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About The Gazette Search Back Issues Contact Us

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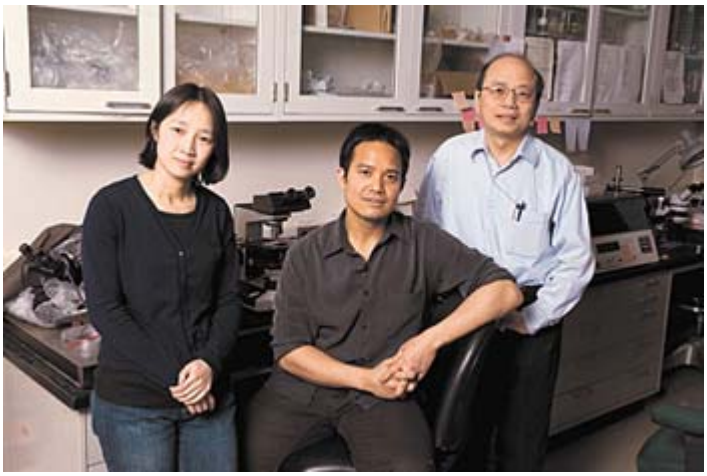
Young Investigators Honored

School of Medicine recognizes the talents of students and fellows

By Keely Newcomb
Johns Hopkins Medicine

The Johns Hopkins University School of Medicine will honor 18 young researchers who have gone above and beyond in their search for answers.

The 32nd annual Young Investigators' Day will be held at 4 p.m. on Thursday, April 16, in the school's Mountcastle Auditorium, East Baltimore campus. A small selection of awardees will present their research, and all will be recognized for their accomplishments.



Neuroscientists Ning Cheng, a doctoral candidate, and Michael Tri Hoang Do, a postdoctoral fellow, with their sponsor, King-Wai Yau. Cheng and Do are among the award recipients who will present their work at Young Investigators' Day.
Photo by Will Kirk / HIPS

Young Investigators' Day was created to celebrate all the school's students, postdocs and research fellows. Even though only a few can receive honors, the awardees say they realize that they are part of something much greater than their individual research.

"The Young Investigators' Day Award recognizes many discoveries made by students at Johns Hopkins, encourages and promotes great research at the graduate level and inspires young scientists to continue in science," said Andrew Kim, a doctoral candidate in the Biochemistry, Cellular and Molecular Biology Graduate Program.

Kim, who is in Xinzhong Dong's lab, will receive the Paul Ehrlich Award for his research into the Pirt protein. Pirt works as part of the molecular sensor of painful heat and capsaicin, the main ingredient in hot chili peppers. Mice lacking Pirt are less able to sense painful heat and capsaicin than normal mice.

Yun Liu, a doctoral candidate in the Biochemistry, Cellular and Molecular Biology Graduate Program, said he also sees the Young Investigators' Day Award as inspiration for aspiring researchers. Liu, who is in Stephen Desiderio's lab, said, "It is a tremendous honor to be recognized by this award. Since coming to Hopkins, I've always dreamed of being part of this ceremony. When I was a first-year student, I witnessed senior members from our lab receiving this award. Their achievements encouraged me to work hard so that hopefully one day I would be as successful as they were. This award boosts my confidence and encourages me to continue to pursue independent research."

Liu will be awarded the Nupur Dinesh Thekdi Award for investigating the role of the RAG-2 enzyme in the recombination of antigen receptor genes in the course of immune cell development. This discovery sheds light on the physiological importance of the interaction in preventing hereditary immunodeficiencies in humans.

Michael Tri Hoang Do, a postdoctoral fellow in King-Wai Yau's lab, acknowledged that "there are so many devoted students and fellows at Hopkins, doing fundamental work that has yet to be recognized" and said, "I hope the Young Investigators' Day draws attention to their labors." His research led him to discover how melanopsin-containing retinal ganglion cells capture light and earned him the W. Barry Wood Jr. Award.

Yu-Yi Lin, a doctoral candidate in the Biochemistry, Cellular and Molecular Biology Graduate Program, will receive the David Israel Macht Award for using a protein acetylation microarray to discover that NuA4 regulates cell metabolism and aging.

"Upon the transition from a trainee to a trainer, I understand as well as anyone that students and fellows are the main drive of advance in science," said Lin, a student in Heng Zhu's lab. "Young Investigators' Day is a celebration that gives them hope and fervency. I am lucky to be a witness to this."

Behind each awardee is a strong mentor, and these ever-supportive faculty members continue to guide the young scientists through the daily challenges in bench research.

