

Nursing gerbils unravel benefit of multiple mothers in collective mammals

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In mammals such as rodents that raise their young as a group, infants will nurse from their mother as well as other females, a dynamic known as allosuckling. Ecologists have long hypothesized that allosuckling lets newborns stockpile antibodies to various diseases, but the experimental proof has been lacking until now.

An in-press report in the journal *Mammalian Biology* found that infant Mongolian [gerbils](#) that suckled from females given separate vaccines for two different diseases wound up with antibodies for both illnesses.

The findings not only demonstrate the potential purpose of allosuckling, but also provide the first framework for further studying it in the wild by using traceable antibodies, said first author Romain Garnier, a postdoctoral researcher in Princeton University's Department of Ecology and [Evolutionary Biology](#). Garnier conducted the research with Sylvain Gandon and Thierry Boulinier of the Center for Functional and Evolutionary Ecology in France, and with Yannick Chaval and Nathalie Charbonnel at the Center for Biology and Management of Populations in France.

Garnier and his coauthors administered an [influenza vaccine](#) to one group of female gerbils, and a vaccine for [Borrelia burgdorferi](#)—the bacterial agent of [Lyme disease](#)—to another group. Once impregnated, female gerbils from each vaccine group were paired and, as the gerbils do in nature, kept separate from the male gerbils to birth and rear their young. In the wild, females can choose which young to nurse and infant

gerbils can likewise choose which female to suckle. In the typical lab, however, one male, one female and their young are housed together, the researchers wrote.

When screened upon birth, all the infant gerbils had no detectable antibodies against influenza while one had antibodies against *B. burgdorferi*, according to the paper. But after eight days of nursing, all the infants contained high levels of antibodies for both influenza and *B. burgdorferi*, suggesting that the females nursed the young—their own and those of the other female—evenly. These results suggest that allosuckling is indeed intended to expose newborn animals to a host of [antibodies](#).

This benefit sheds light on a peculiar arrangement in cooperative mammals that ecologists have puzzled over, the authors wrote. In social species, females usually fall into dominant or subordinate groups with the subordinate females typically involved in tending to the young produced by dominant females. Yet, in many cases, subordinate females are "allowed" to breed. Garnier and his colleagues suggest that the potentially larger antibody pool available through nursing might be one of the reasons why.

Provided by Princeton University

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