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THE Pharmacologist

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The Great Dogsled Relay

Inside:

ASPET
Transforming Discoveries into Therapies

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2014 Year in Review

It's time to raise a toast to a fantastic 2014!

New Year, New Logo

This spring ushered in a notable, new change for ASPET – the launch of our brand new logo and tagline! After nearly a year and a half of conducting branding research, interviewing members, and working with members and designers to come up with the new logo, we were proud and excited to unveil our fresh new look. Our new tagline "Transforming Discoveries into Therapies" captures the important work our members do and also conveys the message that you don't have to be a conventional "pharmacologist" to be an ASPET member. Going off this new message of diversity, we started the "I am an ASPET Member campaign," showing all the different fields our members work in. For more information about the "I am an ASPET Member campaign," visit *www.aspet.org/I_AM_AN_ASPET_Member*

The Pharmacologist

As part of our rebranding process, we decided to take another step forward and redefine our quarterly publication, *The Pharmacologist.* The 2014 editions of *The Pharmacologist* underwent a complete overhaul – with a bright design and feature articles full of compelling imagery and graphics, in depth interviews, and more information about members' achievements. If you haven't yet checked out the new editions, visit us online at *www.aspet.org/The_Pharmacologist.aspx*

2014 ASPET Annual Meeting at Experimental Biology

This year we held an extraordinary joint meeting with the Chinese Pharmacological Society (CNPHARS) in San Diego with a robust attendance of 13,376 attendees at the overall Experimental Biology meeting and 1,321 scientists at the ASPET annual meeting. Our annual meeting program this year was bursting with cutting-edge science led by outstanding speakers in our field. We awarded 82 Graduate Student Travel Awards, 29 Young Scientist Travel Awards, and 5 SURF Fellow Awards and welcomed 8 ASPET Washington Fellows. Be sure to look at our program for 2015, when we will meet in Boston March 28–April 1, 2015.

The *BIG IDEAS* Initiative

The Society also announced its *BIG IDEAS* initiative for the first time this summer and invited individual members and divisions to submit proposals for new projects that would directly benefit ASPET members. After two rounds of reviewing many high quality proposals, the ASPET Council selected three *BIG IDEAS* to pursue: 1) Enhancing Undergraduate Engagement in ASPET at EB Meetings, 2) Industry Internships for Pharmacology PhD Students (IIPPS), 3) From Senior Mentor to Highly Skilled Career Coach: Breaking the Diversity Roadblock. We extend our congratulations to all who were involved in the development of these projects and thank all ASPET members who committed their time and energy to apply to this initiative. For an in-depth update, refer to page 187 in this issue.

Fundraising and Endowments

This year we met our endowment goal of $60,000 toward the Goodman and Gilman Endowment Fund. We thank all our donors who made it possible for us to reach our target goal. At the Fall Council meeting, Council approved the full funding of the John J. Abel Award Endowment and also provided additional support for the Graduate Student Travel Awards. This holiday season, in the spirit of "Giving Tuesday," we have committed ourselves to raise funds for the Young Scientist Travel Award Fund to help young scientists travel to the ASPET annual meeting to advance their careers and the future of pharmacology. A great way for you to give back to your scientific community this year would be to contribute toward this important fund. Your tax-deductible contribution in any amount will make a tremendous difference to the Society's efforts. For more information on how you can help, visit us online at *www.aspet.org/donate*.

IUPHAR World Congress 2014

Over the week of July 13–18, several members of ASPET's leadership and general membership attended the 17th World Congress of Basic and Clinical Pharmacology held in Cape Town, South Africa. This was the first world congress meeting to be held in the continent of Africa and was attended by 1,500 scientists from 74 countries. An extraordinarily successful event, the meeting emphasized the need for new therapeutic agents to combat the vast variety of infectious diseases such as Ebola, Malaria, and HIV, prevalent in the African continent. The congress opened a way for the world community to forge new partnerships with African pharmacological societies to address the acute health challenges facing the African people. In addition to the Society's participation in high-quality scientific symposia at the congress, ASPET members Dr. John Szarek and Dr. Simon Maxwell spearheaded discussions on a multi-national IUPHAR-ASPET Pharmacology Education Project intended to generate novel, web-based tools for pharmacologists.

New Awards

There was no end to our excitement when in the summer of 2014, two new ASPET awards were announced – the David Lehr Research Award and the Reynold Spector Award in Clinical Pharmacology. The Lehr award is intended to extend funding for preclinical or clinical research directed toward improving human health. It was made possible by an endowment to ASPET from Mrs. Lisa Lehr in honor of her husband, the late Dr. David Lehr, former chair of the Department of Pharmacology for New York Medical College.

The Spector award in Clinical Pharmacology was established in 2014 by ASPET in recognition of Dr. Spector's dedication and contributions to clinical pharmacology. The award recognizes excellence in research and/or teaching in clinical pharmacology. It was made possible by an endowment to ASPET from Dr. Reynold and Mrs. Michiko Spector.

The inaugural presentations for both of these awards will be at the Annual Meeting at EB 2015 in Boston.

A scenic view of Capetown

Website Updates

This fall, we were pleased to showcase the simple user-friendly interface of our new 2015 Annual Meeting microsite specifically designed for an enriching user experience. The microsite has everything our meeting attendees need including the full meeting program, abstract information, speakers, and special events in an easily navigable format. Be sure to visit the microsite at www.aspet.org/eb2015 as we update new items weekly. Throughout the year, we have made a dedicated effort to enhance functionality and improve the overall user experience

of the ASPET website, including adding new features, refreshing content and building new web pages. We have made numerous changes to the membership portal, individual chapter and division sites, the awards portal and its corresponding submission site, the symposium proposal forms, and the publications portal. Additionally, our presence on social media has steadily increased with close to a 100 new followers on our Twitter channel and improved engagement with nearly 1,300 fans on our Facebook page. We encourage you to follow us on Twitter and like us on Facebook. If you haven't visited the ASPET website in a while, we suggest you take a look around as we add interesting new content daily.

Divisions

Another new initiative this year was to start a committee of communications officers from each of the Society's nine divisions with an objective to work together on generating new content for ASPET's division-specific target audience. This effort has been helpful in facilitating an exchange of ideas, aiding in identifying and publishing content beneficial to division members, and increasing engagement on each division's LinkedIn group.

In addition, two divisions announced new awards to be presented at the ASPET meeting in Boston next year. The Division for Neuropharmacology announced the Early Career Investigator Award to honor a young investigator who is working in any area of neuropharmacology. The Division for Toxicology announced two new awards: the Junior Investigator Award to be presented to a member of ASPET who is within 15 years of obtaining their highest degree and has made significant contributions to toxicology and the Career Investigator Award to be presented to an established investigator to recognize outstanding original research contributions in toxicology. ASPET's annual member survey this year focused on ASPET's divisions and how well they are serving our members' needs. The survey asked several specific questions about members' primary division membership. We also queried members on their interest in the formation of a new cancer pharmacology division. Due to a very positive member response, Council decided to move forward with establishing this new division. The results of the survey can be found at *www.aspet.org/2014_Annual_Survey_Results*.

Journals

The ASPET journals have continued to lead in the field of pharmacology. This year, *DMD, JPET,* and *MOL* began continuous publication, posting the copyedited and formatted version of each article as soon as it was ready rather than releasing articles issue by issue. *Pharmacological Reviews* made this change in 2013. A new feature called "author ePrints" was added to all of ASPET's journals that allow the corresponding author to share 15 complimentary ePrints of a copyedited and formatted article with colleagues or on a personal website. Each of our journals strengthened their presence on Facebook and Twitter this year, so be sure to follow us and get updates on new issues, highlighted articles of interest, and other special topics.

Looking Forward

ASPET gained new staff members this year in our marketing, education, membership, and meetings departments. With new team members onboard, the Society is committed to driving its mission forward by fulfilling the needs of its members. In the coming year we hope to continue to grow the Society and attract more members who are doing research in pharmacology and experimental therapeutics, and we hope that you will continue to do your part to keep our membership strong.

It has been an outstanding year, and we thank you all for being a part of our important Society. We have exciting plans for the coming year so we hope that you will renew your membership – if you haven't already – and gear up for an exciting 2015!

As always, we would love to hear your feedback. Email us at *membership@aspet.org* to tell us how we can help make your membership as beneficial as possible!

Seasons greetings from all of us at ASPET! We hope you experience the happiest of holiday seasons and a happy, healthy, and successful new year.

With contributions from Prateeksha Nagar and Suzie Thompson

2014 Contributions

ASPET gratefully acknowledges the contributors to the following funds during 2014:

- **John. J. Abel Award in Pharmacology**
- **Julius Axelrod Award in Pharmacology**
- **Bernard B. Brodie Award in Drug Metabolism**
- **Jerry J. Buccafusco Student Travel Fund**
- **Joseph P. Buckley Student Travel Fund**
- **Thomas F. Burks Student Travel Fund**
- **P.B. Dews Award**
- **Drug Metabolism Early Career Achievement Award**
- **Robert F. Furchgott Student Travel Fund**
- **Goodman and Gilman Award in Receptor Pharmacology Fund**
- **Graduate Student Travel Fund**
- **Keith F. & Eva K. Killam Student Travel Fund**
- **Benedict R. Lucchesi Lectureship in Cardiac Pharmacology**
- **Steven E. Mayer Student Travel Fund**
- **John P. Perkins Student Travel Fund**
- **Robert R. Ruffolo Career Achievement Award in Pharmacology**
- **Torald Sollmann Award in Pharmacology**
- **Frank G. Standaert Student Travel Fund**
- **Sustaining Members Fund**
- **A. E. Takemori Student Travel Fund**
- **Norman Weiner Lectureship in Pharmacology**
- **Young Scientist Travel Fund**

ASPET gratefully acknowledges the following individuals who made contributions for 2014.

Susan G. Amara
Hibah Awwad
Louis A. Barker
John F. Bowyer
Patricia Broderick
David R. Brown
John T. Callaghan
Patrick J. Casey
Jorie Chen
Melanie H. Cobb
Richard C. Deth
Frederick J. Ehlert
Doug Eikenburg
Julie L. Eiseman
Sakina E. Eltom
Kelvin W. Gee
Margaret E. Gnegy
Lee M. Graves
Louis Harris
Ronald N. Hines
Kenneth A. Jacobson
Bhagavan S. Jandhyala
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Ralph H. Loring
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C.J. Malanga, III
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David L. Nelson
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Mark A. Osinski
Achilles J. Pappano
Popat N. Patil
Merle G. Paule
Robert N. Pechnick
William B. Pratt
Walter C. Prozialeck
Gary O. Rankin
Robert R. Ruffolo
Elaine Sanders-Bush
McHardy M. Smith
Mitchell I. Steinberg
Craig W. Stevens
Roger J. Summers
Roger K. Sunahara
Palmer W. Taylor
Dhiren R. Thakker
Jeffry L. Vaught
Stephanie W. Watts
Lynn Wecker
David E. Williams
Carole A. Wilmot
Jerrold C. Winter
Paula A. Witt-Enderby
Pancras C. Wong

This list reflects contributions received as of October 31, 2014.

New Award Endowments

The David Lehr Research Award is made possible by an endowment to ASPET from Mrs. Lisa Lehr in honor of her husband, the late Dr. David Lehr, former chair of the Department of Pharmacology for New York Medical College.

The Reynold Spector Award in Clinical Pharmacology is made possible by an endowment to ASPET from Dr. Reynold and Mrs. Michiko Spector.

Thank you to our 2014 Corporate Contributors

Cayman Chemical Company
Data Sciences International
Jazz Pharmaceuticals, Inc.
Med Associates, Inc
Merck
Metabolon, Inc.
Pregmadic
SomaLogic
Zedira

2015 Elections

The ASPET election for president-elect, secretary/treasurer-elect, and councilor will take place this month. All regular, postdoctoral, and retired members are eligible to vote. In addition, the following divisions are holding elections:

- Division for Behavioral Pharmacology
- Division for Cardiovascular Pharmacology
- Division for Drug Metabolism
- Division for Molecular Pharmacology
- Division for Toxicology

Members may view the full bulletin by clicking on the vote button on www.aspet.org or by following this URL: *www.aspet.org/2015_ASPET_Election*.

As required by the by-laws, the election site on the web will be open for a minimum of thirty (30) days from the day of notification. The election opened on December 8, 2014 and will close on January 15, 2015.

Nominees for President-Elect

Edward T. Morgan, PhD
Professor, Department of Pharmacology, Emory University, Atlanta, GA; Winship Cancer Center, Drug Discovery and Development Division, Emory University

Candidate's Statement

This is an exciting time to be a member and prospective president of ASPET. Council has worked hard over the last few years, with vision and responsibility, to position the Society to best serve our members and our discipline in the modern scientific and political landscape. The Society has a new look and a new outlook. Thanks to a judicious investment strategy, our finances are in great shape. As former secretary/treasurer of the Society, I was one of many who advocated for finding more ways to use our resources for the benefit of our members and the discipline of pharmacology. Council's positive response can be seen in many of their recent actions, from increasing the numbers of student and young scientist travel awards for the EB meeting to the "BIG IDEAS" initiative. It will be one of my priorities as president to ensure that we continue to leverage our financial resources while ensuring that we remain on a solid footing. From my experience on the Board of Publications Trustees and as an editor, I'm acutely aware of the rapidly changing landscape for scientific publishing models that may ultimately affect the journal income streams on which the Society depends.

A second area of focus will be on recruiting and retaining members, especially students and early career scientists, on whom the continued vitality of the Society depends. I will look to solicit as much information, feedback, and ideas as possible from these young members and use it to help us increase their participation and shape our strategies going forward. I feel that we also need to get more young people involved in Society governance and will work with council and the divisions to find the best way to do that. We also need to continue to reach out to those many nonmembers who are in fact practicing pharmacology and convince them how being an ASPET member can support them and help further their careers. This can be approached by, e.g.,

synergizing with related societies in sponsoring or presenting conferences and symposia, and also by finding innovative marketing strategies. It goes without saying that these priorities will not be to the detriment of other ongoing emphases at ASPET, such as political advocacy, education, scientific programming, and of course our journals.

As a pharmacologist since my undergraduate days, I joined ASPET soon after I moved to the United States. The society played a huge role in my career through scientific, networking, and leadership opportunities. In my view, the leadership's primary responsibility is to ensure that we continue to do so for current and future members. It has been a privilege to serve ASPET in several capacities over the last couple of decades, and if elected as president, I will serve with commitment and enthusiasm.

David R. Sibley, PhD
Chief, Section on Molecular Neuropharmacology, National Institute of Neurological Disorders and Stroke, National Institutes of Health

Candidate's Statement

It is a great honor to be nominated for president of ASPET. I have been a member of ASPET for nearly 30 years and have been highly involved in ASPET governance at the level of its divisions, various committees, council, and journals. It has been a privilege to work with other Society members and office staff, and I am dedicated to the future success of ASPET and the discipline of pharmacology. If elected president, I believe there are several key areas we should focus on in moving forward.

ASPET Membership and Governance: One of the most important long-range issues facing our Society is its membership. Membership in ASPET has remained relatively static for many years despite the fact that our discipline is producing more exciting science than ever before. One problem may be the siphoning off of scientists to other, more specialized societies, but we can counter this in different ways. One, we should attempt to attract new members as early as possible in their careers. Expansion of the undergraduate summer research fellowships and graduate student/postdoctoral travel awards might be helpful in this regard. At the senior level, we should continue to sponsor annual meeting symposia in emerging and even nontraditional fields to recruit new and diverse scientists to our Society. Importantly, our Society is unique in having divisions based on research interests, unlike that of many other scientific societies. This reflects the diversity of our discipline, but more importantly it provides a mechanism for more membership involvement and a bottom-up rather than a top-down model of societal governance. I believe the division system should be strengthened, wherever possible, including the addition of new divisions that reflect the growing discipline of pharmacology. In addition, we should encourage and support the formation of more regional chapters, not only as a source of new members, but to also increase the level of membership diversity.

ASPET Finances: Our society is currently in good financial shape with our reserves at historical highs, primarily due to the recent run up of the stock market. This has enabled the "BIG IDEAS" initiative, which is a great way to invest in and strengthen the Society and its membership. However, having served as secretary/treasurer of ASPET during the "great recession," I believe that we must remain prudent and careful with the use and investment of our funds knowing that the market can easily reverse course and with it, our reserves. Notably, the greatest single source of current revenue for ASPET is our journals. Consequently, I believe we should invest in our journals as much as possible, including updating their web interfaces to help make them the most attractive publication vehicles for young investigators, members, and nonmembers alike.

ASPET Advocacy and Research Funding: ASPET must be the leader in advocating for increased research funding in these difficult times of limited budgets for NIH and other funding agencies. Our research is the major driver of the discovery and development of new drugs and therapeutics, and we need to help make this even clearer to our political leadership. We are also the society that is best positioned to provide expertise and comment on

issues related to therapeutics and their development, and we need to speak out further, perhaps through the issuing of more public "white papers" on topics of critical importance as they arise. ASPET needs to become the "go-to" organization that journalists and the media come to for information on topics related to drugs and therapeutics.

ASPET and the Future of Pharmacology: These are exciting times for pharmacology! Our field is exploding with new breakthroughs and information at the basic, translational, and clinical levels. If it is to survive as a discipline, however, pharmacology must be considered a "big tent" that emerging and expanding areas such as structural and chemical biology, translational medicine, and a resurging systems and organ biology are naturally attracted to. More importantly, ASPET needs to be seen as an "integrator" of new and evolving areas and technologies within our field. This can be accomplished through continued excellence and creative programming at our scientific meeting and perhaps even enhancing the scope of our scientific journals.

In summary, I am very optimistic about the future of ASPET and the discipline of pharmacology, and I look forward to working with each and every one of you to achieve our goals.

