MCAT’s, milestones and memories! The 2017-2018 academic year was bittersweet as one treasured faculty member hung up their chalk while another earned tenure. An exceptional cohort of students are on their way to prestigious institutions to study Veterinary Medicine, Optometry and Biochemistry. Junior faculty hit the ground running and the department prepares for curricular changes. All this and more in this year’s Limulus!

Sincerely,

Jonathan Blaize, Ph.D.
May 8th 2018- A familiar “change” of scenery- Students were sent away so that we could enjoy this year’s end of semester gathering in the friendly confines of Megerle 421. Big thanks to Stephanie, our event planner extraordinaire.

December 6th 2017- We said goodbye to the Fall 17 semester by celebrating at the Marina Café on Staten Island. It was a welcome return to the popular restaurant which had been destroyed by Hurricane Sandy in 2012. While it was too cold to take advantage of the newly redesigned outdoor space (shown above) we did successfully eat the majority their shellfish 😊
May 7\textsuperscript{th} 2018- Family, friends and colleagues gather at Dr. Zohreh Sharvar’s home to congratulate Dr. Otto Raths. Otto, who began his tenure at Wagner College in 1967, retired at the end of the Spring 2018 semester.
May 8th 2018- The Department of Biological Sciences formally congratulates Dr. Christopher Corbo as he is awarded tenure and promotion to Associate Professor. It wasn’t long ago that Dr. Corbo was an undergraduate working under the supervision of his mentor, Dr. Zoltan Fulop. There isn’t a person on campus who is unaware or unaffected by Dr. Corbo’s contributions. A page of superlatives couldn’t capture the magnitude of his success as a scholar, teacher and administrator. This department is fortunate to work with such a wonderful colleague. Thank you, Chris, for all you do and continued success in your already impressive career!
Biology Staff & Faculty News

Dr. Martin Luther King Jr. Agent of Change Awards
February 15th 2018

Dr. Lily McNair and Dr. Ruta Shah Gordon present alumnus and Hudson County Deputy Chief Keith Stith, Dr. Jonathan Blaize and Junior Biology Major Kaela Teele with the 2018 Agent of Change Award. These recipients were recognized for their commitment to furthering the legacy set forth by Dr. Martin Luther King Jr. Civil rights heroine Nell Braxton Gibson offered remarks as the event’s keynote speaker.
April 6th 2018- The Biological Honor Society welcomes new members at the annual induction ceremony. With more than 20 inductees and over 100 family member and friends in attendance, this was among the largest affairs the Eta Upsilon chapter has ever organized. Joseph Fabozzi will take over as President, joined by Sylvia Lubak, Allison Zupa, Sandra Battista and Jenna Zerino on the executive board.

October 28th 2017- Seniors Monica Valero and Kevin Lipton present their research at the 50th annual Metropolitan Association for College and University Biologist's Conference at New Jersey City University. Monica’s work with Dr. Brian Palestis was recognized for excellence at this conference; she would later receive notice of her acceptance to the exclusive Veterinary Medicine Program at Cornell University!
April 21st 2018- A flock of Seahawks migrate north to attend the 72nd Annual Easter College’s Science Conference hosted by Ithaca College. Over 25 Biology, Chemistry and Biopsychology students presented their research to captivated audiences before converging upon this small college town. Several Wagner faculty members made the journey to upstate New York in support of our students and to participate in conference activities.
April 30th 2018 - Monica Cipriani, Anthony Spano, Shannon Cedeno, Brandon Kocurek and Charles Robinson are recognized for their outstanding work at this year’s graduate award ceremony.
Biology Major’s Kaela Teele and Nicholas Buhta reflect upon their time at Johns Hopkins University where they studied molecular biology and neuroscience.

Most people encounter several formative experiences in their lives. Thus far, my list includes becoming a big brother, moving to New York City, selecting a major, and finding that real first heart-gripping love. For me, formative experiences all have one thing in common: they add pieces to the unfinished mosaic that is my life. Each piece increases the resolution of my eventual oeuvre and provides color and clarity to the journey ahead. Thanks to my summer at Johns Hopkins, I have yet another experience to add to that list.

