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quarterly newsletter
summer 2013

PBS Update

THE BRIDGE TO OUR STUDENTS' FUTURE—AND THE NEXT 125 YEARS THE PBS CAPITAL CAMPAIGN

Each year, PBS recognizes about ten undergraduates with awards for their outstanding work. Between 300 and 350 undergraduates gain experience working in labs. The 125th anniversary capital campaign will allow PBS to strengthen these two features of the program, which play a critical role in shaping our students' futures.

Consider the example of Hena Ahmed, who graduated one year ago from IU with a major in neuroscience and chemistry. This fall she started her first semester at Harvard Medical School.

Starting medical school is not without its uncertainties. Students face an avalanche of information—and an avalanche of debt. "I was terrified," Ahmed admits. She wasn't sure what she would find and how she would find it.

But the night before one of her classes she was reading notes in preparation for the lecture. "SO

COOL!" she wrote next to one of the topics for the next day's class.

The next day in the lecture she got the kind of affirmation that has stuck with her through all the challenges. The professor paused at the image on which Ahmed had commented the night before to look at a slide. "If you don't think this is the coolest mechanism you've ever seen, you are not in the right place," he said.

"It made me feel like I should be here," Ahmed explains. "I get excited about this material."

Finding the right place—and getting there, Ahmed attests—is no easy process. It can depend not only on intelligence, hard work, and in Ahmed's case, limitless enthusiasm, but also on many forms of support.

"A big struggle for me in college early on was the financial burden," Ahmed explains. "My parents couldn't contribute that much to

my education." She consequently sought out financial support from many sources and she received many awards and scholarships—from PBS, the Honors College, and the College of Arts and Sciences, which awarded her a Wells scholarship. She was also awarded a scholarship from the Arnold and Mabel Beckman Foundation, a private foundation. In her senior year, PBS also awarded her money for her honor's thesis and for research.

The gifts paid for research expenses, as well as tuition. But they have also paid for much of her first year of medical school.

"I was incredibly lucky to have that buffer coming into my first year. The amount of stress that comes from accruing interest on a loan and budgeting is really tough for a lot of students."

The money also removed the pressure to choose a specialty in medical school based on the future salary. (cont'd on page 2)



(cont'd from page 1) "A lot of medical students find themselves in a quarter of a million dollars of debt, and then decide to pursue a specialty to pay it off."

Key to her education at IU was her work in the lab. Like many other PBS undergraduates, Ahmed was determined to look beyond the PowerPoint slides for "a more hands-on approach to science." She found it in the lab of Chancellor's Professor George Rebec, whose studies of cocaine addiction and Huntington's disease also appealed to her interest in addressing human problems. Rebec and his lab manager Scott Barton introduced her to the methods of the lab. Under their guidance she took on a project that had never been

studied before, to evaluate a mouse model for Huntington's disease. She worked with Rebec, Olaf Sporns and Dale Sengelaub on the behavior and neuronal firing of this model for her honor's thesis, one of about 25 students to engage in such a project each year.

Now, after her first year of medical school, she is happy to report that she is back in the lab for the summer, this time in a neural engineering

institute in Lausanne, Switzerland, where she was awarded a fellowship. Her project looks at hearing loss caused by neuronal death. The director of the lab is an expert in viral vectors, viruses used to deliver gene therapies and potentially treat neurodegenerative diseases.

Again she is brimming with enthusiasm for her topic. "I've always thought viruses are really interesting and using them to treat disease is a technique that I find incredibly exciting."

She is acutely aware of how the gifts she received as an undergraduate student "made it that much easier to focus on school," which is why, she says, "I'd like to see these forms of support for students continue."

"Eventually," she adds, "when I actually have an income—maybe in about a decade—I plan to also give back to the department."

Find out more about the Capital Campaign at psych.indiana.edu/125campaign.php.

IU RESEARCHERS FOCUS ON A BRAIN PROTEIN AND AN ANTIBIOTIC TO BLOCK COCAINE CRAVING

A new study conducted by a team of Indiana University neuroscientists demonstrates that GLT1, a protein that clears glutamate from the brain, plays a critical role in the craving for cocaine that develops after only several days of cocaine use.

