

The [CATALYST]



[News & Announcements]

New Mountaineer Family

More warm "Welcomes" are going out to our newest faculty members who have joined our Mountaineer Family at the end of August!

Dr. Mark Tsetlyin joined the Biochemistry Department in August! He was recruited from Dartmouth College, New Hampshire and is joining us as an Assistant Professor with a specialization in development of new experimental methods and algorithms for Electron Paramagnetic Resonance (EPR) spectroscopy and imaging with the major focus on studying tumor microenvironment.



Dr. Andrey Bobko also joined the Biochemistry Department in August! He was recruited from Ohio State University and will be joining us as a Research Assistant Professor with a specialization in development of probes and approaches for in vivo detection of important biochemical and biophysical parameters (pH, redox, pO₂, glucose et cet.) using electron and nuclear magnetic resonance techniques.



Congratulations to Roberta, Steven and Peter for receiving the following awards:

Dr. Roberta Leonardi received a NIH-NINDS R21! The project, entitled "*Modeling PKAN disease through neuron-specific degradation of coenzyme A*" is aimed at the generation and characterization of a mouse model for Pantothenate Kinase-Associated Neurodegeneration (PKAN) with the goal to understand the mechanisms that lead to the disease and generate a platform to test potential therapeutics to limit or reverse the neuronal dysfunction in PKAN patients.

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Upcoming Birthdays

Mike Schaller	Oct 1
Tiffany Kornberg	Oct 4
Ray Anderson	Oct 18
Mary Wimmer	Oct 25
Jane Schupp	Oct 27
Steve Frisch	Oct 30
Asley Brandebra	Nov 2
Sriganech Sharma	Nov 5
Aaron Snoberger	Nov 6
Abi Hayes	Nov 7
Wentao Dent	or 13
Deb Corbin	Nov 15
Phil Pifer	Nov 23
Lisa Salati	Nov 25
David Smith	Nov 25
Yazhaikurichi Rajendran	Dec 2
Dan Vanderbilt	Dec 17
Peter Stoilov	Dec 22
Brad Hillgartner	Dec 29

"To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance in science"
~Albert Einstein

[News & Announcements Cont'd]

Dr. Steven Frisch was awarded a Mary Kay Foundation Grant! The project, entitled "Suppression of breast cancer recurrence" will test the ability of a novel tumor suppressor gene characterized by the Frisch lab in preventing the recurrence of breast cancer.

Dr. Peter Stoilov received a 3-year award from the CDMRP Breast Cancer Research Program! The project is entitled "Evaluation of alternative splicing regulators as targets for selective therapy of triple negative (basal) breast carcinoma".



Amanda Suchanek completed her dissertation on August 27, 2015. The title was "Enhancement of RNA Splicing by the Nutrient Regulated Splicing Factor, *SRSF3*". Amanda is on her way to Chapel Hill, NC to start a postdoctoral research fellowship where she will be studying lipid metabolism in the laboratory of Dr. Rosalind Coleman at UNC. **Congratulations Dr. Suchanek!**



• • • • •
Congratulations! to Dr. Smith & his lab! The manuscript titled 'ATP-binding to neighboring subunits and intersubunit allosteric coupling underlie proteasomal ATPase function' for publication in Nature Communications' was accepted to be published in Nature Communications.

• • • • •
"Well Done!" goes out to the Ph.D. student in our Biochemistry program from Dr. Lisa Salati's lab who gave her defense:

• • • • •
WVU President Gordon Gee visited during our Biochemistry faculty meeting! The President spoke about the overall focus that WVU has on talent and culture going forward into the future.



[Chair's Corner]

It has been an eventful summer in the Department. The West Virginia Clinical and Translational Sciences Institute continued their efforts to recruit scientists with translational research interests, and as part of this initiative, Mark Tseytlin (Dartmouth) and Andrey Bobko (Ohio State) were recruited and joined the Department. Welcome Mark and Andrey! Amanada Suchanek, a student in Lisa Salati's lab, successfully defended her dissertation, packed her bags and moved to UNC-Chapel Hill to begin her postdoctoral studies. Congratulations and good luck to Dr. Suchanek!!

