

brain and cognitive sciences

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Fall 2002
**MESSAGE FROM THE
DEPARTMENT HEAD**
MRIGANKA SUR



Ann & Mriganka at the National Medal of Science dinner

The academic year began, as always in an active department, by welcoming new graduate students and new faculty members. With 18 incoming graduate students, we have one of the largest first-year graduate classes ever. New BCS faculty members are Jim DiCarlo and Chris Moore, who have also been appointed to the McGovern Institute for Brain Research (MIBR), and Carlos Lois, who has also been appointed to the Picower Center for Learning and Memory (PCLM). Jim studies mechanisms of visual object recognition in alert primates; Chris studies cortical dynamics associated with the sense of touch in a range of species, including humans; and Carlos uses gene manipulation techniques to study the biological bases of behavior, particularly birdsong. Each of these new faculty members brings innovative ideas and cutting-edge techniques, and together they add strength to the Molecular and Systems Neuroscience areas of our department.

Ongoing faculty searches this year include two positions in Cognitive Science. In addition, we expect to make new appointments in PCLM and MIBR.

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ANN GRAYBIEL

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Ann comes from a very supportive background. Her father was an M.D. who studied vestibular systems, but her mother was not able to pursue a professional career because women were discouraged from doing so. However, her father encouraged her to learn about his research and, at age 14, her parents sent her to the National Cathedral School in Washington, D.C. At that time, schools in Pensacola, where they were living, required that girls study home economics, not science. From boarding school, she went to Harvard, where she majored in Biology.

She was accepted to the graduate program at MIT twice, because she decided not to attend the first time. She had found it very hard to decide between medical school and a graduate program, but once at MIT, she knew it was right for her. Prof. Teuber, the Chairman and founder of the Department, influenced Ann beyond the



Ann receiving the National Medal of Science from President Bush.

academic, as he introduced her to Jim Lackner, to whom she has been married since they were MIT graduate students. Ann is quite sure that Teuber's insistence that she teach 9.00 with Jim was intentional matchmaking.

In her first year at MIT, Ann worked on prism adaptation in the Held lab, then she switched to Walle Nauta's lab and did her Ph.D. work on the anatomy of the visual

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FALL 2002 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:

Tuesday, November 5, 5:30 - 7:30 at the Peabody Orlando Hotel Florida II Room. The annual BCS Mixer at the Society for Neuroscience meeting.

Thursday, December 12, 3:30 - 6:30 BCS Holiday Party at the MIT Faculty Club.

TED GIBSON



Ted at the 1984 Olympics

Ted Gibson comes to us from Canada, where he received his undergraduate degree in math and computer science from Queens University in Kingston. This was followed by an M.Phil. in computer speech and language processing in the EECS department of Cambridge University, and a Ph.D. in computational linguistics from Carnegie Mellon. Ted then spent one year as a postdoc in BCS, and returned to CMU for a year as an Assistant Professor, before he was persuaded to return to MIT as a member of our faculty. He received tenure two years ago.

Ted was always interested in language. He had an affinity for grammar and language after reading a lot in his child-

hood, and he had a parallel interest in computer science and math. However, it was not until he took a course in artificial intelligence in his final year as an undergraduate, when he was introduced to natural language processing, that his interests merged.

He is now working on determining how people understand and produce sentences: what sources of information make them easy or hard to comprehend and produce. He and his lab test their hypotheses on the processing of unambiguous and ambiguous sentence constructions in a variety of languages, including English, Spanish, Chinese, Japanese, Russian and Korean. A particular interest has been resource use and syntactic structure: some structures require more working memory resources to comprehend and produce. A practical application of this

work is the development of more sophisticated style and grammar checkers. Ted's work also has implications for people who are recovering language use, and for children learning language or learning to read.

When not in his lab, Ted enjoys cycling, and bikes in from his home in Lynnfield on days that he doesn't have commitments with his sons (ages 7 and 11), whom he refers to as his major hobby. They enjoy doing "kid stuff" together, as well as swimming in the backyard pool, and playing basketball and soccer.

