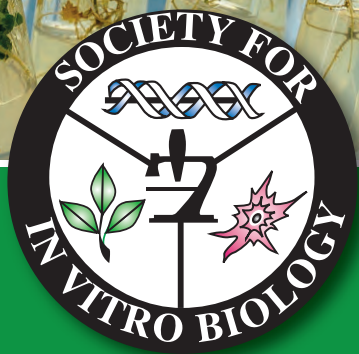


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SIVB ANNUAL 2019 REPORT



PRESIDENT'S REPORT



President John Harbell addressing the attendees at the 2019 Opening Ceremony

2019 was a good year for the SIVB. We had an excellent annual meeting in Tampa, Florida, our journals are doing well, and membership is increasing. There are many people to recognize for these achievements.

As we reflect on our 2019 annual meeting, it seems most appropriate to recognize and thank some of the pivotal members of the Program Planning Committee for their leadership in preparing such an excellent program. While many people contributed to this success, I would like to focus on the leadership team; **Fredy Altpeter** (Program Chair), **Pierluigi Barone** (PB Program Chair), **Mae Ciano** (IVACS Program Chair), **Raj Deepika Chauhan** (PB Sr. Co-chair), **Angela Labrum** (PB Jr. Co-chair), **Albert Kausch** (Education Chair), **Adrienne Brown** (PB Student Co-chair), **Sepideh Mohammadhossinpour** (IVACS Student Co-chair) and **Marietta Wheaton Saunders** (Meeting Secretariat). With their respective session conveners and local organizing committee, they developed an outstanding overall program with excellent science and ample opportunity for social interaction among the attendees. Our keynote speaker, Professor



The SIVB held its Business Meeting on Tuesday, June 11 for all members to review the current activities of the organization.

June Medford (Colorado State University), was a special treat. One measure of success was the number of people who remained to attend the Wednesday sessions and participate in the off-site tours. We also especially thank **Marietta Saunders**, **Michele Schultz**, and the New Beginnings Management team for preparing the venue and assuring that the meeting ran so smoothly.

The mission statement of the SIVB constitution reads, "The Society for In Vitro Biology fosters exchange of knowledge of the in vitro biology of cells, tissues, and organs from both plants and animals (including humans). The focus is on biological research, development, and applications of significance to science and society and is accomplished through publications; national and local conferences, meetings, and workshops; and through support of teaching initiatives in cooperation with education institutions." Journals are a life blood for many societies, the SIVB included. They are essential to our mission and they also contribute revenues that help the society accomplish the other parts of its mission. *In Vitro – Animal* continues to see a good pipeline of submitted manuscripts. As always, we look for manuscripts submitted from our membership. Our Editor-in-Chief, **Professor Tetsuji Okamoto**, has agreed to continue for an additional four years. His leadership has been instrumental in the growth of the journal and its increased impact factor. *In Vitro – Plant* is also growing in number of submissions and impact factor. Editor-in-Chief, **Dr. David Duncan** who led much of this effort has decided to step down and **Dr. David Songstad** has become the new Editor-in-Chief. We thank him for his willingness to take on this demanding assignment. Again, we look for manuscripts submitted from our membership. Our Publications Committee, chaired by **Dr. Michael Fay**, has worked to promote the journals, interface with SpringerNature to address issues as they have arisen, and help to redesign the *In Vitro Report* for electronic publishing. We should also express our special appreciation to **Michele Schultz** who is the Publications Manager for the SIVB.

The detailed reports from standing committees are contained in this document. All of the committees deserve recognition for their efforts this year. I would like to recognize three in particular. As I mentioned above, membership for 2019 has increased over 2018. The Membership Committee, chaired by **Dr. Vivian Dayeh**, and the Business Office have worked tirelessly this year to retain existing members and bring in new members from the annual meeting. Their efforts have paid dividends. As I discussed in a previous letter, the public policy committee, chaired by **Dr. Wayne Parrott**, has been very proactive in drawing on the considerable expertise within the

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EXECUTIVE COMMITTEE



JOHN HARBELL
President



ALLAN WENCK
President-Elect



DWIGHT TOMES
Past President



SUKHPREET SANDHU
Vice President



BARBARA DOONAN
Treasurer



HAROLD TRICK
Secretary

SIVB to address proposed regulations. Most recently, he has organized formal comments on the USDA proposed new “SECURE Biotechnology Regulations to Protect Plant Health and Promote Agricultural Innovation”. This policy statement has been submitted for publication in *In Vitro – Plant*. Finally, the nominating committee, chaired by **Dr. Dwight Tomes**, prepared an excellent slate of prospective candidates for the various elected officers and select committee chairs. Finding individuals able and willing to serve is an ongoing challenge in the best of times. With industry consolidations other unforeseen factors, this year was uniquely difficult. We thank all that were willing to serve and I look forward to working with each of you over the next two years.

Our 2020 World Congress is scheduled from 6–10 June 2020. The program has taken shape under the Program Committee headed by **Michael Dame** (Program Chair) with **Raj Deepika Chauhan** (PB Program Chair), **Mae Ciano** (IVACS Program Chair), **Brett Hale** (PB Student Co-chair), **Cristofer Calvo** (IVACS Student Co-chair), **Cecilia Zapata** (Local Organizing Committee Co-Chair), **Savannah St. Clair** (Local Organizing Committee Co-Chair), and **Marietta Wheaton Saunders** (Congress Secretariat). We are exceptionally pleased to have Professor **Alysson Moutri** as our keynote speaker. His laboratory uses stem cells, molecular tools and sophisticated 3D culture models to investigate fundamental mechanisms of brain development and mental disorders.

Finally, as president, I have come to appreciate just how much the Business Office does to make the SIVB run smoothly throughout the year. On behalf of the society, I would like to thank New Beginnings Management, **Marietta Saunders** and **Michele Schultz**, who have done so much to make this year so successful.

Respectfully yours,

JOHN W. HARBELL, SIVB President
johnharbell@sbcglobal.net

SECRETARY'S REPORT

2019 marks the end of Harold Trick's second term as secretary of the SIVB. The Board of Directors continued pursuing the ongoing initiatives of the organization. The Board strives to increase the visibility of the Society, attract new members, submit comment on behalf of the Society in response to appropriate governmental bodies, and explore venues for future meetings and address other issues of concern to protect the future of the Society. Elections were held in the fall of 2019 and new Officers will be taking their positions beginning in June of 2020. There are many opportunities to be involved in the Society. If you would like to volunteer to help in any capacity, please contact a board member or a committee chair. Member participation is the best way to maintain an active and healthy Society.

Prepared by the Business Office on behalf of

HAROLD TRICK, Secretary
hnt@ksu.edu

TREASURER'S REPORT

2019 has proved to be a good year for the SIVB. The annual meeting in Tampa was excellent with registration higher versus 2018. In spite of rising AV costs, expenses were kept within reasonable limits and the meeting proved to be profitable. Our mainstay, our excellent journals, continue to provide a solid revenue stream with increases seen in the guaranteed royalties for both IVA and IVP. Although additional royalties have dropped, we anticipate the journals to remain strong and profitable. Also, as we move into 2020 we are beginning to see an increase in total membership, suggesting a positive return on the membership drive efforts initiated in recent years. Let us keep up the good work! Investments held at Morgan Stanley are doing well in spite of financial markets continuing to bounce all over the place. The recent gift of \$50,000 for the new Gordon Sato and Wally McKeehan Student Award will be put into a similar type of investment fund — seeking rates well in excess of those offered by banks with minimized risk in mind.

Currently, due to changes at the accounting firm we have been working with for the last 25 years, we are in the midst of a period of transition to a new accountant for the SIVB. This is a critical step for any organization, but somewhat more so for a non-profit such as the SIVB. As Treasurer I am pleased to report that New Beginnings Management, with Marietta at the helm, is moving the process forward as efficiently as possible.



Attendees during the 2019 In Vitro Biology Meeting enjoyed networking during social events.

From our fund-raising efforts, it gives me great pleasure to mention the newly established donation opportunities, AmazonSmile and YourCause. I'm fairly sure most, if not all of us, have probably shopped Amazon online which makes it very easy for any member to make a donation — all sizes being much appreciated as they play a role in helping the SIVB to achieve its goals.

To wrap up, as I've said many times before, we are a unique society, with members from a broad range of disciplines who care deeply about it and want the Society for In Vitro Biology to thrive. Let us all, therefore, continue as members to do everything we can to assure a successful future for the SIVB!

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

BARBARA B. DOONAN, Treasurer
doonanbb210@aol.com

BUSINESS OFFICE REPORT

The Business Office was kept extremely busy throughout 2019 supporting the Society programs and initiatives. Projects that took their greatest focus included managing the 2019 In Vitro Biology Meeting, planning for the 2020 World Congress on In Vitro Biology, organizing site inspections and contracting for the 2021 and 2022 In Vitro Biology Meetings, assisting the Society in membership retention programs and board and committees initiatives, and addressing the day-to-day management of the SIVB's publications.



2019 Keynote Speaker,
June Medford, PhD

2019 IN VITRO BIOLOGY MEETING

The 2019 In Vitro Biology Meeting took place from June 8–12, 2019 at the Tampa Marriott Water Street in Tampa, Florida. Highlights from Tampa included the Keynote presentation from **June Medford, PhD**, of Colorado State University on “Synthetic Biology for Engineering Plant Genetic Circuits:

from Predictable Electronic-like Functions to Innovative Desalination”, and special panel discussions on “Micropropagation Best Practices” held by **Angela Labrum** and **Joyce Van Eck** and on “Future Directions in Development and Applications of Cell Lines” held by **John Harbell** and **Jessica Monserrate**.

SIVB was pleased to present a number of awards to well-deserving members in Tampa. During the Opening Ceremony on Sunday, June 9th, SIVB presented the 2019 Lifetime Achievement Awards to **Tetsuji Okamoto, DDS, PhD** and **Barbara Reed, PhD**, honoring each of them for the significant contributions they have made during their respective careers. For their support of the Society and its activities, SIVB President, **John Harbell, PhD**, thanked **Barbara B. Doonan, PhD**, **Albert P. Kausch, PhD**, **Maria M. Jenderek, PhD**, and **Pamela J. Weathers, PhD** by awarding them Distinguished Service Awards. Additional awards presented during the Plant Biotechnology Section Meeting included: the 2019 Fellow Awards presented to **Jeffrey W. Adelberg, PhD**, and **C. Neal Stewart, Jr, PhD**; the 2019 Distinguished Scientist Award presented to **Harold N. Trick, PhD**; and the 2019 Young Scientist Award presented to **Raj Deepika Chauhan, PhD**.



SIVB is grateful for the assistance of those who offer their time providing registration and Audio-Visual support, such as these volunteers, Sylvia Mitchell and Kim Hanson.

On Saturday, June 8, the 2019 In Vitro Biology Meeting began with a special all-day workshop entitled, “Flow Cytometry: Cell Characterization, Sorting and Data Analysis Techniques,” which focused on various advanced areas in Flow Cytometry and Fluidics for targeting and gene editing with specific biological applications. This was followed by the first ever Student Social and Pizza Party where all student registrants had a chance to meet with the Keynote Speaker and all the Officers and Committee Chairs of the organization. Special oral presentation competitions were held for Plant Student, Plant Post-Doctoral and Animal Student & Post-Doctoral candidates and SIVB offered all student poster authors a chance to participate in the Student Poster Competition. Special social and scientific events offered during this year's event included “The Big Guava Silent Auction,” a fun and informative visit on Tuesday evening with dinner at the Florida Aquarium, and two Wednesday afternoon scientific tours: the “Conservation and Transformation in the Sunshine State” tour visiting Bok Towers Gardens in Lake Wales and the University of Florida's Citrus Research and Education Center in Lake Alfred, and a “Gulf Coast Research and Education Center” tour of the Gulf Coast Research and Education Center at the University of Florida/IFAS. Other social events included the Welcome Reception on Saturday night, Opening Ceremony Reception on Sunday evening after the Keynote Session, and the Joint Sections Social on Monday night.

We are pleased to note that attendance in Tampa was at our highest level of participation in the last 4 years. This can be attributed to the active participation of the Local Organizing Committee working with the Program and Membership Committees which was exceptional and we were able to reach out to many new scientists in our field from both the local area and abroad that may have not heard of us before, but attended the event. Group registration continues to be offered with 2 organizations utilizing this reduced registration rate opportunity in 2019. Final registration came to 436 which included 187 member, 17 group, 7 non-member, 18 research technician, 23 post doc, 80 student, 3 one-day, 1 two-day, 8 emeritus, 4 guest, 12 volunteer, and 51 speaker registrants. There were also 5 staff, 1 accompanying guest, and 19 exhibitor registrants.

We continue in our goal to modernize our ways of sharing information while working toward being more conscious of our impact to the environment. For the second year, SIVB offered a Virtual Conference Bag through the Mobile App rather than including numerous handouts for the attendees. Additionally, this year, rather



A special evening visit to the Florida Aquarium was a highlight of this year's event with attendees enjoying the exhibits and sealife found in huge water tanks.

than just displaying pictures of pdfs in the bag, we were able to provide descriptions of the flyers so people could clearly identify the information. Only a few exhibitors and supporters provided printed materials; however, they were offered the option to include their materials virtually as well. This year's mobile app included more hands-on design from the Business Office. In addition to all presentations uploaded by speakers, presenters, and exhibitors, added functionality this year included: the new Attendees Feed, where participants could post pictures and messages to the group as a whole; pre-event reminders which reminded those who had not done so to download their slides in advance of the meeting; an online option for the meeting evaluation; and an updated color-coded version of the schedule at a glance. Attendees utilization of the app continues to grow each year.

The Business Office would also like to take a moment to thank the volunteers who provided their support during the event. The meeting wouldn't have been as successful were it not for their help with the registration and audio-visual needs at the meeting. Many come back every year and we deeply appreciate their continued support.

2020 WORLD CONGRESS ON IN VITRO BIOLOGY

While the initial planning for the World Congress scheduled for San Diego, California from June 6–10, 2020 began in 2018 with securing a city and venue to hold the 2020 meeting, plans began in earnest to prepare the program and set the final details with the Town and Country San Diego in 2019 for the congress. The Program Committee worked hard during the summer to organize an interesting and informative program of sessions that focused on emerging technologies, changing perspectives and ethical concerns for the 21st century.

While at the writing of this report, the World Congress has now transitioned to a Virtual Pre-recorded Meeting, the Business Office spent 2019 making all the preparations normally required for an in-person event. SIVB members from California and its environs made up the bulk of the Local Organizing Committee (LOC) with support from the 2020 Program Committee members. The LOC held a conference call and various email conversations to discuss the special events and scientific tours that were scheduled to be offered in June. Using a shared Google doc, they also worked to identify local companies and universities who might benefit by participating in our event and reviewed materials prepared by the Business Office to be distributed to spread information about the program. The Program Committee also organized special poster presentations advertising

the event at the PAG Conference in January of 2020 and worked toward advertising the event at the Maize Genetics conference later that same year which was unfortunately cancelled. With the Committee's help, special social and scientific events were planned, including tours of the Plug Connection Lab and the Sanford Consortium for Regenerative Medicine. In addition, group tickets were secured for attendees to visit the San Diego Natural History Museum and final arrangements were made for a special Tuesday evening event at the Maritime Museum of San Diego where guests could see the historic ship, the Star of India. It is hoped that we will be able to hold these special events when we next return to San Diego.

There were a number of special programs that were scheduled for Saturday, June 6. The 15th International Conference on Invertebrate and Fish Cell Culture Conference that occurs only once every 4 years was scheduled to be held on Saturday. Plans were made for a special workshop on "Creative Change on Advanced Flow Cytometry" which was to follow up on presentations from the programs provided over the last 3 years. It is expected that we will hold these programs for 2021.

