

## JHU Department of Biophysics Undergraduate Newsletter



### SENIOR PROFILES

The Spring issue each year highlights our graduating seniors. Congratulations to the Biophysics class of 2012!

#### Andrew Campagnolo

Andrew was born and raised in idyllic suburban New Jersey. He originally came to Hopkins expecting to be a biology major but was brought into the light during a freshman seminar called *Topics in Biomedical Research and Careers*.



The charming course instructor (Professor P.C. Huang), the awesome course TA (Molly Plovovich, JHU Biophysics '09), and the slickest, most inspiring guest-lecturer (Prof. Doug Barrick) were all Biophysicists! Andrew declared the major that spring and truly considers it the best decision he made during his entire college career.

There wasn't a single course in the Biophysics department that Andrew didn't enjoy taking, but Andrew's favorite classes were probably those taught by Dr. Patrick Fleming: *Computational Biology* and *Bioinformatics*. Generally speaking, what Andrew most appreciates about biophysics is that the field seeks to understand nature and biology at a truly fundamental level, using energies and probabilities to ask "why" instead of "what." Andrew also thinks that the biophysics professors are the coolest people on campus. "Despite being scientific rockstars," he says, "the professors are incredibly friendly and down to earth. It made a huge difference in my education to know that faculty members knew who I was and cared about how I was doing."

Andrew worked in the lab of Prof. Vincent Hilser in the Dept. of Biology studying intrinsic disorder in proteins. He minored in Museums & Society and was involved in JHU's Habitat for Humanity chapter, the STAND mentoring group, and the Black & Blue Jay campus humor magazine. Andrew has loved living in Baltimore and will always consider it a second home. He especially enjoyed exploring

all of the city's different historic neighborhoods.

After graduation Andrew will most likely be shipping off to New Haven to study medicine at Yale.

#### Ravi Desai

Ravi was born and raised in Holmdel, NJ. Coming to Hopkins, he wanted to find a major that fit his interests in physics and biology. He did not know that biophysics was even a major until his second semester of freshman year when he heard a couple of friends discussing classes they had taken in the department. He was really drawn toward the small class sizes and the wonderful research that was being conducted in the department. After taking several classes, including Prof. Barrick's *Introduction to Biophysical Chemistry*, Ravi says that he appreciated the emphasis on problem solving skills rather than rote memorization - this is what set apart biophysics from other majors in the sciences in his mind. Ravi really enjoyed taking Prof. Pat Fleming's course on *Computational Biology*, since it offered a new perspective on many biological systems that he had encountered in earlier classes. Additionally, Professor Garcia Moreno's *Seminar in Structural and Physical Virology* was also a pleasure to take. The class facilitates discussion with your fellow peers, and it served as a good review of much that he has learned over the past 4 years as a biophysics major.

Ravi's undergraduate research was focused on RNA. He spent the last year and a half working in the lab of Prof. Sarah Woodson in the Dept. Biophysics researching the question of how macromolecular crowding within the cell affects the folding of RNA. His main subject of study has been a ribozyme that is capable of cleaving itself once transcribed.

Ravi's advice to incoming biophysics majors is to develop an interest in an area of research and stick with it because it will make your time at Hopkins all the more rewarding.

After graduation, Ravi plans on spending another year in a research laboratory within the NIH while applying to MD/PhD programs.



The T. C. Jenkins Department of Biophysics Undergraduate newsletter is published twice yearly. The articles are predominantly written by current Biophysics majors and alumni. Announcements about the major are included, too. The Newsletter is coordinated by Prof. Karen Fleming, Biophysics Director of Undergraduate Studies. Contact her at [Karen.Fleming@jhu.edu](mailto:Karen.Fleming@jhu.edu) to contribute articles. Previous issues can be found at [http://biophysics.jhu.edu/undergraduate\\_newsletter.html](http://biophysics.jhu.edu/undergraduate_newsletter.html)



## Jeffrey Lio

Jeffrey Lio is from California. He chose to major into biophysics because it coincided with premed requirements while at the same time being based on quantitative methods. Jeffrey has enjoyed the flexibility offered by the biophysics requirements because of the ability to choose from a variety of classes in different departments. Of his undergraduate courses, Jeffrey says he particularly liked the *Spectroscopy* class since it demonstrates the application of modern physics to research tools.

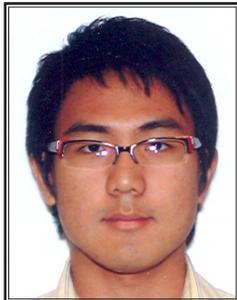


## Seungpyo “Sean” Nam

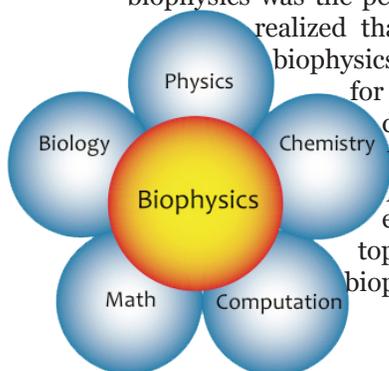
Sean Nam is originally from South Korea. He left Korea – by himself - when he was in the 6th grade and went to New Zealand to study English for two years. In 2008 his family moved to the United States.

