THE
AUSTRALASIAN
SOCIETY FOR
BIOMATERIALS &
TISSUE
ENGINEERING



# ASBTE NEWS

DECEMBER 2019

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### From the President,

Hello All and Greetings from the Presidency.

As this year wraps up, I wish you all a very happy holiday season and a most enjoyable break.

I am sure like me, many of you have had a year of ups and downs. Let's forget about the downs. Congrats on the ups! Congratulations to all our members that have published papers, graduated with their PhD (or other degree), gotten grants, started new jobs or received awards. These are all fantastic accomplishments and should be celebrated!! Well done you – focus on the positive.

Looking back on the year, it has been a busy one. We have created new policies, started a new award, and worked on a couple of new initiatives. The committee and I have been busy trying to make our society the best ever and to make sure our members get the most of it. New things are on the horizon for next year — so watch your inboxes.

Next year is a WBC year. Glasgow here we come! I hope everyone has submitted abstracts and that ASBTE will have a strong representation at our International conference. I am looking forward to catching up with you all there, if not before.

I would like to wish everyone a very restful, happy and stress-free holiday season. Enjoy your break and I look forward to seeing great things happen for our society again next year. As always, I love to chat, so if you have any ideas or issues that you would like to discuss, please feel free to reach out: @Polymer\_Penny.

**Penny Martens** 

**ASBTE NEWS** is a biannual newsletter that covers news from The Australasian Society for Biomaterials & Tissue Engineering. If you have a news item that you wish to be included please contact the editors. Veronica Glattauer (veronica.glattauer@csiro.au) and Anna Waterhouse (anna.waterhouse@sydney.edu.au).

conferences

### **ASBTE Committee Members**



Penny Martens (President)



Bryan Coad (Vice-President)



Veronica Glattauer (Executive Officer)



Jelena Rnjak-Kovacina (Treasurer)



Travis Klein



Khoon Lim



**Neil Cameron**Ordinary members



Anna Waterhouse

International Union of Societies for Biomaterials
Science and Engineering (IUSBSE) Delegates
Helmut Thissen
Lisbeth Grondahl

Science and Technologies

Australia (STA) Liaison Officer

Kelly Tsang

State	Student Representative	ECR/State Representative
WA	Behzad Shiroud Heidari	Yu Suk Choi
QLD	Trent Brooks-Richards, Naomi Paxton	Natalie Bock
NSW	Rebecca Sehnert	Katie Sizeland
VIC	Brayden Parker, Tony Huynh	Nicholas Welch, Amy Gelmi
SA	Argha Chakraborty	Thomas Michl
NZ	Jun Li	Gabriella Lindberg
ACT	Vacant	Vacant

### **TERMIS-AP & ABMC7 2019**



Tissue Engineering & Regenerative Medicine International Society – AP Chapter and the 7th Asian Biomaterials Congress

14 – 17 OCTOBER 2019
Brisbane Convention & Exhibition Centre, AUSTRALIA



ABMC7

This year's TERMIS-AP, ABMC7 and ASBTE conference was held in Brisbane, Queensland. The conference had 832 attendees, representing 36 countries, including 252 student attendees.

The 9 Plenary keynote speakers were:

Prof. Tony Weiss, Prof. Shyni Varghese, Prof. Ki Dong Park, Prof. Changsheng Liu, Prof. Martina Stenzel, Dr Deepthy Menon, Dr Feng-Huei Lin, Prof. Tsutomu Furuzono and Prof. Rocky Tuan.





### Congratulations to all the awards winners:

Best Poster Presentation, Student and Young Investigator:

1st prize: Mr Masahiro Kaneko 2nd prize: Miss Surakshya Shrestha 3rd prize: Miss Huan Ting Ong

Best Oral Presentation, Student and Young Investigator:

1st prize: Dr Richard Tan 2nd prize: Dr Yen-Zhen Lu

3rd prize: Dr Maryam Tamaddon

Best Oral Presentation Overall:

1st prize: Dr Bryan Coad

2nd prize: Dr Rebecca Griffiths

3rd prize: Dr Teja Guda



### **Biomimetics in Bioengineering**



The first Nature Conference to be held in Australia was the Biomimetics in Bioengineering in Brisbane. The conference was chaired by Professor Dietmar Hutmacher (Queensland University of Technology, Australia), Professor Molly Stevens (Imperial College London, UK) and Nature Journal Editors, Amos Matsiko from Nature Materials, Katherine Barnes from Nature Protocols and Christine Horejs from Nature Reviews Materials.





