brain and cognitive sciences

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Fall 2001

Volume IV; Issue 1

MESSAGE FROM THE DEPARTMENT HEAD

Mriganka Sur

I would like to open with a warm welcome to our two new faculty members, Morgan Sheng and Lera Boroditsky, and the 12 new graduate students who started this fall. Morgan is the first holder of the Menicon Chair in Neurobiology and a member of the Center for Learning and Memory. Lera is an Assistant Professor of Cognitive Science. Two other new faculty members will start in January 2002. They are Josh Tenenbaum, Assistant Professor of Cognitive Science and Computation, and Jim DiCarlo, Assistant Professor of Neuroscience. Jim will also be a member of the McGovern Institute for Brain Research.

Planning for the new Brain and Cognitive Sciences Center is well underway. The new center will house the McGovern Institute for Brain Research and the Center for Learning and Memory as well as the Department of Brain and Cognitive Sciences. The center will cost an estimated $150 million, contain about 200,000 square feet of laboratory, office, classroom and meeting space, and be one of the largest buildings on the MIT campus. It will be located at the intersection of Vassar, Albany and Main Streets, and will span the railroad tracks. This will be MIT's northernmost location and, we are told, will open a new frontier for future construction in the institute. The current estimate is that the center will be ready for occupancy by early 2005.

The BCS Visiting Committee, which visited the department in late April, delivered its report to the MIT Corporation in October. The committee was pleased with the progress we have made since the previous visit in 1999: new faculty appointments have strengthened the department, the number of undergraduate majors is at an all-time high, and the graduate program has implemented new courses and research rotations. The committee strongly endorsed the plans for

(cont'd on p. 6)

BCS PARTICIPATES IN ALZHEIMER'S ASSOCIATION MEMORY WALK

Postdoc Anibal Arjona and grad student Amy Pooler led our team.

Back Row: Jill Crittenden, David Ting, Ronan Flynn, John Partridge, Kurt Keville, Jodi Davenport, Brandon Farley, Kay Tye, Danielle Guez. Center Row: Cansu Tunca, Junne Kamihara, Amy Pooler, Becky Huang, Angela Liu, Franz Zhu. Front Row: Shanlenn Birney, Rachel Theran, Anibal Arjona. Fred Lincoln & Maggie Noone are not pictured.

FALL 2001 CALENDAR OF EVENTS

Mondays – Brain Lunch
Tuesdays – Cog Lunch
Wednesdays – Brains & Machines Lecture Series (http://www.ai.mit.edu/events/talks/brainsMachines/brainsMachines.shtml)
Alternate Thursdays – Plastic Lunch (http://monster.mit.edu/nedivi-lab/plasticlunch.html)
Fridays – *Departmental Colloquia Followed by tea*

SPECIAL EVENTS:

Thursday, October 30 at 4:00 Hans-Lukas Teuber Memorial Lecture Daniel H. Schacter, Harvard University, **"The Seven Sins of Memory: A Cognitive Neuroscience Perspective."**

Tuesday, November 13, 5:30 P.M. - 7:30 P.M. BCS Social at the Society for Neuroscience Annual Meeting

BCS Holiday Party, December 13, 3:30 to 6:30 PM at the Faculty Club

SUZANNE CORKIN

Sue Corkin & her instructor preparing for flight.

After a successful parasail.

Sue entered systems neuroscience via psychology, her undergraduate major at Smith College. After college, she spent five years at McGill University where she received an M.Sc. in clinical psychology and a Ph.D. in comparative and physiological psychology. During the first year of graduate school, she found that routine, clinical psychological testing was tedious, and that experimental psychology offered opportunities for asking questions and digging for answers. At that time, she took a stimulating seminar with D.O. Hebb and became acquainted with the research of Brenda Milner. The next year, she joined Milner's lab and became a teaching assistant for Hebb's Introductory Psychology class. Other important influences were Peter Milner, Herbert Jasper, and Pierre Gloor. Her thesis topic was somatosensory function after unilateral cortical excision. While a graduate student, she also met and studied the amnesic patient H.M. She continues to follow H.M. at the MIT Clinical Research Center (CRC) (although after 40 years of working with her, he still does not know who she is).