Alysson Muotri, PhD, of the Sanford Consortium for Regenerative Medicine was chosen as the 2020 Keynote Speaker and his talk will be on the "Emergence of Spontaneous Oscillatory Networks from Human Brain Organoids." This presentation will be provided to all registrants as a pre-recorded presentation available at the start of the 2020 World Congress.

We are also pleased to announce the following people have been announced as the recipients of the 2020 SIVB Awards: Lifetime Achievement Award Recipient, **Dwight T. Tomes, PhD**; Distinguished Scientist Award Recipients, **Michael J. Fay, PhD** and **Fredy Altpeter, PhD**; Fellow Award Recipients, **Michael K. Dame, Lucila E. J. Lee, PhD**, and **William Gordon-Kamm, PhD**; and the Young Scientist Award Recipient, **Yiping Qi, PhD**. Should we not be able to present the awards to these meritorious recipients in 2020, the acceptance of their physical awards will occur during the 2021 In Vitro Biology Meeting in Norfolk, Virginia.

In advance of the program planning, the Business Office spent the summer negotiating a new agreement for the event's mobile app and its ancillary services including modules for the event program website, abstract submission, and gathering of speaker information. This mechanism has become particularly useful as we have transitioned the event to a virtual program. The staff worked with conveners gathering their speakers, confirming details and reaching out to speakers to gather their abstracts. They also worked organizing menus, room placement and other logistics with the hotel and with the special event venues. These tasks have since transitioned to preparing the mechanisms and coordinating the details for the 2020 World Congress Virtual Pre-recorded Meeting.

This is the 19th year that SIVB has offered our Student Initiative Program. We are pleased to encourage the growth of our emerging new scientists. Students have benefitted over the years from this program receiving discounted abstract submission fees, free registration to attend the meeting, and free membership the year after they attend that meeting. For the 2020 World Congress, students are still being provided with free registration to attend the

Virtual Pre-recorded World Congress and will receive free membership in the Society for 2021. We are pleased at how the student's educational program has grown each year with the student members organizing their own sessions focused on their specific needs. If you would like to support the Student Initiative, you can contribute to the Sponsor-a-Buddy program. It only takes \$25, but it can make a huge difference in a student's career.

2021 AND 2022 IN VITRO BIOLOGY MEETINGS

The Business Office spent significant time in 2019 negotiating the contract for the 2021 In Vitro Biology Meeting to be able to arrange for an agreement that was significantly beneficial to the SIVB. The Business Office is pleased to share that the 2021 In Vitro Biology Meeting will be held at The Hilton Norfolk The Main in Norfolk, Virginia from June 5 – 9, 2021. This is the first time we have held the SIVB annual meeting at this riverfront location and we are quite excited to welcome our members there next June.



At the same time, the office researched a number of potential locations for the 2022 Meeting site. The SIVB reviewed numerous proposals for the 2022 Meeting; however, due to the issues with COVID-19 and the fact that we could not hold a physical meeting in San Diego in 2020, we are currently negotiating a new agreement with the Town and Country San Diego and are looking forward to returning to California in 2 years. This also means that we can reach out to the other cities we were previously considering for 2022 as potential locations for 2023 as we begin planning for future SIVB meetings.

MEMBERSHIP

Membership numbers were on the rise in 2019; however, we don't take the slight gains for granted and look to find ways to bring in new members while retaining those who have either just joined us or have been loyal members for many years. A growing number of members took advantage of the combination membership and meeting registration options provided for the 2019 meeting. The Membership Committee also discussed numerous options to encourage membership and provided a number of potential initiatives for the Board's review. After determining that membership dues had not increased in over 13 years, a decision was made to include a modest increase in the membership dues rate for regular members in 2020; however, to counter this, SIVB also began to offer the option for members to renew their membership for 2-years with a discount that equaled the previous rate, thereby encouraging continued membership at the prior rate to those who committed their continued participation in the Society.

SIVB also provides opportunities for current members to encourage their colleagues to join through the Member-get-a-Member program. In this program, current member can go to our website or email our office to recommend a new potential regular member. If their recommendation joins, the current member is



Norfolk awaits the SIVB! Join us June 5-9 to explore an exciting new city and maybe even board the USS Wisconsin!

entered into a drawing for a gift card and the new member receives a \$10 off membership dues for their first year. We also held a drawing during the 2019 meeting for members who renewed their membership by December 31, 2018 and are pleased to announce that the winners were: **Prakash Kumar**, who received free registration to the 2020 World Congress, and **Bob Harriman**, who received free 2020 membership. If your 2020 renewal was sent in by December 31, 2019, you could win membership in 2021 or registration to the 2021 In Vitro Biology Meeting.

SIVB takes pride in the number of our members who have been active in SIVB over the span of their careers and those who are still active in the SIVB even after they have retired from their full-time positions. Their dedication is also shown in the opportunities they find to "give back" to the Society both through personal contributions and in estate planning that includes setting up gifts and/or endowments for the future. The SIVB is grateful to the support we have received from some of our extraordinary members who have made charitable gifts or estate contributions to the SIVB via their Qualified Charitable Distribution (QCD). We acknowledge **Barbara Doonan, John Harbell, Delia Bethell, and Dwight Tomes** for their exceptional generosity. To learn more about how you can make a charitable contribution to the SIVB, please contact the Business Office at marietta@newbeginningsmanagement.com.

Individual contributions of any amount can be made through our website. Just click the "Donate" tab at sivb.org and choose one of the funds listed to support the future of the organization. You can also support the SIVB by contributing \$25 to the Fund for the Future when you renew your membership dues each year or support us by signing up for Amazon Smile and choosing the SIVB as your recipient. Just visit <https://smile.amazon.com/ch/56-0844407> to start the process. You can also support the SIVB through contributions made via yourcause.com.

The Business Office also focused on numerous projects for the SIVB Board of Directors and Committees. The Business Office worked with the Development Committee in preparing a USDA-NIFA grant to support the 2020 World Congress Program. They worked with an Ad Hoc Committee to enhance the previous code of ethics found on our website by creating a draft Code of Ethics and Meeting Code of Conduct that was reviewed by the board prior to implementation. They assisted the Awards Committee in reviewing requests from board including clarification on the

Distinguished Scientist and Fellow Awards and extension of the eligibility for the Young Scientist Award. They drafted an SOP for the Student Poster Competitions based on the materials created by those who started the program with details on coordinating timelines, criteria, and tabulation processes to assist students in managing this program in future years. Additionally, they worked with the Michael Horn Endowment Fund Ad Hoc Committee to determine how those funds should be allocated.

In 2019, we were saddened to learn of the passing of long-time members **R. Ian Freshney**, **Arthur H. McIntosh**, **Hajime Hayashi**, and **Thomas Moehring**. We were also regretfully informed of the passing of members **Agnes Stroud-Lee** and **James L. German III**, both who left us in 2018.

PUBLICATIONS

The Publications Department of the SIVB addresses various activities supporting both the print publications and online organizational presence for the Society. This department supports both *In Vitro Cellular and Developmental Biology – Animal*, *In Vitro Cellular and Developmental Biology – Plant*, and the *In Vitro Report* newsletter plus maintaining SIVB's website, and our presence on social media.

All manuscript submissions are now received online via Editorial Manager, the online system we have used since our transition to Springer. This site receives regular updates as requirements for scientific publishing change. Occasionally, we have had to make adjustments in Editorial Manager to better correspond to our journal set up, such as listing Reports rather than Short Communications for the *In Vitro – Animal* journal and removing submission categories that are not included in our journals' matrix and article types. Springer has also added a new system to help identify authors and reviewers who are suspected of misconduct in Editorial Manager to assist the editors in reviewing new submissions. While this still does not provide us the freedom to mark authors ourselves, it is the first time that Springer has allowed authors to be identified due to their questionable behavior in publishing.

There were a number of staffing changes at Springer in 2019 with a transition of our Production Coordinator in the Summer of 2019 and two additional staffing changes to the Editor handling the day-to-day management of our journals. Following a careful review of their growing program in Medicine and Life Sciences, Springer decided that day to day management of journals would be shifted to publishing editors who have a clear and distinct focus in one area of specialty. The Business Office and Editors were contacted by Springer in April 2019 requesting feedback on the journals' page budgets to determine the 2020 price list. Based on this request, the Publications Committee reviewed the budgets for the last 5 years at the end of 2019 so that a clear recommendation could be available and in place prior to Springer's request for this information in 2020. The SIVB has determined that it will stay with our current page budgets in 2021.

Both contracts for the SIVB Editors-in-Chief of *In Vitro – Animal* and *In Vitro – Plant* were set for renewal in 2019 and the Business Office worked with the Publications Committee and Board to confirm the renewals of the current Editors-in-Chief. In early June

of 2019, David Duncan informed the Business Office that it was his intention to retire from the position of Editor-in-Chief of *In Vitro – Plant*. An Ad Hoc IVP Editor-in-Chief Search Committee was formed and the Business Office worked with the Committee to review various candidates. Top candidates were interviewed and the Publications Committee and SIVB Board of Directors voted on Dr. Duncan's replacement. We were pleased to welcome **David D. Songstad** as the new *In Vitro Cellular and Developmental Biology – Plant* Editor-in-Chief in the Fall of 2019.

The *In Vitro – Animal* journal received an even greater increase in impact factor from 1.447 up to 1.645, the highest it has been in over 15 years. This has caused a significant increase in submissions with a limited number of Associate Editors responding to requests for assistance. We worked with **Tetsuji Okamoto**, *In Vitro – Animal's* Editor in Chief to reach out to the Associate, Corresponding, and Reviewing Editors to acknowledge their prior support and to confirm their desire to continue in service to the journal. This allows the SIVB opportunities for new participation from many of our up-and-coming members to become more active with the journal. Dr. Okamoto accepts suggestions for new special issue topics that would be of interest to our readers.

In Vitro – Plant has been steadily improving their page flow over 2019 with the change in IAPB Secretariat and significantly improved Impact Factor for the journal which rose from the 2017 level of 1.056 released last year to 2018's level at 1.454, released in July of 2019. This is their second highest Impact Factor since 2004. Due to the efforts of both EICs, the 4 SIVB issues were published at near to or above page budget during 2019 and continue to look healthy for the 2020 volume.

Both new and senior members of the SIVB are encouraged to submit their work to the *In Vitro – Animal* and *– Plant* journals whenever possible. The benefit is two-fold as you can share research directly with fellow members and, at the same time, support the long-term health of the journal and your Society.

Based on the request from the Board and Membership Committee, the Publications Committee disseminated a survey prepared to determine how our members are accessing the content of our journals to see if there have been any changes in how print copies are perceived versus online access. Results were analyzed and it was determined that the results did show a move toward usage of online content, but with half of our members still actively requesting the hard copy journals, there was not a definitive enough change to warrant an adjustment in how we disseminate the journal access to our members.

In 2019, the Business Office looked for ways to enhance the SIVB's online newsletter, the *In Vitro Report*. All historical content previously designed in HTML was transferred to the new Wordpress layout, so all issues are now searchable based on the date of publication. A new designer was hired to assist in updating the graphics and content for the publication at the end of 2019. Published 4 times a year, the publication continues to offer updates about the SIVB membership, articles provided by officers, committee chairs and members of the organization, news and updates, and acknowledgements of SIVB Award Winners. This publication represents all our members and we do hope you will take

the opportunity to participate in its publication. Share your news with the Editors-in-Chief **Michael Fay** and **Sylvia Mitchell** when requested and provide updates of your accomplishments along with your picture so we can include it in the next Members News article. You can reach them using the links found on the “Submissions” tab on the new website (<https://www.sivb.org/InVitroReport/>) or contact me at marietta@newbeginningsmanagement.com.

The 2020 World Congress website was redesigned to offer a modernized look for the meeting similar to other associations. The site uses a dynamic format meaning that as you reduce or expand the size of your screen, you will see the pages adjust to fit your screen size. This makes it very mobile and tablet friendly. The design was simplified for easier viewing and uses a “Divi Builder” format which functions more modularly and can provide greater flexibility and visual interest, such as the expandable session listings for the program, colorful exhibitor pages and additional content of interest, including the weather widgets for the meeting city and additional advertising opportunities for supporters and advertisers. Pages also offer links to share any of the pages through your favorite social media.

The Business Office worked with the Education Committee to design a page of links to the University of Rhode Island’s biotechnology course presented by **Albert Kausch** which was available online. We also enhanced the student award pages including images of the those being honored by the awards and adding bios of those illustrious members who helped shape our organization. This allows students applying for awards or those contributing to support the student awards to have a better understanding for whom the awards were created.

One issue of concern for the SIVB in 2019 was addressing the discovery at the end of 2018 that we had been dropping in web searches due to the SVB Financial group’s presence in the stock market and on financial and news websites. SIVB worked to update and improve the SEO for our sites and while they showed improvement, there is still work to be done. SIVB purchased additional domains that redirect traffic back to the SIVB’s website and allow searchability through additional channels to improve the visibility of the organization.

Social media remains an important aspect for member outreach and organizational visibility. To enhance visibility of articles being published in the journals, SIVB has been tweeting highlighted articles from both journals. In addition, we are sharing the content with “Shared-it” linking which provides an open, but not downloadable version of the article to allow those clicking on it to view the article, but not copy it. It is hoped that this has helped in spreading visibility and interest in our journals through this enhanced access on an article basis.

SIVB is always looking at ways we can engage our members with these mechanisms and utilizes both individual and repetitive messages through different media to succeed in our outreach. We utilize Facebook and LinkedIn to share content on both scientific and social topics. Congress images are always popular as are Throwback images. Event Deadlines and membership reminders are included to provide members with another gentle reminder with links to take action and we share weekly articles of scientific interest from our journals, by our members, or about our upcoming speakers.

Broadcast emails focus on upcoming deadlines, membership renewals, and urgent news specifically directed to our membership. Remember to follow us through your preferred method of social media and share relevant posts: **@SIVBiology** for the organization, **#SIVBiology2020** for the 2020 World Congress on In Vitro Biology; **#SIVBiology2021** for the 2021 In Vitro Biology Meeting in Norfolk, VA; **#SIVBIVAN** for *In Vitro – Animal*, and **#SIVBIVPL** for *In Vitro – Plant*.

New Beginnings Management, Inc. (NBM) has maintained the SIVB’s Business Office since 2004. NBM manages daily operations for the organization. As the President of New Beginnings Management, I would like to thank all those volunteering their time and efforts on behalf of the SIVB and its future. I especially wish to acknowledge the Executive Committee, Board of Directors, Committee Chairs and Section Officers, who work tirelessly to guide the SIVB into the future. This Society relies on their efforts and the organization would not have a future without their care and devotion to our members. I also want to personally thank each of you for supporting my company and acknowledging the efforts to which we go to provide you with the best possible service. It is my wish that SIVB will continue to grow stronger each year and together, I believe we can accomplish that goal.

Do you have suggestions or ideas on how to grow the organization’s membership or benefit the organization’s future, please feel free to reach out to me at the Business Office directly by sending your suggestions to marietta@newbeginningsmanagement.com.

