Department of
BIOCHEMISTRY

Volume I, Issue III
November 2012

THE [CATALYST]

INSIDE THIS ISSUE:

[News & Announcements]

Cat Woodard will defend her Masters Thesis on Monday November 5th at 1pm in Pangilinan Lecture Hall in the Eye Institute. Her thesis is titled "Role of Chaperonin CCT in G-protein Biosynthesis." Cat's mentor is Dr. Max Sokolov.

Holly Cyphert will defend her Doctoral Dissertation on Friday, November 16th in room 3067 HSN at 10am. Her dissertation is titled "The Nutritional Regulation of FGF-21, a Novel Anti-Diabetic Hormone." Holly's mentor is Dr. Brad Hillgartner.

Have an announcement or news story? Submit it to asuchanek@hsc.wvu.edu *Deadline for submissions will be the 20th of each month at 5pm.*

Happy Birthday!

Sri Sharma	11/5
Aaron Snoberger	11/6
Bill Wonderlin	11/10
Ryan Ice	11/11
Wentao Deng	11/13
Ryan Mudry	11/13
Erica Peterson	11/16
Mona Sivaneri	11/22
Lisa Salati	11/25
David Smith	11/25

Did we miss someone? Please let us know via email asuchanek@hsc.wvu.edu

[Chair's Corner]

It's been a very busy and exciting semester in the Department as we search to fill a new junior level faculty position. Six outstanding candidates have each spent two days in Morgantown, getting to know us and discussing their science. Thanks to the search committee, David, Elena, Peter and Mike G, and especially to Brad for his leadership of the committee that identified these outstanding candidates. While our days have been full with additional meetings, seminars, chalk talks and student lunches, there has been some additional energy and excitement in the hallways in the past six weeks. The candidates have felt this energy and excitement, and from my conversations with them, they view the Department as a vibrant, growing and nurturing environment for junior faculty. This is exactly the type of environment we have been striving to create! Thanks again to the search committee and to Lana and Sandy for meeting some of the specific challenges in coordinating these visits. Last, but not least, thanks to all of you, the students and faculty, who have made these visits such a success.

-Mike

***Have you seen the* Biochemistry Timeline?? Check it out on the Department website!**

[Alumni Spotlight]

Where are they now?

Gloria Higgins, MD, PhD

Professor of Clinical Pediatrics
The Ohio State University and Nationwide Children's Hospital
Columbus, OH

WVU Graduate Advisor:
George H. Wirtz
Graduation Year:
PhD 1976

What have you been up to since you left WVU?

Shortly before graduation, I took up with John Foster, who was also a graduate student in WVU Biochemistry - to the shock of many. We are still married and enjoying our differences more than ever. John graduated with his PhD in biochemistry the year after me. I had to come back to physically extract him from Dr. Jim Blair's lab, to join me in New York where I was a post-doctoral fellow in cellular immunology at Sloan-Kettering. After a couple of years, we figured out how hard it would be to coordinate the careers of two bench scientists, so I decided to go to medical school. Our son, James the Only, was born in the Bronx where I was a student at Albert Einstein College of Medicine, and where John was also doing a biochemistry post-doc. Having a child was an epiphany of sorts, and I decided to go into pediatrics despite the prejudice that academic careers were not as good as in internal medicine. I started pediatric residency at Children's National Medical Center in Washington, DC - and John joined me there after a year for a second post-doc at NIH. At CNMC, because of a particularly wonderful teacher, I became hooked on the unsolved mysteries of rheumatology. When I followed John to the University of Tennessee Memphis, the rheumatologists there were kind enough to design an "ad hoc" adult and pediatric rheumatology fellowship for me - back in the days when there were no ACGME accredited peds rheum fellowships. I stayed at UT Memphis on the pediatric faculty, running my own basic research lab and caring for children with rheumatic diseases until 1999 when I moved to OSU in Columbus, OH. By that time, I had realized that I could not productively split my efforts in such a way, so I boxed up my plasmids and started doing clinical research in addition to patient care. After leaving Memphis, John has continued to follow the straight path of basic research in biochemistry/molecular biology at UT Southwestern in Dallas and now at UNC in Chapel Hill. Our commuter marriage shows that even people who plan for compatible careers can't always end up in the same place. We look forward to retiring together in Columbus in a few years. Our son James apparently inherited my tendency to meander. He started out with an undergraduate degree in computer engineering, but will soon graduate with a PhD in Philosophy.