In 1964, after graduate school, she came to MIT to work with Hans-Lukas Teuber as a research associate. She established the Behavioral Neuroscience Laboratory at the newly opened CRC, and embarked on studies to uncover brain-behavior relations in a variety of patient groups. When Teuber died unexpectedly in 1977, she was catapulted into the PI's seat in the lab. That year, she wrote her first grant application, had her first site visit, and taught her first course. She also gave birth to her third child. She is a firm believer that you can mix family responsibilities and a career in science. When asked how one manages to raise three children and hold a demanding full-time job, she replied, "You switch hats often and learn to ignore sleep deprivation." For example, she got up at 5:00 every morning, worked from 5-7, then dressed and fed the kids, and got them off to school. After that, she went to work, and returned at night in time to bathe them and read bedtime stories. There was never a wasted moment. First son, Zachary, had often slept in a portacrib in her office or in a bed in the back of her station wagon in the E10 parking lot (weather permitting). He still enjoys the outdoors. When her children were old enough to participate in team sports, she tried to arrange her schedule so that she could attend their games and enthusiastically cheer on their teams. She misses those events, now that her children are out of school.

Prior to the kiddie years, she did a lot of hiking, camping, and whitewater canoeing. She was a Class IV whitewater canoeist, and one year won the National Women's Open-Boat Whitewater Canoe Championship. She also bred beagles and German shepherds, and used the proceeds to travel to Europe. After the children were born, she turned to the all American dog, the golden retriever, and the family welcomed several litters into their home. They were followed by Sterling, a Belgian tervuren, and Kaiser, a 119 pound German shepherd. She is now dogless, but is considering adoption.

Sue's research uses behavioral and fMRI paradigms to address questions concerning the neural basis of learning and memory in humans. She also has a lingering attachment to the somatosensory system. She loves to travel outside the U.S., and although the trips are usually for work, she squeezes in a museum, concert, ballet, or opera whenever possible. She just returned from an eight-month sabbatical in Paris, where her apartment was located near Place Pigale (the red light district), and she worked at the Université Pierre et Marie Curie. She now lives in the Charlestown Navy Yard and is gleeful about the three-mile commute to MIT.

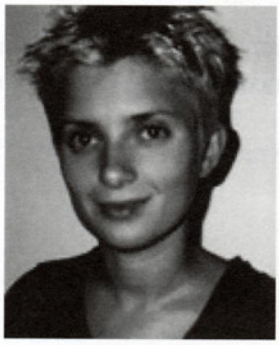
If you would like to be put on the newsletter mailing list, or have information you would like to have published, please contact:

Judith Rauchwarger
Human Resources Administrator
jrauch@mit.edu

BCS ALUMNI
PLEASE KEEP IN TOUCH

Denise Heintze
Academic Administrator
heintze@ai.mit.edu

LERA BORODITSKY



Lera Boroditsky on campus & after a visit to a natural mud spring in Nevada.

If you look at Lera's website, you will see her with a giant banana. She and friends in San Francisco built it a few years ago for the sheer ridiculousness of the undertaking. Now people keep giving her bananas and she has even had one mysteriously appear on her desk at MIT.

Lera arrived in the US from Belarus at age twelve knowing a little English but unable to communicate well. She had been very socially active in Belarus – even being elected the "head communist" of her class – and wanted to be involved in everything here. So, determined to master the language, she refused to speak anything but English, even to her parents, until she could speak English fluently. Though her English did improve, she says for some reason she never made it to "head communist" again.

These days, she is conducting experiments exploring how, when, and why different languages affect the way their speakers think about the world. Her lab has looked at the influence of language on thinking about time in English and Mandarin, on color memory and color perception in English and Russian, and on people's thoughts about the gender of toasters (and other inanimate objects) in Spanish and German.

In another line of work, Lera studies how people are able to think about things they've never seen or touched – things like time, justice, and mathematics. For example, Lera has shown that our ideas of time are derived analogically from our experiences with physical motion through space. For this line of research she has tested people traveling on trains, and planes, waiting in lunch-lines, and betting on horses at the racetrack.