MARIETTA WHEATON SAUNDERS

Managing Director

marietta@newbeginningsmanagement.com

IN VITRO ANIMAL CELL SCIENCES



*Kolla Kristjansdottir,
IVACS Chair*

The 2019 In Vitro Biology Meeting, held June 8–12 in Tampa, FL, was a success, thanks to the diligent efforts of the Program Committees, Local Organizing Committee (LOC) and the SIVB Business Office: **Fredy Altpeter** (Program Chair), **Mae Ciano** (IVACS Program Chair), **Pierluigi Barone** (PB Program Chair), **Raj Deepika Chauhan** (PB Sr. Co-Chair), **Angela Labrum** (PB Jr. Co-Chair), **Albert Kausch** (Education Chair), **Sepideh**

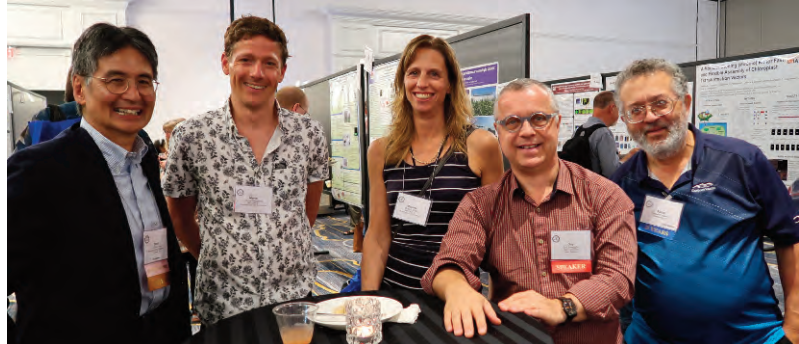
Mohammadhosseinpour (IVACS Student Co-Chair), **Adrianne Brown** (PB Student Co-Chair), **Marietta Wheaton Saunders** (Meeting Secretariat and Managing Director for Society for In Vitro Biology), **Michele Schultz** (Publications Manager) and the Local Organizing Committee, **Fredy Altpeter**, **Thomas Colquhoun**, **Zhanao Deng**, **Manjul Dutt**, **Elsa-Marie Ulrika Egertsdotter**, **Marceline Egnin**, **John L. Griffis, Jr.**, **Alfred Huo**, **Elio Jimenez**, **Michael E. Kane**, **David Lawson**, **Jonathan Meuser**, **Randall P. Niedz**, **Ahmad Omar**, **Vladimir Orbovic**, **Peggy Ozias-Akins**, **Saroj Parajuli**, **Bhuvan Pathak**, **Cheryl Peterson**, **Mahipal Singh**, **Kankshita Swaminathan**, **Joyce Van Eck**, **Wagner Vendrame**, **Nian Wang**, and **Zhifen Zhang**. Over seventy IVACS members

attended the meeting, representing a unique cross-section of universities and industries, both local to the meeting venue and from around the world.

June Medford, Professor of Biology at Colorado State University, delivered an outstanding Keynote Address titled: Synthetic Biology for Engineering Plant Genetic Circuits: from Predictable Electronic-like Functions to Innovative Desalination. She captivated the audience with her work on plants transformed with the computationally designed ability to detect and respond to exogenous substances, programmable genetic controllers, and new technology, a synthetic desalination circuit. The meeting commenced with a Saturday workshop sponsored by Beckman Coulter titled *Flow Cytometry: Cell Characterization, Sorting, and Data Analysis Techniques*. Meeting presentation topics included: *Frontiers in In Vitro and Synthetic Biology; Biological Sensors: Organoids to Organisms for Answering Medicinal, Agricultural and Environmental Questions; Delivery of Genome Editing Agents; 3D Toxicology: Emerging Technologies Directed Towards the Prediction of Human Responses; Importance of Signaling Molecules in Establishing Cell Cultures; Maximizing Gene Editing Target Specificity; Cellular Agriculture and the Use of Cell Lines for Meat Production; 3D Cell Cultures in Cancer Research: Modeling In Vivo Tumors; The Importance of the Microbiome for Animal and Plant Health; Data Analysis Techniques for Microbiome Research; and Stem Cell Differentiation in Human Models*. In all, there were 19 IVACS symposium presentations and 5 plenary presentations. IVACS Contributed Papers broke out into 2 sessions to make room for 7 presentations. Poster presentations included 5 interactive posters, 14 posters, and 4 silent abstracts. Students are an important component of the SIVB meetings. They presented an enjoyable and vigorous Hands-on RNA-Seq Workshop using the Cyverse Computational Infrastructure; Student Networking Luncheon: Employer Engagement; an Ad Hoc Student Committees Breakfast; and a non-competitive student oral presentation session. Student and postdoctoral IVACS oral competition were judged by **Addy Alt-Holland**, **Kolla Kristjansdottir**, **Mae Ciano**, **Michael Dame**, **Joshua Gasiorowski**, **Barbara Doonan**, **Michael Fay**, **John Harbell**, and **Brad Upham**. **Jia Xiong** (North Carolina State University) received 1st place for *Dietary Supplementation with Anthocyanin-rich Berries Promotes Healthy Muscle Development Gene Expression Profiles in Diet-induced Obese Mice*; **Alyssa G. Togliatti** (Midwestern University) received 2nd place for *Characterization of Polymeric Electrospun Fibers for Tissue Engineering and Biologic Delivery*; and **Iara Cassandra Ibay** (Midwestern University) received 3rd place for *The role of Clostridium ramosum in regulating glucose and lipid transport*.

THE IVACS ANNUAL BUSINESS MEETING, was held on June 10, 2019 during the In Vitro Biology Meeting, at the Tampa Marriott Water Street. The meeting started with the recognition of the IVACS elected officers for 2018/2020 term:

Kolla Kristjansdottir – Chair
Mae Ciano – Vice Chair Meeting Program
Vivian Dayeh – Vice Chair Membership
Matthew Desrosiers – Secretary.



Members of the In Vitro Animal Cell Sciences Section use the Annual Meetings as an opportunity to reconnect and make new connections.

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

John W. Harbell – President
Allan Wenck – President Elect
Sukhpreet Sandhu – Vice President
Dwight T. Tomes – Past President
Barbara Doonan – Treasurer
Harold Trick – Secretary
Michael J. Fay – Publications Chair
Wayne Parrott – Public Policy Chair
Kan Wang, John J. Finer, Michael Dame, Brad Upham – Members-at-Large.

We also recognized and thanked all of the IVACS members who helped to raise funds for the 2019 SIVB In Vitro Biology Meeting. 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!

| | |
|---|---|
| Alternatives Research & Development Foundation | J Denry Sato |
| BASF Agricultural Solutions Seed US LLC | JV Biolabs LLC |
| Barbara and John Harbell | Maxillo-Facial Surgery Alumni Assoc., Hiroshima University |
| Barbara B. Doonan | Michael K. Dame |
| Delia R. Bethell | Michael J. Fay |
| Research Institute for the Functional Peptides | Midwestern University |
| Hiroyoshi Hoshi | National Anti-Vivisection Society (NAVS) |
| International Foundation for Ethical Research (IFER) | Raziel Hakim |
| | Sandra Schneider |
| | Wallace McKeehan |

One IVACS member, **Tetsuji Okamoto, DDS, PhD**, was honored with Lifetime Achievement Award for his years of exemplary research, achievements, and pioneering contributions to the field of cell culture. We thanked Maxillo-Facial Surgery Alumni Assoc., Hiroshima Univ., **J. Denry Sato**, Functional Peptides Institute, **Hiroyoshi Hoshi**, **Sandra Schneider**, and **Wallace McKeehan** for their special contributions to this award. IVACS member **Barbara B. Doonan** was presented with the Distinguished Service Award. Student awards were recognized: The 2019 SIVB Cellular Toxicology Award to **Md. Rokib Hasan** (Arkansas State University); the Wilton R. Earle and Student Travel Award to **Yueqing Wang** (Worcester Polytechnic Institute); and the Honor B. Fell and Student Travel Awards to **Elesa Poteres** (Midwestern University). Student Travel Awards were awarded to **Iara Cassandar V. Ibay** (Midwestern University) and **Brenna Hay** (University of Fraser Valley).



Members from all stages of their careers benefitted from the 2019 meeting including these participants from Midwestern University.

THE 2020 WORLD CONGRESS IN VITRO BIOLOGY was originally scheduled to occur in San Diego on June 6–10. Due to restrictions on in-person gatherings due to the COVID-19 outbreak the 2020 World Congress on In Vitro Biology Meeting will be transitioned to a Virtual Pre-recorded Meeting. Nonetheless, we anticipate an outstanding program due to the efforts of the meeting leadership and session conveners; **Michael Dame** (Program Chair), **Mae Ciancio** (IVACS Program Chair), **Raj Deepika Chauhan** (PB Program Chair), **Angela Labrum** (PB Sr. Co-Chair), **Max Jones** (PB Jr. Co-Chair), **Albert Kausch** (Education Chair), **Cristopher Calvo** (IVACS Student Co-Chair), **Bretton Hale** (PB Student Co-Chair), **Marietta Wheaton Saunders** (Congress Secretariat), and the Local Organizing Committee, **Savannah St. Clair** (Co-Chair), **Cecilia Zapata** (Co-Chair), **Michael Dame**, **Kim Hanson**, **Hope Jones**, **Peggy Lemaux**, **Chunsheng Lu**, **Dolendro Nameirakpam**, **Javier Narvaez-Vasquez**, **Reid Robinson**, **Sukhpreet Sandhu**, **Norman Senn**, and **David Songstad**.

2018–2020 IVACS OFFICERS. We would like to welcome and thank the IVACS officers for their continued dedication and service to SIVB: **Mae J. Ciancio** (Midwestern University) for Chair, **Kristina Martinez-Guryn** (Midwestern University) for Vice-Chair Meeting Program, **Vivian Dayeh** (University of Waterloo) for Vice-Chair Membership, and **Matthew Desrosiers** (Worcester Polytechnic Institute) for Secretary. In the same spirit, IVACS would like to sincerely thank **Marietta Wheaton Saunders** (Managing Director), **Michele Schultz** (Publications Manager), and the entire staff of New Beginnings Management for their constant work to execute the daily functions of SIVB and to make possible our annual meetings.

FUTURE ROLE OF IVACS. The 2019 Keynote speaker, **June Medford**, eloquently showed the vital role of continually emerging in vitro discoveries. The In Vitro Animal Science Section is ideally positioned to serve as a platform to engage the scientific community with this exciting attention on the field of in vitro biology.

KOLLA KRISTJANSDDOTTIR

In Vitro Animal Cell Sciences Section Chair

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PLANT BIOTECHNOLOGY

The 2019 In Vitro Biology Meeting was held June 8–12 in Tampa, Florida at the Tampa Marriott Waterside Hotel & Marina. The location is in Tampa's dynamic downtown and on the waterfront within walking distance of the Tampa Riverwalk. The sunny waterfront venue of Tampa provided the ideal location for stimulating presentations, visits with friends and colleagues, establishment of new collaborations, and the sharing of ideas that exemplify SIVB meetings.



*Randall P. Niedz,
Plant Biotechnology
Section Chair*

J. Pon Samuel, Corteva Agriscience, and **Lama Kdouh**, Beckman Coulter Life Sciences, organized a pre-meeting all-day workshop, *Flow Cytometry: Cell Characterization, Sorting, and Data Analysis Techniques*. Because of the popularity and extremely positive feedback from the prior flow cytometry workshops held in 2018 and 2019, a continuation of this workshop is planned for this year's meeting. The workshop opened with a keynote address by **James Leary**, inventor of high-speed flow cytometry and rare-event analysis techniques, entitled, *Flow Cytometry Characterization, and Biological Applications of Multifluorescent Nanoparticles*. The meeting officially opened with **June Medford** delivering the keynote address, *Synthetic Biology for Engineering Plant Genetic Circuits: from Predictable Electronic-like Functions to Innovative Desalination*. Dr. Medford provided a very stimulating talk on the use of synthetic biology for novel solutions to a wide range of human and environmental problems, such as the design and development of a synthetic biological system that enables green plants to purify salt water.

The Plant Biotechnology Section Program Planning Committee included **Pierluigi Barone** (Program Chair), **Raj Deepika Chauhan** (Sr. Co-Chair) and **Angela Labrum** (Jr. Co-Chair). Diverse and outstanding Plenary and Plant Symposia were held. The ten Plenary Symposia included *Beyond Gene Editing: Current Status and Future Applications of Synthetic Biology in Plants*, *Developing Plant Synthetic Biology Tools for Complex Metabolic Engineering*, *Profiling the Diversity and Development of Human Organs and Organoids at Single Cell Resolution*, *Enhanced Gene Delivery Utilizing Non-viral Approaches*, *High Aspect Ratio Nanomaterials Enable Delivery of Functional Genetic Material Without Transgenic DNA Integration in Mature Plants*, *Current and Future Gene Editing Delivery Methods for Plant Genome Modification*, *Improving CRISPR-Cas9 Activity and Specificity by Chemical Modification of the sgRNA Backbone*, *Activity and Specificity of CRISPR-Cas9 and Cas12a Systems in Plant Genome Editing*, *Systematic Evaluation of CRISPR-Cas9 Specificity and Its Relevance in Crop Improvement*, and *Getting Outside the Lab: Endophytes as Modifiers of Plant Stress*. Three Joint Symposia included *2D and 3D Primary Human Breast Tissue Culture Models to Understand Environmental Impacts on Stem Cells in Cancer*, *Differentiation in the Colonic Mucosa with a Mineral Supplement Derived from the Marine Algae Lithothamnion sp: Clinical Trial Outcomes Compared to Response in Human Colonoid Culture*, and *Leveraging Biology for National Security*. **Adrianne Brown** and

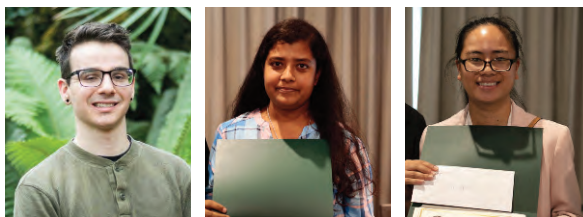
Sepideh Mohammadhosseinpour convened a student workshop, *Hands-on RNA-Seq Workshop Using the Cyverse Computational Infrastructure*. **Angela Labrum** and **Joyce Van Eck** organized a very-well attended combination symposium session followed by a panel discussion over lunch on *Micropropagation Best Practices*.

The Plant Biotechnology Section had 40 Plant Symposia Talks, 23 Contributed Papers, 25 Interactive Poster Presentations, and 119 Posters. Student and Postdoctoral Oral Competitions were organized and moderated by **Geny Anthony** and **Veena Veena**, respectively. **Randy Niedz**, **Joyce Van Eck**, and **Kan Wang** judged the Student Competition. For the Postdoctoral Competition **Leyla Hathwaik** (USDA-ARS, Albany, CA) came in first place with her presentation, *GAENTRY: A Precise and Robust Agrobacterium-based Gene Stacking System for Crop Improvement*, **Evelyn Zuniga-Soto** (Donald Danforth Plant Science Center, St. Louis, MO) came in second place with her presentation, *Transcriptomic Response of the Novel Plant Engineering Bacterium Ensifer adhaerens OV14 During Colonization of A. thaliana Roots*, and **Nathan Reem** (Boyce Thompson Institute, Ithaca, NY) came in third place with his presentation, *Application of Protoplast Technology for Genome Editing in Physalis Species*. For the Student Competition **Stephen Jinga** (University of Illinois Urbana-Champaign, Urbana, IL) came in first place with his presentation, *Multiplex Genome Editing in the Illinois Long Term Selection Experiment*; **Mst Shamira Sultana** (University of Tennessee, Knoxville, TN) came in second place with her presentation, *Development and Validation of a Novel Soybean (Glycine max (L.) Merr.) Cell Suspension Culture for High-throughput Promoter Screening*; and **Chi Nguyen** (University of Florida, Apopka, FL) came in third place with her presentation, *Development of Variegated Lettuce Using CRISPR/Cas9 Technology*. For the Student Poster Competition **Abbas Karouni** (Arkansas State University, State University, AR) came in first place with his poster, *Elicitation of Prenylated Stilbenoids in Cell Suspension Cultures of Peanut*; and, **Hannah Pilkey** (Arkansas State University, State University, AR) came in third place with her poster, *Genetic Transformation of the Ozark Chinquapin (Castanea ozarkensis)*.

