Social influences on the food choices of Norway rats:

Behaviour, Neuroscience, and Molecular Biology

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I intend to do four things during my talk: first, to review a series of behavioural experiments carried out in my laboratory over the last 30 years exploring one of several ways that my students and I have found animals can acquire information about food safety from others of their species. In particular, I shall be discussing evidence that after a naïve Norway rat (an observer) interacts with a recently fed conspecific (a demonstrator), the observer rat exhibits a long-lasting enhancement of its preference for whatever food its demonstrator ate.

Second, I shall describe a recent series of studies (Lesburgueres et al., 2011, *Science*, 331, 924-928) illustrating the potential utility of social learning about foods as an experimental paradigm for exploring the physical substrate of the processing and storage of memories. Third, I shall present a series of experiments that used our analyses of the behavioural mechanisms supporting social learning about foods to explore the function of a previously mysterious part of the mammalian olfactory system (Munger et al., 2010, *Current Biology*, 20, 1438-1444).

The Munger et al. (2010) and Lesburgueres et al. (2011) experiments not only contribute two more examples to the near endless list of instances of neuroscience providing techniques that deepen understanding of interesting behavioural phenomena, but also illustrate that students of behaviour have techniques with the potential to facilitate exploration of phenomena interesting to neuroscientists, molecular biologists, geneticists, etc..

Last, and perhaps most relevant to the concerns of ecologists and evolutionary biologists, I shall present evidence consistent with the view that social learning about foods has the potential to permit animals to thrive in environments that would otherwise be closed to them and can form the basis of traditions of food preference that last for many “generations.”

Studies of social learning have the potential to inform life sciences from anthropology to zoology.