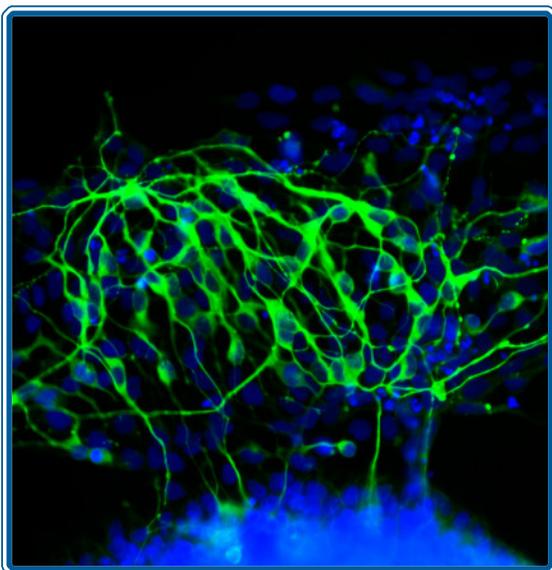




# SCRMC Notes



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“NeuroFlare” is the title of an image that received an Honorable Mention in the UW-Madison Cool Science Image Contest in March. *See page 5 for description. (Photo by Samira Musah.)*

## FROM THE DIRECTOR

It’s hard to believe that five years have passed since the Stem Cell and Regenerative Medicine Center (SCRMC) was established on May 17, 2007. Ian Wilmut, Director of the Edinburgh University Regenerative Medicine Centre, helped launch the center by giving lectures at the Waisman Center and at the Overture Center for the Arts. The SCRMC grew out of a faculty lead initiative based on the clear need to foster interdisciplinary research and education related to stem cells and regenerative medicine on campus. The center was started jointly under the auspices of the Graduate School and the School of Medicine and Public Health, which also provided key core funding. About 50 faculty members from multiple departments and colleges across the UW-Madison campus were initial members. The SCRMC has initiated and led multiple programs and enjoys active participation by more than eighty members from approximately thirty departments and centers across campus. We are fortunate to have a dedicated executive committee focused on advancing center priorities.

One of our greatest priorities is communication. Communication comes in many different forms including hosting the popular weekly Campus Stem Cell Lab Meeting, and co-organizing the Wisconsin Annual Stem Cell Symposium. We look forward to launching our new and improved website later this semester thanks to input from many of you. The website will have an improved format, many updates, and new on-line data sharing and discussion capabilities. The website will also reflect the recent establishment of focus groups in the SCRMC under the guidance of SCRMC Associate Director **Bill Murphy**.

The SCRMC continues to offer fellowships for trainees, pilot grants, and core services. Also stay tuned for new educational programs being launched by our education committee led by **Karen Downs**. Although the SCRMC has grown over the past five years due to the participation of many faculty as well as generous philanthropic support, we look forward to even more programs and exciting advances in the coming five years.

*Tim Kamp*

## Breaking Down Barriers to Cell Reprogramming: Rupa Sridharan Joins WID Scientific Team

by Jordana Lenon

Rupa Sridharan outside her office and lab in the Wisconsin Institute for Discovery.  
(Photo by J. Lenon)



**Rupa Sridharan, Ph.D.**, is settled into her new office at the [Wisconsin Institute for Discovery](#), her graduate student and post-doctoral trainee cubicles ready to occupy just outside, and her spacious lab just beyond them. Even the trains occasionally rumbling past below her office window add to the welcoming atmosphere: Sridharan grew up riding trains in India, and still enjoys train travel with her husband as part of their vacations together, not just as a way to get from one place to another.

Speaking of getting around, Sridharan offered this reporter a tour of the publicly funded side of the Wisconsin Institutes for Discovery, with its five research theme groups: Bionates, Living Environments Laboratory, Optimization, Systems Biology, and Epigenetics – her own group – with John Denu, Ph.D., as the theme leader. An assistant professor of cell and regenerative biology, Sridharan will focus overall on how the epigenetic code influences change in cell fate.

Sridharan's pieces of this puzzle use somatic cell reprogramming, the conversion of differentiated cells to pluripotent cells (iPS cells), as a model system. Working with mouse somatic cells, she plans to perturb the chromatin landscape by adding or depleting specific factors and ask whether the reprogramming efficiency improves. Using mass spectrometry methods, she has identified chromatin barriers that are

suspected to get in the way of optimal cell reprogramming.

