



Some Incredibly Important Dates to Know...

November 11: Deadline for undergraduates to apply for April 2017 graduation in 140 Thackeray Hall

November 24- Thanksgiving Recess-No Classes!

November 28: Have a great Holiday!



Congratulations!

On Friday, November 18, 2016, the American Chemical Society-Student Affiliates at the University of Pittsburgh will host the annual Fall Term Awards Ceremony. This year's award winners include the following students:

Andrew V. Friedman	<i>Undergraduate Analytical Chemistry Award</i>
Paige J. Moncure	<i>Undergraduate Inorganic Chemistry Award</i>
Viktor C. Polites	<i>Undergraduate Organic Chemistry Award</i>

All of our awardees are ACS-SA members and we are very proud to have them in our gang. We extend our sincere congratulations to all of our awardees for a job well done!

Everyone is invited to attend the awards ceremony in Room 150 Chevron Science Center on November 18th. Come join us as we celebrate undergraduate achievements with our awardees!

2016-2017 ACS-SA Officers and Staff

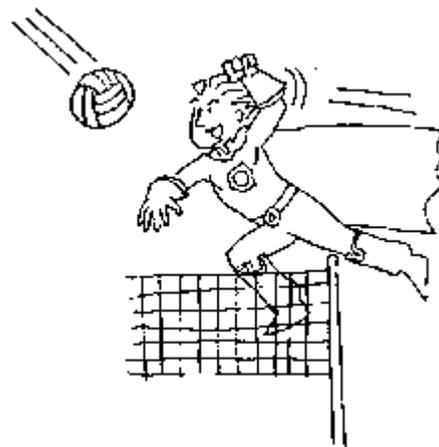
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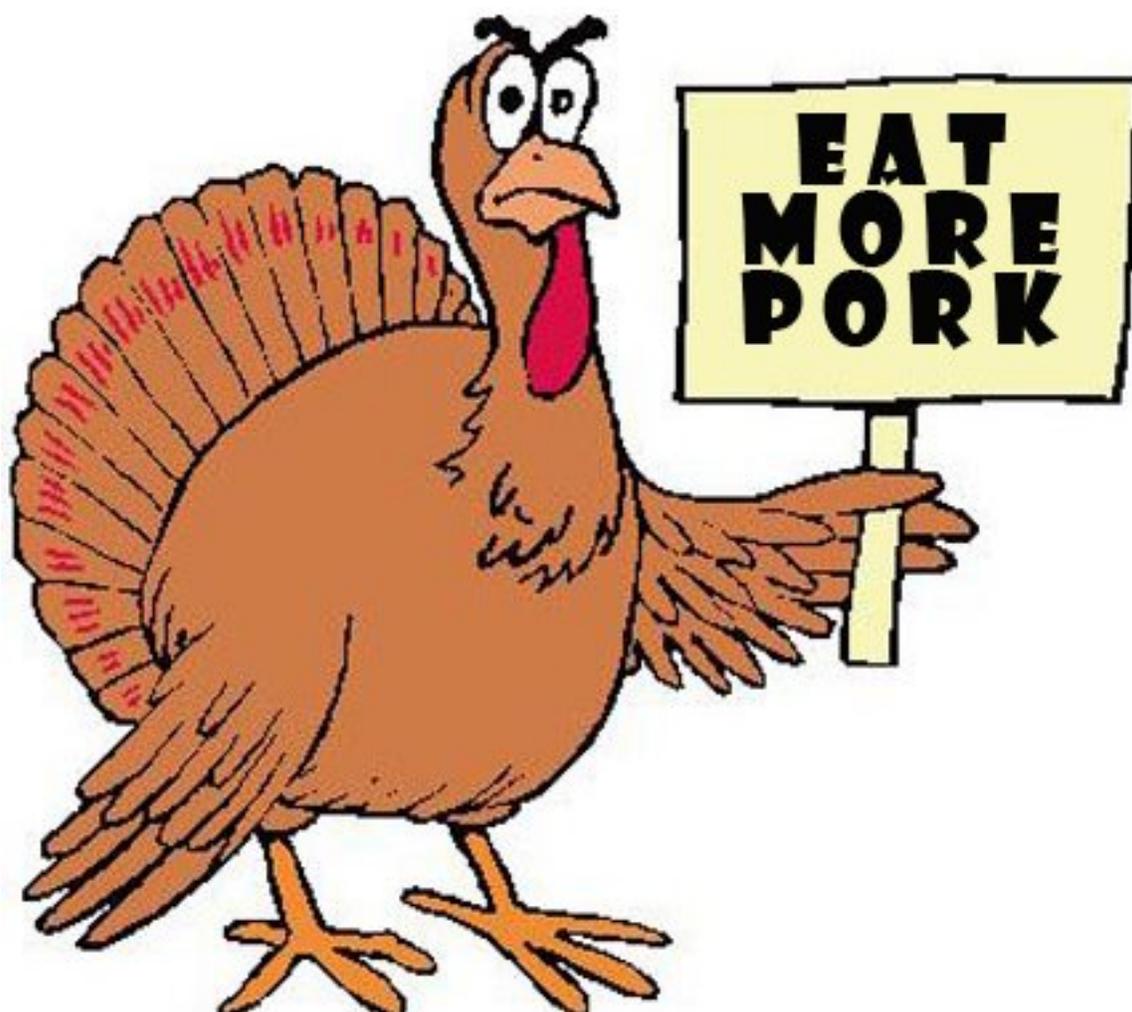
Visit us at <http://www.chem.pitt.edu/acs-sa/>

Congratulations to our ACS-SA!

Our ACS-SA has been named an Commendable Chapter for the 2015-2016 academic year. This is the 28th year in a row that we have received national ranking and it is only possible because of all the hard work and efforts of our members. We will celebrate this recognition on Friday, November 18, 2016 at 12:00 Noon in 150 Chevron Science Center. All are welcome to join in the festivities.



COMEDY CORNER...



Our November Schedule

November



- 04 A Personal Story *by Pat Vescovi*
President and CEO, *Vescovi Innovations*
- 11 Preparing for Saturday Science
with Alex, David and Pat
- 18 Fall Awards Celebration
- 25 Thanksgiving Break--Enjoy!



Everyone is welcome to attend our weekly ACS-SA meetings. Every Friday at noon we get together in 150 Chevron Science Center to hear interesting talks, learn more about science and enjoy each other's company. Come join us for all of the above mentioned meetings.

Saturday Science Academy

Looking for something fun to do on December 3, 2016? Try Saturday Science! It is an opportunity to help ambitious area high school students learn both general and organic chemistry in the lab. With your help, the students get to make crystal gardens, do a simple thin layer chromatography experiment, witness an acid base reaction with dry ice, measure the pH of some favorite soft drinks, and synthesize slime. Volunteers will play the role of a teacher: demonstrating the experiments, helping the students perform them, and finally, answering their questions. Saturday Science is a fun and rewarding volunteer experience in chemistry. So, are you still looking for something fun to this year? Join us for the ACS-SA meeting on Friday, November 11, 2016 at NOON in 150 CHVRN to plan for this great day. If you cannot be there on Friday, e-mail Pat (paa29@pitt.edu), our Outreach



Happy Thanksgiving!!



Green Chemistry

by: Andrew Warburton-Newsletter Co-Editor



Is The Great Barrier Reef Ready Dead?

Howdy y'all! It's officially flu season, which means that you should keep warm and invest in those little packs of tissues in case your nose decides to run. Then again, if your nose is running, I'll probably vote for it! You've probably taken a midterm or two already and now really understand the difficulty of the classes and labs you've decided to take. If you're acing all of your exams, congratulations; you're an incredible student. Light refreshments and snacks will be provided for you later today. If you're human, then there are most likely some classes that come more easily to you and some classes that just don't stick. It's a big change from high school, where you used to be able to coast from class to class without having to do much work. High school teachers would spoon-feed you the information that would be on their tests and you could go on your merry way. College is very different. You have to be much for independent and learn how to learn.

The hardest part for me was to get over my hubris and accept that I do not know everything in the world and ask for help. I know that can be really hard and you might tell yourself "I just had a bad exam" or "I made a ton of silly mistakes," but it is safer to go and reach out to your professor or TA to make sure you really understand the material before your next exam. You don't want to depend on the final to dig yourself out of a hole! Luckily for you, there are a lot of resources here at Pitt that will help you with your classes, and of course, I'm here to plug the ACS student tutoring service we offer on the second floor balcony for anyone struggling with chemistry! There are a ton of really talented students who have taken the same classes you're in right now who know how to solve the problems and can help you as a friend rather than as a teacher to understand the problem. Look out for a tutoring sign next time you're in the balcony!

Anyway, back to the topic at hand: Green Chemistry. Many of you who keep up with the news may have seen the article that said that the Great Barrier Reef has been pronounced "dead" by scientists. While that is a really catchy title and useful to promote coral-preservation, it's not entirely true. The Great Barrier Reef is not dead (yay)! 22% of the reef has been bleached and has died (boo), but the ecosystem as a whole is still relatively intact for now. Having said this, reef is dying at an alarming rate and more preservation techniques should be implemented to prevent further bleaching of the reef in order to preserve this amazingly biodiverse and delicate ecosystem.

Alright, I've stated the problem, but it wouldn't do anyone any good if I didn't propose a solution. Every person can make a difference and help reduce climate change. First of all, you can always turn down your thermostat in your room. I know that the nights can get chilly, but that gives you an excuse to get a super soft plush blanket! I personally love to wrap myself up like a burrito with mine!

You can also try to avoid printing unnecessary documents to reduce the amount of paper used and effectively wasted. There are always people who want to argue that "the paper was already produced, so I'm not killing any trees," but they are the same people who don't have a grasp on basic economics. If you increase the demand for printer paper by using lots of it, the price will either go up or the supply will increase in order to bring the market back to equilibrium. Since the paper market is saturated with different companies all competing against each other for the lowest paper prices, the price will most likely not increase, thus the supply will increase, which means that more trees will be cut down (boo).

Thanks for reading this article and I hope the rest of your midterms go well and that you remember to recycle to save the environment that we all share!

Tired Turkey Syndrome

by: Juli Buchwald, Co-Editor

With Thanksgiving right around the corner, I find it rather appropriate to address this holiday...but from an ACS perspective! After all, chemistry does make things more fun, right?

If you participate in the tradition of celebrating Thanksgiving, you probably know the feeling all too well – you just consumed so much turkey, mashed potatoes, and other delicious foods that you have now entered what some people call the “food coma” stage. Many people are quick to comment that this is point at which the tryptophan has kicked in. Households around the country comment on this and blame their grogginess on this very innocent amino acid. Notice how I said innocent.

This whole tryptophan story is actually all a myth. But first, a little bit on tryptophan. Tryptophan, or more specifically L-tryptophan, is an essential amino acid that is used by the body to produce vitamin B and can be metabolized into the neurotransmitters serotonin and melatonin¹.

In order to experience the grogginess effects that most people attribute to tryptophan, one would have to consume a 40-pound bird¹. Or, L-tryptophan could be taken on an empty stomach without any other proteins and the drowsiness feeling would surely kick in. Instead, this sleepiness can be contributed to the digestive system and the work it must perform in order to deal with the unusual abundance of food. According to Tasos Manokas, a gastroenterologist, “It’s not the tryptophan; it’s all the blood. The blood supply from your other organs (and brain) go to the stomach to help with digestion².” Simply put, you have eaten so much that blood has shunted away from your other organs to assist with the digestion of this one time immense dose of food. Then, there are seconds and thirds, etc, etc.

So, what causes this ‘tired turkey syndrome?’ As you all know by now, turkey contains the protein L-tryptophan but is also carbohydrate rich. This increase leads to the production of serotonin and well as the release of insulin from the pancreas³. The synthesis of serotonin helps to produce the sleepy feeling. Furthermore,

the body redirects blood to the digestive system. In addition to L-tryptophan, turkey and the whole Thanksgiving meal contains fats! Fats tend to decrease the rate of digestion and require more energy to digest³.

But, perhaps the main culprit of the sleepy feeling is relaxation. Often surrounded by friends, family, and delicious food, it is easy to understand why sitting back and relaxing during this holiday is such an easy thing to do.

So with this being said, who is actually guilty? Tryptophan? Lengthy digesting? Or... are we trying to make ourselves feel better for our turkey, mashed potato, gravy-filled protuberant bellies? You make the call. Regardless, one thing is for sure: this makes me hungry for the Thanksgiving meal!

References:

1. Jarvis, Lisa. Talkin’ Turkey. Central Science, November 2008.
2. Saunders, Amy. Ready to pop – Daylong eating on Thanksgiving puts innards through workout. The Columbus Dispatch, November 2008.
3. Helmenstine, Anne. Does Eating Turkey Make You Sleepy? About education, November 2015.



If the collection of letters above means nothing to you, don't worry about it, because it is still lost on me. Truth be told, my Spanish language skills barely extended beyond a simple "hola" before leaving for Peru. After all, I am an English Literature and Biology major with hopes of going to medical school. Reading or speaking Spanish rarely makes its way into my academic ethos, but my lingual deficits were not a deterrent for me nor should they be for you. I later learned that this is a Peruvian proverb that means "it is better to prevent than to cure," a frequent utterance of the physician who was leading our team. In May of 2016, I endeavored on a month long medical trip to Peru in hopes of achieving a plethora of goals, namely understanding medical care abroad, a different culture, and the universal adversaries of humankind. As a hungry and responsible premed student, I chose this trip to learn more about the medical profession, gain more volunteer hours for the ever important application process, and to get as close to the practice of medicine as possible. In the United States, my function in medicine has always been that of observer, and this trip offered the possibility to

interview patients, perform physical exams and aide in diagnose. Such an active role in medicine was one that I simply could not pass up, and I was eager for such a hands on experience, a break from the cerebral habitualness of chemistry, physics, or genetics.

As you might know from taking such a genetics class, I inherited many things from my parents, like mitochondrial DNA from mother or poor eyesight from my father, but this is not the extent of my development, as any psychology class will point out with a heavy hand. My parents instilled in me a deep seated wanderlust, and this thirst has taken me to much of Europe, from the poster child countries of Italy and Greece to little tyros like the Baltic States. These experiences have taught me many things that no amount of class or time spent pouring over notes ever could; the novelty of exploration is that it inserts you into a foreign culture. Traveling abroad takes you out of your comfort zone, forcing you, the confused and frankly lost backpacker, to evaluate and understand the culture that has influenced you, your comfort zone. It brings the prospects of experiencing new cultures and building new relationships. However wonderful and enlightening my past experiences were, they paled in comparison to my cultural experiences from my time in Peru.

"Gobernar es prever" seems like a logical and simple assertion, and for the most part, it is. The ideology

that prevention is superior to treatment drives vaccine implementation and research, and is deeply engrained in medicine, from hand washing to contraceptives. However, the ease in which this philosophy is accepted is largely a product of the country and culture in which we live. Albeit problematic as any behemoth infrastructure is bound to be, the medical care in the United States is unparalleled, both in quality and accessibility. This is not to say that there are not cases of it being otherwise, but generally, American citizens have access to treatment and care that is rivaled by none. Peruvians also believe in the power of prevention, but implementation is not as accessible. There are still vaccinations, hospitals, and routine checkups, but many people only go to the hospital if they are seriously injured. Unfortunately, large areas of Peru lack access to regular health care, and our mission was to provide medical care to those who need it the most. Few experiences are more gratifying than being able to help people so that their lives may be easier, longer, and healthier. After all, is that not what medicine is all about?



2017
Undergraduate Summer
Research Fellowships
in Organic & Biological
Chemistry



- We are pleased to offer Undergraduate Summer Research Fellowships for Pitt students sponsored by *the Organic and Biological Chemistry Divisions*.
- These Fellowships are intended to support a 10-week full-time organic or biological chemistry research project, including stipend & supplies, in the summer of 2017 at the Department of Chemistry in Pittsburgh.

Please submit applications consisting of a current resume, course records, and a letter of recommendation by a suitable Faculty Sponsor with details of the planned research project (not exceeding 1 page) by

FEBRUARY 20, 2017 to **DESIRAE CROCKER, CHVRN 757**.

- The Award will be presented at the Undergraduate Award Ceremony in April 2017.
- The Awardee and Faculty Sponsor(s) are strongly encouraged to present a poster on their research at Science 2017 in Pittsburgh in the fall of 2017, and/or actively participate in an equivalent departmental, regional or national scientific conference.

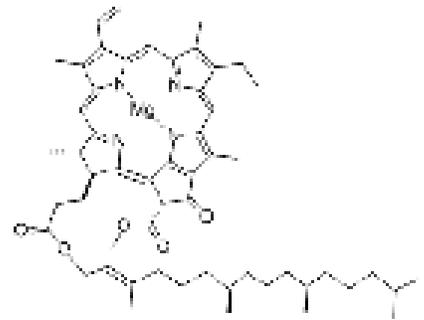
The Color of Fall

by: **Stephanie Liu**

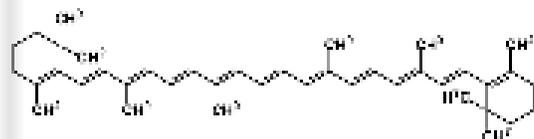
November is upon us, which means the deciduous trees of Pittsburgh have begun their brilliant wardrobe change for the autumn season. Every year, they switch out the greens of spring and summer for the vibrant reds, oranges, and yellows of fall in a process that may be interesting to some.

For those of you who haven't taken a biology course since freshman year of high school (or ever), the green color in tree leaves comes from a photoreceptor compound called chlorophyll present in plant cells, specifically in organelles called chloroplasts. Chlorophyll comes in many forms, the most common of which are chlorophyll *a* and chlorophyll *b*, each with their own unique chemical structure, but all chlorophylls consist of a chlorin ring coordinated around a magnesium ion. This compound not only is distinctly green, but also is a major key in photosynthesis, the process by which plants convert light energy, CO₂ and water into carbohydrates.

Now, what does this have to do with the leaves changing their color? For most of the year, trees use their many leaves to produce these carbohydrates through photosynthesis to serve as the energy source for their growth and day-to-day maintenance. The tree will also store enough energy to sustain its life processes through the winter months. The shorter days and colder temperatures of fall signal to the tree that winter is coming, and to begin leaf senescence, the final stage of life for the tree leaf. An adaptive response to the changing environment, leaf senescence is what causes trees to lose their leaves during winter. The food production process occurring in leaf cells will stop, and slowly the entire cell will be broken down. Veins that carry fluids in and out of the leaf will clog causing a buildup of sugar molecules. Eventually, the leaf becomes entirely disconnected, and it drops from its branch to the ground.



Chlorophyll a



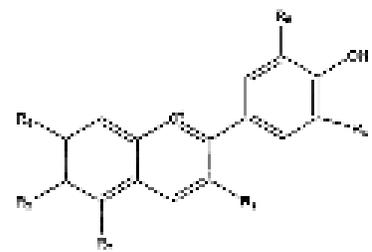
β-carotene, a carotenoid in carrots

Before the leaves are dropped, however, the chlorophyll in leaf cells is broken down, taking the green color with it. This reveals the yellow, brown, or orange pigment underneath, present in the leaf all along. These colors typically come from a class of compounds called carotenoids, frequently found in things like carrots, bananas, and corn.

During the rest of the year, the green of the chlorophyll masks their colors, but once the chlorophyll is broken down, the carotenoids are given a chance to shine.

A separate process gives leaves the vibrant red of fall. A class of compounds called anthocyanidins will react with the excess sugar stockpiled in the leaf to form compounds called anthocyanins. Anthocyanins tend to be a fiery red, but can also appear as a darker, almost purple pigment. This reaction tends to occur first on the outer edge of the leaf, and move in towards the center. Anthocyanin formation increases when warm, sunny days are accompanied by cool (but not freezing) nights, increasing the brilliance of its color.

Pittsburgh is a pretty good place to be during the fall, known for its beautiful fall forest landscapes. Although this display occurs every year, it's hard to predict when it will happen or how vibrant it will be. Hopefully this brief explanation of how it happens will help you appreciate the autumn colors even more!



anthocyanin

References:

1. <https://www.na.fs.fed.us/fhp/pubs/leaves/leaves.shtml>
2. <http://www.esf.edu/pubprog/brochure/leaves/leaves.htm>