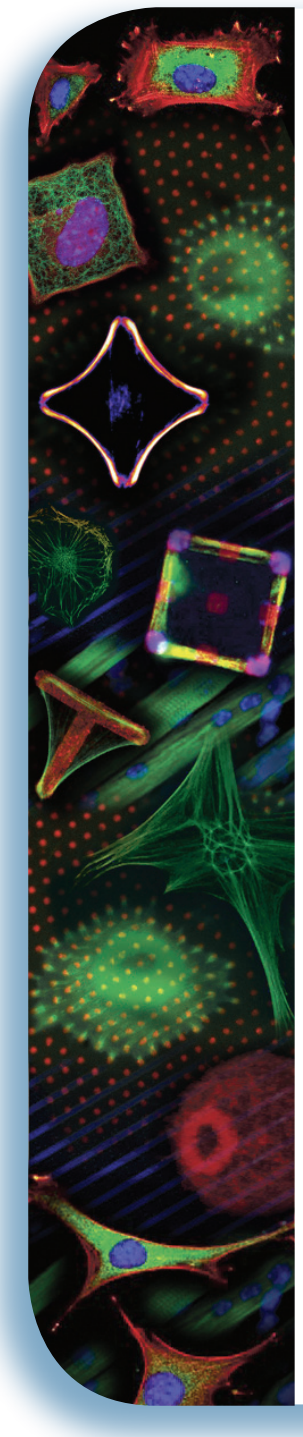


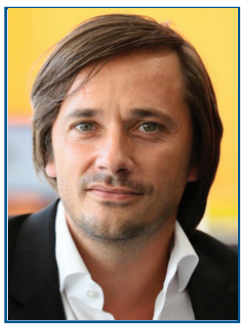
As part of our "Nano & Micro-Systems for Cell Biology" seminar series,

we are delighted to invite you to attend this seminar to be given in english by :

Grégoire COURTINE

Swiss Federal Institute of Technology
Professor, International Paraplegic Foudation
Chair in Spinal Cord Repair

Thursday 19 March 2015
2pm



Neuroprosthetic technologies to improve locomotion after spinal cord injury

Salle Nevill Mott (D420)
3rd floor - Building D - Institut Néel
25 rue des martyrs - 38000 GRENOBLE
[ACCESS MAP]

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Neuroprosthetic technologies to improve locomotion after spinal cord injury

Over the past decade, my team and I developed a pragmatic therapy that restored supraspinal control over refined leg movements after severe spinal cord injury in rodents. Our therapy, termed neuroprosthetic rehabilitation, acts over two time windows. Immediately, electrical and chemical neuromodulation of spinal circuits mediate motor control of the paralysed legs. In the long term, will-powered training regimens enabled by electrochemical neuromodulation and robotic assistance promote neuroplasticity of residual connections—an extensive rewiring that reestablishes voluntary movement. The successful implementation of these interventions required the development of myriad tools, including neural interfaces, computational models, real-time control platforms, robotic systems, and anatomical analyses. Here, I will describe the conceptual framework through which we designed these cutting-edge technologies. I also will reveal some of the mechanisms underlying the immediate and long-term effects of neuroprosthetic rehabilitation on motor control capacities. Finally, I will highlight our current efforts in non-human primates and humans to translate our findings into a viable therapy to improve the recovery of locomotion in paraplegic individuals.

http://courtine-lab.epfl.ch/

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