



MESSAGE FROM THE DEPARTMENT HEAD

Mriganka Sur

The following remarks were made at the Groundbreaking Ceremony for the Department of Brain and Cognitive Sciences, June 12, 2003

This is a hugely significant day for the Department of Brain and Cognitive Sciences, and this day has been made possible by several people: by an outstanding faculty whose discoveries and contributions have shaped the field; by generations of exceptional students and a dedicated staff who are vital members of our community; by the tremendous generosity of donors – most significantly Pat and Lore McGovern who endowed the McGovern Institute for Brain Research, and Jeffrey and Barbara Picower who endowed the Picower Center for Learning and Memory; and by a caring administration, most importantly Chuck Vest, Bob Brown and Bob Silbey, who understood that MIT's growth and stature in neuroscience and cognitive science is due to all of its faculty, students and staff. I thank and salute each of you today.

In a perfect world, and perhaps in some alternate parallel universe, scientific investigation will not be limited by considerations of distance or location. Because our world is somewhat less than perfect, I am very pleased and proud to be here to witness the dedication of the brain and cognitive sciences complex. It represents a tremendous step forward for the Department, for the Institute, and if I might be bold enough to say so, for all of cognitive science and neuroscience.

We are a unique department with a unique vision. Over 40 years ago, Hans-Lukas Teuber founded the Department of Psychology at MIT with the then-radical notion that the study of the brain and mind are inseparable. For its time, it was a historic statement. In a real sense, that vision of an integrative science of mind and brain was deeply synergistic with the vision of what MIT was, and is, about – namely using interdisciplinary, cutting edge approaches to solve big problems. And for many years, the physical structure of the Department, housed



Photo courtesy of Donna Covey/MIT

l to r: Phil Sharp, President Charles Vest, Mriganka Sur, Dean Robert Silbey, Provost Bob Brown, Susumu Tonegawa

in one building, E10, reflected that vision. Over time, however, that vision came under stress as the Department grew and its faculty scattered. First, the neuroscience labs of the Department moved into E25, and then the cognitive science labs moved into NE20. It sometimes seemed, to me at least, that the two parts of the Department, separated by a stretch of green between E10 and E25, and then by Main Street and a parking lot, were also growing intellectually apart. And more recently, as first the Picower Center and then the McGovern Institute have grown, BCS faculty in these centers have come to be housed in E18 and in E19 as well. Thus today our faculty have laboratories in 4 different buildings of

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A NEW LOOK

Notice anything different? That's right, the BCS Newsletter has a new look. But there's more – the whole department has a new look! Earlier this fall, BCS premiered a new logo and a new Web site featuring a design standard that can be used for everything from business cards to t-shirts.

The logo and associated type treatment are meant to represent the diversity and depth of BCS, as well as the blending of disciplines that makes the department unique. Use of the new design standards is expected to become universal across BCS as it becomes the basis for all future department communications.

BCS COLLABORATES WITH CHILDREN'S HOSPITAL ON BRAIN DEVELOPMENT AND DISORDERS

BCS has begun a new collaboration between researchers in the Department and clinicians at the Developmental Medicine Center of Children's Hospital in the area of brain development and disorders. The goal of the effort is to use advanced research tools and methods to develop accurate diagnosis

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Massachusetts Institute of Technology

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 and newsletter editor
jrauch@mit.edu

BCS Alumni Please Keep In Touch
Denise Heintze
Academic Administrator
heintze@mit.edu

FALL 2003 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

Friday, October 17, Hans Lukas Teuber Memorial Lecture, 4:00pm, E25-111 Speaker: Roger N. Shepard, Ph.D., Ray Lyman Wilbur Professor of Social Science Emeritus, Stanford University.
Title: "On the Possibility of Universal Mental Laws"

Tuesday, November 11, The annual BCS Mixer at the 2003 Society for Neuroscience meeting, 5:30pm - 7:30pm, Wyndham New Orleans Hotel at Canal Place, Ballroom II

Friday, December 19, BCS Holiday Party, 4pm - 7pm, Weisner Bldg. (Media Lab) atrium & lower level



ABOUT THE BRAIN AND COGNITIVE SCIENCES PROJECT

by Arne Abramson, bcsp Project Manager

Ed. Note: Arne has been sending us a series of first person weekly updates which have been both informative and interesting. We thought you might enjoy reading them:

June 23 It is 5:15 on Friday afternoon and I can hear the sound of the impact hammer “tapping” the piles into the bedrock. It’s nice to see evidence that our aggressive schedule is being aggressively pursued. Now that a number of the piles have been fully placed, the process of connecting them at the surface has begun.

building fun fact #2: there was once a building on the Albany St. parking lot. We found most of it buried underneath the asphalt: 552 tons of granite, 900 tons of old brick and concrete, and 61 cubic yards of old timbers used as piles for the previous building.