The study, appearing in *The Journal of Neuroscience*, showed that when rats taking large doses of cocaine are withdrawn from the drug, the production of GLT1 in the nucleus accumbens, a region of the brain implicated in motivation, begins to decrease. But if the rats receive ceftriaxone, an antibiotic used to treat meningitis, GLT1 production increases during the withdrawal period and decreases cocaine craving.

George Rebec, professor in the Department of Psychological and Brain Sciences, said drug craving depends on the release of glutamate, a neurotransmitter involved in motivated behavior. Glutamate is released in response to the cues associated with drug taking, so when addicts are exposed to these cues, their drug craving increases even if they have been away from the drug for some time.

The same behavior can be modeled in rats. When rats, who self-administer cocaine by pressing a lever that delivers the cocaine into their bodies, are withdrawn from the drug for several weeks, their craving returns if they are exposed to the cues that accompanied drug delivery in the past; in this case, a tone and light. But if the rats are treated with ceftriaxone during withdrawal, they no longer seek cocaine when the cues are presented.

Ceftriaxone appears to block craving by reversing the decrease in GLT1 caused by repeated exposure to cocaine. In fact, ceftriaxone increases GLT1, which allows glutamate to be cleared quickly from the brain. The Rebec research group localized this effect to the nucleus accumbens by showing that if GLT1 was blocked in this brain

region even after ceftriaxone treatment, the rats would relapse.

While an earlier paper of Rebec's group showed the effects of ceftriaxone on cocaine craving, the new paper was the first to localize the effects of ceftriaxone to the nucleus accumbens and was the first to show that ceftriaxone works after long withdrawal periods.

"The idea is that increasing GLT1 will prevent relapse. If we block GLT1, the ceftriaxone should not work," Rebec said. "We now have good evidence that ceftriaxone is acting on GLT1 and that the nucleus accumbens is the critical site."

Rebec said prior work on Huntington's disease, a neurodegenerative disorder, alerted him and his team to the way ceftriaxone acts on the expression of GLT1, a protein that removes glutamate from the brain. Glutamate removal is a problem in Huntington's disease, and Rebec's team found that ceftriaxone increases GLT1 and improves neurological signs of the disease in mouse models.

It now is important to determine why cocaine decreases GLT1 and to see whether other drugs of abuse have the same effect. Rebec and colleagues have shown that ceftriaxone also can decrease the craving for alcohol in rats selectively bred to prefer alcohol.

Drug cues are one factor that can trigger relapse. Future work also will examine whether ceftriaxone can block drug craving induced by stress or by re-exposure to the drug. If so, it would mean that GLT1 could become an important target in the search for treatments to prevent drug relapse. Now, Rebec said, there are a number of factors to study. "We don't yet know how long the effects of ceftriaxone last. Does an addict have to be on it for a month or will it lose its effectiveness? We don't yet know what will happen."

In the cocaine study, the rats self-administer

cocaine for six hours a day for up to 11 days. Their behavior is much like that of a human addict.

"You might think that because they're in there, they just take more, but they don't just take more," Rebec said. "Like human addicts, they take the drug more and more rapidly and they want to get to it more and more quickly."

Withdrawal serves as an incubation period during which craving increases if it is activated by cues or other factors. "Something changes in the brain during that time to trigger the craving or make it more likely that you want the drug," Rebec said. "That's what ceftriaxone seems to be interfering with."

Ceftriaxone is now in clinical trials on people with ALS, also known as Lou Gehrig's disease, which has many mechanisms in common with other neurodegenerative diseases such as Huntington's disease and Alzheimer's.

Rebec, Chancellor's Professor of Psychological and Brain Sciences, is the director of the Program in Neuroscience and of the Preclinical Pharmacology Laboratory. The Department of Psychological and Brain Sciences resides in the College of Arts and Sciences at IU Bloomington.