The conference highlights included 9 global keynote speakers, over 25 unique plenary presentations, 20 rapid fire presentations and over 80 interactive posters, as well as hearing the Editor's perspectives and a panel discussion on the field and careers.





### **BioTerm Conference**

### BioTerm Conference, Kanpur, India, November 2019

I recently attended the BioTerm Conference in Kanpur, which was excellent. Prof Ashok Kumar had done an excellent job in organising the meeting which attracted 24 plus overseas delegates, plus Vishwa Shrivastava and his many students from Nepal, in the 400 delegates overall. The meeting had a strong focus throughout on patents, new products and patient benefits, with a strong clinical involvement and with a 'Make in India' intent.

The Plenary Speaker, and Chandra Sharma Awardee, was James Kirkpatrick from Germany who gave a great talk on complexity in cell culture systems. I also found many of the Keynote speakers of particular interest, including Subbu Venkatraman from Singapore who shared his vast experience in cardiovascular devices and especially stents. He has dozens of patents in this field.



James Kirkpatrick presents his Plenary talk

A popular direction in India seems to be bioprinting, and a guest from Finland in this field, Jouni Partanen, gave a detailed description of the different approaches and also shared his insights from over 30 years in the field. Although focussed on the small scale for biomedical products he also showed video of macro printing of concrete, for street artwork and the developments in the rapid printing of houses! The presentation by Yasuhiko Tabata on outcomes of tissue engineering was also particularly interesting. A strong focus of several Indian speakers was seeking therapies for liver cancer patients, and included promising new devices/materials strategies based on the cryogel studies of the host, Ashok Kumar. It remains a significant issue with >45 thousand patients needing transplants each year, while only around 1400 take place.

Socially, the Conference presented a cultural evening at the dinner, that included various Indian styles and many of the Nepalese students presented their traditional dances. I certainly enjoyed this style of meeting with a patient focus and hope we can maintain the interactions.



Nepalese students that presented their dance culture

Prof John Ramshaw

### **VIC EMCR Workshop**

The Victorian ASBTE EMCR representatives held a "Conference 101" workshop at RMIT to help prepare for presentations at the TERMIS-AP, ABMC7 conference. Dr Brooke Farrugia and Dr Daniel Heath joined the workshop to provide advice and tips on how to present and network at conferences.

The workshop was attended by 8 EMCRs and included a Q&A session with Daniel (photo left) and Brooke (photo right), and a discussion with the audience, as well as a peer to peer poster and presentation review session among the PhDs and ECRs.

The students "really appreciated talking with Daniel and Brooke and going over their conference slides, and they found it really useful."







Daniel and Brooke explained "we think students were interested in learning appropriate ways to develop networks that might lead to future opportunities and to learn skills on how to present their work in a more effective and impactful manner."

Organised by the ASBTE Victorian E/MCR Representatives: Mr Tony Huynh, Mr Bradyn Parker, Dr Nicholas Welch, Dr Amy Gelmi



### **Congratulations: Grants & Awards**

### **ARC Training Centre for Cell and Tissue Engineering Technologies**

Congratulations to the newly funded ARC Training Centre for Cell and Tissue Engineering Technologies led by Monash University in collaboration with the Queensland University of Technology and 26 Partner Organisations. The Centre aims to develop the next generation of industry-ready workforce in the Regenerative Medicine and Tissue Engineering sector. This will be achieved through an industry specific training program, tailored for the needs of PhDs and PD fellows and industry partners in the centre and research carried out in industry facing projects. Funding from the ARC in this Centre presents an exciting opportunity for university and industry collaboration is a high growth industry sector with impactful health and economic outcomes for Australia.

Four research themes will operate within the centre focussed on specific industry needs and include: (1) engineering process efficiencies, (2) advanced materials and manufacturing, (3) tissue engineering and (4) value chain and commercialisation. The projects in these themes are in collaboration with a broad range of industry partners, from cell therapy, medical device and biotech companies, to electronics companies developing sensors

and logistics companies with interests in supply chain. A number of our partner organisations will focus on helping us deliver the training program and include international partners such as the Centre for the Commercialization of Regenerative Medicine (CCRM) and the Cell and Gene Therapy Catapult in the UK and key local companies such as Cell Therapies.