Nominees for Secretary Treasurer-Elect

Charles France, PhD
Professor, Departments of Pharmacology & Psychiatry, University of Texas Health Science Center

Jeffrey Paul, PhD
Senior Director, Therapeutic Area Lead for Neuroscience, Astellas Pharmaceuticals, Global Clinical Pharmacology and Exploratory Science

Nominees for Councilor

Wayne Backes, PhD
Associate Dean for Research & Professor, Louisiana State University Health Sciences Center

Michael Holinstat, PhD
Associate Professor, Thomas Jefferson University

Members may view the full bulletin by clicking on the vote button on www.aspet.org or by following this URL: www.aspet.org/2015_ASPET_Election. Participate in the governance of your Society by casting your vote by January 15, 2015.

BIG IDEAS Initiative – An Update

In May, ASPET announced its ***BIG IDEAS*** initiative, a unique opportunity for members to propose a project that would directly benefit ASPET's membership. Both individual members and divisions were invited to submit a one-page proposal describing their idea. Those selected for further development by the ASPET Council were invited to create a more detailed proposal to be reviewed during the Fall Council Meeting in October. This resulted in many deserving proposals, and the very high quality of submissions speaks to the commitment and creativity of ASPET's membership. After thorough review, the ASPET Council selected three projects to pursue. Each one addresses an educational need that will ultimately serve the broad community of ASPET members and will help set the stage for the growth of the disciplines we represent. From enhancing undergraduate engagement in ASPET to industry internships for graduate students and novel mentoring approaches for early career scientists, these projects underscore ASPET's renewed commitment to education at multiple levels and career stages.

The three selected projects are:

Enhancing Undergraduate Engagement in ASPET at EB Meetings

Submitted by Carol L. Beck (Thomas Jefferson University), Catherine M. Davis (Johns Hopkins University School of Medicine), and the Division for Pharmacology Education

The goal of this BIG IDEA is to increase undergraduate engagement in ASPET in general, and specifically at the ASPET annual meeting at Experimental Biology. Currently, the ASPET award structure only offers travel awards for undergraduates who were part of the Summer Undergraduate Research Fellowship (SURF) program. However, there are many pharmacologists (who are often ASPET members) who host summer undergraduate research students in their labs outside of formal programs. This proposal provides a mechanism to include these undergraduates in the ASPET/EB experience as a way of introducing them to the world of pharmacology by providing multiple travel awards for non-SURF undergraduate researchers, by adding two additional poster session awards for undergraduates (non-SURF), and by creating a networking luncheon so all undergraduates attending (SURF or other) can meet each other and be provided with career information about pharmacology. This project can

be accomplished using existing infrastructure and a relatively small budget. The future of any discipline-based organization is in involving and integrating younger members into the field and the organization. Involving additional undergraduates beyond the scope of SURF awards in ASPET by providing travel and poster awards will give a chance to introduce these students to the field of pharmacology with the hope that they will consider graduate programs in the field of pharmacology.

The future of any discipline-based organization is in involving and integrating younger members into the field and the organization.

Industry Internships for Pharmacology PhD Students (IIPPS)

Submitted by ASPET members Kathryn Meier (Washington State University), Joan Heller Brown (University of California at San Diego), Mike Jarvis (AbbVie, Inc.), Jim Barrett (Drexel University), Jeff Herz (Algomedix, Inc.), and Jeff Jasper (Cytokinetics, Inc.), with advice from Glenn Prestwich (University of Utah; Echelon Biosciences, Inc.)

The "Industry Internships for Pharmacology PhD Students" (IIPPS) program provides a unique funding opportunity for PhD students to obtain experience in industrial settings, such as the pharmaceutical/biotechnology or government regulatory sectors, while enrolled in graduate school. Many trainees are interested in these careers, which are a particularly viable and exciting option for PhD graduates in the pharmacological sciences. However, it is a challenge for these students to find funding to support their industrial internships, as well as to identify sites for the internships. The goal of this new internship program is to establish a route that will enable more graduate students in pharmacology to gain the "soft skills" needed to progress into a nonacademic career. The program, which is modeled after the successful Summer Undergraduate Research Fellowships (SURF) program, encourages academic institutions with pharmacology doctoral programs to apply for IIPPS funding, which will support three doctoral students per year in a 10-week external internship. The funding is intended to cover the student's usual stipend. Institutional cost-sharing will be used to cover ancillary expenses such as travel and benefits. Institutions receiving ASPET funding will establish a competitive admissions process to select the interns. They will also establish relationships with industrial partners that will facilitate placement of their students. The program is intended to enhance recruitment and retention of students, to enhance awareness of and preparation for nonacademic career paths, and to strengthen connections between academic institutions and industry.

From Senior Mentor to Highly Skilled Career Coach: A Novel Approach to Breaking the Diversity Roadblock

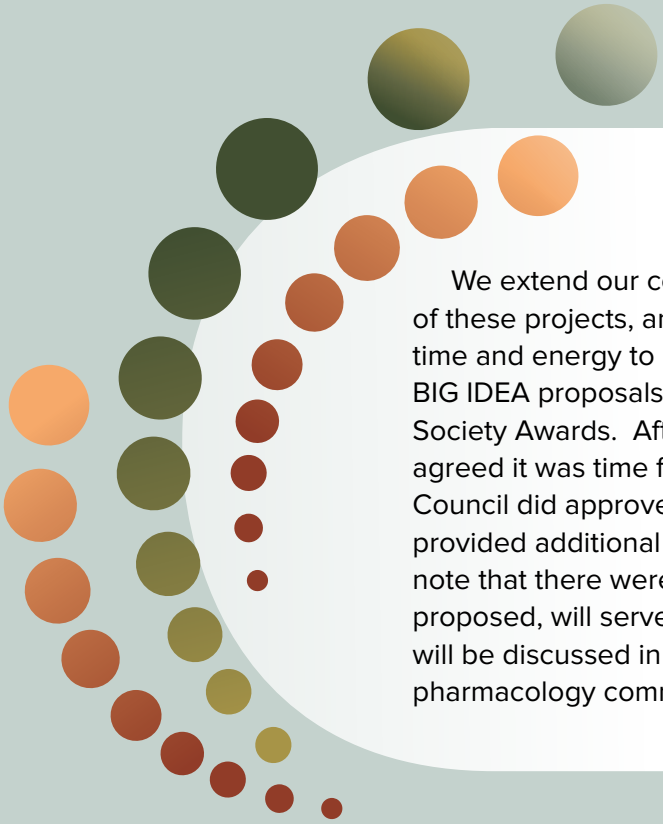
Submitted by Lynn Wecker (University of South Florida Morsani College of Medicine), the Mentoring and Career Development Committee (Susan L. Ingram, Chair), and the Division for Pharmacology Education (Carol L. Beck, Chair and Robert J. Theobald, Secretary-Treasurer)

Efforts to diversify the scientific workforce have resulted in modest improvements in gender, race, and ethnic diversity at the graduate student level, but there has been virtually no change farther up career ladders. To address this gap, Dr. Rick McGee at Northwestern University Feinberg School of Medicine

development

A key design element will be the purposeful construction of coaching groups such that no gender or race/ethnicity is a majority.

created a novel coaching model called *The Academy for Future Science Faculty,* which combines annual in-person meetings with virtual group meetings and individual coaching. The *Academy* is designed to complement, not replace, scientific mentors at students' home institutions and draws from multiple social science theories that address the difficulties of achieving diversity. The coaching model is now being expanded through collaborations with scientific societies, and support through the BIG IDEAS program will enable ASPET to join in this novel approach and cross-society partnership. The *ASPET Academy* will match mid-to late career scientists with senior level graduate students and postdoctoral fellows to help guide them in their development and career advancement. The *ASPET Academy* activities will be constructed around professional development objectives, with a special emphasis on deconstructing the skills needed to succeed scientifically, professionally, psychologically, and socially. A key design element will be the purposeful construction of coaching groups such that no gender or race/ethnicity is a majority. Graduate students, postdoctoral fellows, and coaches will be taught social science theories to enable them to develop strategies for success. Year-long cohorts will begin during both EB 2016 and EB 2017 with in-person activities and will be followed by virtual interactions throughout the year.



We extend our congratulations to all who were involved in the development of these projects, and thank all of the ASPET members who committed their time and energy to apply to the BIG IDEAS initiative. There were a number of BIG IDEA proposals proposing new awards or suggesting funding to endow our Society Awards. After careful consideration at the Fall Council meeting, Council agreed it was time for a comprehensive review of the ASPET award portfolio. Council did approve the funding of the John J. Abel Award Endowment and also provided additional support for the Graduate Student Travel Awards. We want to note that there were some other outstanding ideas that, although not funded as proposed, will serve as inspiration for future ASPET initiatives. Several of these will be discussed in the next Council meeting, including expanded outreach to the pharmacology community and beyond.

Meeting News

Business Meeting and Opening Events

Saturday, March 28, 2015

ASPET Business Meeting and Awards Presentation	6:00 PM – 7:30 PM
ASPET Opening and Awards Reception	7:30 PM – 9:30 PM

Pharmacology Programming

Schedule subject to change. Check the EB 2015 program book and mobile app for final schedule.

Saturday, March 28, 2015

Session	Time
Speed Networking for Careers Beyond the Academic Bench *Chairs: J.E. Clark and P. McGonigle*	9:30 AM – 12:00 PM
2015 Teaching Institute: ***Training Students for Teaching Careers*** *Chairs: K. Karpa and K. Hardy*	12:00 AM – 2:30 PM
Graduate Student-Postdoctoral Colloquium: How to Get Started *Chairs: A.T. Hanna-Mitchell and H. Gottlieb*	2:45 PM – 5:15 PM

Lectures Divisional Programming

Sunday, March 29, 2015

Session	Time
ASPET Presidential Symposium: ***Navigating the Future of Biomedical Research*** *Chair: A.E. Fleckenstein*	9:30 AM – 12:00 PM
Bile Acids and Liver Disease in Pregnant Women and Neonates *Chairs: L.M. Aleksunes and G.L. Guo*	9:30 AM – 12:00 PM
Emerging Regenerative Therapies in Pulmonary Disease *Chairs: Y. Liu and J. Rehman*	9:30 AM – 12:00 PM
Emerging Roles of Trace Amine Associated Receptor 1 (TAAR1) in Drug Abuse and Mental Disorders *Chairs: J. Li and G.M. Miller*	9:30 AM – 12:00 PM
Ion Channel Drug Discovery – Advancements and Current Challenges *Chairs: S.V. Kharade and M.F. Jarvis*	9:30 AM – 12:00 PM
The Role of Protein-Protein and Protein-Membrane Interactions on P450 Function *Chairs: W.L. Backes and J.P. Jones*	9:30 AM – 12:00 PM
Julius Axelrod Award In Pharmacology Lecture: ***Arresting Developments in Receptor Signaling*** *Lecturer: J.L. Benovic*	2:00 PM – 2:50 PM
Julius Axelrod Symposium: The Ins and Outs of G Protein-Coupled Receptor Signaling *Chair: J.L. Benovic*	3:00 PM – 5:30 PM
Pharmacology Education Division Programming: **Active Learning: What's Up with That Flipping Classroom** *Chair: J.L. Szarek*	3:00 PM – 5:30 PM
Elucidating the Molecular Underpinnings of Behavior Using Pharmacological Knock-In Mouse Models *Chair: R.D. Blakely*	3:00 PM – 5:30 PM
Interindividual Variability in CYP-Mediated Drug Metabolism *Chairs: H. Jeong and T.S. Tracy*	3:00 PM – 5:30 PM
Nanotoxicology: Small Particles, Big Concern *Chairs: J.S. Fedan and D.W. Porter*	3:00 PM – 5:30 PM
Vascular Stiffness, A Novel Therapeutic Approach For Hypertension *Chair: S.F. Vatner*	3:00 PM – 5:30 PM

Lectures Divisional Programming

Monday, March 30, 2015

Session	Time
John J. Abel Award in Pharmacology Lecture *Lecturer to be decided*	8:30 AM – 9:20 AM
Membrane Transporters at the Interface of Drug Interactions, Biomarker Monitoring, and Toxicity *Chairs: L.M. Aleksunes and Y. Lai*	9:30 AM – 12:00 PM
Monoamines and Neurotrophins in Inflammatory Bowel Disease/ Irritable Bowel Syndrome *Chairs: H.I. Akbarali and S. Szabo*	9:30 AM – 12:00 PM
New Therapies for an Old Problem: The NINDS-Sponsored Anticonvulsant Screening Program *Chairs: J.H. Kehne and K.S. Wilcox*	9:30 AM – 12:00 PM
Pharmacology of Neuronal Regeneration and Repair *Chairs: J.S. Marchant and B. Grill*	9:30 AM – 12:00 PM
Protein Trafficking and Drug Development *Chair: P.M. Conn*	9:30 AM – 12:00 PM
Psychomotor Stimulant Addiction: Lessons from Methamphetamine *Chairs: R.I. Desai and M.A. Nader*	9:30 AM – 12:00 PM
Drug Metabolism Early Career Achievement Award Lecture *Lecturer to be decided*	2:00 PM – 2:50 PM
Drug Discovery and Development Division Symposium: ***Drug Development in Academic Centers*** *Chairs: R.J. Leadley and R.W. Caldwell*	3:00 PM – 5:30 PM
New Roles of Mitochondria in Vascular Function *Chairs: D.W. Busija and P. Katakam*	3:00 PM – 5:30 PM
ASPET Journal Symposium: Reproducibility in the Pharmacological Sciences: Moving the Discussion Forward *Chair: D.R. Abernethy*	3:00 PM – 5:30 PM
Drug Metabolism Division James Gillette Award and Platform Session	3:00 PM – 5:30 PM
Molecular Pharmacology Division Postdoctoral Award Finalists *Keynote: J.L Benovic*	3:00 PM – 5:30 PM
Neuropharmacology Division Postdoctoral Scientist Award Finalists *Keynote: B. Kieffer*	3:00 PM – 5:30 PM

Lectures Divisional Programming

Tuesday, March 31, 2015

Session	Time
Reynold Spector Award in Clinical Pharmacology Award Lecture *Lecturer to be decided*	8:30 AM – 9:20 AM
"Can We Talk?" Strategies for Collaborative Pharmacology Education *A.L. Gorman, J.S. Reuben and J.L. Szarek*	9:30 AM – 12:00 PM
Biased GPCR Signaling in Drug Development: From Theory to Physiology *Chairs: S. Rajagopal and A. Christopoulos*	9:30 AM – 12:00 PM
Cardiac Fibroblasts: Fair-Weather Friends in Myocardial Fibrosis and Repair *Chairs: P.A. Insel and U. Meade*	9:30 AM – 12:00 PM
New Technologies to Measure Mitochondrial Changes *Chairs: C.C. Beeson and B.S. Cummings*	9:30 AM – 12:00 PM
Novel Therapeutic Targets and Preclinical Models of Post-Traumatic Stress Disorder *Chairs: C.K. Jones and M. Nedelcovych*	9:30 AM – 12:00 PM
Systems Pharmacology: Enhancing Translational Research by Network and Pharmacodynamic Modeling *Chairs: D.E. Mager and D.R. Abernethy*	9:30 AM – 12:00 PM
The Human Microbiome: Systems Pharmacology Insights and the Potential for New Drug Discovery *Chairs: R. Corriden and C. LaRock*	9:30 AM – 12:00 PM
Cardiovascular Pharmacology Division Trainee Showcase	2:30 PM – 4:30 PM
Behavioral Pharmacology Division Symposium: Sigma Receptors In Health and Disease *Chair: H. Khoshbouei*	3:00 PM – 5:30 PM
Presynaptic Autoreceptors and Improved Treatments of Major Psychiatric Disorders *Chair: S.Z. Langer*	3:00 PM – 5:30 PM
Structural and Dynamic Basis of Receptor-Ligand Interactions *Chairs: E. Ortlund and S.F. Traynelis*	3:00 PM – 5:30 PM
***Toxicology Division Symposium:* Pharmacogenetics and Drug Toxicity** *Chair: G.O. Rankin*	3:00 PM – 5:30 PM
Integrative Systems, Translational and Clinical Pharmacology Division: Young Investigator Awards Platform Session	3:00 PM – 5:30 PM
Benedict R. Lucchesi Distinguished Lectureship in Cardiac Pharmacology: *Regenerative Therapy for the Failing Heart* *Lecturer: A. Terzic*	4:30 PM – 5:30 PM

Lectures Divisional Programming

Wednesday, April 1, 2015

Session	Time
Norman Weiner Lecture: *Structural Basis for Function and Pharmacology of Voltage-Gated Sodium and Calcium Channels* *Lecturer: W.A. Catterall*	8:30 AM – 9:20 AM
Structural Basis for Ion Channel Pharmacology *Chair: W.A. Catterall*	9:30 AM – 12:00 PM
Common Pathways and Mechanisms of Chronic Pain and Opioid Addiction *Chair: S.L. Ingram*	9:30 AM – 12:00 PM
Crossing the Line: Exploring the Borders between Physiological Redox Signaling and Oxidative Stress *Chairs: T. Michel and M. Haigis*	9:30 AM – 12:00 PM
Moving Beyond Traditional Stimulants: Emerging Characteristics and Therapeutic Applications of Atypical Reuptake Inhibitors *Chairs: L.P. Carter and B.E. Blough*	9:30 AM – 12:00 PM
Natural Products: Bioactive Molecules from Nature *Chairs: B.T. Green and B.E. Blough*	9:30 AM – 12:00 PM
Transporter-Mediated Drug Interactions: Clinical Significance and Predictions *Chairs: M.J. Zamek-Gliszczynski and C. Lee*	9:30 AM – 12:00 PM

■ Lectures ■ Divisional Programming

ASPET Booth #1154

Visit the ASPET booth in the Experimental Biology exhibit hall! Items for sale at "Shop ASPET" include t-shirts, hats, plush donkeys, and much more. Plus, pick up some free giveaways!

All Division Meetings and Activities

Schedule subject to change. Check the EB 2015 program book and mobile app for final schedule.

