Stanford

Karen J. Parker, PhD

Associate Professor (Research) of Psychiatry and Behavioral Sciences (Major Laboratories and Clinical Translational Neurosciences Incubator)

CONTACT INFORMATION

- **Laboratory Manager**

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Bio

BIO

Dr. Parker is an Associate Professor of Psychiatry and Behavioral Sciences at Stanford University where she directs the Social Neurosciences Research Program. Dr. Parker's research expertise is the biology of social functioning, with a particular interest in oxytocin and vasopressin signaling pathways. Her preclinical research program focuses on developing novel animal models; her clinical research program encompasses biomarker discovery and therapeutic testing in patients with neurodevelopmental and neuropsychiatric disorders.

Dr. Parker received her undergraduate and graduate degrees from the University of Michigan and completed postdoctoral training at Stanford University. Dr. Parker joined the Stanford faculty in 2007. She is an Affiliate Scientist at the California National Primate Research Center, a Member of the American College of Neuropsychopharmacology, and a Kavli Fellow of the US National Academy of Sciences.

Dr. Parker’s research program has been supported by multiple funding agencies including the NIH, the Simons Foundation, NARSAD, and the Weston Havens Foundation. Dr. Parker serves on the Editorial Board of Psychoneuroendocrinology, the scientific advisory board for the Stanford Autism Center at Packard Children’s Hospital, and on various national (e.g., NIH and NSF) and international (e.g., Medical Research Council) grant review committees. She has also participated as an invited expert at NIH and US National Academy workshops.

Dr. Parker was born in Boulder, CO and grew up in suburban Chicago, IL. She lives in the San Francisco Bay Area with her husband, children, and an Australian shepherd.

ACADEMIC APPOINTMENTS

- Associate Professor (Research), Psychiatry and Behavioral Sciences
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Affiliate Scientist, California National Primate Research Center, (2012- present)

HONORS AND AWARDS

- George A. Miller Award, American Psychological Association
- Kavli Fellow, U.S. National Academy of Sciences
- Young Investigator Award, NARSAD
- Distinguished Dissertation Award recipient, University of Michigan

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Chair of Animal Research Committee, American College of Neuropsychopharmacology (2018 - present)
- Member of Committee on Animals in Research, Society for Neuroscience (2018 - present)
- Member of BRLE Grant Review Panel, National Institutes of Health (2012 - 2018)
- Editorial Board Member, Psychoneuroendocrinology (2013 - present)
- Scientific Advisory Board Member, Stanford Autism Center at Packard Children’s Hospital (2016 - present)
- Member of Women's Task Force, American College of Neuropsychopharmacology (2017 - present)
- Member of Animal Research Committee, American College of Neuropsychopharmacology (2017 - present)
- Full Member, American College of Neuropsychopharmacology (2018 - present)

PROFESSIONAL EDUCATION

- Postdoctoral, Stanford University , Psychiatry Neuroscience
- Ph.D., University of Michigan , Biological Psychology
- A.B., University of Michigan , Psychology

LINKS

- Parker Lab Website: http://med.stanford.edu/parkerlab.html

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

The principal goal of the Parker Lab Social Neurosciences Research Program at Stanford University is to better understand the biology of social functioning using an integrative, translational approach. Our behavioral research spans studies of individual differences in animal social development to studies of social cognition impairments in various clinical populations (e.g., in children with autism; in survivors of pediatric hypothalamic-pituitary tumors; in adults with depressive and anxiety disorders). Our biological studies employ epigenetic, gene expression, and neurotransmitter-based approaches to identify biomarkers of impaired social functioning, and we also conduct treatment trials to test the efficacy of novel pharmacotherapies to improve social abilities in animal models and in patients with social deficits. Our lab is particularly interested in testing whether “social” neuropeptide (e.g., oxytocin and arginine vasopressin) signaling pathways are implicated in human and non-human primate social behavior, and whether these neuropeptide pathways are robust biomarkers of, and treatment targets for, social impairments in clinical populations.