What do you remember most about your years in biochemistry at WVU?

Most of all, I remember how much we laughed! Many of the grad students who started around the same time ended up being very close. Whether we were working late in the lab or out socializing, so many things were so very funny (and still are). I remember the faculty who really cared that we learned, though sometimes it was the

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hard way. Dr. George H. Wirtz, whose initials were the same as mine because I used to be Gloria Higgins Wright, studied complement. I did not think that complement was very interesting, but I decided to be in his lab because he was the closest thing to an immunologist in the department. (Little did I know that one day I would be treating diseases in which complement is a major player.) He gave me an old edition of Kabat and Mayer's Experimental Immunochemistry, autographed by Elvin Kabat, when I graduated with my PhD. He was always reserved but very kind, and his best pal in the department was Dr. Gale Rafter who had a similar personality. Dr. Wirtz used to eat prunes for lunch, was very trim and fit, and was a dedicated runner before running became hugely popular. I remember being totally shocked years later when I heard that he had collapsed and died of a heart attack while running.

What do you enjoy most about your current position, field of study, or your current life endeavors?

Rheumatology always feeds my fascination with the unknown, because rheumatic diseases can be a real challenge to diagnose, and their pathogenesis is still being revealed. I love being able to help children with rheumatic diseases and build relationships with their families. I find it very rewarding that now I can help the children and their families so much more than when I started in the field, using the amazing new "biologic response modifier" drugs that are available today. Because I studied the interleukin-1s in my lab in Memphis, I feel a personal connection to some of these medications. I have a great time teaching pediatric rheumatology to medical students, residents, and fellows. Hopefully my enthusiasm will infect some young people to enter this field, because pediatric rheumatologists are still in very short supply. Some states, including West Virginia, have none. Many children from "back home" come all the way to Columbus for their care.

What advice would you give to current or incoming graduate students here at WVU?

In my best inspirational speaker persona, I advise the following, which I really believe: Understand that life is a privilege, and that the most meaningful goals are reached through your own sustained hard work. But accept that no amount of hard work and planning can assure that your life's trajectory will be straight or smooth. Make the most of your opportunities to learn, because you never know where your path will take you. Practice ethical behavior and kindness to others, because the most precious things in life are the people who travel through it with you. And share laughter in your life - it truly is very good medicine! So sayeth the almost old alumnus.

[Who Was George Wirtz?]

By Amanda Suchanek

Whether you're a student, faculty, or staff member here in the Department of Biochemistry, you've probably spent countless hours in room 3122A, aka the George Wirtz Memorial Library—or simply, 'the Wirtz.' Many of you have also probably seen the gold plaque propped up on the cabinets near the door. The plaque has been in the Wirtz library since 1993, when it was dedicated in memory of Dr. Wirtz after his sudden death. Recently, this graduate student found herself wondering about the man behind the name.

George Henry Wirtz was born April 29th, 1931 in Kohler, Wisconsin. He received his B.S in 1953 and his M.S. in 1956 from the University of Wisconsin. From 1956-1958, he worked as a biochemist in the Medical Service Corps with the US Army, and then as a biochemist in the Division of Immunology at the Walter Reed Army Institute of Research from 1958-1962. (George later claimed that from his years in boring military sessions he honed the skill of sleeping with his eyes open – a skill he put to use when attending seminars that were particularly boring.) In February of 1957, he began his Ph.D studies at George Washington University under Dr. Joseph Roe and Dr. William Carroll, completing his dissertation titled "Some Biochemical Studies of the First Component of Complement" in January 1962. Dr. Wirtz then joined the Department of Biochemistry faculty here at WVU in 1963.

