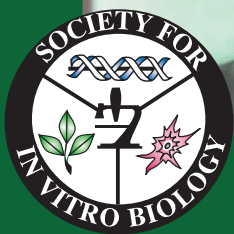


Society for In Vitro Biology

sivb.org

SIVB ANNUAL REPORT 2016



FOSTERING THE EXCHANGE OF KNOWLEDGE OF
IN VITRO BIOLOGY CELLS, TISSUES AND ORGANS

EXECUTIVE COMMITTEE



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Treasurer



Harold Trick
Secretary

PRESIDENT'S REPORT



Sunny San Diego was the site of the 2016 World Congress.

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This is my first opportunity to summarize the past year and look to the future as your President. My personal highlight of the 2016 San Diego meeting was to “meet and ask” as many individuals as I could about their research interests as well as listen to comments about our society. I first started attending the annual meetings at some time in the late 70's primarily because a colleague at my first “real job” invited me to attend the meeting and submit an abstract. At that time, plant cell culture was a small part of the society and existed because the officers in the animal cell culture group had a vision of potential synergy between research in animal and plant tissue culture. The past few years have helped us recognize the unique nature of this combination and the great promise it holds for the future.

Authoring abstracts, scientific papers, and particularly grant applications in the tissue culture research of those early days had a certain rhythm—an introduction that spoke about the significance of cell and tissue culture to make great technical progress to improve agriculture and human health. Hopeful prose predicted the day would soon arrive in which embryogenesis would be possible in any genotype of agricultural or botanical interest and stem cells could be induced to grow and thrive for an infinite number of transfers from the donor tissue of choice. Literally, the same optimistic introductions were recycled for decades (it seemed at least!) with only incremental improvements in the data summarizing the technical progress. Although you might not have noticed, those visions of great scientific accomplishment did come true and have been presented along the way at our annual meetings, one step at a time!

This year's meeting in Raleigh will continue fulfilling our scientific dreams and fueling our imagination of a future state in ways that we can't fully anticipate. Perhaps to our great surprise cell and tissue culture technology is more relevant today than ever. Nevertheless we must continually ask if our dreams have kept pace with the progress of our base technology. A careful read of this year's invited and member speaker's abstracts demonstrate excitement and enthusiasm that will make this your best opportunity to combine meeting friends and pushing our imaginations to the next generation of great possibilities.

Our speakers will offer a combination of amazing developments in our base technologies with novel evidence based discoveries that are redefining how we consider the dreams that will become the new reality. Gene editing technology and advanced knowledge of specific target molecules are essentially helping us develop cell and tissue models that will accelerate this process. Soaring costs for field and clinical evaluation that also meet regulatory hurdles define our limitations to test all our ideas in the final and cost prohibitive applied testing stages. Technical advances in model development and more efficient approaches in meeting regulatory requirements will likely ease this burden. These trends open the door to better use of cell, tissue, and other in-vitro approaches for early stage screening and hypothesis testing.

We depend upon the scientific method to test many ideas and winnow those that have value from the many possibilities that might work but aren't reliable. Along the way we

can voice our opinions of science, climate change, civil discourse and how we make ourselves talk to non-scientists who don't necessarily share our enthusiasm.

Raleigh will be the meeting we recall where Cannabis came out of the closet to introduce us to the science of phyto-pharmaceuticals and DOE referred to experimental design rather than a large

federal bureaucracy. Most importantly we have scientific sessions for students, graduate students, postdocs, research scientists both fresh and well tested, and those of us who just can't give up their desire to get their science "fix". And there will be many opportunities to catch up, to integrate, reinvigorate, and be in the company of the best "techno-nerds" in the world. I'm already

looking forward to late night discussions and debates where everyone is welcome to participate and those early morning committee meetings with great coffee to jump-start the day!

Come enjoy the hospitality of Raleigh!

Dwight T. Tomes
SIVB President
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SECRETARY'S REPORT

My first year as Secretary has been a busy one learning my new role within the Society. One of the primary roles of the Secretary is to capture and record the minutes of the board meetings including identify tasks or the "action items" that need to be performed and to track the status of these action items. I am grateful to Marietta Ellis for guiding me in my new role, making

sure I haven't overlooked an action item, and reminding me of the deadlines I need to make. The Board Meetings are distilled down to these minutes, and, unfortunately, what is lost is the passion and the commitment I have observed from the other Board members (and the Society's various committee members) to keep this Society on track and running smoothly. As a reminder,

elections will be coming up in the Fall of 2017 so please consider serving in some capacity. If you would like to volunteer, please contact a board member or committee chair. Member participation is the best way to maintain an active and healthy Society.

Harold N. Trick, Secretary
hnt@ksu.edu

TREASURER'S REPORT

2016 closed in a positive financial position for our society. This was achieved predominantly through our journals — *In Vitro – Animal* and *In Vitro – Plant*, with our investment portfolio doing well in spite of the ups and downs of financial markets worldwide. The constant attention toward cost cutting made by the New Beginnings Management staff and the diligence of our Officers, Board Members, Committee Chairs and Committee Members have also proved to be critical factors. However, as per a statement made a year ago in this report, our financial cushion remains too thin and appears to be getting thinner — a weight gain/more financial calories are needed!

The year has been a challenging one and major efforts toward increasing membership and finding creative means of gaining and increasing the number of donors to provide funding support for our society and its goals have been initiated. Over the weekend of April 15–17th the SIVB exhibited quite successfully at the 4th USA Science and Engineering Festival in Washington DC. This provided SIVB exposure for thousands

of students, teachers and others who just want to learn more about science. Another success was the Tissue Culture Workshop which took place at the annual meeting in San Diego with many enthusiastic attendees. We are hopeful that these exposures may bring in new members, raise interest in attending the annual meeting or help stimulate membership renewals. However, thus far, there seems to have been no noticeable positive effect.

As mentioned above, our journals play a very important role with respect to our financial health. Increased support for these journals via submission of SIVB member research to *In Vitro – Animal* or *In Vitro – Plant* for publication has a definite potential to impact the future of our society in a positive manner. Also a new initiative for 2017 will present the opportunity for emeritus members to continue showing their love and support for the society and its future through estate planning.

We are a unique society, bridging a broad range of disciplines and we have good reason to feel proud. Working together I know we



SIVB Treasurer, Barbara Doonan, and Nancy Reichert explored some of an exhibitor's wares during the Opening Ceremony reception.

are ready and willing to do all we can to meet the challenges ahead.

The Treasurer's Summary Report of our finances can be found at the end of this Annual Report.

Barbara B. Doonan
Treasurer
doonanbarbara@yahoo.com

BUSINESS OFFICE REPORT

The Business Office activities focused on the 2016 World Congress on In Vitro Biology, 2017 In Vitro Biology Meeting, preparations for the 2018 and 2019 meetings, publications, and membership.

2016 WORLD CONGRESS ON IN VITRO BIOLOGY

The 2016 World Congress on In Vitro Biology was held at the Sheraton San Diego Hotel and Marina from June 11–15, 2016 in San Diego, California. Plans for this meeting started in 2014. This year's meeting highlighted a Keynote presentation by **William E. Moerner**, Nobel Prize Winner in Chemistry (2014), Harry S. Mosher Professor of Chemistry and Professor, by courtesy, of Applied Physics who spoke on "Seeing Single Molecules, from Early Spectroscopy in Solids, to Super-resolution Microscopy, to 3D Dynamics of Biomolecules in Cells." After the Keynote presentation, the 2016 Lifetime Achievement Awards were presented to **Eugene Elmore**, PhD, and **Yvonne A. Reid**, PhD in honor of their years of exemplary research. Also, during the Opening Ceremony, SIVB President, Eugene Elmore, PhD, presented Distinguished Service Awards to **Barbara Doonan**, PhD; **Barbara M. Reed**, PhD; **Elizabeth Roemer**; **Nancy A. Reichert**, PhD; **David D. Songstad**, PhD; **Mary Welter**; and **Allan R. Wenck**, PhD for their support of the Society and its activities. During the IVACS Section meeting, the 2016 Distinguished Scientist Award was presented to **Guy Smagghe**, PhD and the 2016 Young Scientist Award was presented to **Joshua Gasiorowski**, PhD.

This meeting was held in conjunction with our co-sponsors The Japanese Association for Animal Cell Technology (JAACT) and Japanese Tissue Culture Association (JTCA). Special registration rates were offered to JAACT, JTCA and IAPB members. The meeting began with the 14th International Conference on Invertebrate and Fish Cell Culture on Saturday, June 11 which included 2 symposia and a roundtable discussion. Also on Saturday was a Hands-on Plant Tissue



SIVB is grateful for the assistance received from this year's volunteers at the World Congress. Pictured above are a number of them who joined the Cruise on the San Diego Bay.

Culture Workshop for High School and Community College Teachers. The SIVB Business Office worked with the organizers of the Hands-on workshop to register the SIVB through the National Science Foundation and complete the submission of a grant on behalf of the SIVB to cover the costs for the workshop.

Special events held at the meeting included a Tuesday Evening Cruise of the San Diego Bay, and America's Finest Silent Auction. The IVACS and PBS Oral Presentation Competitions were held along with a student poster competition.



The 14th International Conference on Invertebrate and Fish Cell Culture featured sessions all day Saturday, June 11.

THIS MEETING WAS HELD
IN CONJUNCTION WITH
OUR CO-SPONSORS THE
JAPANESE ASSOCIATION FOR
ANIMAL CELL TECHNOLOGY
AND JAPANESE TISSUE
CULTURE ASSOCIATION

The Congress' mobile app was configured to include information on the program, abstracts, bios and pictures of the presenters, exhibitors, contributors, program information, a map of the hotel, a way to upload social media and send messages to other attendees, and the ability to review and take notes on uploaded presentations (but not to download them out of the app). New items this year included the Program-at-a-glance and a "Happening Now" button that showed viewers exactly what presentations were scheduled at what times during the meeting and an in app survey.

At the 2016 World Congress on In Vitro Biology, the final number of registrants came to 425. There were 136 members, 10 JAACT/JTCA/IAPB members, 22 group registrants, 15 non-members, 8 research technicians, 18 post docs, 96 student, 9 one-day, 5 accompanying guests, 6 emeritus, 3 guests, 15 volunteer and 62 speaker registrants. There were also 2 staff registrants and 18 exhibitors. Several circumstances can be cited as having contributed to 2016's success in attendance numbers including that SIVB's presence in California is solid with a significant biotech community that we were able to contact. In addition, there was active solicitation of speakers from local universities by the Program Committee and, with our Local Organizing Committee's help, we were able to reach out to local scientists that may have not heard of us before, but participated in the event. Lastly, we began offering of a discounted group registration rate for corporations bringing 20 or more employees.

The Business Office offers a special thank you to the volunteers who offered their assistance during the 2016 World Congress, many of them working hours beyond what was required. We greatly appreciate all of their efforts on behalf of the SIVB. We couldn't have done it without your help.

2017 IN VITRO BIOLOGY MEETING

The upcoming 2017 In Vitro Biology Meeting will be held from June 10–14, 2017 at the Raleigh Convention Center and Raleigh Marriott City Center in Raleigh, North Carolina. Plans for this meeting began in 2015 and, in 2016, the Business Office worked with the Program Committee to organize the scientific program and determine the Keynote Speaker. They also worked with the Local Organizing Committee to make arrangements for the special events happening at the meeting. The 2017 Meeting will highlight a keynote presentation by Dr. **Anthony Atala**, Director and Chairman of the Wake Forest Institute for Regenerative Medicine, and the W. Boyce Professor and Chair of Urology at Wake Forest University. He will be presenting a talk on “Regenerative Medicine: Current Concepts and Changing Trends.” There will also be presentations of the Lifetime Achievement Awards to **J. Denry Sato**, DPhil, PhD, and **Gregory C. Phillips**, PhD. At the In Vitro Animal Cell Sciences Section meeting, **Miho Furue**, PhD will receive the SIVB Fellow Award. At the Plant Biotechnology Section Meeting, Kan Wang PhD will receive the SIVB Fellow Award; Allan Wenck, PhD, will receive the Distinguished Scientist Award; and the Young Scientist Award will be presented to Sukhpreet Sandhu, PhD. In addition, there will be Distinguished Service Awards, student awards, student competitions and more presented at the meeting.

The 2017 City of Oaks Silent Auction will begin during the Welcome Reception on Saturday, June 10 and will end on Tuesday morning, June 13, 2017. Attendees will also be invited to enjoy Night at the Museum on Tuesday, June 13 at the North Carolina Museum of Science and one of two specially-created Wednesday afternoon scientific tours: one tour visiting Research



The 2017 In Vitro Biology Meeting is being held in charming Raleigh, North Carolina and we hope you can join us this June!

