

Lured by the hope and promise of stem cell advancements, British scientist Clive Svendsen picks up his roots, his family, his successes, and heads to the heartland.

the zen of stem

BY NICOLE RESNICK PHOTOGRAPHY BY MARTHA BUSSE / SUTTER STUDIOS

Once upon a time, on one side of the Atlantic Ocean, in England, lived a young, promising scientist looking to plant some professional roots at a quality research institution. On the other side of the Atlantic, in the heart of America, stood a renowned university planning to build a cutting-edge research facility and aiming to fill its laboratories with top-notch talent. Call it fate – or simply good timing – the result is the same. The UW-Madison's Waisman Center recently landed Cambridge University-trained neuroscientist Clive Svendsen, Ph.D. And neither side could be happier.

The story actually began to unfold a number of years ago when the Waisman Center, a recognized leader in the field of human development and a nationally designated Center for Excellence in Developmental Disabilities, launched an expansion of its existing facility. The goal was to develop a research program for stem cells and gene therapy whose ultimate goal was the treatment of neurodegenerative diseases such as Parkinson's and Alzheimer's. But key to the success of this program was attracting some of world's best and brightest scientists.

Over in England, Svendsen was firmly entrenched in his own laboratory and busy manipulating neural stem cells (cells derived from fetal tissue and committed to developing into cells of the nervous system). Not yet 40 years old, Svendsen had over 50 scientific publications under his belt and had already received thousands of dollars in grant money. Yet the political and scientific climate in Britain threatened to slow him down. The human genome project was the hot research topic, and stem cell mania had not yet hit. Here in Madison, where the power of stem cells was becoming increasingly apparent, Svendsen was exactly the candidate that the Waisman Center and UW faculty hoped to

recruit. "The search committee felt he was one of the most promising researchers in the world," says center director Marsha Seltzer, Ph.D., "and we were able to get him here."

A MAN WITH A MISSION

From boyhood, Svendsen knew exactly what he wanted to do with his life. Science was his passion as early as he can remember, and once he was old enough to enter the world of laboratories, brain cells and disease models, there was no stopping him. He left his childhood home in Somerset, England, at the age of 17 for his first real taste of research science. A local lab wouldn't suffice – Svendsen had his heart set on wetting his feet at the Woods Hole Marine Biological Laboratory, a prestigious research facility in Massachusetts. "I wrote to ten different professors at Woods Hole before finding one who agreed to let me work for him," he recalls. There he spent a glorious summer "cleaning out sea squirt cages," as he puts it, or helping biologists study development with the aid of marine organisms.

That first experience only whetted his appetite for more, and Svendsen actually deferred his entrance into college for a year so that he could continue doing research. He returned to England after finding work in a Cambridge University lab focused on Alzheimer's disease. In the process, he was involved in the publication of several research papers, and his interest in neuroscience blossomed. After graduating from King's College in England, Svendsen embarked upon a number of interesting journeys; he worked briefly as a private detective, married his college sweetheart, landed a job in the Harvard University lab of a renowned researcher, and spent a year working in Japan for a Boston-based biotech company.





Now seven years out of college, Svendsen had enough research experience and publications to warrant a faculty position at a major university. But there was one problem – he had yet to earn his doctoral degree. So Svendsen and his wife decided to return to Cambridge, England, where he pursued his Ph.D. In record time, just two and a half years later, he completed his degree – and his wife gave birth to their son. Next began a research phase in a Cambridge lab, doing what he loved most: investigating the processes of brain repair and transplantation.

Finding his niche

Around that time – the late 1990s, says Svendsen – stem cells were beginning to gain attention, and he was intrigued. Fortunately, he was able to pursue his work with relatively little interference and lots of monetary support. His experiments were going fabulously well, and he earned his first mega-grant, awarded by the Wellcome Trust, a major independent research funder. Svendsen was one of the first scientists to propagate human fetal brain stem cells in the lab by taking a small part of tissue used for transplantation and then coaxing them to grow in a petri dish.

Then came the year 2000 – the millennium – and Svendsen sensed that he was approaching a turning point in his life, both professionally and personally. “There was confusion [about the stem cell issue] in England at this point,” he says. “Parliament was trying to decide what to do, and the MRC (Medical Research Council) ended up shutting down my lab.” Svendsen says that the buzz about stem cells hadn’t really hit England yet, and the British government wasn’t all that interested in brain repair. The ruling research project at the time was the Human Genome, and the MRC was looking to cut its funding to other areas of investigation. Svendsen realized that he needed to look elsewhere. “My timing was bad and I was actually ahead of myself,” says Svendsen. “It was a good time to move on.”

