

winter 2014

How to Choose a Postdoc

By the Trainee Representatives to the GSA Board: Andrew Adrian, Krista Dobi, and Kathleen Dumas



Andrew Adrian

So you've made it close to the end of your doctoral training, and you've decided you are interested in further pursuing a career in research by doing a postdoc.



Krista Dobi

How do you go about making this important decision? Unlike applying to graduate school, the postdoctoral application and decision making process is very much a free-for-all, often undertaken with little guidance and direction.



Kathleen Dumas

Here we lay out some advice from our perspectives at various stages of the process, from graduate school through the postdoctoral experience.

In your choice of a postdoctoral position, you are making two main decisions: you are choosing a research area in which to work, and an advisor to supervise your training for the next stage of your career. While these decisions

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Five Geneticists Receive Renowned GSA Awards for 2014

We are pleased to announce the 2014 recipients of the GSA Awards, who will receive their awards at GSA conferences during 2014. The five individuals honored are recognized by their peers for outstanding achievements and contributions to the genetics community.

"The 2014 GSA award winners are impressive scientists who collectively have positively influenced the field of genetics in research, in education, and in fostering the genetics community," said GSA President Vicki Chandler. "These awards provide an annual opportunity for the genetics community to recognize those individuals whose superb achievements have advanced the science of genetics. On behalf of GSA, I thank each of the award winners for a lasting contribution to the field."

Recipient: **Angelika B. Amon, PhD**, Massachusetts Institute of Technology and Howard Hughes Medical Institute

Award: Genetics Society of America Medal for outstanding contributions to the field of genetics during the past 15 years

Dr. Amon is the Kathleen and Curtis Marble Professor of Cancer Research at the Koch Institute for Integrative Cancer Research and a Howard Hughes Medical Institute (HHMI) Investigator. She has uncovered key biological principles governing the cell cycle. Her work has served as a guide to scientists who study



questions related to controlling mitotic and meiotic cell divisions. She was the first to demonstrate a connection between the physical completion of anaphase and the initiation of mitotic exit, which is key to understanding basic cellular processes. More recently, her research has focused on the genetic consequences of aneuploidy, cells with too few or too many chromosomes, as it relates to stress responses and cancer. Although her lab primarily uses yeast, she has also studied trisomy in the mouse as a model of aneuploidy in mammals.

She is an elected member of the National Academy of Sciences (NAS), and is the recipient of the Ira Herskowitz Award from GSA's yeast genetics community, NAS Award in Molecular Biology, Paul Marks Prize for Cancer Research, Alan T. Waterman Award from the National Science Foundation, and the Presidential Early Career Award for Scientists and Engineers.

Recipient: **Frederick M. Ausubel, PhD**, Harvard Medical School and Massachusetts General Hospital

Award: Thomas Hunt Morgan Medal for lifetime contributions to the field of genetics

Dr. Ausubel is Professor of Genetics at Harvard Medical School and the Karl Winnacker Distinguished Investigator in the Department of Molecular Biology at Massachusetts General Hospital.



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From the Executive Director

As I've written in past columns, GSA has been reaching out to you, our members, to find out how the Society can best serve the genetics community. We've been especially interested in the perspectives of our student and postdoc members, since trainees have been joining at such a high rate that they now make up more than half of the GSA membership.

One of the consistent messages we've been hearing is that GSA can do more to help you prepare for and find your career. As a result, GSA has been rolling out a number of new initiatives designed to address just that.



Adam Fagen

For example, we're launching a new Trainee Bootcamp at this year's *Drosophila* Research Conference, with similar efforts planned at other GSA conferences. The Bootcamp will offer six hours of professional development workshops for graduate students and postdocs that will allow dedicated time to explore topics you've recommended—including how to get funding, advice on publishing, and careers in and out of academia. The fly meeting Bootcamp will all be held just prior to the formal start of the conference so you don't have to pick between advancing your career and attending scientific sessions. Please keep an eye out for the Trainee Bootcamp when registering for GSA conferences and make your travel plans accordingly. And a big thank you to Sonia Hall (University of Kansas), a trainee representative for the GSA Education Committee, for helping organize the Bootcamp at the fly meeting.

We're also very excited about the launch of GeneticsCareers.org at the end of 2013. This new jobs board offers a forum for matching qualified job seekers with careers and training opportunities across the breadth of our discipline, including academic, industrial, government, and nonprofit positions. We welcome postdoctoral and student positions in addition to full- and part-time jobs. GeneticsCareers.org is a joint project of GSA and the American Society of Human Genetics—the two largest professional societies in genetics worldwide—so you'll find listings across not only model systems, but also human genetics, genomics, fundamental and translational research, and much more.

Best of all: GeneticsCareers.org is free to both employers and job seekers. If you or your colleagues have positions to fill, we encourage you to post them; if you're a trainee or in the market for a new position, check out the growing list of opportunities—or post your resume so that potential employers can find you. GeneticsCareers.org is provided without cost as a service to the community and a resource to our members.

Of course, we rely upon your continued membership and charitable support to enable GSA to develop and maintain programs and services that serve the needs of the genetics community.

Sincerely,



Vicki Chandler

I am excited to begin my service as President of GSA. The Society is in great shape and my predecessors have positioned GSA to continue to grow and provide additional benefits to its members and the broader community of researchers. Stay tuned for more specifics to come! In this letter I am issuing a call to each of you to help “make the case” for fundamental, discovery-driven research at your institutions, within your communities, statewide and nationwide. While asking you to think about “what you can do for science,” I also want to learn from you how GSA could help.

Genetic approaches using model organisms within each phylum of life have contributed to our fundamental understanding of how cells work, how traits are passed on, and the ecosystem processes and evolutionary forces contributing to all of the above. This understanding, which rapidly advanced over the past 60 or so years, spurred on the biotechnology industry and enabled all life scientists to capitalize on the multiple genome sequences and other “omics” results of the past two decades. Genetic approaches continue to be essential for testing hypotheses that arise from “omics” and other observational approaches—they are essential to move from intriguing ideas toward a more mechanistic understanding. Genetics is more important now than ever, whether contributing solutions to grand challenges impacting our health and our planet, or revealing amazing,

unexpected discoveries.

We are all aware of the crisis with respect to federal funding of research. National Institutes of Health (NIH) disbursements have trended down by 10% over the past decade, in real terms¹, and this trend has accelerated over the past four years. Other agencies such as the National Science Foundation (NSF) and the Department of Energy (DOE), which support basic science across

What is compounding the flat or decreasing budgets is an increasing emphasis on translational research by many federal agencies.

the life and physical sciences and engineering, are similarly affected. What is compounding the flat or decreasing budgets is an increasing emphasis on translational research by many federal agencies. The desire to focus the scientific enterprise on society's problems and challenges is understandable, whether the emphasis is on human disease or Earth's degrading environment. Translational research is also easier to “sell.” Much discovery-driven research will not lead directly to an easily understood translational application; for those that do, it often takes decades, and they are not predictable ahead of time. However, in my opinion the emphasis on translational research is short sighted if this focus comes at the expense of strong support of basic research, the seed corn of the scientific enterprise.

We have our work cut out for us. Findings from a recent project undertaken by a group of organizations to understand the current environment for research² revealed that the public does not understand what “basic” research is. That term tested very poorly in focus groups, generating little understanding and comments such as, “After all this time, why aren't scientists

doing advanced research?” We need to take responsibility for this lack of understanding and help to change it. How?

Research!America surveys have shown that few Americans can name a practicing scientist and even fewer personally know a scientist³. This immediately suggests a path forward for each and every one of us. What if each of us committed to devoting significant time talking with people who are not well connected with the academic enterprise? Each of us could share our stories about what drives our passion for discovery, our desire to make a difference in the world and explain why and what we research. Each of us could share how science works—for instance, that each professor is a small business entrepreneur and that most of our jobs intimately combine research and teaching. We could do this formally at speaking venues in our towns such as Science Cafés or public lectures, and in classes we teach for non-science majors. We could also do this informally in discussions with our neighbors, the people sitting next to us on planes and in other social situations.