Rowing had been a big part of his life until he injured his back last year. He is beginning to resume this activity and eventually plans to participate in the Head of the Charles regatta again, which he had done annually a few years prior to his injury. He also rowed for the Canadian Olympic team in 1984, and as an undergraduate, he was foremost a rower and "went to school on the side."

Watch out if he invites you to join his lab on a hike. He takes his group up through the New Hampshire mountains. Some like it, while others liken it to a death march. The "easy" hikes are 10 miles, including 3000 feet up and down. The harder ones are 15 to 20 miles long, often with 4000 to 6000 feet of vertical climb.

JAMES DICARLO



Jim & Ren at a Texas triathlon

Jim, originally from Cleveland, is the son of a NASA physicist and a science

teacher, but always planned to be a doctor — "a nice, safe career." [So much for youthful expectations.] In high school, he enjoyed math and science, and was attracted to the quantitative nature of biomedical engineering. At the time (1986), there were not many programs in biomedical engineering, but Northwestern had one of the best, which is why he chose to go there. He was still planning on attending medical school, but, during his junior year, became involved in neural network modeling of the role of the hippocampus in classical conditioning. The idea of building artificial brains had fascinated Jim since using his first Radio Shack TRS-80 computer in middle school (he thanks his parents for being forward thinking on this purchase). The research at Northwestern kindled this interest. Instead of making a choice between medicine and science,

Jim sought the best of both worlds and applied to MD/PhD programs, ending up at Johns Hopkins Medical School and Department of Biomedical Engineering. His goal was to be a doctor who also did brain research. In graduate school, he decided that the best way to understand how the brain works at a computational level was by working in systems neuroscience — studying the neuronal properties that directly underlie complex behavior. He decided to work in the lab of Ken Johnson because of the lab's strong quantitative approach, and he focused on the primary somatosensory system, studying neuronal mechanisms that underlie tactile form recognition in primates. At the same time, he was doing medical clerkships, which he found less intriguing. He particularly didn't enjoy waking at 5 AM to do mindless tasks. When he compared the

life of a doctor with that of a scientist, the latter seemed to be clearly more fun, so he opted for a research postdoc rather than a medical residency.

Inspired by his advisor, Jim became deeply interested in the complex neuronal mechanisms that must underlie object recognition. He realized that the key problem is to understand how the brain is able to extract object identity despite changes in object position, size, pose, and clutter. He was fascinated by work in the visual system showing that neurons in the highest visual areas had responses that indicated that they may have solved these problems. Based on his experience working in the somatosensory system, he also knew that it was much easier to control stimuli in the visual system. Thus, he joined John Maunsell's lab at Baylor College of Medicine in Houston, determined to work on problems of object recognition in the visual cortex of primates. There he began three years of studying the responses of neurons in the inferotemporal cortex, the highest level of visual cortex.

Part of the reason he was excited to join the faculty of the MIT Department of Brain and Cognitive Sciences in 2002 is the strong computational and cognitive components of the department and the institute. He deeply believes that an understanding of how the brain performs object recognition will require a computational framework. For the immediate future his research goal is to form a group focused on deepening our understanding of how the primate inferotemporal cortex

supports position- size- and clutter-tolerant visual object recognition. His dream is to eventually apply insights gained from the real brain to both the design of machines with human-like visual abilities and the construction of brain prosthetics to replace lost visual function or augment normal function.

When not in the lab, Jim and his wife (a public relations and corporate communications executive) enjoy running, biking, and swimming. He has been a runner and triathlete for about 15 years. Last January,

he competed in the Houston marathon (his fourth marathon), but his time is a well-guarded secret. [Actually, he finished in 3 hrs. 15 min — not his best effort.] The couple also enjoys backpacking, accompanied by their Dalmatian, Ren. West Virginia was a favorite place to indulge in this hobby, Texas was not ideal, and they are very excited about great locales in New England.

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

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Some relaxing moments on the BCS Boston Harbor cruise and seminar in Sept.

SPECIAL NOTES

Andrea Hatch, Administrative Officer, was selected to receive the 2002 Spring Infinite Mile Award.

Prof. Emeritus Richard Held celebrated his 80th birthday on 10/10/02. He is currently Director of Research at the New England College of Optometry.

