



## Society for Cryobiology 2018 Election Candidate Biographies and Vision Statements

This election is to elect 3 Governor-at-Large positions (2019-2021). As outlined in the December 2017 revision to the Society for Cryobiology's bylaws, the Society has moved to block voting. The following excerpt is taken from the bylaws:

"Because multiple nominees for each Governor's position may be identified by the Nominating Committee, a block voting method will be employed to determine the winning candidates for Governor. Each voting member is given 100 points. Members choose how to vote those points. A voting member could give one candidate all 100 points, or divide points among the candidates. All candidates are then listed and selected by most point total."

### Candidates for Governor-at-Large

- John G. Baust
- Rob Ben
- Ali Eroglu
- Xiaoming He
- Peter Kilbride
- Estefania Paredes
- Gang Zhao

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#### **John G. Baust, Ph.D.** **Institute of Arctic Biology, University of Alaska, United States**

**Biography:** Dr. John Baust is the UNESCO Professor of Biological Sciences and Director of the Institute of Biomedical Technology at the State University of New York's Binghamton University campus and formerly the B.J. Luyet Distinguished Professor of Cryobiology at the University of Houston. Dr. Baust provides leadership to a multidisciplinary research program in translational cryobiology including cryogenic engineering, cryoablative strategies in cardiovascular disease and cancer therapy along with programs in cell/tissue/organ cryopreservation. His current research is focused on identifying and managing cell signaling pathways (cell death cascades) activated during low temperature stress and development of methodologies to support this emphasis in both cryopreservation and

cryoablation. He has been elected in the past as President, Vice President and member of the Board of Governors of the Society, and in 2009 was awarded the Basile J. Luyet Medal and named Cryo-Fellow by the Society.

Dr. Baust is a Fellow of and has served two terms as President of the American College of Cryosurgery, is a member of the American Urological Association Best Practices Panel on Cryotherapy, is a Founding Editor and past Editor-in Chief of the journals Biopreservation & Biobanking and Cell Preservation Technology and has recently served as Editor-in-Chief of the journal Technology in Cancer Research & Treatment (TCRT). Also, he is the U.S. Delegate to and Commission President of the International Institute of Refrigeration, and now serves as Section Editor for the Intl. Journal of Hyperthermia. He has authored or co-authored more than 500 peer reviewed research and reviewed articles, book chapters, patents and abstracts, has served on various agency grant review panels and consults extensively with government and industry. Dr. Baust has co-edited the CRC text Advances in Biopreservation and has served in the past as President and CEO of Cryomedical Sciences, Inc. (NASDAQ: CMSI) and BioLife Solutions, Inc. (NASDAQ: BLFS), two companies that have made significant contributions to the emerging fields within cryobiology. As UNESCO professor in cryobiology and cryomedicine, his charge

*Disclaimer: Biographies and vision statements were provided by each nominee and have not been checked for accuracy. Any opinions are those of the nominees, not of the Society for Cryobiology.*

under this appointment is to work with various institutes in both the Ukraine and Russia to support their programs in the cryosciences.

**Vision:** Cell cryopreservation is now a fundamental process used in many areas of agriculture, basic sciences and medicine. Simply stated, without the discoveries by our colleagues, fields such as in vitro fertilization, cell therapy, diverse cancer therapies and the related banking of cells, tissues and organs would be severely hampered, if not impossible. As just one example, without the groundbreaking discoveries by members of our Society, the works of Dr. Robert Edwards (2010 Nobel Award) and the subsequent achievements in infertility treatments and the transplant of cryopreserved embryos would not have been possible. Numerous other Nobel Awardees have also benefited from the discoveries made but without attribution by our discipline.

How often do we observe a media report on some advancement in the biomedical sciences featuring an investigator extracting a cryopreserved sample through a cloud of water vapor condensate above a liquid nitrogen dewar? The answer is often but without reference to our science! Why is this? Why do we find our discipline turning in some obscure intellectual cul-de-sac of obscurity?

It is apparent, at least to me, that cryobiology suffers a disconnect between discovery and credit for its translation. To overcome this short-coming we need a Board willing to explore and develop strategies to bring greater recognition to as many of our programs as might be reasonable. One fundamental strategy is essential. The Board must develop a program characterized by lay publication and media releases that emphasize “discovery” in cryobiology. Discoveries emanating from university

research, from clinical and corporate partnerships and from patents represent just a few targets that will enhance the image of cryobiology. The Board must also develop a program to assure the growth, development and hoped for success of our younger investigators through programs of recognition that will improve stature within their home institutions and among various funding agencies. Why is it that some in cryobiology are very well funded on a continuous basis while many must “scratch and claw” to keep a lab going? Is it the science that’s different? Probably not. Is it the ability to “tell a better story” or culture better relationships with funding agencies? Probably yes. As a Board, we must develop a “cryoscientist mentoring” program designed to identify and nurture the skills of the next generation of cryobiologists.

As Board members and officers, we are advocates for and ambassadors of the Society, its Journal and our science. It is our role to advocate for the Society and discipline at diverse annual meetings, workshops and symposia. I have always and will continue to assume a “bully pulpit” role with relevant funding agencies, industry and other societies to strengthen the image of the discipline. In this capacity, I will continue to represent the strengths, diversity and quality of the discipline with an eye toward improving disciplinary recognition and funding opportunities.

