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A new chemotaxis assay shows the extreme sensitivity of axons to molecular gradients.

Rosoff WJ, Urbach JS, Esrick MA, McAllister RG, Richards LJ, Goodhill GJ

Nat Neurosci 2004 Jun 7(6):678-82 [abstract on PubMed] [related articles] [order article]

Selected by | Rachel O.L. Wong / Kees Jalink

First evaluation 19 Jul 2004 | Latest evaluation 23 Sep 2004

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Rachel O.L. Wong Washington University School of Medicine, United States NEUROSCIENCE Tech Advance	Using a clever method to create molecular gradients in three dimensions, the authors reveal the extreme sensitivity of neuronal growth cones to the environment. This technique not only permits rapid assessment of the response of neuronal growth cones to known axonal guidance molecules but also is particularly useful for identifying novel molecular cues. Evaluated 23 Sep 2004 cite this evaluation
Kees Jalink The Netherlands Cancer Institute, Netherlands CELL BIOLOGY Tech Advance	This paper reports imprinting of chemotactic gradients on a collagen gel that are stable enought to study neurite outgrowth in long-term experiments. Such gradients allowed the authors to show that neurites of rat dorsal root ganglion cells are capable of sensing a gradient of 0.1% of nerve growth factor, on average corresponding to a single molecule along a typical growth cone. They also showed that this sensitivity is only reached over a relatively small part of the gradient, indicating that no significant adaptation occurs in the growth cones. As generation of stable chemotactic gradients is a nuisance in other studies too, the gel-printing technique is certainly worth consideration by others studying chemotaxis. Evaluated 19 Jul 2004 cite this evaluation

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