The 2019 Plant Biotechnology Section Business Meeting recognized eight SIVB members. **Barbara Reed** received the Lifetime Achievement Award for her extensive contributions to in vitro plant biology and cryopreservation, as well as her willingness to mentor and to share her knowledge. **Jeffrey Adelberg** and **Neal Stewart** received Fellow Awards. **Raj Deepika Chauhan** received the Young Scientist Award. **Harold Trick** received the Distinguished Scientist Award. **Albert Kausch**, **Maria Jenderek**, and **Pamela Weathers** received the Distinguished Service Award.

Randy Niedz reported at the Business Meeting that \$43,500 was raised from industry and personal contributions to support the 2019 SIVB Meeting. There were many personal contributions that were greatly appreciated but were too numerous to recognize individually. **Raj Deepika Chauhan** presented Certificates of Appreciation to the supporting organizations and included **AgriStarts**, **Calyxt**, **Green Roads**, **BASF**, **Carlton Plants (a division of Bailey Nurseries)**, **Meristematic Labs**, **Bayer US CropScience**,

PLANT COMPETITION

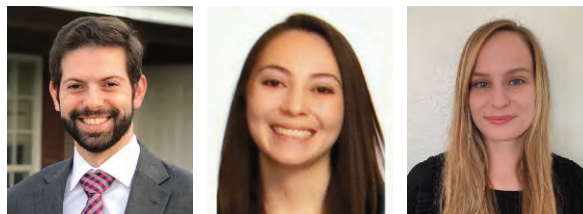


2019 Plant Student Oral Presentation Competition Winners:
1st: Stephen Jinga, 2nd: Mst Shamira Sultana, 3rd: Chi Nguyen



2019 Plant Post Doctoral Oral Presentation Competition Winners:
1st: Leyla Hathwaik, 2nd: Evelyn Zuniga-Soto, 3rd: Nathan Reem

POSTER COMPETITION



2019 Poster Presentation Competition Winners:
1st: Abbas Karouni, 2nd: Julie Tamayo, 3rd: Hannah Pilkey

Molson Coors, Beckman Coulter Life, CTC Genomics, Pairwise Sciences, Cibus US, Syngenta Crop Protection, GenCanna, Corteva Agriscience, The Scotts Miracle-Gro Company, Benson Hill, Elo Life Systems, Biosystems, Inc., and Fall Creek Farm and Nursery.

The journal *In Vitro – Plant* continues to publish high-quality papers. The journal had 424 submitted manuscripts; however, 74% were rejected for a combination of plagiarism, technical flaws, lack of novelty, and out-of-scope. **David Duncan**, as Editor-in-Chief, provided a detailed report of the journal statistics and some areas of concern, particularly maintaining the Society and Springer goal of 140 pages per issue. **David Duncan** recommended 6 action items for the society – 1) an Associate Editor needs to step forward to be the next Review Editor; 2) encourage Society members to submit a review of their current research or an introductory thesis chapter; 3) special topic issues and willing volunteers as guest editors are needed; 4) aggressive pushing of the review process; 5) set up 4–6 alternative reviewers when selecting reviewers for manuscript review; 6) Submit to the Publications Committee names to be considered for the next Editor-in-Chief. **Sylvia Mitchell** or **Michael Fay** are the Editors-in-Chief of *The In Vitro Report* and welcome all submissions.

Current membership status for 2019 is 161 regular and 55 student members.

The 2020 SIVB Meeting will be held from June 6–10, 2020. The Plant Biotechnology Section Program Committee consists of **Raj Deepika Chauhan** (Program Chair), **Angela Labrum** (Sr. Co-Chair), and **Max Jones** (Jr. Co-Chair) are planning an outstanding program to encompass a broad range of in vitro research areas from molecular to micropropagation, with strong participation from the Cannabis in vitro community. All members are encouraged to attend what will be an exciting meeting.

On behalf of the officers of the Plant Biotechnology Section, I thank all members who have contributed their time and effort in making 2019 a successful year.

RANDALL P. NIEDZ

Plant Biotechnology Section Chair
randall.niedz@ars.usda.gov

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; **Cynthia L. Goodman**, U.S. Department of Agriculture, ARC, Biological Control of Insects Research Laboratory; **Leonard Hayflick**, University of California, San Francisco; **Wallace L. McKeenan**, 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 and Global Biological Standards Institute (GBSI) Cell Authentication; **J. Denry Sato**, Manazar Project Foundation, and **Guy Smagghe**, Ghent University, Belgium.

The History Society and Records History Committee nominated and supported the 2019 Lifetime Achievement Award for **Tetsuji Okamoto, DDS, DPhil**, Professor and Chairman Department of Molecular Oral Medicine & Maxillofacial Surgery, Division Applied Biomedical Sciences and Graduate Institute of Biomedical & Health Science Hiroshima University, Oral & Maxillofacial Surgery, Hiroshima University Hospital, Japan. Dr. Okamoto is a maxillofacial surgeon, clinician, biomedical research scientist, educator, and humanitarian, recognized for his significant contributions to developmental in vitro biology, growth factor biology, cancer biology and human pluripotent stem cell biology.

Dr. Okamoto has served as Executive Vice-President, Hiroshima University, Dean, Graduate School of Medicine, Dentistry, Pharmaceutical

Science, Hiroshima University and Deputy Director and Head of Hiroshima University Hospital. He is Adjunct and Visiting Professor to a number of University, Dental Science and Medical Hospitals throughout Japan, China, and serves as Academic Consultant, Ministry of Education and Health, the Republic of Kazakhstan.



2019 IVACS Lifetime Achievement Award presentation: (L to R) Dr. Atsuko Hamada, Dr. John Harbell (SIVB President), Dr. J. Denry Sato, Dr. Tetsuji Okamoto (Awardee), Dr. Sandra L. Schneider (Past President), and Dr. Anh D. Le.

Dr. Okamoto holds a doctorate in dentistry and a doctorate in Oral & Maxillofacial Surgery, Hiroshima University, Japan. He served as Visiting Scientist, the W. Alton Jones Cell Science Laboratory of Dr. Gordon H. Sato, Lake Placid, NY, where he pioneered the development of serum-free media for cancer cell lines and novel cell therapies to treat oral cancers. This work led to several discoveries: a human binding protein for fibroblast growth factor (HBp17); a cell therapy and drug delivery system to treat oral cancer with lymphokine-activated killer cells and the in vitro and in vivo tissue engineering induction of craniofacial cartilage and tooth germ cellular structures for targeted use in oral cancer and Cranio-Maxillofacial disorder therapy.

As Visiting Associate Scientist, Oral & Maxillofacial Surgery, Hanover Medical School, Dr. Okamoto's clinical expertise and research contributions resulted, not only in successful treatment of oral cancers with IL-2 activated lymphocytes, but the building of a cell therapy center in the Hiroshima University Dental Hospital. As an expert in the molecular epidemiology of oral and maxillofacial disorders, he has treated and conducted dental services for the residents of the Former Soviet Union Semipalatinsk nuclear test site (SNT), to include the cities of Dolon, Sarzhai, Kokpekty, and Semipalatinsk.

Dr. Okamoto's scientific publications include 546 peer-reviewed journal articles, clinical case reports and abstracts, published in both Japanese and English. He holds 8 patents and 4 pending patents and has, to date, six cell line submissions to the Riken Cell Bank, Ibaraki, Japan. He serves as a member of the Japanese National Dentistry Examination, Head of Evaluation and Examination for the Research Center for Stem Cell Engineering, and Advanced Industrial Science and Technology (AIST). His clinical, scientific and pharmaceutical contributions have been recognized with Lifetime Achievement Awards from the Japanese Tissue Culture Association (2015), Japanese Tissue Culture Society for Dental Research (2014) and the prestigious 2004 National Health Service Medal, Republic of Kazakhstan.

Dr. Okamoto has been an active, contributing, collaborative and dedicated member of the TCA/SIVB since 1985, serving as a member

of the World Congress Scientific Program Committee and symposium contributor; member Vertebrate and Cellular Toxicology Sections, (now IVACS); and valued member of the History & Records Committee. In addition to his role in active collaborations between the JTCA and SIVB, he was awarded SIVB Fellow status in 2012 and has served as Associate Editor and the first International Editor-in-Chief of *In Vitro Cellular & Developmental Biology/Animal*.

The Lifetime Achievement Award, initiated in 1991, is the highest award given by the Society to those scientists who have achieved academic excellence in their field of study; to honor those 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. The emeritus scientists that have been recognized and received the Lifetime Achievement Award to date include:

The History Society recognizes the passing of **Kary Banks Mullis, PhD** on August 7, 2019, Newport Beach, CA. Dr. Mullis died from pneumonia



Dr. Kary Banks Mullis

following heart and respiratory failure at age 74. Dr. Mullis was the Distinguished Keynote Speaker for the 2004 World Congress, San Francisco, CA entitled *Chemically Programmable Immunity: The Challenge and Approach of Today's Disease & Pathogen Drug Treatments*. Dr. Mullis was very generous and spent time speaking with SIVB scientists and students following his keynote address. Known as the

father of PCR, his invention of the polymerase chain reaction (PCR) earned him the Nobel Prize in Chemistry in 1993 which he shared with Michael Smith. The process and method of amplifying DNA is one of the major scientific medical and biotechnology techniques of the twentieth century. Dr. Mullis authored several major patents to include: PCR technology; a UV-sensitive plastic that changes color in response to light; and a revolutionary approach to instantly mobilize the immune system to neutralize invading pathogens and toxins. Known personally and professionally as one of the more iconic, eccentric and controversial personalities of science, Dr. Mullis had many awards and publications. His autobiographical book *Dancing Naked in the Mind Field* was published by Pantheon Books in 1998.

Recommended must reads which highlight and complement the historical and pioneering accomplishments of *in vitro* cell biology include: **Gold, Michael** (1986). *A Conspiracy of Cells. One Woman's Immortal Legacy and the Medical Scandal It Caused*. **Hayflick, Leonard** (1994). *How and Why We Age*. Ballantine Books, New York State University of New York Press; **Freshney, R. Ian** (2000). *Culture of Animal Cells*. Wiley-Liss, New York; **Maramorosch, Karl** (2014). *The Thorny Road to Success. A Memoir*. iUniverse, Bloomington, IN; and **Pruisner, Stanley B.** (2014). *Madness and Memory. The Discovery of Prions – A New Biological Principle of Disease*. Yale University Press.

SANDRA L. SCHNEIDER

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THE LIFETIME ACHIEVEMENT AWARD

*The Lifetime Achievement Award, initiated in 1991, is the highest award given by the Society to those scientists who have achieved academic excellence in their field of study; to honor those 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. The emeritus scientists that have been recognized and received the Lifetime Achievement Award to date include:*

| NAME | YEAR | NAME | YEAR | NAME | YEAR |
|---------------------------|------|---------------------------|------|-----------------------------|------|
| Richard G. Ham, PhD | 1991 | Thomas Grace, PhD | 2004 | Niels C. Bols, PhD | 2012 |
| Toshio Murashige, PhD | 1991 | Trevor Thorpe, PhD | 2004 | Wallace L. McKeethan, PhD | 2012 |
| Judah Folkman, MD | 1992 | Walter Nelson-Rees, PhD | 2004 | William J. Smith, PhD | 2013 |
| Folke Skoog, PhD | 1992 | Oluf Gamborg, PhD | 2005 | Paul J. Price, PhD | 2013 |
| Leonard Hayflick, PhD | 1995 | Robert Langer, ScD | 2005 | Michael E. Kane, PhD | 2014 |
| Nelly Auersperg, MD, PhD | 1997 | Wei-Shou Hu, PhD | 2006 | David W. Barnes, PhD | 2014 |
| Katherine K. Sanford, PhD | 1997 | Bob Conger, PhD | 2006 | Gertrude Case Buehring, PhD | 2015 |
| Joseph Leighton, PhD | 1998 | Vimla Vasil, PhD | 2007 | Delia R. Bethell, PhD | 2015 |
| Sergey Fedoroff, PhD | 1999 | Indra K. Vasil, PhD | 2007 | Eugene Elmore, PhD | 2016 |
| James L. Vaughn, PhD | 2000 | Jack M. Widholm, PhD | 2008 | Yvonne A. Reid, PhD | 2016 |
| Atsushi Komamine, DSc | 2000 | Toyoki Kozai, PhD | 2009 | J. Denry Sato, DPhil | 2017 |
| Jun Mitsuhashi, PhD | 2000 | Glenn B. Collins, PhD | 2009 | Gregory C. Phillips, PhD | 2017 |
| Karl Maramorosch, PhD | 2001 | Christopher J. Bayne, PhD | 2009 | Sandra L. Schneider, DrPH | 2018 |
| June A. Bradlaw, Ph.D. | 2001 | Masayoshi Namba, MD | 2009 | John J. Finer, PhD | 2018 |
| R. Ian Freshney, PhD. | 2001 | Peggy G. Lemaux, PhD | 2010 | Tetsuji Okamoto, DDS, DPhil | 2019 |
| Sadar S. Sohi, PhD. | 2002 | Wilf A. Keller, PhD | 2010 | Barbara Reed, PhD | 2019 |
| Gordon A. Sato, Ph.D | 2002 | Donald E. Ingber, PhD | 2010 | | |

STANDING COMMITTEES

AWARDS

The 2019 Awards Committee consisted of **Randall Niedz** (Chair, Plant Biotechnology Sciences), **Jeffrey Beringer** (Vice Chair, Plant Biotechnology Sciences), **Kolbrun Kristjandottir** (Chair, In Vitro Animal Cell Sciences), **Mary Welter**, **Ian S. Curtis**, and **Maria M. Jenderek** (Chair) who discussed and recommended for approval the 2019 Award winners. The Committee made efforts to inspire all Society members to nominate their accomplished colleagues. The Committee would like to express a deep appreciation to all those who submitted nominations and congratulate the 2019 Awardees on awards truly deserved. The Society has outstanding members who make our organization successful and of interest to young scientists and students. To learn how to nominate someone for an award, review the awards criteria on the SIVB website <https://sivb.org/awards.html>.

Life Achievement Awards

Dr. Tetsuji Okamoto (IVACS) and Dr. Barbara M. Reed (PB) received the 2019 Life Achievement Award.

Dr. Tetsuji Okamoto has been very successful as a clinician and as a basic research scientist who has made significant contributions in mammalian cell culture, growth factor biology, cancer biology, and human pluripotent stem cell biology. His clinical interests in reconstructive surgery of developmental cranio-facial defects and in treatment of malignant oral and head and neck cancers have contributed to his scientific research, which in turn has produced new approaches to diagnosing and treating diseases. Here are several examples of the translational research that has marked Dr. Okamoto's career.

He has characterized biomarkers (growth factors, receptors, binding proteins) in oral and salivary gland cancers, and he discovered a novel mutation in the FGF receptor 3 gene that causes a defect in cranio-facial development. These findings have been used in disease diagnosis, and in the latter instance to predict which patients will need corrective surgery later in life. Another mutation discovered in the Tie2 gene that caused venous malformations was also predictive of the patient's prognosis.