Christine Ladd-Acosta, a doctoral candidate in the Graduate Program in Cellular and Molecular Medicine, will receive the Mette Strand Award for her study of altered DNA methylation in colon cancer. She discovered that most DNA methylation variation in normal tissues and most abberant DNA methylation in colon cancer occur not in regions close to genes but in sequences up to 2,000 building blocks of DNA away from genes, in regions they've coined as CpG island shores.

Ladd-Acosta credits her success to her mentor, Andy Feinberg, and to the interdisciplinary group with whom she worked on the project. "Not only was Andy's example of hard work, attention to detail and perseverance crucial to my success but also his patience and encouragement in allowing me to pursue unconventional avenues," Ladd-Acosta said. "This work also would not have been possible without the help, insightfulness and knowledge that Rafael Irizarry brought to the project," she said, referring to the School of Public Health biostatistics professor with whom she worked.

Eric Momin, an MD candidate and the recipient of a Paul Ehrlich Award, also attributes his success to his mentor. "I derived so much inspiration from my mentor, Rafael Tamargo, who has guided me since my very first days as a medical student," Momin said. "He is by far the greatest contributor to my success."

Momin engineered mice to carry a specific alteration in the haptoglobin protein to study a constriction of blood vessels in the brain known as vasospasm. This genetic alteration, he said, is thought to be carried by one in every three people and is associated with a higher risk for developing severe vasospasm. He said he hopes to use these mice to test potential drug treatments for this condition.

Ning Cheng, a doctoral candidate in the Graduate Program in Neuroscience, will receive a Paul Ehrlich Award for discovering that melanopsin is found in catfish retinal cells. The further observation that light induces an electrical response from cone cells but not rod cells suggests that melanopsin is the photopigment that enables fish cone cells to sense light.

"The award is a huge encouragement to me that my work is recognized by our community," Cheng said. "The project was very difficult, but I learned a lot and I am grateful for the colleagues in the department who taught me various things. [My adviser King-Wai Yau's] insights made the project possible, and he put in lots of effort to mentor me to grow as a researcher."

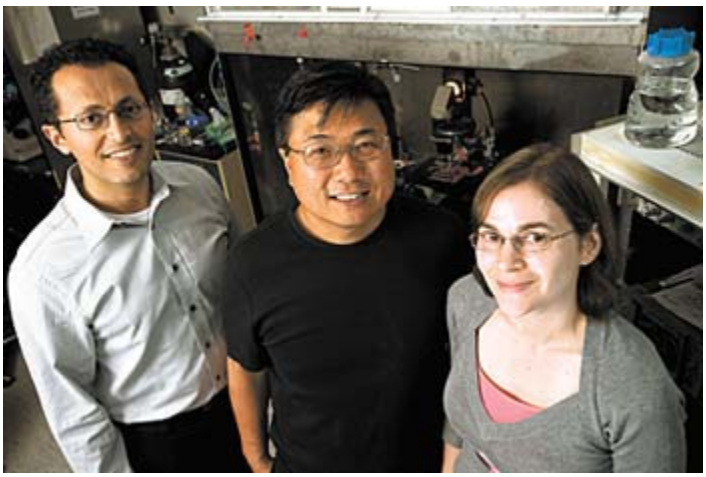
Ye Yan, recipient of the Albert Lehninger Research Award, said, "I credit my achievement to my supervisor, Shanthini Sockanathan, whose encouragement, support and terrific advice kept me highly motivated from the beginning of my project." Yan's work brings into play for the first time the concept that thiol redox biology has major implications for controlling how developing cells become nerve cells, a finding that significantly expands current understanding in the field.

Guidance can go a long way, but for some, the collaborative spirit at Johns Hopkins is the best way to success.

"One of the things I adore about science at Hopkins is the spirit of collaboration," said Rasi Wickramasinghe, an MD/PhD candidate in the Graduate Program in Neuroscience. "It is amazing how a good collaboration can get things off the ground." Wickramasinghe insists that half the credit should go to Wenquin Luo, a friend, lab mate and postdoc in David Ginty's lab, who "exemplifies how good science should be done at a place like Hopkins."

Wickramasinghe will receive the Martin and Carol Macht Award for a study of genes that are expressed in a developing mammal in response to growth factors when organs are innervated. The project led him to identify one mechanism through which nerve growth factor controls the innervation of skin.