Recently, Dr. Larry Harris and Dr. Mike Miller were kind enough to meet with me (over some particularly delicious chicken puttanesca, I should add!) and share a few stories about their friend and colleague. Dr. Wirtz's "impish" sense of humor

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Mike Miller, George Wirtz, and Gale Rafter

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permeated almost every story I heard. According to Mike, "he told more jokes than anyone I knew… some of the best and some of the worst jokes I'd ever heard." If you told George a joke that he really liked, he'd slap his knee and say "THAT'S A KNEE SLAPPER!" In the lab, he had a technician that absolutely hated to do the dishes, so he would put a bottle of rosé wine next to the sink and label it "dishwashing lubricant."

Outside of teaching and the lab, Dr. Wirtz was an avid runner and very active in the Lutheran church. He ran the Marine Corps marathon several times, as well as several other races. Weather rarely, if ever, kept him from running. He even ran in a bright yellow Gortex suit that not only made him instantly recognizable from a distance, but also incurred the moniker "Banana Man" from Mike. Oftentimes, Larry, Mike and George would run together around the health sciences center, and when Larry would complain about being sore, Dr. Wirtz would smile and say it's "the best thing in the world for ya!"

Dr. Wirtz had quite a sense of humor in the classroom as well. At one point, Dr. Wirtz and Dr. Jim Blair were teaching a dental biochemistry course together and thought it would be fun to start a rumor that their dental biochemistry course was the "best course in the entire medical center," just to see if anyone was paying attention. The rumor circulated for quite some time before the dean of the School of Dentistry eventually came up to them and said "I hear you're teaching the best course in the whole medical center!" So apparently word had indeed spread.

While he had a fantastic sense of humor, Dr. Wirtz was very professional and took his teaching and research roles very seriously. He always wore a shirt and tie with a lab coat and carried his 'pointer' –a yardstick Dr. Harris called his 'swagger stick.' He was a devoted mentor not only to graduate students, but new faculty as well. When asked what George might think if he knew the library had been named for him, both Mike and Larry replied that he would probably be very surprised and very humbled.

For those of you who haven't seen it, or stopped to read it, the inscription on the plaque reads:

The Biochemistry Graduate Students of West Virginia University dedicate this library as the George Wirtz Memorial Library. Dr. Wirtz was a professor in the biochemistry department from 1963-1993. His life provided a fine example of the blend between a productive career and a spiritual life. This library is intended to provide educational benefit, but more importantly, it is hoped that the persons using this facility will balance their educational growth with a care and concern for others.

Dedicated on the 28th day of March, 1994.

[Eat or Run?]

By Holly Cyphert

Hello Biochemists!! In this month's edition of *The Catalyst*, I decided to keep on the theme of exercise on brain function. As I am writing my dissertation, I feel like my brain function is on the decline and, perhaps, a nice long run would be beneficial not only for my brain but also for the increased diameter of my waistline due to excessive amounts of hot cocoa and cookies.

This month, I choose a paper that deals with exercise and Alzheimer's disease. I have always been interested in the correlation between metabolic disturbances and Alzheimer's. In the work by Maesako, et al., the researchers investigated the changes in β-amyloid (A-beta) deposits and cognition following high fat feeding in "Alzheimer's" mice. After high fat feeding, there was an increase in A-beta protein and a decline in cognition. As a rescue experiment, the researchers challenged the transgenic "Alzheimer's" mice with exercise and showed that there was a reversal of A-beta deposits and cognition was restored. In addition to the exercise challenge, the researchers also challenged the animals with a low-fat diet to mimic a decrease in nutrient uptake. Compared to exercise alone, the effects of diet were not as significant on cognition or enzymes controlling A-beta protein deposits—suggesting that the effects of exercise on cognition and attenuation of Alzheimer's disease are more potent than the effects of the diet alone.

All in all, this was a nice paper to illustrate how exercise can delay and reverse Alzheimer's terrifying grasp on cognition. It also illustrates that diet alone may not be as important as exercise on cognition suggesting that the molecular mechanisms that relay the effects of exercise should be further explored. Have a great month and I'll see you at the gym or the rail trail!