One of Sean’s hobbies is sports. He played in Intra-mural basketball league for 4 years, and his team won the championship this year for the first time. Sean also helped to create a sport club for kids at Hampden Elementary School (a local elementary school) to teach them how to play basketball and lacrosse.

Sean did not know about biophysics when he first came to Hopkins. The first time he heard biophysics was when he visited the Biophysics open house. At that time he was interested in majoring in both biology and physics. Since he wanted to be a doctor in the future, he thought he needed to major in biology, but since physics was one of his favorite subjects since high school, he decided that biophysics was the perfect major for him. He also



realized that the requirements for the biophysics major fulfill all prerequisites for medical school. Before Sean decided on a major he took the freshman *Topics in Biophysics Research*. He really enjoyed learning about the topics that are being studied in biophysics and made his decision



to study biophysics.

Sean’s favorite aspects of the biophysics major are the low student to faculty ratio and ability to get to know each professor personally. In addition, Sean found that biophysics students tend to help each other out, instead of competing with each other.

Sean’s favorite course was *Cellular and Molecular Physiology* taught by Dr. Richard Cone - he really enjoyed listening to Dr. Cone’s lectures and learning biology from a different perspective. Sean says that this course helped him to “think” about biology, not to just “memorize” facts.

Sean has been researching in Dr. Garcia-Moreno’s lab in the biophysics department for almost 3 years now. The goal of his current project is to understand why long ionizable side chains pack the way they do in the internal hydrophobic core of Staphylococcal nuclease.

Sean’s advice for prospective majors: If you like math and science and would like to challenge yourself academically, you should definitely consider majoring in biophysics.

After graduation Sean is going back to Korea with his family and will be applying to medical school there.

## Leanna Owen

Leanna grew up in Manassas, Virginia. She had originally wanted to study biology or biochemistry but was converted to biophysics after her first classes in the Biophysics department. She was fascinated by the way biophysics provides a framework to understand how and why biological phenomena occur on a deeper level (rather than just describing the steps in biological pathways) and she continues to find these fundamental physical explanations the most satisfying. She found the approach so inspiring that she will be attending a Ph.D. program to study biophysics next fall.



As excited as she is to start graduate school, Leanna admits that she will miss both Hopkins and Baltimore. There is something really special about the environment in the department, including its small classes and the fact that the professors seem to truly care about their students. What she likes most is that she can stop by the offices of many prestigious professors and get extensive guidance about

everything from starting a science outreach student group, understanding how to teach a difficult scientific concept, and through every step of applying to graduate schools. Outside of the university, Leanna has taken advantage of the quirky bars, restaurants, and neighborhoods surrounding campus. Her favorites include Brewer's Art on Friday night, the Uni-Mini chicken parm hoagie to get through a late night of studying, and the neighborhoods north of campus for jogging in the spring.

### Justin Porter

Justin Porter hails from Redmond, Washington, a suburb of Seattle and home to Microsoft. He picked biophysics mostly for the free coffee and printing but stayed for the biological spin on math, physics, and chemistry, which have turned out to be his favorite parts of the curriculum. Justin is also earning a minor in computer science, which would have been impossible without the flexibility of the biophysics major and faculty.



Justin's favorite classes have been *Introduction to Biophysical Chemistry*, taught by the sagacious Dr. Barrick, and *Biological Physics*, delivered by Dr. Leheny, whose mad-scientist charm belies his outstanding talent as a teacher. Both courses cover a lot of thermodynamics, but from different perspectives, which is a lot of fun (if you're into that sort of thing, and Justin is).

Justin's research has been in Dr. Jeff Gray's lab in the Dept. of Chemical & Biomolecular Engineering. His research goals are to pick out real protein-protein complexes from a large set of potential complexes generated by a variety of computer algorithms for complex prediction. Mostly, it's a mess of unphysical decoy structures but there are a few gems they try to pick out, using the macromolecular modeling suite Rosetta. He first discovered Dr. Gray by chatting with him after a seminar then, since both parties seemed interested, he sent his resume to Dr. Gray via email and succeeded in landing a research position in the lab.

After graduation Justin will spend the next academic year working on NMR-assisted protein-protein docking simulations in the Department of Chemistry at the Technical University of Munich, supported by a Study Scholarship from the German Academic Exchange Service. Following that, he hopes to go on to earn combined MD/PhD degree

someplace less rainy than Seattle.