I have two questions: for those who have been engaging in these types of activities, what have your experiences been, and what are the ways GSA can help? For those of you who haven't, how could GSA help lower the activation barrier? Are there tools, trainings, materials or other things we could provide? Let me know your thoughts by contacting me at: president@genetics-gsa.org.

¹ M. Hourihan et al., Intersociety Working Group, Report XXXVIII, Research and Development FY 2014. AAAS, May 2013.

²This research, conducted by two communications strategy firms, included four focus groups that tested public opinion and messaging with a cross-section of voters in two swing states, in preparation for a national poll of about 1400 people.

³Research!America poll of U.S. adults conducted in partnership with Zogby Analytics, with support from the American Society of Hematology, in November 2013

New Staff Members

GSA is pleased to welcome two new staff members:

Cristy Gelling, PhD, joins us as the new GSA Journals Assistant



Editor, where she will be working with the Editors-in-Chief, Senior Editors, and staff to enhance the reach of the GSA journals, *GENETICS* and *G3: Genes/Genomes/Genetics*. She will be working with authors and reaching out to the community to help promote the science published in both journals. Cristy holds a PhD in Biochemistry and Molecular Genetics (University of New South Wales, Australia, working with Ian Dawes) and conducted postdoctoral research in yeast genetics (with Jeff Brodsky, University of Pittsburgh). She is also an

accomplished science writer (including work with *Science News*) and has been an active volunteer with the American Society for Biochemistry and Molecular Biology and American Society for Cell Biology.

Wujun Zhou joined the Information Technology team at GSA this past fall as Web Developer. Although our IT staff usually work behind the scenes, they are an essential element to the work that we do to support membership, GSA conferences and so much more. Wujun joins GSA following completion of a master's in computer science at California State University, Fullerton.



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During his 40-year career, Dr. Ausubel's work has centered on host-microbe interactions and host innate immunity. He has used genetic approaches to conduct pioneering work that spawned related areas of research including: the evolution and regulation of Rhizobium genes involved

in symbiotic nitrogen fixation; establishing *Arabidopsis* as a world-wide model system; identifying a large family of plant disease resistance genes and multi-host bacterial pathogens; and demonstrating that *C. elegans* has an evolutionarily conserved innate immune system that shares features of both plant and mammalian immunity.

His early work with *Klebsiella pneumoniae* and *Rhizobium meliloti* brought discoveries about key regulatory networks in free-living and symbiotic nitrogen fixing bacteria and the genes that symbiotic bacteria use to interact with their hosts. He also applied genetic analysis to the host side of microbial plant and microbial animal interactions, using *Arabidopsis* and *C. elegans* to define fundamental immune defense mechanisms. Ausubel's findings support the hypothesis that key features of host-defense responses, and the offensive strategies pathogenic microbes use, have ancient origins.

Dr. Ausubel is an elected member of the National Academy of Sciences, American Academy of Arts and Sciences, and the American Academy of Microbiology.

Recipient: **Hugo J. Bellen, DVM, PhD**, Baylor College of Medicine and Howard Hughes Medical Institute

Award: George W. Beadle Award for outstanding contributions to the community of genetics researchers

Dr. Bellen holds positions as the Charles Darwin Professor in Genetics and the March of Dimes Chair in Developmental Biology, Departments of Molecular and Human Genetics and Neuroscience, and he is also Director of the Graduate Program in



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How to Choose a Postdoc continued page 1

*By the Trainee Representatives
to the GSA Board: Andrew
Adrian, Krista Dobi, and
Kathleen Dumas*

might seem straightforward at the outset, they are likely to have longstanding influence on your future career, and likely your happiness and wellbeing.

In choosing a research area, you are deciding the field in which you will strive to establish yourself as an expert. The work you do as a postdoc will lay the groundwork for the rest of your scientific career. Because of this, it is important to give serious thought to the research area: what are the big questions to be answered in this field? Do some (hopefully most) of these questions excite you? What is known and what remains to be worked out in this field? What is the competitive landscape like, and does that mesh well with your goals? Ask yourself, do you want to join a burgeoning field with lots of attention and excitement, but also plenty of completion? Or, are you interested in something potentially less sexy, but with plenty of space for you to carve out your own niche?

Once you have a clear idea of the field in which you would like to train, you can begin to draft your list of potential advisors (check out postdoc job postings on GeneticsCareers.org to get started!). In choosing your advisor, you are choosing a mentor who, hopefully, will remain an important asset to your career throughout its entirety. We all know that who you know can sometimes be as important as what you know, so there is reason to consider the place of your potential advisor within the landscape of the field in which you will work. The notoriety of working for the illustrious Professor X can certainly help get your foot in the door with journal editors, reviewers, hiring committees, et cetera. However, if the tradeoff is a lack of interaction with and support from your advisor, the perks of a famous PI are likely not worth it. There can be big upsides to working with new faculty – while “unproven,” and thus assumedly risky, a postdoc

in the lab of a junior faculty member will likely have a great deal of face time from that advisor. By comparison, joining the lab of Professor X might leave you little personal connection or attention. If you are interested in new faculty, consider who they trained with. Often you can tap into that network, even if one step removed (think scientific grandparents – we all know grandparents love and spoil their grandkids!).

Additionally, with the choice of postdoc advisor, you are choosing a management style and a workplace culture. Is the lab dynamic likely to be an environment in which you will thrive? Know yourself; what worked and didn't work for you in graduate school with regard to mentoring and management styles? Once you know what you want, (or at least, what you want to avoid) start trying to find out who of your top contenders fit the bill. Ask your Ph.D. advisor, thesis committee, or any other faculty you know and respect what they know of the people on your list. People with your best interests at heart will be honest with you – if they know that Professor X always puts three postdocs on the same project for his own version of the Hunger Games, they will let you know! Another way to get at this information is to talk to people currently in the lab, or alumni of the lab. Stalk the websites of your top contenders – often email addresses of lab members and alumni are listed or easy enough to find elsewhere. You will also get a glimpse of the lab culture on your interview. Take full advantage of this opportunity and carve out time to speak to your potential colleagues one-on-one to gain insight into their experiences.

Carefully consider what you are likely to get out of the training experience: how does the lab expand and complement your training? What non-bench skills will you learn from being a postdoc in this lab at this institution?

Also think outside of the lab itself: Is there opportunity for interaction and/or collaborations with other labs and PIs? Are there facilities and courses to train you in new equipment and techniques? Moving forward in your career, you will continue to need many strong references – does your potential postdoc provide the opportunity to make these connections and expand your professional “board of advisors”? While many graduate students choose to postdoc because they hope to run their own lab someday, postdocs provide great training for alternative careers. Consider whether a potential postdoc offers opportunities to teach or take courses in new areas. A look at where lab alumni currently work will let you know if postdocs go on to primarily academic careers, or if the PI is supportive of those who chose other paths.

Keep in mind how your decision will impact your quality of life: Can you afford to live in the place where you will be a postdoc? Do you want to live in the place where you will be a postdoc? Is the institution supportive of postdocs: does it provide housing support, benefits, an organization of your peers? Does the position provide adequate support for you to be comfortable, i.e. enough funding per year, as well as reasonable security of funding in future years? Will you be required to write for postdoctoral fellowships? What will happen if you are unsuccessful in these applications, or need to stay in your postdoc longer than the fellowship?

Throughout the process, keep in mind that you are choosing your postdoctoral position. When you go to your interviews, remember that you are interviewing the PI and the lab as much as they are interviewing you!

Eleven Trainees Receive the Spring 2014 DeLill Nasser Award for Professional Development

GSA is pleased to announce the selection of eleven early career researchers — five graduate students and six postdoctoral researchers — as recipients of a spring 2014 DeLill Nasser Award for Professional Development in Genetics. The award is a \$1,000 travel grant for each researcher to attend any national or international meeting, conference or laboratory course that will enhance his or her career.

"GSA is always honored to present the DeLill Nasser Awards because they are about promoting the future of our discipline," said Adam Fagen, PhD, Executive Director of GSA. "Attending scientific conferences and courses is an essential element of practicing science, and we are glad to play a role in fostering the professional development of some of our most promising early career members."