I entered Baltimore as an eager, wandering, hopeful, and somewhat naïve liberal arts student. For ten weeks, I interned under the mentorship of Dr. Irving Reti and Alec Stepanian in the Psychiatry and Behavioral Sciences department at Johns Hopkins University. Right from the get-go, I was overwhelmed. The work was exacting, yet gratifying, the people were simultaneously intimidating and tantalizing, and the day-to-day was laborious, but empowering. Living in this jungle of juxtapositions forced me to adapt to my new climate and stretch and bend in unfamiliar ways to make it through.

Now, if I were asked “Were you ready for all of that?” I would laugh and say, “Of course not!” I don’t think I would have ever been “ready.” But here’s a word to the wise — I think that’s the point. Is anyone ready for a major life experience, like starting a new career? Or having a child? I highly doubt it. One cannot grow without stretching, and one cannot stretch without reaching for what is, at first, out of their grasp. At JHU, I stretched farther than I ever had and added another piece to my mosaic. And I like how it’s looking.

I was hesitant entering Johns Hopkins this summer. It’s a larger school with new surroundings, new students, and very influential and intelligent people. However, when I arrived the faculty that I worked with were instantly welcoming, patient, and kind. This made my experience even more robust. There I learned a multitude of techniques that specifically pertain to cell culture. Cell culture is a larger umbrella of techniques where one uses cell lines to perform different experiments. While the techniques such as, splitting, counting, and seeding cells into flasks were all very new, the concepts behind the experiments were very familiar due to my work at Wagner. Despite Wagner being a small college, that does not mean the education in the biological department is of lesser quality compared to an institution such as Johns Hopkins. Wagner gave me all the tools and then some for someone such as myself to not only feel familiar in a lab but feel like I belong. The internship gave me an opportunity to put my studies into practice and gave me a better direction into what I want to do with my next steps in my educational journey.
From the Pages of Wagner Magazine...

Dr. Donald Stearns of the Department of Biological Sciences has his work with Dr. Utteeyo Dasgupta of the Economics Department showcased in the Summer 2018 Issue of Wagner Magazine!

Careful Thinking
How to Avoid the Pitfalls of Human Reasoning
By Donald Stearns and Utteeyo Dasgupta

Making sound decisions is critical to survival and success. Yet, we often think irrationally, ignoring credible evidence and logical consideration. How do we train ourselves to make more rational decisions?

As a biologist and a behavioral economist who focus on teaching and learning, we want to help you think through how this self-destructive dynamic happens — and how you can change it.

First, you need to understand how your brain works. The brain makes sense of the world by connecting new perceptions with what it has perceived in the past. This process often leads to inaccurate perceptions of reality. An illustration: When Donald’s daughter was a little girl and first encountered deep snow, her brain connected the small, white particles with what she already knew: sugar. She thought the snow was sugar and wanted to bring some inside, in case people needed it. Such mistakes happen not only to children, but also to adults. In fact, the longer we live with a major misconception, the more we have invested in it, the more decisions we have made throughout our lives based on it, and the less likely we are to change our minds. Unconsciously, we support our perceptions, selecting information that favors them, regardless of their accuracy or validity, and dismissing contrary evidence as not credible — the process known as confirmation bias.

When we have believed misinformation, we continue to operate from that standpoint unless we consciously override it. Consciously override requires deliberate, purposeful examination of that perception based on credible evidence collected with as little bias as possible. That’s a lot of work.

Psychologists and behavioral economists routinely point out that such behavior allows us to fall prey to decisions that are not in our best interests. Remember that New Year’s resolution to get into better shape? Most of us, during our first visit to a health club, are overly optimistic. Phrased: The Economics of Manipulation and Deception, that companies and businesses routinely exploit us based on such irrational decision making.

So, how do we override our unconscious biases and misperceptions? By purposefully trying to distinguish fact from fiction, striving to collect credible information in an unbiased manner, and critically examining concepts based on that evidence.

One of the first steps is to examine our sources of information. If the source has a vested interest in shaping what we think (for example, a politician’s web page), we should verify information.

“Our ‘short-term self’ often leads us to make irrational, impulsive decisions based on unexamined mental perceptions.”

about our exercise plans, and we willingly sign expensive contracts. Research suggests that too often we overestimate our resolve and end up paying much more than we should.

