CENTER FOR THE NEUROBIOLOGY OF
LEARNING & MEMORY
UNIVERSITY OF CALIFORNIA, IRVINE

MEMORY IS THE BRIDGE TO OUR PAST AND OUR FUTURE

NEURO TIMES

The newsletter of the
Center for the Neurobiology of
Learning and Memory

ISSUE 12
Spring 2013

Facts about the BRAIN:

- Your brain is made up of 60% white matter which is made up of dendrites and axons that gather and transmit signals. Forty percent of your brain is grey matter which is made up of neurons that gather and transmit signals
- The cerebrum is the largest part of the brain and makes up 85% of the brain's weight.

Inside this issue:

Celebrating 30 Years of Excellence in Research

The Center for the Neurobiology of Learning and Memory (CNLM) is proudly celebrating the **30th** anniversary of its founding. In this newsletter, we look back on our accomplishments over the last three decades and forward to an exciting future in research and outreach.

Our Story

Fixing problems in a complex system is always difficult. Fixing them without a solid understanding of how it normally works is virtually impossible. That is why basic research into how our brain learns and remembers is so critical. There are numerous disorders and diseases with ties to learning and memory, such as drug addiction, post-traumatic stress disorder (PTSD), depression, schizophrenia, and Alzheimer's disease. Knowledge of how the brain performs the miraculous feat of learning and memory is essential to understanding ourselves and to developing treatment when the performance goes awry.

In the early 1980s, a small group of faculty at UCI 'went public' with their revolutionary idea of what it would take to truly understand how the brain learns and remembers. They knew that understanding how information is acquired, stored and retrieved in the brain was a colossal task that would be significantly accelerated by the cooperation of researchers who use different research approaches and techniques. These researchers would need a place and an institutional structure to help foster interaction and the sharing of ideas. Drs. James McGaugh and Norman Weinberger were leaders in this founding group of faculty, and worked tirelessly with the University to establish the CNLM and the buildings to headquarter it in.

The CNLM was the first research institute in the world dedicated exclusively to the multidisciplinary study of the basic brain mechanisms that allow us to learn and remember. The CNLM started out with just nine associated faculty fellows and their labs. Dr. McGaugh was the founding Director and went on to steer the CNLM to great success over 23 years. The number of labs has grown steadily to its current forty-one; twenty-nine from UC Irvine and twelve from other campuses including UCLA, UCSD, Scripps and Caltech. The faculty fellows, together with their postgraduate researchers, graduate and undergraduate students and visiting scientists from all over the world, now number well into the hundreds. This multitude of researchers with their varied backgrounds in psychology, anatomy, pharmacology, neurology, molecular and cellular biology and more, continue to make great strides in understanding the phenomenon of learning and memory.

Fostering Research and Scientific Interactions

The CNLM has done a great deal to foster interaction among our own scientists, and with learning and memory scientists world-wide. The CNLM has:

- Held eight international conferences, over 500 seminars and colloquia, many small subject-focused meetings for experts, thirty annual conferences for CNLM laboratories, Fellow's research meetings and CNLM-wide journal clubs.
- Recruited rising-star faculty in the field of learning and memory to UCI.
- Established awards for foreign graduate students to work in CNLM laboratories.
- Provided space and staff to support numerous neuroscience-related events held by UCI and national organizations.
- Mentored over 1000 undergraduates, 270 PhD students and 240 postdoctoral scholars, many of whom are now conducting research in highly regarded institutions throughout the US and world.
- Published over 2,000 papers in peer reviewed journals, cited by scientists all over the world.

Outreach Efforts

The CNLM is dedicated to community outreach and educating the public on brain function and health. We strive to inspire students' interest in neuroscience. Programs include:

- The UCI Distinguished Lecture Series on Brain, Learning and Memory at the Irvine Barclay Theatre, now in its 19th year.

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- School tours for K-12 students, where over 300 students per year have visited our laboratories since the year 2000.
- Brain Awareness Week visits by our postdoctoral researchers and graduate students to local K-12 classrooms.
- Awards for high school students, undergraduates and graduate students to promote and support their work in CNLM laboratories.

Our Generous Donors

The growth of the CNLM and of the understanding of brain, learning and memory would not have been possible without the support of a large number of generous donors from the local community.

- Gifts from Robert and Meryl Bonney, Safi and Anita Qureshey and John Herklotz, along with other wonderful donors, allowed us to build our two headquarter buildings.
- Our annual giving group, Friends of the CNLM, funds our many outreach programs.
- With a lead gift from Jerry and Jan Barto, donors funded the McGaugh Chair in the Neurobiology of Learning and Memory.
- Many bequests have been made to the CNLM and will provide support for operations and student research in the future.
- Our many student awards are all sponsored by the kindness of our donors.

