



IBNS News

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Presidential Letter



The internet has recently been full of stories on the cost of creating, characterizing and testing new drugs (e.g.

<http://www.forbes.com/sites/matt-hewherper/2012/02/10/the-truly-staggering-cost-of-inventing-new-drugs>). Low-end estimates start at about one billion dollars per drug from inception to approval. The estimated cost per drug rises rapidly from there, with different pharmaceutical company averages that largely reflect variation in the proportion of new drugs developed by each company that is ultimately approved by the FDA.

Distant as these events may seem, except for those of us who might need some of these new drugs, they are actually an important part of the *kuleana*¹ of our Society. A crucial focus of translational research in behavioral neuroscience is use of new information and understanding to produce improvements in treatment or prevention of psychopathologies. Drugs are not, and should not be, the only component of this

process, but for most psychopathologies, they are currently the major focus of treatment approaches. Sadly, for most psychopathologies, not enough is known of their underlying mechanisms to provide practical and effective preventive measures.

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Baldwin Wallace University Wins the SFN Undergraduate Neuroscience Program of the Year

The BWU undergraduate Neuroscience Program was selected as the first recipient of the Society for Neuroscience's prestigious Program of the Year Award (2012).

The Society for Neuroscience Program-of-the-Year Award "... recognizes the accomplishments of a neuroscience department or program for excellence in educating neuroscientists and providing innovative models to which other programs can aspire. Award recipients excel in teaching and positively influencing the lives and careers of their students." See: http://www.sfn.org/index.aspx?pagename=NDP_NeuroscienceAward%20. IBNS Fellow, **Dr. G. Andrew Mickley**, developed initial enthusiasm for the study of

Continued on page 5.

Featured IBNS Scientist:



Dr. Rosalinda Guevara Guzman

Dr. Rosalinda Guevara Guzman is Professor in the Department of Physiology at the Universidad Nacional Autónoma de México. She has a Masters in Physiological Sciences, a PhD in Biomedical Science, as well as a degree in Medicine from the Universidad Nacional Autónoma de México.

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Presidential Letter

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The International Behavioral Neuroscience Society consists of individuals who are involved in research aimed at understanding the neuroscience of behavior. It is fair to say that opinions regarding the role of easily-visualized translatability as a factor in research evaluation—and especially research funding—vary within this group. For what it is worth, my own views run a bit toward the favorable side of this continuum, considering that a focus on human problems is, at least until some of the major ones of them can be better handled, a pretty good idea. However, the idea that I would like to present for your consideration applies across the spectrum of views on translation.

Experimentation is the core of research methodology in science. Because much experimental research in behavioral neuroscience involves procedures with some potential for damage, animals serve as subjects in most such research. There are other values to the use of animal models, including time: The life span of a laboratory mouse or rat is such that the effects of early manipulations can be tracked to adolescence and adulthood over just a few months. Expense is another advantage. Harking back to drug research, preclinical work with animals involves a tiny fraction of the cost of a single set of clinical trials.

Nevertheless, there is an important downside to animal models in behavioral neuroscience research: Not infrequently, they fail to



either the anticipated or hoped-for effects of the treatment, as well as undesirable side effects that may emerge, or be noted, only when people serve as subjects.

So, here is my suggestion: We need to recognize that behavioral tests are still the weak sister in programs analyzing effects of biological manipulations on behavior. We also ought to recognize that this is our fault, and does not reflect some inherent limitation of behavior. We need, in fact, to treat conceptualization of behavior as seriously as we do conceptualization of biological structures and functions. Current research emphasizes multidisciplinary work in neuroscience that combines teams working in a variety of disciplines; anatomy, physiology, immunology, biochemistry, genetics, epigenetics, and the like. Where are the multidisciplinary teams of behaviorists? It is becoming clear that an adequate analysis of specific patterns of behavior—aggression, defense, cognition, sexual or social behavior, etc.-- may be a bigger job than any single lab alone can hope to accomplish. Some approaches may involve field work; cross-species and lab-strain vs. wild-strain analyses; analyses of longer-term outcomes (mortality, reproduction, etc.) of different behaviors in systematically varied situations.

accurately predict the effects of treatment when applied to people. This failure can involve

to assess functionality; all taken in conjunction with detailed descriptions not only of the behavior of the individual, but also the behaviors of those with which it may be interacting. While I acknowledge a certain element of wishful thinking in my hopes for the future of behavior analysis in animal models, the current situation is so far from this scenario that any degree of awareness of what is needed may provide a nudge in the right direction for some.