Of course, the health clubs’ contract offerings, where people essentially end up paying for “not going” to the gym, are not coincidences. George Akerlof and Robert Shiller, two Nobel Prize winners in economic sciences, show in their 2013 book, *Phishing for...* using reliable sources with no such vested interest. We teach our students to rely on scholarly articles and reports that are independently reviewed by professionally recognized experts, and journalists that draw conclusions based on well-researched evidence instead of cherry-picked information.

Look for news organizations and journalists who belong to reputable professional organizations that have truth and accuracy standards, as well
as codes of ethics. We also recommend online venues that help distinguish credible from not-credible information, such as AllSides.com, FactCheck.org, OpenSources.co, Politifact.com, PubPeer.com, RetractionWatch.com, Snopes.com, USAFacts.org, WebLiteracyPressBook.com, and WikiTribune.com.

As we collect evidence, we must consciously override confirmation bias. We must allow the possibility of changing our minds when credible evidence leads in that direction. Such careful thinking allows us to better understand situations and make rational decisions.

Thomas Schelling, a behavioral economist and another Nobel Prize winner, suggested that each of us has two selves: a short-term self who is easily distracted and seeks immediate rewards, and a long-term self who is far-sighted and strong-willed. After we have collected solid evidence for our decisions, another approach towards making rational choices is to place the short-term self in a carefully structured maze that redirects some of the primal, impulsive, and instinctive actions towards long-term, more rational goals.

For example, returning to the failed New Year’s resolution to regularly exercise at the health club: the earnest health-club enthusiast may decide to go to the gym with others. With this conscious, deliberate, slight restructuring, even if the short-term self does not want to follow through with the long-term self’s New Year’s resolution, the gym partner will nudge the short-term self to stick to the exercise routine. Another example: Setting up an automatic payroll deduction for retirement contributions ensures that, with each paycheck, there will be some funds saved towards retirement — funds that, given impulsive human nature, would have likely been spent instead on ephemeral, short-term goals.

A realistic approach towards making rational choices to achieve long-term goals that are in one’s best interests starts with deliberately and carefully considering long-term goals, then purposefully configuring actions in ways that discourage impulsive decisions and encourage more rational choices. Richard Thaler, another Nobel Prize winner in economics, and Cass Sunstein, a Harvard Law School professor, in their best-selling 2008 book, *Nudge*, refer to this general approach as designing “choice architecture.” They focus on how policy makers can use choice architecture to present policy choices in ways that encourage consumers to make more responsible choices that benefit them in the long term, without taking away their freedom to choose.

Almost everyone has a short-term self that wants to be satisfied, which often leads us to make irrational, impulsive decisions based on unexamined mental perceptions. At the same time, we do want to make rational decisions to improve our individual situations in the long term. By carefully, deliberately reconsidering our perceptions in an unbiased manner before drawing a conclusion, we can achieve a clearer understanding of a situation. We are more likely to make rational decisions that are in our best interests based on that clearer understanding.

Careful thinking is purposeful, hard work — the brain will not do this automatically. However, such thinking is necessary to improve one’s lot or address problems in the larger society. It is key to responsibly coping in today’s complex, changing world.

Donald Storrie, Ph.D., is a professor of biology and director of the Wagner College Center for Teaching, Learning, and Research. Utkarsh Dasgupta, Ph.D., is assistant professor of economics.
Publications & Professional Meetings

PRESENTATIONS

Cook, Heather
17th Annual Faculty Institute at Barnard College.

Palestis, Brian

Suter, Elizabeth
Presenter at “Environmental Health and Health of the Environment Conference,” at St. Francis College in Brooklyn, NY.

PUBLICATIONS
Papers Published in Peer Reviewed Journals

Fulop, Zoltan

Onken, Horst

Palestis, Brian

Manuscripts in Review
Palestis, B.G. submitted. Low recruitment of common terns in the declining Barnegat Bay population. Seabird.
Publications & Professional Meetings

Suter, Elizabeth


Manuscripts Submitted for Publication Consideration

Works in Progress

Spanbauer, T., Briseno. C., Pitz, K., Suter, E.A. Salty sensors, fresh ideas.
UNDERGRADUATE THESES:

FALL 2017
Joshua Abraham Darwish (Bobbitt, Blaize)
The Mutagenicity of Electronic Cigarette Oil on Salmonella typhimurium
Jeannie Marie Detore (Blaize, Stearns)
An Identification of Phosphatidylserine Patches Expressed by HeLa Cells:
An Overview of Phosphatidylserine Mediated Phagocytosis
Dominique Michele Landew (Bobbitt, Corbo)
How Prevalent is Staphylococcus aureus on Wagner College’s Campus?
Kevin Lipton (Palestis, Raths)
Effects of the Psychoactive Drug Caffeine on the Behavior of Zebrafish (Danio rerio)
Justin Osuji (Blaize, Corbo)
Preparation of a Three-Dimensional Atlas for the Study of Planaria (Dugesia dorotocephala)
Farwa Qaiser (Cook, Fulop)
The Effects of Bisphenol A on Development in Drosophila melanogaster
Monica Valero (Palestis, Onken)
The Effect of Semi-Preocial Development on Movement of Juvenile Common Tern (Sterna hirundo) from the Nest

SPRING 2018
John Matthew Acquaviva (Fulop, Blaize)
Epithelial Lining Turnover in the Rodent Small Intestine Based on Mitotic Indices in the Crypts of Lieberkühn
Stephanie Marie Barragan (Bobbitt, Blaize)
The Effects of Peppermint Oil, Juniper Berry Oil and Clove Oil and Oral Bacteria
Willie Xiang Bu (Bobbitt, Corbo)
The Effects of Clove, Cinnamon and Lemongrass Oil and Gram-Negative Bacteria
Michael Leonard Cancelleri, Jr. (Blaize, Corbo)
In Silico Comparative Analysis of Gamma-Aminobutyric Acid in Homo sapiens and Other Model Organisms
Madison Paige Cooper (Cook, Blaize)
The Effects of Endocrine Disrupter 4-Tert-Octylphenol on the Reproduction of Drosophila melanogaster
Trevor C. Daniels (Corbo, Blaize)
Detection of Listeria monocytogenes ActA Virulence Gene in Zebrafish Brain Tissue: A Method to Detect Infection
Myriam Inas Djellali (Blaize, Corbo)
Comparative Genomics of the BRCA 1/2 Gene and its Influence on Breast Cancer through the use of Bioinformatic Techniques
Katarzyna Jarzabek (Blaize, Corbo)
Chemical Inhibition of PI3K and Detection of Cyclin D1 Activity in *Girardia dorotocephala*

Olivia Grace Josephsen (Bobbitt, Corbo)
The Antimicrobial Effects of Eugenol, Clove Oil and Peppermint Oil on *Staphylococcus aureus*

Ewelina Karwowska (Palestis, Stearns)
Group Size Preferences in Zebrafish (*Danio rerio*)

Yasmine Khaled (Corbo, Bobbitt)
*Listeria monocytogenes*: The Analysis of Internalin A and Internalin B through Gene Expression Data

Timothy John Maher (Corbo, Blaize)
The Effect of Antibiotics on B Cell Differentiation in Asthmatic Mice

Madison Gail Marable (Blaize, Cook)
Assessing the Role of Rac 1 during Eye Development via Upstream Disruption in Brown Planaria

Sandra Angela Mazanek (Bobbitt, Corbo)
The Effects of Clove Oil, Cinnamon Oil and Lemongrass Oil on Gram Negative *Escherichia coli, Klebsiella Pneumoniae* and *Proteus mirabilis* Bacteria

Michael Anthony O’Byrne (Corbo, Bobbitt, Falabella)
Comparing the Growth of *Staphylococcus aureus* and *Bacillus cereus* in Glucose Peritoneal Dialysis Solution versus Icodextrin Peritoneal Dialysis Solution

Ellen Marie Reidy (Cook, Palestis)
Effects of Diethyl Phthalate on the Development of *Drosophila melanogaster*

Klea Valteri (Corbo, Bobbitt)
*Escherichia coli* and *Pseudomonas aeruginosa* Effects on Two Different Dialysis Solutions (Icodextrin and Glucose Solution) on Peritoneal Dialysis Patients

**GRADUATE THESES:**
**SPRING 2018**

Alaa Alsubyani (Bobbitt, Corbo, Alba)
The Effect of Essential Oils, Cinnamon (*Cinnamomum zeylanicum*), Clove (*Syzygium aromaticum*), and Lemongrass (*Cymbopogon citratus*) in Inhibiting the Growth of *Staphylococcus aureus*