Dr. Okamoto selected a clone of a cancer cell line that allowed him and his colleagues to investigate the protein factors elaborated by human cancer cells. With these cells he independently discovered a novel endothelial cell growth factor (VEGF) and a unique binding protein for FGFs. An antibody to VEGF made by other researchers was approved by the FDA as an anti-cancer drug (Avastin). Dr. Okamoto has shown that an analog of vitamin D3 that inhibits the expression of the binding protein (HBp17/FGFBP-1) is a potential therapeutic agent for squamous cell carcinomas.

He created a serum-free medium that could be used to generate lymphokine (IL-2)-activated killer T cells (LAK cells), and he discovered that the addition of insulin to this medium inhibited the cytotoxic activity of the activated lymphocytes. Dr. Okamoto used autologous LAK cells generated in this medium to treat oral cancer patients for several years. He is currently investigating the mechanism by which insulin inhibits cell killing activity in T-cells as this is relevant to the efficacy of CAR-T immunotherapy of human cancers.

LIFETIME ACHIEVEMENT



Dr. Tetsuji Okamoto (L) and Dr. Barbara M. Reed (R)

He developed a serum-free feeder cell-free culture system to generate and propagate mouse and human embryonic stem cells and induced pluripotent stem cells. He has used this culture system in conjunction with a reprogramming technique that does not genetically transform cells to derive cleidocranial disease-specific pluripotent iPS cells and to generate iPS cells from human dental pulp for studies on directed cell differentiation.

Dr. Barbara M. Reed received her B.S. degree in Biology from University of Nebraska-Lincoln in 1971. She went on to achieve her M.S. in Botany and Plant Pathology (1974) and PhD in Botany (1977) from Oklahoma State University. She is internationally recognized as an expert on clonal germplasm culture, cryopreservation and storage techniques. Many of her developed in vitro conservation techniques are used worldwide. Her primary focus while at the USDA included the development of improved and broadly applicable methods for tissue culture of crop germplasm for the repository, the development of low temperature or other slow growth storage techniques for in vitro cultures, and the development of cryopreservation methods to facilitate the future storage of germplasm in liquid nitrogen. Her most recent research was the application of computer assisted design and modeling to improve mineral nutrition of in vitro cultures. Collaborating with and working off the research first initiated by Dr. Randall Niedz, the computer modeling application resulted in improved growth medium for several agronomic important fruit and nut cultivars for the state of Oregon.

She has authored or co-authored 190 publications with 129 in peer-reviewed journals most of which she is the first author or with graduate students with more in review. She has authored or co-authored two books, 13 book chapters, 19 proceeding papers, two theses, four handbooks of laboratory protocols, and six web-based educational tools. She has spoken and presented posters at numerous national and international conferences and workshops including American Society for Horticultural Science, Society for Cryobiology, The Tissue Culture Association/Society for In Vitro Biology, International Congresses on Plant Tissue and Cell Culture, The Spanish Society for Cryobiology and ISHS meetings.

Dr. Reed has been an exemplary role model to many graduate students and early career scientists. She has advised nine M.S. and nine Ph.D. students and provided short-term training to over 40 visiting international scientists. Even after her retirement from the USDA-ARS,



Dr. Jeffrey Adelberg



Dr. C. Neal Stewart, Jr.

she continues to be actively involved with research projects at Oregon State University providing invaluable scientific insights.

Barbara has been a member of SIVB since 1989 and has served in many capacities over the years. She has served as a Member at-Large for the SIVB Board of Directors (1996–2000), SIVB Secretary (2000–2002), Reviewing Editor for *In Vitro – Plant* (1997–2004), Associate Editor for *In Vitro – Plant* (2005–present), and SIVB Publications Committee Chair (2008–2012). In 2003 she received the SIVB Fellow Award and in 2011 she received the Society for Cryobiology Fellow Award. Additional professional memberships include American Society of Horticultural Science (ASHS), The Society for Cryobiology, The Society for Low Temperature Biology (SLTB), Sigma Xi, Phi Kappa Phi along with serving as editor or on the editorial board of publications for the preceding societies.

Fellow Awards

Dr. Jeffrey Adelberg (PB) and Dr. C. Neal Stewart, Jr. (PB) were awarded the Fellow Award.

Dr. Jeffrey Adelberg has been a faculty member of the Plant and Environmental Sciences Department of Clemson University since 1991. He is a Professor of Horticulture and is currently serving as the Department Chair. He was the Major Advisor for 10 graduate students (MS and PhD), and the Research Advisor for 6 post-doctoral advisees. He has taught plant tissue culture for more than twenty years, and dozens of graduate students have been exposed to this intensive training. Dr. Adelberg combines high professionalism and integrity with an extremely approachable, helpful, and humorous personality. The result is that he is extremely effective in communicating his work and assisting others in the field.

Dr. Adelberg's research area is primarily in *in vitro* plant biology. His major contributions relate to tissue culture processes and methods that facilitate research in *in vitro* plant biology and its use in commercial production. His research covers the entire range of the micropropagation process from initiation to rooting to the *ex vitro* establishment of *in vitro*-derived plants in the greenhouse. He has studied a wide variety of plant species for cross-commodity applications including crop and non-crop, woody and herbaceous, monocot and dicot, and model and recalcitrant. He has contributed deeply to the development and understanding of liquid culture systems and the associated bioreactor systems required, including the development of systems suitable for commercial *in vitro* plant propagation. He has articulated the fundamental principles of water and solutes in tissue culture systems, including solute transfer and

interfacial kinetics, particularly sucrose, in aqueous liquid and agar systems. He has illustrated the difference between pressure (osmotic and matric) and mass flow (hydraulic conductance), and the implications of non-equilibrium conditions over the dimensions of space and time. In practical terms, he explains that water is most available in the freshly made culture medium. Dr. Adelberg has utilized modern design of experiments to study the multifactor relationships in these systems and on a broad range of responses (greenhouse and nursery growth, phytochemical products, and most recently, efficiencies in transformation biology. This is an important contribution because these systems are extremely complex and not suitable for single-factor experiments. He has quantified water use as a component in media formulation, and the many non-nutrient factors to improve the process have been included in some of the multifactor optimization papers.

Dr. Adelberg joined SIVB in 1991 and has attended and actively participated in the annual national meetings for over 25 years. He has contributed numerous talks and posters and has co-convened and organized one joint plenary session, several symposia/workshops, and been on the local organizing committee twice. He has served SIVB by providing numerous ad hoc reviews of manuscripts submitted to the society's journal, *In Vitro Cellular and Developmental Biology – Plant*, and has served as an Associate Editor of the journal since 2014.

Dr. C. Neal Stewart, Jr. is currently the Ivan Racheff Chair of Plant Molecular Genetics at the University of Tennessee and serves as co-director of the Tennessee Plant Research Center. His research spans the use of cellular, molecular, and synthetic biology tools for advanced plant biotechnology. He is widely recognized in many areas of plant biotechnology, and particularly for his risk assessment and bioenergy feedstock research. Dr. Stewart has an excellent publication record with a total of 270 journal articles, 8 books as well as 100 book chapters and other articles, which have been cited over 13,000 times. He is inventor of 18 issued or pending patents. He currently is an editor for 3 prominent biotechnology journals. He teaches a course in plant biotechnology and one on research ethics, and his textbook on plant biotechnology is now in its second edition. Dr. Stewart's research program has evolved over the years and remains at the forefront of plant biotechnology (such as synthetic biology).

Dr. Stewart has mentored over 100 trainees consisting of graduate students, postdocs, visiting scientists, and technicians, most of who now have active scientific careers. Dr. Stewart was elected as an AAAS Fellow in 2015 and from 2014–2016 served on the National Academies committee responsible for publishing "Genetically Engineered Crops: Experiences and Prospects" in 2016. He helped lead the recently published NSF roadmap for plant genetic transformation research and actively participates in discussions on policy issues and the ethics of using genetic engineering and synthetic biology in agriculture.

Dr. Stewart has been an active member of SIVB in past years and contributed to the Society in several aspects. He served as Associate Editor for *In Vitro Cellular & Developmental Biology – Plant* (IVP) from 2007 to 2010 and one of his papers published in IVP (40: 542-551) is among the top-cited articles to ever been published in the journal. He served as a convener for seven sessions or workshops at SIVB meetings, presented more than ten talks and many posters at SIVB

meetings, and promotes the Society at every opportunity. For example, while serving as a member of the National Academies GE Crops Committee, Dr. Stewart convinced the Committee to invite a representative of SIVB to give a presentation and provide feedback to the National Academies.

Distinguished Scientist Award

Dr. Harold N. Trick received the 2019 Distinguished Scientist Award.

Dr. Harold N. Trick is a respected scientist and academic leader in plant transformation and biotechnology. He is currently a Professor at Kansas State University in the Department of Plant Pathology. His lab focuses on plant tissue culture, transformation, and molecular biology of wheat, maize, and soybean. He holds 8 patents in a variety of topics including Sonication-Assisted Agrobacterium Transformation and innovative solutions for plant pest and pathogen resistance.

As a mid-career scientist, he has successfully published 73 publications, including peer-reviewed articles in *Science*, *Nature Genetics*, and *Molecular Plant Microbe Interactions (MPMI)*. Dr. Trick teaches an upper level undergraduate/lower level graduate course on Biotechnology every fall. In addition to his teaching duties, he also performs outreach at numerous public events promoting Ag biotech. He has mentored 12 graduate students, 8 post-doctoral fellows, 18 undergraduate researchers and 5 visiting scientists. He is a recognized expert in the field, serving as a grant panel review manager twice, and as a regular panelist for the USDA. Dr. Trick served the academic community through his efforts on various committees including the Plant Biotechnology Action Team, State of Kansas Biotech Dialogue Group, and as the Chair of the KSU Institutional Biosafety Committee, among others.

His service to science can be noted through his activities as an Associate Editor for *In Vitro Cellular and Developmental Biology – Plant* and previously for *Plant Cell, Tissue, and Organ Culture*. Most notably, his service to the Society of In Vitro Biology has spanned two decades, during which he has served as the SIVB's Secretary (2016-2020), Program Chair (2016), the Plant Biotechnology Section Chair (2012–2014), Plant Program Chair (2003) and the member of the planning committee (2007, 2011, 2012). His efforts also include the Plant Program Chair or Co-chair (2000, 2002, 2003) and numerous years on the Plant Program Committee. Dr. Trick's exemplary track record of research, teaching, and service indicate that he will continue to be an outstanding career professional in the years to come.

Young Scientist Award

Dr. Raj Deepika Chauhan won the Young Scientist Award.

Dr. Raj Deepika Chauhan has made significant contributions to in vitro plant biology research. She developed in vitro plant tissue culture protocols for genetic improvement of multiple recalcitrant plant species; developed methods to introduce traits such as enhanced cellulose biosynthesis, insect resistance, virus resistance and biofortification; and discovered techniques to improve genetic transformation of cassava, a food security crop by 50 to 100 percent which has been pivotal in all cassava projects running at the Danforth Center worth over \$20 million competitive grant funding. She also developed cutting edge tools to improve cassava for



Dr. Harold N. Trick

Dr. Raj Deepika Chauhan

disease and herbicide resistance through gene editing technology, contributed in generating first herbicide tolerant cassava using CRISPR/Cas9 technology, co-inventor in the patent application, and published 24 peer reviewed research papers in high impact journals such as *Nature Biotechnology*, *Plant biotechnology* etc., 3 reviews, 1 book chapter, 25 abstracts in conference proceedings and 1 patent.

As a member of the Society for In Vitro Biology, she has served on Plant Biotechnology Section Program Committee since 2018. She also served on the 2019 Development Committee and made significant contributions in obtaining funds for the 2019 SIVB meeting. She acted as a convener and moderator of several sessions and assisted as a judge and volunteer during the program. Deepika served on Local Organizing Committee for 2018 SIVB meeting and was integral in arranging the scientific tours for the attendees. She is also a reviewer for *In Vitro Cellular and Developmental Biology – Plant*.

As a mentor, she leads a team of two research scientists and 5 research associates in her current role as well as successfully supervising a team of 7–10 research technicians since 2013 in her role as research manager and senior research scientist. She trains visiting scholars/scientists from China, Vietnam, Kenya, Nigeria, Uganda and Columbia on cassava tissue culture and genetic transformation and has trained over half a dozen researchers/scientists from all over the world in last 5 years that has enabled the trainees to establish cassava tissue culture and transformation platform in their home institutes. She also mentored undergraduate students in the field of plant biotechnology at the Department of Genetics, University of Pretoria during 2011.

Student Awards

The evaluating committee this year consisted of **Pamela Weathers** (Chair), **Vivian Dayeh**, **Jessica Rupp**, **Raj Deepika Chauhan**, and **Cindy Goodman**. The SIVB Student Award Program provides recognition and financial support for students who have contributed and made outstanding achievements in the field of in vitro biology. The following awards were presented at the 2019 meeting. The **Philip R. White Award** was given to **Xiaoting Wang**, Arkansas Biosciences Institute, State University, AR, for "Plant cell-derived growth factors for ex vivo mass production of red blood cells." The Wilton R. Earle and Student Travel Awards were presented to Yueqing Wang, Worcester Polytechnic Institute, Worcester, MA for "Grafted *Aptenia cordifolia* (L. f.) Schwant Leaves as Perfusable Tissue Engineered Scaffolds". The **Joseph F. Morgan** and **Student Travel Awards** were given to **Arianne Qanbery**, University of the

STUDENTS AWARDS



Pictured: (Back row) Abbas Karouni, Iara Ibay, Shruti Nindawat, Cristofer Calvo, Bretton Hale, Yueqing Wang, Angelo Alvarez, Lamiaa Mahmoud; (Front row) Hannah Pilkey, Elesa Poteres, Arianne Qanberry, Xiaoting Wang, Md. Rokib Hasan, Chi Nguyen, Tej Tamang; and (not pictured) Brenna Hay.

Fraser Valley, Abbotsford, BC, Canada. for “Analyzing the Effects of Environmental Changes on Fish Cell Lines” The Cellular Toxicology Award was presented to **Md. Rokib Hasan**, Arkansas State University, Jonesboro, AR for “Unraveling the Biosynthesis of Prenylated Stilbenoids in Peanut and their Anti-inflammatory Activities *In vitro*.” The **Hope E. Hopps** and **Student Travel Awards** were given to **Cristofer Calvo**, Arkansas State University, Arkansas State Bioscience Institute, Jonesboro, AR for “Hydroxyproline-O-glycan engineering in tobacco transient protein expression: fish IL-22 and eGFP as model systems.” The **Honor B. Fell** and **Travel Awards** were presented to **Elesa Poteres** of Midwestern University, Downers Grove, IL for “The Role of Gut Microbes in Regulating the Constitutive Androstane Receptor and Metabolism.” The **John S. Song Award** was given to **Shruti Nindawat**, University of Delhi, Department of Botany, India for “Arabian Primrose Mediated Green Synthesis of Silver Nanoparticles and Evaluation of their Anti-oxidant, Anti-cancer, Anti-microbial and Catalytic Potential.” The **Exceptional Plant Research Award** went to **Angelo Alvarez**, Los Angeles Pierce College, Woodland Hills, CA for “In Vitro Propagation of *Asclepias* spp. for Monarch Butterfly Habitat Restoration. SIVB Student Travel Awards also were given to **Bretton Hale**, Arkansas State University, Arkansas State Bioscience Institute, Jonesboro, AR for “Soybean Isolated Microspore Culture: Sustained Cell Divisions and Embryo Formation”, **Brenna Hay**, University of the Fraser Valley, Abbotsford

BC, Canada for “Evaluating Potential Genotoxicity of Imidacloprid with Fish Cell Lines”, **Iara Cassandra V. Ibay**, Midwestern University, Downers Grove, IL for “The role of *Clostridium ramosum* in promoting the development of obesity and increasing lipid absorption”, **Lamiaa Mahmoud**, Mansoura University, Egypt and Citrus Research and Education Center, University of Florida, Lake Alfred, FL. for “Silicon nanoparticles Mitigate the Adverse Effect of Drought Induced By Polyethylene Glycol in In Vitro Banana Shoots”, **Chi Nguyen**, Mid-Florida Research Center, University of Florida, Apopka, FL for “Development of Variegated Lettuce Using CRISPR/Cas9 Technology”, and **Tej Man Tamang**, Kansas State University, Manhattan, KS for “Ectopic expression of a heterologous glutaredoxin enhances tolerance to multiple abiotic stressors and grain yield in field grown maize”. Certificates were presented at the SIVB June 2019 Business Meeting to honor these exceptional students.