As fate would have it, an interesting packet of information soon landed on Svendsen’s desk. The return address read: The Waisman Center, Madison, Wisconsin. A few days later, Svendsen’s wife convinced him to hop on a plane for a “quick look.” The rest, you could say, is history. An impressive tour of the

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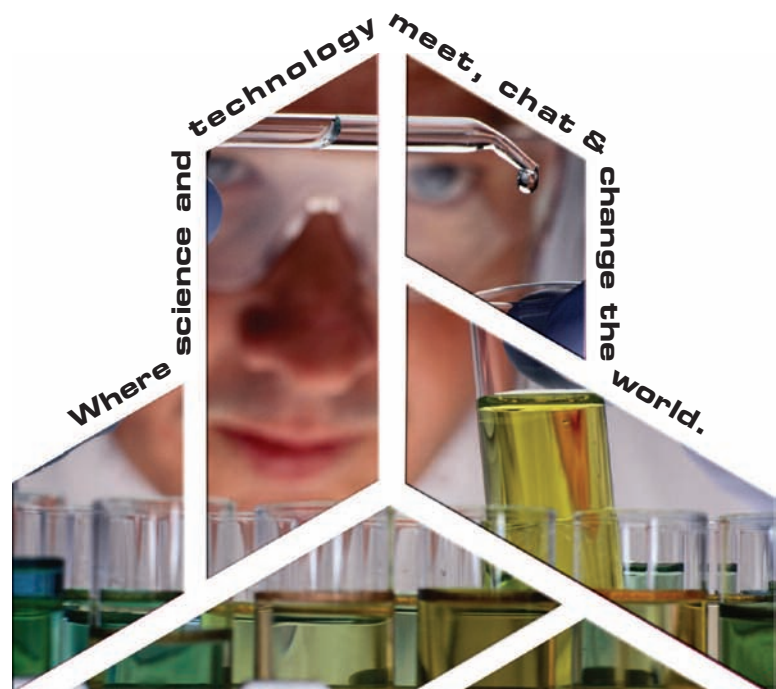
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Waisman Center and a view of the blueprints for the center’s new research facility, a crash course in the variety and depth of the center’s affiliated research programs and resources at the UW-Madison campus, time spent meeting with Dr. Terrence Dolan (then director of the Waisman Center) and the entire search committee – Svendsen says he was hooked. The Waisman Center search committee felt the same way. “It was a process of getting to know him, and helping him to develop a vision, because the facility was not yet even built,” says Seltzer. “But he was able to watch this idea unfold – the concept of the facility, and a series of beautiful labs designed with state-of-the art everything.”

Living happily ever after

Svendsen took a big gamble, but the UW and Waisman Center have made good on their promises. His new laboratory is spacious and now filled with a productive team of scientists. With a joint 50:50 faculty appointment as professor of anatomy and neurology at the Waisman Center, Svendsen enjoys much collaboration across the UW campus. His lab is devoted to understanding the mechanisms of brain cell development and using that knowledge to unravel the mysteries of brain diseases. By working with animal models of diseases like Parkinson’s and stroke, his lab members assess the possible use of human neural stem cells to restore damaged brain function. And they are inspired by the fact that they can take their discoveries and push them ahead to the development of actual cures and pharmaceuticals for managing the treatment of these diseases.

The application, or translation, of Svendsen’s basic science research is spurred by the Waisman Center’s own Clinical BioManufacturing Facility – a unique facility specifically designed to produce experimental biologic therapeutics for initial human clinical studies. And then there is an entire wing of the building, the W.M. Keck Laboratory for functional brain imaging and behavior, which is dedicated to high-tech medical imaging and that will eventually allow Svendsen to monitor the success of brain cell transplantation as he moves into clinical research trials. “We have here a fully integrated model, and this is what attracted Clive,” says Seltzer.

Svendsen and his colleague Su Chun Zhang, Ph.D., assistant professor of anatomy, are co-directors of the Waisman Center’s Stem Cell Research Program. The program was developed as part of the

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Dollars and sense

How much do your kids know about economics? Probably not enough.



Val Simson

The notion of financial literacy may seem intuitive to some, less so to others. But many agree, nationally and here in Wisconsin, that our children deserve a better financial foundation from which to pursue their dreams and build their futures.