Co-authors of "The Role of the Major Glutamate Transporter GLT1 in Nucleus Accumbens Core Versus Shell in Cue-Induced Cocaine-Seeking Behavior" are Kathryn D. Fischer and Alexander C.W. Houston. Fischer received her Ph.D. in neuroscience from IU and is now a postdoctoral fellow at Harvard University. Houston, a former undergraduate in the Rebec lab, is now a graduate student at MIT.

The research was supported by the National Institute on Drug Abuse.



PBS Quasquicentennial

Join us to reflect on our achievements and get a glimpse into our future, with

Symposia to offer historical reflections and celebratory talks led by notable faculty, alumni and university administrators.

Award ceremony to mark the contributions of distinguished faculty and alumni.

Open house: revisit old labs and classrooms, walk the hallways, meet old friends and teachers, get to know the current faculty and the new chair.

Cocktails hour and formal banquet

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NEUROSCIENCE AND BIOLOGY MAJOR COURTNEY BURROUGHS RECEIVES ONE OF SIX PROVOST AWARDS TO IUB UNDERGRADUATES



Courtney Burroughs, from Chrisney, Ind., will graduate in May 2014 with majors

in biology and neuroscience in the College of Arts and Sciences. In 2011 she joined the research lab of her mentor, Chancellor's Professor George Rebec in the Department of Psychological and Brain Sciences. There she became an integral part of

the lab's effort to identify neuronal abnormalities in transgenic mouse models of Huntington's disease, an inherited neurological disorder. In her honors thesis, which she is on track to complete in the spring of 2014, Burroughs is investigating how the Huntington's gene causes dysfunction in neurons located in the cortical and striatal regions of the brain. The research may produce information that can guide new therapeutic strategies aimed at mechanisms of neuronal

communication that are involved in Huntington's disease.

She will be lead author of a presentation this fall at the Society of Neuroscience meeting, and her honors thesis will be a major part of a research paper that the Rebec lab will submit for publication this summer. She also co-authored a presentation at last year's Society of Neuroscience meeting, and that research is being submitted for publication this spring.





CONGRATULATIONS TO THE FOUR PBS RECIPIENTS OF THE NATIONAL SCIENCE FOUNDATION GRADUATE RESEARCH FELLOWSHIP AWARD!

Brittany Rudd (on left), a student of Amy Holtzworth-Munroe, is working on a project entitled “Relationship Dissolution in Never Married Parents: Improving Court Efficiency.” The project will “evaluate family law interventions for separating, never married parents. The ultimate goal is to improve the efficiency (i.e., time and money spent) on family law court systems and outcomes for the families these courts serve.

Francisco Magdaleno (center) is a student in the lab of Professor Meredith West. He is currently “comparing the babble of Spanish- and English-language-learning infants using a phonological approach that incorporates facial expressions.”

Julie Eyink (on right) is a student in the lab

of Professor Edward Hirt. Her research “looks at how beliefs about control (over the situation and other people) contribute to an individual’s decision to use self-handicapping or another type of compensatory behavior after a threat.”

Stephanie Lochbihler (not pictured) is a student in the lab of War Years Chancellor’s Professor Eliot Smith. Her research “investigates the effect of social interaction on the behavior and perceived reward of smoking by assigning participants to either consume nicotine in the presence of others or alone and examining the differences in nicotine intake and perceived reward of the smoking experience.”

The NSF fellowship is a prestigious and

extremely competitive award among students in all NSF-supported science, technology, engineering, and mathematics disciplines. The award provides three years of support for graduate education. Previous PBS recipients include:

In 2011: Dustin Asaf Beasley, Lisa Byrge, Katie Van Loo

In 2010: Nicole Beckage (an undergraduate), Gregory Cox, Patrick Egan

In 2009: Viridiana Benitez, Lisa Cantrell, Molly Erickson, Jerillyn Kent, Day Yurovsky

SEND US YOUR PHOTOS FROM IU AND BE FEATURED IN OUR CELEBRATION



We are compiling photo galleries, slide shows, and posters for our 125th celebration. We’d love to include your photos. Email them to us at pbschair@indiana.edu.