Dr. Thomas Insel, Director of NIMH, has recently pointed out (<http://www.youtube.com/watch?v=u4m65sbqbhY>), that neuropsychiatric disorders represent the late-emerging consequences of abnormal processes that may have taken a long time to develop; making early intervention much more difficult. This situation emphasizes both the need for biomarkers to provide clues that an abnormal process is underway, and the crucial importance of a better understanding of the entire spectrum of the process involved, to facilitate such intervention.

Ultimately, it is this understanding that requires improvement in our grasp of relevant behavior patterns. Several years ago, Bob Blanchard, writing in a similar context to this one, noted that the elusive goal of consilience—understanding how elements from different fields fit together to produce a functioning whole—was coming just a little closer. In the intervening years, it may have approached a bit closer still, due in considerable part to advances in genetics and epigenetics. The

missing element, absolutely necessary to link all of these biological processes to evolution, is behavior. For many biological systems functionality basically refers to behaviors and their outcomes. When this is understood, in its many details, I think we will be a good deal closer to both consilience, and to the creation of meaningful animal models that provide greatly enhanced prediction of the relationships between biological manipulations and behaviors – both normal and pathological- of human beings.

1. *Kuleana* is a hard-to-define Hawaiian word that implies inclusion within a range of events for which a person or group has some responsibility.

*Contributed by
D. Caroline Blanchard, Ph.D.,
President, International Behavioral
Neuroscience Society. Researcher, the
Békésy Laboratory of Neurobiology,
Pacific Biosciences Research Center,
University of Hawaii*

Featured Scientist (Continued. from p. 1)

Following her training in Mexico, Dr. Guzman did postdoctoral research at foreign institutions such as the University of Sao Paulo, Brazil, the Brain Research Laboratory of Syracuse University, the Department of Psychology at MIT, the National Institute of Agronomic Research in Nouzille, France, and the Institute of Animal Physiology and Genetics Research in Cambridge, England, among others.

Her scientific production totals more than 80 articles in behavioral neuroscience in national and international journals and her work has accumulated

thousands of citations. Some of her papers have become milestones in our field. For example her 1997 paper in *Nature* on the involvement of nitric oxide in the formation of olfactory memories has become seminal in our understanding of gaseous neurotransmitters' crucial role in behavior.

Not only is Dr. Rosalinda Guevara Guzman an accomplished scientist, throughout her career she has also been a busy instructor. She has taught more than 50 courses and workshops, most on Cellular Physiology and the Nervous System, and has supervised numerous undergraduate and graduate theses, with more in progress.

Her distinguished academic career has earned her numerous awards such as the "University Merit" medal, "Valentin Gomez Farias," medal, and the "Sor Juana Ines de la Cruz" prize, granted by the National Autonomous University of Mexico in 2006. She has also served in Distinguished Chair positions ("Alberto Rojas Guevara" and "Aquilino Villanueva") in the Faculty of Medicine.

Dr. Rosalinda Guevara Guzman is a founding member of IBNS (1992) and is a fellow of the society. We asked her to tell us what IBNS has meant in her successful scientific career. Here is what she had to say: *"The International Behavioral Neuroscience Society (IBNS) brings back fond memories of an outstanding man. My admiration to doctor Matthew J. Wayner's research work made me take a sabbatical year at his Brain Research Laboratory in Syracuse University in New York from September 1997 to 1978.*

In 1979 he invited me as a guest researcher in November 1979. And then again, took advantage of sabbaticals and in 1981 returned to work with him.

When he moved to the Division of Live Sciences at the University of Texas in San Antonio in 1984, I joined him for a month. As a result of this fruitful collaboration, we published several articles.

Thus, admiration turned into friendship and close communication. I was a witness of the development of a great idea. He was determined to encourage research and education in the field of behavioral neuroscience. But instead of dreaming... he was planning; and put his mind to work. He founded the most prestigious scientific society in 1992.

I was taking a sabbatical at the Institute of Animal Physiology and Genetics Research, in Cambridge, England working with doctor Keith Kendrick when doctor Wayner invited me be part of this society. We have had a close relationship since then. Years later, I became the Latin America Regional Councilor for 2009-2012.