Photo (left to right): Professor Jordan Nash, Professor Rebekah Brown, Senator David Van, Dr Laura Bray, Professor Laurence Meagher, Professor George Simon.



The Centre leadership team is **Professor Laurence Meagher, Director (Monash University) and Dr Laura Bray, Deputy Director (Queensland University of Technology).** In total, there are 52 CIs and PIs from a broad range of disciplines. The Centre will provide employment for a Centre Manager, 5 postdoctoral fellows and 20 stipends for PhD Scholars over a 5-year term.

#### You can read more about it here:

https://www.monash.edu/engineering/about-us/news-events/latest-news/articles/2019/new-funding-for-industry-based-training-in-cell-and-tissue-engineering

https://www.arc.gov.au/news-publications/media/media-releases/research-improve-medical-treatment-australians



Senator David Van



Prof Laurence Meagher & Senator David Van

### **Congratulations: Grants & Awards**

### Dr Rona Chandrawati, UNSW



#### **NHMRC Investigator Grant**

Congratulations to Rona who was awarded an NHMRC Investigator Grant, Level EL2 for her work entitled "Bioactive coatings to improve function and lifetime of implantable medical devices"

You can read more about it here:

https://newsroom.unsw.edu.au/news/general/unsw-top-three-australian-universities-latest-nhmrc-funding? utm source=unsw&utm medium=social%E2%80%A6

#### Dr Daniel Heath, University of Melbourne



**ARC Future Fellowship** 

Congratulations to Daniel who was awarded an ARC Future Fellowship for his work entitled "Designing functional biomaterials with superior cellular interactions"

You can read more about it here:

https://about.unimelb.edu.au/newsroom/news/2019/october/australian-research-council-future-fellows-announced

Associate Professor Yi-Chin Toh; Dr Laura Bray; Dr Nathalie Bock; Professor Dietmar W. Hutmacher, QUT



**ARC Discovery Project** 

Congratulations to A/Prof Toh and the team who were awarded an ARC Discovery Project for their work entitled "A Micro-Physiological System to Mimic Human Microbiome-Organ Interactions"

You can read more about it here:

https://rms.arc.gov.au/RMS/Report/Download/Report/1b0c8b2e-7bb0-4f2d-8f52-ad207cfbb41d/208

### **Congratulations: Grants & Awards**

### Dr Amy Gelmi; Associate Professor Kate Fox, RMIT University



**ARC Discovery Project** 

Congratulations to Amy and Kate who were awarded ARC Discovery Project for their work entitled "Dual Stimulation Approach to Stem Cell Based Tissue Engineering"

You can read more about it here: <a href="https://rms.arc.gov.au/RMS/Report/Download/Report/a3f6be6e-33f7-4fb5-98a6-7526aaa184cf/208">https://rms.arc.gov.au/RMS/Report/Download/Report/a3f6be6e-33f7-4fb5-98a6-7526aaa184cf/208</a>

### Dr Anna Waterhouse, University of Sydney/HRI



**Heart Foundation Vanguard Grant** 

Congratulations to Anna who was awarded a Heart Foundation Vanguard Grant for her work entitled "Reducing blood clots in artificial hearts"

You can read more about it here:

https://www.heartfoundation.org.au/research/research-funding

#### **Prof Dietmar Hutmacher, QUT**



Top 40 Researchers: The Australian

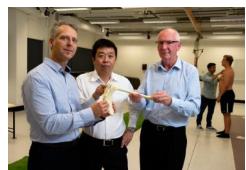
Congratulations to Dietmar who was named one of Australia's Top 40 researchers by The Australian.

You can read more about it here:

http://additivebiomanufacturing.org/the-australian-research/

### **Congratulations: Grants & Awards**

Professor Yuantong Gu, Professor Peter Pivonka and Professor Graham Kerr, QUT



ARC Industrial Transformation Training Centre for Joint Biomechanics

Congratulations to Prof Gu and team who were awarded an ARC Industrial Transformation Training Centre for Joint Biomechanics

You can read more about it here: <a href="https://www.qut.edu.au/research/">https://www.qut.edu.au/research/</a> article?id=152791

### **ASBTE Membership & Social Media**

### REMINDER TO RENEW MEMBERSHIP

As we approach the end of the calendar year, let us remind you that it is now time to renew your membership.