Prof. Edward Adelson and Ruth Rosenholtz were married on 8/8/02.

FACULTY HONORS AND AWARDS

Emilio Bizzi	Named Institute Professor
Lera Boroditsky	Searle Scholars Award
	Surdna Foundation Research Award
James DiCarlo	2002 Pew Scholar Award in the Biomedical Sciences
	2002 Alfred P. Sloan Research Fellow
Ann Graybiel	James Rhyne Killian Jr. Faculty Achievement Award from MIT
	Robert S. Dow Award for Physiology, 2002
	National Medal of Science 2002
Nancy Kanwisher	2002 MacVicar Faculty Fellow
Carlos Lois	Named Edward J. Poitras Assistant Professor
Steven Pinker	Designated a Humanist Laureate by the International Academy of Humanism.
Tomaso Poggio	Named Eugene McDermott Professor of Brain Sciences and Human Behavior
Morgan Sheng	Elected President of the Society of Chinese Neuroscientists of America
Mriganka Sur	Distinguished Alumnus Award, Indian Institute of Technology, Kanpur
	Fellow, Neurosciences Research Program
Matthew Wilson	2002 Picower Scholar Award
Richard Wurtman	Smithies Lecturer, Oxford University, May 2002

FACULTY RESEARCH ACCOMPLISHMENTS

Peter Schiller's lab has studied the role of cortical inhibitory circuits in target selection with visually guided saccadic eye movements, by applying minute quantities of GABA agonists and antagonists to selected brain areas. They found that inhibitory circuits play a central role in visual analysis in the striate cortex and in controlling visually guided eye-movements in the frontal eye fields. These results suggest that the generation of each saccadic eye movement requires not only that excitatory signals be sent to the brainstem oculomotor centers, but also that inhibitory circuits be inactivated.

Mriganka Sur's lab discovered a new property of neurons in early visual cortex. We move our eyes several times a second as we scan a scene, and we tend to successively view locations that differ in structure and composition from the previously viewed location. Experiments by postdoctoral fellow **Valentin Dragoi** and Research Scientist **Jitendra Sharma** demonstrated that such scanning improves visual discrimination, and also the response selectivity of visual cortex neurons. Such rapid plasticity of cortical responses constitutes a simple form of learning that continually influences vision.

Research in **Emilio Bizzi's** lab has shown that in the motor areas of the monkey's frontal lobe there is a population of neurons which is selectively recruited during motor learning. The researchers are also studying patients with impaired mobility caused by a stroke affecting the motor areas of the central nervous system to assess the feasibility of a remotely supervised, computer-enabled physical therapy device, administered over high-speed telecommunications.

Earl Miller's lab has made key discoveries of the neural basis of the high-level concepts, abstractions and functions that guide intelligent behavior. In trained monkeys, they found neural representations of perceptual categories ("cat" vs. "dog"), abstract rules ("same" vs. "different"), and the numbers 1-5. Together with an understanding of the neural dynamics underlying short-term memory, they determined that the neural properties found in the monkey brain may be very similar or even identical to those that provide the foundation of numerical abilities in humans. He and postdocs **Andreas Nieder** and **David Freedman**, hope that the identification of neural networks underlying fundamental numerical competence will provide insight

into what makes intelligent behavior. This may lead to therapies that alleviate cognitive deficits in humans, or changes in the way mathematics is taught to children.

Tomaso Poggio and graduate student **Tony Ezzat** have simulated mouth movements that look so real that most viewers cannot tell that the person is not actually speaking the words. This work could improve the man-machine interface by putting a "real" face on computer avatars. This would have applications in business, entertainment (redubbing films to eliminate subtitles), speech therapy, and in teaching foreign languages through a computerized tutor.

Joshua Tenenbaum's group discovered an apparently universal scaling law of similarity comparison, determining how features of objects or concepts are weighted by people in judging their similarity; improvements to a powerful approach to nonlinear dimensionality reduction that is becoming widely used for scientific visualization and pattern analysis tasks across a number of disciplines; and a novel framework for understanding how people use intuitive theories to learn about the meanings of words and the causal structure of their environment, drawing rich generalizations from very limited perceptual evidence.