To sum up, I can say that science has had an impact in my work and my life... long-term knowledge and long-term friends."

Long-term knowledge and long-term friends. What better words to end this article on the remarkable career in Behavioral Neuroscience of one of our most prestigious members?

*Contributed by Elena Choleris, Ph.D.
Dept. of Psychology & Neuroscience
Program, University of Guelph*

Congratulations to our 2013 Travel Award Winners!

Every year we offer travel awards that provide financial support for graduates and postdocs to attend the meeting. This year the awards are sponsored in part by Elsevier. These awards are highly competitive. We thank Kim Gerecke and Jon Brigman and the Education and Training Committee for their hard work in selecting award winners. Lastly, we congratulate the winners, listed below. The winners represent the international diversity of IBNS members as they come from a variety of countries including Brazil, USA, Germany, Australia, Malaysia, and Canada. Check out the IBNS site for pictures and more information about the winners!

Postdoc Awards:

Michal Arad, University of Maryland, Baltimore, MD, USA
Lisa Briand, University of Pennsylvania, Philadelphia, PA, USA
Stephen Mahler, Medical University of South Carolina, Charleston, SC, USA
Joanna Workman, University of British Columbia, Vancouver, Canada
Armin Zlomuzica, Ruhr-University of Bochum, Bochum, Germany

Graduate Student Awards:

Ryan Bastle, Arizona State University, Tempe, USA
Michael Corley, University of Hawaii at Manoa, Honolulu, HI, USA
Alexandre Hoeller, Federal University of Santa Catarina, Florianópolis, Santa Catarina, Brazil
Ann N. Hoffman, Arizona State University, Tempe, AZ, USA
Linnet Ramos, University of Sydney, Sydney, Australia
Sergey Sotnikov, Max Planck Institute of Psychiatry, Munich, Germany
Farah Wahida Suhaimi, Universiti Sains, Penang, Malaysia
Brandon Warren, Florida State University, Tallahassee, FL, USA

New IBNS Website!



The new IBNS website is now up and running. All members are encouraged to log in and check out the new features, many of which are only available to members. The recent additions are designed to not only promote

IBNS related news, including information on the upcoming 2013 meeting in Malahide, Ireland, but also to facilitate interaction and discussion among IBNS members between annual meetings. Updated information is currently available, including a number of new membership options, such as life membership (a single payment that will avoid having to keep track of yearly dues payments).

As always the website contains important information about the Society and the Annual Meeting, means to contact IBNS members and links to a variety of sites

relevant to behavioral neuroscience. The Career Center also includes job listings and the ability to post and search resumes for both candidates and prospective employers.

Further, each member now has a personal profile, which is designed to enhance communication and collaboration amongst members by providing updated contact information, research interests, activities and publications. The profile also includes a variety of social networking capabilities, and links to other social networking sites,

(Continued on page 5)

like Facebook and LinkedIn, in which IBNS already has a substantial presence (there are currently more than 2000 members of the IBNS LinkedIn group). Like other Social Networking sites this includes the ability to message, gain connections, post photos, files and links, and even blogs. We encourage all members to complete their personal profiles to facilitate the exchange between the members and to gain new contacts in the society. The new Career Center offers job listings and the ability to post and search resumes for both candidates and prospective employers.

Besides the new interactive parts, the homepage provides, as always, important information about the society itself. So there are for instance several new membership options available, including lifetime memberships (a single payment that will avoid having to keep track of yearly dues payments). Furthermore, it is also a resource for information of the upcoming and past annual meetings, including pdf-files of programs and abstracts as well as photo galleries from the last three meetings kindly provided by the IBNS photographer-in-residence, Marianne Van Wagner.

We encourage all members to test out all of the new features of the website and provide feedback on what you like and what you think might still need improvement. Any suggestions about content for the website that members may find useful will be especially appreciated. Please contact any of the members of the Communications Committee with

your comments or suggestions, through the website.

*Contributed by F. Scott Hall, Ph.D.
Molecular Neurobiology Branch
Intramural Research Program, NIDA*

Congratulations to the IBNS members for their Accomplishments!

BWU Award

(Continued from p. 1)

Neuroscience at BWU by offering a Neuroscience minor in 1995.