June 27 This week we hosted 6 cranes, 3 vibrating pile hammers, 1 pile impact hammer, 3 hydraulic power packs, 7 welding stations, and 3 earth excavators, and a work force of 55 men and women, not including the 15 or so administrative personnel enjoying the air conditioned comforts in the construction trailers behind Bldg 44.

July 11 The bulk of the labor this week was devoted to preparing the forms and rebar for the thickened slab that will support the three MRI magnets that have been programmed for the project. The slab will be an extra 3 feet thick and measure 63 feet by 39 feet.

July 25 On Thursday, the last of the vibratory and impact hammers were carted away. Behind us are 675 piles. 71 days after the first test pile was inserted, this first phase of the project has been completed.

August 8 This being MIT, let’s get right into the numbers. As of today, we have made the following progress: we completed 84 pile caps (54% of the total); and 50 grade beams (35% of the total). A major focus of this week’s efforts has been to begin digging the hole that will be filled with one of the complex’s several mechanical rooms. This space will receive the incoming steam and chilled water pipes from MIT’s central utility plant and will house a plethora of tanks and pumps dedicated to RODI water, domestic hot water, lab waste acid neutralization, and grey water. Our grey water is green, not in color, but environmentally sensitive. We will be



progress as of September 26

taking the rainwater collected from the roof, condensate from the air handling equipment on the roof, and discharge from the RODI filters and storing that water in tanks. Water from these tanks will then be used to flush the toilets and urinals in the complex.

August 15 The holding tank for the complex’s grey water system was set into place. The 15,000 gallon tank came in four pre-cast concrete pieces. It is sitting on four piles and its own concrete slab, and took most of a day to install. Some lucky soul will have the pleasure of climbing into the tank to seal the seams so that neither groundwater seeps into the tank nor grey water leaks out. The “neck” rising from the tank ends at the approximate level of the upper portion of the plaza. That area will be 7+ feet above Vassar St. which, not coincidentally, is the same height that the main doors at 77 Mass Ave are above the sidewalk.

Also this week crews began to stand the concrete forms to pour the walls for the mechanical room. These are the tallest concrete walls in the complex.

September 8 Now parked on the Main St. side of the site is a big red crane, a “2250 crawler”. I am told that it is the biggest crane ever in Cambridge. This crane will lift the pieces of steel that will span the railroad. The bcsp will have pieces of steel lifted into place that approach 50 tons in weight. Fully dressed, the crane required 15 flatbed trucks to deliver all of the pieces for assembly (which took almost the whole week).

Steel erection, which will go on for the next 4 months, is the period of construction during which changes are most rapidly apparent. There will be 14 miles of steel piles going down

to the bedrock. They will range from 66’ to 135’ below the sidewalk and are inserted with a combination of vibrating hammers and impact hammers. There are over 5,000 pieces of steel in the bcsp structure.

September 26 Much of the Albany St. and Vassar St facades have been set up to the 3rd floor. You can now see the start of the shape of the graceful curve of the facade as it sweeps from Albany to Main Street.

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BCS/Children’s Hospital Collaboration

and treatment for children with a broad spectrum of developmental disabilities such as learning disorders, autism, Asperger’s, and Down’s Syndrome.

The Developmental Medicine Center is one of the largest clinical centers in the US for treating children with developmental disabilities. It is also a major training site for physicians. Over the past year, discussions have been underway seeking to combine the research strengths of BCS with the clinical strengths of the Center. Funding for specific projects in the near term has been obtained through a gift from Paul and Anne Marcus. Prof. Mriganka Sur, Head of BCS, is leading the collaboration in consultation with Dr. Leonard Rappaport, Head of the Developmental Medicine Center.

The first set of collaborative projects involves two investigators: Emilio Bizzi, whose expertise is in movement systems, and Pawan Sinha, who explores object and face recognition in vision.