Triangle Park's Industries and the second, “An Afternoon in the Trees” visiting sites of interest at North Carolina State University.

Saturday, we are offering a special workshop entitled “Go with the Flow: Expand Your Applications in Biological Research with Flow Cytometry” which provides options for both lecture and hands on opportunities to learn about flow cytometry for both plant and animal applications.

SIVB is proud of its ongoing Student Initiative Program which will be offered in 2017 to students interested in participating at the meeting. This initiative provides free registration to all student attendees who submit an abstract at this year's meeting and free student 2018 student membership to those who attend the 2017 meeting. The Student Committee has organized a Student Symposium on Tips and Techniques for Public Speaking, a Networking Luncheon on Creating Winning Resumes and CVs, and a Non-competitive Oral Presentation Symposium during the meeting to encourage growth and participation of student members, both graduate and undergrad. Both the IVACS and PB sections will offer Oral Presentation Competitions for students and Post Docs. The IVACS section will hold a joint Post Doc/Student competition and the PBS section will present separate Student and Post Doc competitions. The SIVB Student Committee will also be holding the fourth Student Poster Competition which students can sign up for when they arrive at the meeting. SIVB will also offer the Sponsor-a-Buddy program where for only \$25, members and attendees of the Annual Meeting can help support the Student Initiative for the

meeting and, this year, personally mentor a student attendee at the meeting. Contributors to the Sponsor-a-Buddy-program will be acknowledged at the 2017 In Vitro Biology Meeting.

2018 AND 2019 IN VITRO BIOLOGY MEETINGS

In 2016, the Business Office worked with the SIVB Board of Directors to finalize the contracts for the 2018 In Vitro Biology Meeting. Next year's annual meeting will be held in St. Louis, Missouri from June 2–6, 2018 at Hyatt Regency St. Louis at the Arch. We have been in discussion on locations for the 2019 In Vitro Biology Meeting and expect to finalize contracting in 2017.



MEMBERSHIP

Membership numbers decreased this year. Membership dropped 3.85% for all membership and 9.6% for Regular members. Membership initiatives included the extension of the Member-get-a-Member campaign and a special drawing for members who renewed by December 31st, 2016. The 2017 contest winners will be drawn during the 2017

Business Meeting and prizes include one-year of free membership in the SIVB and free registration to the 2018 In Vitro Biology Meeting in St. Louis, Missouri. The Business Office worked to encourage 2016 and 2017 membership by including monthly renewals distributed through both email and regular mail.

The Business Office regrets to inform the membership that we learned of the passing of the following members in 2016: **Hans Koblet** and **Karl Maramorosch**.

SIVB provides the member benefits of free job postings and discounted resume purchase opportunities through our Career Center job bank. These job listings are linked to our Facebook page providing higher visibility for your positions. Don't forget to check it out under "Employment" on the SIVB website.

SIVB also offers a number of ways to support the SIVB. We are currently working with the Board of Directors on preparing a mechanism for emeritus members to bequeath charitable gifts and/or estate contributions to the Society. Should you be interested in participating in this opportunity, please contact me at sivb@sivb.org. You can also make an individual contribution to support the next generation of scientists by visiting www.sivb.org, clicking on the "Donation" button at the bottom of the page, and choosing to contribute to one of available student and Post Doc funds.

SIVB's committees saw heightened activity in 2017 and the Business Office worked to assist and support them as they fulfilled both requests from the Board and discussion through internal committees. They worked with the Ad Hoc Website Committee to review and discuss potential website updates and projects, the Awards Committee to review revisions to the Lifetime Achievement Award Standard Operating Procedure, the Program and Local Organizing Committees in building press releases to expand the outreach of the meeting, the Long-range Planning Committee in preparing and disseminating their Strategic Plan to the various committees, and followed up with various Committees on other action items requiring their attention.

The Business Office along with Barbara Doonan, Chair of the USA Science and



SIVB took part in the USA Science and Engineering Festival in Washington, DC sharing the importance of In Vitro science with potential scientists of all ages.

Engineering Festival Ad Hoc Committee, coordinated SIVB's participation in the 4th USA Science and Engineering Festival which ran from April 15–17, 2016 in Washington, DC. The Business Office was instrumental in helping prepare and manage the SIVB's exhibit: organizing and preparing potential activities for attendees, designing the new display (which you can see at the upcoming annual meeting), creating materials and handouts; working with SIVB members to receive TC donations for display; coordinating the volunteer member staffing; finalizing exhibit logistics including budgeting the event; loading in, setting up, breaking down and loading out the exhibit itself; and being on hand to run the exhibit and interact with attendees. Based on estimated numbers from the Convention Center, approximately 365,000 people participated over the 4 days of the event with Sneak Peek Friday alone including more than 60,000 students, teachers, military families, government officials and press. Saturday and Sunday brought in roughly 150,000 people each day.

PUBLICATIONS

The Business Office's Publications Department's supports the SIVB's print and online publications and maintains and supports the SIVB Website.

The Business Office spent significant time during the first half of 2016 reviewing and revising the new Springer contracts for the 2017–2021 term. This process began in the summer of 2015 and the final contracts were signed in May of 2016. In depth conversations were held between SIVB and Springer to assure that SIVB's interests were protected into the future. This was

significantly in advance of the prior contract's conclusion and allowed for seamless transition into the new agreement at the end of the year.

In 2016, both journals have implemented new steps to work toward protecting the publications from plagiarism and encouraging proper ethical behavior. Each journal received documents with suggestions for ethical compliance language. Both are working toward implementing these new rules in addition to encouraging compliance with previously updated requirements regarding encouraging usage of non-contaminated cell lines and limitations on when, or even if, additional authors can be added to a manuscript after submission, resubmission and acceptance. Additionally, SIVB, with the help of Springer, actively relies on software that reviews each manuscript and analyzes how much of the text is repeated in other published materials. These activities are utilized to catch questionable materials submitted and protect the reputation of the journal. The Business Office has also worked with Springer to implement directives from the Publications Committee by continuing to monitor the look and formatting of articles published in our journals to keep the publications modern and readable in today's market.

In Vitro – Animal's submissions flow has been strong for 2016. Even with a rise to our rejection rate, all issues are publishing above their page budget and indications are that there will be no problem meeting the larger page budget requirements in the new contract. The 2015 impact factor has gone down 0.971. This may be due to having a similar number of citations for the year, but a significantly higher number of published pages. The journal has also added a new matrix category of "Establishment of Cell Lines" to address the possible use of our journal for publishing articles on hPSC establishment for hPSCreg. Editor-in-Chief, **Tetsuji Okamoto**, along with the Business Office works to control the page run of the publication to address this in the future. The Business Office worked with Dr. Okamoto to establish a workflow for incoming Associate Editors. Dr. Okamoto encourages active participation from the Associate Editors and members of the Society to

publish in our journal as well as looking for way to offer new special issues. He worked with Dr. **Cindy Goodman** in 2016 to organize a special issue on Invertebrate Cells which will be published in 2017.

In Vitro-Plant journal's impact factor rose to 1.152 in 2015. Editor-in-Chief, **David Duncan** presented a proposal to overcome difficulties in receiving sufficient paper submissions to the SIVB portion of the Plant journal. The Business Office has worked with him to implement these changes which include a new subcategory of paper (short protocol communication) and advertising a call for papers for a Cryobiology special issue with a deadline for submissions in 2017. We encourage our new and senior members to submit papers whenever possible to support the publications and share your research directly with your fellow members.

Members are to be reminded that the *In Vitro Report* publishes news from our membership in each quarter in the SciNews and Explants sections of the issues. This is your opportunity to get the word out. Do you have a new publication, a new job, a baby, marriage, or other information you want to share? Send it to the Editors and let your fellow members know. Member News is part of the publication's Member's Corner, which includes articles about members each issue, such as the Membership Profiles, Membership Matters which are articles from members who have benefitted from their participation in our organization, and new members. We introduced an Editor's Corner for our Editors-in-Chief to reach out to our membership with articles about publication issues. While the newsletter continues to publish content of interest to our members, it requires your support to make the issues effective. Please forward your news, article suggestions and information to either of the Co-Editors-in-Chief, **Michael Fay** or **Sylvia Mitchell**. Information for inclusion can also be forwarded to sivb@sivb.org.

The SIVB website is set up in a Wordpress environment which provides speedier options for updating content on the site. The Business Office implemented the addition of listing the Lifetime Achievement Awardees as a widget on the home page of the website. SIVB also offers a discussion



Senior members of the Plant Biotechnology Section reconnect during the Welcome Reception and encourage new members participation.

forum for member's use. We encourage all members to create an account, log in, say hello to your fellow members or ask questions, and check back often to see who else is there. It's your community, so go ahead and take advantage of this resource.

Social media has become part of the framework for SIVB's message as we use many methods to reach out to you including broadcast emails and postings through Facebook, LinkedIn and Twitter. This has allowed our members to keep up with information without limitations on accessibility to certain websites. If you haven't friended us on Facebook, joined the SIVB group on LinkedIn, or started following us on Twitter (@SIVBiology), please do so. We provide quick and timely reminders about upcoming deadlines, member benefits, and other information of interest throughout the year. Also, you can spread the word! Use our name and hashtags at the beginning of your relevant posts: @SIVBiology for the organization, #SIVBiology2017 for the 2017 In Vitro Biology Meeting; #SIVBIVAN for *In Vitro-Animal*, and #SIVBIVPL for *In Vitro-Plant*). We encourage our members to use these hashtags when posting in Facebook, LinkedIn Twitter or other social media outlets to help us get the word out.

New Beginnings Management, Inc. (NBM) manages the day-to-day operations of the Society as its Business Office. The staff of NBM consists of Michele Schultz and myself. We greatly appreciate the efforts of all those who volunteer their time on behalf of the SIVB with a special thank you the Executive Committees, Board of Directors, Committee Chairs and Section Officers whose efforts have provided essential support for the continuing health of the Society and its

mission. We are grateful for your encouragement and appreciation of NBM and its endeavors on behalf of the Society. We look forward to continuing to work on behalf of SIVB and its long-term health in the upcoming years.

I would also like to extend a personal thank you for your surprise presentation acknowledging my 25 years of service to the Society which was presented to me during the Opening Ceremony of the 2016 World Congress. I offer a special thank you to Delia Bethell who spearheaded the organization of the event. It has been my pleasure to serve and watch the society evolve over these past 25 years and I hope to help SIVB continue to grow in the future while it encourages the education of our future scientists and researchers.



Delia Bethell (L) presents Marietta Wheaton Ellis (R) with a gift from the membership thanking her for her 25 years of service to SIVB.

The Business Office welcomes your thoughts and ideas on advancing and encouraging continued growth of the Society for in Vitro Biology. Please contact us with your suggestions at sivb@sivb.org.

Marietta Wheaton Ellis
SIVB Managing Director
sivb@sivb.org

IN VITRO ANIMAL CELL SCIENCES

The 2016 Society for In Vitro Biology World Congress, held June 11–15 in San Diego, California, was an resounding success, thanks to the diligent efforts of the Program Committees, Local Organizing Committee (LOC) and the SIVB Business Office: **Harold Trick** (Program Chair), **Hong Luo** (PBS Program Chair), **Michael Dame** (IVACS Program Chair), **Sadanand Dhekney** (PBS Jr. Co-Chair), **Vivian Dayeh** (Education Chair), **Jordan Brungardt** (PBS Student Co-Chair), **Matt Desrosiers** (IVACS Student Co-Chair), **David Songstad** (LOC Chair), **Marietta Wheaton Ellis** (Meeting Secretariat), and **Michele Schultz** (Publications Manager). A special thank you is extended to our World Congress partners, **Ken-Ichi Nishijima** of The Japanese Association of Animal Cell Technology (JAACT), and **Renu Wadhwa** and **Yukio Nakamura** of the Japanese Tissue Culture Association (JTCA). The IVACS Program Committee further included **Addy Alt-Holland**, **Magnolia Ariza-Nieto**, **Durga Attili**, **Mae Ciano**, **Barbara Doonan**, **Eugene Elmore**, **Michael Fay**, **Joshua Gasiorowski**, **Cynthia Goodman**, **John Harbell**, **Kolla Kristjansdottir**, **Lucy Lee**, **Tetsuji Okamoto**, **Paul Price**, **Yvonne Reid**, **J. Denry Sato**, **David Stanley**, and **Brad Upham**. One hundred IVACS members attended the World Congress of 364 total participants.