STUDY IDENTIFIES KEY SHIFT IN THE BRAIN THAT CREATES DRIVE TO OVEREAT

A team of American and Italian neuroscientists has identified a cellular change in the brain that accompanies obesity. The findings could explain the body's tendency to maintain undesirable weight levels, rather than an ideal weight, and identify possible targets for pharmacological efforts to address obesity.

The findings, published in the *Proceedings of the National Academy of Sciences* this week, identify a switch that occurs in neurons within the hypothalamus. The switch involves receptors that trigger or inhibit the release of the orexin A peptide, which stimulates the appetite, among other behaviors. In normal-weight mice, activation of this receptor decreases orexin A release. In obese mice, activation of this receptor stimulates orexin A release.

"The striking finding is that you have a massive shift of receptors from one set of nerve endings impinging on these neurons to another set," said Ken Mackie, professor in the Department of Psychological and Brain Sciences in the College of Arts and Sciences at IU Bloomington. "Before, activating this receptor inhibited the secretion of orexin; now it promotes it. This identifies potential targets where an intervention could influence obesity."

The work is part of a longstanding collaboration between Mackie's team at the Gill Center for Biomolecular Science at IU Bloomington and Vincenzo Di Marzo's team at the Institute of Biomolecular Chemistry in Pozzuoli, Italy. Both teams study the endocannabinoid system, which is composed of receptors and signaling chemicals that occur naturally in the brain and have similarities to the active ingredients in cannabis, or marijuana. This neurochemical system is involved in a variety of physiological processes, including appetite, pain, mood, stress responses and memory.

Food consumption is controlled in part by the hypothalamus, a portion of the brain that regulates many essential behaviors. Like other important body systems, food consumption is regulated by multiple neurochemical systems, including the endocannabinoid system, representing what Mackie describes as a "balance of a very fine web of regulatory networks."

An emerging idea, Mackie said, is that this network is reset during obesity so that food consumption matches maintenance of current weight, not a person's ideal weight. Thus, an obese individual who loses weight finds it difficult to keep the weight off, as the brain signals the body to eat more in an attempt to return to the heavier weight.

Using mice, this study found that in obesity, CBI cannabinoid receptors become enriched on the nerve terminals that normally inhibit orexin neuron activity, and the orexin neurons produce more of the endocannabinoids to activate these receptors. Activating these CBI receptors decreases inhibition of the orexin neurons, increasing orexin A release and food consumption.

"This study identifies a mechanism for the body's ongoing tendency to return to the heavier weight," Mackie said.

The researchers conducted several experiments with mice to understand how this change takes place. They uncovered a role of leptin, a key hormone made by fat cells that influences metabolism, hunger and food consumption. Obesity causes leptin levels to be chronically high, making brain cells less sensitive to its actions, which contributes to the molecular switch that leads to the overproduction of orexin.

For a copy of the study, "Obesity-driven synaptic remodeling affects endocannabinoid control of orexinergic neurons," contact Eurekalert's



journalist page, or contact PNAS at PNASnews@nas.edu or 202-334-1310.

Co-authors include lead author Luigia Cristino, Consiglio Nazionale delle Ricerche, Pozzuoli, Italy; Giuseppe Busetto, University of Verona, and National Institute of Neuroscience in Verona, Italy; Roberta Imperatore, Consiglio Nazionale delle Ricerche; Ida Ferrandino, University Federico II, Naples, Italy; Letizia Palamba, Consiglio Nazionale delle Ricerche, and University of Urbino "Carlo Bo," Urbino, Italy; Cristoforo Silvestri, Consiglio Nazionale delle Ricerche; Stefania Petrosino, Consiglio Nazionale delle Ricerche; Pierangelo Orlando, Consiglio Nazionale delle Ricerche, Naples, Italy; Marina Bentivoglio, University of Verona; and Vincenzo Di Marzo, Consiglio Nazionale delle Ricerche, Pozzuoli, Italy.