(top - bottom)
vibrating hammer, piles
inserted by vibrating
hammer



Peter has established the principles of operation of the superior colliculus and several cortical structures.



examples of Peter's artwork

PETER SCHILLER

As the son of parents with Ph.D.s, Peter Schiller's interest in research started at an early age. His mother worked in the National Library of Hungary, and his father was a Professor of Psychology at a major university in Budapest. Peter's initial exposure to experimental psychology was via research he and his father did at home. Peter had just completed the sixth grade at the Gymnasium when his father made the decision in 1947 that the family needed to flee the inevitable communist takeover of Hungary. As a renowned professor and researcher, Dr. Paul Schiller was offered a job in the United States – a precondition to being able to emigrate from Hungary. The position was at the Yerkes Primate Center in Orange Park, Florida, then headed by Karl Lashley. Peter did his first experimental work at the Center when still in high school, working with cats and chimpanzees.

Peter's life was changed during the spring of his freshman year in high school, when his father, on sabbatical at the Skinner Lab at Harvard University, took a trip to Mount Washington where, at Tuckerman's Ravine, he tragically suffered a fatal skiing accident.

Peter went to live with a family friend in Charleston, SC where he finished high school. During this period he had a part time job working with rhesus monkeys at the medical school. Summers, he worked at the Austen Riggs Center in Stockbridge, MA under the tutorship of David Rapaport, a clinical psychologist, and former student of Peter's father. Here Peter met NYU professor George Klein, and ended up working with him, studying the Stroop test on children. In 1951, after enrolling as an undergraduate at Duke University, where he worked with Gregory Kimball studying visual discrimination in fish, Peter continued to spend part of his summers working on Klein's project at the Austen Riggs Center. This work not only led to Peter's first publication, but it also provided him with excellent training in clinical work. In fact, when Peter first came to MIT, he called upon this knowledge to teach a course on personality and frequently gave lectures on Freud.

Upon graduating from Duke, Peter was drafted into the army. One of the "fantastically useful" skills he learned in basic training was touch-typing; so he was appointed as a clerk/typist and sent to Germany. Just six months later, the Hungarian Revolution broke

out. Peter, who is fluent in Hungarian, offered to serve as a translator but was accused by the general in charge of intelligence at the 5th Corps headquarters of just trying to get out of field exercises. The next day, however, as a result of higher orders, he was told to pack his bags and was sent to the army intelligence school at Stuttgart for three weeks of intensive training. Peter spent the next twelve months in Munich interrogating Hungarian refugees for military intelligence information. Peter found his experience in the army most interesting and useful and is proud to have served.

Back in the U.S. after having served in the army, Peter chose to attend graduate school at Clark University because Heinz Werner, a famous developmental psychologist, was head of the Psychology Department. Peter had hoped to combine his clinical background with developmental work. However, his research interests changed and he began a series of projects with professor Morton Wiener on subliminal perception. The central hypothesis of this work was that subliminal perception arises on the basis of partial cues from which the brain reconstructs the whole. This work then led him to study visual masking, a topic he pursued for several years.

During his years in graduate school, Peter continued his training in psychoanalysis and experimental psychology by conducting research he had previously begun with David Rapaport at the Austen Riggs Center. This led to his involvement in psychoanalytic experiments dealing with learning and, ultimately, to his doctoral thesis on learning and how things become consolidated in memory. He also had a one year clinical internship at the Worcester State Mental Hospital.

Peter's next ambition was to establish the neural underpinnings of visual masking. To do so he sought a post-doctoral fellowship that would enable him to learn single cell recording. Hans Lukas Teuber, a family friend, had just become chairman of the newly formed Psychology Department at MIT and invited Peter to join his lab. Teuber treated Peter "like a king," giving him a part-time secretary and allowing him to set up an independent physiology lab to study visual masking with single-cell recordings. Teuber was not an expert in this field, so Peter learned some of the techniques in the Hubel lab at Harvard.

Peter also carried out some experiments with Steve Chorover at this time on retrograde amnesia. This

work led to the discovery of short-term retrograde amnesia, a finding that was received with considerable interest in the field.

When Emilio Bizzi came to MIT, Peter set up a collaborative arrangement with him. They studied the functions of the frontal eye fields in eye-movement control in alert rhesus macaques, work that Emilio had begun earlier at the NIH. Subsequently Peter went on to study the role of several other brain structures in eye-movement control as well as in vision.

During his tenure at MIT, 24 students have gotten their Ph.D.s in his lab and 17 have done postdoctoral fellowships under his supervision. Peter has established the principles of operation of the superior colliculus and several cortical structures. Work in his lab has characterized the role the ON and OFF channels play in vision and has established what the prime functions are of the of the midget and parasol systems that originate in the primate retina.