CLINICAL TRIALS

- Intranasal Vasopressin Treatment in Children With Autism, Recruiting
- Intranasal Oxytocin Treatment for Social Deficits in Children With Autism, Not Recruiting
- The Role of Vasopressin in the Social Deficits of Autism, Not Recruiting

PROJECTS

- See Lab website for current projects: http://med.stanford.edu/parkerlab.html - Stanford University

Teaching

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Elena Itskovich, Olena Zyga

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biology (School of Humanities and Sciences) (Phd Program)
- Child Psychiatry (Fellowship Program)
- Neurosciences (Phd Program)
- Psychiatry and Behavioral Science (Fellowship Program)

Publications

PUBLICATIONS

- **Blood oxytocin concentration positively predicts contagious yawning behavior in children with autism spectrum disorder.** *Autism research : official journal of the International Society for Autism Research*
  Mariscal, M. G., Oztan, O., Rose, S. M., Libove, R. A., Jackson, L. P., Sumiyoshi, R. D., Trujillo, T. H., Carson, D. S., Phillips, J. M., Garner, J. P., Hardan, A. Y., Parker, K. J.
  2019

- **A randomized placebo-controlled pilot trial shows that intranasal vasopressin improves social deficits in children with autism** *SCIENCE TRANSLATIONAL MEDICINE*
  Parker, K. J., Oztan, O., Libove, R. A., Mohsin, N., Karhson, D. S., Sumiyoshi, R. D., Summers, J. E., Hinman, K. E., Motonaga, K. S., Phillips, J. M., Carson, D. S., Fung, L. K., Garner, et al
  2019; 11 (491)

- **Cerebrospinal fluid vasopressin and symptom severity in children with autism.** *Annals of neurology*
  Oztan, O., Garner, J. P., Partap, S., Sherr, E. H., Hardan, A. Y., Farmer, C., Thurm, A., Swedo, S. E., Parker, K. J.
  2018

- **Adaptive developmental plasticity in rhesus macaques: the serotonin transporter gene interacts with maternal care to affect juvenile social behaviour.** *Proceedings. Biological sciences*
  Madrid, J. E., Mandalaywala, T. M., Coyne, S. P., Ahloy-Dallaire, J., Garner, J. P., Barr, C. S., Maestripieri, D., Parker, K. J.
  2018; 285 (1881)

- **Arginine vasopressin in cerebrospinal fluid is a marker of sociality in nonhuman primates** *SCIENCE TRANSLATIONAL MEDICINE*
  Parker, K. J., Garner, J. P., Oztan, O., Tarara, E. R., Li, J., Sclafani, V., Del Rosso, L. A., Chun, K., Berquist, S. W., Chez, M. G., Partap, S., Hardan, A. Y., Sherr, et al
  2018; 10 (439)

- **Plasma anandamide concentrations are lower in children with autism spectrum disorder** *MOLECULAR AUTISM*
  Karhson, D. S., Krasinska, K. M., Dallaire, J., Libove, R. A., Phillips, J. M., Chien, A. S., Garner, J. P., Hardan, A. Y., Parker, K. J.
  2018; 9: 18

- **Vigilance for threat accounts for inter-individual variation in physiological responses to adversity in rhesus macaques: A cognition × environment approach.** *Developmental psychobiology*
  Mandalaywala, T. M., Petrullo, L. A., Parker, K. J., Maestripieri, D., Higham, J. P.
  2017; 59 (8): 1031–38

- **Preference for novel faces in male infant monkeys predicts cerebrospinal fluid oxytocin concentrations later in life.** *Scientific reports*
  Madrid, J. E., Oztan, O., Sclafani, V., Del Rosso, L. A., Calonder, L. A., Chun, K., Capitanio, J. P., Garner, J. P., Parker, K. J.