Morgan Sheng's lab uncovered three specific proteins that control the growth of dendritic spines (specialized postsynaptic compartments in brain synapses), and revealed the subunit-specific rules that govern the surface delivery of AMPA

receptors (an important postsynaptic neurotransmitter receptor) in neurons.

The focus of **Guosong Liu's** lab is to identify the principles that guide the formation of functional neural circuits. Recently, his lab discovered that the excitatory/inhibitory synapse ratio in a single dendritic tree is always conserved and the total amount of excitatory synaptic inputs per dendritic branch is scaled according to the surface area of the tree. This led them to propose a new rule that governs the organization of synaptic inputs on a dendritic tree.

Ken Wexler's Test of Grammatical Impairment (TEGI) is the first standardized test to select children with Specific Language Impairment that has a scientific basis, and it is expected that it will be the most viable and accurate way to determine which children have this syndrome. He and grad student Tania Ionin have also been working on a model that solves a long-standing puzzle in second language acquisition concerning why some structures seem to be easy for second language learners and others seem to be difficult. In collaboration with researchers at other schools, he has also discovered a surprising difference across languages in the development of very simple structures, "clitics." It had been known that 2 year old French and Italian children often omitted these, but Wexler's group found that Spanish and Greek speaking children did not. Furthermore, these results follow from Wexler's model of the maturation of children's grammar.



***Pawan Sinha's Project Prakash** will study how well the brain can recover visual function – such as basic visual skills and object perception -- following extended periods of blindness-induced deprivation. He is conducting his study in India, where he has located a unique population of children across a wide age-spectrum with treatable congenital blindness. Here he is testing a formerly blind child.*

ALUMNI NEWS

Thanks to Prof. Emeritus Dick Held, we have heard from a number of our alumni. Some of the updates on their activities are included here, and others will be appearing in future newsletters. We are hoping this will encourage alumni who have not yet responded to do so.

Donald Pfaff (Ph.D. 1965) is at Rockefeller University, where he is currently head of the Neurobiology and Behavior Laboratory. His group uses molecular techniques to analyze (1) how the mammalian brain manages specific natural behaviors and (2) hormonal and genetic influences on generalized brain arousal. He was elected Fellow of the American Academy of Arts and Sciences and member of the National Academy of Sciences.

Michael Murphy (Ph.D. 1972) did postdoc work in Ethology at the National Zoo, was an Exchange Scientist at the National Academy in Romania; and a Staff Fellow of the NIMH Laboratory of Brain Evolution and Behavior studying olfaction and animal behavior, before returning to his home city of San Antonio, TX to head a research section on the behavioral effects of prophylactic and treatment drugs against chemical warfare agents at the Air Force Research Laboratory. He later moved to the Radio Frequency Radiation Branch where he was promoted to Chief in 1994. He is also a Senior Member of the IEEE. He's been married for 35 years, and they have a son and daughter.

William Cooper (Ph.D. 1976) has been President of the University of Richmond in Virginia since 1998. He and his wife, Dr. Clarissa Homes, are the parents of two daughters.

Shinsuke Shimojo (Ph.D. 1985) is a Professor at Caltech and an Adjunct Professor at NTT Communication Science Laboratories in Atsugi, Japan.

His Psychophysics Laboratory exclusively concentrates on the study of perception, cognition, and action in humans. They try to bridge the gap between cognitive and neurosciences.

John Rubin (Ph.D. 1986) is an Emmy award-winning filmmaker who turned to documentaries after completing his Ph.D. at MIT in cognitive science. He is now producer at Rubin Tarrant Productions in Waltham, MA. His films range from classical natural history to science to celebrity-driven natural history comedy. He wrote, produced, and directed *The Body Changers* for the PBS series *NATURE*, which won the Edgar Dale Award for best informational screenwriting at the 2000 Columbus International Film & Video Festival. His *Animals Behaving Badly* was the highest-rated film in the 2001 season of *NATURE*.

