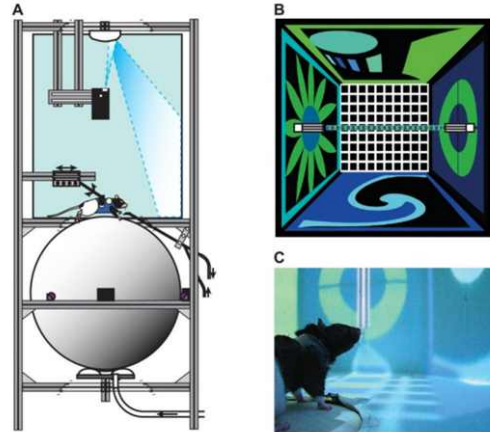


## How Realistic is Virtual Reality for Rats ?Really ?

It is now well established that primates, including humans, can interpret interactive 2-D projections in order to navigate in virtual environments. The discovery in 2005 that also rodents have this ability opened the path to expanded animal research exploring the physiology of the underlying mechanisms. Subsequent studies have focused on defining the cellular limits to these mechanisms using electrophysiology recordings.

Virtual environment testing is usually “one-dimensional” in nature, in that only visual (or sometimes auditory) stimuli are used to guide behavioral response. Rodents have relatively poor vision and are thus more reliant on proprioceptive and olfactory cues for navigation. Therefore, it is appropriate to ask the question “How relevant or representative of the real world are the results of virtual reality studies in rodents?”.



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We are developing a virtual reality system for freely moving rats, which will utilize olfactory and proprioceptive simulation in addition to the visual background cues. The basic form will be a large sphere, which is controlled by three independent unidirectional motors (similar to the diagram above). Information as to the rat's location will be provided using an in-house developed tracking system. This system will provide the basis for rodent behavior comparisons of between physical and virtual reality settings.