The research was supported by the National Institutes of Health and the Compagnia di San Paolo.

REMEMBERING JOHN WALTKE

John Waltke, former shop manager for PBS, passed away on April 17. John spent most of his career helping us conduct cutting-edge research. He was nearly 90 years old when he died, yet could be found working on various projects in the shop until just a few years ago when he began to devote more time to ballroom dancing.



IU BLOOMINGTON COGNITIVE SCIENTIST RECEIVES AMERICAN PSYCHOLOGICAL ASSOCIATION'S HIGHEST HONOR



Linda Smith, Distinguished Professor and Chancellor's Professor in the Department of Psychological and Brain Sciences at Indiana University Bloomington, has received the 2013 American Psychological Association Award for Distinguished Scientific Contributions.

The APA is the largest scientific and professional organization representing psychology in the U.S., and this award is considered its highest honor. For Smith, it is one of a series of major honors she has received this year, among them the prestigious 2013 David E. Rumelhart Prize. She was also featured in the inaugural TED-style video talk for a new APA video series by major figures in the field.

In her work, Smith systematically explores the stages of learning and human development in children, developing computational models of perception, language use, categorization and motor behavior. Her work on perceptual development has had a major impact on the entire field.

An early champion of the "dynamical systems" revolution in cognitive science, she wrote "A Dynamical Systems Approach to the

Development of Cognition and Action." The book has been a touchstone for this movement, widely influential on a new generation of cognitive scientists.

"She presents eloquent philosophical arguments, compelling experimental evidence and revealing formal models that converge on a new and radical view of cognition," IU cognitive scientist Robert Goldstone said in his nomination letter. "Whereas many theories still hold out for 'magical,' inexplicable processes (such as innate knowledge or complex inductive reasoning operations in infants), Dr. Smith has always favored simple, grounded accounts of development. While making humans seem less magical, her accounts have the notable advantages of being far more plausible, providing satisfying mechanisms for change and producing empirically testable predictions."

In addition to her influence on the field, she also has served as chair of the Department of Psychological and Brain Sciences, an associate dean of the College of Arts and Sciences and a member of the governing boards of major national organizations in her field.

"She has superbly played her roles as gifted teacher, inspiring mentor, indefatigable chair and international leader in psychology and cognitive science," Goldstone said.

According to APA administrator Howard Kurtzman, "The APA Award for Distinguished Scientific Contribution, which has been made annually since 1956, recognizes scientists who have made exceptional theoretical or empirical advances in psychology. Recipients of the award are honored for contributions that have had a strong impact on the field, including influences on how other scientists and students pursue their work."

Other 2013 recipients of the award are Ian H. Gotlib and Robert M. Sapolsky, both of Stanford University. A formal announcement of the award will appear in the April 2013 issue of the *American Psychologist* and the May 2013 issue of the *APA Monitor*.

NEUROSCIENCE AND MATH MAJOR, BENJAMIN ALLAN SEITZMAN IS NAMED ONE OF THREE 2013 GOLDWATER SCHOLARS



Three students at Indiana University campuses have been awarded Barry M. Goldwater Scholarships, which are presented to the country's most promising undergraduate college students in math, science and engineering. Neuroscience major Benjamin Seitzman is one of the students receiving this honor.

Benjamin Allan Seitzman, who is majoring in mathematics and neuroscience at Indiana University Bloomington. Seitzman says his career goal is to earn a Ph.D. in neuroscience, conduct research and teach at the university level.

Jason Walsman and Jordan Venderley share this honor with Benjamin. The award provides

recipients up to \$7,500 per year toward tuition, fees, books, and room and board.

The three were among 271 students selected from a field of 1,107 mathematics, science and engineering students to receive the scholarships from the Barry M. Goldwater Scholarship and Excellence in Education Foundation.

Established by the United States Congress in 1986 in honor of former U.S. senator and 1964 presidential candidate Barry Goldwater, the goal of the foundation is to provide a continuing source of highly qualified scientists, mathematicians and engineers by awarding scholarships to college students who intend to pursue careers in these fields.