Citation:
Maesako *et. al. J Biol Chem.* 2012 Jun 29;287(27):23024-33. Epub 2012 May 4.

[From Pee to Shining P]

By Zach Hartman

It almost goes with saying that we take the elements for granted. Show me a soul alive who can remember a time when we didn't have the periodic table firmly worked out and characterized. Most of that work was performed in the 1800s. The last natural element was discovered 73 years ago (Francium, by the way). It's difficult to imagine a time when systematic cataloguing of the elements didn't exist. One of the earliest elements to be discovered- albeit late in the game in terms of human history- was phosphorus. It was the first element discovered by the alchemists. Indeed, it was the first isolated element that had not been known to ancient civilization.

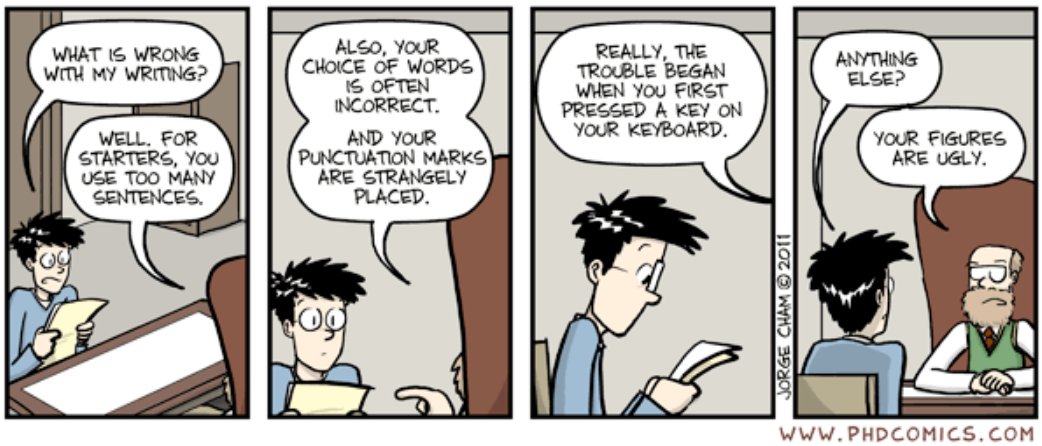
You have to transport yourself back to the mid-1600s. The Enlightenment was just taking hold. This is the time of Isaac Newton's work leading to the *Principia* and the nascent shift from natural philosophy to scientific method. European science was not quite where we would recognize it in its modern form, but it was on the fast track. Chemistry the science was in its infancy, mired in the old Aristotlean four-element theory that was the foundation for the notoriously misguided field of alchemy. It comes as little surprise, then, that the man credited with discovering phosphorus, Hennig Brand, thought he had discovered a limitless supply of gold by noting the color of his urine. A series of absolutely disgusting experiments[1] eventually yielded a strange, glowing gas that smelled of garlic and eventually settled as a solid after it was captured. Its magical properties led Brand to believe he had stumbled upon the philosopher's stone, so he kept the method a secret for years.

Over times, others figured out the magic formula for extracting phosphorus from urine. The element found its way to the father of chemistry, Robert Boyle. His systematic characterization of phosphorus laid the groundwork for England gaining and maintaining the stranglehold on industrial production of phosphorus-based products through the next several centuries.

Phosphorus holds many sinister distinctions, though as life science researchers we focus primarily on its role in the cell in the form of phosphate. This is essential for life as we know it, of course. The ominous numerology of phosphorus- it was the thirteenth element discovered- has not been lost to nature's perverse sense of humor. It's a deadly poison, as any fan of *Breaking Bad* can tell you. It's a powerful weapon, as any of the unfortunate souls in Dresden circa February 1945 could explain. Some of the worst industrial exposure-linked diseases and accidents in modern history have been related to the use of phosphorus in some form. Still essential for life. Touché, nature.