Friday, March 27, 2015

Division Meeting / Event	Time
ASPET Council of Division Chairs *(By invitation only)*	1:00 PM – 5:00 PM

Sunday, March 29, 2015

Division Meeting / Event	Time
Division for Pharmacology Education Executive Committee Meeting *(By invitation only)*	7:30 AM – 9:30 AM
Division for Cardiovascular Pharmacology Executive Committee Meeting *(By invitation only)*	12:30 PM – 2:30 PM
Division for Drug Metabolism Executive Committee Meeting *(By invitation only)*	12:30 PM – 2:30 PM
Division for Drug Discovery and Development Executive Committee Meeting *(By invitation only)*	12:30 PM – 2:30 PM
Pharmacology Education Division Programming: Active Learning: What's Up with That Flipping Classroom *Chair: J.L. Szarek*	3:00 PM – 5:30 PM

Monday, March 30, 2015

Division Meeting / Event	Time
Division for Behavioral Pharmacology Executive Committee Meeting *(By invitation only)*	7:30 AM – 9:30 AM
Division for Neuropharmacology Executive Committee Meeting *(By invitation only)*	7:30 AM – 9:30 AM
Division for Integrative Systems, Translational and Clinical Pharmacology Executive Committee Meeting *(By invitation only)*	12:30 PM – 2:30 PM
Division for Molecular Pharmacology Executive Committee Meeting *(By invitation only)*	12:30 PM – 2:30 PM
Division for Toxicology Executive Committee Meeting *(By invitation only)*	12:30 PM – 2:30 PM

Drug Discovery and Development Division Symposium: ***Drug Development in Academic Centers*** *Chairs: R.J. Leadley and R.W. Caldwell*	3:00 PM – 5:30 PM
Drug Metabolism Division James Gillette Award and Platform Session	3:00 PM – 5:30 PM
Molecular Pharmacology Division Postdoctoral Award Finalists *Keynote: J.L Benovic*	3:00 PM – 5:30 PM
Neuropharmacology Division Postdoctoral Scientist Award Finalists *Keynote: B. Kieffer*	3:00 PM – 5:30 PM
Division for Neuropharmacology Annual Division Meeting *(Open to all division members)*	5:30 PM – 6:30 PM
Division for Drug Discovery and Development Annual Division Meeting *(Open to all division members)*	5:30 PM – 6:30 PM
Division for Molecular Pharmacology Annual Division Meeting *(Open to all division members)*	5:30 PM – 6:30 PM
Division for Drug Metabolism Annual Division Meeting *(Open to all division members)*	5:30 PM – 6:30 PM
Division for Pharmacology Education Annual Division Meeting *(Open to all division members)*	5:30 PM – 6:30 PM
Divisions for Behavioral Pharmacology and Neuropharmacology Joint Mixer	6:30 PM – 8:00 PM
Divisions for Drug Discovery and Development; Integrative Systems, Translational and Clinical Pharmacology; and Pharmacology Education Joint Mixer	6:30 PM – 8:00 PM
Division for Molecular Pharmacology Mixer	6:30 PM – 8:00 PM

Tuesday, March 31, 2015

Division Meeting / Event	Time
ASPET Cancer Division Discussion *(By invitation only)*	12:00 PM – 1:30 PM
Division for Integrative Systems, Translational and Clinical Pharmacology: ***Meet the Experts Lunch: Benchside-to-Bedside Research***	12:30 PM – 2:30 PM
Division Communications Officer's Meeting *(By invitation only)*	12:30 PM – 2:30 PM
Cardiovascular Pharmacology Division Trainee Showcase	2:30 PM – 4:30 PM
Behavioral Pharmacology Division Symposium: Sigma Receptors In Health and Disease *Chair: H. Khoshbouei*	3:00 PM – 5:30 PM

Toxicology Division Symposium: Pharmacogenetics and Drug Toxicity *Chair: G.O. Rankin*	3:00 PM – 5:30 PM
Integrative Systems, Translational and Clinical Pharmacology Division: Young Investigator Awards Platform Session	3:00 PM – 5:30 PM
Division for Cardiovascular Pharmacology **Annual Division Meeting** *(Open to all division members)*	5:30 PM – 6:30 PM
Division for Integrative Systems, Translational and Clinical Pharmacology **Annual Division Meeting** *(Open to all division members)*	5:30 PM – 6:30 PM
Division for Toxicology Annual Division Meeting *(Open to all division members)*	5:30 PM – 6:30 PM
Division for Behavioral Pharmacology **Annual Division Meeting** *(Open to all division members)*	5:30 PM – 6:30 PM
Division for Cardiovascular Pharmacology Mixer	6:30 PM – 8:00 PM
Divisions for Drug Metabolism and Toxicology Joint Mixer	6:30 PM – 8:00 PM

Activities of Interest for Students and Postdocs

Schedule subject to change. Check the EB 2015 program book and mobile app for final schedule.

Friday, March 27, 2015

Session / Event	Time
Give a Day of Service to Boston at EB 2015 – Cradles to Crayons	9:00 AM – 4:00 PM

Saturday, March 28, 2015

Session / Event	Time
Speed Networking for Careers Beyond the Academic Bench *Chairs: J.E. Clark and P. McGonigle*	9:30 AM – 12:00 PM
2015 Teaching Institute: Training Students for Teaching Careers *Chairs: K. Karpa and K. Hardy*	12:00 PM – 2:30 PM
Graduate Student-Postdoctoral Colloquium: How to Get Started *Chairs: A.T. Hanna-Mitchell and H. Gottlieb*	2:45 PM – 5:15 PM

Sunday, March 29, 2015

Session / Event	Time
ASPET Diversity Mentoring Breakfast *(By invitation only)*	7:30 AM – 9:30 AM
Pharmacology Education Division Programming: *Active Learning: What's Up with That Flipping Classroom* *Chair: J.L. Szarek*	3:00 PM – 5:30 PM
ASPET Student/Postdoc Best Abstract Competition	6:30 PM – 8:30 PM
ASPET Student & Postdoc Mixer	8:30 PM – 11:00 PM

Monday, March 30, 2015

Session / Event	Time
Drug Metabolism Division James Gillette Award and Platform Session	3:00 PM – 5:30 PM
Molecular Pharmacology Division Postdoctoral Award Finalists *Keynote: J.L Benovic*	3:00 PM – 5:30 PM
Neuropharmacology Division Postdoctoral Scientist Award Finalists *Keynote: B. Kieffer*	3:00 PM – 5:30 PM
Divisions for Behavioral Pharmacology and Neuropharmacology Joint Mixer	6:30 PM – 8:00 PM
Divisions for Drug Discovery and Development; Integrative Systems, Translational and Clinical Pharmacology; and Pharmacology Education Joint Mixer	6:30 PM – 8:00 PM
Division for Molecular Pharmacology Mixer	6:30 PM – 8:00 PM
Young Experimental Scientists Y.E.S. Mixer	9:00 PM – 11:30 PM

Don't forget to attend your Division's Annual Meeting!

Tuesday, March 31, 2015

Session / Event	Time
ASPET Networking Walk *Weather permitting*	7:00 AM – 9:00 AM
"Can We Talk?" Strategies for Collaborative Pharmacology Education *Chairs: A. Laurel Gorman, Jayne S. Reuben, and John L. Szarek*	9:30 AM – 12:00 PM
Cardiovascular Pharmacology Division Trainee Showcase	2:30 PM – 4:30 PM
Integrative Systems, Translational and Clinical Pharmacology Division: Young Investigator Awards Platform Session	3:00 PM – 5:30 PM
Division for Cardiovascular Pharmacology Mixer	6:30 PM – 8:00 PM
Divisions for Drug Metabolism and Toxicology Joint Mixer	6:30 PM – 8:00 PM

Social Events

Schedule subject to change. Check the EB 2015 program book and mobile app for final schedule.

Friday, March 27, 2015

Event	Time
Give a Day of Service to Boston at EB 2015 – Cradles to Crayons	9:00 AM – 4:00 PM

Saturday, March 28, 2015

Event	Time
ASPET Opening and Awards Reception	7:30 PM – 9:30 PM

Sunday, March 29, 2015

Event	Time
ASPET Diversity Mentoring Breakfast *(By invitation only)*	7:30 AM – 9:30 AM
ASPET Student/Postdoc Best Abstract Competition	6:30 PM – 8:30 PM
Board of Publications Trustees Joint Editorial Boards Dinner *(By invitation only)*	7:30 PM – 11:00 PM
ASPET Student & Postdoc Mixer	8:30 PM – 11:00 PM

Monday, March 30, 2015

Event	Time
ASPET Past Presidents' Dinner *(By invitation only)*	6:00 PM – 9:00 PM
Divisions for Behavioral Pharmacology and Neuropharmacology Joint Mixer	6:30 PM – 8:00 PM
Divisions for Drug Discovery and Development; Integrative Systems, Translational and Clinical Pharmacology; and Pharmacology Education Joint Mixer	6:30 PM – 8:00 PM
Division for Molecular Pharmacology Mixer	6:30 PM – 8:00 PM
Young Experimental Scientists Y.E.S. Mixer	9:00 PM – 11:30 PM

Tuesday, March 31, 2015

Event	Time
ASPET Networking Walk *Weather permitting*	7:00 AM – 9:00 AM
Division for Cardiovascular Pharmacology Mixer	6:30 PM – 8:00 PM
Divisions for Drug Metabolism and Toxicology Joint Mixer	6:30 PM – 8:00 PM

ASPET Meetings

Schedule subject to change. Check the EB 2015 program book and mobile app for final schedule.

Friday, March 27, 2015

ASPET Meeting	Time
ASPET Council Meeting *(By invitation only)*	12:00 PM – 6:00 PM
ASPET Council of Division Chairs *(By invitation only)*	1:00 PM – 5:00 PM

Saturday, March 28, 2015

ASPET Meeting	Time
ASPET Business Meeting and Awards Presentation	6:00 PM – 7:30 PM

Sunday, March 29, 2015

ASPET Meeting	Time
JPET Associate Editors Meeting *(By invitation only)*	7:30 AM – 9:30 AM
ASPET Board of Publications Trustees Meeting *(By invitation only)*	12:30 PM – 2:30 PM

Monday, March 30, 2015

ASPET Meeting	Time
Molecular Pharmacology Editorial Board Meeting *(By invitation only)*	7:30 AM – 9:30 AM
ASPET/BPS Pharmacology Research & Perspectives Editorial Board Meeting *(By invitation only)*	11:00 AM – 12:00 PM
Pharmacological Reviews Editorial Board Meeting *(By invitation only)*	12:30 PM – 2:30 PM
Mentoring and Career Development Committee Meeting *(By invitation only)*	12:30 PM – 2:30 PM
ASPET/BPS Pharmacology Research & Perspectives Management Committee Meeting *(By invitation only)*	3:00 PM – 5:00 PM

Tuesday, March 31, 2015

ASPET Meeting	Time
Drug Metabolism and Disposition Editorial Board Meeting *(By invitation only)*	7:30 AM – 9:30 AM
ASPET Nominating Committee Meeting *(By invitation only)*	7:30 AM – 9:30 AM
ASPET Science Policy Committee Meeting *(By invitation only)*	3:00 PM – 5:00 PM
ASPET Program Committee Meeting *(By invitation only)*	7:30 PM – 10:30 PM

Ancillary Functions at EB 2015

AMSPC Reception	Sunday, March 29
Catecholamine Club Dinner	Tuesday, March 31
Michigan State University Pharmacology and Toxicology Reception	Sunday, March 29
PhRMA Foundation Reception	Monday, March 30
University of Michigan Department of Pharmacology Social Hour	Saturday, March 28

ASPET Guest Societies Participating at EB 2015

Behavioral Pharmacology Society (BPS)	Friday, March 27 – Saturday, March 28
Global GI Club	Sunday, March 29

Follow ASPET's Official Meeting Bloggers

KatieSci: *sicknessisfascinating.blogspot.com*

Elizabeth Sandquist: *everydaybiochemistry.wordpress.com*

Don't forget to also follow ASPET's tweets and Facebook posts. Use #expbio and #ASPET.

ASPET Hires New Scientific Meetings Manager

ASPET welcomed Melissa Huston to the staff on September 15. As the **Scientific Meetings Manager**, she is responsible for programming and logistic details for the ASPET Annual Meeting at Experimental Biology. She looks forward to meeting everyone in Boston, March 28–April 1! Additionally she manages the process for the ASPET Scientific Achievement Awards, working closely with the awards committees and nominators. As a graduate of Georgetown University, Melissa comes to ASPET after a 20-year career in meeting planning for medical and scientific societies including the American Society for Bone and Mineral Research and the American Society of Hematology.

Important Dates

Wednesday | January 21, 2015
Deadline to Submit Late Breaking Abstracts

Monday | February 2, 2015
Deadline for Discounted Registration

Monday | February 23, 2015
Discounted Housing Deadline

March 28–April 1, 2015
EB 2015 in Boston

Saturday | March 28
6:00-7:30 PM EST ASPET Annual Business Meeting

Give a Day of Service to the Children of Boston at EB 2015

The Behavioral Pharmacology Division of ASPET will again sponsor a volunteer opportunity at EB 2015 in Boston on Friday, March 27, 2015 at Cradles to Crayons to help the children of Boston. If you would like to volunteer, please contact Charles P. France at france@uthscsa.edu.

Space is limited and further details will be provided to those who volunteer.

Register Now!

ASPET

Transforming Discoveries into Therapies

Annual Meeting at EB 2015 March 28 - April 1 Boston, MA

EB 2015

Experimental Biology

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March 28 – April 1 • Boston Convention Center

How Bostonian Are You?

In preparation for our upcoming meeting, take this quiz to learn more about Boston – a bustling New England city that proudly exhibits its rich history along with being home to some of the world's best universities and cultural attractions. Are you a fan of the Red Sox, love to eat fish and chips, and enjoy celebrating a traditional Thanksgiving every year? Then you may be a Bostonian at heart.

1. Which significant historic event began in Boston?
a) American Revolution
b) Boston Tea Party
c) War of 1812

2. What is unique about the geographical layout of the city of Boston?
a) Boston is a charming island surrounded by the Atlantic Ocean
b) Boston is bordered by three rivers
c) Boston is a peninsula in the middle of three rivers and the Atlantic Ocean and connected to mainland America by an isthmus.

3. Which river bordering Boston separates it from the city of Cambridge?
a) Mystic River
b) Neponset River
c) Charles River

4. What part of Boston will a typical visitor pass through many times on a tour of this historic city?
a) Freedom Trail
b) Boston Common
c) Chinatown

5. What is the name of the oldest commissioned warship in the world still sailing in the Boston harbor?
a) USS Boston
b) USS Constitution
c) USS George Washington

6. What should you know about the weather in Boston when you plan to travel there?
a) New England weather tends to be dry and moderate with comfortable temperatures
b) New England weather is extremely changeable on a daily basis and prone to precipitation
c) New England weather tends to be extremely tropical all year round

7. What is the best way to access every option of public transport, excluding taxis, when you arrive in Boston by air?
a) Mass Shuttle Bus
b) Logan Airport Loop Train
c) MTBA Light Rail

8. What is your best option for a fast trip to Boston proper that gets you close to the area hotels?
a) MBTA Harbor Express
b) City Water Taxi
c) Both of the above

9. What is one of many nicknames given to Boston that reveals a lot about its character?
a) The Windy City
b) The Walking City
c) The Green City

10. What are Boston's most popular tourist attractions?
a) The Freedom Trail
b) Faneuil Hall Marketplace
c) Cambridge
d) All of the above

See answer key on page 206

How Bostonian Are You?

Answer key:

1. **a)** The American Revolution was triggered by the protest known as the Boston Tea Party. The British parliament tried to recover the cost of destroyed tea by shutting down Boston commerce until it was repaid, which caused a rebellion among the colonists leading to a full revolution.
2. **b)** Boston is almost entirely surrounded by water and joined to mainland Massachusetts by the isthmus of Roxbury Neck.
3. **c)** The Mystic River borders Boston to the north, and the Neponset River borders it to the south. Boston is bordered by the Charles River to the west, which separates it from the neighboring city of Cambridge.
4. **d)** Boston Common is where Boston begins for visitors, who will pass through the 50-acre park many times during their stay. The Park Street Station, the hub of the subway system, and the beginning of the Freedom Trail are both located here.
5. **b)** The USS Constitution was launched in 1797 for use in a battle with the British 600 miles off the coast of Boston and is nicknamed Old Ironsides.
6. **b)** Boston's weather is extremely unpredictable with four distinct seasons and susceptible to precipitation.
7. **a)** The best option is to use the free Massport shuttle bus service that runs between all airport terminals at the arrival levels, the airport subway station on the MBTA Blue Line, and the Water Transportation Terminal dock.
8. **c)** The MBTA Harbor Express offers a fast trip from Logan Airport to the waterfront and is a good choice if you are staying near the convention center and the financial district. The City Water Taxi is also a viable option from the Logan Airport.
9. **b)** Boston is often referred to as the Walking City because walking is really the best way to get around its cobblestoned streets, and most of its attractions are close to each other.
10. **d)** The most popular things to do while in Boston is to follow the 2.5-mile redbrick Freedom Trail from Boston Common to Bunker Hill. In the heart of downtown Boston and along the Freedom Trail is the famous Faneuil Hall Marketplace that dates back to 1742. Cambridge, home to two of the nation's most prestigious schools – Harvard University and the Massachusetts Institute of Technology (MIT) – has stunning architecture and an incredible variety of restaurants and shopping.



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The Great Dogsled Relay:

The Race against Diphtheria

Rebecca J. Anderson

Carrie M. McLain Memorial Museum, Nome, Alaska

Dr. Curtis Welch with two of his nurses.

Nome, Alaska. January 20, 1925. While Curtis Welch was making his rounds at Maynard Columbus Hospital, he realized that he had a serious problem on his hands *(1)*. Nine days earlier, he had admitted 6-year-old Billy Barnett, who had a sore throat, swollen glands, and a fever. Welch treated Billy for tonsillitis, a common ailment in children, but then a thick grayish film began to form in Billy's throat and nasal cavity – a troubling complication.

The preceding October, Dr. Welch had treated a 2-year-old Eskimo boy for tonsillitis, but by the next morning the boy had died *(2)*. When 7-year-old Margaret Eide came down with a severe sore throat and slight fever on Christmas Eve, Welch again suspected tonsillitis, but like the little Eskimo boy, Margaret's condition deteriorated and she died 4 days later. As the winter progressed, Dr. Welch, who had been practicing medicine in Alaska for 18 years, noted an unusually high incidence of tonsillitis and inflamed throats among children in the community. The unexpected deaths and, especially, Billy's symptoms, pointed to something much more serious than tonsillitis: diphtheria.

Diphtheria is caused by an aerobic gram-positive bacillus, *Corynebacerium diphtheriae.* In the early stages, the patient's sore throat and low-grade fever can be easily confused with tonsillitis or a bad cold. The unambiguous sign of diphtheria is formation of a thick grayish-white membranous film over the tonsils, pharynx, or larynx, accompanied by inflammation and swelling of the neck called a "bull-neck" *(3, 4).* Diphtheria toxin (produced by the diseased membrane) circulates systemically, causing damage to the heart, kidneys, and nervous system. As the membrane spreads and the throat swells, the airway becomes obstructed, leading to death by suffocation *(3, 5).*

C. diphtheriae is highly contagious, spread by respiratory droplets through the air and direct contact with contaminated surfaces *(3).* With a 2–5 day incubation period, many people unwittingly can infect others before they show any symptoms *(5).* In the United States in the 1920s, more than 100,000 cases were reported each year, and it was a leading cause of death in young children, in whom the death rate was about 20 percent *(5).*

The native Alaskan population had less natural immunity and was particularly vulnerable to infectious diseases. Only 6 years earlier, the great influenza pandemic of 1919 had killed half of Nome's native residents *(1).* A diphtheria outbreak was cause for grave concern.

Diphtheria antitoxin, which had been introduced in the United States in 1891, was the standard treatment. Horses were inoculated with the *C. diphtheriae* toxin, stimulating production of specific antibodies, or antitoxin. The horses' blood was then harvested and processed to produce the antibody-containing serum *(4, 6).* Antitoxin will not neutralize toxin that is already fixed to tissues, but it will neutralize circulating (unbound) toxin and prevent progression of the disease *(5).* Patients, therefore, needed to be treated as soon as possible after a suspected diphtheria infection.

Sourced from the Public domain, via Wikimedia Commons

A vintage 1895 vial of the diphtheria antitoxin made from horse's blood.

Initial Steps

Dr. Welch had received a limited supply of diphtheria antitoxin in 1919, but it was now 5 years beyond its expiration date. He felt unjustified in using it on Billy because he "had no idea what effect it might have" *(2).* Instead, he employed old-fashioned remedies that doctors had used to treat diphtheria before development of the antitoxin: stimulants to strengthen Billy's heart and swabbing his throat with an astringent, ferric chloride, to break up the lesions. It worked for a while. The grayish membranes sloughed off, color returned to Billy's cheeks, and he slept more comfortably. By the afternoon of January 20, though, Billy's condition worsened. Each time he tried to draw air into his lungs, he coughed up blood. At 4:00 PM, Billy was turning blue from lack of oxygen and his breathing was labored. There was nothing else Welch could do; at this point even fresh serum could not save him. Billy died at 6:00 PM *(1, 2).*

The next morning, Welch made a house call to see 7-year-old Bessie Stanley in the nearby Eskimo village. She was heaving for air, and a massive membrane inside her mouth bled profusely at the touch. Whatever doubts Welch might have had about the previous cases, Bessie's symptoms conclusively pointed to diphtheria *(2).*

Dr. Welch gave Bessie 6,000 units of the old serum because without it, she surely would die. Unfortunately, her infection was too advanced, and she died within 48 hours. Bessie's parents and two sisters had also developed membranes in their throats, and Welch treated them aggressively with the old serum. Their throats cleared. Equally impressive, Welch noted that Bessie and her family experienced no untoward effects from the injections, raising his confidence that the antiquated serum had not degraded *(2).*

Immediately after Billy's and Bessie's deaths, Welch notified Nome's mayor, George Maynard. Welch expected new diphtheria cases within 24 hours, but he had only 80,000 units of serum – enough for about 6 patients. He had placed an order for new supplies the previous autumn, but the shipment had not arrived before Nome's seaport closed on November 1. No other ships would arrive until the spring thaw. To fight the impending epidemic properly, he told Maynard that he needed 1 million units of fresh antitoxin as soon as possible.

Dr. Welch telegraphed every major town and official in Alaska and made an urgent request for serum. As the territory's assistant commissioner of health, he also telegraphed the US Public Health Service in Washington, DC, which regulated production of antitoxins.

Welch and Morgan knew that at the current infection rate, their stock of serum would not last through the week, and without a new supply, many would die.

In Nome, Welch recommended that the town officials create a temporary Board of Health to deal with the crisis. The principal board members were Dr. Welch, Mayor Maynard, and Mark Summers. Summers was superintendent of Hammon Consolidated Gold Fields, a conglomerate mining company that dominated Nome's economy. To control the spread of infection, the new Board of Health immediately shut down every public building in Nome, banned all public gatherings, and discouraged travel along the region's trails *(1, 2)*.

Doing More with Less

Curtis Welch was the only doctor for hundreds of miles, but he was fortunate to have a skilled nursing staff. Among them, Emily Morgan was the most efficient and outstanding. She had served in the Army Reserve Nurses Corps for three years on the Western Front. After World War I, she returned from France to Wichita, KS, and worked as the city's first public health nurse. While in Wichita, she had contracted diphtheria and spent three weeks recovering in bed. In 1923, she inquired about missionary work, and the American Red Cross sent her to Nome to care for the native community as a public health nurse. Because Nurse Morgan had firsthand knowledge of diphtheria and her body had developed immunity, Welch and the Board of Health appointed her quarantine nurse *(1, 7)*.

While Dr. Welch supervised medical care at the hospital, Nurse Morgan made house calls looking for people with diphtheria symptoms and reported suspicious cases to the Board of Health *(2, 7)*. When she discovered patients showing membranes, she posted a red and black sign, quarantining everyone in the household. She treated the most severe cases in the native villages, often working alone, and always carrying her medical bag with its precious tubes of the old antitoxin.

Late on Saturday evening, January 24, the fourth day of the crisis, Welch and Morgan summarized the situation for the Board of Health: The death toll stood at 4, there were about 20 confirmed cases, and at least 50 other people were at risk. Welch and Morgan knew that at the current infection rate, their stock of serum would not last through the week, and without a new supply, many would die.

Welch had still received no word of any available serum from Fairbanks, Anchorage, Juneau, or Washington, DC. The Board of Health could not do anything more to locate fresh serum, but they could help solve another problem: how to get the serum to Nome once it was located. Mark Summers, the superintendent of Hammon Consolidated, proposed an express delivery by dogsled.

During the winter months when the frozen Bering Sea made shipping impossible, Nome depended exclusively on dogsled teams for freight and mail deliveries. The dogsled trails connected Nome to the major settlements on Alaska's southern coast and to the east. A series of trading and military posts, roadhouses, and postal stations dotted the trails to service the sled teams, telegraph offices, and mail deliveries to settlers and miners.

Summers proposed using two fast dogsled teams, one starting from the railhead at Nenana (near Fairbanks) headed west with the serum, and the other departing from Nome headed east. They would meet halfway on the trail at Nulato for the hand-off, and the second team would return to Nome with the serum. Normally, it took about 25 days for mail teams to travel the 674 miles between Nenana and Nome. Summers's plan could shave precious days off of that time.

To handle the western, roundtrip portion of this ambitious plan, Summers's obvious choice was Leonhard Seppala, a sled driver who often ferried Hammon Consolidated employees across Alaska. The scrappy Norwegian outdoorsman was undoubtedly the fastest and strongest musher in Alaska. He and his lead dog, Togo, who was as famous as Seppala, knew the trails and had shattered a number of long-

distance records for speed and endurance. Seppala at 47 and Togo at 12 were both older than the typical sled team, but Seppala was a rare natural athlete of unusual strength and endurance, and Togo was surprisingly fast, strong, and alert. After the Board of Health meeting on that Saturday evening, Summers alerted Seppala, and he began preparations for the run of his life.

The Rescue Begins

Meanwhile, as word spread about Welch's plea for serum, people responded throughout the United States, as well as at the Public Health Service territorial outposts in Alaska. On Monday, January 26, John Beeson, chief surgeon of the Anchorage Railroad Hospital, notified territorial Gov. Scott Bone that he had located 300,000 units of antitoxin. The decision about how to get the serum to Nome rested with Bone, and the first leg of the journey was obvious: Bone directed Dr. Beeson to prepare the serum at once and send it north to Nenana by train. That railroad line had been completed just two years earlier.

Beeson dutifully packed up the amber-colored glass vials of serum. As a territorial doctor, he knew firsthand the unbearable cold and jolting of dogsled trips. To protect the vials, he padded the inside of the container and then wrapped it with a heavy quilt. He placed the container in a wooden crate, covering it with thick brown cloth and pinned a note to the cloth instructing the drivers to warm the container for 15 minutes at each stop along the trail.

Dr. Beeson carried the 20-pound package of serum to the railway station in Anchorage where the train's conductor, Frank Knight, was waiting. Beeson then notified Gov. Bone that the serum was on its way and would arrive in Nenana the following night, Tuesday, January 27. Nenana, the last stop before Fairbanks, had become a major hub connecting the rail line to dogsled trails for distribution of goods and passengers to Alaska's interior.

While the train chugged northward with the serum, Gov. Bone considered his choices for the remaining transport to Nome: traditional dogsleds versus a risky but faster airplane delivery. In Fairbanks, the terminus of the rail line, a small group of enthusiastic pilots were anxious to do their bit. But this was two years before Charles Lindbergh's historic flight across the Atlantic, and the pilots' enthusiasm far surpassed the capabilities of their aircraft. Alaska was in the midst of its worst winter in 20 years. Temperatures fell to -70 degrees, and their airplane engines had no antifreeze. Snowstorms brought shattering gusts that reached 75 mph. No pilot was hearty enough to survive in the open cockpits under those conditions, even if they could fly through uncharted mountains during the winter, with only 4 hours of daylight. And, Nome had no landing strip.

Republished from, *The Cruelest Miles* by Gay Salisbury and Laney Salisbury, WW. Norton & Co.

Map of the 1925 diphtheria serum dogsled relay route from Nenana to Nome.

Late on the afternoon of January 26, as the train traveled the 300 miles north to Nenana, Gov. Bone made his decision. The serum would be delivered to Nome on dogsleds. But instead of sending one team to meet Leonhard Seppala midway on the trail, as Mark Summers had proposed, Bone thought the serum would move faster if a series of fresh drivers traveled shorter distances and handed off the package in a relay. Bone contacted officials in Nenana and told them to engage relay dog teams to carry the antitoxin westward. The teams were to travel night and day with no rest, no matter how bad the conditions, until they met up with Seppala at the halfway mark. The territorial government would bear the expense. When the call went out, men all along the trail responded, reported to their posts, and stood by for their leg of the relay.

The teams were to travel night and day with no rest, no matter how bad the conditions, until they met up with Seppala at the halfway mark. The territorial government would bear the expense.

At 9:00 PM on Tuesday, January 27, Conductor Knight jumped from the moving train onto the platform at Nenana and handed the serum package to "Wild Bill" Shannon. Shannon, a mail driver with the fastest dog team in eastern Alaska, was charged with carrying the serum on the first leg of the relay. That 52-mile stretch from Nenana to Tolovana normally took 2 days, but Shannon was told to cover the route without stopping.

Dogsledders followed the "Rule of 40s," an 80-degree window of optimal sledding temperatures. Above 40 degrees, a husky can overheat and suffer dehydration. Temperatures below -40 degrees are too hazardous for both the driver and the dogs. When Shannon released the sled's brake and set out, it was -50 degrees.

Through the night, the temperature continued to drop. After 4–5 hours Shannon's face grew numb and one big toe had frozen. He found it harder and harder to keep warm. To generate heat, he jogged in front of the lead dog, with the dog team following behind. It worked for a while, but he slowly developed hypothermia. When Shannon reached the roadhouse at Minto at 3:00 AM, the temperature was -62 degrees, and parts of his face had turned black from frostbite.

Shannon spent 4 hours in Minto recuperating and resting his dogs. As Dr. Beeson had instructed, he took the serum package inside, unwrapped the layer of fur and canvas, and dangled the container from the rafters to absorb the warmth of the stove. Three of his dogs were too weak to continue and Shannon left them in Minto. At 7:00 AM on Wednesday morning, he hitched his remaining 6 dogs and headed for Tolovana, 22 miles away.

That same morning in Nome, Mark Summers telephoned Leonhard Seppala and told his Hammon Consolidated employee that it was time to begin his trek eastward. Seppala had the longest assignment: 315 miles to Nulato and 315 miles back to Nome over some of the most difficult terrain of the entire route. At midmorning, Togo led Seppala and a team of 20 dogs down Nome's Front Street and out onto the beach trail. Nome residents were accustomed to seeing dogsled teams, but this was a rare sight. Their lives depended on Seppala successfully completing his journey.

At 11:00 AM Wednesday morning, Shannon arrived in Tolovana. His face was still creased and black from frostbite, and his dogs were exhausted. After allowing the serum to warm up in the roadhouse, Edgar Kallands began the next leg of the relay. Five hours later, he arrived in Manley Hot Springs. The temperature was -56 degrees and the roadhouse owner had to pour boiling water on the sled's birchwood handlebar to pry loose Kallands's gloves and frozen hands.

Over the next 2 days, the names of Dan Green, Johnny Folger, Sam Joseph, Titus Nickolai, Dave Corning, Harry Pitka, Bill McCarty, and the brothers Edgar and George Nollner crackled across the telegraph wires. Their progress generated newspaper headlines in the lower 48 states, and anxious listeners monitored radio news flashes as the sledders navigated the relay trail, which meandered westward along the Tanana and Yukon rivers.

A Greater Urgency

In Nome, Dr. Welch, Nurse Morgan, and Mayor Maynard were also intently monitoring the sled teams' progress. Six days after Billy Barnett died, his 5-year-old sister, Katherine, developed symptoms.

She received 15,000 units of the old antitoxin over several days, and the membrane in her throat slowly disappeared *(2)*. The Stanley family's neighbor, Minnie Englestad, also became ill and received 2,000 units. Between Wednesday evening and Thursday morning, two more children in Nome came down with diphtheria. Several others were complaining of sore throats. Welch's 6-year-old antitoxin dwindled to 21,000 units, and he began to prioritize who would get the medicine *(1)*.

Monitoring these events at the territorial headquarters, Gov. Bone worried about an uncontrolled epidemic that might spread diphtheria throughout Alaska. Beeson's 300,000 units of new serum had reached Ruby, but it was still 400 miles from Nome. Bone needed to get it there faster. He asked Mark Summers, Seppala's boss, to deploy sled teams along the western half of the route to relieve Seppala. Although Seppala and his team were the best in Alaska, a series of fresh teams could cover the distance faster.

Summers dispatched Ed Rohn to Port Safety, 21 miles east of Nome, and Gunnar Kaasen, another Hammon dog driver, to the mining village of Bluff, about 30 miles east of Port Safety. When Kaasen reached Bluff, he told the roadhouse keeper, Charles Olson, to hitch up his rig and drive 25 miles further east to the trading post at Golovin and wait there for the serum.

To reach further to the east – beyond Nome's telephone lines – Summers used US Signal Corps wireless operators to contact the storekeeper at Unalakleet and told him to "spare no expense" in deploying more teams along the trail *(1)*. One was posted at Unalakleet and another 38 miles up the coast at Shaktoolik.

Summers had no way to reach Seppala, who was out somewhere on the trail. He instructed all of the new drivers to keep a sharp lookout for Seppala and his team of Siberian huskies. If they met him, they were to stop him, hand the serum over to him, and tell him to turn westward and link up with the fresh teams that were now waiting along the trail. Summers calculated that the most likely place for the handoff to Seppala would be somewhere near Shaktoolik.

Battling a Blizzard

Early on Friday morning, January 30, the serum was warming near a roadhouse stove in Bishop Mountain. Charlie Evans waited nearly an hour before starting his leg of the relay, worried that the deepening cold would freeze the precious medicine. At 4:30 AM, Evans finally set off under the green and white lights of the aurora borealis. The temperature was -62 degrees. After only 10 miles, the dogsled team encountered a thick layer of ice fog that rose to Evans's waist and swallowed the dogs and sled. Unable to see the trail, Evans put his trust in his dogs.

They navigated well on their own, but after 20 miles, his two lead dogs began tiring. Evans had not protected the dogs' groins with rabbit-fur pelts, and their legs were burned raw by the cold where the harnesses chafed their fur and skin. The two lead dogs had severe frostbite, and both were crippled. Evans put them into the basket of the sled and strapped the harness over his shoulder. For the last 10 miles, he led the remaining dogs and together they pulled the sled to Nulato.

Evans reached Nulato at 10:00 AM on January 30. He carried the lead dogs into the cabin and slumped by the stove. Both dogs were dead. The serum had now been on the trail for 3 days and had traveled 356 miles from the railhead. After a half hour in Nulato, the serum was again on the trail. Tommy Patsy, a driver named Jackscrew, and Victor Anagick took turns carrying the package from the banks of the Yukon River, over the 4,000-foot Nulato Mountains, to the trading store in Unalakleet on the Bering Sea coast. There, the serum was again warmed by the heat of another cast-iron stove. Outside, the weather was growing worse. A vicious storm was approaching.

By Saturday, January 31, another death in Nome brought the death toll to 5 since the outbreak 11 days earlier. Three more children came down with diphtheria on Saturday, pushing the caseload to 27. Dr. Welch and Nurse Morgan were also monitoring 30 suspected cases, and at least 80 people had come in contact with the diphtheria patients. But now, they were out of antitoxin.

At 5:00 AM that Saturday morning, Myles Gonangnan packed up the serum that Victor Anagick had delivered to the Unalakleet trading post. On the opposite shore of Norton Sound, Leonhard Seppala, still unaware that the relay plan had changed, made the risky decision to take a shortcut across the frozen Sound. The approaching storm blew strong northeast winds that threatened to break up the sea ice. Under these conditions, the shortcut was dangerous but

it would save him a day's travel, versus the safer but longer shoreline route. Both Gonangnan and Seppala, from opposite directions, were headed toward Shaktoolik.