Our Future

The mission of the CNLM has not changed and, although the CNLM is no longer the *only* institute taking a multidisciplinary approach to the study of learning and memory, it still comprises one of the broadest arrays of research aimed at the question. We are looking forward to a bright future with technology that makes interaction between scientists and with the public easier than ever and gives us more research options.

- Our public lectures will soon be available on-line for the public to view at their convenience.
- We look forward to increasing our videoconferencing capabilities, so that we can facilitate meetings and discussions with scientists world-wide in real-time.
- We hope to develop an intensive summer course for young neuroscientists on learning and memory to help train the next generation of experts, and to make portions available via videoconferencing.
- In our labs, we will seek new, sophisticated equipment that will allow us a better view inside the brain and its neurons.

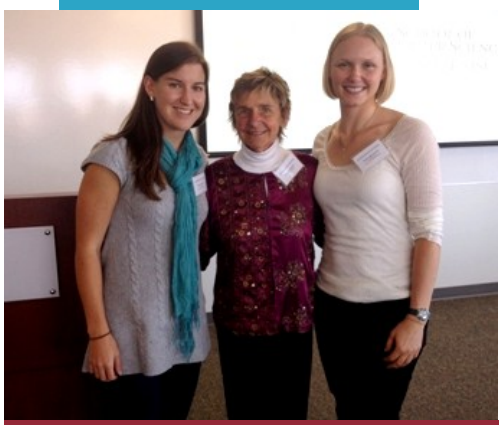
We are excited for the next 30 years of the CNLM's endeavors and are thrilled to see what the future of our research brings to the world.

"The world can benefit from joint efforts of the brightest people to crack the code of how our brain works in health and disease."

-Marian Joëls

CNLM Fellows and Researchers Receive Awards

The CNLM is pleased to announce several awards and recognitions received by CNLM scientists. **Annie Vogel-Ciernia** in the laboratory of Dr. Marcelo Wood, and **Meredith Chabrier** in the laboratory of Dr. Frank LaFerla, were each recipients of the Achievement Rewards for College Scientists (ARCS) Fellowship. This foundation is a unique, nonprofit, national volunteer organization of women dedicated to providing scholarships to academically outstanding U.S. citizens studying to complete their degrees in science, medicine and engineering, thereby contributing to the worldwide advancement of science and technology. "I am so grateful to have received the ARCS Fellowship. It means that all this hard work is being recognized – and will allow me to continue my research with the goal of treating neurodegenerative disease," says Meredith.



Meredith Chabrier (left), Barbara Hamkalo (center), OC ARCS Chapter President and UCI professor, Annie Vogel-Ciernia (right)

Maria Torres, graduate student in Dr. Jorge Busciglio's laboratory, is the recipient of the Public Impact Fellowship which highlights and supports doctoral students whose current research has the potential for substantial impact in the public sphere. **Michelle Allen**, also a graduate student, is in the laboratory of Dr. Karina Cramer. She is the recipient of the Chancellor's Club Fund for Excellence Fellowship. This is one of the oldest and largest support groups at UCI, celebrating over 35 years of service. This fellowship is awarded to the brightest and the best graduate students at UCI who also show great promise as future leaders. Both of these awards are given through the UCI Graduate Division.

Kasia Bieszczad, postdoctoral scholar, in Dr. Marcelo Wood's laboratory, was nominated for an Association for Psychological Science (APS) "Rising Star" by distinguished colleague Dr. James McGaugh. The Rising Star is part of a series on up-and-coming researchers in the field published in the *APS Observer*. A highlight of Kasia and her work will be featured and will recognize her accomplishments with a detailed profile. This designation places her among an impressive cohort of individuals who, in the early stages of their career, are already making significant contributions in psychological science.

CNLM Fellow and professor of neurobiology and behavior **Ron Frostig**, was elected as a fellow of the American Association for the Advancement of Science (AAAS), the world's largest general scientific society, for his work in using optical imaging to describe the organization and plasticity of the cerebral cortex. Dr. Frostig is one of 12 UCI researchers and one administrator being recognized this year. A total of 702 AAAS members are being honored this year for their efforts to advance science or its applications.

Congratulations to you all!

Director's Corner

Craig E. L. Stark

Location, location, location – those are the top three things you're supposed to consider when choosing real estate. I'd say they're also the top three things a scientist should consider when choosing where to do research. The colleagues you surround yourself with will shape your thinking and guide your research, at times in overt ways and at times in subtle but still profound ways. But make no mistake – your colleagues matter.

