Dynamic changes in murine forebrain miR-211 expression associate with cholinergic imbalances and epileptiform activity

**Dynamic changes in murine forebrain miR-211 expression associate with cholinergic imbalances and epileptiform activity**

Authors: Bekenstein et al. (Hermona Soreq's lab)
Published in PNAS on June 2017

On December 16, 1997, hundreds of Japanese children were brought to hospital suffering from epilepsy-like seizures. They all had been watching an episode of the popular Pokémon TV show that included five seconds of intensely bright flashing lights. But why did the lights affect a few hundred children while thousands of other viewers were unharmed? Based on web surveys, we hypothesized that the rapidly produced small microRNA-211 (miR-211) could protect the healthy brain from epilepsy. To test this idea, we developed a transgenic mouse which produced unusually high amounts of brain miR-211, unless fed with the antibiotic Doxycycline. Working with colleagues at Ben-Gurion University of the Negev in Israel and Dalhousie University in Canada, we suppressed excess miR-211 production in the engineered mice to the levels found in normal brains. This led to electrically recorded epilepsy and hypersensitivity to epilepsy-inducing compounds, indicating that miR-211 may protect the brain from epileptic seizures. Understanding how miR-211 affects seizure thresholds may potentially lead to new ways to intensify miR-211 production.

To test for epilepsy, mice were implanted with electrodes that record their brain activity (electrocorticography, ECoG) before and after administration of Doxycycline, and their reaction to the epilepsy-inducing drug PTZ was followed.
UPCOMING EVENTS

Learn more about our exciting upcoming events!

read more

Studying at ELSC

Our Int'l Ph.D. program provides outstanding students with top-notch courses in computational neuroscience.

read more

The Building

The Jerusalem Brain Sciences Building will provide a state-of-the-art research and teaching facility for the Edmond and Lily Safra Center for Brain Sciences.

read more

ELSC Media Channel

Get into our media channel and investigate ELSC's latest videos: seminars, public lectures, courses and video articles.