



A pheromone is a chemical emitted by an organism that is meant to affect the behavior of another organism. These chemicals are used for a wide variety of purposes—an ant will lay a trail of pheromones to guide his compatriots to food, for example, or a mamma rabbit will use the chemicals to signal her babies to start nursing. In many animals, such as mice, pheromones are sensed with the vomeronasal organ (VNO), a tiny structure at the base of the nasal cavity. Dulac began studying the VNO to discover how mouse brains process pheromone signals and gain insight into brain function leading to specific social behaviors. She first developed a method that let her identify the genes that were expressed (turned on) in individual neurons and then isolated a family of genes for VNO receptors associated with pheromones. With such knowledge about the molecular biology of the VNO, Dulac was then able to investigate the role that pheromones play in social interactions between the sexes. Her work overturned the belief that the neuronal pathways that lead to mating begin in the VNO—they actually start in the olfactory system. The VNO instead helps males distinguish between males and females, and it represses male behaviors in female mice and female behaviors in male mice, Dulac found. Most recently, Dulac's group has used their molecular toolbox to uncover the neurons responsible in mice for guiding male and female parental behavior.