MARIA M. JENDEREK

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PAMELA J. WEATHERS

Student Affairs Committee Chair

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CONSTITUTION AND BYLAWS

In the Fall of 2019, the Constitution and Bylaws Committee was tasked by the Board of Directors to review drafts of a Code of Ethics and Code of Meeting Conduct that were prepared by an Ad Hoc Committee and compare them to the SIVB's Constitution and Bylaws to confirm that there was nothing within the language of the codes that would conflict with the language found in our Constitution and Bylaws. The Committee completed this task in February of 2020 by suggesting some minor changes but found no conflicts of interest on the documents.

This Code of Ethics and Professional Conduct is a summary of what SIVB defines as essential ethical behavior for research professionals. These principles and standards should be used as guidelines when examining everyday scientific and professional activities. Most of the Ethical Standards are written broadly in order to apply to scientists in varied roles, and the application of an ethical standard may vary depending on the context. This Code of Ethics and Professional Conduct is not exhaustive. To view the full Code of Ethics and Professional Conduct please visit <https://sivb.org/code-of-ethics-and-professional-conduct.html>.

The Society for In Vitro Biology (SIVB) is committed to providing a safe, productive, and welcoming environment free of harassment and discrimination for all participants and staff to share ideas and knowledge at all venues associated with or sponsored by the SIVB. The Meeting Code of Conduct can be found at <https://sivb.org/meeting-code-of-conduct.html>.

Should you wish to suggest improvements to our governing documents or volunteer to assist in preparing recommendations, you may reach out to the Committee Chair or Managing Director with your thoughts.

Prepared by the Business Office on behalf of

THEODORE KLEIN

Constitutions and Bylaws Chair
theomklein@gmail.com



SIVB held a special Student Social and Pizza Party at the start of the 2019 Meeting to give students the opportunity to meet the SIVB Officers, Keynote Speaker, and their fellow students one-on-one

DEVELOPMENT

The Development Committee helps to secure financial support for the Society and its annual meeting. In 2019, the core members of this team included **Angela Labrum, Piero Barone, Raj Deepika Chauhan, John Harbell, Michael Dame, and Sukhpreet Sandhu** (Chair). The core team was supported by IVACS and PB members who helped to generate contributions. We offer our thanks to Angela, Deepika and Piero who made an outstanding effort by actively identifying prospective donors and working with SIVB members to gain support from companies. We are also very grateful for the support of **Sadanand Dhekney** for his efforts in grant writing on behalf of SIVB and to **John Harbell and Allan Wenck** for their continued involvement in securing contributions. We received contributions from 27 companies, a 35% increase over last year and 17 individual contributions, more than double over last year. We generated \$97,852 in contributions. Significant contributions were secured from BASF, Corteva, and Beckman Coulter. For the third consecutive year, Beckman Coulter has supported a Flow Cytometry workshop at the meeting. Such partnerships with key companies are critical from not only the financial security but increasing our value proposition as a Society.

We appreciate the support from several individual contributors who have been long time members of the Society. 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 the leverage you can provide by connecting us to your networks. We are trusting on support from all SIVB members to help us secure a thriving future of SIVB.

Support for the SIVB came from the following funding sources:

Barbara and John Harbell, Barbara B. Doonan, Delia Bethell, Hiroyoshi Hoshi, Irina Kovalchuk, J. Denry Sato, Kabi Zhambakin, Mary Welter, Michael J. Fay, Michael K. Dame, Natalya Romandanova, Randy Niedz, Raziell Hakim, Sandra Schneider, Sukalya Poothong, Svetlana Kushnarenko, Timur Turdiev, Valerie Pence, Wallace McKeenan, Agristarts, Alternatives Research & Development Foundation, BASF Agricultural Solutions Seed US LLC, Bayer CropScience, Beckman Coulter, Benson Hill Biosystems, Calyxt, Carlton Plants, a Division of Bailey Nurseries, Cibus LLC US, Corteva Agriscience™, Agriculture Division of DowDuPont™, CTC Genomics, Elo Life Systems, Fall Creek Farm and Nursery, Functional Peptides Institute, Gen Canna, Green Roads, IFER, JV Biolabs, Maxillo-Facial Surgery Alumni Assoc., Hiroshima University, Meristematic Labs, Microplant Nurseries, NAVS, North American Plants, Pairwise, PhytoTech Labs, Syngenta, and The Scotts Miracle Gro Company.

SUKHPREET SANDHU

Development Committee Chair

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EDUCATION

The task of the Education Committee is to further the educational goals of the Society for In Vitro Biology (SIVB). This committee works on its own and in support of the Student Affairs Committee to create engaging educational events for the SIVB annual meetings.



The Students Networking Luncheon was extremely successful with participation from experts in numerous fields who interacted and addressed questions from the students.

The 2019 Education Committee was chaired by **Albert Kausch**, University of Rhode Island, and was comprised of the following members: **Addy Alt-Holland**, Tufts University, **Daniel J. Barnes**, Mississippi State University, **Yinghui Dan**, Virginia Polytechnic Institute and State University, **Vivian Dayeh**, University of Waterloo, **Michael E. Kane**, University of Florida, **Sylvia Adjoa Mitchell**, University of the West Indies, **Valerie C. Pence**, Center for Conservation and Research of Endangered Wildlife Cincinnati Zoo & Botanical Garden, **Jessica L. Rupp**, Kansas State University, **Carol M. Stiff**, Kitchen Culture Kits, Inc., and **Margaret M. Young**, Elizabeth City State University. The Student Committee Co-Chairs for the 2019 meeting were **Adrianne Brown**, PB Student Co-Chair, Tuskegee University and **Sepideh Mohammadhosseinpour**, IVACS Student Co-Chair, University of Arkansas. The 2020 program student Co-chairs elected during the 2019 meeting are: **Bretton Hale**, PB Student Co-Chair, Arkansas State University, and **Cristofer Calvo**, IVACS Student Co-Chair, Cincinnati Children's Hospital Medical Center.

The Educational Program for the 2019 Meeting in Tampa, Florida began with a workshop on **Advanced Flow Cytometry Applications and Data Analysis**. This program focused on various advanced areas in flow cytometry and fluidics for targeting and gene editing with specific biological applications. Experts presented discussions on these advanced areas including characterization of nano conjugates using flow cytometry. During the workshop, a panel helped with tips on interpretation of results on flow data with the world expert who invented high-speed flow cytometry, **Professor James Leary**. Following the workshop, experts answered questions on the capabilities of the technology.

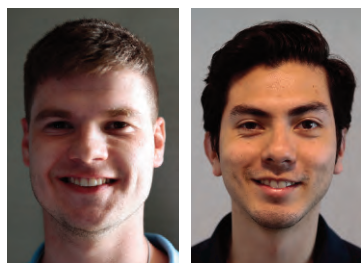
There was also a solid program focusing on student growth. In addition to the Oral Presentation and Poster competitions being offered by the sections, the student Co-Chairs, **Adrianne Brown** and **Sepideh Mohammadhosseinpour** developed three sessions for the 2019 event.

- **A Hands-on RNA-seq Workshop Using the CyVerse Computational** workshop was held on Sunday, June 9. During this workshop, **William Bradley Barbazuk** from the University of Florida introduced researchers to the principles behind RNA-Seq analysis and provided a hands-on introduction to software and analysis pipelines for RNA-Seq. The workshop aimed at teaching the computational process that takes the raw data all the way through the high-level analysis.

- Another outstanding session that was well attended by the students was the **Student Networking Luncheon** on Monday, June 10, which offered students with a chance to interact with professors and experts from various fields to discuss topics such as: Life after Graduate School (both academia and industry tracks), Coping Mechanisms, Publish or Perish, Dealing with Loss, Graduate Life and Family Balance, Finding Resources, How to Build a Better Relationship with Your Advisor, and Developing Your Own Lane. Professionals shared their academic experiences and discussed stressful experiences and how they have coped while pursuing their graduate degrees. This session was moderated by **Adrianne Brown** and **Sepideh Mohammadhosseinpour** and included table moderators: **Ian Curtis, David Lawson, Vivian Dayeh, Fredy Altpeter, Wagner A. Vendrame, Joyce Van Eck, John Finer, Zhifen Zhang, Ahmad Omar, Kolla Kristjansdottir, Jessica Rupp, Brad Upham, Wayne Parrot, Sylvia Mitchell, Michael Kane, David Holt,** and **Jeffrey Adelberg.**
- The **Non-competitive Oral Presentation Session** presented on Monday afternoon, June 10 helped students looking to gain experience in presenting scientific information, as well as for those who are developing effective scientific presentation skills. Three students took advantage presenting their work as part of this session and received feedback from all session attendees.

The Student Affairs Breakfast was held on Tuesday morning and included discussion on the 2020 Program and the election of the 2020 Student Co-Chairs. The 2019 SIVB meeting also included a poster presentation competition with prizes awarded during the Tuesday SIVB Business Meeting. As with all other forms of research presentation, students were judged on the overall quality of their presentation and work.

The Education and Student Committee Chairs would like to thank those who helped to plan and execute the successful student and education programs at the 2019 In Vitro Biology Meeting, especially Student Co-Chairs, **Adrianne Brown** and **Sepideh Mohammadhosseinpour.**



*Bretton Hale and Cristofer Calvo,
Student Committee Co-Chairs*

The Educational Program for the 2020 World Congress has shifted due to the changes of creating a virtual meeting and the limitations caused by a pre-recorded format. The initially scheduled workshop on *Grow with the Flow: Creative Change on Advanced Flow Cytometry* has been postponed until 2021 as the session required hand-on participation with the participants. SIVB will be holding the Oral Presentation Competitions for both Students and Post Docs. Student Co-chairs **Bretton Hale**, Arkansas State University, and **Cristofer Calvo**, Cincinnati Children's Hospital Medical Center, had been organizing a number of sessions which had to be shifted to accommodate this new medium. As of the writing of this report, the new sessions being organized for the 2020 virtual program include a virtual roundtable session where senior SIVB members will provide

short presentations on topics of interest to the student participants to which the students can pose questions for discussion; and a virtual workshop presented by 10X Genomics.

Prepared by the Business Office on behalf of
ALBERT KAUSCH, *Education Committee Chair*
BRETTON HALE, *Student Committee Co-Chair*
CRISTOFER CALVO, *Student Committee Co-Chair*

LONG-RANGE PLANNING

The Long Range Planning Committee is a standing committee of the SIVB charged with developing strategic ideas for the long term sustainability of the society. To find long term sustainability, we must continue to emphasize the value of the SIVB not only to its members, but to society as a whole.

During this time of science skepticism and “alternative facts”, the SIVB needs to be a place where scientific knowledge and rigor is celebrated and communicated. Our members do just that through our journals, meetings, societal engagement and political engagement. All members need to be involved in these activities. This year our journals have continued to be successful due to high quality submissions from members and rigorous review by members. Our members have contributed to important policy discussions and submitted a science-based response to proposed changes in government regulation. We are present on social forums where we help to bring science to society. I challenge all members to continue with these efforts!

We have continued to support students with free registration, and we have challenged them to submit an abstract for consideration to participate in this benefit. For many, this will be a beginning of a long association with the Society as they meet and connect with members as fellow students and future colleagues. We must do better, though, to maintain engagement. Our students often attend as post-docs but then many fall out of the ranks of regular society members. As members—and many of us for several years!—we need to communicate with new members the benefits of membership. How has the SIVB touched your life? Have you developed a long-term mentor/mentee or collaborative relationship? How has membership and active participation in meetings and committees contributed



Michael Dame, Chair, addresses the 2020 World Congress Program Planning Committee as they prepared a stellar scientific program for the June 2020 event.



Networking and continually growing friendships are part of what make the SIVB meetings so successful.

to your career? I ask all members to consider writing an article for *In Vitro Report* pointing to these facts. I further encourage all members to reach out to students and post-docs to establish long term, collaborative relationships. Get involved! Volunteer to organize a session. Volunteer to be on a committee. Volunteer to have your name put forth on the ballot. I never would have thought that I would become Society President when I first volunteered to co-convene a session! You can be —and should be—next!

Last, but not least, long term planning requires a long-term view on society finances. While this is a difficult aspect for early career members, membership needs to be maintained. The Society depends on our members as a bedrock for our finances. We have multiple methods to support the society and its members like through student buddies – also important for the previous point! I would like to further emphasize that you can now support the SIVB just by shopping! We are on Amazon Smile where you can support us every time you buy just by picking SIVB (<https://smile.amazon.com/ch/56-0844407>). Check out the previous issue of *In Vitro Report* for more details. I also want to commend those who have chosen SIVB as the benefactor of tax-free donations from their 401K accounts. This will be further detailed in an article in the next *In Vitro Report*. It is also never too early to contemplate adding SIVB in estate planning. Year on year, the Development Committee keeps the meeting moving forward—so be sure to check out their report. We need all of you to do all you can to make sure SIVB continues on a sound financial footing.

Ultimately, be active! We need you now more than ever! Our members are our talent and our existence!

ALLAN WENCK

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.

Cell Line Authentication remains a critical in vitro industry issue. In addition to cell line authentication, all reagents used for molecular biology protocols must be standardized. Recently plasmids from commercial suppliers were found to be cross-contaminated. This suggests that the absolute purity of commercially prepared plasmids cannot be guaranteed and “extreme caution should be exercised, especially when such plasmids are used for human gene therapies and DNA vaccines”. (Jun S, Tian Y, Du Y, Wang Z, Zhao G, Ma Y, Zheng M [2020] A cautionary tale of cross-contamination among plasmids from commercial suppliers. *BioTechniques* 68(1): 14-21.)

Although commercial cell banks have set “suggested” guidelines, academic research institutions have little concern or interest requiring the training of students, or post doctoral fellows in “best practices.” In an effort to improve the medical and pharmaceutical industry using human cell lines, NIH has responded with guidelines and requirements for submitting cell-based grant applications. These requirements can be found at the links:

- <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-17-068.html>
- <https://grants.nih.gov/reproducibility/faqs.htm#V>
- <https://nexus.od.nih.gov/all/2016/01/29/authentication-of-key-biological-and-or-chemical-resources-in-nih-grant-applications/>
- <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-15-103.html>

NIH has initiated the setting of biological and chemical requirements, but they only respond to pressure from the scientific community, including societies and journals that take a firm stance on Cell Line Authentication Standards.

SANDRA L. SCHNEIDER

*Laboratory Materials and Biosafety
Committee Co-chair*
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MEMBERSHIP

After a dip in membership 2018 the SIVB is happy to state that there was a slight increase in membership by the end of 2019. The Society gained 70 new members in 2019, many of which joined at or around the annual meeting most likely due to the combination membership and annual meeting registration discount. At the end of 2019, our total membership was 465 members, which included: 83 Emeritus Members, 3 Honorary Members, 6 Life Members, 285 Regular Members, 76 Student Members and 12 Post-Doctoral Members. The largest increase is in regular, student, and post-doctoral membership. The SIVB hopes for this continued membership trajectory in the 2020s.

