

## KAREN BALES, PhD

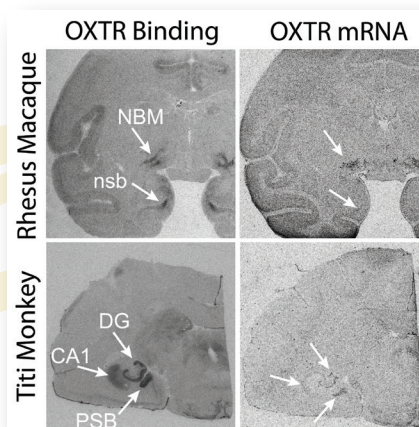
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*Neurobiology of strong social bonds*

In my laboratory, we study the neurobiology that underlies strong social relationships such as pair-bonding and parenting. We do this in titi monkeys, a socially monogamous South American primate; and prairie voles, a socially monogamous rodent.

Primarily we study oxytocin, which is a hormone involved in social bonding, and is now also being proposed as a treatment for autism / schizophrenia / social anxiety/etc. It is already being used without any data on long-term effects; this is what we are studying in animals. We are also examining the oxytocin system in postmortem human tissue from neurotypical individuals and persons with autism.

Our goal is to understand the basic neurobiology of social behavior so that we can effectively treat disorders that include social components.



*Oxytocin receptor binding and mRNA in the titi and rhesus monkey brain, showing a strong signal in the nucleus basalis of Meynert, dentate gyrus and CA1 field of the hippocampus, and presubiculum.*

### Why Primate Models Matter

Phillips KA, Bales KL, Capitanio JP, Conley A, Czoty PW, Hart BA, Hopkins WD, Hu SL, Miller LA, Nader MA, Nathanielsz PW, Rogers J, Shively CA, and Voytko ML.

*Am J Primat* 2014. 76; 801-827, PMID: 24723482

**Background:** Research involving nonhuman primates (NHPs) has played a vital role in many of the medical and scientific advances of the past century. NHPs are used because of their similarity to humans in physiology, neuroanatomy, reproduction, development, cognition, and social complexity—yet it is these very similarities that make the use of NHPs in biomedical research a considered decision. As primate researchers, we feel an obligation and responsibility to present the facts concerning why primates are used in various areas of biomedical research. Here, we review key areas in biomedicine where primate models have been, and continue to be, essential for advancing fundamental knowledge in biomedical and biological research.

**Key Words:** Animal models; translational research; nonhuman primates

### Chronic Intranasal Oxytocin Causes Long-Term Impairments in Partner Preference Formation in Male Prairie Voles

Bales KL, Perkeybile AM, Conley OG, Lee MH, Guoynes CD, Downing GM, Yun CR, Solomon M, Jacob S, Mendoza SP

*Biol Psychiatry*. 2013. Aug 1;74(3):180-8. PMID: PMC3556198

**Background:** Oxytocin (OT) is a hormone shown to be involved in social bonding in animal models. Intranasal OT is currently in human clinical trials for use in disorders such as autism and schizophrenia. We examined long-term effects of intranasal OT given developmentally in the prairie vole (*Microtus ochrogaster*), a socially monogamous rodent, often used as an animal model to screen drugs that have therapeutic potential for social disorders. Long-term developmental treatment with OT may show results different to those predicted by short-term studies, as well as significant sex differences and dosage effects.

**Key Words:** Autism, intranasal, oxytocin, schizophrenia, social behavior, vasopressin