Marvin Chun (Ph.D. 1994) completed a two-year postdoc at Harvard, went on to Yale as an Assistant Professor, and then was recruited by Vanderbilt University where he was appointed as Associate Professor with tenure in 1999. In 1997, he received a New Investigator Award from Division 3 of the APA for a paper he published in *JEPHPP*. In 2000, the Dept. of Psychology at Carnegie Mellon accorded him the Chase Memorial Award given biannually to the person they consider to be the best young cognitive psychologist; and in 2002, he received the APA Distinguished Scientific Award for Early Career Contribution to Psychology in the area of Cognition and Learning.

Paul Abplanalp (S.B. 1968) is Associate Dean for Academic Affairs at the College of Optometry, Nova-Southeastern University, Ft. Lauderdale, FL. He graduated from the New England College of Optometry in 1977 and has played an active role in the

conversion of academic optometry from a profession confined to refractions and based on optics and vision science to one which includes a great deal of medicine and is largely based on the biological sciences.

Steven Kroft (S.B. 1986) graduated from the College of Medicine at the Univ. of Illinois, later taking a position as a hematopathologist and Assistant Professor of Pathology at the Univ. of Texas Southwestern Medical Center in Dallas and as medical director of the clinical hematology lab at Parkland Memorial Hospital. His wife is a radiologist and they have two young sons.

Amanda Gruber (S.B. 1986) went to medical school following her years at MIT. After a Fellowship in Substance Abuse at the Alcohol and Drug Research Center at McLean, she joined the Biological Lab there and has been doing research ever since. She is an Assistant Prof. of Psychiatry at Harvard Medical School and Associate Chief of Substance Abuse Research as well as Associate Attending Psychiatrist at McLean's. She is married and expecting her first child.

Marc Light (S.B. 1988) worked at the University of Zurich as a computational linguist, and then got his Ph.D. in computer science at the University of Rochester, NY. He did postdocs at the Universities of Tuebingen and Stuttgart; was a principal scientist at the MITRE Corp., and is now assuming a position as Assistant Professor in the Linguistics and Library and Information Sciences Departments at the University of Iowa.

Cyrus Shaoul (S.B. 1993) studied psycholinguistics in the dept., but was employed by software companies once he graduated. He recently moved back to the US after living in Japan for seven years, and is currently working on a project that deals with web software and user interface internationalization, in particular, Asian localization. He is married and has a two-year-old son.



Relaxing at the BCS Mixer at the Society for Neuroscience meeting this November. At left: Marlene Wicherski, Earl Miller, and Steve Wise. At right: Richard Hahnloser, Mansuo Hayashi, Jennifer Wang, and Mark Andermann.



STUDENT HONORS AND AWARDS

UNDERGRADUATES

Amy Meadows '03 **organized a trip for 12 MIT students to Pipestem, West Virginia, where they spent a week converting an old school into a job center where adults can learn computer skills.**

Sandy Zhang '03 **runs an MIT program called "ReachOut: Teach a Child to Read." She recruits, trains, and matches MIT tutors with children who need help reading and writing. 50 MIT students are tutoring 70 children ages 5 to 12.**

Sudeb Dalai '02 **received the Karl Taylor Compton Prize, presented to students in recognition of outstanding contributions in promoting high standards of achievement and good citizenship within the MIT community.**

The following seniors were elected to Phi Beta Kappa: Benjamin Balas, Sanjay Basu, Sudeb Dalai, Julia R. de Kadt, Lianne Habinek, Payal Kohli, Vinod Rao, Hillary Rolls, Brian Theisen, **and** Urvashi Upadhyay.

Benjamin Balas **was given the Hans Lukas Teuber Award for outstanding research in the Brain & Cognitive Sciences**

Sanjay Basu, Hillary Rolls, Brian Theisen, Urvashi Upadhyay, **and** Vinod Rao **received the Brain & Cognitive Sciences Award for outstanding scholarship.**

Payal Kohli **was given the Walle J.H. Nauta Award for Outstanding Research in the Brain & Cognitive Sciences**

Honorable Mention for Excellence in Research went to: Janice Chen, Elizabeth Rouse, **and** Andrew Yip

Honorable Mention for Excellent Academic Record went to: Sudeb Dalai, Julia deKadt, Lianne Habinek, Monica Linden, **and** Sondra Miles.