It was also a pretty good summer for news about grants in the Department. Steve Frisch was awarded a Mary Kay Foundation grant. Peter Stoilov received a three

year award from the CDMRP Breast Cancer Research Program. Roberta Leonardi's R21 application scored well and has been funded. Elena Pugacheva's R01 application scored in the 11th percentile. Peter Stoilov and Vishy Ramamurthy heard that their R01 application scored in the 9th percentile. Last, but certainly not least, Raj Rajendran's R01 was scored in the 2nd percentile.

Congrats to all, including mentors and colleagues who provided support for the development of these applications. Special thanks to Lana Yoho, who works tirelessly (not true.... I have seen her tired) to provide the infrastructural support for grant development in the Department.

Finally, President Gee dropped by the Department to attend our most recent faculty



meeting. It was a wonderful opportunity to hear the President's vision, and have the opportunity to discuss our thoughts and concerns.

"The major value in life is not what you get. The major value in life is what you become"
~ Jim Rohn

[Alumni Spotlight]

Eugene G. Sander

President, Emeritus
University of Arizona

What have you been up to since you left WVU?

Since leaving West Virginia University I moved to Texas A&M to become the Head of the Department of Biochemistry and later the Deputy Chancellor in the Texas A&M university system in charge of developing the system programs in biotechnology. In 1987 I moved to the University of Arizona as Vice Provost and Dean of the College of Agriculture and Life Sciences. Later I became the Provost and finished my career as President. I retired in 2013 and moved back to Texas to be close to my Maryland daughter and two grandsons. We also have two granddaughters and a son living in Raleigh, North Carolina.



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

I've been retired for two years. The field of biochemistry and several land-grant universities gave me the opportunity to shape programs to serve a wide variety of students and the public. While senior administrative positions such as president and provost have their challenges, you get great satisfaction out of steering an entire institution in the right direction. With that said, teamwork is essential. I was fortunate to be surrounded by a number of truly outstanding people. On a more personal note I had the opportunity to be involved in the hiring of Rich Rodriguez as the University of Arizona's football coach. His down to earth approach to coaching and interacting with the public was a real breath of fresh air at our institution.

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

First, I would recommend that you make your education a little broader than just your field of interest. Currently you may end up with a non-research job where other talents will serve you well. Good writing and public speaking skills are important.

Second, your research advisor is one of the most important people in your life. This individual should be truly interested in you and your work, and should be able to open doors for your research career.

Third, develop balance in your life. The work you do until midnight in the lab will not be remembered however, not attending your child's birthday party will be remembered.

How did your experience at WVU contribute to your professional career?

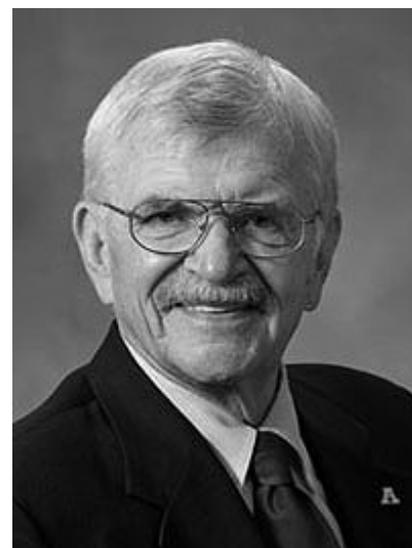
West Virginia University gave me my first administrative job. I learned a lot including how to hire some truly outstanding faculty some of whom have continued at WVU. I also learned the value of a team approach in the management and development of high-quality research.

What advice do you have for students getting ready to graduate during these difficult economic times?

A graduate degree in biochemistry gives you an opportunity to work in many fields of modern biology. Consider other areas such as plant pathology, pharmacology, and other areas which while applied have a need for excellent basic research.

Any additional comments you'd like to include?

Just like a physician needs a residency program to successfully practice medicine, a newly minted PhD in biochemistry needs several years of post-doctoral training. Pick a lab doing science that you're really excited about which is directed by a principal investigator who has a reputation for placing students in good positions. Do not allow yourself to become a professional post-doctoral fellow. You need a career not a job.



"Do not allow yourself to become a professional postdoctoral fellow. You need a career not a job."