In his private life, he is the father of two sons and a daughter. One son works for Goldman Sachs and the other is a financial officer for an international company that runs penal institutions. His daughter is a disk jockey at a radio station in New York City. Peter enjoys sports; he plays tennis several times a week. He used to sail competitively, but it proved too time consuming, so these days he just indulges in occasional canoe trips.

Peter also has an affinity for the arts and literature. He is a sculptor, working with both metal and plastic to create abstract pieces. He has also made about 50 stained glass sun catchers. Peter enjoys the piano, sometimes playing classical pieces, but more frequently composing his own folk medleys by intermingling known tunes (including those of Hungarian origin) with his own creations. He used to play classical guitar seriously, but stopped when his younger son took it up so as to avoid competition. Instead he tried the banjo but, after a few years, realized he was "totally incompetent" in that venture – perhaps because he is a lefty trying to play fast on a right-handed instrument. Peter has also written about 50 short stories and a large chunk of a novel, though so far he has chosen to publish only his scientific works.

His two favorite companions these days are his dog, a very playful Scotty, and a cat who likes to bring him birds.



BCS WELCOMES NEW GRADUATE STUDENTS

Paul Aparicio, a Californian, spent a number of post high school years working, before returning to school: first at a local community college, then at the University of California, at Berkeley, where he studied Psychology (while also nurturing a slight penchant for Anthropology). He investigated bimodal sensory integration, and his favorite brain area was the cerebellum. Maintaining his preoccupation with sub-cortical structures after graduation, Paul found himself immersed in striatal activities, while investigating force and timing production in the motor system.



Top row: Yuanzhen Li,
Eric Jonas, Sirini Turaga,
Lauren Schmidt, Paul
Aparicio. Middle row:
Gül Dölen, Rosa Cao,
Lena Khibnik, Cortina
McCurry, Rahmat
Muhmmad, Ana Fiallos,
Beau Cronin
Bottom row: Ulf Knoblich,
Nadya Modyanova,
Showming (Sally) Kwok,
Sarah Holguin,
Amy Perfors

Rosa Cao grew up in Cambridge (England and MA), and graduated from the University of Chicago in June 2003. She is interested in systems neuroscience at BCS, and philosophy of mind when it fits in. She hopes to become a research scientist in academia. In her spare time she enjoys ice-skating, fiction, and having nerdy conversations with her friends.

Wendy Chen is originally from Taiwan, but her family has lived in Carmel, Indiana for the last 20 years. She received her bachelor's degree in Biology from Washington University in St. Louis in 1999, and then entered Brown University's MD-PhD. She began working with Mark Bear in 2001, and hopes to finish her Ph.D. in Dr. Bear's lab, then return to Brown for the remaining 2 years of the MD.

Beau Cronin received his bachelor's degree in computer science from Berkeley, and came to MIT to learn how to model cognitive processes. He has lived in California his entire life, so he plans to spend any spare time exploring Boston and the east coast. He goes to bars and clubs and likes karate.

Gül Dölen was born in New York, and raised in Texas, but her parents are Turkish, and she has very close ties to Turkey. As an undergrad at Duke, she majored in a self designed curriculum entitled "comparative perspectives on the mind" which consisted primarily of coursework in philosophy and neuroscience. Unsure of her future, she became an underwater photographer on a 1100 year old Byzantine shipwreck off the coast of Turkey, then worked as a technician in a neuroscience lab, and completed premedical requirements at Columbia. Two years ago she began an MD/PhD degree at Brown, and works on Fragile X mental retardation. She spends free time reading, painting, learning the guitar, and has started sailing (thanks to the free sailing classes at MIT).

Ana Fiallos was born in Miami 3 weeks after her parents fled to the USA from the revolutionary war in Nicaragua. She graduated from the University of Miami in Coral Gables with a B.S. in Computer Engineering, but is interested in cognitive neuroscience. In particular, she'd like to study the brain mechanisms underlying human memory and intelligence. Her non-academic interests include: photography, dance, and computers. It is her long term goal to develop her own

photographic style. She also plans to enroll in dance classes at a studio just down the street from her dorm. She believes the BCS program offers a great opportunity to learn, become involved in pioneering research, and make friends. Mikhail Y. Frenkel is originally from Russia, where he completed half the medical school program before moving to the US and enrolling at UCONN to get a BS in physiology and neurobiology. He then went to grad school at Brown University to study experience dependent cortical plasticity with Mark Bear. His hobbies include photography. Sarah Holguin is originally from Riverside California and attended the University of California, Irvine. She is interested in the molecular and genetic aspects of neurobiology. After receiving her Ph.D., she plans to do a post-doc for a few years and eventually become a professor at a major research university. Her hobbies include playing soccer and cooking.