We now take memberships through the ASBTE website <a href="https://www.asbte.org/">https://www.asbte.org/</a> shop!

This new feature of the website simplifies the process for joining the ASBTE.

Just go to <a href="Join/Renew tab">Join/Renew tab</a> and you are in the SHOP.

Standard memberships are \$80 per year, and we now offer the option of purchasing 1, 2, or 3-year memberships.

Student memberships are \$40 per year.

Membership entitles you to conference discounts (National ASBTE and Overseas; e.g. World Biomaterials Congress 2020, Glasgow) and eligibility for Lab and Conference Travel Awards, Newsletters and Members updates highlighting opportunities such as Grants and Jobs.

### **ASBTE on LinkedIn**



The ASBTE group on LinkedIn provides the latest news and discussions for society members. If you are a LinkedIn member, search for "ASBTE - The Australasian Society for Biomaterials and Tissue Engineering" in groups and request to join the group. Or type in the following web address: www.linkedin.com/groups?home=&gid=6512061

If you are not a member of LinkedIn, start by registering today. It's free! au.linkedin.com

### **ASBTE Logo Design Competition**

### **ASBTE Logo Design Competition**



The ASBTE logo, shown above, has been in use since 2007. After consultation with the membership, the committee has decided that it is time to create a new logo, with the help of you, our lovely members! We therefore invite you to contribute your ideas for a new inspiring and eye-catching ASBTE logo.

The design criteria are as follows: the logo should

- Be representative of biomaterials
- Be representative of Australasia
- Contain the letters ASBTE

To provide you with an idea of how to create a winning design, below are the points of explanation provided by the designer of the current logo:

The symbol incorporates:

- Orthogonal lines denoting biomaterials, scaffolds, or cell
- Four point stars denoting cells
- An interconnected logo illustrating cells connected together with the help of biomaterials
- An interconnected logo illustrating centres of research networked together by the ASBTE
- The Southern cross representing the Australian origin of the ASBTE
- Outstretched symbol indicates growth of the ASBTE as it networks into the Indo-Asia-Pacific Region

The winning designer will be credited in future ASBTE publications and recognised on our website.

Please submit your design plus a brief explanation to Prof Neil Cameron (<u>neil.cameron@monash.edu</u>) by Friday 28<sup>th</sup> February, 2020.

### **ASBTE Website** www.asbte.org

Any member wishing to supply news items, links, PhD scholarships, job listings, or other relevant information to the *website* should contact the Travis Klein (t2.klein@qut.edu.au).

### **ASBTE Travel Awards: 2020 Round**

## 2020 TRAVEL GRANTS, ROUND 1 GUIDELINES FOR APPLICANTS

#### **Announcement**

The ASBTE will fund Travel Grants up to \$500.00 each for postgraduate research students to attend the World Biomaterials Congress, Glasgow, 19-24 May 2020. This document summarises the eligibility criteria, guidelines for the application and application submission deadlines. The major objectives of these travel grants are to provide students with:

- Financial assistance to attend the World Biomaterials Congress, to present their research, network with peers and develop new collaborations or enhance existing collaborations;
- The opportunity to interact with groups outside their specific research area.

These grants are available solely for the purpose of attending the World Biomaterials Congress and will not be awarded for any other conference or meeting. The decisions on the Grants will be made by the ASBTE Committee and may vary at the Committee's discretion.

#### Guidelines

#### Eligibility

- Full-time postgraduate student currently enrolled at a recognised higher education provider, located anywhere in Australasia
- Continuing, full-time academic appointees are excluded from applying
- ASBTE member since June 2019 or earlier
- Current, paid, financial member of ASBTE for the 2019 & 2020 calendar years
- Applicants should be enrolled/employed in Australia or New Zealand, but applications from expatriate ASBTE members will also be considered.
- Accepted oral or poster presentation at the conference
- INCOMPLETE/LATE APPLICATIONS INELIGIBLE

#### **Application**

At the time of application, applicants must provide: (i) a completed application form; (ii) evidence of study/ employment and PhD completion date (if applicable); (iii) ASBTE membership receipt for 2019 & 2020 and (iv) evidence of abstract acceptance. If any of these items are missing, your application will be deemed ineligible. The conference travel awards are intended to help those who have difficulty attending the conference through shortage of funds. The decisions on the awards will be made by the ASBTE Committee and may vary in amount at the discretion of the Committee. Application forms are provided on the ASBTE website (www.asbte.org).