~ Eugene G Sander

10 Things you didn't know about:

Jane Schupp

The Basics

Title: Senior Research Specialist
Lab/Office: 3134 HSC-N

1. What was your first job?

Straight out of grad school, I worked in a research lab in the pathology department of Case Western Reserve. My lab was located in the Autopsy Services wing of the building, halfway between the autopsy room itself and the refrigerated locker where the autopsy cases were kept. Most every day you'd see shrouded gurneys passing in the hallway, occasionally with pale feet sticking out from under the drape, with a toe tag attached. It was best not to look too closely when the autopsy door swung open, to avoid seeing something that might ruin your lunch. An interesting atmosphere, to say the least!

2. Five things you couldn't live without?

My Labrador retrievers, horses (I ride hunt seat), anything with caffeine, a good book (preferably a mystery or historical novel), and cross country skis.

3. Most embarrassing moment?

There have been several embarrassing moments while testing the laws of gravity on my road bike. The last time I crashed, I landed on my left knee (not for the first time), and tore half of an old scar off while creating a new one. It's a prime candidate for knee replacement surgery someday.

4. Any phobias?

Well, after working with lots of pathogens as an undergrad and graduate microbiology major, I've developed the habit of obsessively washing my hands. Even in summer, they're a bit chapped.

5. Favorite guilty-pleasure TV show?

"Masterpiece Mystery" on PBS: British mayhem and murder, can't get enough of it!

6. Who was your favorite teacher/professor in school and why?

There have been many good teachers and professors, so will select my high school geometry and calculus teacher, Mrs. Cosimi, as an example. At the start of the school year, she'd put the fear of God into us (smart tactic for a smart woman dealing with teenagers), but once you got to know her, she was the nicest woman. She was tough because she knew it was important that we mastered the subject. Good teachers have that in common.

7. What do you think people would be most surprised to know about you?

That I was kind of a holy terror while on Girl Scout camping trips: my best friend and I would sneak out about half an hour after "lights out", and would start scratching on the tent next to ours like animals, to get the girls screaming. This in turn would set off the hilarious chain reaction of getting the next tent over screaming also, and the next tent, etc! Mission accomplished, we'd tear back to our tent and pretend to



be asleep when the counselors came to check what the hysteria was about. We'd have to stop after a couple nights, as everyone started noticing that our tent was the only suspiciously quiet one.

8. Best advice anyone's ever given you?

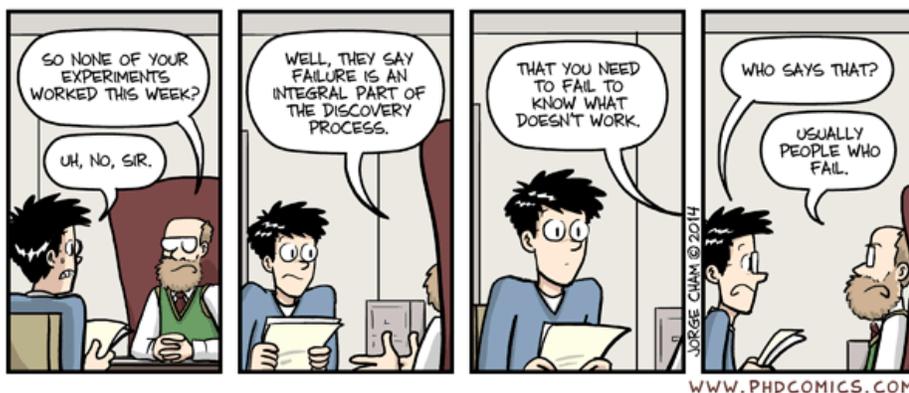
Know what you believe, and be secure within yourself, as that is the only true security.

9. Any hobbies people might be surprised to know about?

Sculling: a few years ago, I joined a rowing club and learned to scull and sweep. It's a great way to enjoy the river in summer.

10. Are you superstitious?

How so? Only in that I always say an incantation to the science gods when trying something new. Maybe give them a burnt offering of some sort from the Bunsen burner also.



[A New Place to Call Home]

by *Mioara Larion*

I came to the Department of Biochemistry at WVU in August 2015, following a national recruitment. The striking features I found at WVU, which set it apart from other departments and institutions that I visited in the country, are: the people, the sense of community, and the friendliness of other faculty and staff in general. This environment, together with the mentoring program for junior faculty and the support from the more established investigators,

attracted me to come here. Upon getting the chance to meet the first-year students, I was impressed by their drive and their willingness to go the extra mile, either to understand journal papers outside their area of comfort or by making sure that they execute their research at the highest of standards. I have enjoyed my short time here so far with the start of setting up my laboratory. I look forward to collaborating with other faculty and clinicians and start-

ing my career. Indeed, Morgantown is a hidden gem between the mountains and I am looking forward to exploring the area I now call home!



