, M., Tjuvajev, J., Rabkin, S., Berk, J., Muraki, A., Koutcher, J. Ballon, D., Pfaff, D. and Blasberg, R. Mutant herpes simplex viruses as potential agents for anti-tumor therapy. Abstract, American Academy of Neurology, May 1992.

415. Pfaff, D.W., Brooks, P.J., Funabashi, T., Pfaus, J.G. and Mobbs, C.V. Gene memory in neuroendocrine and behavioral systems. In CIBA Foundation Symposium #168, Functional Anatomy of the Neuroendocrine Hypothalamus, (ed. by S. Lightman et al.), Chichester: Wiley, pp. 165-186, 1992.

416. Pfaus, J.G. and Pfaff, D.W. Mu, delta, and kappa opioid receptor agonists selectively modulate sexual behaviors in the female rat: differential dependence on progesterone. Hormones & Behavior, 26:457-473, 1992.

Pfaus, J.G. and Pfaff, D.W. Selective mu opioid receptor agonists inhibit whereas delta and kappa receptor agonists facilitate lordosis behavior in the female rat: differential modulation by progesterone. Society for Neuroscience Abstracts, (Abstract #197.12), 17:498, 1991.

417. McCarthy, M.M., Coirini, H., Schumacher, M., Pfaff, D.W., McEwen, B.S. and Schwartz-Giblin, S. Ovarian steroid modulation of [3H] muscimol binding in the spinal cord of the rat. Brain Research, 556:321-323, 1991.

418. McCarthy, M.M., Coirini, H., Schumacher, M., Johnson, A.E., Pfaff, D.W., Schwartz-Giblin, S. and McEwen, B.S. Steroid regulation and sex differences in [3H] muscimol binding in hippocampus, hypothalamus and midbrain in rats. J. Neuroendocrin., 4(4):393-399, 1992.

419. McCarthy, M.M., Kaufman, L.C., Pfaff, D.W. and Schwartz-Giblin, S. Catalepsy induced by muscimol infusion into the hypothalamus can be sensitized and is modulated by ovarian steroids. Behavioral Neuroscience, 107:669-677, 1993.

Kaufman, L.C., McCarthy, M.M., Pfaff, D.W. and Schwartz-Giblin, S. Hormonal modulation of muscimol-induced catatonia: a new model for changes in drug sensitivity? Society for Neuroscience Abstracts, (Abstract #174.6), 17:425, 1991.

420. McCarthy, M.M., Masters, D.B., Rimvall, K., Schwartz-Giblin, S. and Pfaff, D.W. Intracerebral administration of an antisense oligodeoxynucleotides to GAD65 and GAD67 mRNAs modulates reproductive behavior in the female rat. Brain Research, 636:209-220, 1994.

McCarthy, M.M., Schwartz-Giblin, S. and Pfaff, D.W. Intracerebral administration of glutamic acid decarboxylase (GAD) antisense oligodeoxynucleotide reduces lordosis behavior in the rat. Society for Neuroscience Abstracts, (Abstract #197.5), 17:497, 1991.

421. Ogawa, S. Olazabal, U.E. and Pfaff, D.W. Behavioral change after local administration of antisense sequence for progesterone receptor mRNA in female rat hypothalamus. In R. Baserga & D.T. Denhardt, Antisense Strategies. Annals New York Academy of Sciences, Vol. 660, pp. 298-299, 1992.



422. Kow, L.-M., Weesner, G.D. and Pfaff, D.W. Adrenergic agonists act on ventromedial hypothalamic  $\alpha$ -receptors to cause neuronal excitation and lordosis facilitation: electrophysiological and behavioral evidence. Brain Research, 588:237-245, 1992.

Kow, L.-M., Weesner, G.D. and Pfaff, D.W.  $\alpha$ 1-adrenergic agonists act on ventromedial hypothalamus to cause neuronal excitation and lordosis facilitation. Society for Neuroscience Abstracts, (Abstract #197.7), 17:498, 1991.

423. Schwanzel-Fukuda, M. and Pfaff, D.W. Migration of LHRH-immunoreactive neurons from the olfactory placode rationalizes olfacto-hormonal relationships. J. Steroid Biochem. & Mol. Biology, 39:565-572, 1992.

424. Weesner, G.D., Krey, L.C. and Pfaff, D.W. Alpha-1 adrenergic regulation of estrogen-induced increases in luteinizing hormone-releasing hormone (LHRH) mRNA and release. Molecular Brain Research, 17:77-82, 1993.

Weesner, G.D., Krey, L.C. and Pfaff, D.W. Alpha-1 adrenergic regulation of estrogen-induced increases in luteinizing hormone-releasing hormone (LHRH) mRNA and release. Society for Neuroscience Abstracts, (Abstract #544.13), 17:1364, 1991.

425. Gibbs, R.B. and Pfaff, D.W. Effects of estrogen and fimbria/fornix transection on p75GFR and ChAT expression in the medial septum and diagonal band of Broca. Experimental Neurology, 116:23-39, 1992.

Gibbs, R.B. and Pfaff, D.W. Effects of estrogen and fimbria/fornix transection on NGF receptor immunoreactivity in the rat basal forebrain. Society for Neuroscience Abstracts, (Abstract #341.14), 16:819, 1990.

426. Chastrette, N., Pfaff, D.W. and Gibbs, R.B. Effects of daytime and nighttime stress on fos-like immunoreactivity in the paraventricular nucleus of the hypothalamus, the habenula, and the posterior paraventricular nucleus of the thalamus. Brain Research, 563:339-344, 1991.

427. Schwanzel-Fukuda, M., Abraham, S., Reinhard, G.R., Crossin, K.L., Edelman, G.M., Pfaff, D.W. Antibody to neural cell adhesion molecule (NCAM) can disrupt the migration of luteinizing hormone-releasing hormone (LHRH) neurons into the mouse brain. J. Comparative Neurology, 342:174-185, 1994.

Schwanzel-Fukuda, M., Abraham, S., Reinhard, G.R., Crossin, K.L., Edelman, G.M., Pfaff, D.W. Antibody to neural cell adhesion molecule (NCAM) can disrupt the migration of luteinizing hormone-releasing hormone (LHRH) neurons into the mouse brain. Society for Neuroscience Abstracts, (Abstract #175.2) 17:427, 1991.

428. Brooks, P.J., Kaplitt, M.G., Kleopoulos, S.P., Funabashi, T., Mobbs, C.V. and Pfaff, D.W. Detection of messenger RNA and low abundance heteronuclear RNA with single-stranded DNA probes produced by amplified primer extension labeling. J. Histochem. Cytochem., 41:1761-1766, 1993.

Brooks, P.J., Kleopoulos, S.P., Mobbs, C.V. and Pfaff, D.W. Detection of neuropeptide heteronuclear RNA's by in situ hybridization using single stranded DNA probes produced by asymmetric PCR. Society for Neuroscience Abstracts, (Abstract #219.5), 17:547, 1991.

429. Chung, S.R., Haldar, J. and Pfaff, D.W. Combination of in situ hybridization with retrograde marker to study hormone effect on oxytocin mRNA-expressing neurons which project to spinal cord. Society for Neuroscience Abstracts, (Abstract #284.12), 17:715, 1991.

430. Okano, H.J., Pfaff, D.W. and Gibbs, R.B. Role of local environmental factors in determining tissue-specific effects of estrogen: examination of uterine tissues transplanted to brain. Molecular and Cellular Endocrinology, 87:179-192, 1992.

Okano, H.J., Gibbs, R. B. and Pfaff, D. W. Effects of estrogen on fos-like immunoreactivity (F-1R) and 3H-thymidine (3H-THY) incorporation within uterine tissues transplanted to the adult rat CNS. Society for Neuroscience Abstracts, (Abstract #177.15), 17:435, 1991.

431. Bergen, H.T., Pentecost, B.T., Dickerman, H.W. and Pfaff, D.W. In situ hybridization for creatine kinase-B messenger RNA in rat uterus and brain. Molecular and Cellular Endocrinology, 92:111-119, 1993.

Bergen, H.T., Pentecost, B.T., Dickerman, H.W. and Pfaff, D.W. In situ hybridization for creatine kinase-B messenger RNA in rat uterus and brain. Society for Neuroscience Abstracts, (Abstract #177.14), 17:434, 1991.

432. Yu, W.H.A., Gibbs, R.B. and Pfaff, D.W. Effects of testosterone on levels of ribosomal RNA (rRNA) in hypoglossal neurons following nerve injury. Society for Neuroscience Abstracts, (Abstract #95.17), 17:226, 1991.

433. Schwartz-Giblin, S., Robbins, A. and Pfaff, D.W. Diazepam in medullary reticular formation reduces evoked EMG responses in back and neck muscles; progesterone enhances the effect. Society for Neuroscience Abstracts, (Abstract #84.5), 17:197, 1991.

434. McCarthy, M.M., Brooks, P.J., Pfaus, J.G., Brown, H.E., Flanagan, L.M., Schwartz-Giblin, S. and Pfaff, D.W. Antisense oligodeoxynucleotides in behavioral neuroscience. In Neuroprotocols (ed. by K. Kosik), 2:67-74, 1993.

435. Kaplitt, M.G. and Pfaff, D.W. Viral Vectors in Neurobiology. Journal of Neuroscience Methods, 1996.

436. McCarthy, M.M., Kleopoulos, S.P., Mobbs, C.V. and Pfaff, D.W. Infusion of antisense oligodeoxynucleotides to the oxytocin receptor in the ventromedial hypothalamus reduces estrogen-induced sexual receptivity and oxytocin receptor binding in the female rat. Neuroendocrinology, 59:432-440, 1994.

437. Weesner, G.D. and Pfaff, D.W. Disruption of estrous cyclicity following administration of a luteinizing hormone-releasing hormone antagonist to the preoptic area of the rat. Biology of Reproduction, 50:1178-1182, 1994.

Weesner, G.D. and Pfaff, D.W. Disruption of estrous cyclicity following administration of an LHRH antagonist to the preoptic area of the rat. Society for Neuroscience Abstracts, (Abstract #55.13), 18:118, 1992.

438. Tjuvajev, J., Blasberg, R.G., Berk, J., Posner, J.B., Rabkin, S.D., Pfaff, D.W. and Kaplitt, M.G. Treatment of W256 tumors in immunocompetent rats using herpes simplex virus mutants. Society for Neuroscience Abstracts, (Abstract #69.15), 18:158, 1992.

439. Schwanzel-Fukuda, M. and Pfaff, D.W. Neuron specific enolase (NSE) immunoreactivity is present in cells on the migration route of luteinizing hormone-releasing hormone (LHRH) neurons originating from the olfactory placode in mice. Society for Neuroscience Abstracts, (Abstract #109.18), 18:233, 1992.

440. Funabashi, T., Brooks, P.J., Mobbs, C.V. and Pfaff, D.W. DNA methylation and DNase-hypersensitive sites in the 5' flanking and transcribed regions of the rat preproenkephalin gene: Studies of mediobasal hypothalamus. Molecular and Cellular Neurosciences, 4:499-509, 1993.

Funabashi, T., Brooks, P.J., Mobbs, C. and Pfaff, D.W. Tissue-specific DNA methylation and DNase hypersensitive sites in the promoter and transcribed regions of the rat preproenkephalin gene. Society for Neuroscience Abstracts, (Abstract #112.12), 18:240, 1992.

441. Brooks, P.J., Funabashi, T., Kleopoulos, S.P., Mobbs, C.V. and Pfaff, D.W. Cell-specific expression of preproenkephalin intronic heteronuclear RNA in the rat forebrain. Molecular Brain Research, 19:22-30, 1993.

Brooks, P.J., Funabashi, T., Kleopoulos, S.P., Mobbs, C.V. and Pfaff, D.W. Cell-specific regulation of preproenkephalin intron-A derived heteronuclear RNA in the rat basal forebrain, thalamic reticular nucleus, and testis. Society for Neuroscience Abstracts, (Abstract #112.13), 18:240, 1992.

442. Flanagan, L.M., McCarthy, M.M., Brooks, P.J., Pfaff, D.W. and McEwen, B.S. Arginine vasopressin (AVP) levels after daily infusions of antisense oligonucleotides into the supraoptic nucleus (SON). Annals New York Academy of Sciences 689:520-1, 1993.

Flanagan, L.M., McCarthy, M.M., Brooks, P.J., Pfaff, D.W. and McEwen, B.S. Arginine vasopressin (AVP) levels after daily infusions of antisense oligonucleotides into the supraoptic nucleus (SON). Society for Neuroscience Abstracts, (Abstract #205.7), 18:481, 1992.

443. Kaplitt, M.G., Kwong, A.D., Kleopoulos, S.P., Mobbs, C.V., Rabkin, S.D. and Pfaff, D.W. Preproenkephalin promoter yields region-specific and longterm expression in adult brain following direct in vivo gene transfer via a defective herpes simplex viral vector. Proc. Nat'l. Acad. Sci., 91:8979-8983, 1994.

Kaplitt, M.G., Lipworth, L., Rabkin, S.D. and Pfaff, D.W. In vivo analysis of the rat preproenkephalin promoter using an HSV defective viral vector. Society for Neuroscience Abstracts, (Abstract # 254.5), 18:588, 1992.

444. Kow, L.-M. and Pfaff, D.W. Relations between a1a- and a1b-adrenoceptor subtypes: an electrophysiological assessment in hypothalamic neurons. Society for Neuroscience Abstracts, (Abstract #255.2), 18:589, 1992.

445. Verhaagen, J., Hermens, W.T.J.M.C., Oestreicher, A.B., Gispen, W.H., Rabkin, W., Pfaff, D.W. and Kaplitt, M.G. Expression of the growth-associated protein B-50/GAP43 via a defective herpes-simplex virus vector results in profound morphological changes in non-neuronal cells. Molecular Brain Research, 26:26-36, 1994.

Verhaagen, J., Gispen, W.H., Hermens, W., Rabkin, S.D., Pfaff, D.W. and Kaplitt, M.G. Expression of B-50(GAP43) via a defective herpes simplex virus vector in cultured non-neuronal cells. Society for Neuroscience Abstracts, (Abstract #262.10), 18:604, 1992.

Verhaagen, J., Hermens, W.T.J.M.C., Kaplitt, M.G., Pfaff, D.W. and Gispen, W.H. B-50/GAP-43 expression via a defective herpes simplex virus vector results in persistent morphological changes in non-neuronal cells. Abstract, Gene Therapy Meeting, Cardiff, 1993.

446. Okano, H.J., Pfaff, D.W. and Gibbs, R.B. RB and Cdc2 expression in brain: Correlations with 3H-thymidine incorporation and neurogenesis. J. Neuroscience, 13(7):2930-2938, 1993.

Okano, H.J., Pfaff, D.W. and Gibbs, R.B. Expression of RB, Cdc2, NSE and FOS by neuronal precursor cells in the adult brain. Society for Neuroscience Abstracts, (Abstract #269.6), 18:623, 1992.

447. Pfaus, J.G., Kleopoulos, S.P., Mobbs, C.V., Gibbs, R.B. and Pfaff, D.W. Sexual stimulation activates c-fos within estrogen-concentrating regions of the female rat forebrain. Brain Research, 624:253-267, 1993.

Pfaus, J.G., Kleopoulos, S.P., Mobbs, C.V., Gibbs, R.B. and Pfaff, D.W. Fos and jun expression in the female rat forebrain following hormone treatment and sexual stimulation. Society for Neuroscience Abstracts, (Abstract #370.11) 18:892, 1992.

448. Ogawa, S., Olazabal, U.E., Parhar, I.S. and Pfaff, D.W. Effects of intrahypothalamic administration of antisense DNA for progesterone receptor mRNA on reproductive behavior and progesterone receptor immunoreactivity in female rat. The Journal of Neuroscience, 14:1766-1774, 1994.

Ogawa, S., Olazabal, U.E. and Pfaff, D.W. Effects of hypothalamic administration of antisense DNA for progesterone receptor mRNA on lordosis behavior and progesterone receptor immunoreactivity. Society for Neuroscience Abstracts, (Abstract #371.4), 18:893, 1992.

449. McCarthy, M.M., Schlenker, E. and Pfaff, D.W. Enduring consequences of neonatal treatment with antisense oligonucleotides to estrogen receptor mRNA on sexual differentiation of rat brain. Endocrinology, 133:433-443, 1993.

McCarthy, M.M., Schlenker, E. and Pfaff, D.W. Neonatal intracerebral infusion of antisense DNA to estrogen receptor mRNA alters estrogen-dependent parameters in adult rats. Society for Neuroscience Abstracts, (Abstract #371.5), 18:893, 1992.

450. Gibbs, R.B., McCarthy, M.M. and Pfaff, D.W. Nerve growth factor affects defense-related behaviors, but not lordosis, in ovariectomized, estrogen-treated rats. Brain Research, 610:256-266, 1993.

Gibbs, R.B., McCarthy, M.M. and Pfaff, D.W. Effects of NGF and anti-NGF on weight gain and female sexual behaviors in the rat. Society for Neuroscience Abstracts, (Abstract #463.9), 18:1099, 1992.

451. Holtzman, D.A., Brooks, P.J., Pfaff, D.W. and Schwartz-Giblin, S. Preproenkephalin mRNA expression is regulated by an interaction between steroid hormones and nociceptive stimulation. J. Neuroendocrinol. 9: 913-922, 1997.

Holtzman, D.A., Brooks, P.J., Pfaff, D.W. and Schwartz-Giblin, S. Preproenkephalin mRNA expression in the ventromedial nucleus of the hypothalamus and lumbar dorsal horn of female rats following gonadal steroids and formalin injection. Society for Neuroscience Abstracts, (Abstract #576.6), 18:1372, 1992.

452. Pfaff, D.W., Schwartz-Giblin, S., McCarthy, M.M. and Kow, L.-M. Cellular and molecular mechanisms of female reproductive behaviors. In The Physiology of Reproduction (2nd edition), (ed. by E. Knobil & J. Neill), New York: Raven, Ch. 36, pp. 107-220, 1994.

453. Pfaff, D.W., Weesner, G.D. and Schwanzel-Fukuda, M. GnRH neurons during migration and in basal forebrain. In GnRH, GnRH Analogs, Gonadotropins and Gonadal Peptides, (ed. by P. Bouchard, A. Caraty, H.J.T. Coelingh Bennink and S. Pavlou). London: Parthenon, pp. 15-21, 1992.

454. Brooks, P.J., McCarthy, M.M., Funabashi, T., Mobbs, C.V. and Pfaff, D.W. Female sexual behavior in the rat: A model system for studying the molecular neurobiological mechanisms underlying behavioral plasticity. In Proceedings, Ninth International Congress on Endocrinology, (ed. by R. Mornex, et al.), Parthenon, 1992.

455. Robbins, A., Kumar, N., Ogawa, S., Pfaff, D.W., Sundaram, K. and Bardin, C.W. Differential sensitivity to testosterone but not MENT in two strains of male mice. In Abstracts, Laurentian Hormone Conference, 1992.

456. Brooks, P.J., McCarthy, M.M. and Pfaff, D.W. Novel approaches to the study of oxytocin neurotransmission in the rat brain. In Regulatory Peptides Vol. 45, (ed. by LeGros, et al.), New York: Elsevier Science Publishers B.V., p. 159-163, 1993.

457. Schumacher, M., Coirini, H., Flanagan, L.M., Frankfurt, M., Pfaff, D.W. and McEwen, B.S. Ovarian steroid modulation of oxytocin receptor binding in the ventromedial hypothalamus. In Annals, New York Academy of Sciences, vol. 652, Oxytocin in Maternal, Sexual, and Social Behaviors (ed. by C.A. Pedersen, et al.), pp. 374-386, 1992.

458. Weesner, G.D., Harms, P.G., McArthur, N.H., Wilson, J.M., Forrest, D.W., Wu, T.J. and Pfaff, D.W. Luteinizing hormone-releasing hormone gene expression in the bovine brain: anatomical localization and regulation by ovarian state. Biology of Reproduction, 49:431-436, 1993.

Weesner, G.D., Harms, P.G., McArthur, N.H., Wilson, J.M., Forrest, D.W., Wu, T.J. and Pfaff, D.W. LHRH gene expression in the bovine brain: anatomical localization and regulation by ovarian state. Abstracts, Amer. Soc. of Animal Science & Intl. Soc. of Applied Ethology, Annual Meeting (August 8-11), 1992.

459. Brooks, P.J., Funabashi, T., Kleopoulos, S.P., Mobbs, C.V. and Pfaff, D.W. Prolactin receptor messenger RNA is synthesized by the epithelial cells of the chorioid plexus. Molecular Brain Research, 16:163-167, 1992.

460. Schwanzel-Fukuda, M. and Pfaff, D.W. The structure and function of the nervus terminalis. In Handbook of Olfaction and Gustation, (ed. by R. Doty), New York: Dekker, pp. 835-869, 1995.

461. Kaplitt, M.G., Tjuvajev, J., Leib, D.A., Berk, J., Rabkin, S.D., Pettigrew, K., Posner, J.B., Pfaff, D.W. and Blasberg, R.G. Mutant herpes simplex virus causes regression of tumors growing in immunocompetent rats. J. Neuro-Oncology, 19:137-147, 1994.

462. Kow, L.-M., Tsai, Y.-F., Wang, L. and Pfaff, D.W. Electrophysiological analyses of serotonergic actions on neurons in hypothalamic ventromedial nucleus in vitro: receptor subtypes involved and implications for regulation of feeding and lordosis behaviors. Chinese J. of Physiology, 35(2):105-121, 1992.

463. Kawata, M., McCabe, J.T., Chung, S.R., Dutt, A., Yuri, K., Hirakawa, M., Kumamoto, K., Hirayama, Y. and Pfaff, D.W. The effect of progesterone on oxytocin messenger RNA in hypothalamic neurons of estrogen-treated female rats studied with quantitative in situ hybridization histochemistry. Biomedical Research, 12(6):405-415, 1991.

464. Flanagan, L.M., McCarthy, M.M., Brooks, P.J., Pfaff, D.W. and McEwen, B.S. Arginine vasopressin levels after daily infusions of antisense oligonucleotides into the supraoptic nucleus. Annals, NY Acad. of Sciences, 689:520-521, 1993.