Research shows that most high school students flunk when it comes to knowledge about money. That's not surprising, as some parents don't like to discuss money at home with their children, while others are unable. But as best we can, we owe it to our children to help them figure out this financial jungle, for more and more we are the ones responsible for our retirement and savings decisions.

A movement is under way in Washington to address the glaring need for increased consumer education. After Congress passed and the president signed the No Child Left Behind legislation last year, Treasury Secretary Paul O'Neill and the U.S. Department of Education created the Office of Financial Education. "The Office will develop a long-term, multifaceted approach to expanding our nation's money management skills," O'Neill explained, addressing four key areas: basic savings, credit management, retirement planning and home ownership.

Wisconsin took a place at this leadership table when former governor Scott McCallum organized a financial literacy task force, which presented its recommendations in August of last year. The task force was peppered with private- and public-sector professionals in industry and education. Absent from the table, however, was State Superintendent of Schools Elizabeth Burmaster. While appointed to the task force by virtue of her position, she was unable to attend any of the meetings. Nor will you find reference to the need for financial literacy anywhere on her website.

The task force heard presentations from innovative educators around the state. A team from La Crosse talked about the Reality Store, an daylong event, where

students are randomly assigned jobs with incomes, then have to visit various booths where they pay utility bills, buy groceries, pay rent or buy a home, pay property taxes, and experience emergencies like a leak in the basement. It's a novel concept that links

community businesses with the school as well as providing a fun, real-world experience for high schoolers. Tim Stauss, a former banker and high school economics teacher in Marinette, spoke about his experience as the coach of the state championship stock market simulation team. There have been so many layoffs in the financial services sector, you'd think more people like Stauss might find their way into teaching. What you find when you start talking about money and economics is that for many it is a different language. A local company addressing the need for financial information and literacy is Precision Information. Their *Encyclopedia of Personal Finance 2003* not only provides all the data in one easy to use spot, it also provides tests with answer pop-up boxes to provide an application for the information. You can also find much information on the Internet, but knowing where to begin can sometimes be overwhelming. Just remember, no matter where you start, it is a lifelong journey of learning.

The Governors' Task Force on Financial Education recommended the creation of new financial literacy education standards and that assessments be conducted by school districts. Funding this mandate in this budget climate is going to be challenging; the task force agreed that an unfunded mandate was not an option. And yet there is an irony of the legislative body unable to balance its books preaching financial literacy to our children. In 2006, there is going to be a national test, administered by the National Assessment of Education Progress, of the student knowledge of economics. We should give it to our legislators now.

Val Simson is senior business writer for *Madison Magazine*.

broader goals of the Waisman Center's translational research effort, which is actually two-pronged, according to Seltzer. It involves both stem cell research and gene therapy, she says, and while there are parallel labs for each of these individual tracks, the two fields are meant to come together. "Within the same treatment [of a particular disease], both a gene therapy and stem cell approach could be used," she says, "so there is great synergy there."

As for Svendsen's new life here in the Dairyland, it couldn't suit the laid-back and modest Svendsen, or his family, any better. He says that his wife loves the "cosmopolitan lifestyle on the East Side" (the Willy Street Co-op and Jenifer Street markets in particular), as well as the lakes, and being close to the Capitol. And his son, Sam, now 10 years old, loves Marquette School and the nearby YMCA. "Moving to Madison was one of the best of my many moves," says Svendsen. "It has massive Midwest friendliness and one of the best universities in the world. You can skate in the winter and boat in the summer, there is never any traffic, and it has the lowest crime rate in the USA. Yes, there is a heaven – just don't tell all those East and West Coast scientist friends of mine!"

Nicole Resnick is a contributing writer to *Madison Magazine*.

Svendsen's stem cell research is less political

Despite the tidal wave of publicity and controversy surrounding stem cells, misconceptions about their derivation and potential applications still abound. The UW-Madison has established itself as an international leader in the field of stem cell research, due mainly to the groundbreaking research conducted here by developmental biologist Dr. Jamie Thomson. However, unlike Thomson, Svendsen does not work with embryonic stem cells derived from human embryos. Rather, he uses neural stem cells, which are derived from developing brain tissue. Neural stem cells are already committed to becoming cells of the body's nervous system, unlike stem cells, which can be coaxed into becoming any one of the many types of cells that make up the human body.

– Nicole Resnick