[Do you know the M.D./Ph.D. students in our labs?]

Josh Farris is beginning his fourth year in the Cancer Cell Biology program in the PhD phase of his dual degree. Under Dr. Steven Frisch, he is currently studying the contributions of changes in



Phil Pifer is beginning his sixth year in the MD/PHD program and his fourth year in Steven Frisch's lab in the Cancer Cell Biology program. He is currently studying the molecular mechanisms of the transcrip-

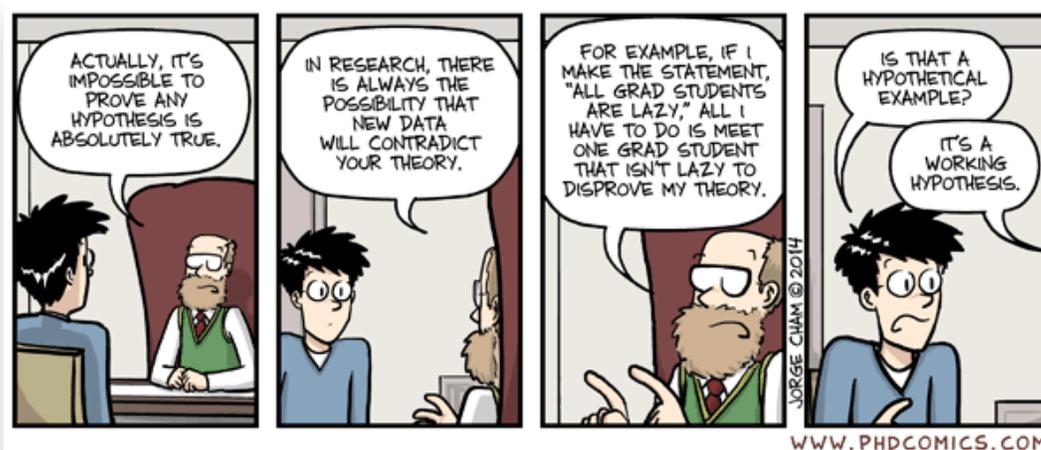


tion factor, grainyhead-like 2, and its ability to suppress the epithelial to mesenchymal transition (EMT). The ultimate goal of the project is to develop a mechanism to keep grainyhead-like 2 up-regulated and prevent cancer metastasis.

Jesse Sundar is currently in his third year in the MD/PhD program, but a first year graduate student and has been in Dr. Ramamurthy's lab for about 8 weeks. They believe that alternative



splicing plays a major role in the development and maintenance of the specialized ciliated outer segment of photoreceptor neurons. In collaboration with Dr. Peter Stoilov's laboratory, they have identified an RNA binding protein that controls alternative splicing. His research focuses on testing its role by the use of conditional knockouts in the retina. The overall goal of his work is to identify the mechanisms that lead to photoreceptor specific alternative splicing



[A Day in the life of the Pugacheva Lab]

by Kristina, Anna, Yuriy, and Brandon

You could say the Pugacheva lab is “competent as DH5alpha, productive as BL21, robust as 293T, bright as luc2, effective as EcoRI, stable as Taq, and illuminating as GFP.”

A day (or night) in the Pugacheva lab is never boring and always filled with interesting results.

