

Press release

ICTP PRIZE rewarding the discovery of “GPS Neurons”

Emilio Kropff, Argentinian neuroscientist and former SISSA PhD student, will officially receive tomorrow the 2017 ICTP Prize for his discovery of *speed-cells*, neurons that help the brain's ability to navigate



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The 2017 ICTP Prize has been awarded to Emilio Kropff, a neuroscientist from Argentina affiliated with that country's National Scientific and Technical Research Council's (CONICET) Instituto de Investigaciones Bioquímicas de Buenos Aires (IIBBA), Leloir Institute. The Prize recognizes Kropff's outstanding contributions to neurosciences.

The award ceremony will be held on Friday 29 June at 14:30 in ICTP's Budinich Lecture Hall.

Kropff's work addresses several aspects of memory and spatial cognition, combining both experimental and theoretical approaches. Most notably, Kropff discovered speed cells in the brain's entorhinal cortex, neurons that encode a high-precision measurement of speed. The discovery was crucial, as it provides the missing link in our understanding of how path integration, a mechanism contributing to spatial orientation based on self-motion rather than sensory cues, is implemented in the brains of rats. The study was featured in *Nature* in 2015.

Kropff's research builds on that by May-Britt Moser and Edvard I. Moser, who shared the 2014 Nobel Prize in Physiology or Medicine (along with John O'Keefe) "for their discoveries of cells that constitute a positioning system in the brain". The cells discovered by the Mosers, called "grid cells", make up a coordinate system in the brain's hippocampus that is used for spatial navigation. Kropff, who is interested in memory and spatial navigation, took the Mosers' work one step further by investigating how the brains of rats process the speed at which they travel to update their internal location map.

Kropff, who is an ICTP Associate, completed his studies in physics at the University of Buenos Aires, and went on to earn a doctorate in cognitive neuroscience at SISSA in 2007. He worked as a postdoc at the Norwegian University of Science and Technology under the direction of the Mosers. He is now a researcher at the Leloir Institute IIBBA-CONICET of Buenos Aires, as well as an ICTP Associate, collaborating with the Centre's Quantitative Life Sciences section.

The ICTP Prize Ceremony will be livestreamed on the ICTP website.

Created in 1982, the ICTP Prize, recognizes young scientists (under 40) from developing countries who work and live in those countries and who have made outstanding and original contributions to physics. The prize includes a sculpture, a certificate and a cash award.

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