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PRESS RELEASE

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THERE'S NO PLACE LIKE HOME

Home exerts its influence on all species. By looking at exploratory behaviour from a zoological perspective, scientists in Israel have found that insects, mammals and humans alike move with reference to home – an anchor.

Speaking at the FENS Forum of Neuroscience in Berlin, Professor Ilan Golani from Tel Aviv University told delegates today (11 July), "Home is a most important phenomenon in our lives shaping a large component of animal and human behaviour."

Researchers of animal and human behavior often study navigation from the theoretical point of view of engineers, but zoologist Professor Golani has carefully observed humans, mammals and insects and has found that they all have to overcome multiple neural constraints during navigation.

The starting point for a fruit fly might be a rotting fruit, home for rodents and ants, or mother for human and primate infants. But this starting point – or origin - constrains exploration by being used as a reference and an anchor for forays into the environment. Behaviour is shaped by circumventing and dissipating the constraints. Short forays always pave the way for extended exploration.

The newness of the first, exploratory excursion constrains the distance they will go, and each subsequent foray will be further: going to a point, returning home, going a bit further then returning home.

"The constraints have been accumulated in the course of evolution, shaping the exploratory behavior of many organisms. Constraint enables the gradual, incremental and careful process of discovery," he said.

In a series of experiments, he observed that rodents often selected a home base location near edges, corners, objects, and shelters but where there was no shelter or landmark they established a home base in the middle of nowhere. When they were allowed to explore a novel area connected to their home cage they performed increasingly complex excursions in a regulated way, exploring each spatial dimension of the experimental arena.

Human infants are similar in their behaviour. In the presence of their mother, the infant moves further away each time and each time returns to the mother. This pattern of behaviour is integral to forming intimacy relationship between mother and infant.

Neuroscientists can now follow this list of endogenous constraints, which are widely shared across animals and man, and look for corresponding constraints in their brains.

"By demonstrating that spatial behaviour of insects, mammals and even human infants share the same developmental course we might also understand how the brain organizes navigation and spatial awareness," he said.

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Symposium S56: Shared principles of animal behavior across species

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NOTES TO EDITORS

Professor Ilan Golani, The George S. Wise Faculty of Life Sciences, University of Tel Aviv, Israel <https://en-lifesci.tau.ac.il/profile/ilan99>

The 11th FENS Forum of Neuroscience, the largest basic neuroscience meeting in Europe, organised by FENS and hosted by the German Neuroscience Society will attract more than 7,000 international delegates. The Federation of European Neuroscience Societies (FENS) was founded in 1998. With 43 neuroscience member societies across 33 European countries, FENS as an organisation represents 24,000 European neuroscientists with a mission to advance European neuroscience education and research. <https://forum2018.fens.org/>