William E. Moerner, the 2014 Noble Prize recipient in chemistry, presented a marvelous Keynote Address, *Seeing Single Molecules, from Early Spectroscopy in Solids, to Super-resolution Microscopy, to 3D Dynamics of Biomolecules in Cells*. The Congress commenced with the 14th International Conference on Invertebrate and Fish Cell Culture, by **Lucy Lee** and **Cynthia Goodman**. Congress presentation topics included: *Establishing Insect Cell Lines for Basic and Applied Biology*; *Beyond Fifty Years of Research with Fish Cell Lines*; *Cannabis sativa: The Science Behind the Smoke*; *Post Translational Modification of Proteins*; *Joyful Tissue Culture for Cancer and Aging – Intervention of Stress and Disease*; *Science in Short: Communicating Your Work Clearly and Effectively*; *In Vitro Biology: From Tools to Reality*; *Gene K/O*,



IVACS Members and Officers, Josh Gasiorowski, Kolla Kristjansdottir, Addy Alt-Holland and Michael Fay, catch up at the World Congress.

Micro RNA, RNAi, and Altering Gene Regulation; *Maximizing the Power of Animal Cell Factory*; *In Vitro Animal Cell Sciences and Education Contributed Papers*; *Infinite Potential of Stem Cells*; *Human Cell Models for Disease*; *Interactive Poster Sessions*; *Organoids and Other Three-Dimensional In Vitro Tissues—One Step Closer to Personalized Treatment*; *Micro-biome: A Hidden Universe*; and *Assessment of Aquacultures*.

Students are an essential component of the SIVB meetings. They presented a vigorous interactive evening symposium (*Science in Short: Communicating Your Work Clearly and Effectively*), a networking luncheon and a non-competitive student oral presentation session. Student and postdoctoral IVACS oral competition were judged by **Addy Alt-Holland**, **Dawn Applegate**, **Mae Ciano**, **Michael Dame**, **Barbara Doonan**, **Eugene Elmore**, **Michael J. Fay**, **John W. Harbell**, **Kolla Kristjansdottir**, **Brad L. Upham**. **Allison Songstad** (University of Iowa) received 1st place for “*Development of a Stepwise Protocol for the Generation of Human Induced Pluripotent Stem Cell-derived Choroidal Endothelial Cells*”; **Elizabeth Hansen** (Midwestern University) received 2nd place for “*Voluntary Exercise Prevents High-fat Diet-induced Obesity: Effect on Intestinal Barrier Integrity*”; and **Darryl Giambalvo** (Midwestern University) received 3rd place for “*Extending Neuronal Regeneration with Nano-sized Topography and Various Matrix Coatings*”. The 2016 SIVB Student Poster Presentation Competition was judged by **Addy Alt-**

Holland, **Mae Ciano**, **Vivian Dayeh**, **Kolla Kristjansdottir**, and organized by **Matthew Desrosiers**, with the third place going to IVACS poster by **Kamal Moghrabi** (University of the Fraser Valley) for “*Evaluation of Sub-lethal Effects by Neonicotinoids in Fish Cell Lines*.”

The IVACS Annual Business Meeting, held June 12, 2016 at the World Congress, started with the recognition of IVACS elected officers for 2016 and welcomed officers for the next term of 2017/2018:

- **Addy Alt-Holland** to **Michael K. Dame** – Chair
- **Michael K. Dame** to **Joshua Z. Gasiorowski** – Vice Chair Meeting Program
- **Magnolia Ariza-Nieto** to **Kolla Kristjansdottir** – Vice Chair Membership
- **Patrick McNutt** to **Stephanie DeWitte-Orr** – Secretary
- **Brad L. Upham** – Fundraising Officer
- **Joshua Z. Gasiorowski** – Fundraising Co-chair

IVACS recognized the leadership and dedication of the 2016 Board of Directors:

- **Dwight T. Tomes** – President
- **John W. Harbell** – President-Elect
- **Sukhpreet Sandhu** – Vice President
- **Eugene Elmore** – Past President
- **Harold Trick** – Secretary
- **Michael J. Fay** – Publications Chair
- **Thomas J. Flynn** – Public Policy Chair
- **Fredy Altpeter**, **John J. Finer**, **J Denry Sato**, **Brad Upham** – Members-at-Large

We also recognized and thanked all of the IVACS members who helped to raise funds for the 2016 SIVB World Congress. We sincerely thanked the following sponsors for their generous financial support. **IVACS members – let’s match their example and effort where we can to build our program and future!**

- **Barbara Doonan**
- **Eugene Elmore**
- **Michael J. Fay**
- **JHarbell Consulting LLC**
- **J. Denry Sato**
- **JV Biolabs LLC**

- *MatTek Corporation*
- *Midwestern University*

Two IVACS members were honored with Lifetime Achievement Awards, **Eugene Elmore** and **Yvonne A. Reid**. We thanked the following sponsors for their special contributions to the award.

- *International Foundation for Ethical Research*
- *National Anti-Vivisection Society*
- *American Type Culture Collection (ATCC)*

Two IVACS members were presented with the Distinguished Service Award, **Barbara B. Doonan** and **Elizabeth J. Roemer**. **Guy Smagghe** received the Distinguished Scientist Award, and **Joshua Z. Gasiorowski** received the Young Scientist Award. The 2016 SIVB Student Travel Award & Honor B. Fell Award were given to **Matt Desrosiers** (Worcester Polytechnic Institute), and the 2016 Cellular Toxicology Award was presented to **Dina Rassias** (Worcester Polytechnic Institute).

We recognized two other special events for 2016. The **4th USA Science & Engineering Festival** (April 15–17, 2016; Washington, D.C.) was held at the Walter E. Washington Convention Center. It is the largest and only national science festival and hosted 365,000 participants. Thank you to **Barbara Doonan**, **Wayne Curtis**, **Ningning Zhang**, **Kathryn Kamo**, **Yvonne Reid**, **Carolyn Keller**, **Jessica Rupp**, **Tony Shireman**, **Ray Gillis**, **Yongian Chang**, **Valerie Pence**, **Areej Alosami**, **Barbara Reed**, **Tina Lai**, **Katie Legenski**, **Krishnan Sreenivas**, **Erica Lennox**, **Olga Vinogradoca**, and **John**



The SIVB was honored to welcome members from Co-Sponsor organizations The Japanese Association Animal Cell Technology and the Japanese Tissue Culture Association to the World Congress.

Cordts. The **Intel International Science and Engineering Fair** (July 2015–July 2016) is the world's largest international pre-college science competition, providing a forum for more than 1,500 high school students from over 40 countries to showcase their independent research. Over 200 students received SIVB certificates and letters of recognition for projects related to the areas of *in vitro* biology.

The **2017 SIVB In Vitro Biology Meeting**, returns to Raleigh, North Carolina on June 10–14. We anticipate an outstanding program due to the efforts of the meeting leadership and session conveners; **Addy Alt-Holland** (Program Chair), **Joshua Gasiorowski** (IVACS Program Chair), **Pon Samuel** (PBS Program Chair), **Sadanand Dhekney** (PBS Sr. Co-Chair), **Pierluigi Barone** (PBS Jr. Co-Chair), **Albert Kausch** (Education Chair), **Elena Arthur** (IVACS Student Co-Chair), **Whitney Harchenko** (PBS Student Co-Chair), **Marietta Wheaton Ellis** (Meeting Secretariat), and the Local

Organizing Committee, **Allan Wenck** (Chair), **Jeffrey Adelberg**, **Addy Alt-Holland**, **Elena Arthur**, **Christopher Bagley**, **Vadim Beilinson**, **Ming Cheng**, **Yinghui Dan**, **Thomas Gurganus**, **Sergei Krasnyanski**, **John Lehman**, **Baochun Li**, **Hong Luo**, **Samson Prabhakar Nalapalli**, **Yufuko Nishimura**, **Yongqing Niu**, **Qiudeng Que**, **Weiming Wang**, and **Margaret Young**.

Future Members and Role of IVACS

In the last five years, *in vitro* biology has ushered in an explosion of innovative culture methods to model once impossible systems, which has been pivotal to the acquisition of significant new findings in basic biology and translational medicine. IVACS has the potential to emerge as an important stage for this story. The most effective means to realize this responsibility is through the membership, by individually projecting our enthusiasm and experiences of SIVB with our colleagues. Indeed, it is the members that fulfill the mission of SIVB and we all share and appreciate one another's efforts. In the same spirit, IVACS would like to sincerely thank **Marietta Wheaton Ellis** (Managing Director), **Michele Schultz** (Publications Manager), and the entire staff of New Beginnings Management for their continual work to execute the daily functions of SIVB and make possible the annual meeting we so enjoy.

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PLANT BIOTECHNOLOGY

The 2016 World Congress on In Vitro Biology was held in San Diego, CA at the Sheraton San Diego Hotel and Marina. This was a joint meeting of the Society for In Vitro Biology (SIVB), Japanese Association for Animal Cell Technology (JAAC) and The Japanese Tissue Culture Association (JTCA). The conference location provided numerous opportunities for attendees to enjoy the views from the hotel as well as the famous San Diego tourist attractions. The Monday evening

joint social provided ample opportunities for all to reconnect with old friends and make new acquaintances.

Prior to the start of the conference an all day workshop titled "Hands on Plant Tissue Culture Workshop for High School and Community College Teachers" was well attended by local teachers. Instructors **Carol Stiff**, **Kim Hanson** and **Sylvia Mitchell** led the workshop.

The 2016 Plant Biotech Section Program Planning Committee was lead by **Hong Luo**

(Program Chair), **Pon Samuel** (Sr. Co-Chair) and **Sadanand Dhekney** (Jr. Co-Chair). The cutting edge Plenary Symposia included "Cannabis Sativa: The Science Behind the Smoke", "In Vitro Biology: From Tools to Reality", "Infinite Potential of Stem Cells" and "Microbiome: A Hidden Universe". Plant symposia topics included "Genome Editing", "Automation in Tissue Culture", "Management of Resistance in GM Plants", "Algae Biotechnology" and "Application of NGS Technology".

The 2016 Student and Post-Doctoral Oral Competitions were coordinated by **Cecilia Zapata** and **Sadanand Dhekney**, respectively. The Student Oral Competition judged by **Nancy Reichert**, **Michael Kane** and **Randall Niedz** awarded first place to **Kerri Neugbauer** (Kansas State University), second place to **Quang T. Nguyen** (University of Queensland) and third place to **Megan Philpott** (Cincinnati Zoo & Botanical Garden). The Post-Doctoral Oral Competition judged by **Prakash Kumar**, **Dennis Gray** and **Daniel Bergey** awarded first place to **Bin Tian** (Kansas State University), second place to **Anne-Catherine Vanhove** (Cincinnati Zoo & Botanical Garden) and third place to **Ratna Karan** (University of Florida). **Jordan Brungardt** and **Matt Desrosiers** moderated a Non-competitive Student Oral Presentation.

At the SIVB Business Meeting, acknowledgments were provided to those who received the Distinguished Service Awards for their commitment and service to the society. Recipients included **Barbara Doonan**, **Barbara Reed**, **Elizabeth Roemer**,

Nancy Reichert, **David Songstad**, **Mary Welter** and **Allan Wenck**.

Despite a reduction in the number of agricultural biotechnology companies that historically have supported the plant section of SIVB, fund raising efforts were successful in generating \$32,750 for the SIVB Plant Activity Fund. Companies donating to the Plant Activity Fund included Bayer CropSciences, Cibus, Dow AgroSciences, DuPont Pioneer, Monsanto, Precision Biosciences, Syngenta and The Scotts Miracle Grow Co. In addition, individual donations continue to provide much needed financial support to the society. A total of \$81,370 in funds was secured through grants and fund raising for all SIVB funds and activities.

As the journal *In Vitro–Plant* generates a significant source of revenue for the society, I would strongly encourage all Plant Biotechnology section members to consider submitting manuscripts for publication. David Duncan is the current Editor and is welcoming new manuscripts to review. For those wishing to share personal achievements with the society, Sylvia Mitchell is looking for input for the In Vitro Report Explants.

The 2017 In Vitro Biology meeting will be held June 10–14, 017 in Raleigh, NC at the Raleigh Convention Center. The Plant Biotechnology Section Program Planning committee consists of **Pon Samuel** (Program Chair), **Sadanand Dhekney** (Sr. Co-Chair) and **Piero Barone** (Jr. Co-Chair). An especially strong line up of topics for the conference includes advances in flow cytometry, microbiome challenges, tissue culture media improvements using DOE, plant genome editing and medicinal plants.

In addition a flow cytometry workshop scheduled for June 10th will give an opportunity for attendees to obtain some hands on experience trying out new flow cytometry applications. Beckman Coulter is the corporate sponsor for this workshop. As the location is located near the Research Triangle Park area, attendance should be strong and provide for ample opportunities for social and intellectual interaction with your fellow scientists.