I bring this up because I have recently been giving a series of talks for general audiences on memory, how it changes with age, and what we all can do to have better memories. In the six hours worth of material, I get to show what might be thought of as a highlight reel of memory research – both basic and applied. When giving it the first time, I realized something amazing. I was showing many of the major advances in our field from researchers across the world and about half of the data came from members of the CNLM! I had slides with data from McGaugh, Cahill, Kawas, Baudry, Squire, Clark, Fortin, Loftus, Wood, LaFerla, Fanselow, Baram, and my own lab in there. I could have easily exchanged many others I was using for important contributions made by other CNLM labs.

Where you are as a researcher matters a great deal for your science. We don't live in an age of the single brilliant researcher making groundbreaking discoveries alone. Groundbreaking work happens far more often when several brilliant researchers get to bring different expertise together to work through our challenges. This is why there's a CNLM and this is why it can attract so many incredible researchers. Looking at that list of CNLM members' names above, I get to see that my research has been directly impacted by almost all of them (as well as by numerous other CNLM researchers not on that list). I'd not be doing what I am without having them around to interact with. That's why I say – Location, location, location!

More than 10 Years of School Tours

One of the most popular outreach programs of the CNLM is our school tour program. This program is just one of many that is supported by the CNLM Friends group. We are thrilled to say that we have now been conducting these tours for over 10 years!

Our tours offer a fun and informative experience that allows students from local K-12 classrooms to learn and ask questions about the brain. Funds from our Friends group pay for busing the students to our Center and for all of the supplies required to make the visit a great learning experience. The tours include a presentation by a trained docent about the many, amazing functions of the brain and what the students should do to keep theirs healthy. Students also visit hands-on exhibits that let them see the wonders of the brain up-close. Our knowledgeable and enthusiastic docents guide the students through these engaging exhibits. The tours wrap up with a visit to one of our laboratories, where students will learn about the real-life experiments taking place in our labs from the CNLM scientists themselves. Throughout the visit, students are free to ask questions of the presenters, docents and scientists.

During the school year, we conduct 9-12 tours with an average of 35 students per tour. This amounts to close to 3000 students who have benefited from this program in the ten plus years. We hope that our tours inspire students to consider science as a career, and to see science as an exciting and viable pursuit for both women and men. We are also pleased to introduce students to UCI and all it has to offer in education and research. We are constantly improving upon the tour program and are excited to continue it for many more years to come.

See what students and teachers who have visited the CNLM have to say about our tours:

"…they couldn't stop talking about everything they had experienced. I know they will always remember these experiences and many have said they want to attend UCI. They've also said they want to become scientists." – Ms. Sweeney, Franklin Elementary, Santa Ana

Docent Chris Lay

"Now I really want to go to UCI and become a scientist! I really liked touching a brain and seeing a human brain!" – Brenda C., 5th grade

"Thanks for letting us touch the brains- that was my favorite part. I liked touching the brains because they are slimy and cool. Now I know what our brains look like because of you guys." – Karisma R., 5th grade

"I just would like to thank you again for our visit, for the time taken by all the staff/students for allowing Ayala High School students to experience the wonders of the brain. I cannot express my gratitude enough for what you provided my kids. And to provide transportation.....simply amazing. Everyone was so helpful and engaging....my kids gave me incredible feedback expressing their enjoyment. Thank you for your time in putting this all together for us." – Mr. Chandler, Ayala High School

Are you interested in:

- Becoming a docent for the tour program?
- Bringing your class to visit the CNLM?
- Becoming part of the Friends group that sponsors the tours?

Contact us at (949) 824-5193 or memory@uci.edu for more information on how you can become involved.

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Special Thanks

The CNLM is excited to announce that we have successfully completed the 30/30 Matching Initiative! We would like to say a very huge thank you to the 23 supporters who helped us reach our goal of raising $30,000 to fulfill the matching challenge made by Jerry and Jan Barto.

Ms. Jean Aldrich
Mr. and Mrs. Dennis Baker
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Mr. and Mrs. Richard Wilkes

A special thanks goes to Jerry and Jan Barto who helped to issue this challenge and to Dr. and Mrs. Gerald Sinykin who gave a generous gift that completed our $30K goal. The Sinykins have been steady supporters of the CNLM for many years and we are grateful for their generosity. Dr. and Mrs. Sinykin used the Charitable IRA Rollover to make this donation.

If you would like to learn more about the Charitable IRA Rollover, which can help fulfill your charitable giving goals as well as mitigate your taxes, please contact Roland Ho at (949) 824-6454 or roland.ho@uci.edu.

Again, many thanks to our generous donors for their support of the 30/30 Matching Initiative. Through your support, we can continue to make breakthroughs in the field of learning and memory while keeping the public abreast of our research.