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Measuring Ultrasonic Communication Between Mouse Pups and Adult
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Abstract

Measuring ultrasonic communication provides us with insights into parental behaviors in animals. In this study, I measured the ultrasonic communication between mouse pups and their mother, females, one of which had given birth to the pups and the other had not raised them. I found that there was no significant difference between the communication expressed by pups in response towards their biological mother and foster mother in groups. Mouse pups called maternal females regardless of genetic relations. Communication in males may be a more complicated model of their environmental systems.

Results

- Blood samples revealed no significant differences between the two groups and the control group was visibly higher than the experimental group in Figure 1.
- Welch’s test revealed significant differences between the two maternal groups in pups, with no significant differences in pup development.

Discussion & Conclusions

- The sound of biological mothers is richer and more varied in communication than those of foster mothers, and is hypothesized as an essential trait in development.
- The maternal control group revealed more maternal behavior. The sound frequency was significantly different from the biological groups.
- Benefits of maternal communication are observed in pups of the experimental group.
- Pups in the maternal groups displayed increased activity and better health compared to control groups.

Figure 1: The average number of pups per minute in each group: biological, foster, and control.

Mother Mice

Materials and Methods

- Eight pregnant females. Male mice were housed in separate boxes but each pair became social. After birth, I placed each mouse in a small box in which she gives birth.
- Mothers exchanged with each pair, each mother cared for two litters from the other box.
- Females expected each pup in each litter separated to each biological maternal foster mother, recorded the number of sounds per minute and the amount of maternal behaviors observed in each pup using BabyBall.com from Converseance Tools, Inc., and the PAWS data analysis program on a PC.
- Control litters of the same strain were used to confirm that biological mothers during the time the experimental groups were of similar genetic backgrounds.

Figure 2: The average number of bouts per minute in each of the three groups and the control group.