2017; 7 (1): 12935

- **Intranasal oxytocin treatment for social deficits and biomarkers of response in children with autism.** *Proceedings of the National Academy of Sciences of the United States of America*
  Parker, K. J., Oztan, O., Libove, R. A., Sumiyoshi, R. D., Jackson, L. P., Karhson, D. S., Summers, J. E., Hinman, K. E., Motonaga, K. S., Phillips, J. M., Carson, D. S., Garner, J. P., Hardan, et al
  2017; 114 (30): 8119–24

- **Vigilance for threat accounts for inter-individual variation in physiological responses to adversity in rhesus macaques: A cognition × environment approach.** *Developmental Psychobiology*
  Mandalaywala, T. M., Petrullo, L. A., Parker, K. J., Maestripieri, D., Higham, J. P.
  2017: 1031–38

- **Biomarker discovery for disease status and symptom severity in children with autism.** *Psychoneuroendocrinology*
  Oztan, O., Jackson, L. P., Libove, R. A., Sumiyoshi, R. D., Phillips, J. M., Garner, J. P., Hardan, A. Y., Parker, K. J.
  2017; 89: 39–45

- **Effects of early life adversity on cortisol/salivary alpha-amylase symmetry in free-ranging juvenile rhesus macaques** *HORMONES AND BEHAVIOR*
  Petrullo, L. A., Mandalaywala, T. M., Parker, K. J., Maestripieri, D., Higham, J. P.
  2016; 86: 78-84

- **Early Predictors of Impaired Social Functioning in Male Rhesus Macaques (Macaca mulatta).** *PloS one*
  Sclafani, V., Del Rosso, L. A., Seil, S. K., Calonder, L. A., Madrid, J. E., Bone, K. J., Sherr, E. H., Garner, J. P., Capitanio, J. P., Parker, K. J.
  2016; 11 (10)

- **Endocannabinoid signaling in social functioning: an RDoC perspective.** *Translational Psychiatry*
  Karhson, D. S., Hardan, A. Y., Parker, K. J.
  2016

- **Cup tool use by squirrel monkeys** *AMERICAN JOURNAL OF PRIMATOLOGY*
  Buckmaster, C. L., Hyde, S. A., Parker, K. J., Lyons, D. M.
  2015; 77 (12): 1323-1332

- **Dopamine D4 receptor genotype variation in free-ranging rhesus macaques and its association with juvenile behavior.** *Behavioural brain research*
  Coyne, S. P., Lindell, S. G., Clemente, J., Barr, C. S., Parker, K. J., Maestripieri, D.
  2015; 292: 50-55

- **Cerebrospinal fluid and plasma oxytocin concentrations are positively correlated and negatively predict anxiety in children** *MOLECULAR PSYCHIATRY*
  Carson, D. S., Berquist, S. W., Trujillo, T. H., Garner, J. P., Hannah, S. L., Hyde, S. A., Sumiyoshi, R. D., Jackson, L. P., MOSS, J. K., Strehlow, M. C., Cheshier, S. H., Partap, S., Hardan, et al
  2015; 20 (9): 1085-1090

- **Arginine Vasopressin Is a Blood-Based Biomarker of Social Functioning in Children with Autism** *PLOS ONE*
  Carson, D. S., Garner, J. P., Hyde, S. A., Libove, R. A., Berquist, S. W., Hornbeak, K. B., Jackson, L. P., Sumiyoshi, R. D., Howerton, C. L., Hannah, S. L., Partap, S., Phillips, J. M., Hardan, et al
  2015; 10 (7)

- **Plasma vasopressin concentrations positively predict cerebrospinal fluid vasopressin concentrations in human neonates** *PEPTIDES*
  Carson, D. S., Howerton, C. L., Garner, J. P., Hyde, S. A., Clark, C. L., Hardan, A. Y., Penn, A. A., Parker, K. J.
  2014; 61: 12-16

- **Early Experience Affects the Strength of Vigilance for Threat in Rhesus Monkey Infants** *PSYCHOLOGICAL SCIENCE*
  Mandalaywala, T. M., Parker, K. J., Maestripieri, D.
  2014; 25 (10): 1893-1902