"First, we need to identify chromatin barriers, and then figure out which ones to remove and at what exact stage in the process to improve the efficiency of cell reprogramming," said Sridharan.

With all these variables to tackle, she is eagerly recruiting her lab team and getting to work solving the mysteries of what converts the fate of a somatic cell to that of a pluripotent cell. This sort of basic stem cell science is still at the heart of many of the exciting advances in the stem cell and regenerative medicine fields.

Sridharan has her work cut out for her: Only about 1 percent of all cell-reprogramming attempts are typically successful. This suggests that multiple obstacles must be overcome for this dramatic change in cell fate to occur. Chromatin barriers appear to be one of the epigenetic roadblocks that cells encounter on their way to becoming stable, self-renewing pluripotent colonies. Insights from her basic studies may lead to more efficient methods of reprogramming somatic cells for therapeutic use.

In addition, she has to adjust to running a lab of her own at UW-Madison. "It was relatively easy being a post-doc," she recalls. "I had good mentors. I had everything I needed. I just had to think of an idea and work on it."

“Now, I have to build my own lab,” she adds. “But the intellectual resources here at UW-Madison are phenomenal. John Denu, **Emery Bresnick**, **Karen Downs** and many others have made me feel incredibly welcome and ready to get to work.”

Sridharan received her B.Sc. degree at St. Xavier’s College, University of Mumbai, India. She earned her M.Sc. and M.S. at the University of Baroda, India, and her Ph.D. at the University of California, Los Angeles. She completed her postdoctoral research at UCLA’s Eli and Edythe Broad Stem Cell Institute with Kathrin Plath.

Her previous research focused on isolating intermediates of the reprogramming process and figuring out why they were stalled.

Sridharan has been quite busy ever since. She did take a few months off to hike in Madagascar before moving to Wisconsin and joining the WID roster of scientists in January.

Now it’s back to work. Fortunately, she says, the trains going by her office continue to remind her to relax and take a break every so often.

For more information on Sridharan’s lab and background, or if you are interested in a post-doctoral position or graduate student rotation in her lab, please visit these sites:

- [The Sridharan Laboratory](#)
- [UCLA Today: Ten Questions for Rupa Sridharan](#)

References:

**Sridharan R**, Tchieu J, Mason MJ, Yachechko R, Kuoy E, Horvath S, Zhou Q, Plath K. Role of the murine reprogramming factors in the induction of pluripotency. 2009. *Cell* 136(2), 364-77.

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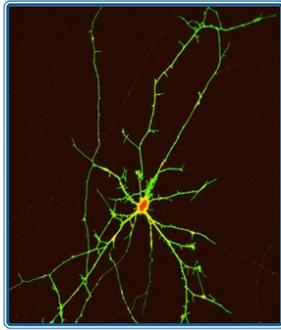
## Featured Speaker

Irving Weissman, M.D., Stanford University Institute for Stem Cell Biology and Regenerative Medicine, presented a visiting scientist talk, “How an Understanding of Stem Cells Can Lead to Treatments in Regenerative Medicine and Cancer,” on April 3 in the H.F. Deluca Forum in the Town Centre of the Wisconsin Institutes for Discovery (WID).

(Above) **Emery Bresnick**, professor of cell and regenerative biology, greets Irv Weissman before the seminar; (Right) Irv Weissman meets with students at WID after his talk. (Photos by J. Lenon)



 Want to stay up-to-date about activities associated with the UW SCRMC or of interest to our members? Subscribe to Stem Cell Announcements by going to our [Google group](#).



March 15, 2012

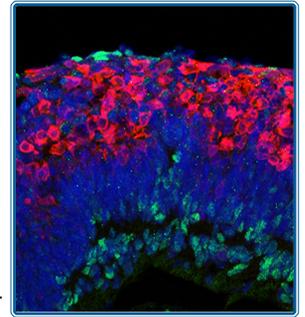
[Stem cells hint at potential treatment for Huntington's disease](#)

Huntington's disease, the debilitating congenital neurological disorder that progressively robs patients of muscle coordination and cognitive ability, is a condition without effective treatment, a slow death sentence. *(Image on left: A human stem cell-derived, striatal medium spiny nerve cell expressing GABA (green) and DARPP32 (red) that is lost in Huntington disease. Courtesy of Su-Chun Zhang.)*

March 13, 2012

[Scientists produce eye structures from human blood-derived stem cells](#)

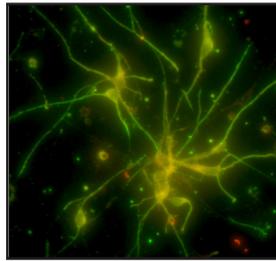
For the first time, scientists at the University of Wisconsin-Madison have made early retina structures containing proliferating neuroretinal progenitor cells using induced pluripotent stem (iPS) cells derived from human blood. *(Image: Human iPS cells can produce laminated retinal tissue in culture as shown by the formation of an outer photoreceptor layer (red) and inner retinal neuron layer (green). courtesy of Gamm lab.)*



February 3, 2012

[Neurons from stem cells could replace mice in botulinum test](#)

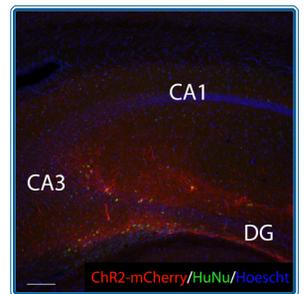
Using lab-grown human neurons, researchers from the University of Wisconsin-Madison have devised an effective assay for detecting botulinum neurotoxin, the agent widely used to cosmetically smooth the wrinkles of age and, increasingly, for an array of medical disorders ranging from muscle spasticity to loss of bladder control. *(Image: Botulinum neurotoxin type A (BoNT/A) entry into hiPSC-derived neurons, provided by Regina C.M. Whitmarsh, Bacteriology.)*



November 21, 2011

[Implanted neurons, grown in the lab, take charge of brain circuitry](#)

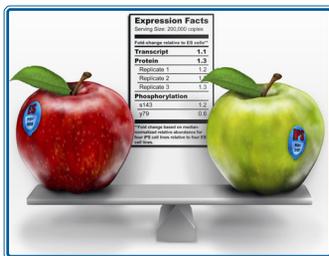
Among the many hurdles to be cleared before human embryonic stem cells can achieve their therapeutic potential is determining whether or not transplanted cells can functionally integrate into target organs or tissues. *(Image of Transplanted human embryonic stem cell-derived neurons (red with green nuclei) migrating to various regions of a mouse hippocampus., courtesy of Jason Weick.)*



September 11, 2011

[Study reveals critical similarity between two types of do-it-all stem cells](#)

Ever since human induced pluripotent stem cells were first derived in 2007, scientists have wondered whether they were functionally equivalent to embryonic stem cells, which are sourced in early stage embryos. *(Image: Coon group uses proteomic technology to compare ES and iPS cells. Courtesy of Coon lab, Chemistry.)*



## Cool Science Image Contest

"NeuroFlare" is the title of an image that received an Honorable Mention in the UW-Madison Cool Science Image Contest in March (*seen on page 1 of this publication.*) The photo was submitted by **Samira Musah**, Josue Baeza and **Laura L. Kiessling**. It shows a colony of human embryonic stem cells differentiating into neurons. Cell nuclei are stained blue and the emerging neuronal cells express a green marker. The undifferentiated stem cells remain in tight clusters, while the differentiating cells migrate out of the colonies. All 12 contest awardees appear in this [slide show](#).

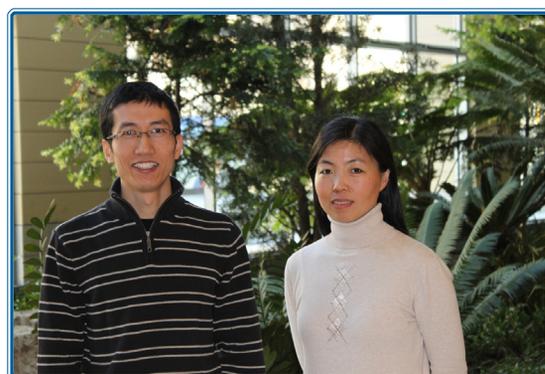
## Fellowship Competition Winners

Our SCRMC-supported 2012 Fellowship awardees, announced March 2012, with winners pictured on the left and their principal investigators on the right, are:



### Graduate fellowship:

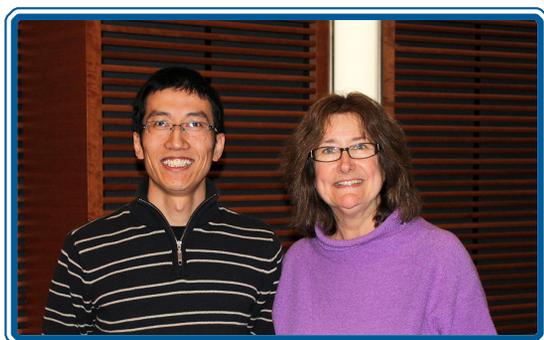
**Paul Wrighton**, research assistant, Biochemistry and Institute for Molecular Virology, in the lab of **Laura Kiessling**, Ph.D.



### Postdoctoral Fellowship:

**Weixiang Guo**, Ph.D., research associate, Neuroscience and Waisman Center, in the lab of **Xinyu Zhao**, Ph.D.

Education Committee Chair **Karen Downs**, Ph.D., presented the awards at the Wisconsin Institutes for Discovery before the campus stem cell seminar on January 31. The [SCRMC Fellowship Program](#) is an interdisciplinary pre- and post-doctoral program that aims to support the training of UW graduate students and post-doctoral fellows in interdisciplinary stem cell and regenerative medicine research.



(Photos by J. Lenon)



April 3, 2012

[Madison researchers making major breakthroughs in stem cell work](#)

This story first appeared in the Sunday edition of the Wisconsin State Journal newspaper. David Wahlberg catches his readers up on where the research is nearly five years after the most recent major stem cell discovery in induced pluripotent stem cells, mature cells reprogrammed to an embryonic-like state—progress continues on many fronts.

March 8, 2012

[UW law professor offers look at FDA from the inside out](#)

UW Law Professor and SCRMC member **R. Alta Charo** was senior policy adviser to the commissioner at the Food and Drug Administration from August 2009 until June 2011. Now back on campus, Charo reflects on her time with the FDA.



March 5, 2012

[Wisconsin Institutes for Discovery named 2012 Laboratory of the Year](#)

The Wisconsin Institutes for Discovery, the innovative 330,000-square-foot public-private facility that opened just more than a year ago on the UW–Madison campus, has been named the 2012 Laboratory of the Year. This institute houses numerous SCRMC members and includes research themes in Regenerative Biology (directed by SCRMC member **James Thomson**, V.M.D., Ph.D., Diplomate A.C.V.P.) and Tissue Engineering (directed by SCRMC member **Li-Sheng “Tom” Turng**, Ph.D.) *(Photo by Jeff Miller/UW-Madison.)*

March 1, 2012

Nature Outlook featured an article by **Rupa Shevde**, Ph.D., Director of Outreach Experiences at the Morgridge Institute for Research, and followed it up with a Q&A:

- [Stem Cells: Flexible Friends](#)
- [Q&A: Stemming the Tide of Misinformation](#)



January 11, 2012

[UW Biochemist Judith Kimble to serve on President’s National Medal of Science committee](#)

As a committee member, **Judith Kimble**, Ph.D., who has served on our SCRMC executive committee, will help choose the next winners of the National Medal of Science, the most prestigious science award in the country. Kimble has made a number of key discoveries in the field, including finding the first stem cell ‘niche,’ the micro-environment that controls stem cell maintenance.

Find more news in our [Newsroom](#)

# Scientific Focus Group Spotlight: Stem Cell Bioengineering

By Bill Murphy

The scientific focus groups continue to initiate and catalyze interdisciplinary research in key areas. The Stem Cell Bioengineering group, led by **Brenda Ogle, Ph.D.**, is establishing a forum for interaction of investigators and expansion of research efforts in this rapidly emerging area. The group's principal investigators meet bimonthly to discuss strategic research and training initiatives, which include multi-investigator research projects, innovative approaches to education/training, and interactions with industry. Recently this group also established a bimonthly research meeting, in which trainees present their latest breakthroughs to the Stem Cell Bioengineering community. Recent topics have included "4D Stem Cell Microenvironments" and "Stem Cell Manufacturing".

## 7th Wisconsin Stem Cell Symposium Highlights Neural Stem Cell Work



Basic and applied science shared the stage at the seventh annual Wisconsin Stem Cell Symposium hosted by the SCRMC and Promega at the BioPharmaceutical Technology Center Institute (BTCI) on April 11.

"Neural Stem Cells: Generation & Regeneration" attracted nearly 300 participants and 27 sponsors from academia and business. Moderators from UW-Madison faculty kept the day's program well paced and guest speakers enjoyed active question and answer sessions after their talks.

Six internationally recognized speakers discussed topics ranging from drug targets for regeneration to how retinal and other structures form to help us learn more about neural development and find ways to use stem cells to model and treat neurodegenerative disorders.

School of Medicine and Public Health Dean Robert Golden, M.D., and Wisconsin Alumni Research Foundation Managing Director Carl Gulbrandsen greeted the audience.

Symposium speakers were Rudolph Jaenisch, M.D. (Whitehead Institute and Massachusetts Institute of Technology, Cambridge, MA), **David Gamm, M.D., Ph.D.** (UW-Madison), Robin J.M. Franklin, Ph.D. (University of Cambridge, UK), Yoshiki Sasai, M.D., Ph.D. (RIKEN Center for Developmental Biology, Kobe, Japan), **Xinyu Zhao, Ph.D.** (UW-Madison), and David V. Schaffer, Ph.D. (University of California at Berkeley, CA).

Poster winners included Yan Liu from Su-Chun Zhang's lab in first place, Ethan Lippmann from Eric Shusta's lab in second place, and Jason Weick, also from the Zhang lab, in third place.

We would like to extend a special thank you to Karin Borgh at BTCI and our faculty organizers **Anita Bhattacharyya, Ph.D.**, **Qiang Chang, Ph.D.**, **Ian Duncan, Ph.D.**, and **Su-Chun Zhang, M.D., Ph.D.**, for making this such a successful and memorable symposium.

Photos appearing soon on the SCRMC Facebook page: Like us at University of Wisconsin Stem Cell and Regenerative Medicine Center.

## Getting to Know Sue Gilbert



As the SCRMC's busy administrative assistant, Sue Gilbert, shares her perspectives on her job and how she keeps balance and perspective as a point person for so many people on campus.

**Q:** What are some of the highlights of being the "center" of the Center for so many people and different labs, departments and centers across campus?

**A:** *As someone who is not a scientist but who believes strongly that this research is important, I am glad to be a part of this all and have been since the beginning. I really like to be able to help in any way that I can. When something comes together that helps members of the center communicate with one another, whether it's the website, the newsletter, or a meeting, I feel very good about it. That's probably the highlight for me—when it all comes together to help fulfill the mission of the center.*

**Q:** Conversely, what are some recent challenges you've had to conquer with so many moving parts to keep track of all the time?

**A:** *I have often said that trying to schedule almost any kind of meeting is like playing a game of tennis where one has to retrieve one's own serve. My biggest challenge is to get very, very busy people, who probably already don't have enough time in any given day, to respond when I need a response—whether for information or when they might be available for a meeting. The latest project, the rebuilding of our website, has been over a year in the making (the first discussions about it were around the beginning of December 2010) and I'm getting anxious about actually getting it done.*

**Q:** You have a lot of great organizational and technical skills. What is your background, and what other experiences have helped you get to this point in your career?

**A:** *My original plan for a career (once I was older than about 15) was journalism. It's what first brought me to Madison in 1975 to start college. Through many strange turns, I ended up getting a degree in Technical Theatre (yup, I've got a BA as a carpenter.) However, I was burned-out on school by the time I was almost done with my degree and started working in restaurants. The plan eventually was to work my way to management in food service. Along the way, I worked about every possible job and got my certification as a Dietary Manager. My last food service job was in the kitchen of the Memorial Union doing all the computer work to help keep their system (nineteen different food units all getting their food and/or supplies through the central kitchen.)*

## Save the Date: SCRMC Fall Conference II



Wisconsin Institutes for Discovery  
H. F. Deluca Forum  
September 21, 2012, noon to 5 p.m.  
Featuring guest speakers and panels, poster contest,  
networking and reception.

(Photo by Jeff Miller/UW-Madison)

*I eventually realized that I needed to make a change and transferred to an office job working at University-Industry Relations (UIR), a center of the Graduate School responsible for tech transfer and intellectual property assistance. Although I started as a receptionist, never having worked in an office before, I was working as the office manager within a few months (although it took me about nine months to get my promotion) and it was quite the training ground to learn how to work in, and run, an office; to learn the ins and outs of the Graduate School and the University's bureaucracy; and how to work with many levels of positions on a regular basis. After three years at UIR, the office was closed and the Graduate School approached Clive Svendsen and Su-Chun Zhang about the idea of taking me on as their administrative assistant—which became my training ground for the SCRMC itself.*

*Along the way, I have been involved with an organization dedicated to the re-creation of the history of the Middle Ages and the Renaissance, the Society for Creative Anachronism, Inc. (SCA) for over thirty years. I have been active on many levels of administration from local president to regional vice president to newsletter editor on a local and regional level (as well as a lot of other positions.) I have learned many skills through this including time management and people management skills as well as skills in computer applications.*

Q: Not too many people on campus work with nearly eighty faculty and lab teams in more than thirty departments. What do you do in your free time and how does it help recharge you for coming back to working for such a high-profile and energetic team of researchers, administrators and their staffs?

A: *I have been married to the same man for almost twenty-eight years and share our house with him, two dogs and four cats. I enjoy cooking, reading, computer games, going out to eat or to movies, photography, and traveling. As stated above, I have been active in the SCA for over thirty years and through that group have learned and taught arts such as Medieval cookery, weaving, stained glass, enameling jewelry, and dance. I wish I could still dance but I've had some joint and back problems that have brought that to a halt. It's been replaced by regular water exercise trying to get my body back to a place where I can dance again.*

Find Sue on Facebook at the [University of Wisconsin Stem Cell and Regenerative Medicine Center](#), or contact her at (608) 263-2982 or via [e-mail](#).



Find the University of Wisconsin Stem Cell and Regenerative Medicine Center on [Facebook](#).  
Join more than 400 followers keeping up with seminars, news and more.

## MOE Team Offers Creative Outreach Experiences



MOE Team member Travis Cordie, B.S., observes students from the Boys and Girls Club of Dane County as they learn to feed pluripotent stem cells (Courtesy of Morgridge Outreach Experiences.)

Following are a few examples of one of the SCRMC outreach partners – the Morgridge Outreach Experiences (MOE) team – and its busy schedule from this past Fall and Winter:

Twelve Madison area high school students, recruited through the UW-Madison PEOPLE Program, joined the MOE team for two days to participate in a Career Conference. Students had the opportunity to learn from several challenge areas within the Wisconsin Institutes for Discovery. All activities and sessions were designed to encourage students to attend college and expose them to a variety of science careers.

The MOE team joined the Saturday Science at Discovery series held at WID to provide a new activity that focused on the use of stem cells in drug discovery. The medical device challenge area was also represented by the use of EKG technology in detecting abnormal heart rhythms.

The Martin Luther King Jr. Youth Service Day event offered an avenue for MOE to introduce 50 students and 15 adults to the field of stem cell. Participants learned how to count and feed cells as well as view them under the microscope. They also had the opportunity to play trivia games on the SMART Board to review facts about stem cells.

The MOE team provided a workshop for the Precollege OPTIONS Saturday Enrichment Program to bring stem cell science to a group of 20 motivated middle-school students. In this workshop the students took detailed notes and observations regarding how human pluripotent stem cells look under the microscope and how they are maintained.

In March, MOE took part in a three-week series in which students from the Madison Boys and Girls Club learned about stem cells. They had the opportunity to learn techniques such as passaging and feeding stem cells as well as explore the area of media optimization.

Morgridge Outreach Experiences Director **Rupa Shevde**, Ph.D., an active SCRMC member and outreach partner, was the keynote speaker for the 2012 Wisconsin Society for Science Teachers Conference. In addition, the MOE team offered a three-hour workshop, focusing on stem cells in the classroom, as well as participated in an evening welcoming event for the conference.

MOE participated in the 2nd Annual Latino Youth Summit held at the Wisconsin Institutes for Discovery by offering a workshop for students to learn about stem cells through an interactive role-playing game and many hands-on activities focused on the maintenance of pluripotent stem cells.



A Madison area high school student scraping human pluripotent stem cells colonies in the biosafety cabinet during the Careers Conference. (Courtesy of Morgridge Outreach Experiences.)