FEELINGS OF POWER CAN DIFFUSE EFFECTS OF NEGATIVE STEREOTYPES



New research from social psychologists at Indiana University Bloomington suggests that feeling powerful might protect against the debilitating effects of negative stereotypes.

“If you can make women feel powerful, then maybe you can protect them from the consequences of stereotype threat,” IU social psychologist Katie Van Loo said.

In new work, Van Loo and Robert Rydell, social psychologists in the Department of Psychological and Brain Sciences in the IU College of Arts and Sciences, brought the study of these two social forces -- power and stereotypes -- together to determine whether one could circumvent the debilitating impact of the other.

Negative stereotypes, according to an already large body of research, have insidious effects. The very fear of confirming a stereotype that reflects on one’s identity -- that “women can’t do math,” for example -- is enough to undermine a woman’s performance in the subject. Social psychologists have labeled this phenomenon “stereotype threat” and have documented its impact in such areas as test taking and athletics.

At the other end of the scale are the equal and opposite effects of power. Power, it has been shown, can have positive effects on individual agency, imparting a sense of freedom and control over one’s cognitive, psychological and physical resources and, perhaps, paving the way for optimal performance.

“This paper looks at whether making women feel powerful and reminding them of a time in which they had power can prevent stereotype threat,” Van Loo said. “I wanted to look at how high power can protect women from decreases in cognitive resources as a result of stereotype threat.”

In a series of three experiments, Van Loo and Rydell built a case for this process. In the first, using a technique called semantic priming, participants were given scrambled sentences of five words, each one containing a word related to either high or low power (“dominant” and “controlling” vs. “subordinate” and “dependent”), which they would form into a sentence. Each group was then given a math test in which the instructions either invoked the negative stereotype about women and math or were gender neutral.

A second experiment used an essay-writing task to make the participants feel either high or low in power, calling upon them to recall an incident in which they had control over another person or people or another had control over them. A control group, neutral in power, enabled the researchers to gauge whether the low power diminished performance or high power boosted performance in contrast to the neutral condition of power. Members of each group then took the math test with either threat or no-threat instructions.

The third experiment examined one possible mechanism involved in this cognitive process: working memory capacity, “that aspect of memory, critical to math, which allows you to hold information and manipulate it in your mind,” Van Loo said. Again divided into high, low and neutral power through the use of the writing task, participants were given a memorization task asking them to recall the last three letters in a series of letters presented to them. They were then given the math test as in the previous experiments.

Each instance led to the same conclusions. Feeling powerful protected participants from the deficits in working memory capacity that those without power and under stereotype threat experience. Women who felt high in

power performed better in math than those in both the low power and control group, despite the stereotype threat instructions.

“It’s not that power made them better at math,” Van Loo said, “but it buffered them from the effect of the negative stereotype. When women feel powerful, they can demonstrate their ability relatively unimpeded by stereotype threat.”

As the researchers observe in the study, these results highlight the pitfalls of using performance to evaluate the abilities of those belonging to negatively stereotyped groups without taking into consideration other environmental factors that may influence performance, such as stereotype threat and power.

As for the practical lessons to be taken from this study, Van Loo said, “It’s a little preliminary, but the reason we did this is to try to get to the point where we could make a recommendation and show something that can be helpful.”

“Maybe if you’re a student and you’re about to take a math test, try doing a thought exercise before you take a test,” she said. “It might be helpful to think about a time when you had power. Maybe that would protect you.”

The paper, “On the Experience of Feeling Powerful: Perceived Power Moderates the Effect of Stereotype Threat on Women’s Math Performance,” was published in the *Personality and Social Psychology Bulletin*.

Van Loo is a graduate student in the IU Department of Psychological and Brain Sciences. Rydell is an assistant professor in the department and director of the Social Cognition Lab.



“THE PSYCHOLOGY OF ADOLESCENT GIRLS,” LINDA HOKE-SINEX’S AWARD-WINNING SERVICE-LEARNING COURSE, BRINGS MIDDLE SCHOOL GIRLS TO CAMPUS.

