

**Supplementary Video 1.** Localized  $\text{Ca}^{2+}$  signals in the growth cone that are induced by an external gradient of the guidance cue netrin-1. Confocal images show the concentration of  $[\text{Ca}^{2+}]_i$  in the growth cone of a cultured *Xenopus* spinal neuron injected with the  $\text{Ca}^{2+}$ -sensitive fluorescence indicator Oregon Green BAPTA-dextran. In this pseudocolor scheme, blue and white represent the lowest and highest  $[\text{Ca}^{2+}]_i$ , respectively. Blank images mark the onset of an external gradient of netrin-1, which was delivered from a pipette (left side) at a distance 100  $\mu\text{m}$  from the growth cone. Images were acquired every 20 s with a confocal laser-scanning microscope equipped with a 60  $\times$  objective (NA, 0.9), as previously published [1].

#### References

- 1 Hong, K. *et al.* (2000) Calcium signalling in the guidance of nerve growth by netrin-1. *Nature* 403, 93–98