## New Graduate Student and Postdoc Stem Cell Group: Wisconsin Stem Cell Roundtable—WiSCR



The Wisconsin Stem Cell Roundtable, WiSCR, was formed in 2009 and incorporated as a bona fide student organization in 2010. With co-founders Dr. Elyse Bolterstein (Allen-Hoffman Lab alum), Dr. Justin Brumbaugh (Thomson and Coon Labs alum), Dr. Joe Klim (Kieśling Lab alum), and Dr. Nick Kouris (Ogle Lab alum) all graduating and moving on to post-doctoral research, Brumbaugh and Kouris met with the SCRMC directors to discuss the future of WiSCR and suggested that the group elect a board to uphold and expand upon its mission statement, "to provide a scientific forum for junior researchers involved in stem cell research at the University of Wisconsin-Madison."

Group members elected Garrett Lee (Ansari Lab Graduate Student in Cellular and Molecular Biology) as president, Stefan Zorn (Murphy Lab post-doctoral fellow) as vice president, Paul Wrighton (Kieśling Lab graduate student in the Integrated Program in Biochemistry) as treasurer, and Ka Yi Ling (Downs Lab graduate student in Endocrinology and Reproductive Physiology) as secretary.

WiSCR holds monthly meetings to give junior researchers the opportunity to discuss their current research with other stem cell enthusiasts. These talks are interactive and informal and involve ample discussion of results and methods, troubleshooting of obstacles, and fostering of potential on-campus collaborations. Wrighton and Asuka Eguchi (Ansari Lab) have presented their current work and we are looking forward to having two more speakers to conclude the Spring 2012 semester. To foster organizational growth and networking, WiSCR has established a partnership the undergraduate Student Society for Stem Cell Research (SSSCR)

wherein WiSCR members present their work to the SSSCR membership and serve as a panel to answer any questions for undergraduate researchers interested in continuing their education and training as stem cell scientists.

In addition to WiSCR and SSSCR research discussions, WiSCR aims to become more involved in outreach and campus meetings. WiSCR members Maria Mikedis (Downs Lab) and Yefim Zaltsman (Kieśling Lab) have volunteered to create WiSCR posters and coordinate outreach activities, respectively. Paul Wrighton (Kieśling Lab), who was awarded the SCRMC Graduate Fellowship this year, will work with Stefan Zorn (Murphy Lab) to plan the SCRMC 2012 Fall Conference. WiSCR has also enjoyed the good fortune to meet and discuss with esteemed SCRMC invited speakers Dr. Todd McDevitt (Georgia Tech), Dr. Marius Wernig (Stanford), and Dr. Irving Weissman (Stanford) in a casual, roundtable format. WiSCR also nominated and elected its First Annual Distinguished Researcher, Dr. Su-Chun Zhang, who gave a lecture to the SCRMC audience on April 10, 2012, describing his lab's recent work on neurobiological regenerative medicine. Building upon our collaborative efforts with SCRMC and SSSCR, WiSCR aims to design and implement a Stem Cell Undergraduate Research Program aimed at empowering young scientists to write a research proposal, execute the proposed research aims in a UW-Madison lab during their fellowship, and deliver a report of their work and experience. It is a truly exciting time to be an integral part of the stem cell experience at UW-Madison!

*by Garrett Lee*

**Updates from**



WiCell has recently achieved an important milestone by deriving new human embryonic stem cell lines under fully defined, xeno-free, feeder-free, and albumin-free conditions. No other group has reported deriving hES cell lines under such conditions. Pluripotent stem cell

lines derived under such exacting conditions are in demand for their potential use for cell therapies. It is generally recognized that the clinical safety and pathway for regulatory approval are greatly improved for cell lines derived using recombinant proteins without exposure to other cells and animal materials. These cell lines are currently being expanded for banking, and will be submitted for NIH approval once initial characterization studies are complete. *(Update provided by Erik Forsberg.)*



**SCRMC Member Services**

The following core services are available to SCRMC members and appear on our website at [www.stemcells.wisc.edu/research/](http://www.stemcells.wisc.edu/research/).

- Immunology and Pathology Services
- Nonhuman Primate Services
- Cellular and Molecular Imaging Services
- Small Animal Imaging Services
- WiCell Research Institute
- Research Materials and Services
- Training Courses

*...and much more!*



*Remember: You can help keep our **website** up to date by sending **Sue Gilbert** updates for your webpages and **job announcements**.*





*Questions about this newsletter? Please contact **Sue Gilbert***  
*Editor: **Jordana Lenon***  
*Designed by **Sue Gilbert***  
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