The BCS award for Outstanding Scholarship and BCS Contributions went to junior Jennifer Shieh

Honorable Mention for Outstanding Academic Record for Juniors went to: Vikash Gilja, Danielle Guez, Naomi Schmelzer, **and** Sandy Zhang

GRADUATE STUDENTS

Roland Fleming **won the Hugh Hampton Young Fellowship.**

Elizabeth Kensinger **received the Goodwin Medal in recognition of conspicuously effective teaching.**

Amy Pooler, Ned Sahin, Rebecca Saxe, Tania Ionin, **and** Yuri Ostrovsky **all received Angus MacDonald Awards for Excellence in Undergraduate Teaching.**

Mark Histed **received the Walle Nauta Award for Excellence in Graduate Teaching.**

Ellis Rutledge-Behnke, Elizabeth Kensinger, **and** Duane Watson **all won BCS Awards for Continuing Dedication to Teaching.**

Toshimasa Sakamoto **won the Whitaker Health Science Fellowship.**

Theresa Feledy **was selected to receive a National Defense Science and Engineering Graduate Fellowship.**

Heather Hinds **was mistakenly omitted from the previous newsletter's list of Ph.D. recipients.**

(Graybiel, cont'd from p. 1)

system. Eventually she made the major switch to work on the basal ganglia. The basal ganglia represented a model system to look at transmitter distributions and she related these patterns to the input/output organization of the basal ganglia. She then started to look at the relationship between the cortex and the basal ganglia, which she refers to as its "side-kick." Her work followed two lines: 1) She began to look at genes selectively expressed in the basal ganglia, and her lab now has a knockout mouse, and they have cloned several novel genes. She is now finding out what they do. Following this line, they also found that even one shot of an addictive substance turns on the genes in the basal ganglia in a pattern that matches the pattern she first observed when she started working on the basal ganglia. The genes plug into that pattern of neurotransmitter related to these patterns of behavior in the basal

ganglia. Ann said that it was just as Teuber used to say: whatever you do at the basic level you need to relate to behavior.

Her second line of work involves physiology; i.e., recording electrical activity of neurons in the cortex and the basal ganglia. In this case, her lab is recording multi-unit activity in mice, rats, and cortical neurons while animals are learning habits. They are finding that the electrical activity changes dramatically as the animals learn. The activity also changes if the animal forgets or is forced to break the habit, and has to relearn it or learn a new one.

This work is also related to the research she has been doing on Parkinson's disease. The basal ganglia is heavily influenced by dopamine, which is low in Parkinson's. Scientists have shown that dopamine responds to reward, which is another group of experiments in which

Parkinson's is mimicked in animals, which are then given L-Dopa, which creates dyskinesias, to see if there is a link.

Ann has won awards for her teaching and her research. This year alone, she was the recipient of the National Medal of Science, the highest award given by the United States to scientists, the James Rhyne Killian Jr. Faculty Achievement Award, the highest award given to a MIT faculty member, and most recently the Robert S. Dow Neuroscience Award..

Outside of MIT, Ann and her husband enjoy tennis and cycling in particular, but also yardwork, hiking, classical music (especially Bach), and Celtic music, and cooking. Ann is especially grateful for the wonderful people in her lab, and she likens the group to a family. They celebrate birthdays and other occasions together and, this year, she even hosted the wedding party for one of the lab members.

(Sur -- continued from p. 1)

Planning for the new brain and cognitive sciences complex to house BCS, PCLM and MIBR has proceeded rapidly in the past six months. Despite the continued economic downturn and budget cuts in many areas, the Institute remains committed to constructing the new complex on the corner of Vassar and Main Streets, across from the Stata Center. A model of the complex is outside our headquarters office in E25, and plans for the interior space – labs, offices, meeting rooms, and common areas – are close to the final design. There will be three separate but linked buildings to house the three entities. The BCS building

will also have space for teaching laboratories, a machine shop, and an electronics shop. With 18 faculty laboratories in BCS, 13 in PCLM and 16 in MIBR, the new complex will finally bring together all BCS faculty under one roof. The appointment of new faculty members to MIBR and PCLM has already fueled the growth of BCS, and more new faculty will be recruited once the complex is ready. Construction is slated to start in Spring 2003 and be completed by Fall 2005. With the synergies provided by proximity, the new building will significantly shape research and teaching in the brain and cognitive sciences at MIT.

