RUTGERS
School of Arts and Sciences

Fall 2018

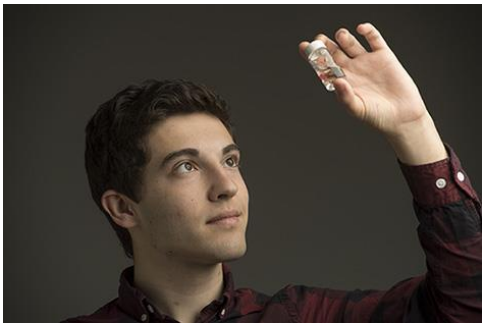
IN THIS ISSUE

A Message from the Chair

Welcome to the Fall issue of Department of Cell Biology and Neuroscience (CBN) newsletter. In this newsletter, you will find features on one of our students, Nicholas Page, who was a recent recipient of the prestigious Goldwater Scholarship, as well as the research of Professor Bonnie Firestein on traumatic brain injury, which was featured in WHYY in both print and radio format! We also look forward to Dr. Brian Daniels coming onboard with us as the new Assistant Professor in January 2019. This past year, the department celebrated its 20th year anniversary and we look forward to what 2019 will bring.

Best wishes for a happy and healthy holiday!

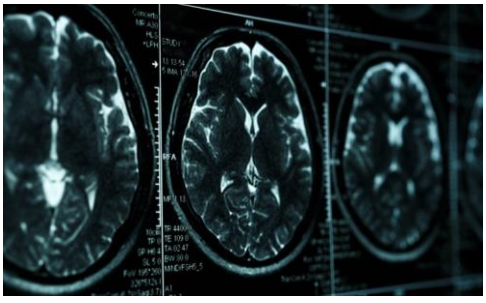
With warm regards,



Student Spotlight: Nicholas Page

Nicholas Page, a junior majoring in CBN, was recently the recipient of the prestigious Goldwater scholarship.

Photo by Nick Romanenko



Bonnie Firestein, PhD, featured in WHYY

Dr, Firestein's research on traumatic brain injury was featured on WHYY in both print and radio format

Photo by Bigstock/DedMityay

Student Spotlight: Nicholas Page

Story by John Chadwick; Photo by Kara Donaldson

Nicholas Page was just 14 when he started working in the lab of a Rutgers–Robert Wood Johnson Medical School professor. He landed that gig by simply asking for it. Page was participating in the Brain Bee, a competition for high school students hosted by the Medical School.

"I was mingling with faculty and asking about research opportunities for high school students," he says.

The one who said "yes" was Mladen-Roko Rasin, a professor of neuroscience and cell biology who studies the formation of the brain, and how it is disrupted in diseases such as autism and epilepsy.

"The rest is history," says Page, of Matawan, New Jersey.

Indeed, he is now a School of Arts and Sciences and Honors College junior on a bold mission.

"I want to work on some of the first drug-based treatments for autism," says Page, a cell biology and neuroscience major. "This is one of the hardest problems, but one I think we could solve in my lifetime."

To get a sense of the seriousness with which Page is pursuing his goal, consider how he spends his summers. In 2017 he journeyed to the Perelman School of Medicine, University of Pennsylvania, where he worked with Yoseph Barash, a professor studying mRNAs to gain insight into ALS, or Lou Gehrig's Disease. Last summer he moved to the West Coast to work at UCLA with Daniel Geschwind, a leading scholar in the study of autism genetics.

"Each summer I travel to labs across the country to learn new techniques and explore my interest in ways that will give me a bigger picture," he says.

Page, the son of a police officer and a special education teacher, always loved science, but initially ruled out biology until Paul Servidio, a science teacher at Matawan Regional High School helped him see the field in a different way.

"I learned that biology is about solving problems," Page says. "Everything I do in the lab is about solving problems, from 'why didn't my experiment work?' to the answer to big questions, such as 'what are the genetic causes of autism?'"

He was deeply influenced by his mother's work educating kids with special needs, and from knowing families who have children with autism.

"It is something I have been exposed to enough to understand its impact, and to know I want to commit my life to finding treatments," he says.

As an undergraduate, he has seized every opportunity for research, sometimes working up to 40 hours a week. He is currently performing experiments in laboratory mice to see how impeding blood flow in embryos could cause neurodevelopmental disorders.

He was selected as a Goldwater scholar by the Barry Goldwater Scholarship and Excellence in Education Foundation last spring, one of the premier undergraduate awards in STEM fields.

"I love the research-friendly environment at Rutgers," he says. "By investing a lot of time in this research, there are no bounds to what we can figure out and how big of an impact we could have."

Support the CBN Awards Fund

With the holidays approaching and the season of gift giving upon us, we hope you will consider a gift to the **CBN Awards Fund.** Celebrate the holiday season by investing in our students, who are the future leaders of tomorrow! Your gift will help to recognize our outstanding students, support them in their research and educational endeavors, and fund leading biomedical research accomplishments. Every gift goes a long way. Click on the link below to give now.

Best wishes for a happy and healthy holiday from the Department of Cell Biology and Neuroscience!