The DeLill Nasser Award was established by GSA in 2001 to honor its namesake, DeLill Nasser (1929–2000), a long-time GSA member who provided critical support to many early career researchers during her 22 years as program director in eukaryotic genetics at the National Science Foundation. Since the formation of this award, over 100 graduate students and postdocs have received funding for travel to further their career goals and enhance their education. The program is supported by GSA, and charitable donations from members of the genetics community.



DeLill Nasser Award for Professional Development in Genetics

Graduate Students



Yang Cao
University of Wisconsin–Madison,
Madison, WI
GSA 55th Annual Drosophila Research
Conference
3/26–3/30/2014, San Diego, CA

"I am investigating two fundamental neurobiological processes, synaptic development and neuroprotection, using *Drosophila* as an animal model."



Huan Chen
Columbia University Medical Center, New
York, NY
Mechanisms of Recombination Meeting
5/19–5/23/2014, Alicante, Spain

"I am studying the molecular mechanism of DNA double-strand break repair and genome integrity in eukaryotes."



Fang Yun Lim
University of Wisconsin–Madison,
Madison, WI
12th European Conference on Fungal
Genetics
3/23–3/27/2014, Seville, Spain

"I study the genes responsible for synthesizing various secondary metabolites prepackaged in the spore (infectious particle) of *Aspergillus fumigatus* and how these spore metabolites impact disease establishment (invasive aspergillosis) in immunocompromised individuals."



Matthew Niepielko
Rutgers University, New Brunswick, NJ
GSA 55th Annual Drosophila Research
Conference
3/26–3/30/2014, San Diego, CA

"I study the evolution of morphologies; in particular, I focus on how changes in the epidermal growth factor receptor signaling mediate new morphologies on the *Drosophila* eggshell."



Nathaniel Sharp
University of Toronto, Toronto, ON,
Canada
Evolution 2014 Meeting
6/20–6/24/2014, Raleigh, NC

"I study mutation rates and the effects of harmful mutations on males and females."

Postdoctoral Researchers



Charissa de Bekker, PhD
Pennsylvania State University, State
College, PA
12th European Conference on Fungal
Genetics
3/23–3/27/2014, Seville, Spain

"My research focuses on unraveling the complex mechanisms underlying manipulation of host behavior by the fungal parasite *Ophiocordyceps*."



George Eisenhoffer, Jr., PhD
Huntsman Cancer Institute at the
University of Utah, Salt Lake City, UT
GSA 11th International Conference on
Zebrafish Development and Genetics
6/24–6/28/2014, Madison, WI

"The goal of my research is to elucidate the mechanisms that regulate the birth and death of cells within epithelial tissues, and understand how specific alterations may lead to epithelial pathologies and cancer."



Eric Joyce, PhD
Harvard Medical School, Boston, MA
GSA 55th Annual Drosophila Research
Conference
3/26–3/30/2014, San Diego, CA

"My research is aimed at understanding the mechanism and function of chromosome interactions, with a primary focus on interactions between homologous sequences."



Eric Stoffregen, PhD
University of North Carolina at Chapel
Hill, Chapel Hill, NC
GSA 55th Annual Drosophila Research
Conference
3/26–3/30/2014, San Diego, CA

"My research uses *Drosophila melanogaster*, the fruit fly, as a model to investigate the biological functions of BLM, a protein that helps prevent cancer by enabling the proper replication and repair of DNA."



Sen Xu, PhD
Indiana University, Bloomington, IN
Daphnia Genetics Consortium Meeting
1/19–1/22/2014, Birmingham, United
Kingdom

"My research aims to understand why the majority of eukaryotic organisms engage in sexual reproduction by examining the genetic mechanisms and consequences of obligate parthenogenesis (i.e., virgin birth) in the freshwater microcrustacean *Daphnia*."



Amanda Zacharias, PhD
University of Pennsylvania,
Philadelphia, PA
Systems Biology: Global Regulation of
Gene Expression
3/18–3/22/2014, Cold Spring Harbor, NY

"I use the nematode worm, *C. elegans*, as a model to study how genes are turned on and off during development."



Eleven Undergraduates Win Victoria Finnerty Travel Awards to Present Research at the *Drosophila* Genetic Conference

GSA and the *Drosophila* research community are pleased to announce the winners of the Victoria Finnerty Undergraduate Travel Awards. The awards will be used by the students to attend the 55th Annual *Drosophila* Research Conference in San Diego, March 26–30, 2014. These 11 recipients are college juniors, seniors, or post-baccalaureates conducting academic research using the fruit fly *Drosophila melanogaster* as a model organism.

For most of the recipients, the 2014 *Drosophila* Research Conference will be their first opportunity to participate in an international professional scientific research conference. The Finnerty Award winners will be presenting their research to more than 1,500 other undergraduates, graduate students, postdoctoral scholars, university faculty and others.

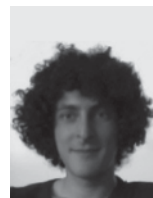
"It was inspiring to read these applications. The number of extraordinary undergraduates conducting significant research far exceeded the number of awards we had available," said Helen Salz, PhD, Chair of the Finnerty Award review committee and a professor at Case Western Reserve University in Cleveland, Ohio.

Adam Fagen, PhD, Executive Director of GSA, added, "We look forward to the opportunity these talented undergraduates will have to present their research to an international audience at the *Drosophila* Research Conference and we hope to hear much more from them at scientific conferences in the years to come."

The Victoria Finnerty Undergraduate Travel Awards were established in 2011 in memory of its namesake, who was a long-time GSA member, a dedicated undergraduate educator at Emory University for 35 years, and an active member of the *Drosophila* research community and the genetics community at large. This is the third year the Victoria Finnerty awards have provided

funding for undergraduates to attend the annual *Drosophila* Research Conference, having already provided more than \$10,000 to enable 16 undergraduates to attend GSA's Annual *Drosophila* Research Conference.

2014 Victoria Finnerty Undergraduate Travel Award



Daniel A. Friedman

Senior, University of California, Davis

Poster Title: "Evolution of sex comb enhancers of the HOX gene *Sex combs reduced*"

Description: I research the role of regulatory DNA sequences in the evolution of a sex-specific trait.

Principal Investigator: Artyom Kopp, PhD



Nancy J. Levansailor

Senior, State University of New York at Fredonia

Poster Title: "Visualization of *Sqd*-grk interactions in live *Drosophila* oocytes using tri-molecular fluorescence complementation (TriFC)"

Description: I am developing a new technique to visualize interactions between protein and RNA in living cells.

Principal Investigator: Scott B. Ferguson, PhD



Katharine Majeski

Senior, Kennesaw State University

Poster Title: "Live imaging of muscle development in *akirin* mutants"

Description: I am using live time lapse microscopy to view muscle development in a novel *Drosophila* mutant.

Principal Investigator: Scott J. Nowak, PhD



Aidan L. McParland

Junior, University of New England

Poster Title: "Steroid signaling modulates nociception in *Drosophila melanogaster*"

Description: My research investigates if decreasing function of steroid hormone prevents pain in the fruit fly.

Principal Investigator: Geoffrey Ganter, PhD



Marvin Nayan

Post-baccalaureate, University of Washington

Poster Title: "MicroRNA processing by Dicer-1 regulates *Drosophila* sensory neuron morphology"

Description: I investigate the molecular and cellular mechanisms that regulate dendrite morphogenesis.

Principal Investigator: Jay Z. Parrish, PhD



Trung T. Phan

Senior, University of Washington

Poster Title: "Analyzing the critical role of Pskl, a sperm membrane protein, in *Drosophila* fertilization"

Description: Our research focuses the identification and characterization of sperm proteins that are required for successful fertilization in *Drosophila*.

Principal Investigator: Barbara Wakimoto, PhD



AnnJosette Ramirez,

Senior, Arcadia University

Poster Title: "Exposure of larvae to perfluorooctanoic acid (PFOA) causes dysregulation of the dTOR signaling pathway in *Drosophila melanogaster*"

Description: My research focuses on the effects of the environmental toxicant perfluorooctanoic acid (PFOA) on growth, survival and gene expression in the fruit fly *Drosophila melanogaster*.