The continued success of the SIVB is due to its membership and we are pleased to note that the efforts of the Business Office and Membership Committee have made an impact. If you know someone who may benefit from SIVB membership, please take the time to refer them through the Member-get-a-Member program (please complete the referral form at <https://sivb.org/membership/membership-referrals.html>). The current member is entered into a drawing for a gift card and the new member gets \$10 off their membership dues if they join. It's win-win for everyone! Please consider connecting with a colleague and refer them to the SIVB.

The SIVB also holds a drawing during the annual meeting for members who renew their membership before December 31st of the prior year. The winners of the 2019 competition were **Prakash Kumar**, who received free registration to the 2020 World Congress, and **Robert Harriman**, who received free membership for 2020. If you renew for 2021 by December 31, 2020, you could win 2022 membership or 2022 annual meeting registration. It's great to renew before the end of the year, and we hope that you consider this incentive!

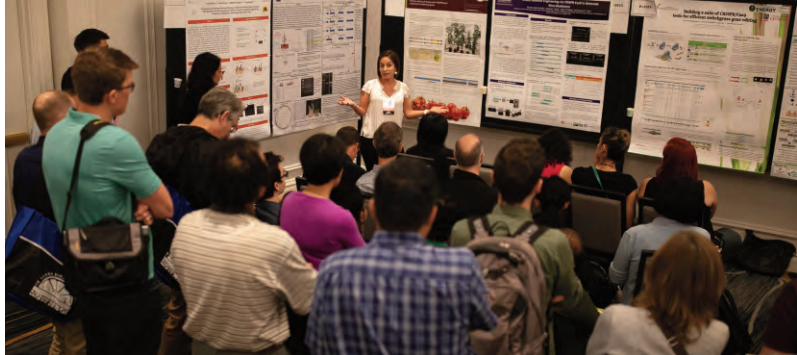
In 2020, the SIVB will offer members a multi-year renewal, which we hope will have substantial uptake. The 2020 Local Organizing Committee has worked hard to encourage new engagement from the local scientific community into the society. We hope that these efforts will increase future membership in the society. We would love to hear from you if you have any membership initiative ideas (sivb@sivb.org).

VIVIAN DAYEH

Membership Committee Chair
vrdayeh@uwaterloo.ca



Young Scientists are an essential part of our future and SIVB is pleased to encourage the networking and growth of our student and Post Doc members.



The Interactive Poster Sessions have become quite the hit at the SIVB Meetings where authors orally present their work to an audience followed by a Q&A session.

NOMINATING

The 2019 Nominating Committee comprised of **Dwight Tomes**, **John Harbell**, **Randy Niedz** and **Kolla Kristjansdottir** worked to finalize the slate of candidates for the offices that were up for re-election. In the fall of 2019, new officers were chosen from the slate during the 2020–2022 election. These newly elected officers and Committee Chairs will assume their offices in June during the 2020 World Congress Virtual Pre-recorded Meeting.

The election results are as follows:

SIVB OFFICERS AND COMMITTEE CHAIRS:

President Elect: **Addy Alt-Holland**
Vice President: **Pierluigi Barone**
Secretary: **Sukhpreet Sandhu**
Treasurer: **Barbara B. Doonan**
Member-at-Large: **Todd Jones**
Member-at-Large: **Cynthia Goodman**
Publications Chair: **Michael J. Fay**
Public Policy Chair: **Wayne A. Parrott**
Awards Chair: **Maria Jenderek**
Constitutions and Bylaws Chair: **Michael Kane**
Education Chair: **Brad Upham**

IN VITRO ANIMAL CELL SCIENCES SECTION OFFICERS:

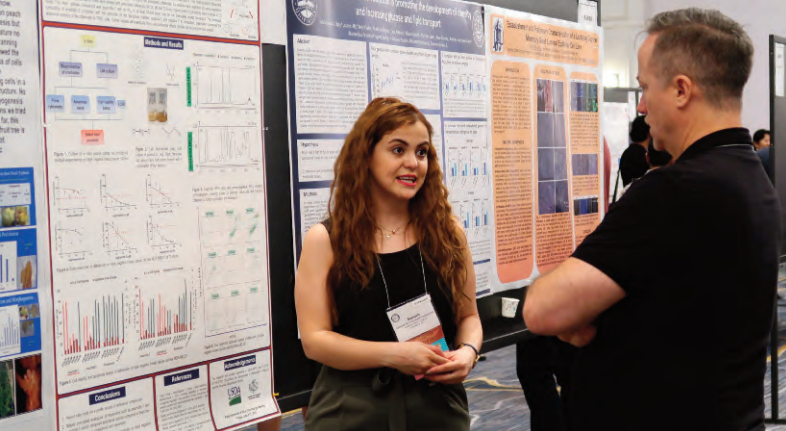
Chair: **Mae Ciancio**
Vice Chair – Meeting: **Kristina Martinez-Guryn**
Vice Chair – Membership: **Vivian Dayeh**
Secretary: **Matthew Desrosiers**

PLANT BIOTECHNOLOGY SECTION OFFICERS:

Chair: **Sadanand Dhekney**
Vice Chair: **Ian S. Curtis**
Secretary: **Veena Veena**

The continued success of our society rests upon the officers and their willingness to serve in a variety of leadership positions. If you wish to become more involved with the Society in an official capacity or if you know others who would be potentially interested in serving please contact any one of the members of the Nominating Committee. In addition, there are available positions on each committee that might benefit from your service within the Society. Active participation is a one of the best ways to continue your personal professional development that also ensures the active role of SIVB in promoting the in vitro sciences.

DWIGHT TOMES, Nominating Committee Chair
d.tomes@icloud.com



Student Co-Chair Sepideh Mohammadhosseinpour, also helped organize the Student's Poster Competition in 2019. Here she is presenting her own research.

PROGRAM



Fredy Altpeter, Chair
Program Committee

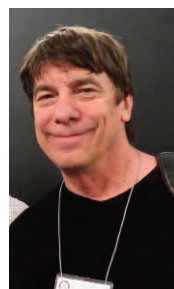
Attendees joined SIVB for the 2019 In Vitro Biology Meeting from June 8 – 12, 2019 at the Tampa Marriott Waterside, Florida. Highlights from Tampa included the Keynote presentation on “Synthetic Biology for Engineering Plant Genetic Circuits: from Predictable Electronic-like Functions to Innovative Desalination” from **June Medford**, a world leader in plant synthetic biology from Colorado State University as well as plenary sessions on *Delivery of Genome Editing Reagents; Maximizing Gene Editing Target Specificity; Frontiers of In Vitro and Synthetic Biology and The Importance of the Microbiome for Animal and Plant Health*.

The Plant Biotechnology Program included symposia and workshops that addressed *Genome Editing for Crop Improvement; Genome Editing Technology Development: CAS9 and Beyond; Protoplast Technology for Genome Editing; Metabolic Engineering for Value Added Plant Products and Biofuels; Controlled Environments for Plant Tissue Culture; Biotechnology and Its Importance for the Citrus Industry; Recalcitrance in Micropropagation, Regeneration and Transformation Regulation of Morphogenesis; Engineering Stress Tolerance in Crop Plants; Micropropagation Best Practices Symposium and Panel Discussion; In Vitro Ecophysiology; and Cannabis Genomics and Biotechnology*.

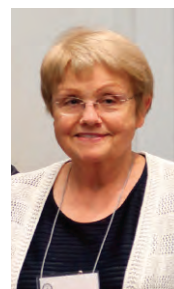
The In Vitro Animal Cell Sciences Program offered sessions on *Stem Cell Differentiation in Human Models; 3D Toxicology: Emerging Technologies Directed Towards the Prediction of Human Responses; Importance of Signaling Molecules in Establishing Cell Cultures; Cellular Agriculture and the Use of Cell Lines for Meat Production; 3D Cell Cultures in Cancer Research: Modeling In Vivo Tumors; and Data Analysis Techniques for Microbiome Research*. A joint symposium on *Biological Sensors: Organoids to Organisms for Answering Medicinal, Agricultural and Environmental Questions* was also included in the program. Both sections also held contributed paper, interactive poster and poster sessions from the abstracts submitted by participants.

There were also plenty of opportunities for student and post doc professional development through oral presentation competitions, a non-competitive oral presentation session, a *Hands-on RNA-seq Workshop Using the Cyverse Computational Infrastructure Data Analysis*, and the *Student Networking Luncheon: Employer Engagement*. There was also a workshop open to all attendees on

DISTINGUISHED SERVICE AWARD



Albert Kausch



Maria Jenderek



Pamela Weathers

(Not pictured, Barbara B. Doonan)

Saturday on *Flow Cytometry: Cell Characterization, Sorting, and Data Analysis Techniques*.

SIVB was pleased to honor both **Tetsuji Okamoto** and **Barbara M. Reed** with the Lifetime Achievement Award to recognize their significant scientific careers and service to the scientific community. Also presented were the Distinguished Service Awards to **Barbara Doonan**, **Albert Kausch**, **Maria Jenderek**, and **Pamela Weathers**, who were selected by the SIVB President for their exemplary support of the SIVB programs and endeavors. The Plant Biotechnology Section presented **Jeffrey Adelberg** and **C. Neal Stewart, Jr.** with the SIVB Fellow Award that recognizes members who made outstanding contributions to in vitro science research, teaching or administration. Additionally, **Harold Trick** was presented with the Distinguished Scientist Award and **Raj Deepika Chauhan** with the Young Scientist Award, both awards that recognize outstanding professionals either in mid-career or early career who have made significant contributions to the field of in vitro biology.

A group of the meeting participants enjoyed the Tuesday night event at the Florida Aquarium where they toured the aquarium after hours and enjoyed a dinner with scenic views. The two scientific tours “Conservation in the Sunshine State” and “Gulf Coast Research and Education Center” were well attended.

Other special events enjoyed by the meeting attendees included the Welcome and Opening Receptions; Joint Section’s Social; the new Saturday night Student Pizza Party/Reception; Big Guava Silent Auction; Exhibits and Panel discussion on Future Directions in Development and Applications of Cell Lines.

The 2019 In Vitro Biology Meeting this past June was a great success as you could tell by all the smiling faces. The number of paid registrations went up from last year and remains higher than the total paid registration during the last 4 years, including the 2016 World Congress. On behalf of SIVB, I would like to thank the Program, Membership and Local Organizing Committees for their dedicated effort in reaching out to many new scientists in our field from both the local area and abroad and attended an SIVB conference for the first time.

FREDY ALTPETER

2019 Program Chair

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PUBLICATIONS



Michael Fay, Chair
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 from around the world. The Publications Committee recognizes the hard work and dedication of **David Duncan** (Past Editor-In-Chief, *In Vitro Cellular & Developmental Biology – Plant*), **David Songstad** (Editor-In-Chief, *In Vitro Cellular & Developmental Biology – Plant*), and **Tetsuji Okamoto** (*In Vitro Cellular & Developmental Biology – Animal*). The impact factor for *In Vitro Cellular & Developmental Biology – Plant* increased from 1.057 in 2017 to 1.454 in 2018; and the impact factor for *In Vitro Cellular & Developmental Biology – Animal* increased from 1.447 in 2017 to 1.645 in 2018. At the 2019 June Board Meeting we learned that **David Duncan** was stepping down as Editor-In-Chief of *In Vitro Cellular & Developmental Biology – Plant*. The Publications Committee and the SIVB Board of Directors extend their sincere gratitude to **David Duncan** for his dedicated service as Editor-In-Chief for over four years. At the June 2019 SIVB Board Meeting, an *Ad Hoc* Editor-In-Chief Search Committee (**John Finer**, **Dwight Tomes**, **Michael Fay**, and **Harold Trick**) was established and they recommended **David Songstad** as the final candidate for Editor-In-Chief. After receiving Publications Committee approval, the Executive Committee interviewed and unanimously approved **David Songstad** for the Editor-In-Chief position. **David Songstad** accepted the position and his contract started in September of 2019. We welcome him as the new Editor-In-Chief of *In Vitro Cellular & Developmental Biology – Plant*. **Tetsuji Okamoto** renewed his contract as Editor-In-Chief of *In Vitro Cellular & Developmental Biology – Animal* through 2022. Please read the individual journal reports submitted by **David Songstad** and **Tetsuji Okamoto** for more detailed information concerning *In Vitro Cellular & Developmental Biology – Plant* and *In Vitro Cellular & Developmental Biology – Animal*. Also, please support our society journals by submitting a manuscript and serving as a manuscript reviewer.

We are working with a new web designer for the *In Vitro Report*. The goal of working with this new web designer is for the *In Vitro Report* to have a more modern style with improved graphics. Another goal of working with the new web designer is to increase the Search Engine Optimization (SEO) for the *In Vitro Report*. The archived content for the *In Vitro Report* has been made available on our new website. Springer continues to publish our society journals, and in June of 2020 we will be receiving and reviewing a new contract from Springer. We also learned from Springer that **Janet Slobodien** will no longer be serving as the Senior Editor for the SIVB journals, and that our new Senior Editor is **Beatrice Menz**.

The Publications Committee and the SIVB Board of Directors approved a journal usage survey that was sent to the SIVB membership to assess how the membership accesses our journals. The SIVB Board is using the results of this survey in their strategic planning.



Student Co-Chair, Adrienne Brown (Left) takes a moment to connect with her colleagues from Tuskegee University in front of her poster presentation during the SIVB Opening Reception.

The social media presence of the SIVB on Facebook, Twitter, and LinkedIn continues to grow. Please support the SIVB by sharing, liking, and commenting on our social media posts.

As Chair of the Publications Committee, I want to thank **Marietta Wheaton Saunders** (SIVB Managing Director) and **Michele Schultz** (SIVB Publications Manager) and the following members of the Publications Committee for their hard work and dedication: **Barbara Doonan**, **David Duncan**, **David Songstad**, **John Finer**, **Cynthia Goodman**, **John Harbell**, **Maria Jenderek**, **Jiarui Li**, **Sylvia Mitchell**, **Tetsuji Okamoto**, **Gregory Phillips**, **Barbara Reed**, **J. Denry Sato**, **Dwight Tomes**, and **Michele Schultz**. Remember to talk to your colleagues, students, and postdocs about the SIVB and encourage them to submit their manuscripts to our journals.

In Vitro – Animal

(For the year 3/1/19 through 2/29/20)

The journal experienced a significant increase (47.4%) in total submissions of new manuscripts over the comparable period last year (460 compared to 312 in 2018–2019). The numbers of submitted manuscripts for the past year compared to the prior year were: 433 regular papers (296 in 2018–2019), 18 Reports (8 in 2018–2019), 8 Reviews (6 in 2018–2019), and 1 opinion Letters-to-the-Editor (2 in 2018–2019). Of the 460 submissions, 62 were accepted (13.4% acceptance rate), 209 (45.4%) rejected, 15 (5.5%) withdrawn, 68 (15%) were still in review or revision and 95 transferred to other Springer Publications (20.7%).

Twenty-nine countries were represented in the submissions received in 2019/2020. Eighty-eight percent (88.3%) of submissions were from China (276), Iran (65), India (25), Korea (11), Japan (10), Turkey (10), and USA (9). Average time from receipt to first decision in the review process was 3.2 weeks compared to 3.4 weeks overall last year. All new submissions were received through the online system.