465. Kaplitt, M.G., Tjuvajev, J., Knott, A., Pfaff, D.W., Gilboa, E., Blasberg, R. Direct transfer of the human interleukin (IL-2) gene into rat brain tumors using replication incompetent viral vectors. Amer. Acad. of Neurology Abstracts, 1993.

466. Galbraith, R.A., Kow, L.-M., Pfaff, D.W. and Kappas, A. Injection of cobalt protoporphyrin into the medial nuclei of the hypothalamus elicits weight loss. Am. J. Physiol., (Regulatory Integrative Comp. Physiol. 32), 263:R805-R812, 1992.

467. Schumacher, M., Coirini, H., Johnson, A.E., Flanagan, L.M., Frankfurt, M., Pfaff, D.W. and McEwen, B.S. The oxytocin receptor: a target for steroid hormones. In Regulatory Peptides, Vol. 45, (ed. by Legros et al.), New York: Elsevier Science Publishers B.V., pp. 115-119, 1993.

468. Grandison, L., Nolan, G. and Pfaff, D.W. Activation of the transcription factor NF-KB in GH3 pituitary cells. Molecular and Cellular Endocrinology, 106: 9-15, 1994.

Grandison, L., Nolan, G. and Pfaff, D.W. The identification of an NF-KB like DNA binding protein and its activation in GH3 cells. Society for Neuroscience Abstracts, (Abstract #642.8), 19:1560, 1993.

469. Hermens, W.T.J.M.C., Kaplitt, M.G., Pfaff, D.W., Oestreicher, A.B., Gispén, W.H. and Verhaagen, J. Expression of the growth-associated protein B-50/GAP-43 via defective herpes simplex virus (HSV) and adenovirus vectors results in a persistent neuron-like morphology in non-neuronal cells. Annual Meeting, American Academy of Neurology, 1994.

470. Funabashi, T., Kleopoulos, S. P., Brooks, P. J., Kimura, F., Pfaff, D. W., Shinohara, K., Mobbs, C.V. Changes in estrogenic regulation of estrogen receptors alpha mRNA and progesterone receptor mRNA in the female rat hypothalamus during aging: an *in situ* hybridization study. Neuroscience Research, 38(1):85-92, 2000.

Funabashi, T., Kleopoulos, S.P., Brooks, P.J., Kato, J., Kimura, F., Pfaff, D.W. and Mobbs, C.V. Regulation of estrogen receptor mRNA and progesterone receptor mRNA by estrogen in female rat hypothalamus during aging. Society for Neuroscience Abstracts, (Abstract #159.14), 19:387, 1993.

471. Gibbs, R.B., Wu, D.-H., Hersh, L.B. and Pfaff, D.W. Effects of estrogen replacement on relative levels of choline acetyltransferase, trkA, and nerve growth factor messenger RNAs in the basal forebrain and hippocampal formation of adult rats. Experimental Neurology, 129:70-80, 1994.

Gibbs, R.B., Wu, D.-H. and Pfaff, D.W. Effects of estrogen on relative levels of CHAT, TRK-A and NGF mRNAs in the rat forebrain and hippocampal formation. Society for Neuroscience Abstracts, (Abstract #8.4), 19:5, 1993.

472. Lauber, A.H., Pfaff, D.W., Alroy, I. and Freedman, L.P. Hypothalamic Estrogen Receptor Binding to a Consensus ERE and a Putative ERE from a Progesterone Receptor Gene. Manuscript completed but never submitted for publication.

Lauber, A.H., Pfaff, D.W., Alroy, I. and Freedman, L.P. Hypothalamic Estrogen Receptor Binding to a Consensus ERE and a Putative ERE from a Progesterone Receptor Gene. Society for Neuroscience Abstracts, (Abstract #289.13), 19:698, 1993.

473. Kow, L.-M., Brown, H.E. and Pfaff, D.W. Activation of protein kinase C in the hypothalamic ventromedial nucleus or the midbrain central gray facilitates lordosis. Brain Research, 660: 241-248, 1994.

Kow, L.-M., Brown, H.E. and Pfaff, D.W. Activation of protein kinase C (PKC) in the hypothalamic ventromedial nucleus (VMN) of the midbrain central gray (MCG) facilitates lordosis in female rats. Society for Neuroscience Abstracts, (Abstract #241.11), 19:586, 1993.

474. Freidin, M. and Pfaff, D.W. Progesterone receptor binding to a consensus PRE using nuclear extracts from brain and other tissues. Society for Neuroscience Abstracts, (Abstract #289.12) 19:698, 1993.

475. Pfafus, J.G., Jakob, A., Kleopoulos, S.P., Gibbs, R.B. and Pfaff, D.W. Sexual stimulation induces fos immunoreactivity within GnRH neurons of the female rat preoptic area: Interaction with steroid hormones. Neuroendocrinology, 60:283-290, 1994.

Pfafus, J.G., Kleopoulos, S.P., Jakob, A.L., Gibbs, R.B. and Pfaff, D.W. Sexual stimulation induces fos protein within GnRH-containing neurons of the female rat preoptic area. Society for Neuroscience Abstracts, (Abstract #416.13), 19:1021, 1993.

476. Brown, H.E., Parhar, I.S., Brooks, P.J. and Pfaff, D.W. Estrogen's induction of preproenkephalin (PPE) mRNA in ventromedial hypothalamus (VMN) of female rats is not augmented by voluntary exercise. Society for Neuroscience Abstracts, (Abstract #202.11), 19:485, 1993.

477. McCarthy, M.M., Felzenberg, E., Robbins, A., Pfaff, D.W. and Schwartz-Giblin, S. Infusions of diazepam and allopregnanolone into the midbrain central gray facilitate open-field and reproductive behavior in female rats. Hormones and Behavior, 29, 279-295, 1994.

Schwartz-Giblin, S., Felzenberg, E.R., Robbins A., Pfaff, D.W. and McCarthy, M.M. Diazepam and allopregnanolone infusions in midbrain central gray facilitate reproductive and open-field behaviors. Society for Neuroscience Abstracts, (Abstract #241.10), 19:586, 1993.

478. Schwanzel-Fukuda, M., Espitia, H.O. and Pfaff, D.W. Survival of luteinizing hormone-releasing hormone (LHRH) neuronal differentiation and migration and the neural cell adhesion molecule (NCAM) "scaffold" despite methotrexate-induced midline craniofacial defects. Society for Neuroscience Abstracts, (Abstract #361.5), 19:873, 1993.

479. Ogawa, S., and Pfaff, D.W. Current status of antisense DNA methods in behavioral studies. Chemical Senses, 1996.

Ogawa, S., Brown, H.E. and Pfaff, D.W. Effects of antisense DNA for progesterone receptor mRNA on progesterin binding in mouse brain. Society for Neuroscience Abstracts, (Abstract #332.11), 19:821, 1993.



480. Kaplitt, M.G., Yin, J., Kwong, A.D., Kleopoulos, S.P., Mobbs, C.V. and Pfaff, D.W. In vivo deletion analysis of the rat preproenkephalin promoter using a defective herpes simplex viral vector. Society for Neuroscience Abstracts, (Abstract #520.4), 19:1259, 1993.

481. Okano, H.J., Pfaff, D.W. and Gibbs, R.B. Expression of EGFR-, p75NGFR-, and PSTAIR (cdc2)-like Immunoreactivity by proliferating cells in the adult rat hippocampal formation and forebrain. Developmental Neuroscience, 15:199-209, 1996.

Okano, H.J., Pfaff, D.W. and Gibbs, R.B. Immunocytochemical and autoradiographic characterization of neuronal stem cells in the adult rat brain. Society for Neuroscience Abstracts, (Abstract #360.14), 19:871, 1993.

482. McCarthy, M.M., Kaufman, L.C., Brooks, P.J., Pfaff, D.W. and Schwartz-Giblin, S. Estrogen modulation of mRNA levels for the two forms of glutamic acid decarboxylase (GAD) in female rat brain. J. of Comp Neurology, 360: 685-697, 1995.

McCarthy, M.M., Kaufman, L.C., Brooks, P.J., Pfaff, D.W. and Schwartz-Giblin, S. Estrogen modulation of mRNA for two forms of glutamic acid decarboxylase (GAD) in rat brain. J. Comp. Neurology, 362: 1-13, 1995.

McCarthy, M.M., Kaufman, L.C., Brooks, P.J., Pfaff, D.W. and Schwartz-Giblin, S. Estrogen modulation of mRNA for two forms of glutamic acid decarboxylase (GAD) in rat brain. Society for Neuroscience Abstracts, (Abstract #489.13), 19:1191, 1993.

483. Brooks, P., Kleopoulos, S., Funabashi, T., Mobbs, C. and Pfaff, DW. Widespread expression and estrogen regulation of PPEIA-3 ' nuclear RNA in the rat brain. Proc Nat Acad Sci USA 94: 14037-14041, (1997).

Brooks, P.J., Funabashi, T., Kleopoulos, S.P., Mobbs, C.V. and Pfaff, D.W. Widespread expression and estrogen regulation of preproenkephalin intron A-like nuclear RNA in rat brain. Society for Neuroscience Abstracts, (Abstract #202.2), 19:483, 1993.

484. Kaplitt, M.G., Kleopoulos, S.P., Yin, J., La Gamma, E.F., Pfaff, D.W. and Mobbs, C.V. In vivo gene transfer into endocrine and neuroendocrine organs of the adult rat using defective herpes simplex viral vectors. The Endocrine Society Abstracts, (Abstract #676), p. 219, 1993.

485. Mobbs, C., Kaplitt, M. and Pfaff, D.W. HIP-70/GRP58/ERp61/PLC- $\alpha$ /CPT: A single gene product and member of the protein disulfide isomerase gene family with thiol-oxidoreductase activity subject to neuroendocrine regulation. In N. Guzman (Editor), PDI Proteins. New York: Dekker, 1997.

486. Flanagan, L.M., Pfaus, J.G., Pfaff, D.W. and McEwen, B.S. Induction of cfos immunoreactivity in oxytocin neurons after sexual activity in female rats. Neuroendocrinology, 58:352-358, 1993.

Flanagan, L.M., Pfaus, J.G., Pfaff, D.W. and McEwen, B.S. Induction of fos immunoreactivity (IR) in oxytocin (OT) neurons after sexual activity in female rats. Society for Neuroscience Abstracts, (Abstract #73.13), 19: 174, 1993.

487. Pfaff, D.W. and Lauber, A.H. Hypothalamus and Hormone-Regulated Behaviors. In Endocrinology (3rd Edition), (ed. L.J. DeGroot), Philadelphia: Saunders, pp.445-457, 1994.

488. Pfaff, D.W., Schwanzel-Fukuda, M., Parhar, I.S., Lauber, A.H., McCarthy, M.M. and Kow, L.M. GnRH neurons and other cellular and molecular mechanisms for simple mammalian reproductive behaviors. In Recent Progress in Hormone Research, Vol. 49, pp. 1-25, 1994.

489. McCarthy, M.M. and Pfaff, D.W. Oxytocin Receptor in Brain and Its Role in Behavior. In Vasopressin, (eds. P. Gross, D. Richter & G. Robertson), Paris: John Libbey & Co. Ltd., pp. 205-217, 1993.

490. Kow, L.-M., Mobbs, C.V. and Pfaff, D.W. Roles of second-messenger systems and neuronal activity in the regulation of lordosis by neurotransmitters, neuropeptides and estrogen: a review. Neuroscience & Biobehavioral Reviews, 18:251-268, 1994.

491. Koibuchi, N., Gibbs, R.B., Jones, K.E., Yamaoka, S., Chin, W.W., Pfaff, D.W. and Suzuki, M. Increase in c-erbA $\alpha$ 2 mRNA in the parvocellular region of the paraventricular nucleus of the hypothalamus following thyroidectomy detected by Quantitative in situ hybridization Histochemistry in the adult male rat. Neuroscience Letters, 164:159-162, 1993.

492. Cohen, R.S. and Pfaff, D.W. Cytology and organization of cell types: Light and electron microscopy. In Neuroscience in Medicine, pp. 21-36, 1995. Philadelphia: Lippincott, edited by P. Michael Conn. (2<sup>nd</sup> edition, 2003)

493. Schwanzel-Fukuda, M. and Pfaff, D.W. GnRH neurons in an interpretation of Kallmann's Syndrome. In Function of Somatic Cells in the Testis, (ed. A. Bartke), New York, NY: Springer-Verlag, pp. 438-447, 1994.

494. Olazabal, U.E., Pfaff, D.W. and Mobbs, C.V. Sex differences in the regulation of heat shock protein 70 kDa and 90 kDa in the rat ventromedial hypothalamus by estrogen. Brain Research, 596:311-314, 1992.

495. Parhar, I.S., Iwata, M., Pfaff, D.W. and Schwanzel-Fukuda, M. Gonadotropin-releasing hormone gene expression in teleosts. Molecular Brain Research, 41:216-227, 1996.

Parhar, I.S., Iwata, M., Pfaff, D.W. and Schwanzel-Fukuda, M. Migration and development of GnRH neurons in the migratory salmon. Abstract, 3rd International Congress of Neuroendocrinology, July 3-8, 1994 Budapest, Hungary.

496. Dutt, A., Kaplitt, M.G., Kow, L.-M. and Pfaff, D.W. Prolactin, Central Nervous System and Behavior: A Critical Review. Neuroendocrinology, 59:413-419, 1994.

497. Wu-Peng, X.S., Pentecost, B.T. and Pfaff, D.W. Cloning and sequence analysis of the rat progesterone receptor gene. Manuscript completed but never submitted for publication.
498. Funabashi, T., Brooks, P.J., Kleopoulos, S.P., Grandison, L., Mobbs, C.V. and Pfaff, D.W. Changes in preproenkephalin messenger RNA level in the rat ventromedial hypothalamus during the estrous cycle. Molecular Brain Research, 28: 129-134, 1995.
- Funabashi, T., Kleopoulos, S.P., Brooks, P.J., Mobbs, C.V., Kimura, F. and Pfaff, D.W. Changes in preproenkephalin (PPE) mRNA levels in the ventromedial hypothalamus (VMH) during the rat estrous cycle. Japanese Neuroscience Society Abstracts, 1993.
499. Funabashi, T., Brooks, P.J., Kleopoulos, S., Mobbs, C.V. and Pfaff, D.W. Luteinizing hormone-releasing hormone receptor messenger ribonucleic acid expression in the rat pituitary during lactation and the estrous cycle. J. of Neuroendocrinology, 6:261-266, 1994.
500. Wood, M.J.A., Byrnes, A.P., Pfaff, D.W., Rabkin, S.D. and Charlton, H.M. Inflammatory effects of gene transfer into the CNS with defective HSV-1 viral vectors. Gene Therapy, 1:283-291, 1994.
501. Pfaff, D.W., Freidin, M.M., Wu-Peng, X.S., Yin, J. Zhu, Y.-S. Competition for DNA steroid response elements as a possible mechanism for neuroendocrine integration. J. Steroid Biochem. Mol. Biol., 49:373-379, 1994.
502. Freidin, M. and Pfaff, D.W. Molecular actions of steroid hormones and their possible relations to reproductive behaviors. In Neurobiological Effects of Sex Steroid Hormones, (Ed. Micevitch P. and Hammer, R.), Cambridge University Press, pp. 350-362, 1995.
503. Gibbs, R.B. and Pfaff, D.W. In situ hybridization detection of trkA mRNA in brain: Distribution, colocalization with p75NGFR and up-regulation by nerve growth factor. J. Comparative Neurology, 341:324-339, 1994.
504. Zhu, Y.-S. and Pfaff, D.W. Protein-DNA binding assay for analysis of steroid-sensitive neurons in the mammalian brain. In Neurobiology of Steroids, Methods in Neurosciences, 22: 245, 1994 (Eds. De Kloet, E.R. & Sutanto, W.), Academic Press, 1994.
505. Pfaff, D.W. and Severino, S.K. Molecular approaches to sex differences in brain functions. In Psychopharmacology of Women - Sex, Gender, and Hormones, (Eds. Jensvold, M.F., Halbreich, U. & Hamilton. J.S.), Amer. Psychiat. Press, Washington, DC., pp. 107-120, 1996.
506. Robbins, A., Ogawa, S., Kumar, N., Pfaff, D., Sundaram K. and Bardin, C.W. Effects of MENT and testosterone on sexual and aggressive behavior in male mice. Hormones and Behavior, MS ready for submission.
- Robbins, A., Ogawa, S., Kumar, N., Pfaff, D., Sundaram K. and Bardin, C.W. Effects of ment and testosterone on sexual and aggressive behavior in male mice. Laurentian Hormone Conference, Abstract, 1992.

507. Rosenfeld, M.R., Meneses, P., Pfaff, D.W. and Kaplitt, M G. Replacement of wild-type p53 by a defective herpes viral (HSV) vector inhibits expression of mutant p53 in a medulloblastoma cell line. Annals, Academy of Neurology, 1994.

508. Priest, C.A. and Pfaff, D.W. Actions of sex steroids on behaviors beyond reproductive reflexes. In CIBA Foundation symposium #191: "Non-reproductive Actions of Sex Steroids", (ed. John Wiley & Sons, Chichester), p. 74-89, 1995.

Priest, C.A. and Pfaff, D.W. Actions of sex steroids on behaviors beyond reproductive reflexes. In CIBA Foundation symposium #191: "Non-reproductive Actions of Sex Steroids", (ed. E. E. Baulieu), 1995.

509. Wood, M.J.A., Byrnes, A.P., Rabkin, S.D., Pfaff, D.W. and Charlton, H.M. Specific patterns of defective HSV-1 gene transfer in the adult central nervous system: Implications for gene targeting. Experimental Neurology, 130: 127-140, 1994.

510. Yin, J., Kaplitt, M.G., Kwong, A.D., and Pfaff, D.W., In situ PCR for in vivo detection of foreign genes transferred into rat brain. Brain Research. 783:347-54, 1998.

Yin, J., Kaplitt, M.G. and Pfaff, D.W. In situ PCR and in vivo detection of foreign gene expression in rat brain. Cell Vision, 1:58-59, 1994.

Yin, J., Kaplitt, M.G., Kwong, A.D., Kleopoulos, S.P. and Pfaff D.W. In situ PCR for in vivo detection of foreign gene transfer in rat brain. Society for Neuroscience, 20:220, 1994.

511. Yin, J., Kaplitt, M.G., Kwong, A.D. and Pfaff, D.W. In vivo promoter analysis for detecting an estrogen effect on preproenkephalin (PPE) transcription in hypothalamic neurons. The Endocrine Society Abstracts, (Abstract #471) p. 318, 1994.

512. Hagihara, K., Wu-Peng, X.S., Funabashi, T., Kato, J. and Pfaff, D.W. Nucleic acid sequence and DNase hypersensitive sites of the 5' region of the mouse progesterone receptor gene. Biochemical Biophysical Research Communications, 205(2): 1093-1101, 1994.

Hagihara, K., Wu-Peng, X.S., Funabashi, T. Kato, J. and Pfaff, D.W. Cloning of mouse progesterone receptor gene promoter. The Endocrine Society Abstract, (Abstract #1705), p. 627, 1994.

513. Schwanzel-Fukuda, M. and Pfaff D.W. Development of GnRH neurons important for the onset of reproductive endocrine and behavioral functions. In "The Neurobiology of Puberty", Endocrine Updates, pp 3-13, (ed. T.M. Plant and P.A. Lee), Society for Endocrinology, 1995.

514. Quiñones-Jenab, V. and Pfaff, D.W. Gender differences in response to stress. In Stress, Gender, and Alcohol-Seeking Behavior, (ed. S. Zakhari, W.A. Hunt), NIAAA Monographs, 29, pp. 125-137, 1995.

515. Dellovade, T.L., Zhu, Y-S and Pfaff, D.W. Potential interactions between estrogen receptor and thyroid receptor relevant for neuroendocrine systems. J. Steroid Biochemistry and Molecular Biology, 53: 27-31, 1995.

516. Eizenberg, O., Kaplitt, M.S., Eitan, S., Pfaff, D.W., Hirschberg, D.L. and Schwartz, M. Linear dimeric interleukin-2 obtained by the use of a defective herpes simplex viral vector: conformation-activity relationship. Molecular Brain Research 26: (1-2) 156-162, 1994.

516a. Johnstone L.E.; Russell, J.A.; Pfaff, D.W.; Douglas, A.J.; Brooks, P.J. Rapid stimulation of oxytocin gene expression in supraoptic nucleus neurons during morphine withdrawal in rats. Adv. Exp. Med. Biol.; 395:205-6. 1995

517. Kaplitt, M.G., Leone, P., Samulski, R.J., Xiao, X., Pfaff, D.W., O'Malley, K.L. and Doring M.J. Long-term gene expression and phenotypic correction using adeno-associated virus vectors in the mammalian brain. Nature Genetics, 8:148-154, 1994.

Kaplitt, M.G., Leone, P., Freese, A., Xiao, Z., Pfaff, D.W., O'Malley, K.L. and Doring, M.J. Adeno-associated virus (AAV) vectors yield safe delivery and long-term expression of potentially therapeutic genes in the adult mammalian brain. Society for Neuroscience, 20:1465, 1994.

518. Parhar, I.S., Pfaff, D.W. and Schwanzel-Fukuda, M. Genes and behavior as studied through GnRH neurons: Comparative and functional aspects. Cellular and Molecular Neurobiology, 15: 107-115, 1995.

519. Zhu, Y.-S. and Pfaff, D.W. DNA binding of hypothalamic nuclear proteins on estrogen response element and preproenkephalin promoter: Modification by estrogen. Neuroendocrinology, 62:454-466, 1995.

Zhu, Y.-S., Freidin, M. and Pfaff, D.W. DNA binding of hypothalamic and pituitary nuclear proteins on ERE and proenkephalin (Penk) promoter. Society for Neuroscience, 20:53, 1994.

520. Parhar, I.S., Iwata, M., Pfaff, D.W. and Schwanzel-Fukuda, M. Embryonic development of gonadotropin-releasing hormone neurons in the sockeye salmon. J. Comparative Neurology, 362:256-270, 1995.

521. Priest, C.A. and Pfaff, D.W. Functional considerations of enkephalinergic projections from the hypothalamic ventromedial nucleus of the rat. Regulatory Peptides, 54:231-232, 1994.