Dengke K. Ma, a doctoral candidate in the Biochemistry, Cellular and Molecular Biology Graduate Program and recipient of the Bae Gyo Jung Award, credits success to teamwork, too. "Teamwork has been essential and central to my research. I am very fortunate to work with an excellent group of talented postdoc fellows and students in Hongjun Song's lab," Ma said. "Hopkins really excels with a diverse group of experts who I can always seek for help, suggestions and collaborations." Ma discovered that highly used nerve cells in the brain can develop permanent DNA changes and also lead to the birth of new nerve cells.



Michael Tadross, an MD/PhD candidate in Biomedical Engineering; sponsor David Yue; and Ivy Dick, a PhD candidate in Biomedical Engineering.
Photo by Will Kirk / HIPS

Sian Jones, recipient of the Alfred Blalock Award, feels similarly about collaboration. "The success of my project is largely due to the teamwork of a number of individuals, including the co-first authors of our paper," said Jones who, working in Kenneth Kinzler's lab, discovered new signaling pathways in pancreatic cancer and a better understanding of why some therapies work and some don't.

One awardee attributes her success to a fellow Young Investigators' Day award recipient. "After having shared the workload, stress, excitement and success of two highly synergistic projects, it's incredible to share the honor of an award like this with my lab mate Mike Tadross," said Ivy Dick, a doctoral candidate in the Biomedical Engineering Graduate Program. "The receipt of the award underscores the benefits of teamwork."

Dick will receive the Alicia Showalter Reynolds Award for her discovery of how to change a calcium channel's ability to react to signals. Calcium channels are controlled by the protein calmodulin, and Dick and others in David Yue's Calcium Signals Lab now have a better understanding of how calcium channels — which are found in virtually all cells of the body — are controlled.

For some award recipients, being a part of the Young Investigators' Day celebration has a meaning that is his or her own.

Kartik Venkatachalam will receive the Daniel Nathans Award for his study of motor defects in a childhood neurodegenerative disease, mucolipidosis Type IV, which is caused by a defect in the body's ability to get rid of dead and dying cells in the brain. Although he said he appreciates the intellectual freedom he received from his adviser, Craig Montell, someone else played a role in his success: his wife, Cheryl, for "putting up with" all his late nights. "My award is a testimony to her patience," he said.

For another recipient of the Paul Ehrlich Award, William Hawse, a doctoral candidate in the Graduate Program in Molecular Biology, the recognition is a reminder of the opportunities he has been given that not everyone is lucky enough to receive. "My

grandfather had a scholarship to study math; however, his family couldn't afford to buy him a suit for college. He ended up working in a steel mill and never had the opportunity to do what he loved," said Hawse, whose research in Cynthia Wolberger's lab gave structural insight into the process of removing the chemical acetyl from histone proteins in DNA strands by the enzyme Sir2. "I'm still in awe of the opportunities that I've had."

"The Young Investigators' award is a historic competition among Johns Hopkins postdocs, which makes me confident as a researcher," said Akishi Onishi, recipient of the A. McGee Harvey Award for discovering how the protein Pias3 directs cells in the developing eye to "decide" whether they will become rod or cone cells and for being the first to demonstrate a clear role for the chemical reaction SUMOylation in determining how nerve cells develop.

Sponsor Cynthia Wolberger and William Hawse, a PhD candidate in Molecular Biophysics and Biophysical Chemistry.
Photo by Will Kirk / HIPS

Joelle Hillion, also a postdoc, will be awarded the Helen B. Taussig Award for her work in Linda Resar's lab. Hillion discovered that the HMG1a gene promotes leukemia through a specific molecular signaling pathway, exposing potential targets for future drug design.

Yuchen Jiao, a doctoral candidate in the Biological Chemistry Graduate Program and recipient of the Hans Joaquim Prochaska Award for discoveries in how fruit flies taste sugar, said he is grateful to be a part of Young Investigators' Day for simple reasons. "The award makes it much easier for me to explain what and how I am doing at Hopkins to my parents," Jiao said.

Michael Tadross, an MD/PhD candidate in the Biomedical Engineering Graduate Program, will receive the Michael A. Shanoff Award for his research into how a single calmodulin protein can simultaneously sense nearby and distant calcium signals. For Tadross, being part of the Young Investigators' Day program is about being part of Johns Hopkins history. "The Young Investigators' Day Award is an incredibly meaningful honor," he said. "For me, it underscores the long history of gifted and devoted scientists upon whose shoulders we stand."

- GO TO APRIL 13, 2009 TABLE OF CONTENTS.
- GO TO THE GAZETTE FRONT PAGE.

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