Lera's favorite thing to do is to go exploring, especially in places where no one has been before. Out west, she enjoyed the "ghost" towns and endless deserts that were filled with traces of civilization. Some people say they've never seen Lera with the same hair color twice, but she claims it's very predictable – white in the summer and dark in the winter (because there are no real seasons in CA, she wanted something to mark the passing of time). At one point, all the students in her lab changed their hair color to purple and green making the lab look like an 80's rock band.

Though her application to MIT was actually an afterthought (because she was interested in relocating to NY after getting a degree at Stanford), she is very happy to be here. The intellectual excitement of the department, the terrific students and resources she has already found here all make Lera thrilled to be doing science at MIT. While being a professor is fun, she enjoys being able to go "undercover" when she leaves the office. Because Lera doesn't look like a typical professor, she says she's perfectly suited for doing undercover missions sneaking science out to the masses. In San Francisco, she used to give scientific (and sometimes pseudo-scientific) lectures at bars, and hopes to continue her guerilla professor efforts here.

WILLIAM QUINN

Chip Quinn (right) with music partner Claude Galinsky

When Chip was growing up in southern Pennsylvania farming country, he had numerous odd pets and read a lot, but confesses that he was somewhat spacey, and that his first grade teacher told his parents he was not college material. Chip's interest in science evolved because he could do it. His undergraduate days at Harvard and his graduate days at Princeton (so much for the opinion of a first grade teacher) were in the pre-cloning period in molecular biology and he spent his time adding radioisotopes to bacteria and finding out how they replicated their DNA, and how they sent it into daughter bacteria. He liked a lot of things and was tempted to become a writer but decided it was a poor way to make a living.

At Caltech, he studied with Seymour Benzer who was studying the fly brain using genetics. Chip was attracted to learning and memory because it seemed to be the most interesting problem and the simplest to state conceptually. Then and now, he teaches the flies something and then gets mutants that don't learn and he tries to figure out why. Chip finds that teaching the flies is the most fun in science "that one can have with one's clothes all on." In a typical experiment he would expose flies to two odors and shock them in the presence of one of them. If done correctly, the flies would avoid the odor associated with the shock.

Chip came to MIT in 1984 as a tenured Associate Professor after

(continued on p. 5 Chip Quinn)

WELCOME NEW GRADUATE STUDENTS

Bottom Row: Theresa Feledy, Thomas Serre. Middle Row: Tevya Rachelson, Cansu Tunca, Emily Hueske, Julie Goldberg, Neville Sanjana, Jennifer Wang. Top Row: Jonathan Winawer, Josh McDermott, Brad Leckron, Nathan Witthoft

Theresa Feledy (formerly Desrochers) majored in Neuroscience and minored in Science Education at NYU. She also worked on recording from amygdala in rats during a fear conditioning task. After graduation, she taught high school in Merrimack, NH for a year. She has pet turtles and pet rats, loves reading, kickboxing/karate (she has a black belt in kempo), and ballroom and hip hop dancing. At MIT, her focus is Systems and she would love to do electrophysiology.

Julie Goldberg is planning to study cellular and molecular neuroscience. She graduated from Wesleyan University with majors in Biology and English and spent a year working as a Ford Fellow in Wesleyan's Writing Workshop. After a summer getting settled in the Boston area, she can't wait to get to work!

Emily Hueske was born in Berlin, Germany but moved to Austin, Texas at the age of 8. She attended Freie Universität in Berlin and the University of Texas at Austin as an undergraduate where she majored in many things but finished degrees in Chemistry and Philosophy. In college she worked in an HIV laboratory at Southwestern Medical Center, aboard NASA's microgravity simulating aircraft at Johnson Space Center, and in an electrochemistry laboratory at the University of Texas. She is starting MIT as a molecular and cellular student but will likely be doing electrophysiology in a system's lab. As for her expectations, hopefully, one day her "brain will sparkle!"

Brad Leckron graduated from the University of Kansas. He was born in Singapore and moved every few years from Asia to Europe to California, finally ending up in Kansas where he studied biology and Chinese. Upon graduating he moved to China and spent the past year living in the mountains of the rural southwest. At MIT he wants to study synaptic plasticity using molecular and electrophysiological techniques.