- **Plasma oxytocin concentrations and OXTR polymorphisms predict social impairments in children with and without autism spectrum disorder** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Parker, K. J., Garner, J. P., Libove, R. A., Hyde, S. A., Hornbeak, K. B., Carson, D. S., Liao, C., Phillips, J. M., Hallmayer, J. F., Hardan, A. Y.
  2014; 111 (33): 12258-12263

- **Emotion dysregulation and the core features of autism spectrum disorder.** *Journal of autism and developmental disorders*

Samson, A. C., Phillips, J. M., Parker, K. J., Shah, S., Gross, J. J., Hardan, A. Y.
2014; 44 (7): 1766-1772

- **Plasma oxytocin concentrations are lower in depressed vs. healthy control women and are independent of cortisol.** *Journal of psychiatric research*
  Yuen, K. W., Garner, J. P., Carson, D. S., Keller, J., Lembke, A., Hyde, S. A., Kenna, H. A., Tennakoon, L., Schatzberg, A. F., Parker, K. J.
  2014; 51: 30-36

- **Early experience affects the strength of vigilance for threat in rhesus monkey infants.** *Psychological science*
  Mandalaywala, T. M., Parker, K. J., Maestripieri, D.
  2014; 25 (10): 1893–1902

- **Physiological and behavioural responses to weaning conflict in free-ranging primate infants.** *Animal behaviour*
  Mandalaywala, T. M., Higham, J. P., Heistermann, M., Parker, K. J., Maestripieri, D.
  2014; 97: 241–47

- **The three-hit concept of vulnerability and resilience: Toward understanding adaptation to early-life adversity outcome** *PSYCHONEUROENDOCRINOLOGY*
  Daskalakis, N. P., Bagot, R. C., Parker, K. J., Vinkers, C. H., De Kloet, E. R.
  2013; 38 (9): 1858-1873

- **Neonatal CSF oxytocin levels are associated with parent report of infant soothability and sociability.** *Psychoneuroendocrinology*
  Clark, C. L., St John, N., Pasca, A. M., Hyde, S. A., Hornbeak, K., Abramova, M., Feldman, H., Parker, K. J., Penn, A. A.
  2013; 38 (7): 1208-1212

- **Distinct Plasma Profile of Polar Neutral Amino Acids, Leucine, and Glutamate in Children with Autism Spectrum Disorders** *JOURNAL OF AUTISM AND DEVELOPMENTAL DISORDERS*
  Tirouvanziam, R., Obukhanych, T. V., Laval, J., Aronov, P. A., Libove, R., Banerjee, A. G., Parker, K. J., O'Hara, R., Herzenberg, L. A., Herzenberg, L. A., Hardan, A. Y.
  2012; 42 (5): 827-836

- **Effects of intranasal oxytocin on social anxiety in males with fragile X syndrome** *PSYCHONEUROENDOCRINOLOGY*
  Hall, S. S., Lightbody, A. A., McCarthy, B. E., Parker, K. J., Reiss, A. L.
  2012; 37 (4): 509-518

- **Hypothalamic-pituitary-adrenal axis physiology and cognitive control of behavior in stress inoculated monkeys** *2nd Herzliyah Symposium on Developmental Psychopathology*
  Parker, K. J., Buckmaster, C. L., Lindley, S. E., Schatzberg, A. F., Lyons, D. M.
  SAGE PUBLICATIONS LTD.2012: 45–52

- **Psychological Stress in Childhood and Susceptibility to the Chronic Diseases of Aging: Moving Toward a Model of Behavioral and Biological Mechanisms** *PSYCHOLOGICAL BULLETIN*
  Miller, G. E., Chen, E., Parker, K. J.
  2011; 137 (6): 959-997

- **A novel form of oxytocin in New World monkeys** *BIOLOGY LETTERS*
  Lee, A. G., Cool, D. R., Grunwald, W. C., Neal, D. E., Buckmaster, C. L., Cheng, M. Y., Hyde, S. A., Lyons, D. M., Parker, K. J.
  2011; 7 (4): 584-587