Principal Investigator: Sheryl Smith, PhD



Zachary L. Sebo,

Senior, University of Missouri, Kansas City

Title: "ER stress attenuates insulin signaling through *tribbles*-mediated block of Akt activity"

Description: I am using the fruit fly as a model system to study molecular links between obesity and insulin resistance.

Principal Investigator: Leonard Dobens, PhD



Letitia Thompson

Senior, The College of New Jersey

Poster Title: "*grk* mRNA alternatively spliced during oogenesis"

Description: Using *Drosophila melanogaster*, we are trying to understand how genes are expressed, in particular how proteins are made at the appropriate time and location within the oocyte.

Principal Investigator: Amanda Norvell, PhD



Daniel M. Wong

Senior, University of California, Los Angeles

Poster Title: "The effects of hypoxia in determining larval size in *Drosophila melanogaster*"

Description: My research project focuses on characterizing how oxygen deprivation restricts cell, tissue, and organismal growth.

Principal Investigator: Julian A. Martinez-Agosto, PhD



Chenling Xu

Senior, University of California, Davis

Poster Title: "Comparative genomics of *Drosophila simulans* endosymbiont *Wolbachia* in natural populations"

Description: I am looking at the genomic differences between two strains of symbiotic bacteria that live inside the cells of fruit flies and how those differences might cause them to affect the host reproduction in different ways.

Principal Investigator: Michael Turelli, PhD

Caenorhabditis elegans

Opens the Gates to the Nematode Pheromone World



by Fatma Kaplan

Nematodes are the most abundant animals on earth and parasitize nearly every plant, insect and animal. When they infect pests, they can be used as biological controls. However, when they infect plants and animals, they either threaten our food security by reducing plant yield or cause diseases in animals.

For example, nematodes cause many diseases in humans such as hookworm, pin worm and intestinal roundworm infection (acariasis). Approximately 1/6 of all humans are infected by nematodes worldwide. Even though nematode infections are effectively treated with drugs, nematodes are developing resistance to current nematicides, much like antibiotic-resistant bacteria. To treat nematode

infections in the future, we need to develop novel drugs. Pheromones, small signaling compounds, are well known control agents for insect pests by interfering with mating or development.

In 2005, the nematode pheromone floodgates were opened with the discovery of dauer pheromone in *Caenorhabditis elegans*. Dauer pheromone regulates entry into a long-lived stress-resistant stage, dauer. Soon after, more dauer pheromones were discovered. Entry into dauer stage is controlled by individual pheromones, whereas social behavior is controlled by blends of the dauer pheromones. The first pheromone-regulated nematode behavior discovered was mating behavior. This was followed by many other behaviors including aggregation, attraction, dispersal and repulsion. Very recently, the same class of pheromones was found inside *C. elegans* and other nematodes. In insect parasitic and free living nematodes, pheromones regulate behavior and development of life stages analogous to dauer in *C. elegans*. Now the question: Can nematode pheromones be used to control plant and animal parasitic nematodes? Of course, the answer to this question will come with understanding the biology of nematode pheromones.

In the next five years, the pheromone field is heading toward three major basic research areas: 1) molecular biology of nematode pheromones; 2) application of concepts from *C. elegans* to parasitic nematodes; and 3) nematode chemical ecology. Molecular biology of pheromones is now a flourishing field including topics like function, regulation and signaling of pheromones. Nematode pheromones, called ascarosides, belong to a large class of compounds (> 150 identified). We currently know the function of a handful of ascarosides in *C. elegans*. There are many more with unknown functions. Questions that still need to be answered include: How many ascarosides are actually biologically active? Do the biologically active ascarosides function by themselves or in a mixture? Regulation is another important field of inquiry. How are the expression of biosynthetic genes regulated;

transcriptionally and/or translationally? How is the pheromone activity regulated? Are the pheromones unstable or conjugated; sequestered in a subcellular compartment? What are the genes that pheromones regulate?

Of course, signaling is a subject of current and future study. For example, the first step in signaling

The application of concepts from *C. elegans* to plant and insect parasitic nematodes will drive major advances.

is the recognition of the signal, so researchers can begin to understand signaling by isolating the receptors in *C. elegans* and other nematodes.

The application of concepts from *C. elegans* to plant and insect parasitic nematodes will drive major advances. Many ascaroside pheromones were identified in *C. elegans*, making it easier to identify and study the function of ascaroside pheromones in other nematodes. Since plant and insect nematodes are parasitic nematodes, there is a potential to explore whether pheromones are involved in host parasite interaction. For example, nematodes use pheromones to determine their density like bacterial quorum sensing (QS). Furthermore, bacterial QS signals regulate bacterial virulence and reprogram animal and plant gene expression and immune systems. We do not know whether

nematode pheromone/QS signals are involved in host parasite interaction or how they affect host gene expression and immune systems. Understanding how nematode quorum sensing signals affect host parasite interaction in plants and insects provides us a platform to apply concepts to nematodes that cause disease in humans and develop drugs that combat human parasitic nematodes.

There will be major advances in the role of pheromones in nematode chemical ecology. Some potential questions are: Do nematodes use pheromones to influence each other's population size? If yes, how is this achieved? For example, do they

jam competitor's signals by producing structural analogs or degrading each other's pheromones for development or social behavior? Are pheromones involved in interacting with other species? The nematode pheromone field will have major advances in understanding the biology of nematode pheromones, application of concepts to other nematodes and nematode chemical ecology.

"Do nematodes use pheromones to influence each other's population size?"

Dr. Kaplan was the winner of an essay contest asking GSA members to write about the future of their field.

Thank You to the GSA Donors

The Genetics Society of America is grateful to our 193 donors who have contributed \$18,190 from May 2013 through January 2014 to the Society and/or its special funds. Your charitable donations enable GSA to support educational programs, public policy activities, and media and public outreach that promote our field and the next generation of geneticists.

The GSA programs supported by your donations include GSA Undergraduate Travel Awards, DeLill Nasser Awards for Professional Development in Genetics, poster awards at GSA conferences. Your contributions also support GSA programs in education, communications, and advocacy.

We invite every member to make a contribution to GSA to ensure the

future of our discipline. From \$1 to \$10,000, every donation is greatly appreciated for the impact it makes on the next generation of researchers or the genetics community at large. To donate by credit card, please go to genetics-gsa.org/donate. You can also add a donation when you join or renew your Society membership: genetics-gsa.org/membership.

To contribute by check, make it out to the Genetics Society of America, and indicate any specific fund in the "memo" line: GSA General Fund, DeLill Nasser Fund, Victoria Finnerty, or Chi-Bin Chien Award. Mail your check to GSA, 9650 Rockville Pike, Bethesda, MD 20814-3991, Attn: Adam Fagen, Executive Director.

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Vassie Claudia Ware, Lehigh University, Bethlehem, PA
John R. Pringle, Stanford University School of Medicine, Stanford, CA
Millard Susman, University of Wisconsin, Madison, WI

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On the GSA Journals

In the first part of an ongoing series of conversations with the editors of the GSA journals, we chat with

Mark Johnston, Editor-in-Chief (EiC) of *GENETICS*, and Professor and Chair, Department of Biochemistry and Molecular Genetics, University of Colorado School of Medicine.



When did you first become interested in being a scientist?

I always wanted to be a scientist. I was curious about what was in the

world. I had a chemistry set when I was quite young, and I remember collecting butterflies, husbanding tropical fish, and bird watching. But what really captured my interest was microscopic life. I had a small microscope and would look at drops of pond water, captivated by the animalcules swimming around. When I was in middle school, I read a biography of Louis Pasteur. I was fascinated that we could learn things about organisms that couldn't be seen (without magnification). That book and its ideas sealed the deal for me. And, as it happens, for the past ~15 years, I've been studying the basis of the Pasteur Effect (and its opposite, the Crabtree/Warburg Effect).

As EiC of *GENETICS*, you've long been a proponent of 'peer-editing'—a term and a concept you've coined. What does that mean, and why is it important?