522. Funabashi, T., Brooks, P.J., Weesner G.D. and Pfaff D.W. Luteinizing hormone-releasing hormone receptor messenger ribonucleic acid expression in the rat pituitary during lactation and the estrous cycle. Journal of Neuroendocrinology, 6:261-266, 1994.

523. Ogawa, S. and Pfaff, D.W. Application of antisense DNA method for the study of molecular bases of brain function and behavior. Behavior Genetics, 26(3):279-292, 1996.

524. Schwanzel-Fukuda, M., Crossin, K.L., Pfaff, D.W., Bouloux, P.M.G., Hardelin, J.-P., and Petit, C. Migration of LHRH neurons in early human embryos: Association with neural cell adhesion molecules. J. Comp. Neurol., 366:547-557, 1996.

Schwanzel-Fukuda, M. and Pfaff, D.W. Migration of LHRH neurons in early human embryos: Association with neural cell adhesion molecules. Society for Neuroscience, 20:1491, 1994.

525. Freidin, M., Priest, C. and Pfaff, D.W. Nuclear extracts from rat brain regulate PPE promoter activity in an in vitro transcription assay. Society for Neuroscience, 20:53, 1994.

526. Quiñones-Jenab, V., Jenab, S., Ogawa, S., Funabashi, T., Weesner, G.D., and Pfaff, D.W. Estrogen regulation of gonadotropin-releasing hormone receptor messenger RNA in female rat pituitary tissue. Molecular Brain Research, 38:243-250, 1996.

Quiñones-Jenab, V., Jenab, S., Ogawa, S., Funabashi, T., Weesner, G.D., and Pfaff, D.W. Regulation of rat pituitary gonadotropin-releasing hormone receptor mRNA levels by in situ and slot blot analysis. Society for Neuroscience, 20:90, 1994.

527. Kow, L.-M., Tsai, Y.-F., Weiland, N.G., McEwen, B.S. and Pfaff, D.W. In vitro electropharmacological and autoradiographic analyses of muscarinic receptor subtypes in rat hypothalamic ventromedial nucleus: Implications for cholinergic regulation of lordosis. Brain Research, 694: 29-39, 1995.

Kow, L.-M., Tsai, Y.-F., Weiland, N.G., McEwen, B.S. and Pfaff, D.W. Muscarinic receptor subtypes in rat hypothalamic ventromedial nucleus (VMN): Electropharmacological and autoradiographic analyses relevant to lordosis. Society for Neuroscience, 20:590, 1994.

528. Scott, R.E.M., Wu-Peng, S., Yen, P.M., Chin, W.W. and Pfaff, D.W. Estrogen receptor and thyroid receptor in ventromedial hypothalamus bind to the progesterone receptor gene sequence. Society for Neuroscience, 20:57, 1994.

529. Wu-Peng, X.S. and Pfaff, D.W. Estrogen regulation of the rat progesterone receptor (PR) gene. Society for Neuroscience, 20:56, 1994.

530. Hermens, W.T.J., M.C., Kaplitt, M.G., Holtmaat, A.J., G.D., Oestreicher, A.B., Pfaff, D.W., Gispen, W.H. and Verhaagen, J. B-50 (GAP-43) expression via defective herpes-and adenoviral vectors results in a neuron-like morphology. Society for Neuroscience, 20:661, 1994.

531. Pfaff, D.W., Wu-Peng, X.S., Scott, R. and Zhu, Y.-S. Meeting the constraints upon behavioral expression through neural and genomic interactive mechanisms. In Progress in Brain Research - The Emotional Motor System, (G. Holstege, R. Bandler, and C.B. Saper, Editors), Elsevier, Amsterdam, The Netherlands. Vol. 107, pp. 343-354, 1996.

532. Schwanzel-Fukuda, M. and Pfaff, D.W. The hypothalamic-pituitary unit. In Reproductive Endocrinology, Surgery and Technology. (E.Y. Adashi, J.A. Rock and F. Rosenwaks, editors) Raven Press, New York, Vol. 1, pp. 5-16, 1995.

533. Ogawa, S.; Lubahn, D.B., Korach, K.S. and Pfaff, D.W. Effects of estrogen receptor gene disruption on aggressive behaviors in male mice. Behav. Genet. 26(6): 593. 1996

Ogawa, S., Lubahn, D.B., Korach, K.S., and Pfaff, D.W. Aggressive behaviors of transgenic estrogen receptor knockout male mice. *Annals, N.Y. Academy of Science*, 1995.

534. Kow, L.-M., and Pfaff, D.W. Functional analyses of  $\alpha$ 1-adrenoceptor subtypes in rat hypothalamic ventromedial nucleus neurons. *European Journal of Pharmacology*, 282: 199-206, 1995.

535. Yin, J., Kaplitt, M.G., and Pfaff, D.W. In vivo promoter analysis in the adult central nervous system using viral vectors. In *Viral Vectors* (ed. by M.G. Kaplitt and A.D. Loewy) Academic Press, San Diego, p. 157-171, 1995.

535a. Pfaff, D.W. Molecular strategies for identifying the roles of steroids in behavior. *Biol. Psychiat.* 39(7):12-21. 1996.

536. Quiñones-Jenab, V., Jenab, S., Ogawa, S., Adan, R.A.M., Burbach, P.H., and Pfaff, D.W. Effects of estrogen on oxytocin receptor messenger ribonucleic acid expression in the uterus, pituitary and forebrain of the female rat. *Neuroendocrinology*, 65:9-17, 1997.

537. Quiñones-Jenab, V., Zhang, C., Jenab, S., Brown, H.E., and Pfaff, D.W. Anesthesia during hormone administration abolishes the estrogen induction of preproenkephalin mRNA in ventromedial hypothalamus of female rats. *Molecular Brain Research*, 35:297-303, 1996.

Quiñones-Jenab, V., Zhang, C., Jenab, S., Brown, H.E. and Pfaff, D.W. Anesthesia during hormone administration abolishes the estrogen induction of preproenkephalin mRNA in ventromedial hypothalamus of female rats. *Soc for Neurosci*, (abstr #80.10) 21: p.189, 1995.

538. Yin, J., Kaplitt, M.J. and Pfaff, D.W. In vivo promoter analysis in the adult central nervous system using viral vectors. In *Viral Vectors: Gene Therapy and Neuroscience Applications*. (Ed. Kaplitt, M.J. and Loewy, A.D.) Academic Press p.157-171, 1995.

539. Matesic, D.F., Attardi, B., Dellovade, T., Pfaff, D.W., Germak, J.A. Differential LHRH secretion, dye coupling, and protein expression in two morphologically distinct cell types identified in GTI-7 cultures. *J. Neuroendocrinology*, 9:467-478, 1997.

Matesic, D., Attardi, B., Dellovade, T., Pfaff, D.W., and Germak, J. Differential LHRH secretion by two cell types identified in GTI-7 cultures. *The Endocrine Society Annual Meeting*, (abstract #P3-335) p. 552.

540. Parhar, I., Pfaff, D.W. and Schwanzel-Fukuda, M. Comparative approach to the GnRH neuronal migration problem. *Frontiers In Endocrinology: Puberty Basic and Clinical Aspects, Vol. 10*. (ed. Bergada, C. and Moguilevsky, J.A.) Ares-Serono Symposia Publications, Rome, Italy, pp. 75-83, 1995.

541. Zhu, Y.-S., Dellovade, T.L., and Pfaff, D.W. Gender-specific induction of pituitary RNA by estrogen and its modification by thyroid hormone. *J. Neuroendocrinology*, 9:395-403, 1997.

Zhu, Y.-S., Dellovade, T.L., Yen, P., Chin, W.W., and Pfaff, D.W. Gender-specific growth effects of estrogen as it interacts with thyroid hormones in rat pituitary. The Endocrine Society, (abstract #P1-91) p. 135, 1995.

542. Dellovade, T.L., Zhu, Y.-S., Krey, L., and Pfaff, D.W. Thyroid hormone and estrogen interact to regulate behavior. Proc. Nat. Acad. Sci. USA, 93:12581-12586, 1996.

Dellovade, T.L., Zhu, Y.-S., Krey, L., and Pfaff, D.W. Modifications of estrogen-dependent sexual behavior by thyroid hormones in female rats. The Endocrine Society, (abstract #P1-90) p. 135, 1995.

543. Quiñones-Jenab, V., Ogawa, S., Jenab, S. and Pfaff, D.W. Estrogen regulation of preproenkephalin messenger RNA in the forebrain of female mice. Journal of Chemical Neuroanatomy, 12:29-36, 1996.

Quiñones-Jenab, V., Ogawa, S., Jenab, S. and Pfaff, D.W. Estrogen regulation of preproenkephalin messenger RNA in forebrain of female mice. The Endocrine Society, (abstract #P1-83) p. 133, 1995.

544. Ogawa, S., Lubahn, D.B., Korach, K.S., and Pfaff, D.W. Behavioral effects of estrogen receptor gene disruption in male mice. Proc. Nat. Acad. Sci., USA, 94:1476-1481, 1997.

Ogawa, S., Lubahn, D.B., Korach, K.S., and Pfaff, D.W. Behavioral characteristics of transgenic estrogen receptor knockout male mice: Sexual aggressive and open-field behaviors. The Endocrine Society, (abstract #P1-84) p. 133, 1995.

545. Ogawa, S., Robbins, A., Kumar, N., Pfaff, D.W., Sundaram, K., and Bardin, C.W. Effects of testosterone and 7 $\alpha$ -methyl-19-nortestosterone (MENT) on sexual and aggressive behaviors in two inbred strains of male mice. Hormones and Behavior, 30:74-84, 1996.

546. Ogawa, S., Brown, H.E., Okano, H.J. and Pfaff, D.W. Cellular uptake of intracerebrally administered oligodeoxynucleotides in mouse brain. Regulatory Peptides, 59: 143-149, 1995.

547. Pfaff, D.W. Neurochemical underpinnings of an instinctive behavior and its abnormalities. In Wenner-Gren Internat. Symposium #68, Molecular mechanisms of neuronal communication. (ed. Fuxe, K., Hokfelt, T., et al), Amsterdam: Elsevier, pp. 165-176, 1996.

548. Bakkum, B.W., Pfaff, D.W. and Cohen, R.S. Lordosis-associated synaptic plasticity in the ventromedial hypothalamus (VMH). Society for Neuroscience, (abstract #80.4) 21: p.188, 1995.

549. Ceccatelli, S., Grandison, L., Scott, R.E.M, Pfaff, D.W. and Kow, L.-K. Estradiol regulation of nitric oxide synthase mRNAs in rat hypothalamus. Neuroendocrinology, 64:357-363, 1996.

Ceccatelli, S., Scott, R., Grandison, L., Pfaff, D.W. and Kow, L.-K. Estradiol regulation of nitric oxide synthase mRNA's in rat hypothalamus. Society for Neuroscience, (abstract #742.16) 21: p.1890, 1995.



550. Attardi, B., Tsuji, T., Friedman, R., Zheng, Z.W., Roberts, J.L., Dellovade, T., Pfaff, D.W., Chandran, U., Sullivan, M., and DeFranco, D.B. Glucocorticoid repression of GnRH gene expression and secretion morphologically distinct subpopulations of GT1-7 cells. Mol. Cell. Endocrin. 131:241-255, 1997.

Attardi, B., Tsujii, T., Friedman, R., Zheng, Z.W., Roberts, J.L., Dellovade, T., Pfaff, D.W. and DeFranco, D.B. Glucocorticoid repression of GnRH gene expression and secretion morphologically distinct subpopulations of GT1-7 cells. Society for Neuroscience, (abstract #744.7) 21: p.1895, 1995.

551. Kaplitt, M.G., Smith, J., Ferran, F., Samulski, R.J., Pfaff, D.W., During, M.J., Gandy, S. and Breslow, J. Expression of human apolipoprotein E in rodent brain via an adeno-associated virus vector. Society for Neuroscience, (Abstract #400.8) 21: p.1008, 1995.

552. Priest, C.A., Borsook, D., and Pfaff, D.W. Estrogen and stress interact to regulate the hypothalamic expression of a human proenkephalin promoter- $\beta$ -galactosidase fusion gene in a site-specific and sex-specific manner. J. Neuroendocrinology, 9:317-326, 1997.

Priest, C.A., Borsook, D., Hyman, S.E. and Pfaff, D.W. Estrogen and stress interact to regulate the transcriptional activity of a proenkephalin promoter-b-gal fusion gene in the hypothalamus of transgenic mice. Society for Neuroscience, (abstract #536.18) 21: p.1364, 1995.

553. Zhu, Y. and Pfaff, D. Differential regulation of AP-1 DNA binding activity in rat hypothalamus and pituitary by estrogen. Brain Research., Mol Brain Res. 55: 115-25, (1998).

Zhu, Y.-S. and Pfaff, D.W. Estrogen produces differential and gender-specific regulation of AP-1 DNA binding activity in rat hypothalamus and pituitary. Society for Neuroscience, (abstract #521.20) 21: p.1319 1995.

554. Schwanzel-Fukuda, M. and Pfaff, D.W. Neural cell adhesion molecule (N-CAM)-, L1-and S100-immunoreactivity on the migration route of luteinizing hormone-releasing hormone (LHRH) neurons originating from the olfactory placode of the early human embryo. Society for Neuroscience, (abstract #602.6) 21: p.1527, 1995.

555. Ogawa, S., Quiñones-Jenab, V., Lubahn, D.B., Korach, K.S. and Pfaff, D.W. Forebrain cellular immunoreactivity for steroid receptors and aromatase in transgenic estrogen receptor knockout male mice. Society for Neuroscience, (abstract #80.18) 21: p.191, 1995.

556. Zhang, C., Kow, L.-M. and Pfaff, D.W. Functional analysis of opioid receptor subtypes in the ventromedial hypothalamic nucleus of the rat. European J of Pharmacology, 308:153-159, 1996.

Zhang, C., Kow, L.-M. and Pfaff, D.W. Functional determination of opioid receptor subtypes in the hypothalamic ventromedial nucleus of the rat. Society for Neuroscience, (abstract #533.22) 21: p.1355, 1995.

557. Kow, L.-M., Carson, S.N. and Pfaff, D.W. Phorbol 12, 13-diacetate (PDAc) can mimic the neuronal excitatory action of phenylephrine (PhE). Society for Neuroscience, (abstract #812.11) 21: p.2067, 1995.

558. Schwanzel-Fukuda, M. and Pfaff, D.W. Luteinizing hormone-releasing (LHRH) and neural cell adhesion molecule (NCAM)-immunoreactivity in development of the forebrain and reproductive system. Annales d'Endocrinologie, (Paris), 55: 235-241, 1994.

559. Pfaff, D.W., Kow, L.-M., Zhu, Y.-S., Scott, R.E.M., Wu-Peng, S.X. and Dellovade, T. Hypothalamic cellular and molecular mechanisms helping to satisfy axiomatic requirements for reproduction. Journal of Neuroendocrinology, 8:325-336, 1996.

560. Ogawa, S., Gordan, J.D., Taylor, J., Lubahn, D., Korach, K., Pfaff, D.W. Reproductive Functions Illustrating Direct and Indirect Effects of Genes on Behavior. Hormones and Behavior, 30:487-494, 1996.

561. Vogt, L., Giger, R.J., Ziegler, U., Kunz, B., Buchstaller, A., Hermens, W.T.J.M.C., Kaplitt, M.G., Rosenfeld, M.R., Pfaff, D.W., Verhaagen, J., Sonderegger, P. Continuous renewal of the axonal pathway sensor apparatus by insertion of new sensor molecules into the growth cone membrane. Current Biology, 6:1153-1158, 1996.

562. Zhu, Y.S., Dellovade, T.L., and Pfaff, D.W. Interactions between hormonal and environmental signals on hypothalamic neurons: molecular mechanisms signaling environmental events. Trends in Endocrinology & Metabolism, 8:111-115, 1997.

563. Quiñones-Jenab, V., Jenab, S., Ogawa, S., Inturrisi, C., and Pfaff, D.W. Estrogen regulation of mu-opioid receptor messenger RNA in the forebrain of female rats. Molecular Brain Research, 47:134-138, 1997.

Quiñones-Jenab, V., Jenab, S., Ogawa, S., Inturrisi, E., and Pfaff, D.W. Estrogen regulation of mu- and delta- but not kappa-opioid receptor messenger RNA in the forebrain of female rodents. Society for Neuroscience Abstract, 557.1, p. 1414, 1996.

564. Dellovade, T., Pfaff, D. and Schwanzel-Fukuda, M. The gonadotropin-releasing hormone system does not develop in Small-Eye (Sey) mouse phenotype. Brain Research; Developmental Brain Research 107: 233-40, (1998).

Dellovade, T.L., Pfaff, D.W., and Schwanzel-Fukuda, M. Role of *PAX-6* gene in LHRH and olfactory system development studied in *SEY* mouse phenotype. Society for Neuroscience Abstract, 119.5, p. 287, 1996.

565. Douglas, A., Meeren, H., Johnstone, L., Pfaff, D., Russell, J. and Brooks, P. Stimulation of expression of the oxytocin gene in rat supraoptic neurons at parturition. Brain Research 782: 167-174, (1998).

566. Rachman, I.M., Pfaff, D.W. and Cohen, R.S., NADPH diaphorase activity and nitric oxide synthase immunoreactivity in lordosis-relevant neurons of the ventromedial hypothalamus. Brain Research, 740:291-306, 1997.

567. Zhu, Y.S., Yen, P., Chin, W.W. and Pfaff, D.W. Estrogen and thyroid hormone interaction on regulation of gene expression. Proc. Nat. Acad. Sci., USA, 93:12587-12592, 1996.

Zhu, Y.S., Dellovade, T.L., Yen, P., Chin, W.W. and Pfaff, D.W. Interactions of estrogen (E) and thyroid hormone (T3) on the regulation of gene expression and reproductive behavior. 10th International Congress of Endocrinology Abstract, P1-15, p. 138, 1996.

568. Kow, L. and DW, P. Mapping of neural and signal transduction pathways for lordosis in the search for estrogen actions on the central nervous system. Behavioral Brain Research 92: 169-80, (1998).

569. Nicot, A., Ogawa, S., Y., B., Carr, K. and Pfaff, D. Effects of an intrahypothalamic injection of antisense oligonucleotides for preproenkephalin mRNA in female rats: evidence for opioid involvement in lordosis reflex. Brain Research 777: 60-68, (1997).

Nicot, A., Ogawa, S., Berman, Y., Carr, K.D., and Pfaff, D.W. Reduction of estradiol-induced hypothalamic enkephalin expression by antisense oligonucleotides reduces reflex in female rats. Abstract, Society for Neuroscience, 1997.

570. Pfaff, D.W., and Matthews, T.J. Sex hormones and the basis of sex differences in the brain: studies of molecular mechanisms and of motivation. In U. Halbreich (Editor), American Psychiatric Assn. Press, 1996.

571. Pfaff, D.W., and Peyser, E.R. Molecular studies of hormone-dependent brain mechanisms in relation to the drive concepts of psychoanalysis. In U. Halbreich (Editor), American Psychiatric Assn. Press Series on Hormones and Behavior, 1997.

572. Scott, R. E., X. S. Wu-Peng, et al. (2003). "Gene transfer and in vivo promoter analysis of the rat progesterone receptor using a herpes simplex virus viral vector." Molecular Brain Research, 114(2): 91-100

Scott, R.E.M., Wu-Peng, S., Kaplitt, M.G., and Pfaff, D.W. In vivo promoter analysis of the rat progesterone receptor using an HSV viral vector. Society for Neuroscience Abstract 704.16, p. 1790, 1996.

573. Krebs, C., Jarvis, E. and Pfaff, D. The 70 kDa heat shock cognate protein (Hsc73) gene is enhanced by ovarian hormones in the ventromedial hypothalamus. Proc Natl Acad Sci, USA 96: 1686-91, (1999).

Krebs, CJ, Jarvis, ED, Pfaff, DW. Estrogen and progesterone enhance the expression of the 73 KD heat shock cognate protein (HSC73) in the rat hypothalamus. Soc. Neurosci. Abstr. 81.8, p.199, (1998).

Krebs, C.J., Jarvis, E.D., and Pfaff, D.W. Characterization of progesterone-responsive genes from the female rat hypothalamus isolated by the differential display polymerase chain reaction. Soc. Neurosci. Abstr. (1997).

Krebs, C.J., Jarvis, E.D., Scott, R.E.M., and Pfaff, D.W. Using the differential display polymerase chain reaction to identify progesterone responsive mRNA in the rat hypothalamus. Society for Neuroscience Abstract, 276.1, p. 697, 1996.

574. Kow, L-M., Pfaff, D.W., and Ogawa, S. Functional differences between two G protein isoforms,  $G\alpha_{11}$  and  $G\alpha_q$ : evidence from the use of antisense oligodeoxynucleotides (ODNs) in the study of lordosis. Society for Neuroscience Abstract, 360.17, p. 919, 1996.

575. Dratman, M.B., Pfaff, D.W., Kow, L-M. An electrophysiological approach to the study of thyroid hormone (TH) action in brain measurements of unit activity in brain slices. Society for Neuroscience Abstract, 240.15, p. 602, 1996.

576. Schwanzel-Fukuda, M. and D. W. Pfaff (2002). "Angiogenesis in association with the migration of gonadotropic hormone-releasing hormone (GnRH) systems in embryonic mice, early human embryos and in a fetus with Kallmann's syndrome." Progress in Brain Research 141: 59-77

Schwanzel-Fukuda, M., Pfaff, D.W., and Dellovade, T.L. Vasculogenesis in the nasal mesenchyme of the early human embryo during LH-RH neuronal migration. Society for Neuroscience Abstract, 119.6, p. 287, 1996.

577. Dutt, A., Bergen, H., and Pfaff, D.W. Effect of continuous and discontinuous estrogen treatment on prolactin (PRL) mRNA in the rat pituitary and brain. Society for Neuroscience Abstract, 535.1, p. 1347, 1996.

578. Matthews, T.J., Grigore, M., Tang, L., Kow, L-M., Doat, M. and Pfaff, D.W. Sexual reinforcement in the female rat. J.Experimental Analysis of Behavior 68: 399-410, 1997.