Josh McDermott grew up in suburban Virginia before spending his undergraduate years at Harvard. He then moved to London, where he did a master's in computational neuroscience at the Gatsby Unit. Most recently he was an editor at Nature Neuroscience in Manhattan. At MIT he will be studying perception in the Perceptual Science Group.

Tevya Rachelson is going to be in the computational cognitive science area, focusing initially on the Oxygen project in the AI lab. He graduated from Cornell University Engineering College in computer science, and immediately moved to Silicon Valley and spent five years at an Internet startup company that sent him to Hong Kong for 16 months. His hobbies include skiing, scuba, traveling, juggling, movies, music, and hangin' out.

Neville Sanjana graduated from Stanford University with a B.S. in Symbolic Systems and an A.B. in English. His interest in cognitive science and neuroscience predates the 7th grade when he attempted to get an internship at the Salk Institute's Computational Neurobiology Lab. He loves the beach, playing the guitar, tennis, golf, and hiking. Someone told him that "IHTFP" really means "I Have Truly Found Paradise," but he assumes this doesn't include the weather. He wants to specialize in computational neuroscience, examining how small groups of neurons learn and communicate.

Thomas Serre is from France, where he got an Ms. Eng in Image Processing from the Ecole Nationale Superieure des Telecommunications de Bretagne and an M. Sc in Statistics and Probabilities from Universite de Rennes. He was also a Visiting Scholar at MIT last year and will specialize in object categorization. He is the recipient of an MIT Presidential Fellowship. Thomas is also the Secretary and co-founder of "ARUGA", a non-profit organization to create a day-care center for street children in Manila.

Cansu Tunca is from Turkey and got her BS from Bogazici University in Istanbul and her Masters from MIT in Chemical Engineering. In BCS she plans to specialize in Molecular and Cellular Neuroscience. She has enjoyed her two years at MIT because the Institute offers a variety of activities and the chance to meet with interesting people from all over the

world. She likes traveling and is a member of the international film club at MIT.

Jennifer Wang did her undergrad work at UCSD. After graduation, she spent about 5 weeks in the UK, mostly in Cambridge, studying Shakespeare and Elizabethan England, and then spent August wandering around California coastal regions, enjoying her last few days of surf and sun. At MIT, she hopes to study some linear combination of theoretical and experimental neuroscience. She doesn't know enough to know what exactly it is she wants to do for the next few years, but wants it to get her a little closer to understanding how the brain works.

Jonathan Winawer has come to MIT from the City College of New York, where he just (nearly) finished an M.S. in Biology, having studied how visual experience alters eye growth to keep the length of the eye matched with its optical power. Previously, he had studied classics as an undergraduate at Columbia. He is interested in visual perception and natural language processing, as well as baseball, film, Hank Williams (Sr.), and New York cheesecakes (eating them, not making them).

Nathan Witthoft came here from the University of Pennsylvania where he majored in English Literature. He lists his area of specialization as modernism but mentions that he is partial to medieval lyric poetry. He claims to be unsure about why he came here, but is hoping to learn some math and maybe get to see a brain or two.

NOTEWORTHY ITEMS – GRADUATE STUDENTS & POSTDOCS

Wael Asaad, a BCS graduate who is currently a postdoc in the Miller lab, was awarded the Donald B. Lindsley Prize in Behavioral Neuroscience for the most outstanding Ph.D. thesis in the general area of behavioral neuroscience. It will be presented at the annual Society for Neurscience meeting.

Elizabeth A. Kensinger, Michael T. Ullman, and Suzanne Corkin demonstrated that bilateral medial temporal lobe damage does not affect lexical or grammatical processing, based on evidence of amnesia patient H.M.

Graduate students **Roland Fleming, Elizabeth Kensinger, Jia Liu, and Duane Watson**, as well as Postdoctoral Fellow **Max Riesenhuber** were presented with Angus MacDonald Awards for Excellence in Undergraduate Teaching.

Javid Sadr won a Walle Nauta Award for Excellence in Graduate Teaching, while **Rutledge Ellis-Behnke, Dan Grodner, and Serkan Oray** were recognized with BCS Awards for Continuing Excellence in Teaching.