Students clamored for more and the University established a Neuroscience major in 2000. Neuroscience students graduate with 2 majors (Neuroscience and Biology, Chemistry, or Psychology). With over 70 students, Neuroscience is the fastest growing major at the University. The curriculum is research-intensive and all students are required to produce an

empirically based senior thesis).

The award citation recognized the peer mentoring program at BWU that encourages Neuroscience students to collaborate and learn from, not only faculty, but each other).

It's a 3-tier process and it starts in the classroom where students work in small teams to review the literature, design, and conduct their own empirical studies. These class projects require students to be creative, write clearly, quickly develop new lab skills, and defend their work. These challenges are met through peer-to-peer teamwork but are also met through peer mentoring provided by more-senior students who have completed the courses and serve as lab assistants. Students are also paired with senior neuroscience majors who have developed particular lab skills and may be called upon to act as supplementary mentors.



Baldwin Wallace University faculty, current students, and alumni pose with the plaque recognizing their Neuroscience Program as the 2012 Undergraduate Neuroscience Program of the Year.

Typically the second step in the program is the peer mentoring that occurs as students work in faculty research labs. Undergraduates, often ill-equipped with research skills, are likely to become involved in research labs where other students are also working with faculty. Students at BWU frequently start laboratory internships as freshmen or sophomores and enter a faculty and peer mentoring system where they are trained in a structured, progressive manner. Students are given a handbook that lists all the techniques employed in a lab and then begin training. They first observe the particular task they wish to learn. Once they have watched this skill for the first time, they have a faculty member, the Lab Manager, or a peer mentor verify this by signing on the 'observation' line of a checklist. Students next *perform* the skill under supervision, and finally are *tested* on the skill. Once this process is complete, students are then qualified to perform this particular task on their own. This method of initial observation, training and testing has been *instrumental in maintaining quality control* in the laboratory. Students begin with learning basic laboratory tasks and may eventually achieve the status of "Senior Laboratory Associate" (SLA) or Project Manager (PM). SLAs and PMs have the authority to train other less-experienced students. *They are the peers that less-experienced students turn to for advice.* As such, they are a critical part of the lab management team. The system provides a structured, but

encouraging, peer-mentoring community in which talented undergraduate neuroscientists can develop and mature.

The final tier of the BWU system involves peer mentoring in the context of the Neuroscience senior theses. Undergraduate students in the BWU Neuroscience Club and *Nu Rho Psi* (the National Honor Society in Neuroscience) manage a "pairing program" where Neuroscience students working on their senior theses are paired with more-junior undergraduates. The students performing their senior thesis research benefit from having an extra set of hands and the mentored younger students learn new lab skills – techniques that will be used later as they perform their own thesis research.

Dr. Mickley notes that "We have tracked the success of our peer mentoring programs via anonymous surveys of our current students and those in their post-undergraduate careers. When over 150 of our students working in laboratories that used our peer mentoring model were asked to rate their experience all 'strongly agreed' with the statement that 'supervision/training was appropriate and of high quality.' 100% of our peer mentors 'agreed' or 'strongly agreed' with statements indicating that their 'peer mentorship was excellent', 'helped them gain confidence' and 'allowed them to be more successful in their research'. Our student's acceptance rate in graduate, medical, dental, and veterinary schools stands close to 100%."

As Morgan Rogers (a current Neuroscience and Psychology

major) says: "The fact that we are encouraged to mentor others has given me the belief that I can develop leadership skills even before my career matures. I also have realized the importance of being patient and paying meticulous attention to detail, and that mistakes by new students provide teachable moments that help my mentoring skills grow."

For more information about components of the BWU peer mentoring model, see the article in the *Journal of Undergraduate Neuroscience Education* (JUNE: Mickley et al., 2003; <http://www.funjournal.org/previous-issues/2003-vol-1-issue-2>).

Submitted by, G. Andrew Mickley, Ph.D., Executive Director, Nu Rho Psi, the National Honor Society in Neuroscience; Emeritus Professor and Founding Chair, Neuroscience Program, Baldwin Wallace University

More Awards....



Benedict Albensi received the Richard Hoeschen Memorial Award from the Manitoba Medical Service Foundation (MMSF) and the St Boniface General Hospital Research Centre; Editor of the newly published book "Transcription

Factors CREB and NF- κ B: Involvement in Synaptic Plasticity and Memory Formation" (2012); and senior-authored the recently published paper: "NF- κ B p50 subunit knockout impairs late LTP and alters long term memory in the mouse hippocampus". Oikawa et al. BMC Neuroscience, 2012.