Matthews, T.J., Grigore, M., Kow, L-M., Tang, L., and Pfaff, D.W. Behavioral tests of motivation by female rat to work for access to male rat. Society for Neuroscience Abstract, 360.14, p. 919, 1996.

579. Ogawa, S., and Pfaff, D.W. Genes and the study of reproductive behavior which results from normal or abnormal development. In Reproductive and Developmental Toxicology, (K.S. Korach, Editor). New York: Dekker, 1997.

580. Scott, R.E.M., Wu-Peng, S., Yen, P.M., Chin, W.W., and Pfaff, D.W. Interactions of estrogen-and thyroid hormone receptors on a progesterone receptor estrogen response element (ERE) sequence: A comparison with the vitellogenin A2 Consensus ERE. Molecular Endocrinology, 11:1581-92 1997.

Scott, R.E.M., Wu-Peng, S., Yen, P.M., Chin, W.W., and Pfaff, D.W. Hypothalamic nuclear DNA binding and activity of a progesterone receptor promoter estrogen response element. Internat. Congress of Endocrinology Abstract, P1-17, p. 139, 1996.

581. Kaplitt, M.G., and Pfaff, D.W. Viral vectors for gene delivery and expression in the CNS. METHODS: A Companion to Methods in Enzymology, 10:343-350, 1996.

582. Attardi, B., Pfaff, D., Dellovade, T.L., and DeFranco, D. Stress effects on the reproductive neuroendocrine axis and their possible molecular mechanisms. GnRH Neurons: Gene to Behavior (I.S. Parhar and Y. Sakuma, Editors), Brain Shuppan Publishers, Tokyo, Japan, pp. 429-438, 1997.

583. Nicot, A. and Pfaff, D.W. Antisense oligodeoxynucleotides as specific tools for studying neuroendocrine and behavioral functions: some prospects and problems. J. Neuroscience Methods, 71:45-53, 1997.

584. Mong, J.A., Lazar, J., Dellovade, T.L., Kapadia, M., Detolla, L., Yu, S.-F., Pfaff, D., Houser, P. And McCarthy, M.M. A transgenic mouse expressing a mutated thyroid receptor- $\beta$  has altered glial morphology in the CA3 region of the hippocampus and reduced behavioral sensitivity to estrogen. Soc. Behav. Neuro. Abstract 81. p. 147, 1997

585. Attardi, B, Pfaff, DW and Fink, G. Actions of progesterone on the pituitary in relation to facilitation of the estradiol induced gonadotropin surge in the immature rat. Soc. Neurosci. Abstr. 582.13, p.1453, (1999).

Attardi, B., Scott, R., Pfaff, D., and Fink, G. Pituitary sensitivity to GnRH in relation to inhibition or facilitation of the LH surge by progesterone in immature rats. Abstract, Society for Neuroscience, Abstr. 237.2 1997.

586. Li, F., Pfaff, D., and Fishman, J. Leptin affects estrogen metabolism in mouse hypothalamus. Abstract, Society for Neuroscience, Abstr. 237.8 1997.

587. Dellovade, T., Pfaff, D. and Schwanzel-Fukuda, M. Olfactory Bulb Development is Altered in Small-Eye (Sey) Mice. J Comparative Neurology 402: 402-418, (1998).

Dellovade, TL., Pfaff, D.W., and Schwanzel-Fukuda, M. Olfactory bulb precursor cell proliferation, migration and survival in small-eye (SEY) mice. Abstract, Society for Neuroscience, 1997.

588. Ogawa, S., Taylor, J., Lubahn, D.B., Korach, K.S., and Pfaff, D.W. Reversal of sex roles in genetic female mice by disruption of estrogen receptor gene. Neuroendocrinology. 64:467-470, 1996.

Ogawa, S., Taylor, J., Lubahn, D.B., Korach, K.S., and Pfaff, D.W. Behavioral characterization of gonadectomized estrogen receptor gene deficient (ERKO) female mice. Abstract, Society for Neuroscience, 1997.

589. Kow, L.M., McEwen, B.S., Pfaff, D.W., and Weiland, N.G. G-protein activation in hypothalamic ventromedial nucleus (VMN) by phenylephrine (PhE), and its potentiation by estrogen: autoradiographic evidence. Abstract, Society for Neuroscience, 1997.

590. Rachman, I., Unnerstall, J., Pfaff, D. and Cohen, R. Regulation of neuronal nitric oxide synthase mRNA in lordosis-relevant neurons of the ventromedial hypothalamus following short-term estrogen treatment. Molecular Brain Research 59: 105-108,(1998).

Rachman, I.M. Unnerstall, J.R., Pfaff, D.W., and Cohen, R.S. Short term estrogen regulation of neuronal nitric oxide synthase mRNA in the ventromedial hypothalamus (VMH). Abstract, Society for Neuroscience, 1997.

591. Gordan, J., Attardi, B.J., and Pfaff, D.W. Mathematical exploration of pulsatility in cultured gonadotropin-releasing hormone neurons. Neuroendocrinology, 67:2-17, 1998.

Gordan, J., Attardi, B.J., and Pfaff, D.W. Mathematical exploration of pulsatility in cultured gonadotropin-releasing hormone neurons. FASEB J. Abstract # 1231. 11:212, 1997.

592. Pfaff, D., Delovade, T., and Zhu, Y.-S. Interactions among genes for transcription factors in hypothalamic neurons: Implications for reproductive behaviors. Molecular Psychiatry, 2:448-50, 1997.

593. Attardi, B., Klatt, B., Hoffman, G., Pfaff, D.W. and Smith, M. Facilitation or inhibition of the estradiol-induced gonadotropin surge in the immature rat by progesterone: regulation of GnRH and LH messenger RNAs and activation of GnRH neurons. Journal of Neuroendocrinology 9: 589-99, (1997).

594. Pfaff, D. Hormones, genes, and behavior. Proc Natl Acad Sci U S A. 94: 14213-14216, (1997).

595. Attardi, B, Pfaff, D, Hendry, L. Transcriptional activation by estrogens in GT1-7 cells is not correlated with affinity for the classical estrogen receptor (ER- $\alpha$ ). Soc. Neurosci. Abstr. 827.9, p.2074, (1998).

596. Kow, L. M., K. G. Commons, et al. (2002). "Potentiation of the excitatory action of NMDA in ventrolateral periaqueductal gray by the mu-opioid receptor agonist, DAMGO." Brain Research 935 (1-2): 87-102, 2002.

Kow, L.-M., Shibuya, I., Pfaff, D.W., Ueta, Y., Sasaki, K., Yamashita, H. Potentiation of the increase in cytosolic Ca<sup>++</sup> [Ca<sup>++</sup>]<sub>c</sub> induced with NMDA and glutamate in acutely dissociated cells from ventrolateral periaqueductal gray (vlPAG) and supraoptic nucleus (SON) by  $\mu$  opioid receptor (MOR) agonist, DAMGO. Soc. Neurosci. Abstr. 669.11, p.1675, (1999)

Kow, L-M, Commons, KG, Ogawa, S, Pfaff, DW. Potentiation of the excitatory action of NMDA in ventrolateral periaqueductal gray (vlPAG) by the  $\mu$ -opioid receptor (MOR) agonist, DAMGO. Soc. Neurosci. Abstr. 446.13, p.1133, (1998).

597. Nomura, M., K. S. Korach, et al. (2003). "Estrogen receptor beta (ERbeta) protein levels in neurons depend on estrogen receptor alpha (ERalpha) gene expression and on its ligand in a brain region-specific manner." Brain Research; Molecular Brain Research **110**(1): 7-14

Ogawa, S, Krebs, CJ, Korach, KS, Pfaff, DW. Forebrain steroid receptor immunoreactive cells in neonatal and prepubertal estrogen receptor- $\alpha$  gene deficient (ERKO) mice. Soc. Neurosci. Abstr. 81.7, p.199, (1998).

598. Dellovade, TL., Schwanzel-Fukuda, M., Gordan, J. and Pfaff, D. Aspects of GnRH neurobiology conserved across vertebrate forms. General and Comparative Endocrinology 112: 276-282, (1998).

599. Gogos, J., Morgan, M., Luine, V., Santha, M., Ogawa, S., Pfaff, D. and Karayiorgou, M. Catechol-O-methyltransferase-deficient mice exhibit sexually dimorphic changes in catecholamine levels and behavior. Proc. Nat. Acad. Sci., USA 95: 9991-9996, (1998).

600. Ogawa, S., Eng, V., Taylor, J., Lubahn, D., Korach, K. and Pfaff, D. Roles of estrogen receptor-alpha gene expression in reproduction-related behaviors in female mice. Endocrinology 139: 5070-5081, (1998).

Ogawa, S., Lubahn, D.B., Korach, K.S., and Pfaff, D.W. Behavioral masculinization in estrogen receptor gene deficient transgenic female mice. Society for Neuroscience Abstract, 276.8, p. 698, 1996.

601. Ogawa, S. and Pfaff, D. Current status of antisense DNA methods in behavioral studies. Chemical Senses 23: 249-55, (1998).

602. Ogawa, S. and Pfaff, D.W. Genes and the study of reproductive behavior which results from normal or abnormal development. Reproductive and Developmental Toxicology. K. S. Korach. New York, Dekker: 181-199 (1998).

603. Ogawa, S., Washburn, T., Taylor, J., Lubahn, D., Korach, K. and Pfaff, D. Modifications of testosterone-dependent behaviors by estrogen receptor-alpha gene disruption in male mice. Endocrinology 139: 5058-5069, (1998).

604. Pfaff, D. Hormonal and environmental control of lordosis behavior: Neural and molecular mechanisms. European Journal of Neuroscience 10: 330, (1998).

605. Pfaff, D., Dellovade, T., Chan, J., Zhu, Y., Kia, K., Vennstrom, B. and Forrest, D. Interactions between oestrogen receptors and thyroid hormone receptors as nuclear proteins in hypothalamic neurons. J Physiology -London 509P: 14S, (1998).

606. Rachman, I., Unnerstall, J., Pfaff, D. and Cohen, R. Estrogen alters behavior and forebrain c-fos expression in ovariectomized rats subjected to the forced swim test. Proc Natl Acad Sci, USA 95: 13941-13946, (1998).

Rachman, IM, Unnerstall, JR, Pfaff, DW, Cohen, RS. Estrogen alters behavior and forebrain c-fos expression in rats subjected to the forced swim test. Soc. Neurosci. Abstr. 465.11, p.1182, (1998).

607. Sommer, W., Pfaff, D. and Ogawa, S. Tissue distribution, cellular uptake, and intracellular localization and stability of centrally administered oligonucleotides in the brain: Implications for behavioral and physiological effects of antisense oligonucleotides. Modulating Gene Expression by Antisense Oligonucleotides to Understand Neural Functioning. M. McCarthy. Boston, Kluwer Academic Publishers: 9-26 (1998).

608. Yin, J., Kaplitt, M., Kwong, A. and Pfaff, D. In situ PCR for in vivo detection of foreign genes transferred into rat brain. Brain Research 783: 347-54, (1998).

609. Dellovade, T., Zhu, Y. and Pfaff, D. Thyroid hormones and estrogen affect oxytocin gene expression in hypothalamic neurons. J. of Neuroendocrinology 11: 1-10, (1999).

Dellovade, T.L., Zhu, Y.-S. and Pfaff, D.W. Thyroid hormone and estradiol alter oxytocin gene expression in the paraventricular nucleus. Society for Neuroscience, 21: (abstract #80.5) p.189, 1995.

610. Dellovade, T., Kia, H., Zhu, Y.-S. and Pfaff, D. Thyroid hormone coadministration inhibits the estrogen-stimulated elevation of preproenkephalin mRNA in female rat hypothalamic neurons. Neuroendocrinology 70: 168-174, (1999).

Pfaff, D.W., Zhu, Y.-S., Dellovade, T., Yen, P. and Chin, W.W. Interactions of estrogen and thyroid hormone on the regulation of preproenkephalin (PPE) gene expression in the hypothalamus and striatum of female rats. Society for Neuroscience, (abstract #80.6) 21: p.189, 1995.

611. Commons, K., Kow, L., Milner, T. and Pfaff, D. In the ventromedial nucleus of the rat hypothalamus, GABA-immunolabeled neurons are abundant and are innervated by both enkephalin- and GABA-immunolabeled axon terminals. Brain Res 816: 58-67, (1999).

Commons, K.G., Milner, T.A., and Pfaff, D.W. Ultrastructural relationship between neurons expressing immunoreactive enkephalin and GABA labeling in the ventral medial nucleus of the rat hypothalamus. Society for Neuroscience Abstract, 519.11, p. 1308, 1996.

612. Commons, K., Van Bockstaele, E. and Pfaff, D. Frequent colocalization between mu opioid and NMDA-type glutamate receptors in rat periaqueductal gray neurons. J Comparative Neurology 408: 549-559, (1999).

Commons, K.G., and Pfaff, D. Subcellular localization of MU opioid receptor in the rat periaqueductal gray as determined by immunohistochemistry and electron microscopy. Abstract, Society for Neuroscience, 1997.

613. Commons, K., Aicher, S., Kow, L.-M. and Pfaff, D. Pre-and post synaptic relationships of  $\mu$ -opioid receptors to GABA-labeled and medullary-projecting periaqueductal gray neurons. J. Comparative Neurology, 419 (4) 532-42, 2000.



Commons, KG, VanBockstaele, EJ, Pfaff, DW, Kow, L-M. Ultrastructural analysis of the cellular sites mediating mu opioid receptor (MOR) action in the ventrolateral periaqueductal gray (vlPAG). Soc. Neurosci. Abstr. 446.12, p.1133, 1998.

Commons, KG, VanBockstaele, E.J., Kow, L-M, Beck, SG, Pfaff, DW. Distribution of G Protein  $\alpha$  subunits Gi, Go and Gz with respect to the mu opioid receptor in the periaqueductal gray. Soc Neurosci. Abstr. 591.5, p.1476, (1999).

Commons, K.G., Aicher, S., Kow, L.-M., Pfaff, D.W. Medullary projecting cells in the periaqueductal gray contain mu opioid receptor. Int. Narcotics Res. Conf., Abstr. 64 (1999)

614. Kia, S.H.K., Yuen, G., Krebs, C. J. and Pfaff, D. W. Co-expression of estrogen and thyroid hormone receptors in individual hypothalamic neurons. J. Comparative Neurology, 437:286-295, (2001).

Kia, HK, Krebs, CJ, Koibuchi, N, Chin, WW, Pfaff, DW. Estrogen and thyroid hormone receptor gene expression in mouse brain: a double-label in situ hybridization study. Soc. Neurosci. (Abstr. 245.18) p614, (1999). )

615. Krebs, C. and Pfaff, D. W. Expression of the SCAMP-4 gene, a new member of the secretory carrier membrane protein family, is repressed by progesterone in brain regions associated with female sexual behavior. Molecular Brain Research, 88:144-154, 2001

Krebs, CJ, Jarvis, ED, Pfaff, DW. Expression of a novel member of the secretory carrier membrane protein family, SCAMP-25, is repressed by progesterone in the ventromedial hypothalamus. Soc. Neurosci. Abstr. 546.12, p.1356, (1999).

616. Geary, N., Asarian, L., Korach, K.S., Pfaff, D.W. and Ogawa, S. Deficits in E2-dependent control of feeding, weight gain and cholecystokinin satiation in ER- $\alpha$  null mice. Endocrinology, 142(11):4751- 4757. (2001).

Geary, N, Asarian, L, Chan, J, Korach, K, Pfaff, DW and Ogawa, S. Estradiol (E) treatment does not affect food intake (FI) or body weight (BW) in ovariectomized (OVX) estrogen receptor- $\alpha$  knockout (ER $\alpha$ KO) mice. Soc. Neurosci. Abstr. 35.3, p.77, (1999).

617. Agmo, A. and Pfaff, D. Research on the neurobiology of sexual behavior at the turn of the millennium. Behavioral Brain Research 105: 1-4, (1999).

618. Frohlich, J., Ogawa, S., Morgan, M., Burton, L. and Pfaff, D. Hormones, genes and the structure of sexual arousal. Behavioral Brain Research 105: 5-27, (1999).

619. Ogawa, S., Chan, J., Chester, A.E., Gustafsson, J., Korach, K. and Pfaff, D. Survival of reproduction-related behaviors in male and female estrogen receptor  $\beta$  deficient ( $\beta$ ERKO) male and female mice. Proc Natl Acad Sci, USA 96: 12887-12892, (1999).

Ogawa, S, Korach, KS, Gustafsson, J, Pfaff, DW. Survival of reproductive behaviors in estrogen receptor  $\beta$  gene deficient ( $\beta$ ERKO) male mice. *Soc. Neurosci. Abstr.* 245.15, p.614, (1999).

620. Ogawa, S. and Pfaff, D. Genes participating in the control of reproductive behaviors. Genetic Influences on Neural and Behavioral Function. D. W. Pfaff, W. Berrettini, T. Joh and S. Maxson. Boca Raton, CRC Press, pp. 417-430 (1999).

621. Pfaff, D., Kia, H. and Zhu, Y.-S. Cold stress and its implications for thyroid and reproductive physiology: molecular and behavioral data. Control Mechanisms of Stress and Emotion: Neuroendocrine-Based Studies. H. Yamashita, J. Funder, J. Verbalis, Y. Ueta and E. Yutaka. Amsterdam, Elsevier: 29-32 (1999).

622. Pfaff, D., Ogawa, S. and Kow, L.-M. Neural oxytocinergic systems as genomic targets for hormones and as modulators of hormone-dependent behaviors. Regulatory Peptides and Cognate Receptors. D. Richter. Berlin, Springer: 91-105 (1999).

623. Pfaff, D.W. Introduction: Genetic influences on the nervous system and behavior. Genetic Influences on Neural and Behavioral Function. D. W. Pfaff, W. Berrettini, T. Joh and S. Maxson. Boca Raton, CRC Press, pp. 1-12 (1999).

624. Pfaff, D. Lordosis. Encyclopedia of Reproduction. E. Knobil and J. Neill. San Diego, Academic Press. 2: 1074-1075 (1999).

625. Zhu, Y.-S., Cai, L.Q., You, X., Duan, Y. Imperato-McGinley, J., Chin, W.W. and Pfaff, D.W. Molecular analysis of estrogen induction of preproenkephalin gene expression and its modulation by thyroid hormones. Molecular Brain Research, 91:23-33, 2001.

Zhu, Y.-S., Ling, Q., Cai, L.Q., Imperato-McGinley, J., and Pfaff, D.W. Regulation of preproenkephalin (PPE) gene expression by estrogen and its interaction with thyroid hormone. Abstract, Society for Neuroscience, 1997.

626. Morgan, M., Dellovade, T.L. and Pfaff, D.W. Effect of thyroid hormone administration on estrogen-induced sex behavior in female mice. Hormones and Behavior, 37: 15-22 (2000).

Morgan, M.A., Dellovade, T.L., Ogawa, S., and Pfaff, D.W. Female mouse sexual behavior is regulated by thyroid hormones and estrogen. Abstract, Society for Neuroscience, 1997.

627. Alves, S., McEwen, B., Hayashi, S., Korach, K., Pfaff, D. and Ogawa, S. Estrogen-regulated progesterone receptors are found in the midbrain raphe but not hippocampus of estrogen receptor alpha ( $ER\alpha$ ) gene disrupted mice. J Comp Neurol, 427(2): 185-195 2000.

Alves, S, McEwen, B, Korach, K, Pfaff, DW, Ogawa, S. Estrogen-regulated progesterone receptors are found in serotonin cells in the  $ER\alpha$ KO mouse. *Soc. Neurosci. Abstr.* 581.2, p.1448, 1999.

628. Commons, K. and Pfaff, D. Anatomical basis for enkephalin mediated disinhibition in the ventromedial nucleus of the hypothalamus. J Chemical Neuroanatomy, 430(2):200-8, 2001.

629. Dellovade, TL, Chan, J, Vennstrom, B, Forrest, D, Pfaff, DW. The two thyroid hormone receptor genes have opposite effects on estrogen stimulated sex behaviors. Nature Neurosci. 3(5):472-475 (2000).

630. Dellovade, T. L., J. P. Hardelin, et al. (2003). Anosmin-1 immunoreactivity during embryogenesis in a primitive eutherian mammal. Brain Research; Developmental Brain Research 140(2): 157-67.

Dellovade, TL, Hardelin, JP, Soussi-Yanicostas, V, Pfaff, DW, Schwanzel-Fukuda, M, Petit, C. Anosmin-I immunoreactivity during embryogenesis in a primitive eutherian mammal.

631. Krebs, C., Jarvis, E., Chan, J., Lydon, J., Ogawa, S. and Pfaff, D. A membrane -associated progesterone binding protein, 25-Dx, is regulated by progesterone in brain regions involved in female reproductive behaviors. Proc Natl Acad Sci, USA 97(23):12816-12821 (2000).

632. Ogawa, S. and Pfaff, D. Genetic contributions to the sexual differentiation of behavior. In Sexual Differentiation of the Brain. (Ed.) A. Matsumoto. Boca Raton, CRC Press, 11-20 (2000).

633. Schwanzel-Fukuda, M. and Pfaff, D. The structure and function of the nervus terminalis. Handbook of Olfaction and Gustation, 1st Edition. R. Doty. New York, Dekker (2000).

634. Pfaff, D., Vasudevan, N., Kia, H., Zhu, Y.-S., Chan, J., Garey, J., Morgan, M. and Ogawa, S. Estrogens, brain and behavior: studies in fundamental neurobiology and observations related to women's health. J Steroid Biochemistry and Mol. Biol. 74(5):365-373 (2000). (Nobel-Symposium paper).

635. Morgan, MA and Pfaff, DW. Effects of estrogen on activity and fear-related behaviors in mice. Hormones and Behavior, 40(4): 472-82. (2001).

Morgan, MA and Pfaff, DW. Effects of estrogen on fear-related assays in female mice. Soc. Neurosci. Abstr. 350.13, p.873, 1999.

636. Vasudevan, N., Zhu, YS, Daniel, S, Koibuchi, N, Chin, WW, Pfaff, DW. Crosstalk between estrogen receptors and thyroid hormone receptor isoforms results in differential regulation of the preproenkephalin gene. J. Neuroendocrinology 13: 779-790, 2001.