- **Identifying key features of early stressful experiences that produce stress vulnerability and resilience in primates** *NEUROSCIENCE AND BIOBEHAVIORAL REVIEWS*
  Parker, K. J., Maestripieri, D.
  2011; 35 (7): 1466-1483

- **Somatic and neuroendocrine responses to standard and biologically salient acoustic startle stimuli in monkeys** *PSYCHONEUROENDOCRINOLOGY*
  Parker, K. J., Hyde, S. A., Buckmaster, C. L., Tanaka, S. M., Brewster, K. K., Schatzberg, A. F., Lyons, D. M., Woodward, S. H.
  2011; 36 (4): 547-556

- **Mu-opioid Receptor (OPRM1) Variation, Oxytocin Levels and Maternal Attachment in Free-Ranging Rhesus Macaques Macaca mulatta** *BEHAVIORAL NEUROSCIENCE*
  Higham, J. P., Barr, C. S., Hoffman, C. L., Mandalaywala, T. M., Parker, K. J., Maestripieri, D.
  2011; 125 (2): 131-136

- **Oxytocin receptor gene polymorphism (rs2254298) interacts with familial risk for psychopathology to predict symptoms of depression and anxiety in adolescent girls** *PSYCHONEUROENDOCRINOLOGY*
  Thompson, R. J., Parker, K. J., Hallmayer, J. F., Waugh, C. E., Gotlib, I. H.
  2011; 36 (1): 144-147
- **Animal Models of Early Life Stress: Implications for Understanding Resilience** *DEVELOPMENTAL PSYCHOBIOLOGY*
  Lyons, D. M., Parker, K. J., Schatzberg, A. F.
  2010; 52 (7): 616-624
- **Preliminary evidence that plasma oxytocin levels are elevated in major depression** *PSYCHIATRY RESEARCH*
  Parker, K. J., Kenna, H. A., Zeitzer, J. M., Keller, J., Blasey, C. M., Amico, J. A., Schatzberg, A. F.
  2010; 178 (2): 359-362
- **Effects of Age on Cerebrospinal Fluid Oxytocin Levels in Free-Ranging Adult Female and Infant Rhesus Macaques** *BEHAVIORAL NEUROSCIENCE*
  Parker, K. J., Hoffman, C. L., Hyde, S. A., Cummings, C. S., Maestripieri, D.
  2010; 124 (3): 428-433
- **FOR BETTER OR WORSE? STRESS INOCULATION EFFECTS FOR IMPLICIT BUT NOT EXPLICIT ANXIETY** *DEPRESSION AND ANXIETY*
  Edge, M. D., Ramel, W., Drabant, E. M., Kuo, J. R., Parker, K. J., Gross, J. J.
  2009; 26 (9): 831-837
- **Prefrontal Plasticity and Stress Inoculation-Induced Resilience** *DEVELOPMENTAL NEUROSCIENCE*
  Katz, M., Liu, C., Schaer, M., Parker, K. J., Ottet, M., Epps, A., Buckmaster, C. L., Bammer, R., Moseley, M. E., Schatzberg, A. F., Eliez, S., Lyons, D. M.
  2009; 31 (4): 293-299
- **Developmental cascades linking stress inoculation, arousal regulation, and resilience** *FRONTIERS IN BEHAVIORAL NEUROSCIENCE*
  Lyons, D. M., Parker, K. J., Katz, M., Schatzberg, A. F.
  2009; 3
- **Preliminary evidence that hippocampal volumes in monkeys predict stress levels of adrenocorticotropic hormone** *BIOLOGICAL PSYCHIATRY*
  Lyons, D. M., Parker, K. J., Zeitzer, J. M., Buckmaster, C. L., Schatzberg, A. F.
  2007; 62 (10): 1171-1174
- **Early life stress and novelty seeking behavior in adolescent monkeys** *PSYCHONEUROENDOCRINOLOGY*
  Parker, K. J., Rainwater, K. L., Buckmaster, C. L., Schatzberg, A. F., Lindley, S. E., Lyons, D. M.
  2007; 32 (7): 785-792
- **Stress inoculatio n-induced indications of resilience in monkeys** *22nd Annual Meeting of the International-Society-for-Traumatic-Stress-Studies*
  Lyons, D. M., Parker, K. J.
  JOHN WILEY & SONS INC.2007: 423–33
- **Social stress-related behavior affects hippocampal cell proliferation in mice** *PHYSIOLOGY & BEHAVIOR*
  Mitra, R., Sundlass, K., Parker, K. J., Schatzberg, A. F., Lyons, D. M.
  2006; 89 (2): 123-127
- **Maternal mediation, stress inoculation, and the development of neuroendocrine stress resistance in primates** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Parker, K. J., Buckmaster, C. L., Sundlass, K., Schatzberg, A. F., Lyons, D. M.
  2006; 103 (8): 3000-3005
- **Intranasal oxytocin administration attenuates the ACTH stress response in monkeys** *PSYCHONEUROENDOCRINOLOGY*
  Parker, K. J., Buckmaster, C. L., Schatzberg, A. F., Lyons, D. M.
  2005; 30 (9): 924-929
- **Mild early life stress enhances prefrontal-dependent response inhibition in monkeys** *BIOLOGICAL PSYCHIATRY*
  Parker, K. J., Buckmaster, C. L., Justus, K. R., Schatzberg, A. F., Lyons, D. M.
  2005; 57 (8): 848-855
- **Prospective investigation of stress inoculation in young monkeys** *ARCHIVES OF GENERAL PSYCHIATRY*
  Parker, K. J., Buckmaster, C. L., Schatzberg, A. F., Lyons, D. M.