DONATE NOW | Click here to give to CBN

FUN FACT: THE COVER PHOTO IS OF A ZEBRAFISH EMBRYO. MAGNET LABELS THE NUCLEI (TOPRO-3) OF CELLS WHILE THE GREEN SIGNAL IS A GDP REPORTER (SHOX2:GAL4;UAS:GFP).
PHOTO BY ALEJANDRA SOFIA LAUREANO-RUIZ

Welcome New CBN Faculty: Brian Daniels, PhD

The Department of Cell Biology and Neuroscience is excited to welcome Dr. Brian Daniels onboard with us as an Assistant Professor come January 1, 2019. Dr. Daniels received his PhD in neuroscience at Washington University in St. Louis and completed his postdoctoral training at the University of Washington in Seattle. His research centers on immunological responses in the central nervous system using cell culture and mouse models of viral encephalitis and traumatic injury.

Join us in welcoming Dr. Brian Daniels to the department!

Save the Date: 2019 CBN Retreat!

We will be holding our annual departmental retreat on **Tuesday, January 15, 2019 at the Livingston Multi-Purpose Room from 9-4:30**. It will feature presentations from our faculty members about the research they do, as well as poster presentations from our undergraduate students, graduate students, and postdoctoral associates.

To register, please click [here] to fill out the form.
Hope to see you there!

2018 SPRING SEMINAR SERIES

Join us for our 2019 Spring Seminar Series!

February 22nd 12PM: Tarik Haydar, Boston University
March 8th 12PM: Natalia De Marco Garcia, Weill Cornell Medical College
March 22nd 12PM: Shao-Cong Sun, MD Andersen Cancer Center
March 29th 12PM: Yidong Bai, UT Health San Antonio Long School of Medicine
April 12th 12PM: Shirley Shidu Yan, University of Kansas
April 26th 12PM: Bing Zhang, Univeristy of Missouri

All are held in Nelson D406, Open to all.
For more details, visit us at cbn.rutgers.edu.

Rutgers study proposes novel approach for treating traumatic brain injury

By Liz Tung, article was featured in WHYY

A team of Rutgers University-led researchers have discovered two molecules that they say could be the basis for developing new drugs to treat traumatic brain injuries.

The findings are the result of a 10-year study that recently appeared in the journal Neurobiology of Disease.

"I think that this opens up a whole new way of thinking," said lead author Bonnie Firestein, a professor of cell biology and neuroscience at Rutgers. "Because, if you want to help somebody who's had a traumatic brain injury, not only do you want to spare their neurons, you want to make sure that their brain is connected properly."

More than 2 million people are hospitalized in the U.S. every year for traumatic brain injuries. Long-term effects can include epilepsy, depression, and impaired cognitive function.

Damage caused by traumatic brain injuries isn't just the result of the physical blow, but it is connected to the release of a neurotransmitter called glutamate, Firestein said.

"Under normal circumstances, a little bit of glutamate is really good," she said. "The problem is, if you have too much of this glutamate released, it starts killing off your nerve cells."

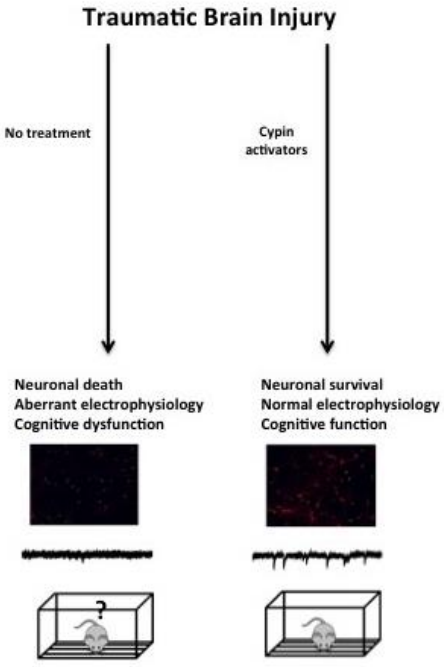


Image by Bonnie Firestein

Nerve cells, also called neurons, are responsible for sending and receiving information in the brain. Together, they form advanced circuits necessary for memory and learning. When glutamate is released, it not only destroys neurons, but also the connections that form those circuits.

But the brain has a natural defense against damage caused by glutamate — a compound called cypin.

"When you have more of this compound cypin, these cells are more resistant to being killed by glutamate," Firestein said. "So the question is, can we somehow activate this protein?"

To finish reading the full article, click [here].

Mike Kiledjian, PhD, named AAAS Fellow

By Todd Bate

Megerditch (Mike) Kiledjian, Distinguished Professor and chair of the Department of Cell Biology and Neuroscience in the School of Arts and Sciences at Rutgers–New Brunswick.

Kiledjian's research focuses on the mechanistic understanding of mRNA turnover and its consequence on human disorders. His lab's primary emphasis has been on a key regulatory step involving the removal of the protective 5´end cap, termed decapping. The lab has identified all known mRNA decapping enzymes and has made significant contributions to our understanding of how decapping contributes to the physiology of the innate immune response, cell migration and cognitive function.

The lab's most recent focus has been on the link between RNA metabolism and cellular metabolism. The lab identified a novel mRNA 5´end cap consisting of nicotinamide adenine diphosphate (NAD). The presence of an NAD cap on mRNAs demonstrates an important correlation between mRNA decay and cellular energetics and new avenues to modulate gene expression in human cells.

The association cited Kiledjian for "distinguished contributions to advancements in the life sciences, particularly in understanding the molecular mechanisms of post-transcriptional regulation of gene expression."

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