For Gonangnan, the wind and massive snow drifts made progress difficult. He put on his snowshoes and tamped down the snow on the trail to give his dogs better traction, but it slowed their pace to a crawl. In 5 hours, they had managed to move only 12 miles. With the wind blowing harder by the hour, Gonangnan stopped at an abandoned hut to make a small fire and warm the serum. Fifteen minutes later, the team headed back on the trail and began the exhausting climb up to the 1,000-foot summit of Blueberry Hills. With drifts that came up to the dogs' bellies, the climb required every ounce of their energy. But Gonangnan's 8-dog team was powerful, sure-footed, and they knew the trail.

By 11:00 AM, they were battling gale-force head winds and a wind chill of -70 degrees. When they finally reached Shaktoolik at 3:00 PM, there was no sign of Seppala. It was possible he had been delayed, or that he had already passed Shaktoolik without resting. Gonangnan had not seen him on the trail, but in those whiteout conditions they could easily have missed each other.

Fortunately, Henry Ivanoff, a Russian Eskimo, had been stationed at Shaktoolik to handle the next leg of the relay. While they waited for the serum to warm, Gonangnan briefed Ivanoff on the weather conditions, which were deteriorating rapidly. Ivanoff might not have been as experienced as the other drivers, but he was determined to do his best.

Meanwhile, Leonhard Seppala and Togo had successfully crossed the iced-over Norton Sound and passed the fishing camp at Ungalik. The strong winds of the brewing storm were blowing at their backs, and they were speeding toward Shaktoolik. Nearing the Shaktoolik roadhouse, Seppala saw something through the blinding snow. As he got closer, he realized it was another dogsled team, but it wasn't moving. A reindeer had wandered onto the trail and Ivanoff's high-spirited dogs had snarled their lines as they chased playfully after it. When he saw Seppala, Ivanoff ran toward him, frantically waving his arms. Seppala had no intention of stopping. He could not afford any delays.

A determined Ivanoff continued shouting above the whistling wind, "The serum! I have it here *(1)*!" When Seppala finally made out the words, he slammed on the sled brake. It took a while for him to stop his 20 dogs, turn them into the wind, and return to Ivanoff.

In the past 3 days, Seppala and Togo had traveled 170 miles. Now, Ivanoff briefed him on the change in plans and the worsening epidemic in Nome. Seppala's new orders were to carry the serum back across Norton Sound and on to the roadhouse at Golovin, where Charlie Olson was waiting. Seppala and Togo headed north and quickly covered the 23 miles to the Ungalik fishing camp.

A Most Dire Dilemma

In Nome, Nurse Morgan was also struggling against the storm. She knew how to work in the crudest environments, but this winter was particularly tough. She continued visiting patients in the native villages until her vision was obscured by the blowing snow and the cold became unbearable.

As the extraordinary blizzard roared up the coast, Dr. Welch monitored the deteriorating weather with increasing concern. He faced a heart-wrenching choice: the need for serum versus the possibility that the shipment would be lost as the heroic drivers fought the storm. He called a meeting of the Board of Health and recommended stopping the relay; the loss of a few hours or even a few days was not as important as the safety of the serum. The Board agreed, but no one knew exactly where Dr. Beeson's package was.

Mayor Maynard phoned the roadhouse keeper in Solomon, the furthest that Nome's telephone lines reached, and told him to intercept the dogsled driver, Gunnar Kaasen, when he arrived from Bluff. Kaasen and the serum were to remain in Solomon until the storm passed.

Maynard also called Port Safety and alerted Ed Rohn, the last designated driver in the relay. Rohn unhooked his dogs, fed them, and put away his sled. Returning to his cabin, he telephoned Nome to report that the wind was blowing at 80 mph. Then, he heard the line crackle. The phone went dead. Nome had now lost its last connection with the drivers, and Mayor Maynard could only hope that his instructions had reached down the trail to Kaasen.

Late on the afternoon of Saturday, January 31, Seppala and Togo set out from Ungalik to cross Norton Sound. It was dark, and they were facing gale-

force winds with a wind chill of -85 degrees. Unfazed by the deafening wind, Togo held his head low and his body level in deep concentration. Despite the mounds of snow and slippery patches of ice covering the Sound, he carved a straight course, and they reached Isaac's Point on the opposite bank at 8:00 PM. Hours later, the storm churned the frozen Sound into an impassable icy soup. Togo and his mates had traveled 84 miles that day, half against the wind, and they needed to eat and rest before battling the wind through the next 50 miles to Golovin.

Seppala unlashed the serum package, and inside the roadhouse, he opened the fur and canvas wrappings down to the paper cartons. He was certain that the serum inside had frozen, but he placed the cartons as close to the stove as he dared.

At 2:00 AM on Sunday, February 1, the fifth day of the relay, Seppala wrapped the serum package inside his sleeping bag, covered it with sealskin, and tied it into his sled with a blanket and then covered it with more animal skins. The storm, which had been marching up the coast for 2 days, had arrived with winds of 65 mph. Seppala and Togo took the safest path, hugging the coastline and zigzagging as sea ice heaved and crashed around them – the blizzard obscuring their vision. For the last 8 miles, they turned inland, climbing 5,000 feet over a series of ridges. Having traveled for more than 4 days and with little rest, the dogs strained up the final ascent, but they did not stop. Then, they raced down the last stretch to the roadhouse in Golovin, 13 hours after leaving Isaac's Point.

He faced a heart-wrenching choice: the need for serum versus the possibility that the shipment would be lost as the heroic drivers fought the storm.

Altogether since leaving Nome, Seppala and Togo had traveled 261 miles; from picking up the serum from Ivanoff to the handoff to Charlie Olson in Golovin, they had traveled nearly double the distance covered by any of the other sled teams. They were still as fit as the day they left Nome, just a little tired.

Mayor Maynard's instructions to wait out the storm had not reached Golovin. An hour after Seppala's arrival and with a wind chill of -70 degrees, Charlie Olson packed the serum and left for Bluff. The wind repeatedly blew Olson and his dogs off the trail, and not long after leaving Golovin, a hurricane-force gust hurtled them into a huge snowdrift. In the dark, Olson dug his way out and untangled the dogs. Despite years of rugged experience in Alaska and his heavy parkas, he could not keep warm in the blizzard.

At 7:00 PM on February 1, with the storm still raging, Olson finally reached Bluff, his hands too numb from frostbite to unleash the serum. Although he had protected his dogs with rabbit fur blankets, they were stiffened by the cold and could not have gone much further. Gunnar Kaasen helped retrieve the serum and brought the exhausted team inside, all 7 dogs limping into the cabin. Olson's fingers were white and hard as stone as he briefed Kaasen. It had taken him 4.5 hours to travel the 25 miles from Golovin to Bluff.

With his dogs crumpled on the floor and his fingers burning with pain, Olson advised Kaasen to wait for the storm to pass. They had not received Mayor Maynard's directive, but this was not weather to be traveling in, no matter how badly Nome needed the serum.

Balto and the Blizzard

Gunnar Kaasen had left Norway as a young man to seek his fortune in Alaska's gold fields, and in recent years, he worked alongside Leonhard Seppala at Hammon Consolidated. A plain-speaking, practical driver, Kaasen was a good judge of sledding conditions, and he wisely waited 2 hours in Bluff. But the wind did not subside; if anything, conditions were getting worse. At 10:00 PM on February 1, the snow was coming down fast and blowing at 70 mph, stronger than Kaasen ever remembered in his 24 years living in Nome. If he delayed any longer, the trail to Port Safety would be an impassable mass of snow drifts. His 13 dogs were well fed, rested, and ready to move, including his lead dog, Balto. The Siberian husky was less experienced and slower than many lead dogs, but he was steady and strong, and Kaasen placed great confidence in him.

Eschewing the Rule of 40s, Kaasen hooked up the dogs, packed the serum, and headed out. They faced a blizzard strength that few drivers had ever dared to tackle. After only 5 miles, they plowed into a massive drift that blocked the trail. Balto tried to run through it, but the dogs bogged down. The snow

came up to the six foot two Norwegian's chest, and he could not clear a path, either. Their only choice was to retreat and detour around the obstruction. The relatively inexperienced Balto could follow trails, but now Kaasen was asking him to scout a new trail in unfamiliar territory – in the pitch dark, in a blizzard.

Balto lumbered along the back edge of the drift, trying to find the faint scent of dogs that had pattered before him that winter. He kept his nose low to the ground, his ears flattened against his head to keep out the wind, and moved slowly. After they had skirted and passed beyond the edge of the drift, Balto was still searching. Minutes felt like hours. Then, suddenly, he lifted his head and broke into a run. They were back on the trail.

When he reached into the sled to make sure the serum was in place, it wasn't there. It had been thrown somewhere into the darkness.

Well after midnight, Kaasen's right cheek began to sting with frostbite. The wind blasted thick veils of snow, obscuring his vision. He could only guess his position and turned control of the team over to Balto. Kaasen just held on.

Several times, the hurricane-force gusts hurled the sled off the trail, dragging the dogs with it. Each time Kaasen had to take off his gloves, untangle the team, and right the sled. Ten miles from Port Safety, they were slammed by a gust in excess of 70 mph, burying Kaasen in a drift. He crawled back to the sled, righted it, and fumbled with the dogs' harnesses. When he reached into the sled to make sure the serum was in place, it wasn't there. It had been thrown somewhere into the darkness. Kaasen systematically searched the snow, crawling on his knees and with his bare hands. Finally, his right hand hit something hard, his precious cargo. He leashed it back into the sled, securing it with a few extra knots of rope.

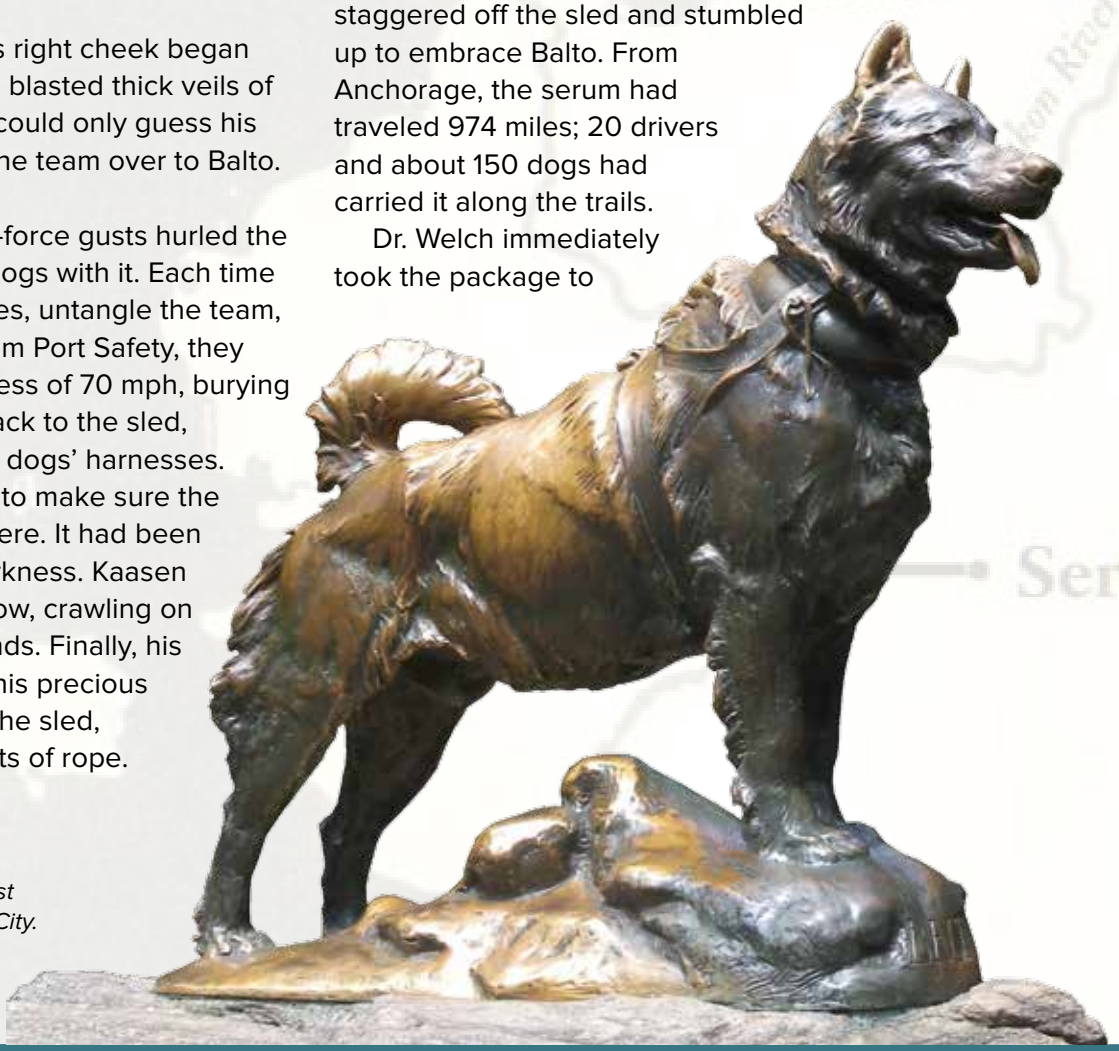
Kaasen and Balto reached Port Safety at 3:00 AM on Monday, February 2, but the roadhouse was dark. Ed Rohn had gone to sleep, assuming that Kaasen had stopped at Solomon to wait out the storm. Instead, Kaasen had missed the Solomon roadhouse, blinded by the blizzard, and proceeded straight to Port Safety. Kaasen considered waking Rohn, but harnessing and hitching his dogs would cause a further delay. The wind was easing and despite the cold, Balto and the team were still moving fast and strong. Kaasen decided to continue on to Nome.

The last 20 miles of the trail to Nome ran along the beach. The winds diminished, but the heavy snow drifts made travel slow and at times difficult. Kaasen's fingers ached from frostbite, and several of his dogs were now stiffening, but at least they could see the trail.

The Journey's End

On Monday, February 2, at 5:30 AM, Balto turned onto Front Street in Nome. Kaasen stopped the team in front of the Miners & Merchants Bank. He staggered off the sled and stumbled up to embrace Balto. From Anchorage, the serum had traveled 974 miles; 20 drivers and about 150 dogs had carried it along the trails.

Dr. Welch immediately took the package to



Statue of Balto, the lead dog on the last relay team, in Central Park, New York City. The statue is dedicated to all the dogs involved in the serum run.

By Jim Henderson (own work) [CC0], via Wikimedia Commons

the hospital and unwrapped the cartons. The serum was frozen solid. Fortunately, Dr. Beeson in Anchorage had allowed for expansion of the serum by using rubber and cork stoppers on each vial. Welch put them in a 46 degree room – warm by Alaska standards. By 9:00 AM, the serum had partially liquefied and not a single vial was broken. By 11:00 AM, the serum was clear and ready for use. Welch immediately treated the most severely ill patients in Nome. Nurse Morgan simultaneously headed to the Eskimo village to visit several quarantined families and injected each of them.

By early afternoon, more than 10% of the 300,000 units had been used up. By evening, several thousand more units of serum were gone. Many patients would receive a second round of injections.

Soon, news reached the world that the serum had arrived in Nome and seemed to be working. Some patients responded within hours. The repeated freezing and thawing had not affected the serum's efficacy, and on February 3 it looked as if even those who were seriously ill would recover.

A second dogsled shipment of antitoxin arrived in Nome on February 15, delivered by Ed Rohn in the middle of another blizzard. The second relay engaged many of the same drivers as the first and was also difficult, with heavy snowstorms impeding the drivers and dogs. Unrestricted use of the new serum rapidly ended the diphtheria threat, and on February 21, Dr. Welch lifted the quarantine *(2)*.

The Impact of the Nome Relay

A diphtheria vaccine had been introduced in the United States in the early 1920s, but it saw little use until the publicity surrounding the 1925 Nome epidemic galvanized public opinion about immunization. In the 1940s, the diphtheria vaccine was combined with tetanus toxoid and pertussis vaccine (DPT). Routine immunization of children with DPT dramatically reduced outbreaks of diphtheria. No cases have been reported in the United States since 2003 *(3, 5)*.

In New York's Central Park, near the Children's Zoo, a statue of Balto was erected in December 1925. Generations of children have petted the head, rubbed behind the ears, and climbed on the back of the metallic Balto – its bronze surface polished down to a gold sheen by thousands of tiny hands that have never suffered from diphtheria.

The Nome Serum Relay Participants

	Relay Leg	Distance (miles)	Driver
Jan 27	Nenana to Tolovana	52	Bill Shannon
Jan 28	Tolovana to Manley Hot Springs	31	Edgar Kallands
Jan 28	Manley Hot Springs to Fish Lake	28	Dan Green
Jan 28	Fish Lake to Tanana	26	Johnny Folger
Jan 29	Tanana to Kallands	34	Sam Joseph
Jan 29	Kallands to Nine Mile Cabin	24	Titus Nikolai
Jan 29	Nine Mile Cabin to Kokrines	30	Dave Corning
Jan 29	Kokrines to Ruby	30	Harry Pitka
Jan 29	Ruby to Whiskey Creek	28	Bill McCarty
Jan 29	Whiskey Creek to Galena	24	Edgar Nollner
Jan 30	Galena to Bishop Mountain	18	George Nollner
Jan 30	Bishop Mountain to Nulato	30	Charlie Evans
Jan 30	Nulato to Kaltag	36	Tommy Patsy
Jan 30	Kaltag to Old Woman Shelter	40	Jackscrew
Jan 30-31	Old Woman Shelter to Unalakleet	34	Victor Anagick
Jan 31	Unalakleet to Shaktoolik	40	Myles Gonangnan
Jan 31	(Shaktoolik to Seppala handoff)		Henry Ivanoff
Jan 31	Shaktoolik to Golovin	91	Leonhard Seppala
Feb 1	Golovin to Bluff	25	Charlie Olson
Feb 1	Bluff to Nome	53	Gunnar Kaasen

Biosketch:

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In the next issue of *The Pharmacologist...*

Dr. Anderson will be exploring a story about how Paul Janssen and his innovative drugs saved the Chinese terracotta warriors.