Mary Welter
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HISTORY AND RECORDS

The History Society was established in 1979 at the Seattle Washington Tissue Culture Association (TCA) meeting as the Records and Historical Committee. The charge of the committee is to preserve historical information concerning the growth, maintenance and in vitro experimental use of cells, tissues and organs. The History Society, in conjunction with the Records and Historical Committee oversees contributions to the SIVB archives located in the main library of the University of Maryland, Baltimore, MD. This archived material is available to all that would like to acquaint themselves with the history of tissue culture and scientific application to in vitro biology.

Members of the History Society and Records Historical Committee include: **Sandra L. Schneider** (Chair), Research & Clinical Laboratory Systems; **Gertrude C. Buehring** (Co-Chair), University of California, Berkeley; **Barbara B. Doonan**, New York Medical College.; **Ian Freshney**, University of Glasgow; **Cynthia L. Goodman**, U.S.

Department of Agriculture, ARC, Biological Control of Insects Research Laboratory; **Leonard Hayflick**, University of California, San Francisco; **Wallace L. McKeethan**, Center for Cancer & Stem Cell Biology Institute of Biosciences and Technology (IBT) Texas A&M Health Science Center, Houston, TX; **Tetsuji Okamoto**, Department of Molecular Oral Medicine and Maxillofacial Surgery, Graduate School of Biomedical Sciences, Hiroshima University, Japan; **Jon Ryan**, Consultant Wheaton; **Yvonne Reid**, American Type Culture Collection; **J. Denry Sato**, Manzanar Project Foundation, and **Guy Smagghe**, Ghent University, Belgium.

The History & Records Committee was tasked by the Board of Directors to review and determine the historical importance of donated scientific books. The recommendations of the Committee were:

1. One copy of a text book, paper or other material deemed of historical importance and significance, and not already in the

archive, should be archived by the Society, either at the University of Maryland Library Archive, or Iron Mountain storage facility.

2. The SIVB will only accept appropriate items that are in prime collectable state, i.e., do not contain mold, mildew, water or smoke damage, or require repair.
3. Donations to the SIVB archives will be at the discretion of the Society Management Office to be placed into a collection, exchanged for other materials, donated to other institutions, or sold, unless stipulated in writing by the donor. These stipulations are similar to most library collections, including the University of Maryland, Baltimore Library Archives.
4. Donations and gifts to the SIVB will be acknowledged through a receipt of date and item given to the donor for income tax purposes.
5. Donations and gifts to the SIVB are irrevocable once the processing has been completed and are placed in the archive facility.

6. Duplicate copies of books, papers and materials should be the responsibility of the owner to dispose of through other venues.
 - a. The cost of shipping and/or other costs related to the donation should be the responsibility of the donor and not the Society;
 - b. The donor of any text book, paper or scientific material is responsible for determining the donation value for IRS purposes.
7. It is strongly recommended that the Board consider and invest in the technology of digitization through the University of Maryland Library, or other digital management venue for the future archiving and preservation of SIVB historical publications and documents.
 - a. Digitization of books, personal papers, or other materials would simplify storage and distribution to diverse databases where they will be forever searchable;
 - b. Digitization of books would involve copyright issues, unless the SIVB purchases pre-existing digital copies.

The History Society and Records History Committee nominated and supported the 2017 Lifetime Achievement Award for **J. Denry Sato**, D.Phil which was generously funded by the ATCC. The Committee also nominated and supported SIVB Fellow status for **Miho Kusuda Furue**, DDS, PhD.

The scientific and humanitarian career of Dr. J. Denry Sato spans over 35 years of significant pioneering contributions to the field of in vitro biology and applications to human disease and cancer treatment. Dr. Sato received his doctorate in genetics, Oxford University, UK and then joined the University of California at San Diego Cancer Center where he pioneered the development of serum-free media specific for hybridoma and stem cell culture. This work led to the discovery of the epidermal growth factor (EGF) signaling pathway for proliferation and differentiation of normal and cancer cells, as well as cell selection based on cholesterol autotrophy. The product of this technology was the first FDA approved monoclonal antibody to human EGF receptor (Erbtux/Certuximab) to treat advanced colon cancer. His discovery of a vascular endothelial cell growth factor (VEGF), enabled colleagues to discover the FDA approved monoclonal antibody (Avastin/bevacizumab) for treatment of colon, lung and brain cancers. Dr. Sato continues to investigate the role of protein kinases as a transmembrane conductance regulator (CFTR) in cystic fibrosis.

Dr. Sato has served in positions at the Cold Spring Harbor Biological Laboratory, Beckman Research Institute, W Alton Jones Cell Science Center, Mt. Desert Island Biological Laboratory, ATCC Deputy Director, National Stem Cell Resources and is currently Scientist of the Manazar Project Foundation. His scientific publications include over 100 peer-reviewed articles, 5 patents, and 14 GenBank submissions. In addition, he serves as *ad hoc* reviewer for numerous prestigious journals, including PNAS, J Immunology Methods, J Cellular Physiology. Fellowships and awards include: EP Abrahams Chemical Pathology Trust; National Research Service Award, Institute of General Medical Sciences; SIVB Senior Investigator, Fellow and Distinguished Service Awards.

An active, contributing and dedicated member of the TCA/SIVB since 1985, Dr. Sato has served as Reviewer, Associate Editor, Editor-in-Chief and Emeritus Editor-In-Chief of In Vitro Cellular & Developmental Biology/Animal; World Congress Scientific Advisory Board; Program Committee; symposium contributor; member Vertebrate and Cellular Toxicology Sections, (now IVACS); SIVB Board of Directors and valued member of the History & Records Committee.

Dr. Furue, DDS, PhD currently serves as Project Leader, Laboratory of Stem Cell Cultures, National Institutes of Biomedical Innovation, Health and Nutrition with actively funded research on the culture, development and application of pluripotent stem cell technology. In addition she is visiting professor to Graduate Schools of Dentistry and Biomedical Sciences at Kanagawa Dental College, Osaka, Hiroshima and Kyoto Universities where she mentors and trains graduate students and postdoctoral fellows. She was awarded a year's sabbatical as Visiting Lecturer, Centre for Stem Cell Biology, University of Sheffield, UK and serves as an expert on stem cells, iPS research and regenerative medical research for many institutional and governmental committees in Japan.

Dr. Furue has over 58 original publications, 9 reviews, 5 book chapters and 13 platform presentations. She holds 6 patents with several pending patent applications on the development of stem cell technology. Her ongoing research is the development of cutting-edge imaging analysis and culture conditions for neural crest pluripotent stem cells to establish a drug efficiency and toxicity testing clinical system. She is also invested and partnered with the Stem

Cell Evaluation Technology Research Association in the standardization of stem cell culture techniques for the Japanese pharmaceutical industry.

An active member of the Japanese Tissue Culture Association since 1984 and SIVB since 1994, supporting numerous scientific Congress symposia and programs over the years, Dr. Furue has been instrumental in maintaining the SIVB international scientific relations with the European and Japanese Associations. In this capacity, she was awarded the SIVB Distinguished Service Award and is respected by her peers for scientific and leadership roles in the Vertebrate and Toxicology Sections.

The History Society was notified of the passing of three emeritus, pioneering invertebrate scientists: **Drs. Karl Maramorosch, Thomas Duncan Grace and Herbert Oberlander.**

Professor emeritus and renowned virologist, entomologist and plant pathologist **Karl Maramorosch**, PhD passed away on May 9, 2016 at age 101 while visiting friends in Poland. Dr. Maramorosch pioneered insect tissue culture and the understanding of plant-pathogens in insect vectors. His diverse research recognized the interactions between insects, viruses and plants, laying the foundation for in vitro expressions systems and emergence of the baculovirus-insect cell cultures used in agriculture, medicine, drug discovery and mammalian cell gene delivery.

Dr. Maramorosch began his education at the Moniuszko Conservatory of Music, Poland as a concert pianist, but then graduated *magna cum laude* from the Warsaw University in agricultural engineering. His studies in virology were interrupted as he escaped to Romania with his wife and partner, Irene Ludwinoska, during the Nazi and Soviet invasions of Poland. After a nine year journey interred in refugee camps and escaping Soviet-occupied Romania, they arrived in New York, where Dr. Maramorosch entered Columbia University, while working at the Brooklyn Botanical Garden and received his doctorate degree.

His first position was with Rockefeller University and Cold Spring Harbor where over the next 12 years he was influenced by scores of scientists to include: Salvador Luria, Max Delbruck, Ernst Mayr, Barbara McClintock and Alfred Hershey (*note: Hershey shared the 1969 Nobel Prize in Physiology or Medicine with Max Delbrück and Salvador Luria for their "discoveries concerning the genetic structure*

of viruses). At Rockefeller, Dr. Maramorosch modified the method of Rudolph Weigl, who had been his brother's professor in Poland, to microinject plant pathogenic viruses and phytoplasmas into leafhopper vectors. This also resulted in the first evidence that some plant pathogens multiply not only in plants, but also in invertebrate vectors.

In 1961, Dr. Maramorosch moved to Boyce-Thompson Institute as Program Director of Virology where he and co-workers were at the forefront using the electron microscope to detect and characterize viruses and phytoplasmas in cells of diseased plants and insect vectors. Joining the Waksman Institute at Rutgers University in 1974, where he became Robert L. Starkey Professor of Microbiology and then his final career move in 1984 to the Rutgers Entomology Department.

A founding and active member of the TCA/SIVB History & Records Society, Dr. Maramorosch was a prolific writer and editor serving the disciplines of virology, plant pathology and entomology with distinction across eight decades. He edited more than 90 volumes and authored/co-authored hundreds of journal articles in comparative virology, invertebrate cell culture, parasitology, plant and insect disease, spirochetes, viroids, phytoplasmas, spiro-plasmas and biotechnology.

Recognized throughout his life with numerous awards and accolades, Dr. Maramorosch's proudest moment was the 1980 awarded Wolf Prize, considered agriculture's equivalent of the Nobel Prize, "for his pioneering and wide-ranging studies on interactions between insects and disease agents in plants." Other awards included: the Jurzykowski Award in Biology, American Institute for Biological Sciences Award of Distinction and Distinguished Service Award, Japan Society for Promotion of Science Distinguished Professorship, two Fulbrights, Waksman Award and Medal, American Association for the Advancement of Science Campbell Prize, Distinguished Lifetime Achievement Award of In Vitro Biology Society, Warsaw University Award of Distinction, Society of Invertebrate Pathology Founder's Lecture Honoree, elected to the German National Academy of Sciences, Fellow of the American Association for the Advancement of Science, American Phytopathological Society, New York Academy of Sciences Indian Virological Society, Indian National Science Academy and others. He was an Honorary Member, Fellow and most significantly

designated a "Legend" of the Entomological Society of America, which also nominated him for the National Medal of Science.

Dr. Karl Maramorosch was recognized by his peers as an eminent virologist, entomologist, and plant pathologist who was a truly remarkable and multifaceted individual. A celebrated scientist, gifted pianist, sleight of hand magician, polyglot, world traveller, avid photo and videographer, owner of a phenomenal memory, "an extraordinary person who lived an extraordinary life."

Thomas Duncan Campbell Grace, PhD, Broulee, Australia, passed away January 2, 2016 at age 87 in Broulee Australia. Dr. Grace began his career in science at the Hurlston Agriculture College, Sydney University and received his doctorate in microbiology at the Australian National University. His interest in insect cell culture began in the laboratory of Dr. Max Day, Division of Entomology Scientific and Industrial Research Organization, now the CSIRO. He studied not only viruses which caused diseases in insects, but those viruses transmitted by insects which attacked animal and plants.

During this time, Dr. Grace successfully established the first four insect cell lines from ovarian tissue of the emperor gum moth (*Antheraea eucalypti*) and silkworm (*Bombyx mori*). Both these insects contained hemolymph which, at this stage, was a necessary ingredient of the medium and where the cells were susceptible to polyhedral virus diseases. He also established the first cell line of medical importance from the mosquito (*Aedes aegypti*). From 1957 to 1958 Dr. Grace studied at the Rockefeller University in New York in the laboratory of Dr. Karl Maramorosch. There he refined the first medium generated for continuous insect cell culture, later known as the popular Grace's Medium.

The development of Grace's Tissue Culture Medium benefited many fields of cell biology for which Dr. Grace was recognized by many internal awards from Australia, USA, Japan, Israel, UK, India and Czechoslovakia. Dr. Grace closed his career with a diplomatic posting to Japan as Scientific Counselor, retiring to the Protea Patch, a hobby farm he enjoyed with his family, and perfecting his intricate Asian-inspired wood boxes and carvings.