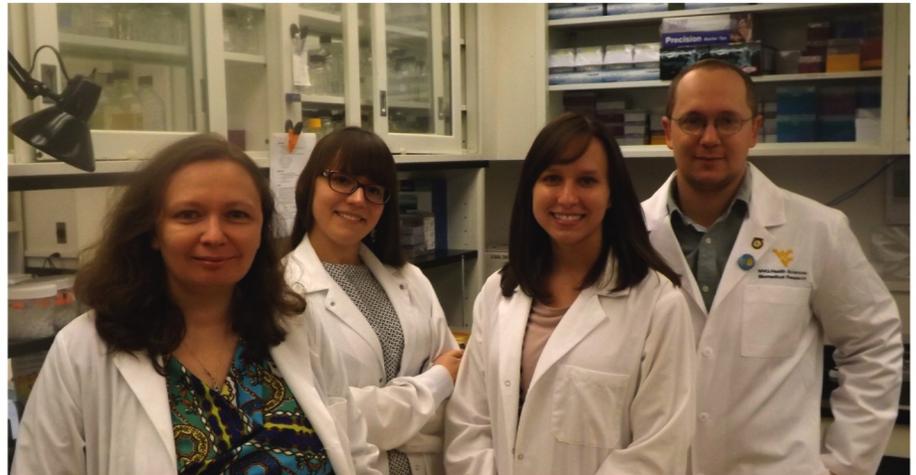
Our lab has historically had a main concentration on breast cancer and NEDD9, a scaffolding protein present at focal adhesions that has been shown to promote cell invasion and be upregulated in many human cancers. Currently, the lab has many different ongoing projects in different areas of cancer research. There are currently four graduate students in the lab: Brandon, Yuriy, Anna and Kristina. Brandon’s project focuses on the regulation of the mesenchymal and amoeboid cell movement phenotypes through NEDD9 and ROCK driven pathways in an attempt to hinder cell invasion and metastasis. Yuriy’s project explores the role of primary cilia in glioblastoma, which utilizes glioblastoma patient derived xenografts and intracranial injections in mice. Anna’s project focuses on HER2 and NEDD9 interactions in breast cancer. Anna is also in charge of our breast cancer PDX collection. Kristina’s project focuses on the nuclear accumulation of Aurora A kinase in breast cancer cells and its impact on metastasis

and also looks at several functional single nucleotide polymorphisms (SNPs) of Aurora A and their impact on cancer progression. Our lab utilizes many techniques; some of our favorites are microscopy, immunohistochemistry, PDX models, CRISPR/Cas9 system and tissue processing.

Elena allows us the freedom to set our own schedules as long as our work gets completed. We email her daily updates on our progress and plans, which allows for open and frequent communication so that we can determine possible experimental issues early and budget our time more efficiently. To assist this even further, the entire lab meets weekly on Fridays where we all informally present our data (good and bad) from the past week. This allows

for everyone in the lab to critically evaluate each other’s data and not only gives the presenter guidance on how they may proceed differently in their experiments for the following week, but strengthens their presentation skills as well. We also read papers weekly and write a short summary on the paper, which helps us to keep up with the literature and practice writing.

Every day in the Pugacheva lab is challenging; consisting of many experiments going on simultaneously, article reading, and daily writing and troubleshooting. Even though there are many challenges, we are a team that supports each other and at certain times can be pretty goofy. So, if you are eager to talk with us more, please stop by - someone is always in the lab!



[Recent Publications & “In The Press”]

- Sharma SB, Ruppert JM. “*MicroRNA-Based Therapeutic Strategies for Targeting Mutant and Wild Type RAS in Cancer*”. Drug Dev Res. 6459 Aug 5².
- Lin CC, Sharma SB, Farrugia MK, McLaughlin SL, Ice RJ, Loskutov YV, Pugacheva EN, Brundage KM, Chen D, Ruppert JM. “*Kruppel-like factor 4 signals through microRNA-206 to promote tumor initiation and cell survival*”. Oncogenesis. 6459 Jun

[Top 5 Things to Know About Being a WVU MD/PhD Student]

by Philip Pifer

1. **By the time I am finished with my MD/PhD degree, I will have spent as much time (or more!) in post-secondary education as I did in 1st through 12th grade. Let that sink in...**

I started as a freshman at WVU in the Fall of 2006 and obtained a B.S Chemistry degree in 2010. Hopefully, I will graduate with my MD/PhD degree in 2018 – a mere 12 years later. The MD/PhD program was designed to create physician-scientists, people who use their experiences in clinic to guide their investigations in lab. The order of events for the WVU MD/PhD Program consists of the first two years of medical school, followed by PhD training (usually 3-5years), and then finally the 3rd and 4th years of medical school.

2. **I chose the MD/PhD dual track because I couldn't decide whether to be a researcher or a physician.**

At WVU, potential MD/PhD students must be accepted by both WVU SOM and the Office of Research and Graduate Education. I am an unusual case. I was accepted into the WVU MD/PhD Program during my first year of medical school, instead of earlier. During

my first year, I realized that I really missed being in laboratory, and subsequently applied for the MD/PhD Program. This unorthodox entrance into the program gives me confidence that it was the right choice for me. However, I would not recommend this approach, as many things had to go my way for me to be accepted.

3. **All of this time in Morgantown has practically made me a townie.**

The thing that I find most enjoyable about Morgantown is the plethora of outdoor activities. I try to spend as much time outside as I can. My favorite spot is Cooper's Rock. I have eaten at about every restaurant in Morgantown. The chili cheese dogs at Town Hill are an absolute must.

4. **Medical school and graduate school are equally challenging, but for completely different reasons. This is one of the aspects that I love about this degree.**

Medical school requires more discipline and studying than anything else I have ever done. However, the rigid requirements allow you to check off items as you accomplish them, letting you know that you are on the right



track on an almost weekly basis. This comfort is completely absent in the pursuit of a PhD. My favorite aspect of medicine is the chance to be engaged in a variety of people's lives. Graduate school requires creativity and resilience. The joy of having an experiment work has to be greater than the sorrow of that same experiment failing the first 19 times attempted. My favorite part of research is being the only person in the world (I hope!) who knows what my most recent Western blot results just proved.

5. **I can always find an expert in the Biochemistry/Cancer Cell Biology Programs who is more than willing to help me with my research and answer my questions.**

The importance of great mentors cannot be overstated. Acknowledge your weaknesses and seek out help in improving them. I think that nothing is more important during graduate school than learning to become a good scientist. If you've encountered a problem, more than likely that you're not the first person to come across this obstacle. Reach out to senior graduate students and post-docs, and you'll be pleasantly surprised how often you will find solutions.



Science

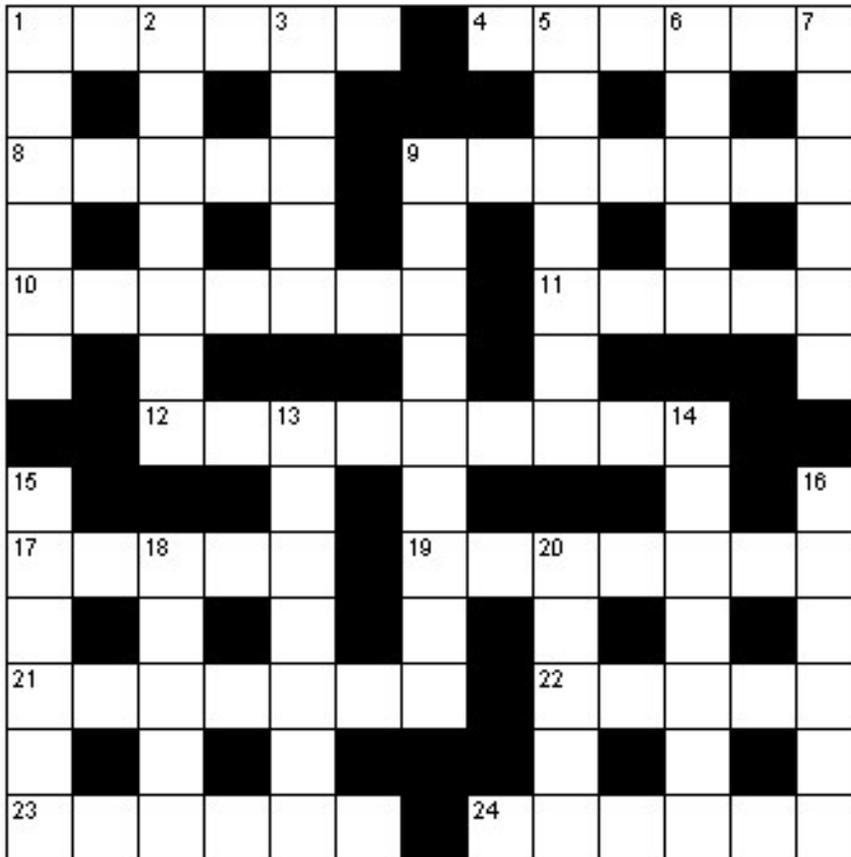


AREA
 ATOMIC
 AVERAGE
 BEAKER
 CHEMICAL
 DEPENDENT
 ELECTRONS
 FLASK
 GRADUATED CYLINDER
 HYPOTHESIS

INDEPENDENT
 INTRODUCTION
 LENGTH
 MASS
 MATERIALS
 METHODS
 NEUTRONS
 OBSERVATION
 OPAQUE
 PHYSICAL

PROPERTY
 PROTONS
 RESULTS
 RING STAND
 THERMOMETER
 TRANSLUCENT
 TRANSPARENT
 VARIABLE
 VOLUME
 WIRE GUAZE





Across

- 1 Bowman (6)
- 4 Canal boats (6)
- 8 Urban areas (5)
- 9 Cowboy story (7)
- 10 Gather together (7)
- 11 Exterior (5)
- 12 Game bird (9)
- 17 Not married (5)
- 19 Blow up (7)
- 21 Rapture, bliss (7)
- 22 Carried (5)
- 23 Afternoon rest (6)
- 24 One taking part in game (6)

Down

- 1 Assail (6)
- 2 Spring flower (7)
- 3 Follow as a result (5)
- 5 Run away (7)
- 6 Excellent (5)
- 7 Miscellaneous (6)
- 9 Aquatic plant (5,4)
- 13 Glowing (7)
- 14 Precisely (7)
- 15 Purchasers (6)
- 16 Seller (6)
- 18 Squander (5)
- 20 Deadly (5)

Crossword Puzzle answers located on the back page [No L^oo^oKING...!!]

[Upcoming Events]

WVU and Morgantown Upcoming Events (as of mid Sept. 2015 - Dec. 2015)

Date(s)	Event	Time	Location
September 2015			
9/15/2015	Seminar Speaker, Mark Szewc	12pm	3067
9/14/2015	Research Forum - Agazie Lab	4pm	
9/18 - 9/20	Morgantown Marathon Weekend		
9/19 - 9/20	Wine & Jaz Festival	Sat: 11 - 6 Sun: 12 - 6	Camp Muffly - Morgantown, WV
9/26/2015	Football - WVU vs. Maryland (Gold Rush)	TBA	Mountaineer Field
October			
10/2/2015	Arts Walk	6pm - 9pm	Downtown
10/2/2015	Art is Food	5pm - 7pm	Downtown/Morgantown Market Place
10/3/2015	Football WVU @ Oklahoma	TBA	Mountaineer Field
10/3 - 10/4	Fall Family Weekend		
10/8/2015	Research Forum - Hillgartner Lab	4pm	Erma Byrd 201
10/10/2015	Football - WVU vs. Oklahoma State (Stripe the Stadium)	TBA	Mountaineer Field
10/13/2015	Faculty Meeting	12pm	Wirtz Library
10/17/2015	Football - WVU vs. Byalor	TBA	
10/20/2015	Seminar Speaker, Alan Cochrane	12pm	3067
10/22/2015	Research Forum - Ramamurthy Lab	4pm	Erma Byrd 201
10/23/2015	Last Day to Drop a Class		
10/24/2015	Give Back a Smile 5k	9am-1pm	WVU College of Law Parking Lot
November			
11/1/2015	Fall back- turn your clocks back one hour!		
11/1/2015	Fall Back 5k	11am - 3pm	Hazel Ruby McQuain Ampitheater
11/7/2015	Football - WVU vs. Texas Tech	TBA	
11/5/2015	Research Forum - Leonard Lab	4pm	Erma Byrd 201
11/10/2015	Faculty Meeting	12pm	Wirtz Library
11/11/2015	Veterans Day		
11/12/2015	Seminar Speaker, Douglas Black	12pm	3067
11/14/2015	Football - WVU vs. Texas (True Blue)		
11/17/2015	Seminar Speaker, Mazence Nachury	12pm	3067
11/19/2015	Research Forum - Schaller Lab	4pm	Erma Byrd 201
11/21 - 11/29	Fall Recess (students)		
11/26/2015	Thanksgiving/Holiday (faculty/staff)		
11/27/2015	Holiday (faculty/staff)		
11/28/2015	Small Business Saturday	10am - 5pm	Downdown & Wharf District
Dec			
12/1	Seminar Speaker, Elena Pugaceva	12pm	3067
12/3	Research Forum - Sokolov Lab	4pm	Erma Byrd 201
12/5	Football - WVU vs. Kansas State	TBA	
12/8	Seminar Speaker, Peter Stoilov	12pm	3067
12/10 - 12/16	Final Exam Week		
12/15/2015	Faculty Meeting	12pm	Wirtz
12/18/2015	Commencement		



Check out the
Biochemistry Website