In conclusion, it can be informative and fun for us as life sciences to step outside the box and consider the history of science as a whole. Phosphorus is one of those amazing examples of something that we simply take for granted as an important player in biochemistry. Yet its humble beginnings to its usage in war betray a fascinating story that spans more than 400 years.

[1] Key ingredient for this new material was buckets of urine that had been allowed to putrefy for weeks. The putrefaction was not essential, but why not go the extra mile?



10 Things you didn't know about Brandon Jones

The Basics:

Title: *Graduate Student*
Lab/Office: Pugacheva Lab

1. What was your very first job?
My first "real job" was at a Gabriel Brothers, doing everything from cashier to restocking. Before that, I worked a lot of summers for my aunt's dance/gymnastics school, Pittsburgh Pro Performance Centre. I started out doing curtain/lights for performances and eventually also did the recital announcing and yearbook design.

2. Has anyone ever said you look like a celebrity? If so, whom?
You know, that guy with the shaved head? And the beard? That guy.

3. How many times, if any, did you change majors?
I never officially changed majors, but my initial intention upon entering undergraduate was to major in chemistry. At the campus majors fair, I started talking to the biochemistry representative, who looked quite bored sitting next to the bustling criminology and business tables. The rest is history (and I did end up with a chemistry minor).

4. Biggest pet peeve?
Probly speling errers. Even before simply messaging a friend, I will frequently Google a word just to make sure that it is correct.

5. Are you superstitious? How so?
Only when it comes to genotyping techniques.

6. How many languages can you speak?
I took four years of Spanish in high school. By the time I reached senior year, our class had dwindled to only about five people and the teacher was about to retire, so we had a lot of free reign in regards to class activities. I will always remember the fictional "Spanish dating profile videos" that we made using a box of funny costumes, along with our homemade papier-mâché piñata of Osama bin Laden.

7. What are you most afraid of?
Holly beating me in Words with Friends.

8. What's your favorite season and why?
Winter for the win. Snow, cocoa, roasting marshmallows, decorations, National Lampoon's Christmas Vacation… it is the best.

9. Do you know or have you ever done the "Gangnam Style" dance?
Some friends and I tried to make this happen at a recent wedding. The DJ said that he would queue it up, but we later found out that he only had the song on his home laptop and not the one that he uses for events. Sadness.

10. Best advice anyone's ever given you?
If you're in a war, instead of throwing a hand grenade at the enemy, throw one of those small pumpkins. Maybe it'll make everyone think how stupid war is, and while they are thinking, you can throw a real grenade at them.

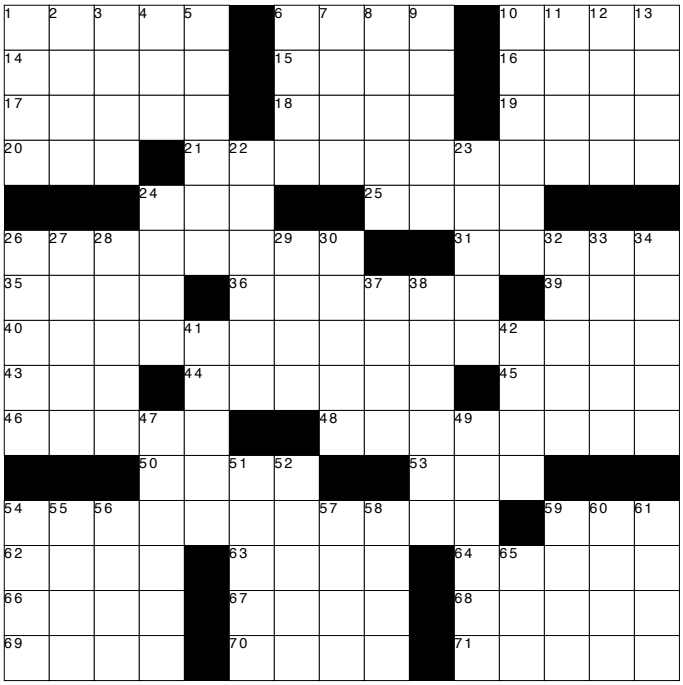
the[Spotlight]

the[Catalyst] Spotlight is chosen by random draw each month using the department directory.

