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# UCLA scientists teach cultured brain cells to keep time

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The ability to tell time is fundamental to how humans interact with each other and the world. Timing plays an important role, for example, in our ability to recognize speech patterns and to create music.

Patterns are an essential part of timing. The human brain easily learns patterns, allowing us to recognize familiar patterns of shapes, like faces, and timed patterns, like the rhythm of a song. But exactly how the brain keeps time and learns patterns remains a mystery.

In this three-year study, UCLA scientists attempted to unravel the mystery by testing whether networks of brain cells kept alive in culture could be "trained" to keep time. The team stimulated the cells with simple patterns - two stimuli separated by different intervals lasting from a twentieth of a second up to half a second.

After two hours of training, the team observed a measurable change in the cellular networks' response to a single input. In the networks trained with a short interval, the network's activity lasted for a short period of time. Conversely, in the networks trained with a long interval, network activity lasted for a longer amount of time.

The UCLA findings are the first to suggest that networks of brain cells in a petri dish can learn to generate simple timed intervals. The research sheds light on how the brain tells time and will enhance scientists' understanding of how the brain works.

**More information:** The research appears in the June 13 edition of Nature Neuroscience, now online at www.nature.com/neuro/journal/v … nt/full/nn.2579.html

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