On May 8, PBS senior lecturer Linda Hoke-Sinex received a Healthy Schools Award from the Monroe County Community School Corporation for her popular service-learning course, “The Psychology of Adolescent Girls.” The award recognized Hoke-Sinex for her “dedication to student mental health and wellness.”

“Linda is an absolute pleasure to work with,” says David Pillar, principal of Jackson Creek Middle School whose students participate in the course. “She is a wonderful collaborator, ultra professional, and truly cares about all of the learners involved. I am thrilled to have her as a partner in connecting her students with our students.” He credits Nicole Schonemann and Andrew Libby from IU Service-Learning for helping to make this connection and “looks forward to opportunities for this program to grow.”

To Hoke-Sinex, too, the course represents “a welcome link between IU and the local school system,” that she has “sought to support for quite some time” and seeks to develop further.

A two-way learning experience

In P474, “The Psychology of Adolescent Girls” advanced undergraduate psychology majors meet twice a week in class to discuss the psychological changes experienced by adolescent girls and the issues that arise at this

time in their lives: body-image and self-esteem; gender and identity; problems with depression, self-harm, and eating disorders; behavior and family issues.

Once a week, the eighteen IU students in the class also travel to one of three local middle schools, where they get together with groups of about seventeen or eighteen girls at each school to mentor and discuss some of the challenges these girls are facing. As mentors and role models for the girls, IU students in the class often form relationships that extend beyond the semester-long course. They also keep a journal about the meetings.

Visiting PBS

On Thursday afternoon, March 21, about 50 middle school girls from Jackson Creek, Batchelor, and The Project School arrived at the IUB Department of Psychological and Brain Sciences for a series of hands-on discussions and demonstrations of how brain scientists go about their work.

They had an up-close look at the scientists’ tools: computers that track the eye movements of toddlers, fMRI scanners that look at brain activity during a specific mental task, and a “miracle berry” grown on trees in West Africa that turns sour tastes into sweet. All of the lessons incited the curiosity of the students and



a stream of thought-provoking questions, particularly on the brain—“Why is it split down the middle?” “Are all brains the same size?”

Many of the middle school girls come from families in which college is not part of their parents’ experience or expectations and the day on campus gives them a taste (quite literally) of what college could be like and how it can open up their mind to different things—in this case, the mind itself, putting it on the table in front of them.

Often in just this single afternoon, says Hoke-Sinex, who has taught the course for four years now, the event has a visible impact. “After this one day on campus, they come away seeing what college can do for them.

Or as a middle school girl named Michaela put it at the end of the trip, “You guys got me interested in science.”

IN MEMORIAM: BILL FREEMAN 1954-2013

The Department of Psychological and Brain Sciences mourns the loss of longtime employee, colleague, and friend, Bill Freeman. He worked at IU for 30 years and in the department for 23 of those years as an electronics specialist. His presence will be greatly missed, so much so that when manager of facilities Lee Deckard asked for testaments to Bill from members of PBS, he was met with an outpouring of touching and humorous anecdotes from all corners of the department.

The anecdotes spoke of Bill’s remarkable expertise and craftsmanship, his generosity and good nature, his outsized personality, and his unique ability to create a sense of community within the department against difficult odds.

His litany of special greetings would brighten the day of those he encountered with an endearing

mix of affection and subversion. For many, it was, “Do the cops know you’re loose?” While for others, it was, “You staying out of trouble?” When asked how he was, his most frequent answer was, “Meaner than ever!” said with a twinkle in his eye.

Yet in addition to the countless antics and good humor, accounts of the quality, strength, and precision of his work abound alongside numerous acts of sheer generosity and kindness. As PBS chair William Hetrick observes, “When all is said and done, what Bill gave to the department will be difficult, if not impossible, to replace and not likely forgotten. Bill Freeman will be dearly missed by all.”

To read his obituary, go to <http://www.heraldtimesonline.com/stories/2013/06/05/obit.obituaries.sto?1372087244>