Eric Jonas, originally from Boise, Idaho, did his undergraduate work at MIT in courses 6 and 9. He will be working in Matt Wilson's lab as a grad student, where he hopes to focus on issues of memory encoding in the rodent hippocampus. When he has free time, he enjoys hardware engineering projects and signal processing.

Ulf Knoblich, from Germany, just completed his Master's thesis in computer science at Saarland University. His interest in BCS is mostly computational neuroscience and computational cognitive science, and his long-term goal is to help bridge the gap between neuroscience and artificial intelligence. In his free time he likes to play Go and is a member of the MIT Kendo Club.

Lena Khibnik is originally from Russia and moved to the US in 1995. She finished high school in CT and then studied at Brandeis, where she majored in neuroscience and biology. She is interested in synaptic plasticity, particularly with relation to learning and memory. After finishing graduate school she plans to get involved in biomedical research. She likes to read, play piano, and hike.

Show Ming (Sally) Kwok is an international student from Hong Kong, although her family lives in Brooklyn NY. She went to Macalester College in Minnesota as a freshman and transferred to MIT as a Biology student. She is interested in cell and molecular biology and system neurobiology, but is unsure of her long-range plans. She enjoys volleyball, tennis, table tennis, cooking, movies, and calligraphy, and asks that anyone planning to explore the Boston area restaurants, count her in.

Yuanzhen Li is from China, where she graduated from the Institute of Automation, Chinese Academy of Sciences, with a Masters in Pattern Recognition and Intelligent Systems. She has also been a visiting student at Microsoft Research Asia for the past two years, working mainly on computer vision. At MIT she'll be studying human and machine vision. She likes movies and jogging, and is practicing cooking.

Cortina McCurry was born and raised in Anchorage, Alaska in a family of eight. They lived outside the city so she grew up playing with Eskimo yo-yo's and fishing salmon from the creek. She graduated from Lincoln University in PA with a B.S. in Chemistry, but is primarily interested in the visual and auditory systems, and how perceptions and behaviors are shaped by the environment. Her passions include painting, photography, and modern dance, and she is learning how to play the guitar. Her dream is to photograph the Northern Lights. She also loves to travel and spent the past eight months touring Europe and living in Spain and England.

Nadezhda (Nadya) Modyanova is originally from Russia, but has lived in Switzerland, the USA, and France, and graduated from University College London. She is interested in language development and in the molecular and cellular



bases of language, and would like to understand how language functions in humans. Her main hobbies are mountain hiking (she has hiked in the Alps, the Appalachians, and the Pyrenees) and playing piano.

Rahmat Muhammad is usually assumed to be a male, based on her name, but she is definitely a woman. She was born in Nigeria, grew up in Newark, NJ, and attended Boston University. She is thrilled to be part of the BCS program. Her interests are in understanding the neural mechanisms of cognitive behavior, particularly goal-directed behaviors, and she looks forward to the challenges the next 4-5 years will bring.

Amy Perfors is entering BCS having previously earned a B.S. in Symbolic Systems and an M.A. in linguistics from Stanford University, and having served as a Peace Corps volunteer in Mozambique. She is interested in language and cognition: how concepts are formed and acquired (on the individual and evolutionary levels), and how language affects thought. In her spare time, she likes to play rugby and other rather violent sports, as well as write, paint, and read.

Lauren Schmidt comes from Redmond, WA originally, but shed her Pacific Northwest-dweller moss over the past 7 years, which she spent in California. She has a B.S. in

Symbolic Systems and M.S. in Computer Science from Stanford University and did research in the psychology dept. there for the past 5 years. She is interested primarily in cognitive science, with a secondary interest in computation. She wants to continue studying the acquisition of words and concepts, and how language and thought interact. She also juggles and has been trying to learn to ride a unicycle. She is hoping to volunteer for the ACLU in the fall.

Srinivas Turaga did his undergrad work at the University of Massachusetts, Amherst, and is interested in the computational/theoretical models of cognition. His long-range plans involve street performing, and his hobby is juggling.

Jonathan Whitlock from Dallas, Texas, graduated from Hendrix College in Conway, Arkansas, and made the move to MIT from Brown (grad school) along with the rest of Mark Bear's Lab. He is starting his 4th year as a grad student. His interests lie in elucidating the relationship between synaptic plasticity and hippocampal-dependent learning in rats and mice, and is hoping to have a productive career as a neuroscientist, either in academia or industry. He spends his spare time commuting from Providence to Boston, and is a budding golfer when not commuting.

AWARDS AND HONORS

FACULTY AND STAFF

Emilio Bizzi received a doctoral degree "honoris causa" in Biomedical Engineering from the University of Genova, Italy.

Lera Boroditsky received the Class of 1942 Career Development Professorship for innovative and imaginative teaching.

Ann Graybiel recently received an honorary Doctor of Science degree from the Mount Sinai School of Medicine.

Earl Miller was named Picower Professor of Neuroscience.

Elly Nedivi received the Dean's Award for Education and Student Advising.

Pawan Sinha received the John Merck Scholar Award for Research on Developmental Disorders, the Jephtha and Emily Wade Award for creative research, and the Dean's Award for Education and Student Advising. He was also inducted into the Guinness Book of World Records for creating the world's smallest book.

Mriganka Sur was elected Fellow of the American Academy of Arts and Sciences.

Administrative Assistants Paul Abrams, John Canfield, and Charles Moss, and Technical Assistant Anne Krendl received Spot Appreciation Awards from the School of Science Rewards and Recognition Program.

POSTDOCS AND GRADUATE STUDENTS

Postdoctoral Fellow Max Riesenhuber was named by Technology Review Magazine as one of the "TR100, the 100 people under age 35 whose contributions to emerging technologies will profoundly influence our world." He will be joining the faculty in the Department of Neuroscience at Georgetown University.

Daniel Casasanto received a fellowship from the Vivian Smith Advanced Studies Institute of the International Neuropsychological Society, for study in Xylokastro, Greece (June-July, 2003).

Roland Fleming was awarded the Vision Sciences Society Student Award for his abstract entitled "How image statistics drive shape-from-texture and shape-from-specularity."

Amy Pooler received a 2003 Glenn/AFAR Scholarship for Research in the Biology of Aging from the American Federation of Aging Research.

Florian Wolf received the Eli and Dorothy Berman Fund Fellowship Nathan Wilson and Charlene Ellsworth received the Dean's Educational and Student Advising Award for AY03.

James Schummers, Tania Ionin, Rebecca Saxe and Javid Sadr graduated and became postdocs in September. James is working in the Sur lab in BCS, Tania is a Lecturer in the Linguistics Dept. at USC, Rebecca is a Junior Fellow in the Lab for Developmental Studies at Harvard, and Javid has joined the Harvard Vision Lab as a postdoc.

UNDERGRADUATE STUDENTS

Irit Rappley '04 was named a 2003-2004 Barry Goldwater Scholar. The Barry M. Goldwater Scholarship and Excellence in Education Foundation awarded 300 scholarships for the 2003-2004 academic year to undergraduate sophomores and juniors from the U.S. The Goldwater Scholars were selected on the basis of academic merit from a field of 1,093 mathematics, science, and engineering students who were nominated by the faculties of colleges and universities nationwide.

Vikash Gilja '03 received the Karl Taylor Compton Prize. It is presented to students in recognition of outstanding contributions in promoting high standards of achievement and good citizenship within the MIT community. It is considered the most prestigious award given at the undergraduate level.

Kyle Rattray, '05, received the Priscilla King Gray Award for Public Service. The award recognizes an undergraduate exceptionally committed to public service at MIT and its surrounding communities. The recipient clearly demonstrates a personal dedication to social change, prolonged and in depth involvement and initiative in a leadership capacity.



CHRISTOPHER MOORE

Chris has always been interested in why we are who we are. It is his view that this can be addressed in many ways: for example, he views neuroscience, philosophy and literature on a continuum of approaches to the same question. However, he believes that neuroscience, with its link to quantification, is the most interesting path.

In elementary school he was torn between science and baseball, but by high school his lack of an “arm” made the choice inevitable. In fact, he had greater prominence as a goalie on his high school soccer team. He also was in the drama club.

At Oberlin – from where he believes he was the first tone-deaf person ever to graduate – Chris majored in philosophy and neuroscience. He went there because it was only an hour from his family’s home in Kent, Ohio, and was a small school that also had an excellent science program. After graduation, he worked in a medical school neuroscience lab in the Boulder/Denver area for a couple of years, conducting hippocampal research that led to some publications. In fact, he recommends working between college and graduate school though he did it primarily because he liked living in Colorado and had bills to pay.