Until recently, the standards of science have been determined by actual practicing scientists. That tradition goes back to at least The Enlightenment, with the French Academy, which evaluated and certified (or rejected) every major discovery that was made. Established scientists who were leaders in their fields determined which ideas and discoveries were valid and which were specious. That was still mostly the case when I entered graduate school (in the mid '70s): the premier journal in my field was the *Journal of Molecular Biology*, whose editors were the founders of the field, household names among its practitioners. By 1980 a new paradigm for journals had emerged, in which the most prestigious journals were edited not by practicing scientists but by professional science journalists, often with little experience as scientists. I've never understood why we gave them the authority to set the standards of our field. I think practicing scientists—peers of the authors who submit their work for publication (and validation)—should reclaim their responsibility for setting the standards of the field. We are doing that with *GENETICS*, as are many other society-sponsored journals. But we will only be successful if grant review and hiring and promotion committees recognize that work published in peer-edited journals has passed the most stringent scrutiny—that of our peers—and if authors continue to submit their best work for publication in peer-edited journals.

How does a journal like *GENETICS*, dating to 1916, manage to innovate and at the same time build on its illustrious history? How is *GENETICS* staying on the cutting-edge?

History and innovation are not mutually exclusive. In fact, they're

complimentary! Progress in science builds on the work of others. The past and the future are inextricably linked. That's been part of my core vision since I became Editor-in-Chief.

The lions of the field have published seminal work in our journal, from Bridges, Muller, and McClintock to Brenner, Horvitz, and Hartwell. Authors can publish in the same journal as did Luria and Delbruck, and Sewall Wright, and Ronald Fisher, and Crow and Kimura (and many other luminaries).

And while *GENETICS* provides a professional and scientific thread that extends back to the founders of our field, it also points to our future. We provide intellectual leadership in emerging areas such as genomic selection for improvement of crops and livestock, and the use of multiparent crosses to study complex traits, with novel series like YeastBook and our Educational Primers, and with innovative features like links in articles directly to model organism databases, ORCID ID integration, and article themes published across *GENETICS* and *G3*, for maximum impact.

Scientific publishing and communication are rapidly changing, and our goal is to lead rather than follow. Making the most of the newest technology, including social media, helps us to communicate scientific findings more efficiently and in more interesting ways than even five years ago. We've just added Altmetric data to articles so authors can see who's talking about their work. We've streamlined our editorial processes and pride ourselves on being accessible, agile, and fast! For several years, our goal has been to give authors a first decision within 30 days. We answer pre-submission inquiries and can even fast-track manuscripts. Our early online articles are free to read, and are in PubMed, complete

with DOI, within a week or so of acceptance. In that sense – we're not your mentor's *GENETICS*!

Our field is data-driven. It's important to make sure authors provide that data, so others can re-use and replicate results, and we've got a data policy that upholds that idea. We've also made supplemental data easy to find, and publish just about any format authors dream up. As always, we still want authors to tell their whole story – with no limits on pages, figures, or supplemental data. We now allow deposits of manuscripts in pre-publication servers like arXiv, which was a direct response to community requests.

Because our editors are part of the practicing scientific community, we have direct connections that provide insight into real-world problems researchers encounter with their science, and their needs in communicating it. All in all, we're honoring our rich legacy and at the same time charging forward.

Why publish in a society journal, specifically *GENETICS* or *G3*?

Scientific societies (and its members) are the trustees of their journals. Only societies provide the transparent governance that ensures that the journal is serving the community and the field. Like a company's Board of Directors ensures that the leadership is acting in the best interests of the shareholders, the GSA's Board of Directors makes sure that the journals' leadership is serving its stakeholders—communities of scientists and the larger society that ultimately benefits from scientists' research output. By publishing in the journals of the GSA, authors support more than just the Society; they're supporting science and communities way beyond our reach.

When authors submit manuscripts to journals not affiliated with a scientific society, they might ask themselves who and what they're supporting, what effects conflicts of interest and funding sponsors may have on the end

result, and under whose aegis their work will be published. It's important to understand the environment, the bigger picture—which can be easy to miss when the field is flooded with new journals and new publishers, some with loud voices and aggressive marketing and branding, wrapped in backers with deep pockets. Look closer and you'll see that society-sponsored journals have long been doing what some of the flashy new ones are touting.

What's on the horizon for *GENETICS*?

We're expanding our scope into several areas. We'd like to attract more articles in human genetics. Astonishing advances in DNA sequencing and genotyping technology have quickly brought analysis of humans almost to the level of that of model organisms. Significant answers to fundamental genetic questions are likely to come from studies of humans in the near future, and *GENETICS* should be part of that conversation. The same technological advances, and others, such as recent advances in gene editing technology (several of which were recently reported in *GENETICS*), have leveled the playing field for experimental organisms. Because new methods and technology are necessary for advancing science, we are expanding our Methods, Technology and Resources section of the journal. And *GENETICS* has been encouraging and facilitating the development of new experimental model organisms with its Toolbox series of articles that highlight resources available for emerging model organisms. *GENETICS* in fact wants more submissions of manuscripts reporting original research using these organisms. That's groundbreaking stuff!

What's the best piece of advice for a young scientist?

Be a student or postdoc for as long as possible! It's the best time of your career because you're only responsible for yourself. If you work hard (and smart) and choose the right mentors,

you're given extraordinary freedom to discover. It's an unbelievable and creative opportunity.

What do you like about being EiC?

First, I'm proud to carry the baton on this leg of the journal's race. It's an honor to be on the roster of *GENETICS* EiCs, to be linked back to the founders of our field. Second, it's a joy to work with our Editorial Board. I rely on them heavily and am always impressed with their insightful counsel and dedication. My heart swells with pride when I read their decision letters, which are always—yes, always—thoughtful, fair, and helpful. I sincerely believe that *GENETICS* editors are setting the standard of peer-editing, helped by reviewers who take their roles seriously. Third, I enjoy helping authors improve the presentation of their stories, which ultimately improves the impact of the work. This is a major goal of our reviewers and editors, and it's satisfying to see that result. I actually like wordsmithing. For the past few years I've been editing the titles of at least half of the manuscripts that are accepted. Finally, I love working with our Editorial Office staff. Anyone who has interacted with Tracey, Ruth and Wendy knows how efficient and engaged they are. Our new Journals Assistant Editor, Cristy Gelling, PhD, came on board in January and is a terrific science writer. Having a robust editorial office was one of my goals when I took the role as EiC, and I think we've achieved that.

Rumor has it you like to ski, hike, golf, and fish. Been on any adventures this year?

I moved to Denver five years ago. Colorado offers lots of opportunities to be outdoors. One of my new year's resolutions is to carve out the time for just that. Last fall, I went on a terrific 4-day bike trip through Canyonlands in Utah. I'm hooked! I'm going to do it again this year.

GSA Welcomes Eleven New Trainee Representatives to the Board and Committees

GSA is pleased to introduce eleven new graduate students and postdocs in leadership roles as trainee representatives to the Board of Directors and GSA Committees. These new trainee representatives will serve two-year terms (through the end of 2015) and are joining thirteen other trainees appointed last year who serving out the second year of their terms. These representatives are directly engaged in helping set GSA priorities and guide its activities.

"The trainee representatives appointed last year have done an excellent job working individually and collectively to bring student and postdoc perspectives to GSA decisions," said GSA Executive Director Adam Fagen. "We thank the continuing and new trainee reps for their time and dedication to the Society and for all of their great ideas that are helping GSA better serve our student and postdoc members."

Representative to the GSA Board of Directors

Trainee representatives participate in the semi-annual meetings of the GSA Board of Directors, which sets the overall direction for the Society. Their opinions add a much-needed perspective, as half of GSA members are trainees.

Andrew Adrian

Graduate Student
University of Iowa, Iowa City, IA



Communications Committee

The Communications Committee was formed in 2013 to provide guidance to the Society on communications activities directed at both our own community and an external audience. Communications is important not only for keeping members of the Society engaged but in helping enhance appreciation for genetics research and education more broadly.

Sarah Piloto

Postdoctoral Researcher
Sanford-Burnham Medical Research Institute, San Diego, CA

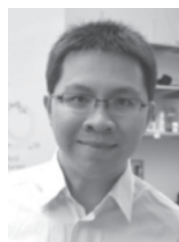


Conferences Committee

This high-level committee is charged with providing guidance on the Society's portfolio of conferences and to help provide strategic direction on the ways that GSA can best serve the genetics community through its meetings.