Robert Gerlai received the 2013 IBANGS (International Behavioural and Neural Genetics Society) Distinguished Investigator Award.

Shampa Ghosh got the FAONS International Travel Award and Fellowship to attend the IBRO School on Biomedical Imaging at the Monash Biomedical Imaging Center, Clayton, Australia and the 33rd Annual meeting of Australian Neuroscience Society, Melbourne, Australia, for her work on accelerated aging of a



novel obese rat model (WNIN/Ob).

Wael Mohamed received the NAN (National Academy of Neuropsychology) Outstanding Dissertation Award 2012 for his dissertation titled: "Neurobehavioral Sequelae of Early Iron Deficiency in Rats."



Joanna Workman was awarded a NARSAD Young Investigator Grant from the Brain and Behavior

Research Foundation; Recently published a paper in the Journal of Neuroendocrinology demonstrating that high corticosterone given during the postpartum period reduces complexity of, but increases mushroom spines on pyramidal neurons in the CA3 region of the hippocampus.

Publications....

Elena Choleris published the book "Oxytocin, Vasopressin and Related Peptides in the Regulation of Behavior" Editors: Elena Choleris, Donald W. Pfaff, Martin Kavaliers.

Giuseppe Crescimanno senior authored "Temporal structure of the rat's behavior in elevated plus maze test" (*Behavioural Brain Research*, 2013). The research demonstrates for the first time the existence of complex and significantly timed behavioral sequences in the activity of

Wistar rats tested in elevated plus maze.

F. Scott Hall edited a new book on serotonin entitled "Serotonin: Biosynthesis, Regulation and Health Implications", by NOVA Publishers. The book includes chapters by a number of other IBNS members, including Rani Vasudeva, Allan Kalueff and Susan Andersen, as well as other noted leaders in the serotonin field.

Bruce King wrote a theoretical review paper on the evolutionary origins of human obesity which was published in American Psychologist - Dec. 17, 2012.



Liang Li recently senior-authored a paper showing that auditory responses in the lateral amygdala nucleus can be modulated by attention (Du et al., 2012, *Neuroscience*).



Mikhail V. Pletnikov senior-authored the manuscript "Pathogenic disruption of DISC1-

serine racemase binding elicits schizophrenia-like behavior via D-serine depletion". (*Molecular Psychiatry*, 2012). The paper received much press including coverage by Johns Hopkins, NARSAD and the NIH!

Heinz Steiner was first author on a paper published (*Progress in Neurobiology*, 2013) on addiction and the long term neuronal effects of psychostimulants.



Ingo Willuhn first authored a publication entitled "Hierarchical recruitment of phasic dopamine signaling in the striatum during the progression of cocaine use" in December 2012's issue of PNAS.

Career Updates....

Stephanie Bissiere impressively organized the first MCCS (Molecular and Cellular Cognition Society) Australia Meeting, which took place in Melbourne, AU Feb 1-2, 2013.

Sylvie Granon



co-founded a small company called Brain@vior, dedicated to study social behaviors and acoustic communication in rodents. Brain@vior allows you to analyze and rapidly process your data.

For more information, you can visit the company's website: www.brainavior.com."

Ever productive, Sylvie also created, with colleagues Stéphanie Pons (Institut Pasteur) and Sandra Suarez (NeuropsyScience) a non-profit organization, called StuAtNet dedicated to encourage students to go abroad for internships in the Neuroscience field. She is currently compiling a directory file of labs interested in taking students for short-term internships, even students with low qualification. So far, they have 15 labs from 8 different countries! The aim is to encourage students to engage in this field and to discover, through internships, the different aspects of Neuroscience. They strongly encourage female/male parity. (for more info, go to: www.studatnet.org).

Botros B. Kostandy Shenoda and colleagues at Drexel University are studying the epigenetic control over the endogenous system of analgesia as well as whether or not this is being modulated by already known analgesics.

Janaina M. Zanoveli recently joined the department of Pharmacology at Federal University of Parana (UFPR) where she has introduced a new research line focusing on neurochemistry and neural substrate involved in altered defensive behaviors in diabetic rats.

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