Vasudevan, N, Krebs, CJ, Zhu, YS, Daniels, S, Koibuchi, N, Chin, WW, Pfaff, DW. Thyroid hormone affects estrogen mediated induction of the rat preproenkephalin gene. Soc. Neurosci. (Abstr. #245.17), p.614, 1999.

637. Ragnauth, A., Schuller, A., Morgan, M., Chan, J., Ogawa, S., Bodnar, R.J., Pintar, J., Pfaff, D.W. Female Preproenkephalin knockout mice display altered emotional responses. Proc. Nat. Acad. Sci. USA, 2001 98(4): 1958-1963.

Ragnauth, A., Schuller, A., Chan, J., Ogawa, S., Pintar, J., Bodnar, R.J., Pfaff, D.W. Female Preproenkephalin knockout mice display altered emotional responses. Soc. Neurosci.(Abstr. 536.6), p.1356, 1998.

638. Pfaff, D.W, Vasudevan, N., Attardi, B. Neuroendocrine regulation of sexual behavior. In Neuroendocrinology in Physiology and Medicine. Conn, P. and Freeman, M., Eds. Humana Press, 287-299, 2000.

639. Frohlich, J., M. Morgan, et al. (2002). Hormonal and genetic influences on behavioral dispositions related to reproduction. Archives Women Mental Health 5(4): 151-60

640. Frohlich, J., Morgan, M., Ogawa, S., Burton, L. and Pfaff, D. W. Statistical analysis of measures of arousal in ovariectomized female mice. Hormones and Behavior, 39: 39-47, 2001.

641. Garey, J., Morgan, M.A., Frohlich, J., McEwen, B.S. and Pfaff, D.W. Effects of the phytoestrogen, coumestrol, on locomotor and fear-related behaviors in female mice. Hormones and Behavior 40(1): 65-76 (2001).

Garey, J., Morgan, M.A., McEwen, B.S. and Pfaff, D.W. Effects of the phytoestrogen, coumestrol, on locomotor and fear-related behaviors in female mice. Society for Neuroscience Abstracts, (Abstract # 177. 20) 26:484. 2000

642. Ogawa, S., Chester, A. E., Hewitt, S. C., Walker, V. R., Gustafsson, J-A., Smithies, O., Korach, K. S., Pfaff, D. W. Abolition of male sexual behaviors in mice lacking estrogen receptors  $\alpha$  and  $\beta$  ( $\alpha\beta$ ERKO). Proceedings of the National Academy of Sciences, U. S.A. 97(26): 14737-14741, 2000.

Ogawa, S., Chester, A. E., Hewitt, S. C., Walker, V. R., Gustafsson, J-A., Smithies, O., Korach, K. S., Pfaff, D. W. Abolition of male sexual behaviors in mice lacking estrogen receptors  $\alpha$  and  $\beta$  ( $\alpha\beta$ ERKO). Society for Neuroscience Abstracts. (Abstract # 472.2) 26:1273, 2000.

643. Kia, K., Vasudevan, N., Pfaff, D. W. New concepts in the neuroendocrine regulation of female reproductive behavior. In Endocrine Basis of Reproductive Function (Ed.) M. Filicori Bologna, Italy: Monduzzi Editore p. 69-76, 2000.

644. Chan, J., Ogawa, S., Pfaff, D. W. Reproduction-related behaviors of Swiss-Webster female mice living in a cold environment. Proceedings of the National Academy of Sciences, U. S.A. 98(2): 700-704, 2001.

645. Ogawa, S., Krebs, C. J., Zhu, Y.S., Pfaff, D. W. Genes participating in reproductive behaviors. In Genetic Influences on Neural and Behavioral Functions, pp. 417-430, 1999.

646. Pfaff, D.W. Global effects of estrogens in the adult central nervous system. In Hormone Replacement Therapy and Osteoporosis. Editors: J. Kato, H. Minaguchi and Y. Nishino. Berlin: Springer-Verlag, p. 63-74, 2000.

647. Scott, R.E.M., Wu-Peng, S. and Pfaff, D.W. Regulation and expression of progesterone receptor mRNA isoforms A and B in the male and female rat hypothalamus and pituitary following estrogen treatment: a comparison. J of Neuroendocrinology, 14(3):175-83, 2002 Mar.  
648.

649. Commons, K. G. and D. W. Pfaff (2001). "Ultrastructural evidence for enkephalin mediated disinhibition in the ventromedial nucleus of the hypothalamus." J Chem Neuroanat 21(1): 53-62, 2001

Commons, K.G., VanBlockstaele, E.J., Kow, L-M., Beck, S.G., Pfaff, D. W. Anatomical interaction between MOR and multiple G protein alpha subunits. INRC, 2000.

650. Krzanowska, E.K., Ogawa, S., Pfaff, D.W. and Bodnar, R. J. Reversal of sex differences in morphine analgesia elicited from the ventrolateral periaqueductal gray in rats by neonatal hormone manipulations: an organizational role for gonadal hormones in pain inhibition. Brain Research. 929(1):1-9, 2002

Krzanowska, E.K., Znamensky, V., Ragnauth, A., Ogawa, S., Pfaff, D.W., Bodnar, R.J. Neonatal gonadectomy alters patterns of sex differences in morphine analgesia elicited from periaqueductal gray in rats. Society for Neuroscience Abstracts. (Abstract # 158.10) 26:436, 2000.

651. Vasudevan, N., Koibuchi, N., Chin, W.W. and Pfaff, D. W. Differential crosstalk between estrogen receptor (ER) $\alpha$  and ER $\beta$  and the thyroid hormone receptor isoforms results in flexible regulation of the consensus ERE. Molecular Brain Research, 95 (1-2):9-17, 2001.

Vasudevan, N., Zhu, Y-S., Koibuichi, Chin, W. W. and Pfaff, D.W. Differential crosstalk between estrogen receptor  $\alpha$  and  $\beta$  and the thyroid hormone receptor results in flexible regulation of the consensus ERE. Society for Neuroscience Abstracts. (Abstract # 417.1) 26:1105, 2000.

652. Nomura, M., Durback, L., Chan, J., Gustafsson, J-A., Smithies, O., Korach, K. S., Pfaff, D. W. and Ogawa, S. Genotype/age interactions on aggressive behavior in gonadally intact estrogen receptor  $\beta$  knockout ( $\beta$ ERKO) male mice. Hormones and Behavior . 41(3):288-96, 2002.

Nomura, M., Ueta, Y., Chan, J., Gustafsson, J-A., Smithies, O., Korach, K. S., Pfaff, D. W. and Ogawa, S. Genotype/age interactions on aggressive behavior in gonadally intact estrogen receptor  $\beta$  knockout male mice. Society for Neuroscience Abstracts. (Abstract # 472.1) 26:1273, 2000.

653. Kia, H. K., G. Yuen, et al. (2002). "Colocalization of estrogen receptor alpha and NMDA-2D mRNAs in amygdaloid and hypothalamic nuclei of the mouse brain." Brain Res Mol Brain Res 104(1): 47-54

Kia, S.H.K., Yuen, G., Krebs, C. J. and Pfaff, D. W. Neuronal co-expression of NMDA receptors and estrogen  $\alpha$  mRNAs in the mouse brain. Society for Neuroscience Abstracts. (Abstract # 544.6) 26:1454, 2000).

654. Vasudevan, N., Davidkova, G., Zhu, YS, Koibuchi, N, Chin, WW and Pfaff, D.W. Differential interactions of estrogen receptor and thyroid hormone receptor isoforms on the rat oxytocin receptor promoter leads to differences in transcriptional regulation. Neuroendocrinology, 74 (5): 309-324, 2001.

655. Pfaff, D. W. Precision in mouse behavior genetics. PNAS, 98: 5957-5960, 2001.

656. Pfaff, D.W., Frohlich, J., Morgan, M. Hormonal and genetic influences on arousal, sexual and otherwise. Trends In Neuroscience, 25:45-50, 2002.

657. Pfaff, D.W. and Agmo, A. Arousal mechanisms serving reproductive motivation underlying reproductive behaviors. In Steven's Handbook of Experimental Psychology, Third Edition (Ed. C.R. Gallistel) New York: Wiley, Vol 3, Chapter 17, pp. 709-736, 2002.

658. Klein, L. C., M. M. Stine, et al. (2003). "Maternal nicotine exposure increases nicotine preference in periadolescent male but not female C57B1/6J mice." Nicotine Tobacco Research 5(1): 117-24.

659. Morgan, M. and Pfaff, D.W. Estrogen's effects on activity, anxiety and fear in two mouse strains. Behav Brain Res. 132(1):85-93, 2002 Apr 15.

660. Vasudevan, N. Kow, L-M., and Pfaff, D.W. Early membrane estrogenic effects required for full expression of slower genomic actions in a nerve cell line. PNAS , 98(21):12267-71, 2001 Oct 9.

661. Vasudevan, N., S. Ogawa, and Pfaff, D.W. (2002). "Estrogen and thyroid hormone receptor interactions: physiological flexibility by molecular specificity." Physiological Reviews 82(4): 923-44

662. Frohlich, J., Morgan, M., Ogawa, S., Burton, L. and Pfaff, D. W. Statistical Analysis of Measures of Arousal in Ovariectomized Female Mice. Hormones and Behavior, Vol 39:39-47, 2001.

663. Pfaff DW, Ogawa S, Kia K, Vasudevan N, Krebs C, Frohlich J and Kow LM. "Genetic mechanisms in neural and hormonal controls over female reproductive behaviors. In: Pfaff DW, Arnold A, Etgen A, Fahrbach S, and Rubin R. (eds). Hormones, Brain and Behavior. Vol. 3, Chapter 47, pp 441-510. San Diego, CA: Academic Press (2002).

664. Ragnauth, A., Brewer, C., Ogawa, S., Muglia, L., Pfaff, DW, Kow, L.M. (2004). Vasopressin stimulates ventromedial hypothalamic neurons via oxytocin receptors in oxytocin gene knockout male and female mice. Neuroendocrinology, 80: 92-99, (2004).

Kow, L.M., Ragnauth, A., Brewer, C., Ogawa, S. and Pfaff, DW. Arginine vasopressin (AVP) stimulates oxytocin-responsive neurons in the hypothalamus of oxytocin (OT) gene knockout (OTKO) mice. Society for Neuroscience Abstracts. (Abstract # 90.3) 27:2001.

665. Schlenker, E. H., S. N. Hansen, et al. (2002). "Gender comparisons of control of breathing and metabolism in conscious mice exposed to cold." Neuroendocrinology **76**(6): 381-9

Schlenker, EH., Hansen, S. and Pfaff, D.W. Gender differences in control of breathing and metabolism in conscious mice exposed to cold. Society for Neuroscience Abstracts. (Abstract # 243.11) 27: 2001.

666. Mitra, S. W., E. Hoskin, et al. (2003). "Immunolocalization of estrogen receptor beta in the mouse brain: comparison with estrogen receptor alpha." Endocrinology **144**(5): 2055-67

Alves, SE., McEwen, BS., Hoskin, E., Gustafsson, JA., Korach, KS., Pfaff, DW. and Ogawa, S. Regional differences in estrogen regulation of progesterin receptor: evidence from the estrogen receptor beta ( $\beta$ ) gene disrupted mouse. Society for Neuroscience Abstracts. (Abstract # 407.9) 27: 2001.

667. Fossella, J., T. Sommer, et al. (2002). "Assessing the molecular genetics of attention networks." BMC Neurosci **3**(1): 14-27.

Fossella, J., Fan, J., Wu, Y., Sommer, T., Pfaff, DW. and Posner, MI. Genetic analysis of attention network efficiency. Society for Neuroscience Abstracts. (Abstract # 417.2) 27: 2001.

668. Ogawa, S., J. Chan, et al. (2003). "Estrogen increases locomotor activity in mice through estrogen receptor alpha: specificity for the type of activity." Endocrinology **144**(1): 230-9.

Ogawa, S., Chan, J., Korach, K.S. and Pfaff, DW. Estrogen facilitates running wheel activity via estrogen receptor- $\alpha$ . Society for Neuroscience Abstracts. (Abstract # 534.14) 27: 2001.

669. Ragnauth, A., Devidze, N., Moy, V., Finley, K., Goodwillie, Kow, LM., and Pfaff, DW. Female oxytocin gene knockout (OTKO) mice in a semi-natural environment (SNE) display exaggerated aggressive behaviors. Genes, Brain & Behavior, (2005). **4**(4):229-39

Ragnauth, A., Moy, V., Brewer, C., Kow, LM., Ogawa, S. and Pfaff, DW. Female oxytocin gene knockout (OTKO) mice in a semi-natural environment (SNE) exhibit altered aggressive behaviors. Society for Neuroscience Abstracts. (Abstract # 746.1) 27: 2001.

670. Garey, J., Kow, L-M, Huynh, W., and Pfaff, D. W. Temporal and spatial quantitation of reproductive behaviors among mice housed in a semi-natural environment. Hormones and Behavior, **42**(3):294-306, 2002.

671. Yuan, L., C. Brewer and D.W. Pfaff (2002). "Immediate-early Fos protein levels in brainstem neurons of male and female gonadectomized mice subjected to cold exposure." Stress **5**(4): 285-94

Yuan L., Brewer, C., Pfaff, D.W. Immediate – Early c-Fos protein levels in brainstem neuron of male and female gonadectomized mice subjected to cold exposure. Society for Neuroscience Abstracts. (Abstract # 944.11) 27: 2001.

672. Fossella, J., M. I. Posner, et al. (2002). "Attentional phenotypes for the analysis of higher mental function." ScientificWorldJournal 2(1): 217-23.

673. Ogawa, S., Korach, K.S., and D.W. Pfaff (2002). "Differential roles of two types of estrogen receptors in reproductive behavior." Current Opinion In Endocrinology & Diabetes, 9:224-229.

674. Musatov, S., J. Roberts, et al. (2002). "A cis-acting element that directs circular adeno-associated virus replication and packaging." J. Virology 76(24): 12792-802.

675. Frohlich, J., M. Morgan, et al. (2002). "Statistical analysis of hormonal influences on arousal measures in ovariectomized female mice." Hormones and Behavior 42(4): 414-23.

676. Vasudevan, N., Kia, H.K., Inoue, S., Muramatsu, M. and Pfaff, D.W. (2002). "Isoform specificity for oestrogen receptor and thyroid hormone receptor genes and their interactions on the NR2D gene promoter." J Neuroendocrinol 14(10): 836-42.

677. Mong, J. A., C. Krebs, and D.W. Pfaff (2002). "Microarrays and differential display PCR-tools for studying transcript levels of genes in neuroendocrine systems." Endocrinology 143(6): 2002-6.

678. Choleris, E., J. A. Gustafsson, et al. (2003). "An estrogen-dependent four-gene micronet regulating social recognition: a study with oxytocin and estrogen receptor-alpha and -beta knockout mice." Proceedings, National Academy Sciences 100(10): 6192-7.

Choleris, E., Pfaff, D.W., Ogawa, S.. "Social recognition and social discrimination are similarly impaired in both oxytocin (ot) and estrogen receptor beta (er)-beta knockout female mice." Society for Neuroscience Abstracts (#380.17), 2002.

679. Mong, J. A., N. Devidze, et al. (2003). "Estradiol differentially regulates lipocalin-type prostaglandin D synthase transcript levels in the rodent brain: Evidence from high-density oligonucleotide arrays and in situ hybridization." Proc National Academy Sciences, 100(1): 318-23.

Mong, J.A., Devidze, N., Choleris, E., Pfaff, D.W. "Estradiol (E2) differentially regulates prostaglandin D synthetase (PGDS) mRNA in ventrolateral preoptic area (VL-POA) and medial basal hypothalamus (MBH) of adult female mice." Society for Neuroscience Abstracts (#574.4), 2002.

680. Nomura, M., E. McKenna, Korach, K. S., Pfaff, D. W. Ogawa, S. (2002). "Estrogen receptor-beta regulates transcript levels for oxytocin and arginine vasopressin in the hypothalamic paraventricular nucleus of male mice." Molecular Brain Research 109 (1-2): 84-94.

681. Schwanzel-Fukuda, M. and Pfaff, D.W. "The structure and function of the nervus terminalis." In Handbook of Olfaction and Gustation, 2<sup>nd</sup> edition (ed. by R. Doty), New York: Dekker, pp. 835-869, 2003.



682. Mong, J. A. and D. W. Pfaff (2003). "Hormonal and genetic influences underlying arousal as it drives sex and aggression in animal and human brains." Neurobiol Aging **24 Suppl 1**: S83-8
683. Nomura M, Saito J, Ueta Y, Muglia L.J., Pfaff D.W., Ogawa S (2003). "Enhanced up-regulation of corticotropin-releasing hormone gene expression in response to restraint stress in the hypothalamic paraventricular nucleus of oxytocin gene-deficient male mice." J. Neuroendocrinol **15**(11):1054-61.
684. Yang, Z., Kow, L., Pfaff, DW., Mobbs, C (2003). "Metabolic pathways mediating inhibition of hypothalamic neurons by glucose." Diabetes, Jan (2004); 53(1):67-73
685. Fossella, J., Sommer, J.F., Pfaff, D.W., and M. Posner (2003). "Synaptogenesis and heritable aspects of execution attention." Mental Retard. Developmental Disabilities Res Rev. 9(3):178-83.
686. Garey, J., Goodwillie, A., Frohlich, J., Morgan, M., Gustafsson, J-A., Smithies, O., Korach, K., Ogawa, S. and D. Pfaff (2003). "Genetic contributions to generalized arousal of brain and behavior." Proceedings of the National Academy of Sciences, 100(19):11019-22.
687. Mong, J., Easton, A., Kow, L. and D. Pfaff (2003). "Neural, hormonal and genetic mechanisms for the activation of brain and behavior." European Journal of Pharmacology, 480(1-3):229-31.
688. Ozaki, Y., Nomura, M., Saito, J., Leudke, C.E., et al (2003). "The expression of the arginine vasopressin gene response to salt loading in oxytocin gene knockout mice." J. Neuroendo., 16: 39-44.
691. Nomura, M., Akama, K., Alves, S. Korach, K.S., Gustafsson, J.A., Pfaff, D.W. and Ogawa, S. (2004). Differential Distribution of Estrogen Receptor (ER)- $\alpha$  and ER- $\beta$  in the Midbrain Raphe Nuclei and Periaqueductal Gray in Male Mouse: Predominant Role of ER- $\beta$  in the Midbrain Serotonergic Systems. Neuroscience, 130(2): 445-456, (2005).
692. Kavaliers, M., Colwell, D.D., Choleris, E., Agmo, A., Muglia, L.J., Ogawa, S. and D.W. Pfaff. "Impaired discrimination of, and aversion to, parasitized male odors by female oxytocin knockout mice." Genes, Brain & Behavior, 2(4): 220-230, 2003.
694. Kavaliers, M., Ågmo, A., Choleris, E., Gustafsson, J.A., Korach., K.S., Muglia, L.J., Pfaff, D.W., and Ogawa, S. "Oxytocin and estrogen receptor alpha and beta knockout mice provide discriminably different odour cues in behavioural assays." Genes Brain and Behavior, **3(4)**:189-195, (2004).
695. Choleris, E., Ogawa, S., Kavaliers, M., Gustafsson, J-Å., Korach, K., Muglia, L.J. and D.W. Pfaff. "Involvement of estrogen receptor alpha, beta and oxytocin in social discrimination: a detailed behavioral analysis with knockout female mice." Genes, Brain and Behavior, (2006). **5(7)**:528-539.
696. Mong, J.A. and D.W. Pfaff. "Hormonal Symphony: Steroid Orchestration of Gene Modules for Sociosexual Behaviours." Molecular Psychiatry, **9**:550-556, (2004).
697. Pfaff, D.W. and Lindsley, D.B. "Arousal: the activation of behavior." Encyclopedia of Neuroscience (3<sup>rd</sup> ed.). Ed. G. Adelman. Amsterdam: Elsevier, (2004).

698. Cohen, R.S. and Pfaff, D.W. "Cytology and organization of cell types: Light and electron microscopy." In Endocrinology: Basic and Clinical Principles. (P.M. Conn and S. Melmed, eds.), Totowa, NJ: Humana, 2003.
699. Pfaff, D.W. "Mechanisms of estrogenic effects on neurobiological functions." In New Molecular Mechanisms of Estrogen Action. (H. Fritzemeier, ed.), (46):79-88, Heidelberg: Springer-Verlag, (2004).
700. Mong JA, Devidze N, Goodwillie A, Pfaff DW (2003). "Reduction of lipocalin-type prostaglandin D synthase in the preoptic area of female mice mimics estradiol effects on arousal and sex behavior." Proc Natl Acad Sciences. 100(25):15206-11.
- Mong, J., Choleris, E., Jasnow, A., and Pfaff, D.W. "Anti-sense DNA oligos in mouse preoptic area affect generalized and sexual arousal." Society for Neuroscience, abstract, 2003.
701. Devidze, N., Pfaff, D.W., and Kow, L.M. "Potentiation of genomic actions of estrogen by membrane actions in MCF-7 cells and the involvement of protein kinase C activation." Endocrine. (2005) Aug; 27(3):253-8.
702. Musatov S, Roberts J, Brooks AI, Pena J, Betchen S, Pfaff DW, Kaplitt MG (2004). Inhibition of neuronal phenotype by PTEN in PC12 cells. Proc National Academy Sciences 101(10):3627-31.
- Musatov, S.A., Roberts, J.M., Sugiultzoglu, M., Pfaff, D.W., Kaplitt, M.G. "Tumor suppressor PTEN inhibits neuronal differentiation." Society for Neuroscience Abstracts (#631.18), 2002.
703. Kavaliers, M., Choleris, E., Agmo, A. and D.W. Pfaff. (2004) "Olfactory-mediated parasite recognition and avoidance: linking genes to behavior." Hormones and Behavior, 46 (3):272-283
704. Choleris, E., Kavaliers, M and D.W. Pfaff. "Functional genomics of social recognition." J. Neuroendocrinology 16: 383-389, (2004).
705. Ogawa, S., Nomura, M., Choleris, E. and D.W. Pfaff. "The Role of estrogen receptors in the regulation of aggressive behaviors." Biology of Aggression (Editor: Randy Nelson). New York: Oxford University Press, (2005). (pp. 231-249)
706. Ogawa, S., Choleris, E., and D.W. Pfaff. "Genetic influences on aggressive behaviors and arousability in animals." In Devine, J., et al. (editors) Annals, New York Academy of Sciences, 1036: 257-266, (2004).
707. Morgan, M.A., Schulkin J. and D.W. Pfaff (2003). "Estrogens and non-reproductive behaviors related to activity and fear." Neuroscience & BioBehavioral Reviews. 28(1):55-63.
708. Kow, L.M., Vasudevan, N., Ragnauth, A. and D.W. Pfaff. "Mechanisms of steroid hormone actions on hypothalamic nerve cells: Molecular and biophysical studies relevant for hormone-dependent behaviors." In Hormones and the Brain, C. Kordon (editor). Berlin: Springer-Verlag, 73-79, (2004).