#### Submission Details

Applications should be submitted by email to **Prof. Neil Cameron (neil.cameron@monash.edu) no later than 5** pm (AEST) on Friday 31 January 2020.

Include the subject "WBC Travel Grant" in your application. All documentation, including relevant membership receipts, must be supplied at the time of application. If any of the items are missing, your application will be deemed ineligible.

Please do not submit applications by post.

#### Acknowledgement

Any poster or oral presentations and any publications resulting from the work must acknowledge the funding obtained from ASBTE.

#### Report

Successful applicants will be required to write a short report on their conference experience.

### **ASBTE Lab Travel Awards: 2020 Round**

## 2020 INTERNATIONAL AND LOCAL LAB TRAVEL GRANTS GUIDELINES FOR APPLICANTS

#### **Announcement**

The ASBTE will fund one or more Travel Grants (maximum amounts \$2,000 for international travel or \$1000 for domestic travel) for postgraduate research students and early-career researchers. This document summarises the eligibility criteria, guidelines for the application and application submission deadlines. The major objectives of these travel grants are to provide students and early-career researchers with:

- the opportunity to travel to other institutions to develop new collaborations or enhance existing collaborations;
- increased access to equipment and/or expertise that is not available in their own institution; and
- the opportunity to interact with groups outside their specific discipline area or culture.

These grants will not be allocated for conference travel alone, however, if applicants can organise their laboratory visit/s at times coinciding with relevant Biomaterials/Tissue Engineering conferences, support may be approved. The decisions on the Grants will be made by the ASBTE Committee and may vary at the Committee's discretion.

#### **Guidelines**

#### Eligibility

- Full-time postgraduate student currently enrolled at a recognised higher education provider, or early-career researcher with less than 3 years of post-doctoral experience between date of award of PhD and date of application for grant.
- ASBTE member since June 2019 or earlier
- Current, paid, financial member of ASBTE for the 2019 & 2020 calendar years
- Applicants should be enrolled/employed in Australia or New Zealand, but applications from expatriate ASBTE members will also be considered.
- INCOMPLETE/LATE APPLICATIONS INELIGIBLE

#### **Application**

Complete the application form and provide the following attachments:

- List of publications
- List of grants and awards
- Letter of support from the host laboratory
- Copy of receipts confirming payment of 2019 and 2020 membership

#### Submission Details

Applications should be submitted by email to **Prof. Neil Cameron (neil.cameron@monash.edu) no later than 5** pm (AEST) on Monday 2nd March 2020.

Include the subject "ASBTE Lab Travel Grant Application" in your application. All documentation, including relevant membership receipts, must be supplied at the time of application. If any of the items are missing, your application will be deemed ineligible.

Please do not submit applications by post.

#### Reporting Details

A short report detailing the activities undertaken during the visit and any outcomes from the visit will be required within 2 months of returning from the visit. **The format should include one paragraph to a half page executive summary and details of actual expenditure but is otherwise flexible.** The report should be no longer than 3 pages and the executive summary will be posted on the ASBTE website and/or in the ASBTE Newsletter.

#### Acknowledgement

Any poster or oral presentations and any publications resulting from the work must acknowledge the funding

### **Spotlight on Conferences**

### Please check the Web to get further information and also details on due dates

Conference	DATES	LOCATION	WEBSITE
CTERM-BT 2019 The 4th Conference on Tissue Engineering and Regenerative Medicine 第四届组织医学与再生医学国际学术研讨会 December 13-15, 2019 Bangkok, Thailland  4th Conference on Tissue Engineering and Regenerative Medicine (CTERM-BT)	December 13-15, 2019	Bangkok, Thai- land	http://www.janconf.org/ conference/CTERM- BT2019/
OF EXCELLENCE IN INTERNATIONAL MEETINGS alliedacademics.com  3rd International Conference on Mechanics of Biomaterials and Tissues	Feb 19-20, 2020	Hawaii, USA	https://www.elsevier.com/ events/conferences/ international-conference-on -mechanics-of-biomaterials- and-tissues
International Conference on Biomaterials Engineering	April 23-24, 2020	Kyoto, Japan	https://waset.org/ conference/2020/04/kyoto/ ICBE
5 <sup>th</sup> BIOMATSEN 2020 International Congress on Biomaterials & Biosensors Liberty Hotels Lykia, Oludeniz Turkey April 23-29 2020  5th International Congress on Biomaterials & Biosensors	April 23-29, 2020	Oludeniz, Tur- key	http:// www.biomatsencongress.or g/
Biomaterials 2 © 2 © 2nd Global Congress & Expo on Biomaterials	May 11-12, 2020	Manchester, UK	https:// scientificfederation.com/ biomaterials-2020/
11th World Biomaterials Congress 19 - 24 May 2020, Glasgow, Scotland  11th World Biomaterials Congress, 2020	May 19-24, 2020	Glasgow, UK	www.wbc2020.org
5th Annual Conference and Expo on BIOMATERIALS  May 25-26, 2020 Rome, Italy  5th Annual Conference and Expo on Biomaterials	May 25-26. 2020	Rome, Italy	https:// biomateri- als.insightconferences.com/