At the 2004 World Congress on In Vitro Biology in San Francisco, Dr. Grace, Australia and Professor Shangyin Gao, Wuhan, China received Lifetime Achievement Awards for pioneering invertebrate biology and establishing continuous cell lines from insects. To recognize the achievements of Dr. Grace,



The backbone of the Invertebrates, from left to right: Spiros Agathos, Robert Granados, Tom Grace, Dwight Lynn, Just Vlask, Karl Maramorosch.

and Professor Gao, Dr. Karl Maramorosch and Dr. Robert Granados convened a symposium: "Molecular Engineering and Biology of Invertebrate Cell Cultures: A tribute to Dr. Tom Grace and Professor Shangyin Gao" at the 11th International Conference on Invertebrate Cell and Tissue Culture, held in conjunction with the 2004 World Congress on In Vitro Biology. It was a significant honor to SIVB that Dr. Grace attended this symposium and where he presented his historical 1963 film: "Insect Tissue Culture."

Herbert Oberlander, PhD passed away peacefully at his home in Gainesville, FL on April 13, 2016 at age 76. After receiving his doctorate in biology from Case Western Reserve University and teaching at Brandeis University, he joined the U.S. Department of Agriculture/Agricultural Research Service. Dr. Oberlander developed the USDA Bureau of Entomology to train graduate students and fellows. His research included the use of endoparasites as biological control agents and developing an artificial medium to allow parasites to live outside the plant host.

Dr. Oberlander served the USDA, as both laboratory director and center director, authoring more than 100 publications on insect endocrinology and tissue culture. Dr. Oberlander was recognized as USDA Outstanding Scientist of the Year, served on the governing board of the Entomological Society of America and was active in the International Conference of Invertebrate Cell Culture and Invertebrate Pathology sections.

Dr. Karl Maramorosch, Dr. Thomas Grace and Dr. Herbert Oberlander each left a notable scientific legacy to invertebrate biology and impacted those scientists who were privileged to have known and served with them as international SIVB colleagues.

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STANDING COMMITTEES

AWARDS

New Award Criteria

The 2017 Awards Committee consisting of **Mary Welter** (Chair, Plant Biotechnology Sciences), **Ming Cheng** (Vice Chair, Plant Biotechnology Sciences), **Michael Dame** (Chair, In Vitro Animal Cell Sciences), **Kolbrun Kristjandottir** (Vice Chair, In Vitro Animal Cell Sciences) and **Maria M. Jenderek** (Chair) discussed and recommended for approval SOP for the Life Achievement Award. The SOP approved by the Board of Directors outlines eligibility criteria, fundraising requirements for nominators (to cover the awardee expenses to attend the award ceremony) and the time frame for the nomination process. The Committee made efforts to inspire all Society members to nominate accomplished colleagues and the response was very positive.

2016 Awards

The 2016 Awards Committee, which determined the 2016 Award Recipients, consisted of **Kan Wang** (Awards Committee Chair), **Joseph Petolino** (Chair, Plant Biotechnology Sciences), **Ian Curtis** (Vice Chair, Plant Biotechnology Sciences), **Addy Alt-Holland** (Chair, In Vitro Animal Cell Sciences), **Magnolia Ariza-Nieto** (Vice Chair, In Vitro Animal Cell Sciences), and **Maria M. Jenderek** (Incoming Chair)

The 2016 and 2017 Committees would like to express a deep appreciation to all Nominators and congratulate the 2016 Awardees; job well done and the awards truly deserved. The Society has outstanding members who make our organization successful and of interest to young scientists and students. The awards criteria are posted at the SIVB website <https://sivb.org/awards.html>.

Lifetime Achievement Awards

The Society for In Vitro Biology established the Lifetime Achievement Award in 1989 to recognize outstanding late-career scientists who have made significant contributions to the field of in vitro biology and/or in the development of novel technologies that have advanced in

vitro biology. Two outstanding SIVB members, **Dr. Eugene Elmore** (IVACS) and **Dr. Yvonne Reid** (IVACS), were nominated and won the 2016 Lifetime Achievement Awards in acknowledgement of their exceptional careers in in vitro cell and developmental biology and exemplary research, management and mentoring careers. They were presented with the awards and gave brief acceptances during the Opening Ceremony.

Dr. Elmore has been chosen for the Lifetime Achievement Award for 2016 based on his consistent support and active participation in the SIVB, excellence in research and publication, and exceptional contributions to in-vitro biology in both private and public sectors. Dr. Elmore's involvement in the standard setting process leading to ANSI standard ASN-002 on STR profiling for authenticating human cell lines, and more recently ASN-003 on use of DNA barcoding for authenticating animal cells, represents just the tip of the iceberg when it comes to his contributions to the science of cell culture. He has presented over 100 contributed or invited papers, edited two books and written six book chapters and over 40 peer-reviewed manuscripts. Dr. Elmore has been a member of TCA/SIVB since 1984 in which he has served the Society in teaching, scientific programs, research and in varied leadership positions within the society. Dr. Elmore is a Past President of SIVB, a Society Fellow, has served on the Board of Directors numerous terms, been Program Chair as well as contributing to the Program Committee, and been a mentor to numerous students, postdocs and scientists. His research in genetic toxicology, in-vitro teratology, cell line quality control and authentication and chemoprevention technology is global in scope and is highly regarded for its contribution to the fields of cancer biology and the use of in-vitro cell culture for screening and toxicity. In addition, he has served on a number of influential boards and panels that set policy and standards both on national and international levels.

Dr. Reid is a Manager and Scientist, Cell Culture Contracts of the American Type

Culture Collection (ATCC); her expertise and knowledge help establishing and supporting state-of-the-art cell biology and culture programs and the reputation of the ATCC. Dr. Reid is a well-known and respected member of the national and international in vitro biology and the scientific community as an expert in cell authentication and verification. Dr. Reid's seminal achievements include scientific publications, pioneering in vitro research work, acknowledgments for her outstanding research work and significant contributions to the SIVB. The main focus of Dr. Reid's pioneering work is in the area of in vitro and molecular investigations for the identification and authentication of cell lines. Her work is published in over 41 articles, reviews, chapters, numerous media and presentations and a patent on immortalized neonatal human hepatocytes. She developed cell line identification and authentication procedure using DNA hyper-variable regions for intra-species identification. This breakthrough technology enables the identification and authentication of the tissue origin of a specific cell line as well as its donor. Her pioneering work in cell line authentication, banking and best laboratory practices have collectively ensured an industry-wide reproducibility and reliability of interspecies cell culture data. Dr. Reid serves as a member of the Comparative Medicine Review Committee for the National Center of Research Resources and as an advisor to the NICHD and FDA USP Advisory Panel. She also serves on the Global Biological Standards Institute that advances life science standards to support credible, reproducible and translatable research outcomes. She co-chaired the committee developing guidelines for species identification using DNA technology and contributed much of the text for the American Standard ASN-002 used by the government, pharmaceutical industry and academia. Based on her pioneering work, Dr. Reid has been recognized with significant awards for her cell culture contributions, such as the prestigious Eddie Award, the Distinguished George S Bascom Memorial lecturer, and SIVB Service Award. Dr. Reid has been a member of the TCA/SIVB since

January, 1980. She is a member of Vertebrate and Cellular Toxicology Section, served on the SIVB Board of Directors and is a valued member of the History & Records Committee. She actively contributed to the TCA/SIVB as World Congress Scientific Advisory Board, Program Committee, symposium, continuing education and training programs presenter and convener.

Distinguished Scientist Award

Dr. Guy Smagghe (IVACS) won the 2016 Distinguished Scientist Award. This award recognizes outstanding mid-career professionals who have made significant contributions to the field of in vitro biology and/or in the development of novel technologies that have advanced in vitro biology. Dr. Smagghe is a Professor and the Head of a Research Group for Insect Physiology and Pest Control at Ghent University, Belgium. He graduated with a doctoral degree in 1995 and joined the SIVB in 1997. He leads an internationally recognized, multidisciplinary team of 35 researchers and post-doc associates involved in basic and applied research on insects. Using insect tissue culture, Dr. Smagghe was the first one to demonstrate that hormone mimetics activated in insects were order specific. He was involved in development of a midgut tissue culture system that is widely used in studies on biorational insecticides. He researched and tirelessly advocated the use of insect cell lines in studies on insect biology, screening of insecticides and the detection of environmentally destructive substances. Dr. Smagghe developed RNAi technologies to de-orphanize unknown receptors in insects that are used as a tool in developing bio safe pest control strategies. He has implemented CRISPR/Cas9 genome-editing technology in insect cell culture settings. He has made significant, original basic and applied research contributions in the area of in vitro biology. He authored/coauthored over 330 peer-reviewed research publications that appeared in *Nature*, *Nature Biotechnology*, *Nature Communications*, *Science* and the *Proceedings of the National Academy of Sciences* and other high impact journals, contributed to over 750 abstracts and holds eight patents involving insect control. He serves on editorial boards of 22 journals, was an invited/keynote speaker at 21 professional

events, and served as a referee for 114 scientific journals. Under his tutorship, 25 students graduated with a PhD degree and over 95 with a MS degree. Dr. Smagghe is a Fellow of SIVB, AAAS, holds three Doctor Honoris Causa degrees and nine other prestigious awards. He served as secretary, vice-chair and chair in the Invertebrate Section and as a member of the Board of Directors for the SIVB. Dr. Smagghe was recognized during the Opening Ceremony and his award was presented during the IVACS Section Meeting.

Young Scientist Award

Dr. Joshua Z. Gasiowrowki won the 2016 Young Scientist Award. This award recognizes outstanding early-career scientists who have made significant contributions to the field of in vitro biology and/or in the development of novel technologies that have advanced in vitro biology. Dr. Gasiowrowski has spent much of his career studying the dynamic intracellular movement of episomal and genomic DNA in mammalian culture cell systems. He has also developed well-defined biomaterials to use as in vitro tools to study cell behaviors in response to different biophysical cues. His work has had meaningful impact in the areas of gene therapy, biomaterials, tissue engineering, and cell biology. Dr. Gasiowrowski has 17 peer-reviewed publications, and almost all of them have focused on in vitro research. In total, his articles have been cited over 625 times and twelve of them have been cited at least 12 times to give him a personal h-index = 12. Nine of his papers have been cited at least 25 times each. He has also authored 4 peer-reviewed book chapters and has authored or co-authored numerous abstracts for local and national meetings. In his three years as an assistant professor, Dr. Gasiowrowski has mentored seven biomedical sciences graduate students, one medical student, one dental student, and one biomedical sciences masters/dental dual degree student. He has also assisted mentoring four undergraduate students in collaboration with the University of Chicago. Dr. Gasiowrowski has attended the past three SIVB meetings and has authored or co-authored three posters, and has provided one oral IVACS presentation. He has co-convened a plenary session and has

convened two IVACS sessions. At the 2016 meeting in San Diego he co-convened two IVACS sessions. Additionally, Joshua was recently elected as the IVACS Section Program Chair and began his service at the San Diego meeting to plan for the 2017 Raleigh meeting. Dr. Gasiowrowski was recognized during the Opening Ceremony and his award was presented during the IVACS Section Meeting.

Distinguished Service Awards

2016 Distinguished Service Awards were presented to the following members: **Barbara B. Doonan, Barbara M. Reed, Elizabeth J. Roemer, Nancy A. Reichert, David D. Songstad, Mary Welter, and Allan R. Wenck**. These awards recognize those specially selected by the SIVB President who have demonstrated and given extra effort in support of the SIVB Programs and endeavors. The recipients were presented with the awards during the Opening Ceremony.

Student Awards

The evaluating committee this year consisted of **Craig Meyers, Sylvia Mitchell, Guy Smagghe, and Esther Uchendu**. The following awards were presented at the 2016 meeting.

Saroj Parajuli, University of Florida, Gainesville, FL was granted the John S. Song Award for the project entitled, "*Metabolic Engineering of Sugarcane for Hyper-accumulation of Oil in Vegetative Biomass.*" The Hope E. Hopps Award and an SIVB Travel Award were won by **Neelam Negi**, Jawaharlal Nehru University, New Delhi, India for "*Preparing Future Brassica juncea Plant Towards Dry and Saline Areas: Gene Pyramiding of Antioxidant Enzymes.*" The Cellular Toxicology Award was granted to **Dina Rassias**, Worcester Polytechnic Institute, Worcester, MA for a project entitled, "*The Therapeutic Effects of per os Artemisinin Delivered as Dried Leaf Artemisia annua vs. Artesunate in Non-small Cell Lung Cancer.*" The Honor B. Fell Award and an SIVB Travel Award went to **Matthew Desrosiers**, Worcester Polytechnic Institute, Worcester, MA for "*Bioavailability of the Antimalarial Drug Artemisinin Delivered Orally as Dried Leaves of Artemisia annua: the Role of Solubility and*



Top: Lifetime Achievement Award Winners: Yvonne Reid and Eugene Elmore, Distinguished Scientist Award Winner, Guy Smagghe and The 2017 Student Award Winners: Ning Yang, Dina Rassias, Neelam Negi, Matt Desrosiers, Quang T. Nguyen Himanshi Kapoor, Kerri Neugebauer, and Amritpal Singh. Middle, Young Scientist Award Winner, Joshua Gasiorowski, and Distinguished Service Award Winners, Barbara Doonan, Barbara Reed, Nancy Reichert, David Songstad, and Mary Welter.