Xiaofeng (Allen) Su

Graduate Student
Indiana University, Bloomington, IN



Education Committee

The Education Committee is charged with providing guidance on the Society's activities related to education, career development, and public outreach. This includes advising on the professional development programming at GSA conferences; guiding the direction of GSA PREP, the Society's online peer-reviewed education resource portal; setting the yearly goals for GSA education; and many other tasks.

Heather Bennett

Graduate Student
Brown University, Providence, RI



Mary Durham

Postdoctoral Researcher
University of Maryland Baltimore County, Baltimore, MD



Membership Committee

The Membership Committee is charged with providing guidance on recruiting and retaining members of the Society, including member benefits and services that best serve the needs of the members and potential members. The committee thinks broadly about the kinds of people that the Society should have among its membership and how to make sure GSA appeals to them. Because students and postdocs now represent the majority of members of the Society, the role of the

trainee representatives is especially important for this committee.

Patrick Gibney

Postdoctoral Researcher
Princeton University, Princeton, NJ



Jennifer Apper-McGlaughon

Graduate Student
Cornell University, Ithaca, NY

Publications Committee

The Publications Committee is charged with providing guidance on matters related to the publication of the Society's scholarly journals, *GENETICS* and *G3: Genes/Genomes/Genetics*. The committee is an important center for discussions of policy and strategy related to the journals, complementing efforts by the editorial boards of the journals themselves.

Maria Cattani

Postdoctoral Researcher
New York University, New York, NY



Public Policy Committee

The Public Policy Committee was created in 2012 and is charged with providing guidance on advocacy and policy activities to most effectively represent the collective interests of the genetics community, including to policymakers and government officials.



Rami Ajjuri

Graduate Student
University of Alabama, Tuscaloosa, AL

Benjamin Krinsky

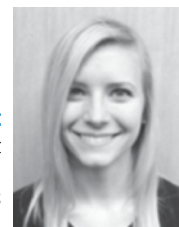
Graduate Student
University of Chicago, Chicago, IL

Women in Genetics Committee

The Women in Genetics (WiG) Committee provides guidance to the Society on issues related to enhancing gender equity within GSA and the scientific community. This new committee has been looking broadly to ensure that the Society's activities—including awards and conferences—reflect the diversity of our discipline.

Lauren Dembeck

Graduate Student
North Carolina State University, Raleigh, NC



Twenty-five Trainees Receive Best Presentation Awards in Genetics at Conferences Dedicated to Serving Underrepresented Minorities

The Genetics Society of America is a proud participant in two renowned conferences dedicated to serving underrepresented minorities in science, technology, engineering, and mathematics (STEM): the Society for Advancement of Chicanos and Native Americans in Science (SACNAS) National Conference, and the Annual Biomedical Research Conference for Minority Students (ABRCMS). Each year, GSA exhibits at both of these conferences, spreading awareness about the Society and careers in the field of genetics. Additionally, GSA sponsors awards for best oral and poster presentations at each meeting. We congratulate all of the winners, and thank the judges for helping select these outstanding early career scientists!

SACNAS 2013 National Conference

The SACNAS National Conference is designed to support trainees and professionals as they transition through the stages of their career with the goal of assisting them into positions of science leadership. More than 3,500 attendees participated in the 2013 conference in San Antonio, Texas, October 3-6, 2013.



2013 SACNAS Genetics Award Winners:

• Graduate Student Oral Presentation in Genetics:

- o **Jason Torres**, University of Chicago

• Undergraduate Student Poster Presentation in Genetics:

- o **Brayon Fremin**, University of New Mexico
- o **Aditi Trivedi**, University of California, Santa Barbara
- o **Alexandra Wiscovitch Bonilla**, Massachusetts Institute of Technology
- o **Jodie Wu**, San Jose State University

ABRCMS 2013

Now in its thirteenth year, ABRCMS is the largest, professional conference for minority students to pursue advanced training in STEM. Approximately 3,500 people, the majority of whom were undergraduate students and STEM professionals, attended the conference in Nashville, Tennessee, November 11-14, 2013.



2013 ABRCMS Developmental Biology and Genetics Award Winners (co-sponsored by GSA and the Society for Developmental Biology):

• Best Oral Presentation:

- o **Alexis Collier**, Lincoln University
- o **Francisco Galdos**, Harvard University

• Best Poster Presentation:

- o **Osamah Badwan**, University of Puerto Rico at Humacao
- o **David Bullock**, North Carolina Central University
- o **Michael Emami**, University of California, Irvine
- o **Daniella Espiritu**, University of Arizona
- o **Rafael Gutierrez**, Miami Dade College
- o **Krystal Harrison**, North Carolina A&T State University
- o **Emily Hernandez**, University of California, Irvine
- o **Hamid Hussaini**, University at Buffalo, State University of New York
- o **Emily Irely**, University of Minnesota, Morris
- o **Nancy Lopez**, University of California, Los Angeles
- o **Matilde Miranda**, San Francisco State University
- o **Moises Paramo**, University of California, Irvine
- o **Brian Perez**, University of California, Los Angeles
- o **Gordon Pherribo**, Carnegie Mellon University
- o **Christopher Pineda**, San Francisco State University
- o **Derek Platt**, Tennessee State University
- o **Rafael Rivera-Lugo**, University of Puerto Rico at Ponce
- o **Alexandra Wiscovitch**, University of Puerto Rico at Mayagüez

Introducing GeneticsCareers.org

A free service of the Genetics Society of America and American Society of Human Genetics, GeneticsCareers.org provides a forum for matching qualified job seekers with careers in all areas of genetics. GeneticsCareers.org has the potential to bring together more than 12,000 researchers, educators, clinicians, genetic counselors, students, postdocs, and other professionals in genetics. Post a job or find a new position today—it's free!

Five Geneticists Receive Renowned GSA Awards for 2014 [continued page 4](#)

Developmental Biology at the Baylor College of Medicine and an HHMI Investigator.

Dr. Bellen has made seminal contributions to the fields of genetics, developmental biology, and neuroscience through a steady stream of insightful experiments in *Drosophila*. His lab has addressed fundamental questions regarding genes involved in neuronal development, neurotransmission, and most recently the mechanistic basis for neurological diseases such as ALS (Lou Gehrig's Disease). In parallel with this landmark science, he has worked to expand the toolbox available to *Drosophila* genetics. Dr. Bellen is a leading scientist in the *Drosophila* Gene Disruption Project effort to disrupt and tag *Drosophila* genes on a comprehensive scale, an effort initiated with previous Beadle Award winners Gerry Rubin and Allan Spradling. Moreover, his laboratory developed simple mapping methods, including a highly versatile transgene system named P[acman], the MiMIC transposable element, and libraries of transgenic flies and MiMIC strains. These efforts have provided ~15,000 new stocks with single transposable element insertions, which enable mutational analysis of ~75% of *Drosophila* genes.

Recipient: Charles Boone, PhD, University of Toronto

Award: Edward Novitski Prize, which recognizes an extraordinary level of creativity and intellectual ingenuity in solving significant problems in genetics research

Dr. Boone is Professor and Canada Research Chair at the University of Toronto's Donnelly Centre for Cellular and Biomolecular Research and Department of Molecular Genetics,



and is a leader in emergent discipline of post-genome systems biology. His visionary, creative approach to science has focused on the global mapping of genetic interaction networks. Dr. Boone invented the Synthetic Genetic Array (SGA) technology, transforming the field of yeast genetics. SGA provides an automated method to both cross thousands of specific strains carrying precise mutations and map large-scale yeast genetic interactions. These network maps offer researchers a functional wiring diagram of the cell, which clusters genes into specific pathways and reveals functional connections. His innovative method provides insight into difficult human genetic problems, including the origin of complex inherited diseases and phenotypes, and it has catalyzed work in labs worldwide.

Dr. Boone serves on the editorial boards of both *GENETICS* and *G3: Genes | Genomes | Genetics*. He is also an HHMI international research scholar and a Fellow of the American Academy of Microbiology, American Association for the Advancement of Science, and the Canadian Institute for Advanced Research. Dr. Boone previously received the Ira Herskowitz Award from GSA's yeast genetics community.

