

# SURVIVING DEATH VALLEY



Stem Cell Network  
Réseau de cellules souches

## Early support from SCN helped an award-winning medical researcher successfully navigate the tricky terrain where so many great ideas can die.

Today's research innovation often has a way of becoming yesterday's news. What looked so promising in the "Eureka!" phase can slowly fizzle when there is insufficient funding or industry interest to take a laboratory breakthrough from its conceptual stage to commercial viability.

Dr. Samuel Weiss, the University of Calgary researcher who discovered that the adult brain contains stem cells capable of providing an infinite supply of new neurons, knows this all too well.

"People call it the Death Valley of science," says Dr. Weiss, Director of the Hotchkiss Brain Institute and winner of the 2008 Gairdner International Award for outstanding medical research. "It's where good ideas can just dry up."

Dr. Weiss has been fortunate in not having to walk through Death Valley alone.

"The Stem Cell Network has been very supportive," says Dr. Weiss, whose original stem cell discoveries have led to the development of a promising stroke therapy now in Phase II clinical trials.

"In the early days with the stroke work, partnering with SCN and the Canadian Stroke Network allowed us to demonstrate the proof of principle for mobilizing stem cells to treat animal models. They were extremely supportive in helping us fill that gap between discovery and proof of principle.

No one wants to support the in-between stuff, but they did a great job."

The stroke therapy, called REGENESIS, uses NTx™-265, a regimen of two drugs – human Chorionic Gonadotropin (hCG) and Erythropoietin (EPO) – to stimulate neural cell growth and replace brain cells destroyed by oxygen deprivation. Stem Cell Therapeutics Corporation (SCT), a Calgary-based company that Dr. Weiss helped found five years ago, is conducting the clinical trials.

Meanwhile, separate clinical trials will soon begin to test the effectiveness of prolactin – a hormone that triggers lactation in pregnant women – in combating Multiple Sclerosis (MS). With that debilitating disease, the nervous system's cell-to-cell communication is disrupted when an insulator called myelin is stripped from cellular fibres.

"We drew the parallels between the reasonably well-known remission of MS during pregnancy and the fact that prolactin levels go up then," says Dr. Weiss. "We tested it in animals and were able to show that prolactin could also increase myelination."

As with the development of REGENESIS, SCN was there to help during the early days of the prolactin research – and beyond.

“SCN support in the prolactin project helped develop the proof-of-principle studies and even supported some of the early stage clinical efforts. I’m really grateful for the belief in the concept.”

Dr. Weiss was an early adopter of what he calls he calls “intrinsic” or endogenous (from within the tissue or organ) cellular repair in which the existing stem cells are stimulated to begin proliferation and differentiation to replace or repair damaged cells. This approach varies from the notion of transplanting or injecting stem cells at the damaged site to affect repair – a strategy that may not always be workable when dealing with the human brain.

“The neat thing about the endogenous approach is that it actually occurs already, and to some extent spontaneously. So what we’re doing is trying to work with nature rather than trying to superimpose something from the outside in. That’s not to suggest superimposing doesn’t work, but it may be more challenging.”

He says SCN was quick to respond to encourage research in this new way of manipulating stem cells. “It was a different model for how cell therapy might be applied. But I had great support, great scientific advice, great peer review and of course, financial contributions in trying to move the scientific translation forward.”

## ON THE RECORD: WHAT’S BEEN SAID ABOUT SAM WEISS

“The true spirit of science is to embrace the unknown, and to have the wisdom to recognize when you’ve hit on something that could turn out to be big. Sam has that spirit.”

–Dr. Tom Feasby, Dean, University of Calgary  
Faculty of Medicine.

“Sam made a landmark discovery when he identified neural stem cells in adult tissue, transforming the field of neurobiology and paving the way for regenerative medicine in the nervous system.”

–Dr. John Dirks, President and Scientific Director,  
the Gairdner Foundation

“Dr. Weiss has a passion and dedication for his work that will undoubtedly lead to further discovery and solutions.”

–Dr. Harvey Weingarten, President,  
University of Calgary



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