Don't miss the exciting March 2015 issue.

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Science Policy

NIH Funding Prospects: Half Empty or Half Full?

Mid-term elections are over. Republicans have added seats to their majority in the house and won the senate, but there is no clear forecast for what that means for the biomedical research community.

Too many in Congress today think the nation's federal investment in basic science can be replaced by industry.

While it is a pretty safe bet that the next two years will not be among the most productive or civil in the history of Congress, a Republican majority in Congress does not necessarily mean continued stalemate or that funding prospects will become even more constrained for the NIH and other federal science agencies. While the glass may not appear to be half full, it does not mean it is half empty. In fact, relatively recent history suggests that could happen. In the 1990s, President Clinton and the Republican Congress were able to balance the budget and enact welfare reform among other legislative achievements in a highly charged partisan political atmosphere. Also often overlooked is that the NIH received steady and sustained increases, ultimately leading to the Republican inspired effort to double the NIH's budget from 1998–2003. Granted, there are significant differences between then and now: there was a budget surplus and relatively minimal debt; the Tea Party did not exist and anti-government sentiment paled to today's environment; there were more Republicans who recognized the value of investing in basic biomedical research and viewed the NIH as an agency that worked, was entrepreneurial, and created jobs. Too many in Congress today think the nation's federal investment in basic science can be replaced by industry.

Another possible favorable turn is the growing bi-partisan consensus that spending cuts may have gone too far. With Republicans defending many more Senate seats and trying to elect a president in 2016, it is possible that many Republicans aware of what has already been cut may not have an appetite to cut more. With the prospects of another sequestration (automatic across-the-board spending cuts) looming in January, lawmakers will be looking closely to fix that. However, it is not certain if Congress will work hard enough to protect domestic discretionary spending as they will most assuredly work to save defense from another possible sequestration. Although there will likely be some support to either fix or repeal sequestration, this would mean raising the spending caps, which is a politically contentious issue. This fight, defense vs domestic discretionary spending, may be the key debate that will impact NIH funding. ASPET members and the rest of the biomedical research community must continue to be outspoken about the consequences of stagnation or outright cuts and forcefully advocate for steady and sustained increases for the NIH.

The outbreak of Ebola and its introduction into the United States has also raised the profile on federal investment in biomedical research. With much publicity about the NIH's budget woes having slowed development of a vaccine, the agency will be looked at closely. By this calculus, the NIH, as well as the CDC and the FDA would likely see some increases to their FY 2015 budgets.

ASPET members and the rest of the biomedical research community must continue to be outspoken about the consequences of stagnation or outright cuts and forcefully advocate for steady and sustained increases for the NIH.

But the election results may still lead to less optimistic outcomes for NIH funding trends, with Republican control of Congress increasing momentum for additional spending cuts, even for defense spending. While there seemed to be bipartisan acceptance that spending cuts have gone too far, others think more needs to be done. A Republican Congress may make it even more difficult to pass any increase in the budget caps, even if it means that defense spending will be spared from cuts as well.

Lame Duck and Beyond

At this writing, the Continuing Resolution (CR) funding the NIH and other government programs was due to expire December 11. ASPET and the biomedical research community have urged Congressional leadership to pass an omnibus bill, rather than another CR, that provides adequate funding for the NIH before January 1. The 114th Congress convenes this January, and there is hope that spending bills could be passed before the new Congress returns. Published reports this fall have indicated that the Appropriations Committees has been trying to write an omnibus bill to complete funding for FY 2015. However, the new Republican majority in Congress might decide to pass another CR through March to give them the opportunity to pass spending bills that reflect their priorities.

As hard as it may be to believe, resolving FY 2015 spending bills may look like a walk in the park compared to upcoming FY 2016 budget battles. OK, maybe it is not so hard to believe that. But last year's budget deal cut by the Senate and House Budget Chairs (Sen. Murray – D/WA and Rep. Ryan – R/WI) already set spending levels through FY 2015. That two-year deal ends and assures, most likely, another difficult spending fight in FY 2016. All groups will be asking for increased spending, and those debates will be difficult to resolve even without a rabidly contentious political climate made more complex by 2016 candidates jockeying for the White House.

ASPET Urges Congress to Pass NIH Spending Bill

ASPET's leadership wrote to Congressional leadership urging Congress to pass omnibus legislation before January 1 and complete spending legislation for FY 2015. The letter from ASPET President Annette E. Fleckenstein notes that a continued impasse over appropriations bills will "further compromise NIH's ability to meet its current obligations and research opportunities."

ASPET
Transforming Discoveries into Therapies

October 13, 2014

The Honorable Barbara A. Mikulski
Chair
Committee on Appropriations
United States Senate

The Honorable Richard C. Shelby
Ranking Member
Committee on Appropriations
United States Senate

The Honorable Harold Rogers
Chair
Committee on Appropriations
United States House of Representatives

The Honorable Nita M. Lowey
Ranking Member
Committee on Appropriations
United States House of Representatives

On behalf of the Council of the American Society for Pharmacology & Experimental Therapeutics (ASPET), I write to urge Congress to pass appropriations legislation when Congress returns following the November 4 election. It is critical for the National Institutes of Health and all discretionary health programs that Congress completes final omnibus spending legislation for FYY 2015 before January 1.

The current short-term Continuing Resolution providing temporary funding for government programs is of great concern. For the NIH, the continued breakdown of regular order of this year's appropriations process disrupts NIH's ability to meet funding obligations to the institutions and biomedical research scientists the agency funds. The possibility of an extension of the CR, or a year-long CR would further compromise NIH's ability to meet its current obligations and research opportunities. A further diminishment of NIH's purchasing power that we have seen for several years will impact human health and hurt the agency's ability to address emerging health threats. Only a steady and sustained investment in the NIH will allow for the continuity of funding that is essential to keep the Nation safe from a new generation of biological threats. NIH funding is essential for America's biological readiness to protect against health threats like Ebola virus, Enterovirus D-68 and other diseases. Furthermore, failing to meet other scientific opportunities and needs of the NIH will mean continued hardship for many academic health centers and universities conducting important biomedical research. The diminishment of our nation's investment in biomedical research has already influenced the career decisions of the next generation of scientists who see no future in pursuing research in biomedicine as a realistic career path.

I urge you to support the NIH and provide the agency with steady and sustainable increases to help meet the many scientific opportunities the agency has not been able to address. Enactment of omnibus appropriations legislation for fiscal year 2015 would be a welcome start to reversing the decline in one of America's most critical and successful enterprises.

Sincerely,

Annette E. Fleckenstein

Annette E. Fleckenstein
President

9650 Rockville Pike | Bethesda | MD | 20814-3995
P: (301) 634-7060 | F: (301) 634-7061 | E: info@aspet.org | www.aspet.org

Meet the 2015 ASPET Washington Fellows

Maria Briscione
Emory University

Maria Briscione was born and raised in Oceanport, New Jersey. She studied biochemistry at American University in Washington, DC, where she worked in a neuropharmacology lab and discovered her passion for neuroscience. She is currently a second year neuroscience doctoral student at Emory University. Her research focuses on applying acoustic-startle based phenotypes to understand genetic and neurobiological mechanisms underlying sex differences observed in survivors of combat and civilian trauma. The broader goal of her research is to contribute to our understanding in ways that may lead to improved treatment and preventative strategies for combating PTSD and other psychological disorders. Maria believes the ASPET Washington Fellows Program will allow her to use her research training to advocate for a greater understanding of how basic science intersects with the needs of society to ultimately influence science policy.

Tamara Escajadillo
University of California at San Diego

Tamara Escajadillo was born in San Diego, CA, and received her bachelor's degree in biochemistry from California State University-Dominguez Hills, in Los Angeles County. While doing so she worked in the research laboratory of Dr. Marion Seweray at the University of California-San Diego, focusing on the regulation of steroid hormone production and lipid homeostasis in the adrenal gland. More specifically, she worked on the role of an oxysterol binding protein called ORP2 in steroidogenesis. Tamara is currently an incoming graduate student at the University of California, San Diego.

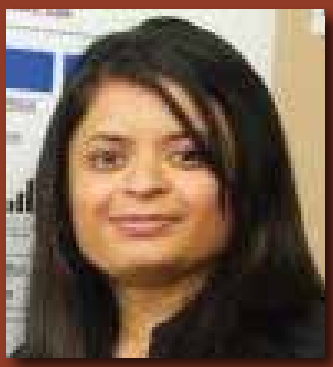
Benjamin J. Lieblong
University of Arkansas for Medical Sciences

Ben Lieblong was born in Mississippi but raised in Little Rock, AR, from age two. He earned a bachelor's degree in biology from Centenary College of Louisiana and is currently a fourth-year pharmacology PhD candidate at the University of Arkansas for Medical Sciences. Ben researches radiation-induced heart disease, a delayed side effect of radiotherapy for thoracic tumors, such as those found in breast or lung cancers. Specifically, his project focuses on characterizing radiation-induced endothelial dysfunction within coronary arteries, and developing a technique for early detection of the pathology. His interest in science policy is an extension of one of his core philosophies: promoting scientific literacy through science education at all levels. Ben believes that having a science- and health-literate populace is critical to electing officials that recognize the importance of biomedical research.

Andrew Merluzzi grew up in Vermont and completed his undergraduate degree at American University in Washington, DC. He is currently working toward his doctorate at the University of Wisconsin-Madison and is interested in studying how the brain changes over the course of development in response to environmental

Andrew Merluzzi
University of Wisconsin-Madison

stress, poverty, lack of education, malnourishment, and injury. His goal is to understand how these factors contribute to reduced human capital and to analyze various policy options for ameliorating the resulting societal burdens. Andrew is conducting lab rotations within the Neuroscience and Public Policy Program at UW and is currently working on a longitudinal study of children with PTSD. He plans to analyze how cortical thickness in fear and learning circuitry changes over the course of development for adolescents with PTSD. This area of research, as well as many others in child development and human capital, represent fertile ground for implementation of sensible policy based on a sound scientific foundation.



Dhara Patel, PhD
New York Medical College

Dhara Patel was born and raised in India. After receiving her bachelor's and master's degrees in biochemistry from India, later, she joined the PhD program at New York Medical College. She graduated with a PhD in physiology from New York Medical College in May 2013. As part of her doctoral dissertation, she generated mice models of pulmonary hypertension to investigate the role of extracellular peroxide in the vasculature of this model. She also investigated novel signaling mechanisms involved in the regulation of protein kinase G in vasculature of this mouse model of pulmonary hypertension as well as in PKG-KI (protein kinase G-knock in) mouse model. Because of the strong collaborative team of scientists available for investigation of exciting science that can lead to an independent collaboration, she decided to continue at New York Medical College as a postdoctoral fellow. As a postdoctoral fellow, she has been working on a project that is mainly focused on the disruption of heme biosynthesis in pulmonary hypertension and how ferrochelatase inhibition affects this pathway. She believes that biomedical science is not just about investigating one particular protein or gene but how that protein or gene affects the human body. Many people are not aware of the advantages of biomedical research, and it is necessary to explain in a very simple manner about any scientific area to people in non-scientific fields in order to expand the overall benefits of biomedical science. ASPET's Washington Fellows program is a first step toward her journey in public policy/science policy.

Phillip Saccone
University of Michigan Medical School

Phillip Saccone is a fourth year PhD candidate in pharmacology at the University of Michigan Medical School. Under the supervision of Dr. James Woods, Phillip is developing novel procedures to study the intranasal administration of opioid medications as well as gastrointestinal transit in non-human primates. The goal of this research is to determine whether intranasal opioid delivery will result in direct absorption to the CNS, and if so, will the peripheral side effects of opioid medications, such as constipation, be reduced. He currently serves as Graduate Study Body President and is the recipient of a Ruth L. Kirschstein Individual National Research Service Award. Before attending Michigan, Phillip worked as a lab manager for Dr. Sandra Comer at the New York State Psychiatric Institute where he studied the reinforcing effects of prescription opioids in

humans and investigated novel pharmacological strategies for the treatment of opioid abuse. As an ASPET Washington Fellow, Phillip is interested in helping to improve the understanding between scientists and lawmakers with the goal of finding new and innovative ways to strengthen federal research programs. Phillip was born and raised in New York City and currently lives with his wife, Meredith, in Ann Arbor, MI.

Katherine M. Serafine, PhD
University of Texas Health Science Center, San Antonio

Katie Serafine was born and raised in San Antonio, TX, but decided to attend college in a much cooler climate, at Norwich University in Northfield, VT. As a psychology major she had the opportunity to conduct research and teach a laboratory course in the principles of learning which sparked her interest in both experimental science and classroom teaching. In order to pursue these interests, she enrolled in graduate school at American University in Washington, DC, and received her master's degree in psychology and PhD in behavior, cognition, and neuroscience. She accepted a postdoctoral fellowship in the Department of Pharmacology at the University of Texas Health Science Center in San Antonio. Her research investigates how age, sex, and diet can impact abuse vulnerability to drugs like cocaine. Living, attending graduate school, and teaching undergraduate courses in Washington, DC, opened her eyes to the interface between science, education, and policy. Katie hopes that the ASPET Washington Fellows program will help her learn how to communicate as a scientist with politicians that are responsible for making policy decisions that impact science. She also hopes to bring this training home to Texas to help other scientists in her community learn how to more effectively communicate with their elected officials. She is excited about the opportunity to make an impact by advocating for science in her home state.

Ed Stahl, PhD
Scripps Research Institute (Florida)

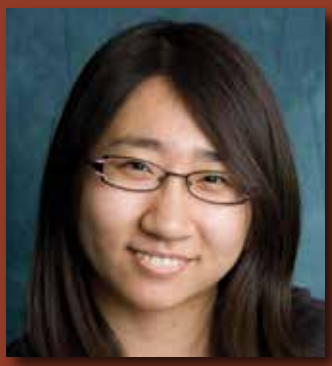
Ed Stahl was born and raised in Harrisburg, PA. He attended Lycoming College in Williamsport, PA, where he received a bachelor's degree in computer science. Following college, he decided to explore a different career path and began working as a technician in a research laboratory. In the interest of broadening his academic training in biology, he briefly attended Messiah College. He was then accepted into the pharmacology PhD program at the Penn State College of Medicine. Ed's thesis focused on developing and applying mathematical models of neuroreceptor activation in the lab of Prof. John Ellis. After completing his degree, he was hired by GraphPad Software, Inc. to provide support and modeling assistance for their scientific software users. He is currently a postdoctoral fellow in Prof. Laura Bohn's lab at the Scripps Research Institute in Jupiter, FL. His research focuses on studying novel mechanisms of drug action. Ed feels there is a real need to express to the general public, and to policy makers, the value and importance of public investment in biomedical scientific research.

Michael Tranter was born and raised in rural southern Illinois and received his bachelor's degree in molecular biology from Rose-Hulman Institute of Technology in Terre Haute, IN. Michael did his graduate work at the University of Cincinnati College of Medicine where he received a PhD in molecular pharmacology for his work on gene expression in the heart and how regulation of these changes protects cardiac muscle during a heart attack. Now an assistant professor at the University

Michael C. Tranter, PhD
University of Cincinnati College of Medicine

of Cincinnati, Michael's research focus is aimed at understanding the molecular and gene expression changes that drive the pathological progression of heart failure. Michael has been active in science advocacy for the American Heart Association and believes we must urge everyone in the scientific community to be more pro-active in advocating for science funding and education.

Menglu Yuan was born in Chengdu, China, and grew up in Missouri. She is currently a doctoral candidate of a pharmacology and toxicology at the University of California, Irvine (UCI). Her research examines the underlying mechanisms of the "Gateway Theory" with a focus on adolescence and addiction. Utilizing techniques in neuroscience



Menglu Yuan
University of California, Irvine

and behavioral pharmacology, her dissertation investigates how nicotine and the antidepressant Prozac create maladaptive changes in brain development during adolescence, resulting in enhanced reward sensitivity. Her interest in addiction-related diseases was inspired while she was an undergraduate researcher at Boston University, where she obtained a bachelor's degree in biochemistry and molecular biology. As a graduate student, Menglu served as the Pharmacological Sciences Program Student Representative and led diversity efforts to improve campus climate, access, and inclusion at UCI. With the ASPET Washington Fellows Program, she would like to gain greater exposure to public policy and learn how to cultivate scientifically informed, evidence-based laws and regulations.

Applications Open for 2016 ASPET Washington Fellows Program

Applications are now being accepted for the 2016 ASPET Washington Fellows Program. The application deadline is September 2, 2015.

The Washington Fellows Program was created in 2013 with the goal to develop early career scientists interested in science policy to learn about and become more engaged in public policy issues. Washington fellows develop an understanding of how public policy decisions made in Washington help shape and impact science policy, such as funding for the National Institutes of Health and other science agencies. They come to Washington and learn how to advocate effectively on Capitol Hill and in their home districts. This program will help fellows develop the skills and insights to become future leaders in science.

Three fellows classes have now completed their Capitol Hill meetings with their respective congressional delegations. In past years, they were on Capitol Hill during the ongoing discussions involving sequestration and subsequent budget debates. Each fellow makes a persuasive case for providing steady and sustained support for NIH. Of particular note was the interest congressional offices have concerning the future career prospects of graduate students, postdoctoral trainees, and early career scientists. Hearing directly from young investigators – the future scientists of America – that they are considering leaving biomedical research or considering leaving the country to have an opportunity to pursue their chosen career path made an impression upon many on Capitol Hill.

Fellows receive briefings and training prior to their visits. The fellows take the lead in these meetings; they are not part of a group participating in a meeting with other fellows. Besides visiting their congressional delegation in Washington, they write op-ed pieces for publication in their local media outlets. ASPET Washington Fellows also receive a travel award when attending the ASPET Annual Meeting at Experimental Biology.