Our Friday Colloquium series continues

to be a focal point for the department. We kicked off the Fall series with a cruise around Boston Harbor and a talk by Pawan Sinha on “The Nature and Acquisition of Object Representations.” The Colloquium committee is chaired by Peter Schiller, and would welcome suggestions for outside speakers.

An important change in BCS administration is the departure of Andrea Hatch, who has been Administrative Officer of BCS since 1989. She came to BCS in 1986, when the department was reorganized, and has been indispensable ever since. She will be missed by everyone, and we wish her success in her new role as Assistant Director for Administration in PCLM. Sheila Hegarty has been named interim Administrative Officer as we search for a new AO.

Bottom Row (L to R): Jinsook Roh, Aaron Andalman, David Nguyen, Terra Barnes. Middle Row: Benjamin Scott, David Cox, Cindy Shih, Monica Linden, Charles Kemp, Evelina Fedorenko, Mara Breen. Top Row: Tom Griffiths, Alexander Rivest, Thomas Davidson, Christopher Hirsch, Benjamin Balas, Rebecca Schwarzlose, Timothy Buschman. Not photographed: Safa Sadeghpour.



Aaron Andalman, born in Mississippi, schooled in Washington D.C., and a computer science major at Stanford, did a postgraduate internship at the Palo Alto Research Center (PARC), where he discovered his interest in the brain. Now, 3 years later, he will focus on computational neuroscience, particularly computational vision. He would like to be an academic working to solve the mysteries of the brain while occasionally winning teacher of the year awards. He divides his spare time among drawing, basketball, tennis, and hip-hop dancing. He hopes to add tap dance to his list of hobbies, and already has the shoes.

Ben Balas was born in Pittsburgh, PA, “but turned out all right anyhow.” He spent the past four years at MIT, and will be working in Pawan Sinha’s lab, studying face and object recognition. When not at work, Ben performs improv comedy in the Cambridge and Boston area, most recently with MIT’s own Roadkill Buffet.

Terra Barnes grew up in St. Louis, Missouri, went to school at the University of Illinois Urbana-Champaign, and was in Costa Rica before coming to MIT. She’s interested in the neuronal substrates of learning and memory, and would like to be a professor. She hopes to learn more

statistics and more molecular neuroscience. Her hobbies include kayaking, traveling, and knitting.

Mara Breen is originally from Connecticut and graduated from the School of Cognitive Science at Hampshire College. She plans to study language processing at MIT. She loves Hollywood blockbusters, mountain biking, and cooking.

Tim Buschman grew up in Baltimore, MD and attended Caltech as an undergraduate. After taking a year off to study attention at the NIH, he is excited to be joining Earl Miller’s lab to investigate the prefrontal activity and the temporal dynamics of neural activity. When not working in neuroscience, he enjoys being a newlywed.

David Cox grew up in central MA and graduated from Harvard with a degree in biology and psychology. After graduating, he spent two years playing around with fMRI at MGH before coming to MIT to study object recognition, especially using electrophysiological techniques. He is an avid pianist and enjoys cross-country skiing when the weather permits.

Tom Davidson is a native of Vancouver, Canada and received his BA in the history of science from Harvard.

Since graduating in 1999, he has worked in visual neuroscience and neuronal apoptosis labs, for the Let’s Go travel guides, and for an electronic publishing startup. At MIT, Tom plans to study systems neuroscience and to keep up with developments in genetics and AI. He even finds time for hiking, sailing, snowboarding, reading and travel.

Evelina Fedorenko is from Volgograd, Russia. She did her undergraduate work at Harvard, but came to MIT to study sentence processing in Ted Gibson’s lab. She would like to have a career in academia. Her hobbies are tennis and reading.

Tom Griffiths an avid fencer from Perth, Western Australia, “which is apparently the most isolated Western city on Earth.” He received a Bachelor’s degree in psychology from the University of Western Australia, and started a PhD at Stanford University, where he worked with Josh Tenenbaum. Tom will spend the next couple of years here as an exchange student, so they can continue to work together. His main interest is in how statistical concepts can help to explain the human capacity for easily solving certain difficult inductive problems, like learning the causal structure of the world or the probabilistic structure of language.