709. Easton, A., Jasnow, A., Norton, J., Goodwillie, A. and D.W. Pfaff. "Sex differences in mouse behavior following pyrilamine treatment: role of histamine 1 receptors in arousal." Pharmacology, Biochemistry and Behavior, 79 (2004) 563-572.

Easton, A., Jasnow, A., Norton, J., Goodwillie, A. and D.W. Pfaff. "Pyrilamine, an H1 receptor antagonist, alters arousal to multimodal stimuli." Amer. Prof. Sleep Soc. Abstract, 2003.

710. Kavaliers, M., Choleris, E., and Pfaff, D.W. "Recognition and Avoidance of the Odors of parasitized conspecifics and predators: Differential Genomic Correlates." Neuroscience and Biobehavioral Reviews, (2005); **29(8)**:253-258.

711. Zhao, X., Lorenc, H., Stephenson, H., Wang, Y. J., Witherspoon, D., Katzenellenbogen, B., Pfaff, D.W. and Vasudevan, N. "Thyroid hormone can regulate estrogen-mediated transcription from a consensus estrogen response element in neuroblastoma cells." Proc National Academy Sciences, (2005) 102(13):4890-5.

712. Vasudevan, N., Kow, L.M. and Pfaff, D. W. (2005). Integration of steroid hormone-initiated membrane action to genomic function in the brain. Steroids, (2005) May-Jun; **70(5-7)**:388-396.

713. Vasudevan, N., Kia, H.K., Hadjimarkou, M., Koibuchi, N., Chin, W.W., Forrest, D., Vennstrom, B. and Pfaff, D.W. (2005). Retinoid related receptor (ROR) $\alpha$  mRNA expression is altered in the brain of male mice lacking all ligand-binding thyroid hormone receptor (TR) isoforms. Endocrine. (2005) Feb.; **26(1)**:25-32.

714. Nomura, M., Durbak, L., Chan, J., Smithies, O., Gustafsson, J.A., Korach, K.S., Pfaff, D.W., and Ogawa, S. (2002). Genotype/Age Interactions on Aggressive Behavior in Gonadally Intact Estrogen Receptor beta Knockout (betaERKO) Male Mice. Hormones & Behavior, **41**: 288-96.

715. Nomura, M., Korach, K.S., Pfaff, D.W., and Ogawa, S. (2003) Estrogen receptor beta (ERbeta) protein levels in neurons depend on estrogen receptor alpha (ERalpha) gene expression and on its ligand in a brain region-specific manner. Molecular Brain Research, 110: 7-14.

716. Kow, L-M., Easton, A., and Pfaff, D.W. "Acute estrogen potentiates excitatory responses of neurons in rat hypothalamic ventromedial nucleus." Brain Research, (2005), 1043(1-2): 124-131.

717. Kavaliers, M., Choleris, E., Agmo, A., and Pfaff, D.W. Olfactory-mediated parasite recognition and avoidance: linking genes to behavior. Hormones & Behavior, **46**: 272-283, (2004).

718. Pfaff, D.W., Choleris, E., and Ogawa, S., Genes for Sex Hormone Receptors Controlling Mouse Aggression. ). Molecular Mechanisms Influencing Aggressive Behaviours. ( Novartis Foundation Symposium), London: Wylie, (2005), in press.

719. Kow, L., Devidze, N. Pataky, S., Shibuya, I. and Pfaff, D.W. Acute estradiol application increases inward and decreases outward whole-cell currents of neurons in rat hypothalamic ventromedial nucleus. Brain Research, **1116(1)**: 1-11, (2006).

Kow, L., Devidze, N., Shibuya, I., Pfaff, D.W. "Acute estradiol application increases inward

and decreases outward whole-cell currents of neurons in rat hypothalamic ventromedial nucleus (VMN).” Society for Neuroscience Abstracts, Program # 610.7, 2003.

720. Kow, L., Pfaff, D.W., The membrane actions of estrogens can potentiate their lordosis behavior-facilitating genomic actions. Proc. National Academy Sciences, vol. 101, no. 33: 12354-7, (2004)

721. Jasnow, A.M., Mong, J.A., Romeo, R.D. and Pfaff, D.W. “Estrogenic regulation of gene and protein expression within the amygdala of female mice.” Endocrine (2007) 32:271-279.

Jasnow, A.M., Mong, J.A. and D.W. Pfaff. “Estrogen regulates CaMK gene expression in the amygdala of female mice.” Program # 82.3, Society for Neuroscience Abstracts, 2003.

722. Kavaliers, M., Choleris, E., Agmo, A., Muglia, L.J., Ogawa, S., and Pfaff, D.W. Involvement of the oxytocin gene in the recognition and avoidance of parasitized males by female mice. Animal Behaviour. (2005); **70(3)**:693-702. .

723. Kavaliers, M., Agmo, A., Choleris, E., Ogawa, S., Pfaff, D.W. Impaired recognition of parasitized males by estrogen receptor alpha ( $\alpha$ ERKO), estrogen receptor beta ( $\beta$ ERKO), and oxytocin (OTKO) knockout male mice. Hormones and Behavior, (2004) JUN; **46(1)**:93

724. Pfaff, D.W. (2004) Hormone-driven mechanisms in CNS facilitate the analysis of mammalian behaviours. Journal of Endocrinology, **184**:447 – 453.

725. Commons, K.G., Aicher, S.A., Kow, L.M., and Pfaff, D.W. (2000) Presynaptic and postsynaptic relations of mu opioid receptors to GABAergic and medullary projecting periaqueductal gray neurons. J Comparative Neurology. 419 (4): 532-542.

726. Crews, D., Fuller, T., Mirasol, E.G., Pfaff, D.W., and Ogawa, S. (2004) Postnatal environment affects behavior of adult transgenic mice. Experimental Biology & Medicine **229(9)**: 935-9

727. Papanicolaou, D.A., Amsterdam, J.D., Levine, S., McCann, S.M., Moore, et al (2004) Neuroendocrine aspects of chronic fatigue syndrome. Neuroimmunomodulation **11 (2)**: 65-74

728. Klein, L.C., Stine, M.M., Pfaff, D.W., and Vandenberg, D.J. (2003) Maternal nicotine exposure increases nicotine preference in periadolescent male but not female C57B1/6J mice. Nicotine & Tobacco Research **5(1)**: 117-24

729. Dellovade, T.L., Hardelin, J.P., Soussi-Yanicostas, N., Pfaff, D.W., Schwanzel-Fukuda, M., Petit, C. (2003) Anosmin-1 immunoreactivity during embryogenesis in a primitive eutherian mammal. Developmental Brain Research, **140 (2)**: 157-67.

730. Kavaliers, M., Choleris, E., and Pfaff, D.W. “Genes, Odours and the Recognition of Parasitized Individuals by rodents.” Trends in Parasitology. (2005) Sept. **21(9)**:423-9.

731. Musatov, S., Chen, W., Pfaff, DW., Kaplitt, MG., and Ogawa, S. RNAi-mediated silencing of estrogen receptor (alpha) in the ventromedial nucleus of hypothalamus abolishes female sexual behaviors. PNAS. (2006) July 5; **103(27)**: 10456-60.

Moussatov, S., Kaplitt, M., Pfaff, D.W. and Ogawa, S. Adeno-associated virus-mediated gene replacement in estrogen receptor  $\alpha$  knockout mice. Society for Neuroscience Abstracts. (Abstract # 191.6) 27: 2001.

732. Zhao, X., MacBride, M.M., Peterson, B.R., Pfaff, D.W., and Vasudevan, N. Calcium flux in neuroblastoma cells is a coupling mechanism between non-genomic and genomic modes of estrogens. Neuroendocrinology, **81(3)**:174-82, (2005).

733. Parhar, I., Soga, T., Ogawa, Satoshi., Ogawa, Sonoko., Pfaff, D. and Sakuma, Y. Nonmammalian gonadotropin-releasing hormone molecules in the brain of promoter transgenic rats. Proc. National Academy Sciences, (2005). **102(16)**:5880-5885.

734. Devidze, N., Mong, J.A., Jasnow, A.M., Kow, L.M., and Pfaff, D.W. Sex and estrogenic effects on co-expression of mRNAs in single ventromedial hypothalamic neurons. PNAS, **102(40)**: 14446-14451, (2005).

Devidze, N., Mong, J.A., Kow, L.M. and D.W. Pfaff. "Differential co-expression of various mRNA populations in single ventromedial hypothalamic neurons." Program # 504.3, Society for Neuroscience 2003.

735. Jasnow, A.M., Schulkin, J., and Pfaff, D.W. "Estrogen facilitates fear conditioning and increases corticotropin-releasing hormone mRNA expression in the central amygdala in female mice." Hormones and Behavior, (2006) Feb; 49(2):197-205.

Jasnow, A.M., Schulkin, J., and Pfaff, D.W. "Estrogenic modulation of emotion: Involvement of corticotropin-releasing factor within the amygdala." Society for Neuroscience, (2004).

736. Zhou, J., Pfaff, D.W., and Chen, G. Sex difference in estrogenic regulation of neuronal activities in neonatal cultures of ventromedial nucleus of hypothalamus. Proc. National Academy Sciences **102(41)**: 14907-12. (2005)

Zhou, J., Pfaff, D.W., and Chen, G. "Sex difference in estrogenic regulation of neuronal activities in neonatal cultures of ventromedial nucleus of hypothalamus." Society for Neuroscience, (2004).

737. Blutstein, T., Devidze, N., Choleris, E., Jasnow, A.M., Pfaff, D.W., and Mong, J.A. Oestradiol up-regulates glutamine synthetase mRNA and protein expression in the hypothalamus and hippocampus: implications for a role of hormonally responsive glia in amino acid neurotransmission. J Neuroendocrinology, (2006) Sep; **18(9)**:692-702.

Kia, S.H., Mong, J.A., Pfaff, D.W. "Estradiol (E2) up-regulation of glutamine synthetase (GS) mRNA in the medial basal hypothalamus (MBH) and amygdala: implications for glia in hormonal modulation of neuronal function." Society for Neuroscience (#863.1), 2002.

738. Frye, C.A., Sumida, K., Lydon, J. P., O'Malley, B.W., and Pfaff, D.W. "Mid-aged and aged wild-type and progesterin receptor knockout (PRKO) mice demonstrate rapid progesterone and 3 $\alpha$ , 5 $\alpha$ -THP, facilitated lordosis." Psychopharmacology. May, **185**(4): 423-32. (2006).
739. Devidze, N., Pfaff, D.W., and Kow, L.M. "Potentiation of genomic actions of estrogen by membrane actions in MCF-7 cells and the involvement of Protein Kinase C activation." Endocrine. **(3)**:253-8, (2005).
740. Cataldo, G., Bernal, S., Markowitz, A., Ogawa, S., Ragnauth, A., Pfaff, D.W. and Bodnar, R.J. "Organizational manipulation of gonadal hormones and systemic morphine analgesia in female rats: effects of adult ovariectomy and estradiol replacement." Brain Research, **1059**(1): 13-9, (2005).
741. Devidze, N., Lee, A.W., Zhou, J., and Pfaff, D.W. "CNS arousal mechanisms bearing on sex and other biologically regulated behaviors." Physiology and Behavior, (2006), Jun 30; **88**(3):283-93.
742. Ribeiro, A.C., and Pfaff, D.W. "Stress and CNS arousal: Genomic Contributions." The Encyclopedia of Stress, Second Edition; G. Fink, ed. San Diego: Elsevier, (2007). Pp. 591-595.
743. Kavaliers, M., Choleris, E., Ágmo, A., Braun, W., Colwell, D., Muglia, L., Ogawa, S., Pfaff, D.W. "Inadvertent social information and the avoidance of parasitized male mice: A role for oxytocin." Proc. National Academy Sciences, (2006). March 14; **103**(11): 4293-8
744. Pfaff, D.W., Sakuma, Y., Kow, L-M., Lee, A.W., Easton, A. "Hormonal, neural, and genomic mechanisms for female reproductive behaviors, motivation, and arousal." Knobil and Neill's Physiology of Reproduction, 3<sup>rd</sup> Edition. Ed. Jimmy D. Neill, Elsevier/Academic, (2006). Pp 1825-1920.
745. Musatov, S., Kaplitt, M.G., Pfaff, D.W., Ogawa, S. "Use of viral vectors to influence behavior." Gene Therapy of the Central Nervous System: From Bench to Bedside. Ed. Michael G. Kaplitt and Matthew J. During. Elsevier/Academic, (2006). Pp195-205
746. Coop, A.D., Stavarache, M.A., Pfaff, D.W., and Reeke, G.N. "Mathematical analysis of locomotor behavior by mice in a radial maze." Proceedings, National Academy Sciences, (2006). October 17; **103**(42):15710-15.
747. Mong, J., Lee, A., Easton, A., and Pfaff, D.W. "Cellular and molecular mechanisms underlying sexual arousal." In Women's Sexual Function and Dysfunction: Study, Diagnosis and Treatment. Ed. I. Goldstein, C. Meston, S. Davis and A. Traish. London: Taylor & Francis, (2006). pp.151-8.
748. Pfaff, D.W., Westberg, L., and Kow, L.M. „Generalized arousal of mammalian central nervous systems." Journal of Comparative Neurology. (2005). **493**(1): 86-91
749. Vasudevan, N., and Pfaff, D.W. "Molecular mechanisms of crosstalk between thyroid hormones and estrogens." Current Opinion in Endocrinology and Diabetes, (2005); **12**(5):381-8.
750. Easton, A., Dwyer, E. and Pfaff, D.W. "Estradiol and Orexin-2 saporin actions on multiple forms of behavioral arousal in female mice. Behavioral Neuroscience. (2006). **120**(1): 1-9.

751. Fricke, O., Lehmkuhl, G., and Pfaff, D.W. "Cybernetic principles in the systematic concept of hypothalamic feeding control." European Journal of Endocrinology. (2006). **154**:167-173.
752. Ågmo, A.; Choleris, E.; Kavaliers, M.; Pfaff, D.W. and Ogawa, S. "Social and sexual incentive properties of estrogen receptor alpha, estrogen receptor beta, or oxytocin knockout mice." Genes Brain Behav. (2008) **7**:70-77.
753. Matthews, T.J., Duvarci, S., Abdel-Baky, P., and Pfaff, D.W. "Social and sexual motivation in the mouse." Behavioral Neuroscience. (2005); **119**(6):1628-39.
754. Martin-Alguacil, N., Schober, J., Kow, L.M., and Pfaff, D.W. "Arousing properties of the vulvar epithelium." Journal of Urology. (2006); Aug; **176**(2):456-62. Review.
755. Zhao, X., Pfaff, D.W. and Vasudevan, N. (2005) Estrogens and thyroid hormone: Non-genomic effects are coupled to transcription. Current Medicinal Chemistry – Immunology, Endocrine and Metabolic Agents. (2006); **6**:267-280.
756. Choleris, E.; Little, S.R.; Mong, J.A.; Puram, S.V.; Langer, R. and Pfaff, D.W. Microparticle-based delivery of oxytocin receptor antisense DNA in the medial amygdala blocks social recognition in female mice. Proc. National Academy Sciences (2007), 104(11):4670-4675
757. Tomihara, K., Soga, T., Nomura M., Korach, K.S., Gustafsson, J.A., Pfaff, D.W., and Ogawa, S. "Effect of ER-beta gene disruption on estrogenic regulation of anxiety in female mice." Physiology and Behavior. (2009) Feb 16; **96**(2):300-6.
758. Pfaff, D.W., "A Brain Built for Fair Play". Cerebrum, (Dana Press on-line publication); March 2006. [http://www.dana.org/pdf/cerebrum/art\\_0603pfaff.pdf](http://www.dana.org/pdf/cerebrum/art_0603pfaff.pdf)
759. Nomura M, Andersson S, Korach KS, Gustafsson JA, Pfaff DW, Ogawa S. "Estrogen receptor-beta gene disruption potentiates estrogen-inducible aggression but not sexual behaviour in male mice." Eur J Neurosci. (2006) Apr; **23**(7):1860-8.
760. Tomihara, K., Kaitsuka, T., Soga, T., Korach, K.S., Pfaff, D.W., Takahama, K., and Ogawa, S. "Abolition of sex-dependent effects of prenatal exposure to diethylstilbestrol on emotional behavior in estrogen receptor-alpha knockout mice." Neuroreport. (2006) Jul 31; **17**(11):1169-73.
761. Flanagan-Cato, L., Kow, L.M., Loose, M., and Pfaff, D. "Reverse engineering the lordosis behavior circuit." Hormones & Behavior (2008) **54**:347-354.
762. Lee, A.W., Devidze, N., Pfaff, D.W., and Zhou, J. "Functional genomics of sex hormone-dependent neuroendocrine systems: specific and generalized actions in the CNS." Progress in Brain Research. (2006) **158**:243-72.
763. Schober, J., and Pfaff, D. "The neurophysiology of sexual arousal." In Best Pract Res Clinical Endocrinology and Metabolism. (2007) **21**(3):445-461. Review.

764. Helena, C.V.V., Gustafsson, J.-Å., Korach, K.S., Pfaff, D.W., Anselmo-Franci, J.A., Ogawa, S. "Effects of estrogen receptor alpha and beta gene deletion on estrogenic induction of progesterone receptors in the locus coeruleus in female mice." Endocrine (2009) Aug; 36(1):169-77.
765. Shelley, D.N., Choleris, E., Kavaliers, M., and Pfaff, D.W. "Mechanisms underlying sexual and affiliative behaviors of mice: relation to generalized CNS arousal." Social Cognitive and Affective Neuroscience (2006) 1(3): 260-270.
766. Schober, J., Dulabon, L., Martin-Alguacil, N., Kow, L.-M., and Pfaff, D.W. "Significance of topical estrogens to labial fusion and vaginal introital integrity." J Pediatric Adolescent Gynecology. 2006 Oct; 19(5):337-9.
767. Vasudevan, N., and Pfaff, D.W. "Membrane initiated actions of estrogens in neuroendocrinology: emerging principles." Endocrine Reviews, (2007). 28(1):1-19.
768. Kow, L.-M., Florea, C., Schwanzel-Fukuda, M., Kia, H.K., Lee, A.W.J., Zhou, J., MacLaughlin, D., Donahoe, P., and Pfaff, D.W. "Development of a sexually differentiated behavior and its underlying CNS arousal functions." Current Topics in Developmental Biology, (2007). 79:37-59.
769. Ribeiro, A.C., and Pfaff, D.W. "Sexual behavior, neuroendocrine control." In The Encyclopedia of Neuroscience. Ed. L.R. Squire et al. Oxford: Elsevier Ltd., (2007). In Press.
770. Musatov, S., Chen, W., Pfaff, D.W., Mobbs, C.V., Yang, X.-J., Clegg, D., Kaplitt, M.G., and Ogawa, S. "Silencing of estrogen receptor alpha in the ventromedial nucleus of hypothalamus leads to metabolic syndrome." Proceedings of the National Academy of Sciences, (2007). Feb 13;104(7):2501-6.
771. Lee, A.W., Kyrozis, A., Chevalyere, V., Kow, L.M., Zhou, J., Devidze, N., Etgen, A.M., and Pfaff, D.W. "Voltage-Dependent Calcium Channels in Ventromedial Hypothalamic Neurons of Postnatal Rats: Modulation by Oestradiol and Phenylephrine." Journal of Neuroendocrinology (2008). 20(2):188-98
- Lee, A.W., Kyrozis, A., Chevalyere, V., Kow, L.M., Zhou, J., Devidze, N., Etgen, A.M., and Pfaff, D.W. "Biophysical bases of phenylephrine (norepinephrine  $\alpha$ 1) effects on ventromedial hypothalamic neurons." Society for Neuroscience (2005). No. 265.7
772. Kow, L.-M., Bogun, M., Zhang, Q. and Pfaff, D.W. "Hormonal induction of lordosis and ear wiggling in rat pups: gender and age differences." Endocrine, (2007) 32:287-296.
- Kow, L.M., Bogun, M., and Pfaff, D.W. "Induction of lordosis and ear wiggling in rat pups with estrogen and progesterone: age and gender differences." Society for Neuroscience (2005). No. 321.15
773. Zhou, J., Lee, A.W., Zhang, Q., Kow, L.M., and Pfaff, D.W. "Histamine-induced excitatory responses in mouse ventromedial hypothalamic neurons: ionic mechanisms and estrogenic regulation." Journal of Neurophysiology, (2007). 98(6):3143-52.



Zhou, J., Lee, A.W., Devidze, N., Kow, L.M., and Pfaff, D.W. "Estrogenic regulation of histamine action on ventromedial hypothalamic neurons: a patch-clamp study." Society for Neuroscience (2005). No. 404.7

774. Arrieta-Cruz, I., Pfaff, D.W. and Shelley, D. N. "Mouse model of diffuse brain damage following anoxia, evaluated by assay of generalized arousal." Experimental Neurology (2007) **205**(2):449-460.

Arrieta-Cruz, I., Pfaff, D.W. and Shelley, D. N. "Mouse model of diffuse brain damage following anoxia, evaluated by assay of generalized arousal." Society for Neuroscience (2006). No. 682.11/NN65

775. Wu, H, Stavarache, M., Pfaff, D.W., and Kow, L. "Arousal of cerebral cortex electroencephalogram consequent to high-frequency stimulation of ventral medullary reticular formation." Proceedings of the National Academy of Sciences, (2007). Nov 13; **104**(46):18292-18296.