Application Information

The 2016 ASPET Washington Fellows Program is open to any graduate student, postdoctoral trainee, or researcher no more than four years past the completion of his/her postdoctoral training. Fellows serve one-year terms. Applicants must be members of ASPET in good standing and have a strong interest in science and its intersection with public policy. Fellows will be selected by the ASPET Science Policy Committee. We anticipate up to 10 Washington Fellows Program participants in 2016.

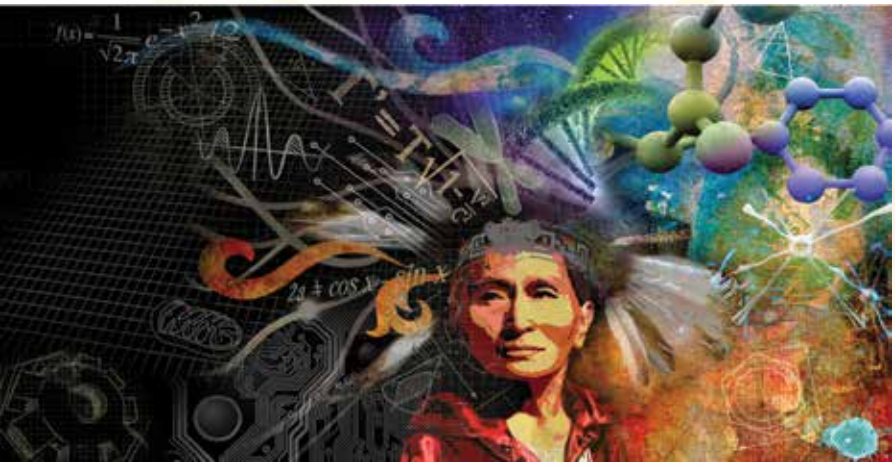
All applications must contain the following information and be submitted by September 2, 2015 as a single combined PDF:

- A letter (no more than two pages) from the applicant stating their interest in public policy and why they are interested in the ASPET Washington Fellows Program
- A *curriculum vitae*
- A brief letter of support from the candidate's mentor and/or department chair stating their support for the candidate's application

Additional information is available on the ASPET's website: *www.aspet.org/2016_ASPET_Washington_Fellows_Program*.

Education News

ASPET Participates in Fall Conferences for Underrepresented Students



"Changing the Face of Science" – artwork by Jenny Q. Sandrof for SACNAS. Used with permission.

This fall, ASPET was excited to once again join a diverse array of exhibitors at two conferences aimed at broadening the participation of minorities traditionally underrepresented in the STEM disciplines. From October 16–18, we participated in the national conference of the Society for Advancement of Hispanics/Chicanos and Native Americans in Science (SACNAS) in Los Angeles, CA. From November 12–15, we attended the Annual Biomedical Research Conference for Minority Students (ABRCMS) in San Antonio, TX. Combined, these conferences bring together over 6,000 attendees, the majority of whom are undergraduate students. Other participants include representatives from graduate programs at U.S. colleges and universities as well as scientists and staff from government agencies, foundations, and professional scientific societies. Both conferences afford unique opportunities to connect with bright and motivated students who are interested in pursuing advanced studies in STEM. They also serve a growing role in strengthening the U.S. scientific enterprise, whose vitality relies on diversifying the workforce. Currently, the groups most underrepresented in STEM are the fastest growing in the general population.

Since 2001, ABRCMS has served as one of the largest professional gatherings for underrepresented minority students and students with disabilities who are interested in careers in the biomedical sciences. This year's conference theme was "Developing Scientific Leaders through Research Training and Academic Excellence." In addition to scientific sessions, attendees take part in focused workshops on grant writing, science communication, and career development. The exhibitors program highlights opportunities for internships, fellowships, and graduate programs.

ASPET's participation in these meetings allows us to highlight our student opportunities, including the Summer Undergraduate Research Fellowships (SURF) and the travel and best abstract awards to participate in the Experimental Biology conference. We also share information about the benefits of membership and the array of career options possible to students of pharmacology.

The participation of scientific societies is a key component of the conference; after participating in ABRCMS, all students are strongly encouraged to attend professional society meetings of their respective disciplines to continue their scientific and professional development.

Now in its 35th year, the theme of this year's SACNAS conference was "Creativity, Vision, and Drive: Toward Full Representation in STEM." The program blends scientific symposia and poster sessions with interactive workshops designed to help attendees navigate each transition stage of their careers as they move toward leadership positions in STEM. Cultural events are interwoven throughout the program, acknowledging the important role of heritage and cultural identity in improving STEM outcomes for underrepresented groups. From the vibrant dancers at the Native American Pow Wow to the spirited merengue music at the ¡Pachanga! community dance, these events are part of what make SACNAS truly inspirational.

ASPET's participation in these meetings allows us to highlight our student opportunities, including the Summer Undergraduate Research Fellowships (SURF) and the travel and best abstract awards to participate in the Experimental Biology conference. We also share information about the benefits of membership and the array of career options possible to students of pharmacology.

Serving as an exhibitor also allows us to network and share ideas with other organizations who have related missions.

If your institution or organization doesn't already participate in these conferences, we urge you to consider attending, as the meetings represent a unique opportunity to attract exceptional students to your programs. This year, both meetings were attended by ASPET's Education Manager, Catherine Fry. She was joined by ASPET members Martha Davila-Garcia and Robin Rockhold at SACNAS and ABRCMS, respectively.

Individual Summer Undergraduate Research Fellowship (SURF) Program

Applications Due March 1, 2015 for Summer 2015 Fellowships

ASPET's individual SURF program aims to introduce undergraduate students to pharmacology research through a 10-week laboratory research experience. The program aims to heighten interest in science as a career and to increase the number of young scientists entering the research discipline of pharmacology.

The SURF individual awards are intended to support students whose institutions do not have a currently funded institutional SURF program. A list of currently funded institutions can be viewed at: *www.aspet.org/awards/SURF/institutional-Funded*

Who Should Apply

Undergraduate students conducting pharmacology-related research including, but not limited to, students representing departments of pharmacology, toxicology, pharmaceutical sciences, and/or biological chemistry are welcome to apply to the program.

Program Requirements

- Students must have a sponsor who is a regular member of ASPET in good standing or a retired member who is still active in research.
- Students are expected to work on a research project with some degree of independence.
- If awarded, ASPET will provide a student stipend of $1800 for a minimum of ten weeks' participation in the program. Sponsors are expected to secure $1000 in matching funds from local resources.
- The sponsor is expected to sponsor the SURF Fellow for student membership in ASPET at the beginning of their summer research experience.

Undergraduate student membership in ASPET is free.

Applications from women and underrepresented minorities are particularly encouraged.

ASPET also offers institutional SURF awards for groups of at least five faculty members to facilitate a summer program on their campus. More information about both types of SURF awards can be found at *http://www.aspet.org/awards/SURF*; or contact Catherine L. Fry, PhD, ASPET's Education Manager at *cfry@aspet.org* or 301-634-7782.

Applications for the 2015 SURF Individual Fellowship are due by March 1, 2015. For more information, please visit: www.aspet.org/awards/SURF/individual

Natalie Arabian Talks About Her Experience As an ASPET Summer Undergraduate Research Fellow

Natalie Arabian
University of Southern California

Natalie Arabian is currently a Senior Undergraduate Investigator in the Alcohol & Brain Research Laboratory at the University of Southern California. She participated in ASPET's Summer Undergraduate Research Fellowship (SURF) program during the summer of 2013. She continues to work with her research mentor, Dr. Daryl Davies.

How long have you been engaged in research?

I've been engaged in research for approximately 3 years. I started off in our lab as a high school student volunteer; the experience was so positive that I've been here ever since. I just can't imagine myself doing anything else.

What first got you interested in pursuing research?

Initially I spent about 10 hours a week assisting other students with technical work. At the end of every work day, I would walk over to the library in search of old papers and review articles to study. The more I read, the more interested I became. Eventually, I was in a place where I could pitch project ideas, and execute them on my own. I think that having more of a hands-on role in the project is what piqued my interest in research as a career.

What drew you to pharmacology versus other possible fields?

Neuroscience has always been my research area of primary interest. My mother was an alcoholic, so the opportunity to work in an alcohol research lab was inherently appealing to me. I was also drawn to pharmacology because of its clinical applicability.

How would you summarize your research?

Alcohol Use Disorder (AUD) is the third leading preventable cause of death in the United States, highlighting the need for the development of more effective treatment options. Our laboratory has been working on repositioning ivermectin (IVM), an FDA approved anthelmintic agent with an excellent safety prolife, to fulfill this health care crisis of unmet need. The main goal of my project has been centered on fulfilling a comprehensive preclinical assessment of the drug's efficacy and safety when delivered for a long-term period of time. These studies have now culminated in the approval of a phase 0 clinical trial.

Have you had the opportunity to attend many scientific conferences?

Yes, I received a SURF travel award which allowed me to present some of my findings at the Experimental Biology 2014 conference. Additionally, I received a graduate student merit award from the Research Society on Alcoholism (RSA), to help defray some of the costs associated with attending the annual RSA conference. The award is given to a very select number of undergraduate students. I think that year I was one of only two students to receive the distinction. It feels good to have your work recognized by other scientists within the community.

It feels good to have your work recognized by other scientists within the community.

When you go to a conference, what do you hope to get out of the experience?

I always look through the itinerary ahead of time to see if anyone from any of the labs I am interested in will be there. For me, it's definitely a networking opportunity. It's also an opportunity to learn about new developments in overlapping areas of study.

At what stage of your research were you engaged in the SURF program?

I entered the SURF program after my first year of research. The fellowship gave me the opportunity to take my initial investigations one step further. It's been so rewarding to see the research transition into the next phase. Additionally, through the SURF program I was able to cultivate an opportunity for myself as a Guest Blogger on ASPET's PharmTalk, which is a blog for young scientists. I'm working on submitting my second post now.

What's the most surprising thing your research experience has taught you?

I've learned how to be very flexible, and to think more critically and objectively.

What's next for your investigations?

Currently, I am investigating analogues of ivermectin for the treatment of alcohol use disorder. Considering that all of these compounds act on the P2X4 receptor, my hope is that our studies will lead to the validation of this receptor as a target for the treatment of alcohol use disorders.

I'm also working on submitting a manuscript alongside my graduate student mentor, which is really exciting. The paper will include data obtained during my summer as a SURF fellow.

Do you have a wish list for the type of graduate program you'd like to find yourself in?

Absolutely! I'd like to immerse myself in a neuroscience program with a psychopharmacology department that places a strong emphasis on basic science. Although a pharmacological or clinical emphasis would be most aligned with my research interests, I would also like to receive training from a computational perspective. There are certain labs that I have in mind, but I would be grateful for the opportunity to study neuroscience at any institution that encourages creativity and "out of the box" thinking.

From your perspective, what are the qualities of a good research mentor?

To me, a good research mentor is someone who really cares about their students, and genuinely wants to see them succeed. I am incredibly lucky to have found all of these qualities in my PI, Dr. Daryl Davies, and my graduate student mentors, Nhat Huynh and Sheraz Khoja. If I could give other investigators advice, I would urge them to treat their students fairly and to provide additional opportunities to those that work the hardest. I also think it's important to allow students to work independently.

If you could go back to the beginning of your research experience and give yourself one or two pieces of advice about doing research, what would they be?

With time I have learned that failure is a powerful resource. I would encourage my past self not to be too disheartened by experimental blunders and instead to use them as fuel to help propel the work forward.

Natalie also contributes to PharmTalk, ASPET's blog for young scientists: www.aspet.org/six_ways_to_join_a_research_team.

Journal News

New NIH Guidelines

On November 5, the National Institutes of Health announced "Proposed Principles and Guidelines for Reporting Preclinical Research." The guidelines address five principle areas of concern for the publication of preclinical biological research: rigorous statistical analysis, transparency in reporting, data and material sharing, consideration of refutations, and the establishment of best practice guidelines in the areas of image-based data and the description of biological materials with enough information to uniquely identify the reagents (in particular, antibodies, cell lines, and animals).

In June, Dr. Michael F. Jarvis, editor of *JPET*, represented ASPET at a workshop organized by *Nature, Science/AAAS*, and the NIH that addressed the reproducibility and rigor of published research findings. Workshop attendees provided input to the draft guidelines. The Board of Publications Trustees reviewed the draft and submitted a response to the NIH on August 19.

Many of the actions and policies called for in the guidelines are already practiced by ASPET's journals. ASPET's editors have reviewed the Instructions to Authors for *DMD, JPET,* and *MOL* to further align the instructions with the guidelines as appropriate. At the BPT meeting in October, there was further discussion of these revisions and of implementing the changes, including revisions to reviewer forms. These changes are in the process of being made.

ASPET endorses the NIH principles and is listed among the other supporters at *http://www.nih.gov/about/endorsing-jounals.htm*.

New *JPET* Editorial Board Members

Three researchers joined the Editorial Advisory Board of *The Journal of Pharmacology and Experimental Therapeutics* in September: Dr. Lisa Hazelwood (AbbVie), Dr. Jim Wang (University of Illinois at Chicago), and Dr. Harvey Motulsky (GraphPad Software).

Members-in-the-News

Achievements, Awards, Promotions, and Scientific Breakthroughs

Dr. Namandjé N. Bumpus
Johns Hopkins School of Medicine

A clinical study on the HIV drug maraviroc by **Dr. Namandjé Bumpus**'s lab that was first published on August 12 in *Drug Metabolism and Disposition* received press coverage in several news sources including *Healthy Living Magazine, Science Daily, Pharmacy Learning Network, Public Health Watch, Specialty Pharmacy Times,* and *American Nurse Today.* The formatted version of the article, "CYP3A5 Genotype Impacts Maraviroc Concentrations in Healthy Volunteers," is in the November issue of *DMD*.

Dr. Bumpus is an assistant professor in the Department of Pharmacology and Molecular Sciences and the Department of Medicine - Division of Clinical Pharmacology at the Johns Hopkins University School of Medicine. Her research is focused on understanding the contribution of drug metabolites to the pharmacokinetic-pharmacodynamic relationships of drugs being developed for HIV pre-exposure prophylaxis.

Dr. Bumpus received her PhD in pharmacology from the University of Michigan and trained as a postdoctoral fellow at The Scripps Research Institute.

Dr. Bumpus has been an ASPET member since 2008 and is affiliated with the **Division for Drug Metabolism,** the **Division for Integrative Systems, Translational and Clinical Pharmacology,** and the **Division of Toxicology**.

At a recent meeting sponsored by the International Academy of Cardiovascular Sciences in Winnipeg, Manitoba, **Dr. John McNeill** was presented with a lifetime achievement award by the president of the academy.

John McNeill received his bachelor's and master's degrees from the University of Alberta and his doctoral degree in pharmacology from the University of Michigan in 1967. He taught at Michigan State University before returning to Canada at the University of British Columbia in 1971.

His current position is professor and dean emeritus in the Faculty of Pharmaceutical Sciences. Dr. McNeill's work over the past 35 years has concentrated on the cardiovascular problems associated with diabetes and their treatment. He has published over 500 manuscripts which have been quoted 14,000 times; his h-factor is 58. He is particularly proud of his trainees, 45 graduate students, 23 post-docs, and hundreds of undergraduate students.

Dr. McNeill has won awards for both his teaching and his research over the years and has been recognized for his service to the pharmacy profession and to the Canadian Heart Foundation. He has served and chaired committees for granting agencies and as president and executive member of national and international societies. He is an elected Fellow of the Royal Society of Canada, the Canadian Academy of Health Sciences, and the International Academy of Cardiovascular Sciences. He has been an ASPET member since 1970 and primarily affiliated with the **Division of Cardiovascular Pharmacology**.

Dr. Sidhartha D. Ray was presented with the 2014 Outstanding Scholar of the Year Award by Manchester University. He serves as a professor of pharmaceutical sciences and was the founding chair of that department at Manchester University College of Pharmacy in Fort Wayne, Indiana. Prior to joining Manchester, Dr. Ray served as professor at the Arnold & Marie Schwartz College of Pharmacy and Health Sciences of Long Island University, New York, for nearly two decades.

His seminal discoveries have provided clear understandings on the dynamic role of apoptosis and necrosis in drug-induced organ toxicity and have influenced the development of safety measures for a stunning variety of xenobiotics, phytochemicals, and nutraceuticals.

Based on his contributions to teaching, service, and scholarship to health sciences in general, Dr. Ray received multiple prestigious awards, including the American Academy of Clinical Toxicology's national research award (1996), Fellow of the American College of Nutrition (FACN) honor in 1999, the David Newton Award for Excellence in Teaching Pharmacy (2005), the Biennial Abraham Krasnoff Memorial Award for Lifetime Scholarly Achievement (2008), the Society of Toxicology's Undergraduate Educator of the Year national award (2013), and the Manchester University's Outstanding Scholar of the Year award (2014).

Dr. Ray perseveres to promote lifelong learning strategies among his students and clearly models his beliefs as a mentor. He has been a member of ASPET since 1999 and primarily affiliated with the **Division of Toxicology**.

Dr. John McNeill
University of British Columbia

Dr. Siddhartha Ray
Manchester University

Our warmest wishes for a safe and happy Holiday Season and a prosperous New Year.

-The ASPET Staff

ASPET

Transforming Discoveries into Therapies

Division News

2015 Division Elections

Division elections are taking place for the following divisions:

- Behavioral Pharmacology (BEH)
- Cardiovascular Pharmacology (CVP)
- Drug Metabolism (DM)
- Molecular Pharmacology (MP)
- Toxicology (TOX)

Only vote for those divisions to which you belong as a primary or secondary member. If you are unsure of your divisions, please contact membership@aspet.org.

