

## Entrepreneurial ID «venture leaders» 2007



**Andre Mercanzini**

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«Project»: *Aleva Neurotherapeutics – We develop implantable neurostimulation microelectrodes for the treatment of neurological disorders*

*Industry: Medical Devices*

### Biography

André received his BS in Engineering Physics at the University of Toronto in 2003. During his undergraduate studies he carried out summer research projects at the Institute for Biomedical Engineering, University of Toronto and at the Artificial Intelligence Laboratory, Massachusetts Institute of Technology. André was first exposed to high-tech entrepreneurship during a one year internship at Zyvex Corp (Dallas, TX), the first company to commercialize molecular nanotechnology. As a member of their MEMS group he worked on the development of micro-optical devices and was awarded two US patents on microassembly. He chose to pursue his PhD at the EPFL Microsystems Laboratory under Prof. Philippe Renaud because of its excellent facilities and Switzerland's culture of innovation. The goal of his thesis is to reduce the inflammatory response to devices implanted in the brain using highly localized drug delivery. During his doctoral research he has developed microfabrication processes for implantable neurostimulation and recording devices and has co-developed a novel drug eluting coating. In 2006 he spent four months as a graduate intern at Bosch Research in Palo Alto, CA where he was involved with the development of silicon microfabrication processes for automotive sensors at the Stanford Nanofabrication Facility. In 2007 André founded Aleva Neurotherapeutics to commercialize the results from his thesis.

### Company / project

Aleva Neurotherapeutics is developing implantable microelectrodes used in Deep Brain Stimulation therapy for neurological disorders. Our target customers are neurosurgeons performing Deep Brain Stimulation therapy using implantable neurostimulators seeking to improve the efficiency and success rate of the therapy while decreasing surgery time and complexity.

Indications for Deep Brain Stimulation (DBS) currently include Parkinson's disease, tremor and dystonia, and are expanding to epilepsy, drug resistant depression, obesity and obsessive-compulsive disorder. There are over 6000 DBS surgeries per year worldwide and to date 40,000 patients have undergone DBS therapy. The market for DBS was \$600 million in 2006 and will continue to grow at 22% a year until 2010. Problems arising in the success rate of the therapy are related to the type of electrode lead that is implanted in the brain. Today's large leads can cause severe neurological damage during surgery and the electrodes are not small enough to precisely stimulate the affected area causing psychiatric side effects in a large percentage of patients.

Aleva's technology enables placing more than fifty electrodes where today there are only four. Our high quality microfabrication techniques ensure reliability and inexpensive manufacturing. We provide the smallest possible DBS lead minimizing complications during surgery. The microscale electrode sites permit highly localized stimulation and provide new functionality for DBS therapy. Quicker stimulation site identification means quicker, simpler surgery. Finally, if the lead shifts after surgery, different electrode sites can be chosen for stimulation thus eliminating the need for a costly and traumatic re-operation.

Aleva Neurotherapeutics is currently seeking funding for biocompatibility tests of its prototype, a necessary step in the regulatory process, and to finance further electronics development. We are also currently seeking a strategic partner already active in the neurostimulation field with whom we can co-pursue development of a high channel count implantable Deep Brain Stimulator.

[www.aleva-neuro.com](http://www.aleva-neuro.com)