James Catalano (Bobbitt, Corbo, Alba)
The Antimicrobial Effects of Oregano and Basil Plant Extract against *Escherichia coli*

Shannon Cedeno (Bobbitt, Panyu, Suter)
Identifying Key Patient Risk Factors of Multidrug Resistant *Klebsiella pneumoniae*

Infection Acquisition within a Specialized Burn Unit

Monica Cipriani (Corbo, Panyu, Bobbitt)
The Structural Analysis and Observation of Biofilms on Central Venous Catheters
Brandon Kocurek (Corbo, Bobbitt, Blaize)
Role of In1A & In1B in *Listeria monocytogenes* Pathogenesis

Charles Robinson (Bobbitt, Suter, Joho)
The Isolation and Identification of *E. coli* from Staten Island Parks using Standard Methods and PCR

Anthony Spano (Corbo, Bobbitt, Blaize)
The Use of Visikol Tissue Clearing and Immunofluorescence to Identify the Cellular Components of the Zebrafish Optic Tectum

Nidia Valle (Corbo, Bobbitt, Joho)
Molecular Detection of *Listeria monocytogenes* and Act A in a Zebrafish Brain Model

Andrew Weisenburger (Corbo, Falabella, Bobbitt, Blaize)
The Effects of Induced Static Electromagnetic Fields on Embryonic Zebrafish Spinal Cell Development
Awards for Academic Recognition
Compiled by Stephanie Rollizo

UNDERGRADS:

**Biological Sciences Award** - Presented to the underclass (sophomore) student showing the highest academic promise in a major within the Department of Biological Sciences.

*Jenna Zerino*

**Robert D. Blomquist Memorial Award** - The income from a fund given by friends of the late Robert D. Blomquist, a 1967 Wagner graduate, is presented annually to a student completing the junior year who, in the judgment of the biology faculty, is an outstanding biology student and of good moral character.

*Joseph Fabozzi*

**John ’53 and Gloria Dean Award in Environmental Studies** – Presented to a deserving student who demonstrates the strongest level of academic excellence in, and the desire to pursue work, in the field of environmental studies.

*Jessica Trieste*

SENIORS:

**Norman L. Freilich Memorial Award** - Established by his wife Lillian and their daughters in memory of Dr. Norman L. Freilich, a graduate of the Class of 1935, this award is presented to a graduating student who has been accepted into medical, dental, veterinary or optometry school.

*Monica Valero (Cornell Veterinary School) and Madison Marable (Arizona Midwestern Optometry School)*

**Hugi Award** – For a student who intends to go to medical school. It was established by the wife of John L. Hugi in his memory, in the 1980s.

*Ellen Reidy (Tufts Medical School)*

**Kevin Sheehy Memorial Award** - Presented to a graduating senior in biology who has achieved the highest cumulative grade point average in the major. This award is given in memory of Dr. Sheehy, Class of 1967, who was a Tottenville High School biology teacher and a Wagner College trustee.

*Madison Marable*

**Biopsychology Award** – Presented to a graduating senior in the biopsychology major, who in the judgment of the faculties of the Psychology and Biological Sciences Departments has most demonstrated academic excellence in Biopsychology.

*John Acquaviva & Lauren Taibi*
Dr. Natale Colosi Microbiology Award (at the undergraduate level) - Presented to a graduating student in the discipline of microbiology whose scholastic achievement in the field of microbiology is outstanding. The award is given by faculty and staff in memory of Dr. Natale Colosi, former chair of the department.

Timothy Maher

BS/MS PROGRAM:

Roy. H. Mosher Award in Microbiology – Beginning May 2013, The Roy H. Mosher Memorial Award in Microbiology will be presented annually to a student in the BS/MS five year program in Microbiology, who, in the judgment of the faculty has excelled in independent research in the field of microbiology and who is also conscientious and cooperative.

Anthony Spano

GRADUATE:

Dr. Natale Colosi Microbiology Award (at the graduate level) - Presented to a graduating master’s degree student in microbiology whose scholastic achievement in the field is outstanding. The award is presented in the memory of Dr. Natale Colosi, former chair of the department.

