

Israeli researchers create artificial rat cerebellum

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(Medical Xpress) -- Taking another step towards creating devices that could be meshed with brain function to help those with brain damage, or perhaps one day, to improve on abilities, researchers at Tel Aviv University, led by Professor of Psychobiology Matti Mintz, have developed an adjunct to a part of a rat brain. The team, who will be presenting their results this month at a biotechnology meeting in the UK, has created a computer chip that is able to emulate one of the functions of the rat cerebellum.

The [cerebellum](#) is the small odd looking [part of the brain](#) that looks like a separate organ. It sits below most of the rest of the brain and is able to communicate directly with the brain stem. One of its main purposes is to aid in helping learn how to perform new types of physical activities, such as surfing, riding a bike or walking a tightrope. The researchers focused

on this part of the brain both because its actions are better understood than other [parts of the brain](#), and because they could rather easily measure results in mimicking its actions.

They began their experiment by studying [brain signals](#) as they arrived at the cerebellum and then watched as those signals were converted to other types of signals that were sent back out. In so doing they were able to recognize the signal for a particular event as well as the signals the cerebellum would send back to the rest of the brain in response. Next, they created a computer chip that was both able to recognize the incoming signal for a certain activity and then generate the appropriate response. After that they disabled the cerebellum of a rat and hooked up their chip as a temporary replacement; but before switching it on, they tested the rat by directing a puff of air at one of its eyes while simultaneously sounding a tone; the idea being to teach it to blink upon hearing the tone. With its cerebellum disconnected, the rat did not learn to blink upon hearing the tone. After switching the chip on however, the rat did learn to blink upon hearing the tone, just as it would have using its normal cerebellum to do the job.

While this experiment is clearly just one simple example of being able to mimic the function of one simple brain activity, it shows that it can be done, and more to the point, it's the first time that two-way communications between the brain and an artificial device has been achieved. It most assuredly will open the door to all kinds of future possibilities. Hopefully, after a lot more work is done in this area, researchers might one day be able to replicate some of the functions that are lost due to [brain damage](#) in people; a godsend to victims of trauma and/or stroke.

More information:

via [Newscientist](#), [Daily Mail](#)

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