2004; 61 (9): 933-941

- **Female meadow voles (Microtus pennsylvanicus) demonstrate same-sex partner preferences** *JOURNAL OF COMPARATIVE PSYCHOLOGY*
  Parker, K. J., Lee, T. M.
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- **Circadian and homeostatic regulation of hypocretin in a primate model: Implications for the consolidation of wakefulness** *JOURNAL OF NEUROSCIENCE*
  Zeitzer, J. M., Buckmaster, C. L., Parker, K. J., Hauck, C. M., Lyons, D. M., Mignot, E.
  2003; 23 (8): 3555-3560
- **Euroendocrine aspects of hyperportisolism in major depression** *HORMONES AND BEHAVIOR*
  Parker, K. J., Schatzberg, A. F., Lyons, D. M.
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- **Interaction of photoperiod and testes development is associated with paternal care in Microtus pennsylvanicus (meadow voles)** *PHYSIOLOGY & BEHAVIOR*
  Parker, K. J., Lee, T. M.
  2002; 75 (1-2): 91-95
- **Social and environmental factors influence the suppression of pup-directed aggression and development of paternal behavior in captive meadow voles (Microtus pennsylvanicus)** *JOURNAL OF COMPARATIVE PSYCHOLOGY*
  Parker, K. J., Lee, T. M.
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- **Day length and sociosexual cohabitation alter central oxytocin receptor binding in female meadow voles (Microtus pennsylvanicus)** *BEHAVIORAL NEUROSCIENCE*
  Parker, K. J., Phillips, K. M., Kinney, L. F., Lee, T. M.
  2001; 115 (6): 1349-1356
- **Paternal behavior is associated with central neurohormone receptor binding patterns in meadow voles (Microtus pennsylvanicus)** *BEHAVIORAL NEUROSCIENCE*
  Parker, K. J., Kinney, L. F., Phillips, K. M., Lee, T. M.
  2001; 115 (6): 1341-1348
- **Central vasopressin administration regulates the onset of facultative paternal behavior in Microtus pennsylvanicus (Meadow voles)** *HORMONES AND BEHAVIOR*
  Parker, K. J., Lee, T. M.
  2001; 39 (4): 285-294
- **Development of selective partner preferences in captive male and female Microtus pennsylvanicus (meadow voles)** *Animal Behaviour*
  Parker KJ, Phillips KM, Lee TM
  2001; 61 (6): 1217-1226