Wu, H, Stavarache, M., Pfaff, D.W., and Kow, L. "Electrical stimulation to ventral medullary reticular formation arouses cortical EEG." Society for Neuroscience (2006). No. 817.23/X11

776. Devidze, N.; Zhang, Q.; Zhou, J.; Lee, A.W.; Pataky, S.; Kow, L.-M. and Pfaff, D.W. "Presynaptic actions of opioid receptor agonists in ventromedial hypothalamic neurons in estrogen-and oil-treated female mice." Neuroscience. (2008) 152(4):942-949.

777. Pfaff, D.W. and Banavar, J.R. "Hypotheses: A theoretical framework for CNS arousal." BioEssays. (2007) **29**(8):803-10.

778. Shelley, D.N., Dwyer, E.R., Johnson, C., Wittkowski, K.M., and Pfaff, D.W. "Interactions of estrogens and hunger in ovariectomized female mice." I. Measures of CNS arousal. Hormones and Behavior (2007). 52:546-553.

779. Ribeiro, A.C., Sawa, E., Carren-LeSauter, I., LeSauter, J., Silver, R., and Pfaff, D.W. "Two forces for arousal: Pitting hunger versus circadian influences and identifying neurons responsible for changes in behavioral arousal." Proceedings of the National Academy of Sciences (2007) **104**(50):20078-83.

780. Martin-Alguacil, N., Pfaff, D.W., Shelley, D.N., and Shober, J.M. "Clitoral sexual arousal: an immunocytochemical and innervation study of the clitoris." British J Urology Intl. (2008) 101(11):1407-13.

781. Martin-Alguacil, N., Pfaff, D.W., Kow, L.-M., and Shober, J.M. "Estrogen receptors and their relation to neural receptive tissue of the labia minora." British Journal of Urology. (2008) 101:1401-1406.

782. Pfaff, D.W., Martin, E.M. and Ribeiro, A.C. "Relations between mechanisms of CNS arousal and mechanisms of stress." Stress (2007) **10**(4):316-25.

783. Pfaff, D.W., Martin, E.M. and Ribeiro, A.C. "CNS arousal necessary for supporting stress responses: Reply to 'More appraisal please': A Day and Walker commentary on Pfaff et al. 'Relations between mechanisms of CNS arousal and mechanisms of stress'." Stress (2007) **10**(4):314-15.
784. Fricke, O., Kow, L.-M., Bogun, M. And Pfaff, D.W. "Estrogen evokes a rapid effect on intracellular calcium in neurons characterized by calcium oscillations in the arcuate nucleus." Endocrine (2007) **31**(3):279-88.
785. Pfaff, D. and Silver, R. "Gene-hormone-environment interactions in the regulation of aggressive responses: elegant analysis of complex behavior." Science's STKE. (2007) **406**:pe55.
786. Pfaff, D.W., Martin, E.M. and Kow, L.-M. "Generalized brain arousal mechanisms contributing to libido." (2007) Neuro-Psychoanalysis, **9**(2):173-82.
787. Pfaff, D.W. and Levine, J. "Reconciling molecular neuroendocrine signals and the scientists who study them." Frontiers in Neuroendocrinology. (2008) **29**:167-168.
788. Clipperton, A.E., Spinato, J.M., Chernetz, C., Pfaff, D.W. and Choleris, E. "Differential effects of estrogen receptor alpha and beta specific agonists on social learning of food preferences in female mice." Neuropsychopharmacology (2008) **33**(10):2362-2375.
789. Cohen, R.S. and Pfaff, D.W. "Cytology and organization of cell types: light and electron microscopy." In Neuroscience in Medicine, 3<sup>rd</sup>. Ed., (2008) Springer-Humana. In Press.
790. Choleris, E., Devidze, N., Kavaliers, M. and Pfaff, D.W. "Steroidal/neuropeptide interactions in hypothalamus and amygdala related to social anxiety." In J.D. Neumann and R. Landgraf (Eds.) Progress in Brain Research (2008) **170**:291-303
791. Kavaliers, M., Devidze, N., Choleris, E., Fudge, M., Gustafsson, J.-A., Korach, K., Pfaff, D.W., and Ogawa, S. "Estrogen receptors alpha and beta mediate different aspects of the facilitatory effects of female cues on male risk-taking." Psychoneuroendocrinology (2008). **33**(5):634-42.
792. Arrieta-Cruz, I. and Pfaff, D.W. "Definition of arousal and mechanistic studies in intact and brain-damaged mice." In N. Schiff and S. Laureys, Eds. Annals of the New York Academy of Sciences. Issue: Disorders of Consciousness (2009) **1157**:24-31
793. Choleris, E., Kavaliers, M. and Pfaff, D.W. "Brain mechanisms theoretically underlying extremes of social behaviors: the best and the worst." In Kordon, Pfaff, Christen, (Eds.) Hormones and Social Behavior. (2008). Heidelberg: Springer-Verlag. Pp. 13-25.
794. Kordon, C., Pfaff, D.W. and Christen, Y. "Social bonding, a product of evolution; an introduction to the volume." In C. Kordon, D. Pfaff and Y. Christen, (Eds.) Hormones and Social Behavior. (2008). Heidelberg: Springer-Verlag. Preface pp. V-VIII.
795. Pfaff, D.W. and Adolphs, R. "Social neuroscience: complexity to be unravelled." In C. Kordon, D. Pfaff and Y. Christen, (Eds.) Hormones and Social Behavior. (2008). Heidelberg: Springer-Verlag. Pp. 187-196.

796. Pfaff, D.W., Kieffer, B.L. and Swanson, L.W. "Mechanisms for the regulation of state changes in the CNS. An introduction." Annals, NYAS -Molecular And Biophysical Mechanisms Of Arousal, Alertness, And Attention. (2008) 1129:1-7.
797. Pfaff, D.W., Ribeiro, A.C., Matthews, J. and Kow, L.-M. "Concepts and mechanisms of generalized CNS arousal." Annals, NYAS -Molecular And Biophysical Mechanisms Of Arousal, Alertness, And Attention (2008) 1129:11-25.
798. Pfaff, D., Martin, E.M. and Kow, L.-M. "Generalized brain arousal mechanisms contributing to libido." Neuro-Psychoanalysis (2007) 9(2):173-181.
799. Pfaff, D., Martin, E.M., Weingarten, W. And Vimal, V. "The central neural foundations of awareness and self-awareness." In M. Murase and I. Tsuda, Eds.; Progress of Theoretical Physics (2008). Supplement 173:79-98.
800. Schiff, N. and Pfaff, D. "Neural perspectives on activation and arousal" In G. Bernston and J. Cacioppo, Eds.; Handbook of Neuroscience for the Behavioral Sciences. New York: Wiley (2009)
801. Pfaff, D., Vasudevan, N. and Kow, L.-M. "Sexual behavior and arousal; neuroendocrine and genomic controls." In The Encyclopedia of Neuroscience. Ed. L.R. Squire et al. Oxford: Elsevier Ltd., (April 2010).
802. Vasudevan, N. and Pfaff, D.W. "Non-genomic actions of estrogens and their interaction with genomic actions in the brain." Frontiers in Neuroendocrinology. (2008) 29:238-257.
803. Martin-Alguacil, N., Schober, J.M., Sengelaub, D., Pfaff, D.W., and Shelley, D.N. "Clitoral sexual arousal: neuronal tracing study from the clitoris through the spinal tracts (I)." J Urology. (2008) 180:1241-1248.
804. Silver, R. and Pfaff, D. "Issues emerging from a consideration of the cellular and molecular bases of biological rhythms." In M. Caba (Ed.) Bases Celulares Y Moleculares de los Ritmos Biologicos. Universidad Veracruzana, Xalapa. (2008)
805. Martin-Alguacil, N., Pfaff, D.W., Kow, L.-M. and Schober, J.M. "Clitoral sexual arousal: neuronal tracing study from the clitoris through the spinal tracts (II)." British J Urology International (2008) 101(11):1407-1413.
806. Pfaff, D.W., Tetel, M., and Schober, J. "Neuroendocrinology: Mechanisms by which hormones affect behaviors." In G. Bernston and J. Cacioppo, eds., Handbook of Neuroscience for the Behavioral Sciences. New York, Wiley Press, pp. 99-118 (2009).
807. Attardi B, Scott R, Pfaff D, and Fink G. "Facilitation or inhibition of the oestradiol-induced gonadotrophin surge in the immature female rat by progesterone: effects on pituitary responsiveness to gonadotrophin-releasing hormone (GnRH), GnRH self-priming and pituitary mRNAs for the progesterone receptor A and B isoforms. J Neuroendocrinol. 2007 Dec;19(12):988-1000.

808. Lee, A.W., Kyrozis, A., Chevaleyre, V., Kow, L.M., Devidze, N., Zhang, Q., Etgen, A.M., and Pfaff, D.W. "Estradiol modulation of phenylephrine-induced excitatory responses in ventromedial hypothalamic neurons of female rats." Proc. National Academy of Sci. (2008) 105(20):7333-7338.
809. Devidze, N., Zhou, Y., Ho, A., Zhang, Q., Pfaff, D.W. and Kreek, M.J. "Steady-state methadone effect on generalized arousal in male and female mice." Behavioral Neuroscience (2008) 122(6):1248-1256.
810. Lee, A.W. and Pfaff, D.W. "Hormone effects on specific and global brain functions." J. Physiological Sciences (2008). 58(4):213-220.
811. Zhou, J., Kow, L.-M., Vannucci, S.J., Pfaff, D. and Martin, E.M. "Arousal-related reticular neurons during reduced oxygen tension: resilience and recovery of electrical activity." Developmental Neuroscience (2009). 31:4(255-258).
812. Rubin R. and Pfaff, D. "Principles of translational Neuroendocrinology." In Hormone Brain and Behavior- Topics of Clinical Interest. (2009) Academic Press/Elsevier.
813. Pfaff, D. and Sherman, S. "A scientist's view of the timing of applications for patents." In Intellectual Property Law & Policy, vol. 12, ed. Hugh C. Hansen, published by Hart Publishing, Oxford and Portland, OR. (2009)
814. Pfaff, D.W. and Gunnar, M.R. "Development of mechanisms that regulate global CNS states: an introduction." Developmental Neuroscience (2009). 31:4(251-254).
815. Kow, L.-M. and Pfaff, D.W. "Membrane-initiated estrogen actions on ion channels and the induction of lordosis, the rodent female sexual behavior." Chinese Journal of Physiology (2009) 52(4):175-195.
816. Ribeiro, A.C., Pfaff, D.W., and Devidze, N. "Estradiol modulates behavioral arousal and induces changes in gene expression profiles in brain regions involved in the control of vigilance." PMID 19200060 European J of Neuroscience. (2009). Feb;29(4):795-801
817. Karatsoreos, I.N., Pfaff, D.W. and McEwen, B.S. "Androgens in brain tissue: cellular localization, interactions with neurotransmitter systems, and consequences for circadian behavior and generalized arousal." Current Topics in Steroid Research. (2008) 5:77-89.
818. Lee, A.W., Kow, L.-M., Devidze, N., Ribeiro, A., Martin-Alguacil, N., Schober, J., and Pfaff, D. "Genetic mechanisms in neural and hormonal controls over female reproductive behaviors." In Hormones, Brain and Behavior (2<sup>nd</sup> edition, 2009) 2:1163-1186.
819. Nautiyal, K.M.; Ribeiro, A.C.; Pfaff, D. and Silver R. "Brain mast cells link the immune system to anxiety-like behavior." Proceedings of the National Acad. Sci. (2008) 105(46):18053-18057.
820. Mori, H., Matsuda, K.I., Pfaff, D.W., and Kawata, M. "Sagittalis Nucleus: A Novel Hypothalamic Nucleus." J Neuroendocrinology (2009) 21(4):406-409.

821. Martin-Alguacil, N., Schober, J., Kow, L.-M. and Pfaff, D. "Oestrogen receptor expression and neuronal nitric oxide synthase in the clitoris and preputial gland structures of mice." British J Urology International. (2008) 102:1719-1723.
822. Burton, L., Pfaff, D., Bolt, N., Hadjikyriacou, D., Siltan, N., Kilgallen, C. and Allimant, J. "Effects of gender and personality on the Conners Continuous Performance Test." J Clinical and Experimental Neuropsychology. (2010) 32(1):66-70.
823. Stavarache, M., Pfaff, D. and Schober, J. "Hormone effects on specific motivational states and underlying CNS arousal." In J.-C. Dreher and L. Tremblay, Eds. Handbook of Reward and Decision Making. Elsevier/Academic Press, pp. 335-343 (2009).
824. Mayoglou, L., Dulabon, L., Martin-Alguacil, N., Pfaff, D. and Schober, J. "Success of treatment modalities for labial fusion: A retrospective evaluation of topical and surgical treatments." J. Pediatric Adolesc Gynecology (2009) 22(4):247-250.
825. Westberg, L., Sawa, E., Wang, A.Y., Gunaydin, L.A., Ribeiro, A.C. and Pfaff, D.W. "Colocalization of connexin 36 and corticotropin-releasing hormone in the mouse brain." BMC Neuroscience (2009) Apr 30;10(1):41-55.
826. LeSauter, J., Hoque, N., Weintraub, M., Pfaff D.W. and Silver, R. "Stomach ghrelin-secreting cells as food-entrainable circadian clocks." Proc. National Academy Sciences (2009) 106(32):13582-7.
827. Etgen, A.M. and Pfaff, D.W. "Historical and conceptual introduction to molecular forays intended to explain hormone/behavior relations." In A. Etgen and D. Pfaff (Eds.) Hormone and Behavior relations-Molecular mechanisms. (2009) Academic Press/Elsevier.
828. Pfaff, D. and Ågmo, A. "Hormonal contributions to arousal and motivation." In Koob, et al., (Eds.) Encyclopedia of Behavioral Neuroscience; section on Motivation. (2010) Elsevier.
829. Pfaff, D.W., Kavaliers, M. and Choleris, E. "Mechanisms underlying an ability to behave ethically" The American Journal of Bioethics (AJOB)-Neuroscience. (2008) 8(5):10-19.
830. Ribeiro AC, LeSauter J, Dupré C, Pfaff DW. Relationship of arousal to circadian anticipatory behavior: ventromedial hypothalamus: one node in a hunger-arousal network. Eur J Neurosci. 2009 Nov;30(9):1730-8. Epub 2009 Oct 26. Review. PMID: 19863654.
831. Pfaff, D. "Hormonal effects on specific behaviors, on global CNS states, and on human disease. An introduction to the second edition." Hormones Brain and Behavior Page 1. (2009)
832. Mori, H., Matsuda, K., Pfaff, D.W. and Kawata, M. "A recently identified hypothalamic nucleus expressing estrogen receptor alpha." Proc National Academy of Sciences. (2008) 105(36):13632-7.
833. Han, B., Altman, N.S., Mong, J.A., Klein, L.C., Pfaff, D.W. and Vandenberg, D.J. "Comparing quantitative trait loci and gene expression data." Advances in Bioinformatics Volume 2008, Article ID 719818, 6 pp doi:10.1155/2008/719818.

834. Pfaff, D.W., Kavaliers, M. and Choleris, E. "Response to peer commentaries on 'Mechanisms underlying an ability to behave ethically' - Neuroscience addresses ethical behaviors: transitioning from philosophical dialogues to testable scientific theories of brain and behavior." The American Journal of Bioethics (AJOB)-Neuroscience. (2008) 8(5):W1-W3.
835. Pfaff, D. and Schiff, N.D. "The aging brain: is it less connected?" Scientific American online (2008) [www.scientificamerican.com](http://www.scientificamerican.com) April 30, 2008.
836. Tetel MJ, Pfaff DW. Contributions of estrogen receptor-alpha and estrogen receptor-beta to the regulation of behavior. Biochim Biophys Acta. 2010 October 1800(10):1084-89.
837. Pfaff, D.W. and Ribeiro, A.C. "Theoretical Consequences of Fluctuating vs. Constant Liganding of Estrogen Receptor- $\alpha$  in Neurons". J. Neuroendocrinology, (2010) 22(6):486-491.
838. Spiteri T, Musatov S, Ogawa S, Ribeiro A, Pfaff DW, Agmo A The role of the estrogen receptor alpha in the medial amygdala and ventromedial nucleus of the hypothalamus in social recognition, anxiety and aggression. Behavioral Brain Resarch (2010). 210(2):211-220.
839. Weil ZM, Zhang Q, Hornung A, Blizard D, Pfaff DW. Impact of generalized brain arousal on sexual behavior. Proc National Academy Sciences. (2010).107(5):2265-70.
840. Clipperton Allen, A.E., Cragg, C.L., Wood, A.J., Pfaff, D.W. and Choleris, E. "Agonistic behavior in males and females: Effects of an estrogen receptor beta agonist in gonadectomized and gonadally intact mice." Psychoneuroendocrinology. (2010) 35(7):1008-1022.
841. Martin EM, Pavlides C, Pfaff D. Multimodal sensory responses of nucleus reticularis gigantocellularis and the responses' relation to cortical and motor activation. J Neurophysiology (2010). May;103(5):2326-38.
842. Devidze N, Fujimori K, Urade Y, Pfaff DW, Mong JA. Estradiol regulation of lipocalin-type prostaglandin D synthase promoter activity: evidence for direct and indirect mechanisms. Neuroscience Letters. (2010) 474(1):17-21.
843. Gagnidze K, Pfaff DW. Sex on the brain. Cell. 2009 Oct 2;139(1):19-21.
844. Pfaff, D. and Sherman, S. "Possible Legal Implications of Neural Mechanisms Underlying Ethical Behavior." In Law & Neuroscience, vol. 13 (Current legal issues), ed. Prof. M. Freeman, pub: Oxford University Press. (2010)
845. Pfaff DW. "Hormone/brain relations serving the unity of the body." Physiology & Behavior 2010 Feb 9; 99(2):149-50.
846. Hunter RG, McCarthy KJ, Milne TA, Pfaff DW, McEwen BS. "Regulation of hippocampal H3 histone methylation by acute and chronic stress." Proc National Academy Sciences. (2009)109:17657-62.

847. Pfaff, D. "Brain mechanisms for behaving well: Molecules, Men and Robots." In (Ed. J. Giordano) Neuroscience, technology and the nature of being. Cambridge: Cambridge University Press (2013).
848. Cooney, T.E., Gor, R.A., Pfaff, D. and Schober, J. "Detection of RXFP1 receptors in skin biopsies from children with congenital adrenal hyperplasia: a preliminary report." Journal of Pediatric Urology, (2010) 6(4):389-395.
849. Karatsoreos IN, Bhagat SM, Bowles NP, Weil ZM, Pfaff DW, McEwen BS. Endocrine and physiological changes in response to chronic corticosterone: a potential model of the metabolic syndrome in mouse. Endocrinology. (2010). 151(5):2117-27.
850. Wang, B., Ni, J., Litvin, Y., Pfaff, D.W. and Lin, Q. "A microfluidic device for pulsatile transdermal delivery for neurobiological drugs." (2010) Proceedings of the 5th IEEE International Conference on Nano/Micro Engineered and Molecular Systems (IEEE-NEMS) Xiamen, China.
851. Schober J, Cooney T, Pfaff D, Mayoglou L, Martin-Alguacil N. Innervation of the labia minora of prepubertal girls. J Pediatric Adolescent Gynecology. (2010)23(6):352-7.
852. Ribeiro AC, Ceccarini G, Dupré C, Friedman JM, Pfaff DW, Mark AL. Contrasting effects of leptin on food anticipatory and total locomotor activity. PLoS One. 2011;6(8):e23364.
853. Dupré C, Lovett-Barron M, Pfaff DW, Kow LM. Histaminergic responses by hypothalamic neurons that regulate lordosis and their modulation by estradiol. Proc National Academy of Sciences.(2010). 107(27):12311-6.
854. Martin-Alguacil N, Mayoglou L, Dupre C, Pfaff D, Schober J A study comparing estrogen receptors, androgen receptors, and glucocorticoid receptors in penile skin and penile scar tissue in boys with and without hypospadias Journal of Sexual Medicine 2010 Dec; 7(supple 6): 407-408
855. Zhou, Y., Litvin, Y., Piras, A.P., Pfaff, D.W. and Kreek, M.J. "Persistent increase in hypothalamic arginine vasopressin gene expression during protracted withdrawal from chronic escalating-dose cocaine in rodents." Neuropsychopharmacology (2011) 1-14.
856. Martin, E.M., Devidze, N., Shelley, D.N., Westberg, L., Fontaine, C. and Pfaff, D. "Molecular and neuroanatomical characterization of single neurons in the mouse medullary gigantocellular reticular neurons. J. Comparative Neurology (2011) September 1. 519(13):2574-2593.
857. Milner TA, Thompson LI, Wang G, Kievits JA, Martin E, Zhou P, McEwen BS, Pfaff DW, Waters EM. Distribution of estrogen receptor  $\beta$  containing cells in the brains of bacterial artificial chromosome transgenic mice. Brain Research. (2010). 1351:74-96. .
858. Weil ZM, Murakami G, Pfaff DW. Reproductive behaviors: new developments in concepts and in molecular mechanisms. In (Luciano Martini,editor) Progress in Brain Research. (2010);181:35-41.