Recipient: Robin Wright, PhD, University of Minnesota

Award: Elizabeth W. Jones Award for Excellence in Education, which recognizes significant and sustained impact in genetics education

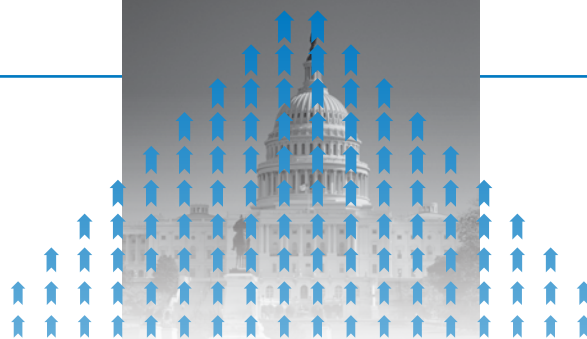
Dr. Wright is a Professor in the Department of Genetics, Cell Biology and Development, and Associate Dean for Faculty and Academic Affairs in



the College of Biological Sciences at the University of Minnesota. Her research focuses on work for exploring the genetics, molecular and cellular biology, and physiology of cold adaptation in yeast.

Consistent with her philosophy of linking research and education, Robin includes undergraduate students in all of her research. She seeks to teach how to think like and to actually be a biologist, working in teams and looking at real-world problems. This active approach to learning has taken off at the University of Minnesota, and has other universities looking to Wright for guidance. She emphasizes a learner-centered model of classroom work that promotes and enhances lifelong skills, and is described as having "transformed biological education at the University of Minnesota" through several efforts including developing the interactive, stimulating Foundations of Biology course sequence, emphasizing active learning and open-ended research; spearheading the construction of Active Learning Classrooms; and establishing Student Learning Outcomes, standards that measure biology education. She serves as founding Editor-in-Chief of CourseSource, a focused national effort to collect learner-centered, outcomes-based teaching resources in undergraduate biology.

Dr. Wright is a Senior Editor for *CBE—Life Sciences Education* and a member of the steering committee for the National Academies–HHMI Summer Institutes on Undergraduate Education in Biology. She is a Fellow of the American Association for the Advancement of Sciences, a National Academies of Science Education Mentor in the Life Sciences, and is a past chair of GSA's Education Committee.



Budget Deal Provides \$1 Billion Increase For NIH

By Jennifer Zeitzer, Director of Legislative Relations, Federation of American Societies for Experimental Biology

A bipartisan agreement reached by Representative Paul Ryan (R-WI) and Senator Patty Murray (D-WA) in December ended several years of budget dysfunction on Capitol Hill, resolved a dispute between the House and Senate over the fiscal year (FY) 2014 discretionary spending level, and replaced scheduled sequestration cuts with other savings. In addition, a breakthrough in the budget gridlock restored power to the House and Senate Appropriations Committees that were marginalized after Congress allowed the federal government to operate under a series of “continuing resolutions” in 2013.

The Ryan-Murray agreement increased FY 2014 spending to \$1.012 trillion, a compromise between the \$1.058 trillion level adopted by the Senate and the FY 2013 post-sequester limit (\$967 billion) preferred by the House. Over the Christmas holidays, the Appropriations Committee worked to combine the 12 individual FY 2014 spending measures into an omnibus package (HR 3547) reflecting the increased spending level. To ensure that the voice of the research community was heard as the omnibus bill was being drafted, the Federation of American Societies for Experimental Biology (of which GSA is a member) issued an e-action alert urging scientists to contact their members of Congress. More than 7,200 emails were sent to Capitol Hill asking lawmakers to support the highest possible funding levels for the National Institutes of Health (NIH), the National Science Foundation (NSF), and other research agencies.

Good news for NIH came on January 13 when House Appropriations Committee Chairman Hal Rogers (R-KY) and his counterpart, Senator Barbara Mikulski (D-MD) publicly released the omnibus bill, providing a \$1 billion increase for NIH and additional funding for several other research agencies. NIH received \$29.9 billion – three percent above the FY 2013 post-sequester level. Although, the increase does not completely replace all of the funding NIH lost due to sequestration, it is certainly a step in the right direction. NSF was funded at \$7.2 billion, four percent (\$200 million) over the agency’s 2013 budget. With little debate, the House passed the omnibus spending bill on January 15 by a vote of 369-67. Senate approval of the bill followed later the same week, and President Obama signed it on January 17.

A report accompanying the omnibus bill noted that basic biomedical research “must remain a key component of both the intramural and extramural research portfolio at NIH.” The report also instructed NIH to distribute the provided funding increase proportionally among all of the Institutes and Centers and directed the agency to adopt a reasonable policy for non-competing and competing inflation rates consistent with the overall growth in the budget. In addition, the appropriators stated that NIH is expected to support as many scientifically meritorious new and competing research projects as possible, at a reasonable award level. NIH was also told to provide inflationary increases in research trainee stipends. NSF received a warning that future growth in interdisciplinary research should not come at the expense of adequate support for infrastructure and core research programs in each of the agency’s scientific disciplines. The omnibus continued the existing restriction that prohibits NSF from using funds to pay for more than 50 employees to attend any single conference or meeting outside the U.S.

Although the battle over FY 2014 funding ended on a positive note for biomedical research, there will be little rest for advocates as lawmakers are expected to turn their attention to the FY 2015 budget early this spring. On January 23, the White House announced that President Obama will submit his FY 2015 budget request to Congress on March 4. Release of the President’s request is the traditional first step in the annual budget process and is typically followed by Appropriations Committee hearings to review the proposed funding levels for agencies and programs.

There is some hope that the discussion about spending priorities will be less contentious than it was last year because the Ryan-Murray agreement also established the discretionary spending limit for FY 2015. However, the FY 2015 level (\$1.014 trillion) is essentially the same as the current rate, and the long-term fiscal outlook is far less optimistic. Unless Congress changes the law, the strict spending caps enacted through the Budget Control Act of 2011 and the threat of sequestration will return in 2016, guaranteeing that the fight to sustain the investment in NIH and NSF is far from over.

GSA'S EVOLVING SCIENTIFIC COMMUNICATION



By Tracey
DePellegrin,
Executive
Editor, GSA
Journals

Scientific publications today provide anything but the two-dimensional articles of even five years ago. Now, publishers integrate technology that has changed what it means to find, use, read, evaluate, share, and discuss a journal article. Growing interactivity, more ways to parse and use article content, an increase in mobile-enabled websites, and flexible, robust XML afford new opportunities all-around.

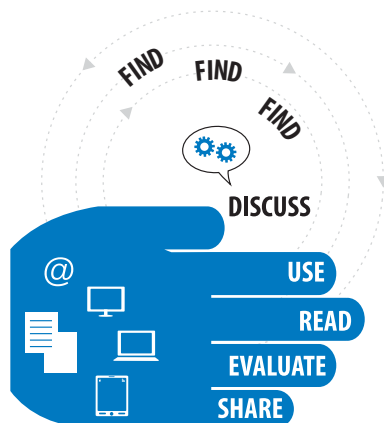
In fact, considering the way scientists search for, browse, and use scientific information, blogs, databases, and other sources of knowledge, journals must evolve – and quickly. No longer do scientists read a journal cover-to-cover (or an article front-to-back). Readers want depth, breadth, speed, and the ability to quickly find the article components they seek.

We offer a brief update on how GSA is using emerging technology to enhance its journals for authors and readers alike.

Altmetric: Scientists talk. They listen.

Citations to your own papers are but one way to know who's reading and using your work. These days, scientists don't have to wait until their paper is cited to monitor their work's attention.