Bottom: PBS Plant Oral Presentation Competition Winners Kerri Neugebauer and Quang T. Nguyen; Post Doctoral Competition winner Bin Tian; IVACS Oral Presentation Competition winners Darryl Giambalvo and Allison Songstad; and Student Award Winners, Tina Lai and Saroj Parajuli.

Protein." The Joseph F. Morgan Award was won by **Amritpal Singh**, University of Guelph, Guelph, Ontario, Canada for "Light Intensity Stress as the Limiting Factor in Micropropagation of Sugar Maple (*Acer saccharum* Marsh.)." The Philip R. White Memorial Award went to **Ningning Zhang**, Arkansas Biosciences Institute, Arkansas State University, AR for "Novel Designer Glycopeptides as a Molecular Carrier Boosts Secreted Protein Yields in Plant Cell Culture." SIVB Travel Awards were also granted to: **Quang T. Nguyen**, The University of Queensland, St Lucia, Australia for "Improvement of Embryogenic Callus Production from Coconut (*Cocos nucifera* L.) Plumule Explant"; **Himanishi Kapoor**, University of Delhi, Delhi, India for "Strong Cytotoxic Potential and Anti-Proliferative Effect of *Nardostachys jatamansi* D.C. Herbal Extract on Human Glioblastoma Cell Lines Manifested as Cell Cycle Arrest and Mitotic Catastrophe";

Kerri Neugebauer, Kansas State University, Manhattan, KS for "Susceptibility and Race Specific Wheat Genes Induced by Six *Puccinia triticina* Races"; **Tina Lai**, Pennsylvania State University, University Park, PA for "Analyzing Somatic Embryogenesis Gene Expression in Response to Tissue Culture Enhancer *PLA1* Protein."

Changho Ahn of the University of Georgia, Athens, GA was chosen to receive the **Wilton R. Earle Award** and an **SIVB Travel Award** for "Application of somatic embryogenesis to hybrid hemlocks for use in restoration programs." Unfortunately Mr. Ahn was unable to attend the annual meeting, so his award went unrepresented.

Maria M. Jenderek
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Student Awards
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CONSTITUTION AND BYLAWS

The 2016 Constitution and Bylaws Committee met during the June annual meeting. No items were brought to the committee chair either by the Board of Directors, or members of the Society. Since not all members are able to attend the committee meetings in person, should you wish to suggest improvements to our governing documents and volunteer to assist in preparing recommendations, you may reach out to the Committee Chair with your thoughts.

Theodore Klein
Constitution and Bylaws
Committee Chair
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DEVELOPMENT

The Development Committee helps to secure financial support for the society. In 2016, the Committee included: **Pon Samuel**, **Sadanand Dhekney**, **Ted Klein**, **Michael**

Dame, Josh Gasiorowski, Joseph Petolino, John Harbell, David Songstad, Eugene Elmore, Harold Trick, Brad Upham, Harold Trick, Hong Luo, and Allan Wenck (Chair). This team of IVACS and PBS members helped to generate contributions for the 2016 World Congress on In Vitro Biology.

In 2016, we discovered that the environment was becoming more challenging due to major consolidations in the Ag Industry and overall a tough market environment, the impact of which is evident from smaller contributions coming from big companies. We were pleased to receive a grant from NSF in support of the Hands-on Tissue Culture Workshop for High School and Community College Teachers which was secured through the efforts of **Kim Hanson, David Songstad** and the Business Office.

Support for SIVB came from the following funding sources: ATCC, Bayer CropScience, Cibus, LLC, Dow AgroSciences LLC, Dupont Pioneer, JHarbell LLC, JV Biolabs, MatTek, Midwestern University, Monsanto Company, National Anti-Vivisection Society/International Foundation for Ethical Research, Precision Biociences, Inc., Protect Your Home, An Authorized ADT Premier Provider, Robert and Gale Lawrence, Southern California Biotechnology Center, Syngenta, and The Scotts Miracle Gro Company and Meeting Co-sponsors The Japanese Association for Animal Cell Technology and The Japanese Tissue Culture Association. Individual contributors came from: **Barbara Doonan, Delia Bethell, Eugene Elmore, Fredy Altpeter, J. Denry Sato, Michael J. Fay.**

Planning for the 2017 Meeting began soon after the end of the 2016 World Congress. The 2017 Committee's core members include **Piero Barone, Sadanand Dhekney, and Sukhpreet Sandhu** (Chair) with support from many IVACS and PBS members. The Committee has reached out to smaller companies to support the organization as well as looking for grant opportunities. We have been very fortunate to have members like **David Songstad**, whose continued efforts to rally support for the Society has helped us tremendously. We appreciate the support from several individual contributors who have been long time members of SIVB. It goes to show their commitment and belief in SIVB's mission.

We continue to urge SIVB members to help in this pursuit. We appreciate your ideas for alternate sources of funding and relying on your networks. We trust in the support from all SIVB members to help us secure a thriving future for SIVB.

EDUCATION

The Education Committee has the task to further the educational goals of the Society for In Vitro Biology (SIVB). Over the years, the committee has worked together with the Student Affairs Committee to provide a number of engaging events at the SIVB annual meeting. The following is a highlight of events from 2016 and upcoming events at the 2017 Annual Meeting.

The Education Committee, under the chairmanship of **Vivian Dayeh**, organized a full hands-on plant tissue culture workshop for high school and community college teachers on the Saturday prior to the start of the 2016 Annual Meeting. The workshop offered a teaching-based experience during the 2016 World Congress. The committee thanks the organization by **Kim Hanson** of the workshop which was led by **Carol Stiff** and **Sylvia Mitchell**. This session, titled, "Hands-on Plant Cell Tissue Culture Workshop for High School and Community College Teachers" was well attended bringing together teachers from all over the Southern California area to educate them in sterile technique and plant tissue culture for their classrooms. To support this program, Ms. Hanson, **David Songstad** and the SIVB Business Office prepared a \$12,000 grant through NSF to cover the costs of the workshop and to provide materials for these teachers to take this work back to their classrooms. Participants were able to use this information to enhance tissue culture practices of their own upon their return.

For the 2016 meeting **Jordan Bruungardt** and **Matthew Desrosiers** conducted the student symposium called "*Science in Short: Communicating Your Work Clearly and Effectively.*" This symposium focused on communicating science to various media sources in a short amount of time. Students participated in breakout sessions where they practiced their elevator talks and were encouraged to avoid field-based jargon. The symposium then moved on to discuss interacting with the media as a scientist. Dr.

Wayne Parrott was the key speaker for the symposium with planning facilitated by Dr. **Harold Trick**.

For the 2017 Annual Meeting, the Education Committee is pleased to offer an all-day Saturday workshop on Flow Cytometry entitled "*Grow with the Flow: Expand your Application in Biological Research with Flow Cytometry.*" This program was coordinated by **Pon Samuel** and **Mary Welter** and is sponsored by Beckman Coulter. The program will provide AM lectures on Flow Cytometry followed in the afternoon with demonstrations and interactive sessions for both plant and animal researchers.

The student events at the 2016 World Congress conference were well attended. The Education Committee and Student Affairs Committee would like to thank **Matthew Desrosiers** and **Jordan Bruungardt** for organizing the student symposium, networking luncheon, and the non-competitive student oral presentations. The student symposium focused on how to communicate science clearly and effectively to different types of audiences, while the luncheon focused on professional networking. The Committees would also like to congratulate the 2016 student award winners.

Student events for the 2017 Meeting will consist of the three events: a student symposium, student luncheon, and non-competitive student oral presentation session. They will be co-convened by student committee co-chairs **Elena Arthur** and **Whitney Harchenko**. It is increasingly important for students today to be aware and skilled in presentation skills, interviewing and preparation of resumes and CVs. For the student symposium, the session will focus on persuasive presentations: Tips and Techniques for Public Speaking with invited speaker, **Cally Ritter**, and the Monday luncheon will include a keynote presentation by **Patrick Brandt** who will address how to create winning CVs and resumes.

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LONG-RANGE PLANNING

The LRPC is a standing committee of the SIVB charged with discussing and developing strategic ideas for the long-term benefit of our membership. The Constitution and Bylaws Committee (C&BC) considered the draft Strategic Plan and suggested revisions at the SIVB annual meeting in Tucson in June 2015. The revised Strategic Plan was approved by the SIVB board. In addition to these revisions the C&BC indicated that the Long Range Planning Committee should work with various other Committees in the Society to implement the Strategic Plan. Below are the strategic priorities from that plan that the LRPC is working to implement:

Overarching goal: Expand, convey and promote the embedded knowledge and experience of in vitro science.

This goal includes basic and applied research, sharing research results via publications and meetings, service/outreach efforts for novel techniques, training, enhancing student scientific competencies, sharing information with lay audiences, and promoting the professional development and recognition of members.

1. Promote and enhance the knowledge base and information exchange of in vitro science.
- Encourage and promote the submission and publication of scientific articles in In Vitro journals by all classifications of members, especially students and post-docs.
- Develop all In Vitro publications as venues for scientific information exchange.
- Increase awareness of the Society's scientific impact by hosting interesting, novel scientific content presented at annual meetings and promoting outstanding research published in the Society's journals.
- Encourage and facilitate interactions among various scientific disciplines to promote synergistic approaches to benefit scientific endeavors.
2. Promote scientific competencies among professional, educational and lay audiences.
- Develop/strengthen partnerships with federal agencies to encourage establishment of standards to ensure application of standardized cell culture research practices.
- Promote, facilitate and distribute educational programs, training and certification opportunities in standardized cell culture practices to industry, academia, and government.
- Enhance and expand scientific awareness, opportunities and competencies through teacher and student outreach efforts.
- Serve as a forum for information exchange with lay audiences.
3. Promote the professional development of members.
- Recognize and reward excellence among members within the Society.
- Provide opportunities for all members to participate in all facets of the Society, including governance, serving on committees and contributing in other areas of interest to the members.
- Provide opportunities to contribute to the Society's annual meetings as presenters, session chairs or co-chairs, and as members of the program committee and local program committee.
4. Insure that financial practices, annual meetings, and other activities of the society are conducted effectively, and in a fiscally sound manner that allows continuation and expansion of the SIVB.
- Develop a diversified and structured approach to fund-raising and generation of revenue.
- Maintain and provide individual, corporate, and governmental contacts based on previous success and update regularly to insure efficient and effective fundraising.
- Provide a framework, including definitive guidelines and training, for members involved in fund raising/revenue generation.
- Support publication activities with our journals and other publications to insure their success and adoption both inside SIVB and in the larger scientific community.



SIVB encourages the growth of young scientists through their participation in our annual meetings through presentations and planning their own program.

5. Insure continuity of the activities of the Society.
- Succession planning should be instituted for key positions within the organization.
- Develop and train multiple individuals who are aware of key tasks and requirements for key deadlines, forms, and requirements for annual meetings and society operations.
- Develop an active Emeritus member group including an active bequest program.

John W. Harbell

Long-Range Planning Committee Chair
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LABORATORY MATERIALS AND BIOSAFETY

The Laboratory Materials and Biosafety Committee (LMBC) provides a mechanism within the Society for In Vitro Biology (SIVB) to promote laboratory standards, biotechnology practices, laboratory materials, safety equipment, and facilities that constitute biosafety levels 1-4 associated with in vitro and biotechnology methodology. The goals of the LMBC are: 1) to provide an educational process and format to distribute information regarding potential hazards and risk assessment associated with: the cell culture process, the use and handling of biological agents, quality control of biomaterials, and updates on federal regulation pertinent to research, industry and clinical biotechnology applications; 2) to recommend laboratory practice, operation, or materials based on risk assessment of the agent/or material and the laboratory activity involved; and 3) to promote the interaction of committee members with national and international scientists, professional groups, and

manufacturers regarding the design, processing, and use of material for in vitro and biotechnology methodology.

