

Researchers create first transgenic prairie voles

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Researchers at the Yerkes National Primate Research Center, Emory University, have successfully generated the first transgenic prairie voles, an important step toward unlocking the genetic secrets of pair bonding. The future application of this technology will enable scientists to perform a host of genetic manipulations that will help identify the brain mechanisms of social bonding and other complex social behaviors. This advancement may also have important implications for understanding and treating psychiatric disorders associated with impairments in social behavior. The study is available in the December issue of *Biology of Reproduction*.

Lead researcher Zoe Donaldson, PhD, and her colleagues adapted transgenic technology to the prairie vole, a naturally occurring monogamous rodent that is being used to discover the brain mechanisms underlying monogamous pair bonds.

"Domesticated lab rats and mice dominate biomedical research, but wild rodent species with more complex social behaviors are better suited for investigating the biology of the social brain. Until now, genetic engineering among rodents has been limited to [lab mice](#) and rats," says Donaldson.

Single-cell prairie vole embryos were injected with a lentivirus containing a gene found in glowing jellyfish. The gene encodes a green fluorescent protein, which glows under the appropriate conditions. The prairie vole that developed from this embryo expressed the green

fluorescent protein throughout its body, and the foreign gene was passed on to the offspring for multiple generations.

Larry Young, PhD, a Yerkes-based senior investigator on the study and an expert in [social behavior](#), will next use this technology to determine whether monogamy and its associated social behaviors can be affected by manipulating a single gene. Researchers are also investigating ways to refine this technology in order to alter gene expression in certain [brain regions](#) as well as at certain developmental milestones.

Source: Emory University ([news](#) : [web](#))

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