Coffee Break

[Newsday Crossword]

11/06/12 BEWARE OF DOG Billie Truitt, edited by Stanley Newman



Across

1 Jeweler's weight measure
6 Achy
10 African snakes
14 44th president
15 Those people
16 Dance move
17 Pie nut
18 Cincinnati's state
19 Suffix for table or Tupper
20 Antlered beast
21 Stop early on, as a problem
24 Camcorder button
25 __ over (faint)
26 Rose Bowl city
31 Camel's South American cousin
35 CPR experts
36 Eventually turned into
39 Film director __ Howard
40 Look alert immediately
43 Infant
44 Full range
45 Angel's topper
46 Beer mug
48 "Obey me!"
50 Transmission selection
53 __ Vegas, NV
54 Suffer defeat
59 Cinemax alternative
62 Make revisions
63 Airport postings: Abbr.
64 Driver's reversal
66 Sandwich shop
67 Equips for battle
68 Fit for a king
69 Shaker contents
70 Active person
71 Mean-spirited

Down

1 Handle hardship
2 Cain's brother
3 Fixture that holds spices
4 Doctors' org.
5 Browned by the sun
6 Halt
7 Casual greeting
8 Freshen, as a stamp pad
9 Overdo it on stage
10 Also
11 Wild guess
12 Lima's land
13 Raced
22 Refrigerator's ancestor
23 __ of Troy (mythical abductee)
24 Gravelly voice
26 Nuisances
27 "Are so!" response
28 Idaho or Iowa
29 Tidy
30 Performed in a play
32 Opera solos
33 Money, slangily
34 Be a nuisance to
37 __ cost (free)
38 Silver and copper
41 Basic belief
42 "Now hear __!"
47 "That makes sense"
49 Ringed planet
51 In the lead
52 Back-in-style style
54 Sleep spots
55 Concept
56 Cash drawer
57 University of Notre __
58 Cold War adversary: Abbr.
59 Embraces
60 Misbehaving kid
61 Merely
65 Chinese beverage

Upcoming Events

November 2012

Date	Event	Time	Location
11/1	**Research Forum** ***Ivanov Lab***	4pm	Erma Byrd 201
11/5	**Master's Thesis Defense** ***Cat Woodard***	1pm	E216 Eye Institute
11/6	**ELECTION DAY!!!!!!** *(University Holiday)*	6:30am	DON'T FORGET TO VOTE!!!!
11/7	**Seminar: Dr. Byung-Hoon Lee** ***Faculty Candidate*** ***Harvard University***	12:30pm	3084 HSN
11/8	**Research Forum** ***Stoilov Lab***	4pm	Erma Byrd 201
11/13	**Seminar: Dr. Bennet VanHouten** ***UPMC Pittsburgh***	12pm	3067 HSN
11/15	**Research Forum** ***Rajendran Lab***	4pm	Erma Byrd 201
11/15-11/16	**Special Seminar: Dr. Peter Friedel** ***MD Anderson Cancer Center***	TBA	TBA
11/22	**Morgantown Running Turkey Trot (3-mile run)**	8:30am	WVU Track
11/29	**Research Forum** ***Salati Lab***	4pm	Erma Byrd 201

Victims of Hurricane Sandy Still Need Your Help!

Ways **YOU** can help:

- American Red Cross – Emergency food, shelter, and support to victims.
  - Visit www.redcross.org, call 1-800-RED-CROSS, or text the word "Redcross" to 90999 to make a $10 donation.
- AmeriCares – Help get medicine and other supplies to victims.
  - Visit www.americares.org to donate.
- World Vision – Flood clean-up kits, personal hygiene products and food.
  - Visit www.worldvision.org to donate
- Save the Children – Provide relief to families and their children.
  - Visit www.savethechildren.org to donate.

Quote of the Month:

"There is one thing even more vital to science than intelligent methods; and that is, the sincere desire to find out the truth, whatever it may be."

• • •

Charles Sanders Pierce