859. Schober J, Martin-Alguacil, N., Mayoglou, L. C., Chan J., Pfaff, D. and Meyer-Bahlburg, H. "Self-assessment of labial and vaginal anatomy, related sexual sensitivity and function in women: implications for labiaplasty." Clinical Anatomy (2015) 28:355-362.
860. Heiman JR, Pfaff D. Sexual arousal and related concepts: An introduction. Hormones and Behavior. (2011) 59(5):613-5.
861. Matsuda KI, Mori H, Nugent BM, Pfaff DW, McCarthy MM, Kawata M. Histone Deacetylation during Brain Development Is Essential for Permanent Masculinization of Sexual Behavior. Endocrinology. 2011 May 17. PMID: 21586557. PMCID: PMC3115610.
862. Hildebrandt T, Alfano L, Tricamo M, Pfaff DW. Conceptualizing the role of estrogens and serotonin in the development and maintenance of bulimia nervosa. Clinical Psychology Reviews. (2010). 30(6):655-68. .
863. Quinkert AW, Schiff ND, Pfaff DW. Temporal patterning of pulses during deep brain stimulation affects central nervous system arousal. Behavioral Brain Research (2010).214(2):377-85.
864. Quinkert AW, Vimal V, Weil ZM, Reeke GN, Schiff ND, Banavar JR, Pfaff DW. "Quantification of Behavior" Sackler Colloquium: Quantitative descriptions of generalized arousal, an elementary function of the vertebrate brain. Proc National Academy Sciences(2011)108 Suppl 3:15617-23.
865. Litvin Y, Murakami G, Pfaff DW. Effects of chronic social defeat on behavioral and neural correlates of sociality: Vasopressin, oxytocin and the vasopressinergic V1b receptor. Physiology and Behavior. (2011) 103(3-4):393-403.
866. Pfaff DW, Rapin I, Goldman S. Male predominance in autism: neuroendocrine influences on arousal and social anxiety. Autism Res. 2011 Jun;4(3):163-76. PMID: 21465671.
867. Gagnidze K, Pfaff DW, Mong JA. Gene expression in neuroendocrine cells during the critical period for sexual differentiation of the brain. Progress in Brain Research. (2010) 186:97-111.
868. Gagnidze K, Weil ZM, Pfaff DW. Histone modifications proposed to regulate sexual differentiation of brain and behavior. Bioessays. 2010 Nov; 32(11):932-9.
869. Murakami G, Hunter RG, Fontaine C, Ribeiro A, Pfaff D. Relationships among estrogen receptor, oxytocin and vasopressin gene expression and social interaction in male mice. European Journal of Neuroscience. (2011) 34(3):469-77.
870. Pfaff D, Waters E, Khan Q, Zhang X, Numan M. Minireview: estrogen receptor-initiated mechanisms causal to mammalian reproductive behaviors. Endocrinology. (2011)152(4):1209-17.
871. Schober J, Weil Z, Pfaff D. How generalized CNS arousal strengthens sexual arousal (and vice versa). Hormones and Behavior. (2011) 59(5):689-95.



872. Hildebrandt T, Lai JK, Langenbucher JW, Schneider M, Yehuda R, Pfaff DW. The diagnostic dilemma of pathological appearance and performance enhancing drug use. Drug Alcohol Dependence. (2011) 114(1):1-11.
873. McGinnis, M. and Pfaff, D. Sexual behaviors. In: Fink, G., Pfaff, D and Levine, J., Handbook of Neuroendocrinology. San Diego: Academic Press/Elsevier, (2012). 485-496.
874. Spiteri T, Musatov S, Ogawa S, Ribeiro A, Pfaff DW, Agmo A. Estrogen-induced sexual incentive motivation, proceptivity and receptivity depend on a functional estrogen receptor alpha in the ventromedial nucleus of the hypothalamus but not in the amygdala. Neuroendocrinology. (2010); 91(2):142-54.
875. Martín-Alguacil N, Aardsma N, Litvin Y, Mayoglou L, Dupré C, Pfaff DW, Schober JM. Immunocytochemical characterization of pacinian-like corpuscles in the labia minora of prepubertal girls. J Pediatr Adolesc Gynecol. (2011). 24(6):353-8.
876. Leshner A and Pfaff DW. Quantification of Behavior: An introduction. Proc National Academy of Sciences. (2011). 108 Suppl 3:15537-41.
877. Nieves Martín-Alguacil, N.; de Gaspar, I.; Schober, J.M. and Pfaff, D.W. (2012). Chapter 22: “Somatosensation: End Organs for Tactile Sensation.” In D.W. Pfaff (ed), Neuroscience in the 21<sup>st</sup> Century. (pp. 743-780). Heidelberg: Springer Verlag.
878. Leshan, R., Milner, T. and Pfaff, D. (2012). Chapter 52: Blood brain barrier. In D.W. Pfaff (ed), Neuroscience in the 21<sup>st</sup> Century. (pp. 1621-1630). Heidelberg: Springer Verlag.
879. Litvin, Y. and Pfaff, D. (2012). Chapter 54: Hormone Effects on Behavior. In D.W. Pfaff (ed), Neuroscience in the 21<sup>st</sup> Century. (pp. 1683-1714). Heidelberg: Springer Verlag.
880. Gagnidze, K. and Pfaff, D. (2012). Chapter 63: Epigenetic Mechanisms: DNA Methylation and Histone Protein Modification. In D.W. Pfaff (ed), Neuroscience in the 21<sup>st</sup> Century. (pp. 1939-1979). Heidelberg: Springer Verlag.
881. Normandin, J., Pfaff, D. and Murphy, A.Z. (2012). Chapter 69: Sexual behavior. In D.W. Pfaff (ed), Neuroscience in the 21<sup>st</sup> Century. (pp. 2101-2114). Heidelberg: Springer Verlag.
882. Martin, E.M. and Pfaff, D. (2012). Chapter 71: Elementary CNS arousal. In D.W. Pfaff (ed), Neuroscience in the 21<sup>st</sup> Century. (pp. 2147-2172). Heidelberg: Springer Verlag.
883. Kreinin, T., Garcia Moreno Esteva, C., Pfaff, D., Lusweti, S. and Suleiman Shauri, H. “Violence: Adaptive, regulated aggression contrasted with violence against women. In: Schenck-Gustafsson, K., Pisetsky, D., Pfaff, D., and DeCola, P. (Eds.) Handbook of Clinical Gender Medicine. (2012) Basel: Karger. pp 99–124.
884. Wang B, Ni JH, Litvin Y, Pfaff DW, Lin Q A Microfluidic Approach to Pulsatile Delivery of Drugs for Neurobiological Studies. J Microelectromechanical Systems. (2012). 21(1):53-61

885. Clipperton-Allen AE, Lee AW, Reyes A, Devidze N, Phan A, Pfaff DW, Choleris E. Oxytocin, vasopressin and estrogen receptor gene expression in relation to social recognition in female mice. Physiology and Behavior. (2012). 105(4):915-24.
886. Quinkert AW, Pfaff DW. Temporal patterns of deep brain stimulation generated with a true random number generator and the logistic equation: effects on CNS arousal in mice. Behavioral Brain Research. (2012). 229(2):349-58.
887. Gagnidze, K. and Pfaff, D. Hormone-dependent chromatin modifications regulating sexually differentiated animal behavior. In D.W. Pfaff and Y. Christen (eds.), Multiple Origins of Sex Differences in Brain, Research and Perspectives in Endocrine Interactions. Pp. 1-20. Fondation IPSEN. Springer-Verlag Berlin Heidelberg (2013).
888. Pfaff DW and Fisher HE: Generalised Brain Arousal Mechanisms and Other Biological, Environmental and Psychological Mechanisms that Contribute to Libido. In "From the Couch to the Lab: Trends in Psychodynamic Neuroscience", Aikaterini Fotopoulou, Donald Pfaff, and Martin A. Conway (Eds) Oxford: Oxford University Press (2012). 64-84.
889. Hunter RG, Murakami G, Dewell S, Seligsohn M, Baker ME, Datson NA, McEwen BS, Pfaff DW. Acute stress and hippocampal histone H3 lysine 9 trimethylation, a retrotransposon silencing response. Proc National Academy of Sciences (2012). 109(43):17657-62.
890. Pfaff DW, Martin EM, Faber D. Origins of arousal: roles for medullary reticular neurons. Trends in Neuroscience. (2012). 35(8):468-76.
891. Proekt A, Banavar JR, Maritan A, Pfaff DW. Scale invariance in the dynamics of spontaneous behavior. Proc National Academy Sciences (2012). 109(26):10564-9.
892. Spiteri T, Ogawa S, Musatov S, Pfaff DW, Agmo A. The role of the estrogen receptor  $\alpha$  in the medial preoptic area in sexual incentive motivation, proceptivity and receptivity, anxiety, and wheel running in female rats. Behavioral Brain Research. (2012) 230(1):11-20.
893. Ribeiro AC, Musatov S, Shteyler A, Simanduyev S, Arrieta-Cruz I, Ogawa S, Pfaff DW. siRNA silencing of estrogen receptor- $\alpha$  expression specifically in medial preoptic area neurons abolishes maternal care in female mice. Proc National Academy Sciences. (2012). 109(40):16324-9.
894. Litvin Y. and Pfaff, D.W. The involvement of oxytocin and vasopressin in fear and anxiety: animal and human studies. In: Choleris, E., Pfaff, D. and Kavaliers, M. (Eds.) Oxytocin, Vasopressin and Related Peptides in the Regulation of Behavior. Pp 309-330. Cambridge: Cambridge University Press. (2013).
895. Choleris, E., Kavaliers, M. and Pfaff, D.W. Conclusions and outlook. Oxytocin, vasopressin and related peptides in the regulation of behavior: where next? In: Choleris, E., Pfaff, D. and Kavaliers, M. (Eds.) Oxytocin, Vasopressin and Related Peptides in the Regulation of Behavior. Pp 379-381. Cambridge: Cambridge University Press. (2013).

896. Vasudevan N, Morgan M, Pfaff D, Ogawa S. Distinct behavioral phenotypes in male mice lacking the thyroid hormone receptor  $\alpha 1$  or  $\beta$  isoforms. Horm Behav. (2013).63:742-751.
897. Litvin Y, Phan A, Hill MN, Pfaff DW, McEwen BS. CB1 receptor signaling regulates social anxiety and memory. Genes, Brain & Behav. (2013) 12:479-489.
898. Hunter RG, McEwen BS and Pfaff DW. Environmental stress and transposon transcription in the mammalian brain. Mobile Genetic Elements. (2013). 3:324555.
899. Martin-Alguacil N, Schober JM, Kow LM, Pfaff DW. Oestrogen receptor expression and neuronal nitric oxide synthase in the clitoris and prepuccial gland structures of mice. British J. Urology International 102(11):1719-1723, December 2008.
900. Brumbaugh CC, Kothuri R, Marci C, Siefert C, Pfaff DW. Physiological Correlates of the Big 5: Autonomic Responses to Video Presentations APPLIED PSYCHOPHYSIOLOGY AND BIOFEEDBACK 2013 DEC; 38(4):293-301
901. Clark S, Rainville J, Zhao X, Katzenellenbogen BS, Pfaff D, Vasudevan N Estrogen receptor-mediated transcription involves the activation of multiple kinase pathways in neuroblastoma cells JOURNAL OF STEROID BIOCHEMISTRY AND MOLECULAR BIOLOGY 2014 JAN; 139:45-53
902. Litvin Y, Cataldo G, Pfaff DW, Kow LM Estradiol regulates responsiveness of the dorsal preammillary nucleus of the hypothalamus and affects fear- and anxiety-like behaviors in female rats EUROPEAN JOURNAL OF NEUROSCIENCE 2014 JUL; 40(2):2344-2351
903. Tabansky I, Quinkert AW, Rahman N, Muller SZ, Lofgren J, Rudling J, Goodman A, Wang YP, Pfaff DW Temporally-patterned deep brain stimulation in a mouse model of multiple traumatic brain injury BEHAVIOURAL BRAIN RESEARCH (2014) OCT 14; 273:123-132
904. Schaafsma SM, Pfaff DW. Etiologies underlying sex differences in Autism Spectrum Disorders. FRONTIERS IN NEUROENDOCRINOLOGY (2014) AUG; 35(3):255-271
905. Young LJ, Pfaff DW. Sex differences in neurological and psychiatric disorders FRONTIERS IN NEUROENDOCRINOLOGY (2014) AUG; 35(3):253-254.
906. Hudson AE, Calderon DP, Pfaff DW, Proekt A. Recovery of consciousness is mediated by a network of discrete metastable activity states PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA (2014) JUN 24; 111(25):9283-9288.
907. Gagnidze K, Weil ZM, Faustino LC, Schaafsma SM, Pfaff DW. Early Histone Modifications in the Ventromedial Hypothalamus and Preoptic Area Following Oestradiol Administration JOURNAL OF NEUROENDOCRINOLOGY (2013) OCT; 25(10):939-955
908. Leshan, R. and Pfaff, D. The hypothalamic ventral preammillary nucleus: A key site in leptin's regulation of reproduction. J. Chemical Neuroanatomy (2014) 61:239-247.

909. Hildebrandt T, Shope S, Varangis E, Klein D, Pfaff DW, Yehuda R. Exercise reinforcement, stress, and beta-endorphins: An initial examination of exercise in anabolic-androgenic steroid dependence. *DRUG AND ALCOHOL DEPENDENCE* (2014) JUN 1; 139:86-92.
910. Davis EP, Pfaff D. Sexually dimorphic responses to early adversity: Implications for affective problems and autism spectrum disorder. *PSYCHONEUROENDOCRINOLOGY* (2014) NOV; 49:11-25.
911. Gore AC, Martien KM, Gagnidze K, Pfaff D. Implications of Prenatal Steroid Perturbations for Neurodevelopment, Behavior, and Autism. *ENDOCRINE REVIEWS* (2014) 35(6):961-991.
912. Schaafsma, S., Pfaff, D., Spunk, R. Adolphs, R. Deconstructing and reconstructing theory of mind. *Trends in Cognitive Science* (2015)19:65-79.
913. Martín-Alguacil N, Cooper RS, Aardsma N, Mayoglou L, Pfaff D, Schober J. Terminal innervation of the male genitalia, cutaneous sensory receptors of the male foreskin. *Clinical Anatomy* (2015). 28:385-391.
914. Schober J, Aardsma N, Mayoglou L, Pfaff D, Martín-Alguacil N. Terminal innervation of female genitalia, cutaneous sensory receptors of the epithelium of the labia minora. *Clinical Anatomy* (2015).28:392-398.
915. Faustino, L.C., Gagnidze, K., Ortiga-Carvalho, T. and Pfaff, D. Impact of thyroid hormones on estrogen receptor-alpha-dependent transcriptional mechanisms in ventromedial hypothalamus and preoptic area. *Neuroendocrinology* (2015) 101:331-346.
916. Keenan, D. Quinkert, A., Pfaff, D. Stochastic modeling of mouse motor activity under deep brain stimulation: The extraction of arousal information. *Public Library of Science: Computational Biology*. (2015)11:e1003883.
917. Keverne, E.B., Tabansky, I. Pfaff, D. Epigenetic changes in the developing brain: effects on behavior. *Proc. National Academy of Sciences* (2015) 112:6789-6795.
918. Martín-Alguacil, N., Gaspar, I., Schober, J. and Pfaff, D. Somatosensation. In D.W. Pfaff and Nora D. Volkow (editors), *Neuroscience in the 21<sup>st</sup> Century*. (2<sup>nd</sup> edition). Heidelberg: Springer Verlag. (2016, volume 2, pp 863-902).
919. Leshan, R., Milner, T and Pfaff, D. Blood Brain Barrier. In D.W. Pfaff and Nora D. Volkow (editors), *Neuroscience in the 21<sup>st</sup> Century*. (2<sup>nd</sup> edition). Heidelberg: Springer Verlag. (2016, volume 3, pp 1911-1920).
920. Litvin, Y. and Pfaff, D. Hormone effects on behavior. In D.W. Pfaff and Nora D. Volkow (editors), *Neuroscience in the 21<sup>st</sup> Century*. (2<sup>nd</sup> edition). Heidelberg: Springer Verlag. (2016, volume 3, pp. 2017-2048).

921. Gagnidze, K. and Pfaff, D. Epigenetic mechanisms. In D.W. Pfaff and Nora D. Volkow (editors), *Neuroscience in the 21<sup>st</sup> Century*. (2<sup>nd</sup> edition). Heidelberg: Springer Verlag. (2016, volume 3, pp 2339-2380).
922. Hull, E., Normandin, J., Murphy, A. and Pfaff, D. Sexual behavior. In D.W. Pfaff and Nora D. Volkow (editors), *Neuroscience in the 21<sup>st</sup> Century*. (2<sup>nd</sup> edition). Heidelberg: Springer Verlag. (2016, volume 3, pp. 2475-2490).
923. Kilinc, M., Calderon, D., Eugene, M., Tabansky, I., and Pfaff, D. Elementary CNS arousal. In D.W. Pfaff and Nora D. Volkow (editors), *Neuroscience in the 21<sup>st</sup> Century*. (2<sup>nd</sup> edition). Heidelberg: Springer Verlag. (2016, volume 4, pp. 2555-2486).
924. Schaafsma, S., Pfaff, D., Spunt, R. and Adolphs, R. Social behavior: Theory of mind. In D.W. Pfaff and Nora D. Volkow (editors), *Neuroscience in the 21<sup>st</sup> Century*. (2<sup>nd</sup> edition). Heidelberg: Springer Verlag. (2016, volume 4, pp 2717-2726).
925. Kow, L-M, Lee, A.W., Klinge, C., Gustafsson, J-A., and Pfaff, D. Molecular and cellular mechanisms for estrogenic effects on brain and behavior. In D.W. Pfaff and M. Joels (editors-in-chief), *Hormones, Brain and Behavior* (3<sup>rd</sup> edition). Cambridge: Elsevier (2017, volume 3, pp.55-82.)
926. Kow, L-M, Dupre, C., Phan, A. and Pfaff, D. Analyses of rapid actions of estrogens on ventromedial hypothalamic neurons. *Steroids* 111:100-112 (2016).
927. Calderon, D.P., Kilic, M., Maritan, A., Banavar, J. and Pfaff, D. Generalized CNS arousal: existence, mechanisms, and submission to quantitative analysis. *Neuroscience and Biobehavioral Reviews*, 68:167-176 (2016).
928. Chu, X., Gagnidze, K. ; Pfaff, D. and Agmo, A., Estrogens, androgens and generalized behavioral arousal in gonadectomized female and male mice. *Physiology & Behavior* (2015) 147:255-263.
929. Snoeren, E. Antonio-Cabrea, Spitteri, T., Mousatov, S. Ogawa, S., Pfaff, D. and Agmo, A. Role of oestrogen- alpha receptors in sociosexual behaviour in female rats housed in a seminatural environment. *J. Neuroendocrinology*, 100:1-16, (2015).
930. Hunter, R., Gagnidze, K., McEwen, B. and Pfaff, D. Stress and the dynamic genome: steroids, epigenetics and the transposome. *Proc. National Academy of Sciences* (2015) 112: 6828-6833.

931. Phan, A., Suchkov, S., Molinaro, L., Reynolds, K., Kow, L.M., MacLusky, N., Pfaff, D. and Choleris, E. Rapid increases in immature synapses parallel estrogen-induced hippocampal learning enhancements. Proc. National Academy of Sciences (2015) 112:16018-23.
932. Thengone, D., Gagnidze, K., Pfaff, D. and Proekt, A. Phase-amplitude coupling in spontaneous mouse behavior. PLoS One, (2016) 11(9): Article e0162262.
933. Tabansky, I., Stern, J. and Pfaff, D. Implications of epigenetic variability within a cell population for “cell type” classification. Frontiers in Behavioral Neuroscience (2015) 9:342-359.
934. Magarinos, A.M. and Pfaff, D.W. Influences of stress on sexual reproductive mechanisms in the female. In Simpson, E. and Balsam, P. (Editors), Current Topics in Behavioral Neuroscience (volume 27). Heidelberg: Springer, 2016, pp. 35-51.
935. Liu, X., Pfaff, D., Tabansky, I., Calderon, D., Wang X., Wang Y., and Kow, L.-M. Development of electrophysiological properties of nucleus gigantocellularis neurons correlated with increased CNS arousal. Developmental Neuroscience (2016) 38:295-310.
936. Manzoor, M. and Pfaff, D. A brief overview of techniques for modulating neuroendocrine and other neural systems. In Stem Cells in Neuroendocrinology ( Christen, Y. and Pfaff, D., eds). Heidelberg: Springer, pp. 1-11. (2016).
937. Kow, L-M and Pfaff, D. Rapid estrogen actions on ion channels: a survey in search for mechanisms. Steroids (2016) 111:46-53.
938. Hunter, R., Seligsohn, M., Rubin, T. Pfaff, D., Datson, N. and McEwen, B. Stress and corticosteroids regulate rat hippocampal mitochondrial DNA gene expression via the glucocorticoid receptor. Proc. National Academy of Sciences (2016) 113:9099-9104.
939. Ribeiro AC, Ågmo A, Musatov S, Pfaff DW. Silencing Estrogen Receptor- $\alpha$  with siRNA in the Intact Rodent Brain. Methods Mol Biol. 2016;136:343-52.
940. Pfaff, D.W., Bubnys, A. and Tabansky, I. Brainstem reticular formation and CNS arousal. In Brainstem and Behavior ( R. Lalonde, ed.). Nova Press ( 2017, in press).
941. Schaafsma, S.M., Gagnidze, K., and Pfaff, D.W. Sex-specific gene-environment interactions underlying ASD-like behaviors. Proceedings, National Academy of Sciences ( 2017, in press).

942. Kafkafi, N.,.....Pfaff, D.W.....Y. Benjamini. Reproducibility and replicability of mouse phenotyping in preclinical studies. *Neuroscience and Biobehavioral Reviews* (2016, submitted).
943. Pfaff DW, K.Gagnidze and R.G. Hunter, Molecular endocrinology of female reproductive behavior. *Molecular and Cellular Endocrinology*, (2017 , in press).
944. Pfaff, DW and Baum, M., Preoptic/hindbrain/autonomic coordination in the regulation of androgen-controlled male reproductive behavior. *Molecular and Cellular Endocrinology*, (2017, in press).
945. Calderon D.P, Proekt, A. and Pfaff, D. Activation of large neurons in the medullary reticular formation regulates cortical and behavioral arousal. *Nature Neuroscience*, submitted, 2017.
946. Kow, L-M and Pfaff, D. A unified theory of estrogenic actions on neurons. *Frontiers in Neuroendocrinology*, submitted, (2017).
947. Keenan, D.M. , Gagnidze,K., Proekt, A.,and Pfaff, D.W. Reconstructing Arousal- Sensitive Response Curves Even When Arousal Signaling is not Directly Observed. *Nature Neuroscience* (2017, submitted ).

## **PATENTS**

Pfaff, D. and Wells, A. (2009) “Neurostimulation having non-linear dynamics.