### Camila Prieto

Although Camila was born in Colombia and grew up in central Florida, she currently lives in Watertown, NY. She decided to major in Biophysics during her freshman year after taking Dr. P. C. Huang's *Introduction to Biomedical Research and Careers* in which she became captivated by all the opportunities the Biophysics department and its professors had to offer to undergraduate students. These included one-on-one interaction with professors, research opportunities, and a department that felt like "home". Camila's favorite classes have been *Cellular and Molecular Physiology* and *Computational Biology*. I really appreciated how Dr. Cone and Dr. Fleming presented the material in an incredibly interesting and enthusiastic manner and opened the classes to student questions and input. Her favorite aspect of the Biophysics major has been the closeness of the department. She felt she had the chance to get to know her professors, the students from her own graduating class as well as biophysics majors from earlier graduating classes.



For her research project, Camila studied the dynamics of the *E. coli* cell division complex assembly under Dr. Jie Xiao at the JHMI Biophysics department. In addition, she spent a summer researching in an immunology lab at the University of Pennsylvania where she studied the biological pathway involving the protein C16orf57, which is responsible for a rare, genetic disease called Clericuzio-type poikiloderma with neutropenia.

The best advice Camila has for future biophysics majors is to become acquainted with your fellow majors. "Working with my fellow students and befriending the upperclassmen have made getting through the upper level courses much more bearable and enjoyable."

Camila's favorite aspects of living in Baltimore were all the unique restaurants, cafes, and stores she had the chance to explore. After graduation, she will be doing another year of research and then applying to graduate schools.



## Gabriel Salzman

Gabe was born and raised in Washington Heights, a neighborhood in northern Manhattan. He went to high school in the Bronx and has always loved science. Gabe decided to come to JHU as an undergraduate because of the core emphasis on science here. In hindsight, he is sure it was the right decision, thanks to the biophysics department. When choosing a major, it was important for him to consider both the subject matter as well as the structure and members of the department. Given these two criteria, the biophysics department was the obvious choice. In addition, Gabe thinks that the selection of classes offered in the biophysics department is all truly excellent. Each of the professors has taught him not only “knowledge” but also a unique way of thinking about their particular subject and their own scientific perspective. These perspectives are priceless.

Gabe started working in Dr. Doug Barrick’s laboratory in the Biophysics department during his sophomore year and has continued since then. The other lab members, Dr. Barrick included, have gone out of their way, time and time again to support him and answer questions, however trivial or needlessly complicated.

After graduation, Gabe plans on matriculating to the MD/PhD program at the University of Chicago this summer. One of the main factors that has drawn him to Chicago was the support and praise of their Biophysics program and Chicago faculty by the faculty here at JHU. Gabe says he will leave Baltimore with a truly rich biophysics knowledge base and unique scientific mindset thanks to the members of this department.

Also, GO RAVENS!



## Jonathan Teo

Jonathan Teo hails from hot, sunny Singapore. He loves food, photography, and – naturally - he loves to travel as well.

Jonathan decided to major in biophysics before applying to JHU. While he loves physics, he finds that he prefers to apply concepts rather than to develop new theories and feels that there are many opportunities for him to do just that in biophysics.

Jonathan’s favorite aspect about the major is the small class size because it makes it easier for him to in-



teract with my faculty and peers.

Jonathan’s favorite class was *Cellular & Molecular Physiology*. It embodies everything he envisioned biophysics to be when he decided on the major. Also, he feels that Dr. Cone is a very interesting lecturer.

Jonathan’s undergraduate research project involved the modeling of cell chemotaxis in the cellular signaling control lab under Dr. Pablo A. Iglesias. He obtained this position by emailing Dr. Iglesias when he was a sophomore, and they met spoke briefly about the research. Jonathan decided that he liked computing and stayed with it ever since!

Jonathan’s favorite aspect of living in Baltimore is its central location on the east coast. New York, Philly and DC are only a bus ride away!

Jonathan’s advice for prospective majors is that it can really be what you make of it. Biophysics can be a very broad major. If you are a mathematically inclined student, he strongly recommends taking additional physics and engineering classes to complement the biophysics classes.

After graduation, Jonathan will be applying to graduate school.

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## BIOPHYSICS SPRING PARTY

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Tuesday, May 1, 2012 5-6:30 PM, Jenkins 107. Our annual spring party will take place. All current and new majors are invited. Good food will be served.

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## GRADUATION RECEPTION FOR SENIORS & PARENTS

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Wednesday, May 23, 2012 4-5:30 PM, Jenkins 107. Biophysics Reception for seniors and their parents. Student accomplishments will be recognized, and awards will be given.

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## JHU BIOPHYSICS GROUP AT LINKED-IN

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Join the JHU Undergraduate Biophysics group on Linked-In to connect with Biophysics majors, past and present. Be sure to register before you graduate. Check it out online at:

[http://www.linkedin.com/groups?gid=1776717&trk=hb\\_side\\_g](http://www.linkedin.com/groups?gid=1776717&trk=hb_side_g)