Christopher Hirsch, finished a double major at UC Berkeley in linguistics and cognitive science. He's come to MIT to study neurolinguistics and his particular interest is in the neural mechanisms underlying syntactic and semantic processing. He'll be hanging out in the Wexler and Gibson labs. Things that make him smile: SF indie pop, crossword puzzles, table tennis, and all things nerdy. He's putting together a vegetarian and seafood cookbook using only original recipes from friends and relatives (so feel free to send some to ckh@mit.edu). His greatest fear is his first NE winter, so he "prays nightly for global warming."

Charles Kemp grew up in Sydney, Australia, and attended the University of Melbourne, where he developed an interest in computational models of learning and perception. Charles will be joining Josh Tenenbaum's group. He enjoys playing keyboards and writing music, and performed with several choirs and bands in his home city.

Monica Linden from Ft. Lauderdale, FL got her undergraduate degrees in Math with CS and BCS at MIT. She's interested in Learning and Memory and Computational Neuroscience, and hopes to become a research professor. Her hobbies include enjoying good restaurants, movies, travelling and talking online to friends. She can't think of ways the dept/MIT can help that they aren't already doing.

David P. Nguyen of Methuen, MA received a B.S. in E.E. from Boston University and an M.S.E.C.E. from Georgia Tech. His interests include the development of innovative multi-electrode recording technologies and spike

classifications algorithms in tandem, the investigation of the role of the rat hippocampus in spatial information consolidation during sleep, and investigation of what makes a place cell a place cell. He also enjoys fishing, hiking, beach volleyball, and snow skiing. David's long term goal is to discover new avenues for investigation.

Alexander Rivest grew up in Arlington Mass, but went west to UCSB for his undergraduate degree in Cell and Developmental Biology. He is interested in neurogenesis and memory on a molecular level. His long-term goals are to get his PhD; after that, who knows. He is interested in traveling and seeing the world, and climbed Kilimanjaro this summer and spent time with some of his Masai friends in southern Kenya.

Jinsook Roh is from Korea, where she majored in physics at Ewha Womans University. Her goal is to understand higher order cognitive functions, such as self-awareness, and make the world better. Her paramount interests nowadays are motor control and motor learning. To do that, she hopes to combine physiology and mathematical modeling. Taekwondo, all kinds of concertos and Christianity are her particular interests.

Safa Sadeghpour was born in Persia but raised primarily in Ecuador and Chile. He has a BS in Neuroscience and Cybernetics from UCLA, and is currently also an M.D. student at Harvard. He's a Baha'i as well, and his long-term plans are to gain a sense of the spiritual pulse of America, do solid, but socially-relevant research, and revolutionize the soul of the planet. He is leading a small youth workshop that

involves such processes as eloquence development, learning how to apply knowledge to solve social problems, and learning how to learn.

Rebecca Schwarzlose is originally from the Chicago area and attended Northwestern University as an undergraduate. Her background is grounded in psychology, cognitive science, and linguistics, but she's particularly interested in diving into systems and cellular/molecular neuroscience as a graduate student. Her long-range plans are centered around conducting basic research with clinical relevance for psychiatric and neurological disorders.

Ben Scott claims to have been raised in NH by banditos. He received his undergraduate degree from the University of Chicago. His academic interests include physiology and behavior; especially new interpretations of classic behaviors and new techniques to study physiology. Ben is also interested in medically and socially applicable biology. His non-academic interests include literature, cowboy movies, hunting, and mountaineering.

Cindy H. Shih, born in Taipei, Taiwan, immigrated to the US at age six. She grew up in L.A. and received her B.Sc in Organismic Biology, Ecology, and Evolution from UCLA in 2001. She spent a part of her undergraduate years in the Sonoran Desert studying the distribution and behavior of gray-breasted jays, and a summer studying the genetics of behavior and aging in fruit flies. Her prime interest is in elucidating how memory is formed and maintained in the brain. She loves to discuss behavior, evolutionary relationships, and theories about sleep.

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