Earlier this year, *GENETICS* and *G3* added the now-familiar Altmetric "donut" to full-text versions of articles on the journal websites. The snapshot reveals mentions on F1000, Mendeley, CiteULike, Twitter, Facebook, blogs, and more, and even offers a geographical breakdown of all activity

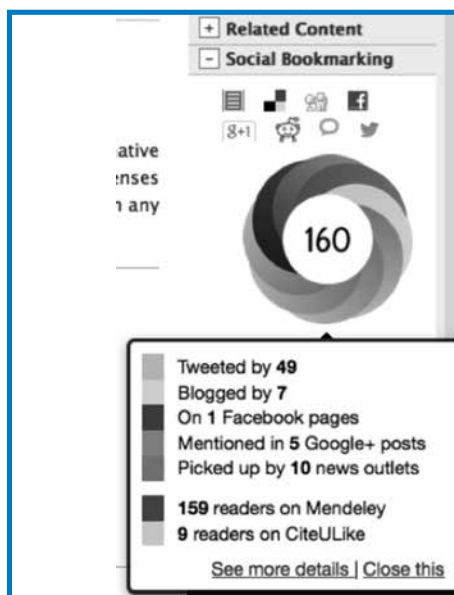


surrounding an article, the combined number of Twitter followers, and other statistics.

"We are increasingly seeing scholarly work discussed and shared online," says Catherine Chimes of Altmetric.

"Altmetrics provide authors and readers with a new and innovative way to gain insight into the immediate dissemination and impact of a paper, long before citation data becomes available."

The figure below illustrates the Altmetric score of The Genomic and Transcriptomic Landscape of a HeLa Cell Line (Landry *et al.* 2013), published in *G3: Genes | Genomes | Genetics*.



Discovering science on the go: mobile

Science doesn't stay in the lab, or the office, so why should the way you read about discoveries be any different?

In 2013, *GENETICS* and *G3* joined the growing ranks of journals that provide readers with automatic mobile versions – that is, when a user accesses *GENETICS* or *G3* from a mobile phone or a reader, each journal's layout automatically adjusts to the device.

The mobile-optimized sites provide access to all current, archived, and Early Online articles using mobile devices which support Apple's iOS, Google's Android, and BlackBerry operating systems.

Interactive journal articles: MODs

Publishing an article in *GENETICS* or *G3* involving *Drosophila melanogaster*, *S. cerevisiae*, or *C. elegans*? *GENETICS* was the first journal to partner with WormBase, integrating journal articles directly with WormBase model organism database (MOD). With continuing help from the WormBase team at Caltech, GSA works to integrate FlyBase and *Saccharomyces* Genome Database (SGD) into articles we publish. Where appropriate, all articles (including PDFs) in *GENETICS* and *G3* feature links from genes, proteins, alleles, phenotypes, and other genetic objects directly to the related landing page in a model organism database. For readers and authors alike, the article becomes multi-dimensional, and allows a one-click deeper dive — showing, for example, genetic and genomic position maps, sequences, interactions, expression summaries, gene ontology annotations, and a wealth of other information.

A rose by any other name is.... confusing. Enter ORCID.

Recognize that lime-green circle with the “iD” next to researcher names in a journal article or grant application? If you haven't seen this iconic symbol yet, you will soon.



Akin to a Digital Object Identifier (DOI) for individual researchers, ORCID [orcid.org] is a non-profit, community-driven effort to create and maintain a registry of unique researcher IDs that spans disciplines, research area, and national boundaries. *GENETICS* and *G3* have added ORCID IDs to their manuscript submission systems, and the IDs will soon appear next to author names in articles published in both journals.

ORCID is full-steam ahead, with more than 350,000 researchers registered for an ID. To encourage widespread adoption, ORCID's member partners and integrators include publishers; academic and research institutions; and organizations like Altmetric, CrossRef, Dryad, Copyright Clearance Center, and NIH. Research funders including NIH are working to incorporate ORCID so it will be easy to pull publication and other information from ORCID to simplify submitting grant proposals and submitting progress reports.

Do we really need another standard? The Open Researcher and Contributor ID (ORCID) has (among many) one major goal – to collect professional output in one place, while solving the author name ambiguity problem in scholarly communication. Many of us can relate to the frustration of having a name that is common, often misspelled, hyphenated—or have published under different names. This frustration can turn into real problems if your work is not adequately linked to you. ORCID IDs seek to eliminate the issue of author name ambiguity altogether, providing instead a 16-digit, unique identifier that associates all of a person's research objects—including datasets, articles, citations, experiments, patents, media stories, and even equipment—with the unique ORCID ID. You say which outputs are associated with you and those follow you around everywhere you can use your ORCID ID.

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With over 100,000 biomedical articles published every month, PubChase [PubChase.com] enables scientists to discover new research important to them, no matter where it is published. Registered users receive automated relevant personal recommendations based on the articles in their library, which they create and customize. Scientists using reference packages like Endnote, Papers, Mendeley, and Refworks can quickly import bibliographies and receive relevant article suggestions. PubChase is a new GSA partner, offering unlimited PDF storage to GSA members (see sidebar).

“It is incomprehensible that in the days when Netflix knows which movies we are likely to enjoy and Pandora predicts the music we will love,” says Lenny Teytelman, co-founder of PubChase and ZappyLab, “that scientists are still searching for relevant papers by keywords and RSS feeds. Even though we are constantly scanning tables of contents, we miss most of the papers we should be reading.”

Their just-released article-level blogging platform enables researchers to share the stories behind the papers. The idea is resonating greatly in the scientific community, since there's always more to the story than can be included in the published paper. For example, see “The job's not over till the paperwork is done,” which details an exchange between Jasper Rine and Fred Winston discussing Rine & Herskowitz (1987) [https://www.pubchase.com/essay/the-jobs-not-over-till-the-paperwork-is-done-by-jasper-rine-6]. *GENETICS* and *G3* are exploring integrating access to the blogging platform at the article level. ZappyLab has also created a mobile suite called Bench Tools to help in experimental work. The apps are freely available at zappylab.com.

Do you have an idea for how GSA can use technology to enhance *GENETICS* and *G3*? Write to Tracey DePellegrin at tracey.depellegrin@thegsajournals.org.



FREE to GSA Members:

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2014 Schedule for the Congressional Biomedical Research Caucus Briefing Series

The Coalition for the Life Sciences (CLS) has released the schedule for the 2014 briefing series of the Congressional Biomedical Research Caucus.

The Caucus is celebrating its 25th year of informing and educating Members of Congress about potential and actual advances in health care made by our investment in biomedical research. It is a bipartisan, bicameral caucus and takes no dues from members. Representatives Steven Stivers (R-OH), Charles Dent (R-PA), Jackie Speier (D-CA), and Rush Holt (D-NJ) are the current co-chairs of the Caucus. During each session of Congress, the country's leading research scientists provide Members of Congress with monthly briefings about cutting-edge research. The CLS has been proud to sponsor presentations by prominent scientists,

including several Nobel laureates, to address on such topical

issues as women's health, cystic fibrosis, heart disease, gene therapy, and effective drug design. Many of the stunning advances highlighted in their presentations have led to improved understanding of the cause of and treatment for human disease.

The 2014 briefing series continues the tradition by featuring talks on cutting-edge technologies, bold initiatives, and research that will transform human health.



The general public is invited to attend these presentations that start at 12 noon.
Please RSVP to cls@coalitionforlifesciences.org.

April 2	"Understanding Circadian Rhythms: Understanding sleep disorders" Michael Rosbash, PhD, Brandeis University (<i>GSA member</i>) Rayburn House Office Building, Room B-340
May 7	"HIV/AIDS in 2014: Progress and priorities" Anthony Fauci, MD, National Institute of Allergy & Infectious Diseases, NIH Rayburn House Office Building, Room B-340
June 18	"Paying Dividends: How federally funded biomedical research fuels the pharmaceutical industry" Marc Tessier-Lavigne, PhD, The Rockefeller University Rayburn House Office Building, Room B-340
July 16	"Embryonic Stem Cell Research: Advances and potential" Lawrence Goldstein, PhD, University of California, San Diego (<i>GSA member</i>) Rayburn House Office Building, Room 2168 (Gold Room)
July 30	"CRISPR: The game changing therapeutic technology" Feng Zhang, PhD, McGovern Institute for Brain Research, Massachusetts Institute of Technology Rayburn House Office Building, Room 2168 (Gold Room)
September 10	"Aging and the normal brain" Carol Barnes, PhD, University of Arizona Rayburn House Office Building, Room 2168 (Gold Room)

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