The LMBC committee members represent government, university/academia, private industry and include: **Linda B. Jacobsen** (Chair); **Sandra L. Schneider** (Co-Chair), Research and Clinical Laboratory Systems; **Walter Finkbeiner**, University of California-San Francisco; **Thomas Goodwin**, Sovaris Aerospace; **John Harbell**, JHarbell Consulting, LLC.; **John Masters**, University College London, Institute of Urology-UK; **Tohru Masui**, JCRB Cell Bank, Division of Bioresources, National Institute of Biomedical Innovation, Osaka, Japan; **Colette J. Rudd**, Rudd & Associates; **Lynn Rutsky**, The University of Texas Health Science Center Houston; **Glyn N. Stacey**, National Institute for Biological Standards and Control-UK; and **Alda Vidrich**, University of Virginia Health Sciences Center.

The SIVB Laboratory Materials and Biosafety Committee is a forum to lead the discussion on setting industry standards and guidelines for world-wide compliance of cell line authentication, tissue engineered and cell-derived products.

The March 22, 2016 Federal Register notice detailed the NIH Office of Science Policy (OSP) revised procedures for the review of human gene transfer trials subject to the *NIH Guidelines for Research Involving Recombinant of Synthetic Nucleic Acid Molecules*. The NIH Guidelines detail basic and clinical research safety practices, biosecurity and containment procedures for recombinant or synthetic nucleic acid molecules, including the use and/or creation of recombinant, or synthetic organisms to include viruses. Visit the NIH OSP website at: (<http://www.osp.od.nih.gov>).

It was recently reported, with some concern, that five-seven biosafety level-4 (BSL-4) laboratories will be built across the Chinese mainland by 2025. There are already two BSL-4 labs in Taiwan, but the Wuhan National Safety Laboratory, being cleared to work with the world's most dangerous pathogens, would be the first on mainland China (Nature: Vol 542; 23 February 2017). The United States of America (USA) currently has 13 operational or planned BSL-4 facilities. Grants were provided by the



Students, Post Docs, Research Technicians and professional scientists. SIVB has something for everyone at each stage of their professionalism development.

National Institute of Allergy and Infectious Diseases (NIAID) in consultation its Blue Ribbon Panel on Bioterrorism to increase BSL-4 and BSL-3 laboratory space nationwide.

Sandra L. Schneider
*Laboratory Materials and Biosafety
Committee Co-chair*
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MEMBERSHIP

Membership is very important for the continued success of SIVB. Membership numbers have continued to decrease. At the end of 2016, our membership was 425 members, which included: 81 Emeritus Members, 4 Honorary Members, 6 Life Members, 263 Regular Members, 63 Student Members and 6 Post Doctoral Members. This was a 3.85% decrease in all membership and a 9.6% decrease for regular members from the previous year. Several broadcast emails and hardcopy membership forms were sent by the SIVB office to encourage membership renewal.

Since 2011, the Member-get-a-Member campaign has encouraged current members to recruit their colleagues to join SIVB. Completing a short online membership renewal form at <https://sivb.org/membership/membership-referrals.html> will extend an invitation to your colleagues, and give them a discount on their annual membership. If a member recommends 5 potential members, and they all join, the SIVB member receives free registration to the upcoming SIVB Annual Meeting. The program has had limited impact on recruitment over these years, but it is our hope that participation in this program will increase during 2017 and that new members

will become more involved in the society in the future.

SIVB has continued with its drawing for prizes to those who renewed their membership by December 31 of the prior year. The drawing is held during the SIVB Business Meeting at the Annual Meeting and prizes include Free Membership in the Society for the upcoming year and Free Meeting registration to the next year's meeting. Prior winners have included SIVB Members Robert Lawrence, Laura Schramm, Barry Flinn, Robert Redman, Shirley Sato, and others. Winners for the 2017 renewal will be drawn at the upcoming In Vitro Biology Meeting.

Please contact the SIVB office (sivb@sivb.org) if you have a membership initiative idea. We would love to hear from you!

Vivian Dayeh
Membership Committee Chair
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NOMINATING

The re-election of Board of Directors, Section Officers, and Committee Chairs will occur in this fall. Those who are elected will take office in June of 2018. The Nominating Committee is currently identifying candidates for all of the elected positions. The following is a list of offices that are up for re-election.

President-Elect, Vice-President, Secretary, Treasurer, Member-at-large (PBS), Member-at-large (IVACS), Publications Chair, Public Policy Chair, Awards Committee Chair, Education Committee Chair, Constitution and Bylaws Committee Chair. PBS officer positions up for re-election include: PBS Chair; PBS Co-chair; and PBS Secretary. IVACS officer positions up for re-election include: IVACS Chair; IVACS Co-chair for the Meeting Program; IVACS Co-chair for Membership; and IVACS Secretary.

The Nominating Committee, which includes **Eugene Elmore**, **Mary Welter**, **Michael Dame**, **Ming Cheng**, and **Kolla Kristjansdottir**, is seeking to identify at least two candidates for each position. If you would like to serve your society in an official capacity or know of a good candidate, please contact one of the

members of the Nominating Committee to volunteer for this or future elections. In addition, there are available positions on each committee that could benefit from your participation.

Eugene Elmore
Nominating Committee Chair
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PROGRAM

The 2016 World Congress on In Vitro Biology was held from June 11–15, 2016 at the Sheraton San Diego in San Diego, California. The World Congress was co-sponsored by The Society for In Vitro Biology (SIVB), the Japanese Tissue Culture Association (JTCA) and the Japanese Association for Animal Cell Technology (JAAC). This year's meeting highlighted a keynote presentation by **William E. Moerner**, Nobel Prize Winner in Chemistry (2014), Harry S. Mosher Professor of Chemistry and Professor, by courtesy, of Applied Physics. He presented his talk on “*Seeing Single Molecules, from Early Spectroscopy in Solids, to Super-resolution Microscopy, to 3D Dynamics of Biomolecules in Cells.*”

Also during the Opening Ceremony, SIVB President, **Dwight Tomes**, PhD, presented the Lifetime Achievement Awards to **Eugene Elmore**, PhD, and **Yvonne A. Reid**, PhD. **Marietta Wheaton Ellis** was also recognized for her 25 years of service to SIVB. At the In Vitro Animal Cell Sciences Section meeting, **Guy Smagghe**, PhD, will receive the SIVB Distinguished Scientist Award and the Young Scientist Award will be presented to **Joshua Gasiorowski**, PhD.

Special events held at the meeting included the workshop “Hands-on Plant Tissue Culture Workshop for High School and Community College Teachers”; a Tuesday Evening Dinner Cruise on the San Diego Bay, and America's Finest Silent Auction.

The IVACS and PBS Oral Presentation Competitions were held along with a student poster competition and the Student Symposium “Science in Short: Communicating your work clearly and effectively”.

The 2016 World Congress on In Vitro Biology was a solid success. The registration total of 425 for this meeting was up significantly from last year's meeting in Tucson, Arizona, which was a total of 309.



William Moerner, 2016 Keynote Speaker, accepts a thank you gift presented by Brad Upham at the World Congress Keynote Symposium.

136 members, 10 JTCA/JAAC Invited speakers, 22 group registrants, 15 non-members, 8 research technicians, 18 post docs, 96 student, 9 one-day, 5 accompanying guests, 6 emeritus, 3 guests, 15 volunteer and 62 speaker registrants. There were also 2 staff registrants and 18 exhibitors.

Circumstances that can be cited as having contributed to 2016 success attendance numbers include: 1) SIVB's presence in California is solid with a significant biotech community that we were able to be contacted. In addition, there was active solicitation of speakers from local universities by the Program Committee and, with our Local Organizing Committee's help, we were able to reach out to local scientists that may have not heard of us, but participated in the event; 2) Offering of a discounted group registration rate for corporations bringing 20 or more employees also helped. For example Cibus, based in San Diego, registered 22 employees from their organization.

Harold N. Trick
Secretary
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PUBLICATIONS

Our Society journals, *In Vitro Cellular & Developmental Biology–Animal* and *In Vitro Cellular & Developmental Biology–Plant*, continue to publish important research related to in vitro biology. The Society for In Vitro Biology and the Publications Committee thank our journal Editors, **Tetsuji Okamoto** and **David Duncan**, for their dedicated service. As outlined in the Annual Report submitted by David Duncan for *In Vitro Cellular &*

Developmental Biology–Plant, the impact factor for the journal increased in 2015. An important issue for the journal is to identify strategies for increasing the number of manuscript submissions. A current initiative to increase manuscript submissions to the journal includes identifying topics and guest editors to facilitate special issues of the journal. As outlined in the Annual Report submitted by **Tetsuji Okamoto**, *In Vitro Cellular & Developmental Biology–Animal* experienced a 6% increase in the number of submitted manuscripts compared to last year; however, there was a small decrease in the impact factor for the journal in 2015 compared to the previous year. As a strategy to increase the impact factor for the journal, we are planning on publishing more review articles. The Publications Committee encourages the membership of both the Plant Biotechnology Section (PBS) and the In Vitro Animal Cell Sciences Section (IVACS) to submit their manuscripts to our journals. One issue that has affected both of our journals is the submission of manuscripts that have to be rejected due to issues such as plagiarism or duplicate submissions to multiple journals. The editors of our journals have started to educate potential authors on issues such as plagiarism through a recurring feature in the In Vitro Report titled “Editor's Corner”. The first feature was on the topic of plagiarism and how an author can avoid this issue with their manuscripts. This past year the Publications Committee also worked with Springer and the journal Editors to update the compliance with ethical standards in the instructions for authors for our journals. The Society's social media presence continues to grow, and we are actively encouraging authors who publish in our journals to share the news of their publication on social media outlets such as Twitter and Facebook. As Chair of the Publications Committee, I want to thank **Marietta Ellis** and the following members of the Publications Committee for their hard work and dedication: **Barbara Doonan**, **David Duncan**, **John Finer**, **Cynthia Goodman**, **John Harbell**, **Maria Jenderek**, **Jiarui Li**, **Sylvia Mitchell**, **Ewen Mullins**, **Tetsuji Okamoto**, **Gregory Phillips**, **Barbara Reed**, **Denry Sato**, **Dwight Tomes**, and **Michele Schultz**.

In Vitro–Animal

(For the year 3/1/16 through 2/28/17)

The journal experienced an increase (6%) in total submissions of new manuscripts over the comparable period last year (374 compared to 353 in 2015–2016) showing the highest number of submissions since 1998.

The numbers of submitted manuscripts for the past year compared to the prior year were: 344 regular papers (328 in 2015–2016), 12 Reports (19 in 2015–2016), 13 Reviews (4 in 2015–2016), 0 opinion Letters-to-the-Editor (2 in 2014–2015), and no book reviews (0 in 2014–2015). Of the 374 submissions, 110 were accepted (29.4% acceptance rate), 247 (66.06%) rejected, 10 (2.67%) withdrawn, 7 (1.87% were still in review or revision.

Thirty-three countries were represented in the submissions received in 2015/2016. Eighty-four % of submissions were from China (159), Iran (71), India (31), Korea (24), Japan (17), and USA (14). Average time from receipt to first decision in the review process was 2.3 weeks compared to 3.53 weeks overall last year. All new submissions were received through the online system.

The *In Vitro–Animal* journal publishes 10 individual issues at or above page budget levels and continues to publish on schedule. The 2015 impact factor for IVA was 0.971, which is decrease from the 2014 impact factor of 1.145. More than 95% of the submissions came from outside the US so there is an strong awareness of and a market for *In Vitro–Animal* beyond the US and North American research communities.

In Vitro–Animal continues to publish papers in traditional areas such as cell line derivation and toxicology, but we are also receiving increasing numbers of submissions in the areas of adult and pluripotent stem cell biology, tissue engineering, cell signaling, and methods development for cell line characterization.

In the past year, several submissions included irregularities (eg. duplication, manipulation or misrepresentation of data) that were discovered by editors, reviewers or readers. IVA takes quick and decisive action in such cases to maintain the integrity of the journal and to retain the trust of its authors.

The editorial board will not review any manuscripts with the iThenticate similarity scores higher than 40%.

In Vitro–Plant

The impact factor for *In Vitro–Plant* increased from 0.981 in 2014 to 1.152 in 2015, which possibly reflects the addition of three review articles in 2015. In 2016, the number of review articles published increased to five; a level not seen since 2007. We are working hard to maintain this higher level of review articles.

In addition to review articles, an effort was begun in 2016 to find guest editors to manage new special topic issues of the journal. This effort has yielded potentially two special issues for 2017 covering cryopreservation (**Barbara Reed** the guest editor) and In vitro chemistry of endangered species (**Jorge Canhoto** and **Praveen K. Saxena** guest editors). Please contact the Editor-in-Chief if you have a suggestion for a special topic issue and would like to volunteer as a guest editor for the issue.