Brandon Kocurek

Highest Academic Achievement (Microbiology Graduate Program): Shannon Cedeno and Monica Cipriani

Outstanding Academic Achievement (Microbiology Graduate Program): Charles Robinson

DEPARTMENTAL HONORS:
For maintaining high major GPAs and presenting their research at conferences.

John Acquaviva
Kevin Lipton
Timothy Maher
Ellen Reidy
Monica Valero
Opportunities

RESEARCH WITH PLANARIA
Dr. Blaize offers research opportunities for students in the frame of a project with the flatworm, *G. dorotocephala*. Dr. Blaize investigates the relationship between RTK genes and stem cell mediated reconstruction of wounded tissue. This lab is also building a three-dimensional, interactive, planarian atlas using high resolution micrographs. Students interested in either of these projects should contact Dr. Blaize at jonathan.blaize@wagner.edu

RESEARCH WITH DROSOPHILA
Dr. Cook offers research opportunities for students in the frame of a project with the classical insect model organism, *Drosophila melanogaster*. At this time, research in Dr. Cook’s lab focuses on endocrine disruptors and their effects on fruit fly development. Please, contact Dr. Cook for further information at heather.cook@wagner.edu

RESEARCH WITH MOSQUITOES AND CRABS
Dr. Onken offers research opportunities for students in the frame of a project in which he collaborates with scientists from Washington State University, the University of Idaho, and the University of Alberta (Edmonton, CA). The project is funded by the National Institute of Health and studies the physiology of the midgut of larval yellow fever mosquitoes (*Aedes aegypti*). In collaboration with colleagues from the U.S. (Mt. Desert Island Biological Laboratories, Maine), Brazil (University of Sao Paulo in Ribeirão Preto, University of Paraná in Curitiba) and Canada (University of Manitoba in Winnipeg) Dr. Onken pursues research with Crustacea related to the osmoregulatory capacities and mechanisms of crabs. Please, contact Dr. Onken for further information at horst.onken@wagner.edu.

RESEARCH WITH MICROBES
Dr. Bobbitt offers a variety of research opportunities with microorganisms for students. She follows different aspects of microbiological research, using a wide array of experimental techniques. Please, contact Dr. Bobbitt and for further information at kbobbitt@wagner.edu

RESEARCH IN ANIMAL BEHAVIOR AND ECOLOGY
Dr. Palestis offers research opportunities for students in the frame of his research project with common terns (*Sterna hirundo*) in southern New Jersey. Apart of his work with terns, Dr. Palestis is interested in animal behavior and has forwarded numerous student research projects with zebrafish in the past. Please, contact Dr. Palestis for further information at bpalesi@wagner.edu

RESEARCH ABOUT LIGHT PERCEPTION
Dr. Stearns offers research projects to determine the light sensitivity of animals. Currently, Dr. Stearns is interested in the characteristics of the eyes of *Daphnia*. However, other animals like the brine shrimp (*Artemia salina*) or larval mosquitoes (*Aedes aegypti*) have been investigated in the laboratory of Dr. Stearns. Please, contact Dr. Stearns for further information at dstearns@wagner.edu

RESEARCH WITH ZEBRA FISH BRAINS
Dr. Fulop offers research opportunities for students with an interest in vertebrate neuroanatomy and physiology. Zebrafish *Danio rerio* has become an important model organism for vertebrate anatomy and physiology. Dr. Fulop is an expert in using microscopic techniques for anatomical and physiological research. Please, contact Dr. Fulop for further information at zfulop@wagner.edu
Department of Biological Sciences meets FACEBOOK!

Visit us on Facebook for up to the minute coverage of life in the Megerle Science Building!

https://www.facebook.com/WagnerBiologicalSciences/

BE A LIMULUS ASSISTANT EDITOR:
Student writers are invited to become assistant editors for the newsletter of the Department of Biological Sciences. If you are interested please contact the new editor, Dr. Blaize (jonathan.blaize@wagner.edu).

GUIDELINES FOR WRITERS:
Please e-mail to jonathan.blaize@wagner.edu
Please submit photographs as separate files (jpg is the preferred file format) attached to the e-mail.
All contributions will indicate the author’s identity and are reviewed before publication. The editor reserves their right to edit contributions.
Editor: Jonathan Blaize, PhD
Assistant Editor: Stephanie Rollizo, Dept. Secretary
Student Assistant Editor: