



Bio/Bio News – January 2015

BIO/BIO FACULTY IN THE NEWS

OLD DRUG MAY TEACH NEW TRICKS IN TREATING INFECTIOUS DISEASES, CANCER

COLLEGE STATION – Meclizine, an over-the-counter drug used for decades to treat nausea and motion sickness, has the potential for new uses to treat certain infectious diseases and some forms of cancer, according to Dr. Vishal M. Gohil, an assistant professor of biochemistry and biophysics at Texas A&M University. The research on meclizine appears in the current online version of the [Journal of Biological Chemistry](#)



Dr. Vishal Gohil, (*Photo courtesy of Texas A&M AgriLife Research*) Texas A&M AgriLife Research reports, “Clearly this drug has many potential new applications,” Gohil said. “And now that we know its new target within the cell, we can start to explore ways of using it to treat other diseases. We can ‘repurpose’ this drug.” The research on meclizine appears in the current online version of the [Journal of Biological Chemistry](#).

“We found a particular enzyme which is inhibited by meclizine has been proposed (in other research) to be a drug target for the treatment of many diseases, including infectious diseases like malaria and African sleeping sickness,” Gohil said. “And this pathway has also been proposed to be a critical pathway for the proliferation of cancer cells.”

Gohil said his research, which included collaboration with scientists at Harvard Medical School and Massachusetts General Hospital, the University of Rochester and the University of Guelph, had already shown that the drug also works in the treatment of heart attack and stroke. Meclizine is an antihistamine, synthesized in the 1950s and later found to be useful for treating nausea, motion sickness and vertigo.

Gohil, who also is a Texas A&M AgriLife Research biochemist, said he started working on the compound when he identified it in a drug-screening experiment aimed at discovering compounds or drugs that inhibit mitochondrial respiration, a process that provides energy to cells.



Mitochondria are structures found in the cells of all eukaryotes, organisms with one or more cells containing a nuclei and organelles that perform specific tasks. Enclosed in membrane, mitochondria are responsible for supplying the cell with energy and are connected to a cell’s life and death.

“When that drug screen identified meclizine, it was a bit of a surprise for us, because this compound had been in the market for several years and had never been linked to mitochondrial respiration,” Gohil said. “It’s a known drug, and was known to target a few of the molecules within the cell.”

But unlike other classes of antihistamine, he noted, meclizine has a unique property, which allows it to be used for the treatment of nausea and motion sickness, while most other antihistamines cannot.

“So there was this unique thing about this particular antihistamine,” Gohil noted. “And it is well-tolerated so the toxicological profile is very acceptable, so it doesn’t have to be sold under strict regulations.”

“With that kind of profile, when we saw it in our drug screen we got excited about it because we could see that it decreases cellular oxygen consumption or respiration,” he said. “We started trying to figure out the mechanism and to see if it could have any clinical benefit and application.”

Gohil said for certain diseases like stroke, heart attack and some neurological diseases, previous medical research has shown that if mitochondrial respiration can be turned down, it could be beneficial for treatment.

“The way many of the cells die during the heart attack or stroke is connected to mitochondrial respiration, so the idea was that if you can turn down the respiration, then it will prevent death,” he said. “This is exactly what we found when used meclizine in models of heart attack, stroke and even Huntington disease. We have a drug with a known clinical use and have identified a new biochemical target within the cells, so that opens up new applications.”

He said when he and colleagues started studying the mechanism of this drug in terms of how it is inhibiting mitochondrial respiration, they made a couple of fundamental observations. “First, when we add this drug to the whole cells, we see reduced respiration, not rapidly but slowly,” he said.

The researchers then added the drug to isolated mitochondria, which is the main site of respiration within the cells. “But we did not see an effect, so that gave us the idea that this drug may not be directly targeting one of the enzymes of mitochondria which are required for or participates in consuming oxygen,” Gohil said. “We used that clue to figure out how non-mitochondrial pathways could be targeted by this drug.”

He used an unbiased metabolic profiling approach, a new technology that gives a snapshot of metabolite levels before and after the treatment of a drug so researchers can get an idea of how this drug is perturbing these metabolites.

“Through metabolic profiling, we found one particular metabolite – phosphoethanolamine – was in fact ‘going through the roof’ within a few hours of the treatment,” Gohil said. “We got excited about that.”

He explained that phosphoethanolamine is an intermediate in a biosynthetic pathway of a common phospholipid that forms the membrane around the cells. It is present in all living matter from the lower organisms such as bacteria all the way to humans. Thus, finding that the metabolite that was elevated when cells were treated with meclizine indicated a link between this pathway, or metabolite, and respiration.

“Our research showed that if we just take this metabolite and directly add it to mitochondria, it actually inhibits the respiration,” Gohil said. “The reason we could use the drug for infectious disease or cancer is not because it inhibits respiration but because it inhibits a phospholipid biosynthetic enzyme that is required to form the building blocks of membranes.”

[via Old drug may teach new tricks in treating infectious diseases, cancer | AgriLife Today.](#)

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IBUPROFEN USE LEADS TO EXTENDED LIFESPAN IN SEVERAL SPECIES, STUDY SHOWS

COLLEGE STATION — A common over-the-counter drug that tackles pain and fever may also hold keys to a longer, healthier life, according to a Texas A&M AgriLife Research scientist. Regular doses of ibuprofen extended the lifespan of multiple species, according to research published in the journal [Public Library of Science-Genetics](#).

“We first used baker’s yeast, which is an established aging model, and noticed that the yeast treated with ibuprofen lived longer,” said Dr. Michael Polymenis, an AgriLife Research biochemist in College Station. “Then we tried the same process with worms and flies and saw the same extended lifespan. Plus, these organisms not only lived longer, but also appeared healthy.”

He said the treatment, given at doses comparable to the recommended human dose, added about 15 percent more to



the species lives. In humans, that would be equivalent to another dozen or so years of healthy living.

Polymenis, who also is a professor in the biochemistry and biophysics department at Texas A&M University, collaborated with Dr. Brian Kennedy, the president and CEO of the Buck Institute for Research on Aging in Novato, California, along with several researchers from Russia and the University of Washington.

Ibuprofen is a relatively safe drug that was created in the early 1960s in England. It was first made available by prescription and then, after widespread use, became available over-the-counter throughout the world in the 1980s.

The World Health Organization includes

ibuprofen on their “List of Essential Medications” needed in a basic health system. Ibuprofen is described as a “nonsteroidal anti-inflammatory drug used for relieving pain, helping with fever and reducing inflammation.”

Polymenis said the three-year project showed that ibuprofen interferes with the ability of yeast cells to pick up tryptophan, an amino acid found in every cell of every organism. Tryptophan is essential for humans, who get it from protein sources in the diet.

“We are not sure why this works, but it’s worth exploring further. This study was a proof of principle to show that common, relatively safe drugs in humans can extend the lifespan of very diverse organisms. Therefore, it should be possible to find others like ibuprofen with even better ability to extend lifespan, with the aim of adding healthy years of life in people.”

“Dr. Polymenis approached me with this idea of seeing how his cell cycle analysis corresponded with our aging studies,” said Dr. Brian Kennedy, CEO at the Buck Institute for Research on Aging in Novato, California. “He had identified some drugs that had some really unique properties, and we wanted to know if they might affect aging, so we did those studies in our lab. We’re beginning to find not just ibuprofen, but other drugs that affect aging, so we’re really excited about it.”

“Our institute is interested in finding out why people get sick when they get old. We think that by understanding those processes, we can intervene and find ways to extend human health span, keeping people healthier longer and slowing down aging. That’s our ultimate goal.”

Chong He, a postdoctoral fellow at Buck Institute and lead author on the paper, said looking deeper into the common drugs that target individual diseases might shed light on understanding the aging process.

“We have some preliminary data on worms that showed that this drug also extended the health span in worms,” she said. “It made them live not just longer but also more healthy. You



Ibuprofen, a common over-the-counter drug worldwide, added to the healthy lifespan of yeast, worms and flies in a recent study. (Texas A&M AgriLife Research photo by Kathleen Phillips)

AWARDS PRESENTED FOR 2014 VICE CHANCELLOR'S AWARDS IN EXCELLENCE PROGRAM

can measure the thrashing of the worms. If they're healthy, they do have a tendency to thrash a lot, and also we can measure the pumping as they swallow, because if they're healthy, the pumping is faster.

"Ibuprofen is something that people have been taking for years, and no one actually knew that it can have some benefits for longevity and health span."

Funding for this research was by the National Science Foundation, the National Institutes of Health, the Ellison Medical Foundation and the Glenn Foundation for Medical Research.

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<https://www.youtube.com/watch?v=xmqwfHcm1fg>

UPCOMING EVENTS IN BIO/BIO

Faculty & Staff Holiday	January 19
Faculty Meeting, N127, 3:30 PM	January 26
Departmental Chili Cook-off	February 2
Genetics Recruiting Weekend	February 6 & 7
BICH Recruiting Weekend	February 27 & 28
Spring Break, Faculty & Staff	March 18-20

BIO/BIO'S NEW DEPARTMENT WEBSITE HOSTED THROUGH AGRILIFE COMMUNICATIONS

The new Bio/Bio website was originally planned to launch in March, but the downed status of the current site has forced the expedition of an early launch date. We will continue to improve the aesthetics, update the content, and smooth out user interface issues on a separate staging site until the "relaunch" in March. For example, a photographer will be coming to take professional images for various parts of the site.

In the meantime, please take a look at the current version of the new site (<http://aglifesciences.tamu.edu/biochemistry/>) and send the website committee an email to Dr. Jennifer Herman (jkherman@tamu.edu) if you notice any issues that require immediate attention, particularly with content updates that might be relevant to graduate recruitment or your lab status (program requirements, updates made to research descriptions, etc....). If you would like your research descriptions updated, simply send a word file with the new text. We now have easy capability if you would like to have additional headings and paragraphs for different projects in the lab, so feel free to specify section headings if you desire them. Finally, if you have any images you would like (that can be) integrated into your research description, we can add these. Please send as jpg at reasonable resolution for web viewing.

The Vice Chancellor's Awards in Excellence Program recognized outstanding achievements by personnel of Texas A&M AgriLife, comprised of the College of Agriculture and Life Sciences at Texas A&M University, Texas A&M AgriLife Research, Texas A&M Extension Service, Texas A&M Forest Service, and the Texas A&M Veterinary Medical Diagnostic Laboratory and recognizes these employees in 17 categories. Out of all of those programs and out of all of those award categories, the Department of Biochemistry and Biophysics claimed four of these awards during the Texas A&M AgriLife Conference, which was held on Tuesday, Jan. 6, 2015 at Rudder Theatre. **Dr. James Sacchettini** was awarded the Research Award; **Dr. Larry Dangott** was awarded the Technical and Programmatic Staff Award; **Mr. Robert Koenig** was awarded the Graduate Student Teaching Award and the **Mr. Alfredo Erazo-Oliveras** was awarded the Graduate Student Research Award. Congratulations to these four recipients. The department agrees that these four individuals are a great example of the Lone Star State of Mind of Shining a Light on Service.

2014 VICE CHANCELLOR'S AWARDS IN EXCELLENCE TEACHING- Graduate Student Teaching

Mr. Robert Koenig - Graduate Assistant, Laboratory of Dr. Gregory D. Reinhart, Dept. Of Biochemistry & Biophysics

Mr. Koenig is a senior graduate student who has been a teaching assistant for eight semesters in two different classes. He fosters a great learning environment and tailors his teaching to each group of students. He learns over 60 student's names each semester. When he calls on a student to answer a question, he tailors the difficulty of the question to the student. All of this creates the camaraderie that is needed in small, interactive classes. Mr. Koenig also puts a great deal of effort into presenting the lecture material. He differentiates his sections from the main lecture to prod the students' thinking. He incorporates jokes, ask challenging questions and helps students see the common pitfalls in problem solving. For Mr. Koenig, teaching is not a necessary chore to support his research but a responsibility and a privilege to help students go from struggling to successful.



Graduate Student Research

Mr. Alfredo Erazo-Oliveras - Ph.D. Laboratory of Dr. Jean-Philippe Pellois, Dept. Of Biochemistry & Biophysics

A top student in his department, Mr. Erazo-Oliveras graduated from the University of Puerto Rico, Rio Piedras Campus, where he researched molecular enzyme inhibition. In summer 2007, he conducted NSF-sponsored research in the laboratory of Dr. James Sacchettini, at Texas A&M through the REU program. He began his graduate studies here in 2008. His research focuses on developing a technology for introducing proteins into live cells with unprecedented



efficiency and control and with the complete absence of toxicity. This work could be a game-changer in the field of novel drug delivery, and it required superb problem-solving skills in chemistry, biochemistry and cell biology. Among his publications is a first-author paper in the journal *Nature Methods*, considered the highest among 75 journals in biochemical research. Alfredo also won a graduate student teaching award in 2013.

Research

Dr. James Sacchettini – Professor and R. J. Wolfe=Welch Chair in Science, Dept. of Biochemistry and Biophysics Director, Center for Structural Biology



Since he joined the Texas A&M faculty in 1996, Dr. Sacchettini has gained worldwide acclaim for his work to understand how enzymes interact with their substrates and how this information can help combat worldwide diseases such as tuberculosis and malaria. He has obtained an impressive amount of research funding and assembled a laboratory of nearly 50 people. His team identifies and studies proteins that are critical to the life cycle of disease-causing organisms, and then designs, creates, and tests molecules that can inactivate these proteins, killing disease-causing agents. He applies his scientific resources to the discovery of new drugs for infectious diseases, drug-resistant bacterial infections, and cancer. The team has published in some of the best scientific journals in the world. Dr. Sacchettini is a true scientific leader and a generous collaborator to faculty within and outside Texas A&M University.

Technical and Programmatic Staff

Dr. Lawrence J. Dangott – Research Scientist, Depart. Of Biochemistry and Biophysics



Since 1997, Dr. Dangott has served as director of the Protein Chemistry Laboratory. This facility offers researchers across the Texas A&M campus services such as protein microsequencing, amino acid analysis, peptide synthesis, and protein mass spectrometry. Dr. Dangott's work goes far beyond these requirements. He uses his many years of expertise to solve critical research problems, offer suggestions on further analysis, and interpret data. For many of the facility's clients, Dr. Dangott has become a collaborator and a co-author. In addition, he assists with student training; he has mentored graduate students, served on thesis committees, trained undergraduates in protein science research, and taught in the classroom. All these activities go beyond his job description, but he gladly varies them out to help students receive the best possible education.

DR JOHN ELLISON RECEIVES NOMINATION

Dr. John Ellison, professor of Genetics and lecturer, was nominated recently for the 2014 Food and Agricultural Sciences Excellence in College and University Teaching

Award. The award, which honors university faculty for their use of innovative teaching methods and service to students, was presented at the 127th Association of Public and Land-grant Universities (APLU) Annual Meeting in Orlando, Florida.



When reading comments such as - "When alumni recall their college days, they often think of teachers who had the biggest impact on them," said Ian Maw, vice president of Food, Agriculture and Natural Resources at APLU. "These awardees are teachers who will always be remembered by the students they inspire. They serve to inspire other educators through their commitment to the teaching profession and their chosen disciplines," one must agree that Dr. Ellison was a great candidate for this award.

Though he was not selected for this award we are very proud of his contributions to our department. Dr. Ellison, who has been a professor at Texas A&M University since 1984, and lecturer for Genetics 301, he also team-teaches the newly developed Honors section of GENE 302. Thank you, Dr. Ellison, for your commitment to Texas A&M University.

WOMEN IN SCIENCE RESEARCH & MENTORING AWARDS Ethel Ashworth-Tsutsui Memorial



Each year [Women in Science and Engineering](#) (WISE) sponsors an awards program that recognizes the research and mentoring efforts of women on the Texas A&M campus. These awards are offered in honor and remembrance of Ethel Ashworth-Tsutsui, a long time member of the faculty of the Biochemistry Department here at Texas A&M University. Dr. Tsutsui was a founding member of WISE and cared deeply about the retention and recognition of women in our graduate programs.

Women graduate students are invited to apply for these awards. Faculty members are encouraged to nominate deserving individuals.

Rachel Jordon, Genetics Graduate Student in the laboratory of Dr. Mary Bryk has been named the recipient of the 2014 Ethel Ashworth-Tsutsui Memorial Award for Mentoring. This award was established to honor women graduate students, postdoctoral researchers and research staff who take action to encourage and support women graduate students at A&M University. Graduate student nominees must have completed at least two semesters at Texas A&M University and currently be enrolled. Nominations may be made by a peer or by a Texas A&M faculty member. Award recipient will receive a \$500 monetary award, certificate and plaque.



The 2014 Ethel Ashworth-Tsutsui Memorial Award for Research, established to honor women graduate students who have demonstrated excellence in research, has been awarded to **Amanda Hulse**, Graduate student with the Texas A&M

University Genetics program. Nominees for this award must be women graduate students currently enrolled in a graduate program at Texas A&M University. They must have completed at least two semesters of graduate study at Texas A&M University and be enrolled for at least six semester credit hours during the semester in which they are nominated. Nominations may be made by the candidate or by a Texas A&M University faculty member. Award recipients will receive a \$500 monetary award, certificate and plaque.

RESEARCH, PUBLICATION OF SCHOLARLY ARTICLE OPPORTUNITIES OPEN TO TEXAS A&M UNDERGRADS

With articles ranging from research regarding weight discrimination to bacterial meningitis study results, Texas A&M University's undergraduate scholarly journal could be mistaken at first glance for one of the older and better-established publications to which the students' professors frequently contribute, adding to scientific and other literature. It's all in the sixth edition of *Explorations: The Texas A&M Undergraduate Journal*, sponsored by the Honors and Undergraduate Research Office.



Few universities have such research-oriented journals managed and edited by undergraduates and to which undergraduates of all academic disciplines have the opportunity to submit an article.

The process for selection of articles to be published in *Explorations* is highly competitive, and less than 20 percent of submitted proposals are accepted.

In addition to conducting their own research projects with advice provided by faculty members, many students at Texas A&M also have the opportunity to work closely with their professors on a variety of research endeavors.

With more than \$820 million invested in research annually, Texas A&M ranks first in Texas and among the leaders nationally in experiments and studies that enhance the basic storehouse of knowledge, with much of such work also having major economic benefits, officials note.

In addition to an array of student-produced articles, the current *Explorations* includes a student photographer's portraits highlighting the beauty of humanity and a student researcher's study of how language reveals the experiences of war veterans.

Guided by faculty and administrators, *Explorations* student editors select and publish student-authored articles and creative works of general interest in any area. Student researchers submit proposals for articles to an editorial board comprised of students and faculty. If accepted, research and scholarly articles then undergo a second round of peer review before publication. Creative pieces are vetted by faculty experts and student reviewers.

Editors also point out that for the first time *Explorations* has an extended online issue that more easily allows for submissions with video, music or extensive photography,

such as that seen in an article exploring personal identity as seen through the eyes of Muslim student artist, and MacArthur "genius" award winner Shahzia Sikander.

"We are so excited to see the continuing high quality of the research, scholarly and creative submissions we receive in all disciplines" says Dr. Sumana Datta, the executive director of Honors and Undergraduate Research., "The support our student authors and artists get from the faculty and The Association of Former Students is truly tremendous. I'm particularly proud of the initiative and dedication the student editorial and executive board members for *Explorations* exhibit. They embody the best of student leadership on this campus."

The Association of Former Students provides financial assistance to help make possible the publication of the students' journal.

Recently published articles embrace wide range of academic fields: music, creative poetry, forensics, cancer biology, astrophysics, nanomedicine, computer algorithms, business, geosciences, sociology, aerospace engineering, and cultural anthropology.

BIO/BIO PARTICIPATES IN RUN THE CITY (BCS MARATHON AND HALF-MARATHON)

Article Submitted By Rafael Almanzar, BICH Academic Advisor

On December 14 2014, seven members from our department ran in the 4th Annual Baylor Scott and White Bryan-College Station Marathon. Nearly 5,000 runners ran into several neighborhoods in Bryan and then up and through Texas A&M campus and ending back at Wolf Pen Creek. The BCS marathon supports three charities, which are the Mercy Project, Scotty's House and Brazos Valley Food Bank.



From L-R: Jessica Tracy, Anthony Pratt, Dr. Tatyana Igumenova, Terry Lovingshimer, Rafael Almanzar, Jeremy Weaver & Rachel Jordan. Not included in picture are Dr. Gary Kunkel, Kaitlyn McGrath, Michelle "Shelley" Vekasy, and James Vranish.

Congratulations to all the runners

who ran in the BCS Marathon & Half Marathon

including our very own-Rafael Almanzar, Dr. Tatyana Igumenova; (Full Marathon) Rachel Jordan (Half Marathon); Dr. Gary Kunkel (Half Marathon); Terry Lovingshimer (Full Marathon); Kaitlyn McGrath (Full Marathon); Anthony Pratt (Half Marathon); Jessica Tracy (Half Marathon); James Vranish (Full Marathon)

Special thanks to the BGA members who volunteered in the BCS Marathon for the 3rd straight year. "Personally it was a great feeling knowing that on mile 19.5, I will see the BGA cheering and



BGA volunteering at the B/CS Marathon for the third year in a row

supporting not only me but the thousands of runners including those in our department who ran the BCS marathon...plus they had beef jerky!" says our graduate advisor Rafael Almanzar.

For more information or if you are interested in the BCS Marathon, please visit their website at www.bcsmarathon.com

2014 Biochemistry & Biophysics Annual Holiday Celebration

The 2014 Annual Bio/Bio Holiday Celebration was held on Monday evening, December 22 at the Phillips Event Center, Briarcrest Country Club.

Festivities began with the 6PM Social Hour, during which Diego, Natalia, Isabela Cruz-Reyes, Becca Walker, James Wu and Anna Barrington shared a repertoire of seasonal musical numbers with the guests. There was a "special appearance" by our very one and only, Dr. Tim Meek!

Departmental Awards were presented by Dr. Greg Reinhart following the dinner. TAMU and AgriLife Years of Service Pins were present to: Dr. Bryant Miles, TAMU 20 years, AgriLife 19 years; Dr. Gary Kunkel, TAMU 25 years; Dr. John Ellison, TAMU and AgriLife 30 years. AgriLife Years of Service Pins – 10 years, Ping Cui, Terry Lovingshimer; Daisy Wilbert, Nishant Shetty, Dr. Shelley Pozzi, Dr. Nishant Shetty, Brock Weers, and Sherry Coronado, and Cathy Wolff, 20 years. Congratulations to each of you, and thank you for your combined 110 years of service!

Recipients for the Departmental Award of Excellence for Research – Denis Odokonyero, Research Assistant in the laboratory of Dr. Margy Glasner; Administrative Award – Ms. Jenny Ponzio, Business Coordinator III in the Department of Biochemistry and Manish Rathi, Project Manager with the James Sacchettini Laboratory.

ANNUAL BIO/BIO DEPARTMENTAL CHILI COOK-OFF & BAKE GOODS CONTEST

The Administrative Staff of the Department of Biochemistry & Biophysics hosts various events throughout the year in the effort to raise funds for the Departmental Flower Fund. This fund provides the financial resources for the Department to send flowers, fruit baskets, etc., to faculty, staff and students who incur a hospitalization, birth or adoption in the immediate family, or the passing of a loved one, using designated funds.

Since the weather has been so inclement this would be a "good excuse" for a Departmental Chili Cook-off and Baked Goods Contest. Enter as many categories as you wish. Four categories of chili and five categories of Baked Goods have been defined, but be creative – we'll accept any category – our faculty, staff and students love to eat, and the Flower Fund can certainly use the contributions! If you'd like to enter you can either fill out the Entry Form on line and email it back to juanitaw@tamu.edu by Thursday afternoon, January 29, or stop by room 103 and fill out a form.

Please bring your entries for the judging to room 106A by 11AM on Monday, February 2. Judging begins at 11:30AM and at 12 Noon the serving of the entries will begin. A donation of \$5 per bowl is kindly requested for the Flower Fund. The Baked Goods will also be available for lunch.

Along with the entries to the contest we also need volunteers to sign up to bring condiments such as crackers, chips, cheese, sour cream, etc. There is a sign up sheet in room 103 on the desk. We do appreciate your participation to help make this a GREAT success, and get some good chili and enjoy visiting with colleagues while doing so! Don't forget – ENTER to win and come on down for a delicious HOT lunch, Monday, February 2 at 12 Noon!

February 2 will be the date for the 2015 Bio/Bio Departmental Chili Cook off. This will serve as our winter Flower Fund Raiser, and as we all know there will be plenty of delicious chili and baked goods to be by all for a donation to the Flower Fund.

Entry forms for the chili and baked goods are available in room 103, for those of you who want to test your chili making and baking skills. Entry forms should be turned in no later than Thursday, January 29.

On Monday, February 2 all contestants should bring their entries to room 106A by 11AM for judging. Following the judging, that will begin at 11:30 by our panel of volunteer judges; lunch will be served at 12 noon and may be enjoyed by all for a donation of \$5 (per bowl) to the Departmental Flower Fund.



**2015
Grand Champion**
(This could be YOU!!)