When he finally enrolled in grad school, it was at MIT in this department. He was attracted by the breadth of influences and the fact that cognition and neuroscience were housed ‘under the same roof.’ He took advantage of the diversity by working in both the Corkin and Sur labs. As a student, he, Matt Tresch and Brad Postle left a legacy to the department when they graduated, in that they had formed the ongoing and still expanding Brain lunch group, which was great fun and kept them off the streets. With that success behind him, he is now anxious to start a study group for people interested in fMRI. The goal is to talk about cutting edge techniques: what the options are, how to use them, and how they could apply to their own research. Interested parties should contact Chris at cim@ai.mit.edu.

After spending 6 months doing a postdoc in BCS, Chris joined the MGH Martinos Center for a year and a half and then UCSF (Mike Merzenich’s lab) for a year and a half. He loved being at UCSF because he could do significant science and enjoy San Francisco. While out there, he ran the 7 mile San Francisco road race and hiked the Grand Canyon (not at the same time).

At the time he began his research as a student, the sense of touch and brain plasticity were just being linked to the phantom limb phenomenon, and he saw touch as an excellent way for him to combine human and animal research. He currently uses touch as a model system to discover the relationship between rapid changes in neural organization and rapid changes in perceptual function, in part because the best research on plasticity and dynamics has used this system. His laboratory recently discovered that rats’ whiskers function something like tuning forks, or strings on a harp, such that each whisker is tuned to a specific frequency at which it resonates. This suggests that whiskers are similar to hearing as a vehicle for representing frequency in the brain.

Another focus of his lab is studying moving tactile stimuli. Chris is studying the perception of motion because he thinks that brain dynamics are important for the perception of this touch stimulus. Also, moving touch stimuli are ubiquitous, as almost everything we perceive by touch goes over our skin or we move our skin over it, so motion is fundamental to perception. [You can find more detail about this at the Moore lab’s website: web.mit.edu/~moore.] He even likes to think about healing touch and how it works and whether there is a quantifiable neuroscientific element to it.

Chris and his significant other coincidentally share the same last name and (intentionally) joint ownership of a home. She runs the Asian programs at the Children’s Museum and travels to Japan a lot, and was also a key organizer of the dragon boat races on the Charles. She and Chris had met in college, though they didn’t date until introduced years later by mutual friends. His father is a consultant in dispute resolution, and his mother is an academic administrator, who will shortly be the VP for Academic Affairs at Emerson College.

In case there are any pool sharks among the readers, Chris would like to learn to play if he can find a teacher; they can play for small sums at first. He’s also a devoted Red Sox fan, and exercises and runs – at least in the summer. His free time if not his ambition deteriorate come fall. He loves to eat well, and spends a lot of time thinking about where to eat because, while he can barbeque and prepare simple foods, he cannot really cook. He’s also trying to become passable at home improvement projects and is currently working on a closet. Again,

if there is anyone who knows about constructing a closet and would like to teach him by demonstration, contact Chris immediately.

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Message from Department Head

MIT. Of course, fractured space is the practical price a department pays for growth. Successive administrations at MIT, including our present leaders, have always been strong partners with the Department and have been directly instrumental in its growth. The challenge has been to find contiguous space so we can still feel like one Department.

Today, I am pleased that our Department’s original vision is taking form once again on a much grander scale in this complex of buildings. For the first time in many years, the cognitive sciences and the neurosciences will reside in the same place. For the first time in over 20 years, the physical structure of the Department will reflect the intellectual endeavors of its members. And again, MIT will have a single facility dedicated exclusively to the study of the brain and the mind.

It is difficult to overstate how important this building is to the mission of our Department. Bridging the intellectual chasm that still divides what we know about the brain and how it creates the mind will require significant collaboration among our members – the sort of collaboration that is rendered explicitly in the design of this building. Advancing our field will require the focused efforts of centers of excellence such as the McGovern Institute and the Picower Center which share space with BCS in this complex. I thank Charles Correa and Goody Clancy Associates for being exquisitely sensitive to the interdisciplinary nature of our enterprise as they designed the building.

And finally, MIT’s commitment to cognitive science and neuroscience, which is manifest in the resources invested in this project, will allow us to attract and retain the very best faculty and students. We are thus charged with a sacred trust and a duty – to build BCS and MIT into the clear worldwide leader in the study of the brain and mind. You should hold us to this charge, and I promise you – we will not screw it up!

In elementary school he was torn between science and baseball, but by high school his lack of an “arm” made the choice inevitable





BCS SUMMER AND FALL EVENTS

BCS Team for the Alzheimer's Association Memory Walk raised \$1570.