Richard Hahnloser, a postdoctoral fellow in Sebastian Seung's lab, was awarded a grant for advanced researchers from the Swiss National Science Foundation.

UNDERGRADUATE STUDENTS

Marlene Cohen received a Hans-Lukas Teuber Award for Outstanding Research in the Brain & Cognitive Sciences.

A Walle J.H. Nauta Award for Outstanding Research in the Brain & Cognitive Sciences went to **Divakar Mithal.**

Camelia-Mariana Turcu, Nina Shah, and Sanjay Basu were recognized with Department of Brain & Cognitive Sciences Awards for Outstanding Scholarship.

Vinod Rao won a Department of Brain & Cognitive Sciences Award for Outstanding Scholarship and Research.

(continued from p. 3 - Chip Quinn)

spending 10 years on the Princeton faculty. He is easy to spot around BCS because of the dramatic T-shirts he wears. He tends to favor Grateful Dead shirts because they're the nicest, though he liked the group as well. His musical interests go beyond just wearing the shirts, however. Chip spent ten years listening to Bach cantatas nearly exclusively, and has played the guitar since he was 17 with varying degrees of intensity and styles. He's currently moved back to pre-World War II blues and ragtime and folk music. He writes a little and plays a lot – mostly old songs – with Claude Galinsky, a computer geek he met at a music camp run by a local radio station on Thompson Island. The two can be heard at various locales. Recently, a number of people from BCS went to his performance at the Cantab. He's also performed at Borders, Barnes and Noble, and the Westford Museum. His teenage daughter, Rose, likes and respects his music, but thinks it's scandalous that he goes around and plays at his age.

NOTEWORTHY ACTIVITIES OF THE FACULTY

Emilio Bizzi was invited to serve on both the Board of Scientific Directors, Institute for Scientific Information, Turin, Italy, and the International Scientific Valuation Committee of the International Institute for Advanced Studies, (SISSA) in Trieste.

Ann Graybiel received the Outstanding Women in Neuroscience Award from Brown University.

Yasunori Hayashi received an Ellison Medical Foundation New Scholar in Aging award.

Earl Miller was appointed Associate Director of CLM.

Steve Pinker was presented with the 2001 School of Science Teaching Prize for Excellence in Undergraduate Teaching for his "clear, humorous, and thought-provoking lectures and his development of innovative web-based courseware in BCS's flagship undergraduate course" (per the inscription on the plaque).

Jerry Schneider spent August in China, having been invited to speak in Hong Kong, Xi'an and Guilin. He gave talks not only about his research, but also one about BCS and education in America. Jerry has collaborated with researchers at the University of Hong Kong and at the Institute of Neurosciences at the Fourth Military Medical University in Xi'an.

Mriganka Sur was named Sigma Xi Distinguished Lecturer, 2001-2003.

(cont'd from p. 1: Message from Dept. Head)

bringing all of the department's laboratories into one location, the BCS Center, as a means of better integrating our research and teaching. A central conclusion of the report is that "It is necessary to ensure that BCS's vision of integration of brain and cognitive science continues to be upheld and implemented."

We continue to seek outstanding candidates for faculty positions. Three faculty searches are underway this fall to fill slots in Cognitive Science, Cellular/Systems Neuroscience and Systems/Cognitive Neuroscience. The latter two appointments will be joint with CLM and MIBR respectively. We anticipate expanding our graduate program next year with increased student recruitment, and our undergraduate majors are likely to increase as well. Thus, the department will continue to grow.

As always, I remain committed to building community in the department. Although we cancelled the harbor cruise scheduled for September 14 in the aftermath of the September 11 events, we have carried on with our tradition of Friday afternoon colloquia. We will reschedule our harbor cruise for the spring and we plan on incorporating more events which foster both scientific and social interactions between faculty, students, staff, and alumni.

Dept. of Brain & Cognitive Sciences
Massachusetts Institute of Technology
E25-406
Cambridge MA 02139

NON PROFIT ORG.
U.S. POSTAGE
PAID
Cambridge, MA
Permit No. 54016