Division for Behavioral Pharmacology

Nominees for Chair-Elect

Irwin Lucki, PhD
Professor of Psychology in Psychiatry, University of Pennsylvania School of Medicine

Carol Paronis, PhD
Assistant Professor of Biopsychology, Harvard Medical School

Nominees for Secretary/Treasurer

Bill Fantegrossi, PhD
Associate Professor of Pharmacology and Toxicology, University of Arkansas

Wael M.Y. Mohamed, PhD
Assistant Professor of Biopsychology, American University in Cairo, Egypt

Division for Cardiovascular Pharmacology

Nominees for Chair-Elect

Walter J. Koch, PhD, FAHA
William Wikoff Smith Endowed Chair in Cardiovascular Medicine; Professor and Chairperson, Department of Pharmacology; Director, Center for Translational Medicine, Temple University School of Medicine

Hemal H. Patel, PhD
Associate Professor of Anesthesiology, University of California, San Diego

Nominees for Secretary/Treasurer

Steve Jones, PhD
Associate Professor of Medicine, University of Louisville

Sarah Lindsey, PhD, FAHA
Assistant Professor of Pharmacology, Tulane University

Kishore Wary, PhD
Associate Professor of Pharmacology, Center for Lung and Vascular Biology, University of Illinois at Chicago

Have You Joined a Division?

Take full advantage of ASPET Membership by joining a Division!

- Participate in creating scientific program for the annual meeting
- Network with people in your field at mixers, division programs, and on each division's LinkedIn group
- Participate in running the division and planning activities
- Receive special notices about events and activities of interest in your field

Division for Drug Metabolism

Nominees for Chair-Elect

Tim Carlson, PhD
Scientific Director, Pharmacokinetics and Metabolism, Amgen

Deepak Dalvie, PhD
Research Fellow, Pfizer, Global Research and Development

Nominees for Secretary/Treasurer

John P. Harrelson, PhD
Associate Professor, Pharmaceutical Sciences, Pacific University

Swati Nagar, PhD
Associate Professor, Temple University School of Pharmacy

Division for Molecular Pharmacology

Nominees for Chair-Elect

Haian Fu, PhD
Professor, Department of Pharmacology; Director, Emory Chemical Biology Discovery Center; Director, Discovery and Development Therapeutics Program, Winship Cancer Institute, Emory University

Jin Zhang, PhD
Professor of Pharmacology, Department of Pharmacology & Molecular Sciences; Solomon H. Snyder Department of Neuroscience and Department of Oncology, The Johns Hopkins University School of Medicine; Department of Chemical and Biomolecular Engineering, The Johns Hopkins University Whiting School of Engineering

Nominees for Secretary/Treasurer

Katerina Akassoglou, PhD
Professor, Department of Neurology; Senior Investigator, Gladstone Institute of Neurological Disease; Director, Center for In Vivo Imaging Research, Gladstone Institutes, University of California, San Francisco

David Roman, PhD
Associate Professor, Department of Pharmaceutical Sciences & Experimental Therapeutics, The University of Iowa College of Pharmacy

Division for Toxicology

Nominees for Chair-Elect

Serrine S. Lau, PhD
Professor of Pharmacology and Toxicology, College of Pharmacy, University of Arizona; Director, Southwest Environmental Health Sciences Center; Director, Arizona Board of Regents Center for Toxicology, College of Pharmacy, University of Arizona

Monica A. Valentovic, PhD
Professor, Department of Pharmacology, Physiology, and Toxicology, Joan C. Edwards School of Medicine, Marshall University

Nominees for Secretary/Treasurer

Qin M. Chen, PhD
Professor of Pharmacology, University of Arizona

Alison Harrill, PhD
Assistant Professor of Environmental and Occupational Health, Regulatory Sciences Program, University of Arkansas for Medical Sciences

New Division Awards for 2015

Division for Toxicology Announces Two New Awards

The Division for Toxicology has announced two new awards to be presented at the ASPET Annual Meeting at EB 2015.

The **Junior Investigator Award** will be presented to a member of ASPET who is within 15 years of obtaining their highest degree and has made significant contributions to toxicology. The ASPET Division for Toxicology Junior Investigator Award has been established to recognize excellent original research by early career investigators in the area of Toxicology. The award is presented annually and consists of $500, a plaque, and complimentary registration plus partial travel expenses (to a maximum of $500) for the winner to attend the awards ceremony at the annual meeting. The primary criterion for the award is the excellence and originality of research conducted by the candidate in the field of toxicology. Selection will be made by the Executive Committee of the Division for Toxicology.

For more information, visit *www.aspet.org/junior_investigator_award*.

The **Career Investigator Award** will be presented to an established investigator to recognize outstanding original research contributions in toxicology. The award has been established to recognize outstanding original research contributions to toxicology by an established investigator. The award is presented annually and consists of $500, a plaque, and complimentary registration plus partial travel expenses (to a maximum of $500) for the winner to attend the awards ceremony at the annual meeting. The primary criterion for the award is the level of excellence and originality of the research conducted by the candidate in the field of toxicology during their career. Selection will be made by the Executive Committee of the Division for Toxicology.

For more information, visit *www.aspet.org/career_investigator_award*

Division for Neuropharmacology Announces the Early Career Investigator Award

The Division for Neuropharmacology has announced an inaugural Early Career Investigator Award to be presented at the ASPET Annual Meeting in Boston in March 2015. The award will recognize and honor a young investigator who is working in any area of neuropharmacology. The award is open to early career stage investigators from all types of organizations, including academia, industry, private or government institutes.

An early career stage investigator is defined as someone who at the time of nomination is under 40 years of age or, if over 40 has been in an independent position for no more than 5 years. An independent position is considered to be one that is responsible for securing and administering their own budgets for research (traditionally a faculty position, or a team leader in a non-university setting).

The recipient will receive a plaque, free registration to the EB meeting, up to $1000 to use towards attending the subsequent meeting and become a member of that year's program committee, with the expectation that he/she will put together an Early Career Award Symposium, on a theme of his/her choosing.

For more information, visit *www.aspet.org/NEU_Early_Career_Investigator_Award*.

Chapter News

Mid-Atlantic Pharmacology Society

2014 Annual Meeting in Review

Poster presentations at the MAPS chapter annual meeting.

The Mid-Atlantic Pharmacology Society held its annual scientific meeting on Tuesday, October 28, 2014 at Temple University School of Medicine. Scientific presentations at the meeting and a bioventure company panel discussion highlighted the theme of "Drug Discovery Innovations."

Dr. Jeffrey Conn, the Lee E. Limbird Professor of Pharmacology and founding Director of the Program in Translational Neuropharmacology and of the Vanderbilt Center for Neuroscience Drug Discovery (Vanderbilt University), delivered the keynote address entitled "Allosteric Modulators of GPCRs as a Novel Treatment of CNS Disorders." Dr. Conn provided insight into the use of positive allosteric modulation of M1/M4 muscarinic receptors as a strategy to address neural defects in Alzheimer's and Huntington's diseases.

Additional thematic invited speakers included Dr. John Pascal (Thomas Jefferson University), who employs structural biology to guide the search for specific inhibitors of PARP-1 function in DNA damage; Dr. Salim Merali (Temple University Moulder Center for Drug Discovery), who addressed the use of proteomics and metabolomics in drug discovery targeting polyamine synthesis/catabolism; Dr. Beverly L. Davidson (Children's Hospital of Philadelphia), who described repurposing studies to target lysosomal storage diseases in the CNS; and Dr. James Barrett (Drexel University College of Medicine), who discussed the benefits of discovery strategies focused at Phase II, prior to moving to Phase III. Two trainees, Dr. Takahiro Sata (post doc at Temple University) and Richard Carr (graduate student at Jefferson University) were selected from submitted abstracts to present their research on "Improving Specificity of Epigenetic Therapy through Combined Targeting of DNA and Histone Methylation" and "Development and Characterization of Gs-biased Pepducins of the β2-Adrenergic Receptor," respectively.

A roundtable panel discussion on "Bioventure Approaches to Drug Discovery" was moderated by Dr. R. Kyle Palmer, co-founder and CSO of Operon Biotech; other panelists included Dr. Susan Catalano, co-founder and CSO, Cognition Therapeutics, Inc.; Dr. F. Raymond Salemme, co-founder and President,

Imiplex, LLC; and Dr. Huailing Zhong, co-founder and President, U-Pharm Laboratories LLC. In addition, 30 poster presentations were made by undergraduate, graduate student, and postdoctoral researchers, with awards given to "best in class" presentations at a wrap-up networking reception. The recipient of the George B. Koelle Award for 2014 was MAPS Councilor Dr. Ellen A. Walker. Dr. Michael Holinstat (Cardeza foundation, Thomas Jefferson University) and Dr. Douglas Tilley (Temple University) take on responsibilities as MAPS President and Vice-President, respectively, for 2015–2016.

2014 Great Lakes Chapter Annual Meeting Abstracts

To access all abstracts presented at the 2014 GLC Annual Meeting held on June 13, 2014 in North Chicago, please visit: *www.aspet.org/2014_GLC_Abstracts*

2015 ASPET Member-Get-A-Member Participate Today!

Participate in the 2015 ASPET Member-Get-A-Member program, get a free ASPET Lunch Bag, and be entered into a raffle to win a $150 Gift Card!

By helping us recruit new members, you will be contributing to the growth and sustainability of ASPET. A growing ASPET means great recognition for the field of pharmacology, more resources and support for our members, and a louder voice with policy makers.

Get Started Today!

- Tell a friend, colleague or student about the benefits of ASPET membership.
- Encourage them to fill out an application form online at: www.aspet.org
- Tell the applicant that they must enter your name in the "Sponsor Name/Email" field on the application form.
- Tell the applicant that they must enter the marketing code "MGM" in the field that asks, "Where did you hear about ASPET?"
- Once they are approved for membership and their dues payment has been made, you will receive credit for your recruitment efforts.

For more information about this program, visit www.aspet.org/membership/member-get-a-member or contact the membership department at membership@aspet.org or call (301) 634-7060.

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2015 Membership Renewal

ASPET is pleased to announce there is no dues increase for the FOURTH year in a row! Take advantage of this great benefit and renew today. Remember: if you are one of the first 1,000 members to renew, you will be entered into a drawing to win a $150 VISA gift card. We wish you all good luck and thank you for your valued support!

In Sympathy

ASPET notes with sympathy the passing of the following members:

Dr. Keith H. Byington
Dr. Steven R. Goldberg
Dr. Ed Keenan
Dr. John D. Leander
Dr. Jean M. Marshall

Upcoming Meetings & Congresses

January 2015

Immunology of Fungal Infections
www.grc.org/programs.aspx?id=14930
Jan. 18–23, Galveston, TX

PI 3-Kinase Signaling Pathways in Disease
https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1310
Jan. 13–18, Vancouver, BC, Canada

Integrating Metabolism and Tumor Biology
https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1312
Jan. 13–18, Vancouver, BC, Canada

Epigenetics and Cancer
https://www.keystonesymposia.org/index.cfm?e=web.Meeting Program&meetingid=1315
Jan. 25–30, Keystone, CO

Neuroinflammation in Diseases of the Central Nervous System
https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1358
Jan. 25–30, Taos, NM

New Frontiers in GPCR Signaling: From Biased Agonism to Disease Progression
www.grc.org/programs.aspx?id=14785
Jan. 31–Feb 1, Ventura, CA

February 2015

Connecting G Protein-Coupled Receptor Mechanisms to Physiological Functions
www.grc.org/programs.aspx?id=11687
Feb. 1–6, Ventura, CA

ACNS Ann. Mtg.
http://www.acns.org/meetings/annual-meeting-and-courses/2015
Feb. 3–8, Houston, TX

AMSPC Ann. Mtg.
www.amspc.org/annual-meetings/
Feb. 4–8, St. Kitts, Caribbean

Antibodies as Drugs: Immunological Scaffolds as Therapeutics
https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1332
Feb. 8–13, Banff, Alberta, Canada

Systems Biology of Lipid Metabolism
https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1281
Feb. 9–13, Breckenridge, CO

Exploring the Intersection of Stem Cell & Cancer Biology
www.grc.org/programs.aspx?id=17096
Feb. 14–15, Ventura, CA

Glycans as Mediators of Interactions between Molecules, Cells & Organisms
www.grc.org/programs.aspx?id=15615
Feb. 28–Mar 1, Lucca, Italy

March 2015

Gut Microbiota Modulation of Host Physiology: The Search for Mechanism
https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1342
Mar. 1–6, Keystone, CO

Heart Disease & Regeneration: Insights from Development
https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1319
Mar. 1–6, Copper Mountain, CO

Amer. Soc. for Clinical Pharmacology & Therapeutics
http://www.ascpt.org/ASCPT-2015-Annual-Meeting
Mar. 3–7, New Orleans, LA

Hybrid Methods in Structural Biology
https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1285
Mar. 4–8, Tahoe City, CA

ENDO 2015
http://www.endocrine.org/endo-2015
Mar. 5–8, San Diego, CA

Soc. for Brain Mapping & Therapeutics
http://www.worldbrainmapping.org/
Mar. 6–8, Los Angeles, CA

European College of Neuropsychopharmacology (ECNP)
ECNP Workshop on Neuropsychopharmacology for Young Scientists in Europe
Mar. 12–15, Nice, France

Pathways of Neurodevelopmental Disorders
https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1359
Mar. 16–20, Tahoe City, CA

9th World Immune Regulation Mtg.
http://www.wirm.ch/
Mar. 18–21, Davos, Switzerland

54th Ann. Mtg. of the Soc. of Toxicology
http://www.toxicology.org/ai/meet/am.asp
Mar. 22–26, San Diego, CA

Cartilage Biology & Pathology
https://www.grc.org/programs.aspx?id=13111
Mar. 22–27, Galveston, TX

Experimental Biology 2015
http://experimentalbiology.org/2015/Home.aspx
Mar. 28–Apr. 1, Boston, MA

April 2015

BNA2015: Festival of Neuroscience
http://www.bna.org.uk/events/?page=2
Apr. 12–15, Edinburgh, UK

Amer. Assn. for Cancer Res,
http://www.aacr.org/Meetings/Pages/MeetingDetail.aspx?EventItemID=25&DetailItemID=156#.VFETHxabE7A
Apr. 18–22, Philadelphia, PA

17th Int'l Neuroscience Winter Conf.
https://www.regonline.com/Register/Checkin.aspx?EventID=1579592
Apr. 7–11, 2014, Sölden, Austria

The Crossroads of Lipid Metabolism & Diabetes
https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1317
Apr. 19–24, Copenhagen, Denmark

Mechanisms of Pro-Inflammatory Diseases
https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1334
Apr. 19–24, Olympic Valley, CA

The Human Proteome
https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1259
Apr. 24–29, Stockholm, Sweden

BPS Focussed Mtg.: Exploiting the New Pharmacology & Application to Drug Discovery
http://www.bps.ac.uk/meetings/NewPharmaDrugDiscovery
Apr. 20–21, Edinburgh, UK

Mechanisms of HIV Persistence: Implications for a Cure
https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1345
Apr. 26–May 1, Boston, MA

May 2015

ARVO Ann. Mtg.
http://www.arvo.org/Annual_Meeting/
May 3–7, Denver, CO

Ann. APHMG Workshop & Special Interest Groups Mtg.
http://www.aphmg.org/#!2015-workshop/c1n4f
May 6–8, Clearwater, FL

AAI Ann. Mtg.
http://aai.org/meetings/index.html
May 8–12, New Orleans, LA

Hypoxia: From Basic Mechanisms to Therapeutics
https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1323
May 12–17, Dublin, Ireland

Digestive Disease Week 2015
http://www.ddw.org/
May 16–19, Washington, DC

ASCEPT-BPS Joint Scientific Mtg.
http://ascept-bps2015.com/?_cldee=a3NAYnBzLmFjLnVr&urlid=1
May 19–21, Hong Kong, China

Int'l Behavioural & Neurogenetics Soc. Ann. Mtgs.
http://www.ibangs.com/
May 19–23, Uppsala, Sweden

Canadian Pain Soc. Ann. Mtg.
http://www.canadianpainsociety.ca/en/meetings_cps.html
May 20–23, 2013, Charlottetown, Prince Edward Island, Canada

Cannabinoid Function in the CNS (GRS): Endocannabinoid Signaling in Neurobiology: From Molecules to Networks
https://www.grc.org/programs.aspx?id=14641
May 23–24, Lucca, Italy

Cannabinoid Function in the CNS: From Molecules to Disease Mechanisms
https://www.grc.org/programs.aspx?id=14641
May 24–29, Lucca, Italy

Assn. for Psychological Science Ann. Mtg.
http://www.psychologicalscience.org/index.php/convention#.VFFSwmctCUk
May 21–24, New York City, NY

Amer. Soc. for Microbiology Ann. Mtg.
http://gm.asm.org/
May 30–June 02, New Orleans, LA

June 2015

24th Ann. Mtg. of the Int'l Behavioral Neuroscience Soc.
http://www.ibnsconnect.org/?page=2015_Meeting
June 2–7, Victoria, British Columbia, Canada

75th Scientific Sessions Mtg. of the Amer. Diabetes Assn.
http://professional.diabetes.org/Congress_Display.aspx?TYP=9&CID=95010
June 5–9, Boston, MA

MicroRNAs & Noncoding RNAs in Cancer
https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1316
June 7–12, Keystone, CO

Apoptotic Cell Recognition & Clearance: Responses to Apoptotic Cells Leading to Inflammatory Resolution & Pathogenesis
https://www.grc.org/programs.aspx?id=14625
June 13–14, Biddeford, ME

Apoptotic Cell Recognition & Clearance: Physiological Significance & Pathological Consequence
https://www.grc.org/programs.aspx?id=13127
June 14–19, Biddeford, ME

DIA 2015
http://www.diahome.org/en-US/Flagship-Meetings/DIA-Annual-Meeting/About-the-Conference.aspx
June 14–18, Washington, DC

Autophagy
https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1322
June 19–24, Breckenridge, CO

Animal-Microbe Symbioses: Identifying the Common Language of Host-Microbe Associations
https://www.grc.org/programs.aspx?id=16842
June 21–26, Waterville Valley, NH

4th Regional "Stress & Behavior" Neuroscience & Biopsychiatry Conf.
http://www.stressandbehavior.com/PDF/2014/Conference_announcement%20ISBS%202015%20Miami.pdf
June 22–24, Miami, FL

Int'l Soc. for Stem Cell Res.
http://www.isscr.org/home/annual-meeting/isscr2015
June 24–27, Stockholm, Sweden