Back Row (l to r): Lei Wang, Charlene Ellsworth, Mila Mandic, Cindy Xi, Jonathan Reinharth, Tia Pooler, Mary Prendergast, Amy Pooler (team captain), Jodi Davenport, and Steve Cohen. Front row (l to r): Renske Benedictus, Kayi Lee, Sally Kwok, Ronan Flynn, Keith Thoresz, Carla Ashton-Cohen, and Chunky. (Not pictured: Judy Rauchwarger)



(above) On board: Earl Miller and gang

*Boston Harbor Cruise & Colloquium:
(left) top row: Kristin MacCully, Emily Walazek
Middle row: Jason Jacobson, Carla Ashton-Cohen, Melissa Yeh, Jodi Davenport
Bottom: Casey Johnson*



*Summer Social:
Charlene Ellsworth and Amy Pooler untangling the balloons they had so carefully arranged. The event featured volleyball, croquet, raffle prizes, and ice cream.*



ALUMNI NEWS

We look forward to your news and strongly urge you to send us updates on your activities. Dick Held (HeldD@ncopost.ne-optometry.edu) and Judy Rauchwarger (jrauch@mit.edu).

Michael Kuperstein, Ph.D. '82, has focused his career on creating technology that mimics the brain's behaviors and then starting companies to bring that technology into the world. In 1987, he invented the first "Neural Robot," which learned coordinated behavior from experience. In 1988, he founded a company to read handwriting that is now part of Captive Software Corp. In 1994, he invented the first commercial facial recognition software and is now involved in the next generation of that software, as well as Metaphor Technology, which provides conversational computer speech applications that mimic natural dialogs. He and his wife and son live in Wellesley.

Nancy Berman, Ph.D. '72, and her husband, a database administrator, have 2 daughters. Nancy is in the Anatomy and Cell Biology Dept. at the University of Kansas Medical School, where she has been working on molecular mechanisms of neuroplasticity for many years. She is particularly interested in microglial cells, resident immune cells of the brain responsible for many neuroplastic events. She gave up systems neuroscience 15 years ago in favor of a molecular approach. She is working on brain injury in genetic mouse models and on neuro AIDS in macaques. She recently started on research on the pathogenesis of menstrual migraine.

Len Maler, Ph.D. '72, has been at the University of Ottawa since completing two postdocs. He planned to work out the structure of the electric fish and how it transformed its direct sensory input so as to be able to characterize the transfer function of a neural network. He had estimated – in the early 70's – that this would take about 5 years, but admits that it wasn't until 1998 that he had really worked out the circuitry, transmitters, and some of the most important biophysics. Now he has progressed to the more theoretical aspects. He has also been working on many other projects related to plasticity and optimizing receptive fields/temporal processing for object estimation versus communication.

Amy Brand, Ph.D. '89, spent about 10 years in cognitive science and linguistics book publishing, then moved on to cross-publisher online research platforms and is currently the Director of Business Development at CrossRef, a non-profit organization that runs a Digital Object Identifier system for citation linking. Between 1994 and 2000 she was also Executive Editor at the MIT Press, managing the Bradford Books cognitive science imprint. She and her husband have two children.

Louis Toth, Ph.D. '95, completed his degree in the Sur lab and stayed on for a short time to work on optical imaging before joining John Assad's lab at Harvard Med School to work on the physiology of primate extrastriate cortex and motor system. His interest in imaging then led to a collaboration in Minneapolis developing high-field MR techniques for neurophysiology. He is now on the faculty of the BU Medical School. His long term goal is to understand the mechanisms of cognition and cortical computation in animals.

David Small, '87, completed a master's program in the Media Lab after graduation, then stayed on to work as a Research Associate while his partner completed a Ph.D. By 1999, he had his own Ph.D. and founded a company called Small Design Firm, Inc. in Cambridge. They design interactive displays for museums and other public places and provide information design services to corporate clients.

Alissa Whitney, '95, taught high school science at a small private school in Covington, LA for seven years, then attended veterinary school at LSU in Baton Rouge. She doesn't know if she will end up in research or private practice, but says that her MIT years were invaluable to her.

Anna Orenstein-Cardona, '99, spent a year and a half at a NY company selling government treasury bonds to Central Banks, then left for London to work for Credit Suisse First Boston selling corporate bonds and other financial instruments to Spanish banks. She may still pursue her original plan to study medicine. She loved her years at MIT and in the department and hopes in the future "to donate money to my old department as I felt very happy there. I feel the education and support I received developed me into the person I am today and has helped me achieve success."

brain+cognitive sciences

Massachusetts Institute of Technology
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