Although we are pursuing these new avenues to increase the relevancy and impact of our journal, 2016 was a challenging year to fill the pages of each issue of *In Vitro–Plant*. Only 457 manuscripts were received, which is just one more than in 2015. Of those 457 manuscripts, almost 79% were rejected leaving a mere 21% acceptable for publication. Of the rejected manuscripts, almost 37% were rejected for plagiarism, a continuing problem for the journal, and another third were rejected for technical flaws.

While 2016 was a challenging year, 2017 is starting out to be even more challenging. In response to the recent political situation in the United States, it must be emphatically stated that the journal is a non-discriminatory scientific publication and manuscripts from all countries of the world are welcome and will be fairly peer reviewed and published in a timely manner. This was reflected in 2016 with the diverse array of countries from which manuscripts were submitted to the journal. The top 10 countries were, in descending order, India, Iran, China, Brazil, Malaysia, Mexico, USA, Turkey, Poland and Canada.

Curiously, only half of these countries are in the top 10 for supplying reviewers and in fact no manuscripts were received in 2016



Sylvia Mitchell encourages the participation of all PBS members in the In Vitro Report at the Plant Biotechnology Section Meeting. Share your news and accomplishments with the Editors-in-Chief!

from four of the top 10 reviewing countries. One of the biggest problems to having a robust journal is the lack of researchers willing to review manuscripts. A total of 473 individuals were invited to review manuscripts in 2016 but only 35% of those invited (168) completed reviews. Please, when asked to review a manuscript do not hesitate to do so. Your effort helps the society, is a perk on your C.V., and helps insure that when you submit a manuscript there will be reviewers available to quickly assess your work.

Finally, to maintain journal excellence SIVB members are encouraged to publish in *In Vitro–Plant*. Apart from supporting the society and fellow scientists, there are advantages to publishing in *In Vitro–Plant* such as a rigorous and fair peer review process, discounted color photograph printing and timely publishing in a respected international journal. Furthermore, SIVB members with access to *In Vitro–Plant* also have free online access to *Plant Cell Tissue and Organ Culture*.

In Vitro Report

The *In Vitro Report* is the quarterly on-line newsletter for the membership of the Society for In Vitro Biology. The *In Vitro Report* provides a mechanism for the Society's membership to communicate with each other outside of our annual meeting and on a year-round basis. The Co-Editors are **Michael Fay** and **Sylvia Mitchell**, who work together to represent the In Vitro Animal Cell Sciences Section (IVACS) and the Plant Biotechnology Section (PBS). The Co-Editors are thankful to **Michele Schultz** (Publications Manager) who facilitates the editorial and publication process. The Co-Editors are also thankful to **Tetsuji Okamoto** (Editor-in-Chief of *In Vitro*

Cellular & Developmental Biology– Animal), David Duncan (Editor-in-Chief of *In Vitro Cellular & Developmental Biology–Plant*), and the Publications Committee for their guidance and support. As a new initiative we are working with David Duncan and Tetsuji Okamoto to facilitate a new recurring feature in the *In Vitro Report* titled “Editor’s Corner”, and the first published article discussed the issue of plagiarism and steps that authors can take to avoid plagiarism with their manuscript submissions. We encourage all SIVB members to share their news and accomplishments through the *In Vitro Report*, and don’t forget to read the latest issue of the *In Vitro Report* by clicking on the icon located at the upper right corner of the website for the Society for In Vitro Biology (<https://www.sivb.org>). If you have suggestions for improving the *In Vitro Report*, please contact the Co-Editors (mfayxx@midwestern.edu, sylviamitchell.biotech@gmail.com) or the Publications Manager (Michele@sivb.org).

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PUBLIC POLICY

The Public Policy Committee is a standing committee of the Society with multiple roles — to alert and educate SIVB members about current issues affecting the scientific community; to be a resource to the general public for fact-based information; and to provide advice and assistance to the SIVB Board of Directors in regard to public policy issues in national and international arenas. The SIVB has allies in these endeavors through memberships in American Institute of Biological Sciences (AIBS) and Council for Agricultural Science and Technology (CAST). SIVB President-Elect **John Harbell** represents SIVB on the CAST Board of Representatives.

The Public Policy Committee has actively followed the national debate on genetically-modified (GM) foods, and last year the committee sent out a member alert (including links to information on the bill and contact information for senators) on a U.S. Senate bill on GM foods labeling.

The Public Policy Committee is working with the Education Committee on a number of initiatives of mutual interest. These include: development of a position statement on genome editing and gene drive; ways to make position statements more readily accessible to the general public on the SIVB website; and, development of public outreach activities that can be conducted as part of SIVB’s annual meeting in coordination with the local organizing committee for the SIVB meeting.

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REPRESENTATIVES OF THE SIVB

ATCC

ATCC recently entered into a three-year cooperative research and development agreement (CRADA) with the National Institute of Standards and Technology (NIST) to optimize short tandem repeat (STR) markers for mouse cell line identification. ATCC partnered with NIST to establish a Mouse Cell Line Authentication Consortium, which will participate in an interlaboratory validation study on the use of STR markers to uniquely identify 50 of the most commonly used mouse cell lines. The DNAs from the mouse cell lines will be part of a PCR-

based test reagent kit that will be distributed to Consortium members. Each consortium member will submit their results to NIST, who will, in partnership with the consortium members, evaluate the performance of the assay kit and STR markers to determine if modifications are needed. Data collected by NIST will be used to develop a public database of STR profiles for mouse cell lines.

Mouse cell lines, next to human, are the most commonly used models to study human genes and disease; however, the level of misidentification is unknown. The problem of interspecies cell line misidentification and

contamination has plagued cell biology for decades. Moreover, the current authentication methods lack the resolution to differentiate among inbred strains or the individual mouse cell lines. The multiplex PCR assay of mouse STR makers will be the first of its kind to provide a unique DNA profile for each individual mouse cell line. The ATCC-NIST collaboration represents an important step in providing a technical solution to that problem.

Liz Kerrigan
*Director, Commercial Partnerships
and Standards, ATCC*
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INTERNATIONAL ASSOCIATION FOR PLANT BIOTECHNOLOGY (IAPB)

Dear Colleagues,

I would like to take this opportunity to thank all of our members for supporting IAPB in 2016. Currently our membership (now standing at over 700) is drawn from 52 countries. Preparations have already begun for the 2018 congress. You are cordially invited to participate in the 14th International Association for Plant Biotechnology (IAPB) congress, which will be held in Dublin (Ireland) from 19–24th August 2018. As we edge closer to our next quadrennial congress, I would ask you to continually check in to the conference website (<http://iapb2018.com/>). Reduced conference rates for IAPB symposia are offered to all members. IAPB looks forward to good collaboration with its personal members to further improve the impact and the visibility of plant science in USA and beyond. IAPB offers excellent value for money and is probably the lowest membership rate for any professional organization at \$25 per year. Members will receive a copy of the IAPB newsletter twice yearly and two issues of the journal. I warmly invite you to activate your

membership with IAPB. Help us grow by spreading the word about IAPB among your colleagues. The two societies IAPB and SIVB also work closely together and members can renew their IAPB membership through SIVB. Please contact me and I will send you more information.

Siva Velivelli

US Correspondent, IAPB
svelivelli@danforthcenter.org

COUNCIL FOR AGRICULTURAL SCIENCE AND TECHNOLOGY (CAST)

The Society for In Vitro Biology is a member of CAST, which is a nonprofit 501(C)(3) organization composed of individual members and representatives from scientific societies, nonprofit and trade organizations, and commercial companies. CAST addresses issues surrounding animal, plant and food sciences, and agricultural technology including biotechnology. Their mission is to “assemble, interpret, and communicate credible science-based information regionally, nationally, and internationally to legislators, regulators, policymakers, the media, the private sector, and the public.” A complete list of their

reports, to date: <http://www.castscience.org/publications>. Issue papers, commentaries, and one-page quick CASTs are freely available online. **Dr. Nancy Reichert** has represented the SIVB in CAST as a member of their Board of Representatives. She is now the president-elect of the Council and shall assume the presidency at the October 2017 CAST meeting in Saint Louis. Members of the Board also sit on one or more of the standing working groups. As a new member of the Food Science and Safety Work Group, I am learning the issues generally and those that are germane to the SIVB in particular. One example of major work products of the working group are issues papers. One of these is an issue paper on food biofortification lead by Nancy. Biofortification focuses on the improved nutritional value of crops through agronomic practices, conventional breeding and biotechnology. Others include Genome Editing in Agriculture—Methods, Applications, and Governance and Omega-3 Fatty Acids: Health Benefits and Dietary Recommendations. Any and all suggestions for future CAST reports would be welcomed — just email me.

John W. Harbell

CAST Board of Representatives, SIVB
johnharbell@sbcglobal.net

SOCIAL MEDIA

There are so many ways to reach out to SIVB and your fellow members. We welcome your active participation and hope you'll find us through one or more of these outlets.

Discussion Forum: sivb.org/forum/

Facebook: www.facebook.com/pages/Society-for-In-Vitro-Biology/198079413553746

Twitter: twitter.com/SIVBiology

LinkedIn: [linkedin.com](https://www.linkedin.com/company/society-for-in-vitro-biology) (Search for Society for In Vitro Biology)

Website: sivb.org

Contact SIVB:

Society for In Vitro Biology
514 Daniels St. Suite 411
Raleigh, NC 27605
Phone: (910) 755-5431
Fax: (910) 755-5432
Email: sivb@sivb.org



Nobel Prize Winner and 2016 SIVB Keynote Speaker, William E. Moerner, meets with the student attendees at the World Congress.



TREASURER'S SUMMARY REPORT

SOCIETY FOR IN VITRO BIOLOGY

**STATEMENTS OF FINANCIAL POSITION
DECEMBER 31, 2016 AND 2015**

ASSETS

	December 31, <u>2016</u>	December 31, <u>2015</u>
<u>Current Assets:</u>		
Cash	\$ 395,990	\$ 483,248
Accounts Receivable	1,315	505
Prepaid Expense	<u>55,819</u>	<u>35,997</u>
Total Current Assets	<u>453,124</u>	<u>519,750</u>
<u>Other Assets:</u>		
Investments	<u>185,961</u>	<u>174,091</u>
Total Other Assets	<u>185,961</u>	<u>174,091</u>
Total Assets	<u>\$ 639,085</u>	<u>\$ 693,841</u>

LIABILITIES AND NET ASSETS

<u>Current Liabilities:</u>		
Accounts Payable	\$ 1,602	\$ 1,834
Other Accrued Expenses	76	-
Deferred Dues and Subscriptions	<u>30,060</u>	<u>43,255</u>
Total Current Liabilities	<u>31,738</u>	<u>45,089</u>
<u>Net Assets:</u>		
Unrestricted	386,724	396,664
Temporarily restricted	<u>220,623</u>	<u>252,088</u>
Total Net Assets	<u>607,347</u>	<u>648,752</u>
Total Liabilities & Net Assets	<u>\$ 639,085</u>	<u>\$ 693,841</u>

TREASURER'S SUMMARY REPORT

SOCIETY FOR IN VITRO BIOLOGY

**STATEMENTS OF ACTIVITIES
FOR THE YEARS ENDED DECEMBER 31, 2016 AND 2015**

	<u>Unrestricted</u>	<u>Temporarily Restricted</u>	<u>Total</u>	December 31, 2015 <u>Total</u>
<u>Revenue:</u>				
In Vitro-Animal	\$ 117,477	\$ -	\$ 117,477	\$ 110,391
In Vitro-Plant	50,109	-	50,109	52,956
Newsletter	5,549	-	5,549	5,901
Meetings	170,860	43,432	214,292	214,768
Horn Endowment Fund contributions	-	-	-	120
Administrative	29,496	-	29,496	35,920
Net assets released due to satisfaction of program restrictions	74,897	(74,897)	-	-
Total revenue	448,388	(31,465)	416,923	420,056
<u>Program services:</u>				
In Vitro-Animal	12,562	-	12,562	4,603
In Vitro-Plant	17,439	-	17,439	9,383
Annual meeting	207,241	-	207,241	166,148
Total program services	237,242	-	237,242	180,134
<u>Supporting services:</u>				
Administrative	226,474	-	226,474	222,809
Total expenses	463,716	-	463,716	402,943
Change in net assets before unrealized gain/(loss) on investments	(15,328)	(31,465)	(46,793)	17,113
Unrealized gain/(loss) in fair value of investments	5,388	-	5,388	(10,598)
Change in Net Assets	(9,940)	(31,465)	(41,405)	6,515
Net assets, January 1	396,664	252,088	648,752	642,237
Net assets, December 31	\$ 386,724	\$ 220,623	\$ 607,347	\$ 648,752