The *In Vitro–Animal* journal publishes 10 individual issues at or around page budget levels and continues to publish on schedule. The 2018 impact factor for IVA was 1.645, which is a significant increase from the 2017 impact factor of 1.447, and the 5-year impact of 1.532, which is up from last year's 1.360. More than 98% of the submissions came from outside the US so there is a 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 the areas of biotechnology, cell and tissue models, cell growth/differentiation/



SIVB is grateful to the exhibitors who participate in our events and support our researchers work through their innovations.

apoptosis, cellular pathology/virology, cytokines/growth factors/adhesion factors, establishment of cell lines, product applications, signal transduction, stem cells, and toxicology/chemical carcinogenesis. Submissions to the respective categories in the last year were: biotechnology (95), cell and tissue models (139), cell growth/differentiation/apoptosis (186), cellular pathology/virology (53), cytokines/growth factors/adhesion factors (52), establishment of cell lines (54), product applications (20), signal transduction (59), stem cells (95), and toxicology/chemical carcinogenesis (31). In the past year several submissions included irregularities (eg. duplication, manipulation or misrepresentation of data) that were discovered by editors, reviewers or readers. IVA will take 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

David Songstad became the new Editor-in-Chief (EIC) of *In Vitro – Plant* as of September 2019 taking over for **David Duncan** who served as EIC for the past four years. I want to thank David Duncan for his mentoring and friendship during this transition. I also want to thank several past EICs, specifically **Dwight Tomes**, **John Finer**, and **Greg Phillips**, SIVB Publications Chair **Michael Fay** and SIVB Managing Director **Marietta Saunders** for their encouragement and support.

The impact factor for *In Vitro – Plant* increased from 1.057 in 2017 to 1.454 in 2018. The increase in impact factor is likely due to the improved quality of manuscripts accepted for publication in *In Vitro – Plant*. In the past, the journal has also received a “positive bump” in the impact factor by publication of Special Issue Invited Reviews. In late 2019, initial discussions occurred about reviving a Special Issue on Genome Editing and this will be an ongoing effort in 2020 with a goal of publishing this Special Issue in 2021; hopefully with a subsequent “positive bump” in the impact factor, too. However, genome editing is not an exclusive topic for invited reviews. We encourage all Society members to submit a review concerning the subject of your current research or that introductory thesis chapter.

A total of 498 manuscripts were submitted to *In Vitro – Plant* in 2019, which is an increase of 74 manuscript compared to 2018 and also exceeded the manuscript number from 2017 by 39 submissions. This is good news, although it is still important to realize that meeting the page count required to publish each issue of *In Vitro – Plant* will continue to be an important challenge. Of those 498 manuscripts, 324 were rejected (slightly over a 65% rejection rate)

leaving nearly 35% acceptable for publication. Of the rejected manuscripts, about 25% were rejected for plagiarism, a continuing problem for the journal. Approximately 38% were rejected for technical flaws and another 27% rejected based on novelty, which when combined accounts for nearly 2/3 of all rejections. About 5% of the rejections were based on “Out of Scope” and 1.5% were due to submitting to the wrong journal and were redirected to *In Vitro – Animal*. This leaves 3.5% of the rejections due to a variety of “other” reasons including poor writing, improperly submitted, refused to submit revised version, etc.

In 2019 the top 10 countries were India, China, Brazil, Iran, Mexico, Turkey, Pakistan, USA, South Korea, and Egypt. One of the biggest problems to having a robust journal is the lack of researchers willing to review manuscripts. 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 ensure 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, free color photograph printing, both online and in the hard copy of the journal, and timely publishing in a respected international journal.

In Vitro Report

The *In Vitro Report* (IVR) is the quarterly online newsletter for the membership of the Society for In Vitro Biology (SIVB). The Co-Editors are **Michael J. Fay** and **Sylvia Mitchell**, who work together to represent the In Vitro Animal Cell Sciences (IVACS) and Plant Biotechnology (PB) Sections of the SIVB. The Co-Editors work with **Michele Schultz** (SIVB Publications Manager) to gather content, edit, and publish the IVR. The Co-Editors also received guidance and support from **Marietta Wheaton Saunders** (SIVB Managing Director), **Tetsuji Okamoto** (Editor-In-Chief, *In Vitro Cellular & Developmental Biology – Animal*), **David Duncan** (Past Editor-In-Chief, *In Vitro Cellular & Developmental Biology – Plant*), **David Songstad** (Editor-In-Chief, *In Vitro Cellular & Developmental Biology – Plant*), and the SIVB Publications Committee (**Barbara Doonan**, **David Duncan**, **David Songstad**, **John Finer**, **Cynthia Goodman**, **John Harbell**, **Maria Jenderek**, **Jiarui Li**, **Sylvia Mitchell**, **Tetsuji Okamoto**, **Gregory Phillips**, **Barbara Reed**, **J. Denry Sato**,



SIVB Photographer and Past President, Dwight Tomes, takes time to converse with student and Post doc attendees.

Dwight Tomes, and **Michele Schultz**). Routine articles in the IVR include: The President's Report, Journal Highlights, SIVB Meeting Updates, Feature Articles on SIVB Award Recipients, and Membership News. This past year we also published several articles highlighting Public Policy Issues, and the Election Results for the IVACS and PB Sections and the SIVB Board. We encourage all SIVB Members to share their news and accomplishments through the IVR, and don't forget to read the most recent issue of the IVR by clicking on the icon located in the upper right corner of the website homepage for SIVB (<https://sivb.org/>). If you have suggestions for improving the IVR, please contact the Co-Editors (mfayxx@midwestern.edu, sylviamitchell.biotech@gmail.com) or the Publications Manager (michele@sivb.org).

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MICHELE G. SCHULTZ

Publications Manager
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PUBLIC POLICY

The Public Policy Committee is a standing committee of the Society for In Vitro Biology (SIVB). Membership is open to all SIVB members interested in biotech policy, though government regulators only serve on an ex officio basis. The year 2020 should be an important year for policy formulation, so we always welcome interested members!

The Committee assists Society members and the scientific community-at large to better understand in vitro biology, biotechnology and the current research and public policy issues affecting the scientific community. The Committee supports the SIVB to interact with members of Congress and other governmental officials for the purpose of giving scientific advice on funding priorities and other issues relevant to in vitro biology and biotechnology.

As this report is being written, we are awaiting three documents that will profoundly affect plant biotechnology for a generation of scientists. First, the FDA is revising its guidance to industry. Next are the updated USDA regulations on genetic engineering, for which the SIVB Public Policy Committee provided substantial input. The third is the proposed EPA regulations on plants edited for disease resistance, and for which the committee is prepared to provide input.

In the meantime, the fate of genome editing regulations remain unclear. On the American side of the Atlantic, USDA Secretary



Plant Biotechnology Members Ian Curtis and Yurong Chen catch up during the Joint Sections Social on Tuesday night.

Perdue exempted various types of editing from regulatory oversight, with the caveat that these do not yet have the force of regulations, and thus are not permanent. Various South American countries have likewise exempted edited plants from regulatory oversight, but only after government agencies have verified that they are edited and not transgenic.

Editing has not fared well in the other side of the Atlantic, where the European Union Court of Justice ruled that edited plants are GMO, and hence need to undergo through a prohibitive safety assessment process. More recently, the French Council of State declared conventional mutagenesis to be GMO if the mutagenesis was conducted in vitro.

It is against this backdrop that several activities have taken place in Washington, DC. The Public Policy Committee Chair participated in these, though in the interest of time, represented himself rather than any single group:

FEBRUARY 18: Participated in a workshop to familiarize regulators with plant breeding. Plant breeding is supposed to be the base line against which to assess changes imparted by biotechnology, but most regulators are sufficiently familiar with it to make it a baseline.

MARCH 2: Provided input to the Coalition for Responsible Gene Editing in Agriculture (<https://www.foodintegrity.org/programs/gene-editing-agriculture/>) during a conference call. The coalition has drafted voluntary guidelines to ensure public opinion remains favorable to gene editing. While most of the guidelines are excellent and laudable, there is concern in that some of the guidelines a) would be overwhelming for university labs and small business, b) they intimate biotechnologists do not always follow safety procedures or abide by regulations, c) they set editing aside as something new and different, and d) treat off target effects like a credible hazard.

MARCH 12: U.S. Senate Committee on Agriculture, Nutrition, and Forestry held a hearing titled, "Agriculture Innovation and the Federal Biotechnology Regulatory Framework." Wayne Parrott was among the witnesses invited to testify before the committee. The FDA treatment of edited animals and the EPA treatment of edited plants were highlighted by the witnesses as being particularly problematic.

For now, public, NGO, government, and media attention on biotechnology has been overshadowed by the pandemic. Nevertheless, we will remain vigilant for any issues that require our attention. In addition, the initiative for the development of an SIVB position statement on genome editing and gene drive in animals (e.g., transgenic insects) is continuing under the leadership of John Harbell.

WAYNE PARROTT
Public Policy Chair
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REPRESENTATIVES OF THE SIVB

INTERNATIONAL ASSOCIATION FOR PLANT BIOTECHNOLOGY (IAPB)

I would like to take this opportunity to thank all of our members for supporting IAPB in 2019. Founded in 1963, the International Association for Plant Biotechnology is the largest international professional organization representing the interests of the worldwide plant biotechnology community and has been hosting successful symposia around the world since the early '60s. Following the successful 2018 conference, IAPB is pleased to announce that the 15th IAPB Congress will take place in South Korea (<http://iapb2018.com/>). Final location details will be announced soon). Preparations have already begun for the 2022 Congress. Prof. **Jang Liu** is our new president, and he will continue in that role until 2022. His colleague, Prof. **Donghern Kim** is the new treasurer. IAPB members span over 89 countries, ranging from industrial to early career scientists. 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. In addition, 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 the USA and beyond. I encourage all plant scientists to join the IAPB. The two societies IAPB and SIVB also work closely together, and members can renew their IAPB membership through SIVB. Interested? Please contact me, and I will send you an application.

SIVA VELIVELLI

US Correspondent, IAPB
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COUNCIL FOR AGRICULTURAL SCIENCE AND TECHNOLOGY (CAST)

I became aware of the Council for Agricultural Science and Technology (CAST) somewhat by accident—by pursuing my photography hobby for the past several years at the presentation of “The Borlaug CAST Communication Award”. This award is presented annually in Des Moines, IA for outstanding achievement by a technical professional contributing to the advancement of science in one or more of the technical areas in agricultural technology. The Awardee gives a presentation about their work during the Borlaug Dialogue each year. I also discovered many of my professional friends were in the audience at this annual ‘breakfast’ celebration. During the festivities and the address by the awardee I’ve enjoyed visiting with the speaker and officers of CAST while trying my best to capture the essence of the celebration with “Bertha”, my trusted camera.

SIVB is a member of the Board of Representatives of CAST. CAST communicates science-based information to policy makers, media and the general public. Communication to non-scientists is a critical component of providing fact-based information that is

non-partisan, understandable and interesting. The Board of Representatives is broadly represented among scientific and professional societies in food, agricultural technology, animal, plant and soil sciences. The primary work product consists of reports, publications and issue papers written by experts and scientists. SIVB participates primarily in the food science work group but also interacts with the plant and animal groups. As a new ‘official’ member I’ve been pursuing possible areas for new publications. Since CAST has broad interests, additional projects of interest from SIVB members would be most welcome.

We must remember that the future of both our society and that of fact-based communication depends on reaching out to those individuals who may be educated and well informed, but are not aware of the peer review and facts which are a part of our scientific core! The 2019 CAST annual meeting was both interesting and entertaining and a wonderful opportunity to share common interests among techies from a number of other scientific societies.

I would appreciate any ideas you may have for a CAST publication in any of the major groups mentioned above and I will see that these topics are discussed in our upcoming work group meetings.

Thank you for your support of CAST.

DWIGHT TOMES

CAST Representative
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STAY INFORMED & STAY CONNECTED

In this virtual world, there are so many ways to keep in touch with the SIVB and your fellow members. We welcome your active participation in the organization and encourage you to join us through one or more of these outlets.



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Society for In Vitro Biology

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TREASURER'S SUMMARY REPORT
SOCIETY FOR IN VITRO BIOLOGY
STATEMENT OF FINANCIAL POSITION
DECEMBER 31, 2019 AND 2018

ASSETS

| | <u>31-Dec-19</u> | <u>31-Dec-18</u> |
|----------------------|-------------------|-------------------|
| Current Assets: | | |
| Cash | \$ 375,244 | \$ 354,531 |
| Accounts Receivable | 21,287 | 21,427 |
| Prepaid Expense | <u>45,268</u> | <u>57,007</u> |
| Total Current Assets | <u>441,799</u> | <u>432,965</u> |
| Other Assets: | | |
| Investments | <u>250,873</u> | <u>192,191</u> |
| Total Other Assets | <u>250,873</u> | <u>192,191</u> |
| Total Assets | <u>\$ 692,672</u> | <u>\$ 625,156</u> |

LIABILITIES AND NET ASSETS

| | | |
|--------------------------------|-------------------|-------------------|
| Current Liabilities: | | |
| Accounts Payable | \$ 10,830 | \$ 585 |
| Other Accrued Expenses | | |
| Deferred Income | <u>34,504</u> | <u>28,801</u> |
| Total Current Liabilities | <u>45,334</u> | <u>29,386</u> |
| Net Assets: | | |
| Unrestricted | 304,923 | 304,921 |
| Temporarily Restricted | <u>342,414</u> | <u>290,849</u> |
| Total Net Assets | <u>647,337</u> | <u>595,770</u> |
| Total Liabilities & Net Assets | <u>\$ 692,672</u> | <u>\$ 625,156</u> |

See independent accountant's compilation report

SOCIETY FOR IN VITRO BIOLOGY
STATEMENT OF ACTIVITIES
FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2019 AND 2018

| | | | | Dec. 31, 2018 |
|--|---------------------|-----------------------------------|-------------------|-------------------|
| Revenue: | <u>Unrestricted</u> | <u>Temporarily Restricted</u> | <u>Total</u> | <u>Total</u> |
| In Vitro-Animal | \$ 120,812 | \$ | \$ 120,812 | \$ 84,199 |
| In Vitro-Plant | 65,282 | | 65,282 | 39,481 |
| Newsletter | 4,399 | | 4,399 | 5,129 |
| Meetings | 170,370 | 40,240 | 210,610 | 246,123 |
| Horn Endowment Fund contributions administrative | 24,756 | | 24,756 | 110 |
| | | | | 27,675 |
| Total Revenue | <u>385,619</u> | <u>40,240</u> | <u>425,859</u> | <u>402,717</u> |
| Program services: | | | | |
| In Vitro-Animal | 3,488 | | 3,488 | 4,777 |
| In Vitro-Plant | 8,404 | | 8,404 | 10,486 |
| Annual meeting | 168,363 | | 168,363 | 129,113 |
| Total program | <u>180,255</u> | <u>-</u> | <u>180,255</u> | <u>144,376</u> |
| Supporting services: | | | | |
| Administrative | 203,686 | | 203,686 | 245,964 |
| Total expenses | <u>383,941</u> | <u>-</u> | <u>383,941</u> | <u>390,340</u> |
| Change in net assets before unrealized gain/(loss) on investments | 1,678 | | 41,918 | 12,377 |
| Unrealized gain/(loss) in fair value of investments | <u>9,649</u> | <u>-</u> | <u>9,649</u> | <u>(11,276)</u> |
| Change in Net Assets | 11,327 | 40,240 | 51,567 | 1,101 |
| Net assets, beginning of year | <u>304,921</u> | <u>290,849</u> | <u>595,770</u> | <u>594,669</u> |
| Net assets, end of period | <u>\$ 316,248</u> | <u>\$ 331,089</u> | <u>\$ 647,337</u> | <u>\$ 595,770</u> |

See independent accountant's compilation report