### **Spotlight on Conferences**

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CONFERENCE	DATES	LOCATION	WEBSITE
26 - 29 May 2020 Manchester, UK  2020 TERMIS-EU Conference	May 26-29, 2020	Manchester, UK	https://www.termis.org/ sites/default/files/termis- eu2020-savethedate.png
C	June 7-12,	Les Diablerets	https://www.grc.org/
Frontiers of Science  Cordon Research Conference Ricinatived Meteri	2020	CH, Switzerland	bioinspired-materials- conference/2020/
Gordon Research Conference – Bioinspired Materials			
<b>G</b> Frontiers of Science	June 14-12, 2020	Lucca, Italy	https://www.grc.org/ biointerface-science- conference/2020/
Gordon Research Conference – Biointerface Science			
ISSCR 2020 ANNUAL MEETING	June 24-27, 2020	Boston, MA, USA	https://www.isscr.org/ meetings-events/annual- meetings/isscr-annual- meeting-2020
International Society for Stem Cell Research Annual Meeting			
	July 20-21, 2020	Paris, France	https://waset.org/ conference/2020/07/paris/ ICTERM
ICTERM 2020: International Conference on Tissue Engineering and Regenerative Medicine			
<b>BEIS-2020</b>	July 20-22, 2020	Boston, MA, USA	https:// www.materialstoday.com/ biomaterials/events/2nd- biomedical-instrument- summit2020-beis2020-/
2nd Biomedical Engineering and Instrumentation Summit-2020 (BEIS-2020)			
EMBC 2020 Montreal  42nd Annual International Conferences of the IEEE Engineering in Medicine and Biology Society in conjunction with the 43rd Annual Conference of the Canadian Medical and Biological Engineering Society	July 20-24, 2020	Montreal, Canada	https:// embc.embs.org/2020/

### **Spotlight on Conferences**

Conference	DATES	LOCATION	WEBSITE
Biomaterials and Tissue Engineering  International Conference and Exhibition on Biomaterials and Tissue Engineering—OLC	July 23-24, 2020	Valencia, Spain	https:// www.olcinternational.com/ biomaterials-2020/
Frontiers of Science  Gordon Research Conference - Musculoskeletal	Aug 9-14, 2020	Andover, NH, USA	https://www.grc.org/ musculoskeletal-biology- and-bioengineering- conference/2020/
Biology and Bioengineering  TERMIS-AP 2020  2020 TERMIS-AP Conference	Sep 21-24, 2020	Kuala Lumpur, Malaysia	https://www.termis.org/ ap2020
PARIS Advances in Stem Cell Research: FRANCE From Single Cells to Organs  Advances in Stem Cell Research: From Single Cells to Organs—ISSCR, FSSCR, BeSSCR	Oct 12-14, 2020	Paris, France	https://www.isscr.org/ meetings-events/ international-symposia/ paris-2020-symposium
Joint Fall Symposium - Society for Biomaterials and Japanese Society for Biomaterials	Dec 11-13, 2020	Honolulu, HI, US	https:// www.biomaterials.org/ events-future- meetings/2020-hawaii-joint- fall-symposium-sfb-jsb
TERMIS-AM ANNUAL CONFERENCE & EXPOSITION 2020 CONFERENCE CHAIRS: Allson P. McGiugan, PhD - Ponney M. Culbort, PhD DECEMBER 2020 2020 TERMIS-AM Conference	Dec 13-16, 2020	Toronto, Canada	https://www.termis.org/ sites/default/files/TERMIS- 20-STD-Web.jpg