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**Robert N. Ben, Ph.D**  
**University of Ottawa, Canada**

**Biography:** Professor Ben obtained his undergraduate degree in Biochemistry from Laurentian University in 1990. He then

pursued graduate studies in synthetic organic chemistry at the University of Ottawa under the supervision of Professor Tony Durst and obtained his PhD in 1994. After a postdoctoral position at the University of Toronto from 1994-1996 under the supervision of Professor Mark Lautens, he accepted a Research Associate position at the Steacie Institute of Molecular Sciences (SIMS) at the National Research Council of Canada in Ottawa. In 1998, he started his independent research career as an Assistant Professor in the Department of Chemistry at the State University of New York (SUNY) at Binghamton. During the summer of 2003, he joined the Chemistry Department at the University of Ottawa as a Canada Research Chair in Medicinal Chemistry (Tier 2). In 2013, he accepted the Directorship for the Biopharmaceutical Sciences (BPS) and Biomedical Sciences (BMS) programs at the University of Ottawa.

Since his tenure at the University of Ottawa Dr. Ben has established a nationally and internationally recognized research program at the interface between organic chemistry and biology. Specific research interests encompass organic synthesis, bioorganic chemistry, carbohydrates, peptides, glycoconjugates and cell biology with the main focus being the rational design of new and improved cryoprotectants. As such, the students in his laboratory get extensive training in modern synthetic organic chemistry and also modern cell culture techniques, live cell imaging, flow cytometry and various cell assays. Much of the work in his laboratory utilizes cultured cells (liver, kidney) as well as primary cells such as hematopoietic stems cells (HSCs) from cord blood and human red blood cells (RBCs). In the last 8 years, Dr. Ben's research program has focused on the rational design of novel ice recrystallization inhibitors that can serve as new cryoprotectants. Conventional cryoprotectants such as dimethyl sulfoxide (DMSO) and glycerol fail to control the growth

of ice during freezing and in particular fail to control ice recrystallization during warming. This results in extensive cellular damage and decreases both post-thaw viability as well as functionality. Given the rapid development in the fields of regenerative medicine and tissue engineering there is an urgent need for improved cryoprotectant and cryopreservation protocols.

Dr. Ben is an invited reviewer for more than 15 scientific journals. He was an editorial board member for the Future Medicinal Chemistry from 2008-2012 and was an Associate Editor for the interdisciplinary journal RSC Advances from 2015-2017. He is a member of the American Peptide Society (APS) and the American Chemical Society (ACS) and has been an active member of the Society for Cryobiology for the past seven years. From 2016-2018 he has been a board member for the Society of Cryobiology.

**Vision:** The field of cryobiology is very applied and it is this aspect that uniquely positions the Society for Cryobiology for growth. This is especially relevant with the many exciting advances in the field of regenerative medicine as cryopreservation of progenitor cells for cellular therapies and products is essential to commercialization. This represents a tremendous opportunity for the Society as the current membership is very interdisciplinary in nature and is the current authority on issues relating to cryopreservation. As a new member attending this first meeting over 7 years ago, I was extremely impressed with the breadth of expertise and willingness of researchers in the Society to collaborate together and address key issues and problems in the field of cryobiology. I believe that the future of the Society will be dependent upon its ability to engage other scientific societies, regulatory agencies, and commercial partners in a similar manner to actively promote the research mission and apply our collective expertise to new and emerging areas of development. In addition, graduate students are one of the greatest resources that the society possesses as they have the potential

to be the future researchers of the Society. To remain a viable scientific society, I believe that we need to refocus our efforts at attracting new members from the many interdisciplinary fields that benefit from knowledge of low temperature biology.

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**Ali Eroglu, Ph.D**  
**Medical College of Georgia, Augusta**  
**University, GA, United States**

**Biography:** Ali Eroglu is a tenured Associate Professor at the Medical College of Georgia at Augusta University in Augusta, Georgia, USA. He graduated from the Veterinary Medical School of Istanbul University in Turkey with a DVM degree and completed his PhD in Reproductive Biology at the Justus-Liebig University in Germany. Subsequently, he worked at the Massachusetts General Hospital/Harvard Medical School as a postdoctoral research associate. His post-doctoral work focused on cell and tissue preservation with a particular interest in oocyte cryopreservation. In 2003, he joined the Medical College of Georgia as a faculty member. Dr. Eroglu has published numerous papers on cell and tissue cryopreservation and holds an international patent in this area. In addition to Cryobiology, his research interests include Regenerative Medicine and Epigenetics. His administrative responsibilities include serving as Director of the Human Cord Blood Stem Cell Bank and iPS Cell Core. Previously, he served as Director of the Transgenic and Embryonic Stem Cell Core Facility at the Medical College of Georgia. Dr. Eroglu has been a member of the Society for Cryobiology since 1997 and served on the Student Award Committee and Board of Governors between 2009 and 2012. He was a member of the Organizing and Scientific

Program Committee for the 37th Annual Meeting of the Society for Cryobiology. Currently, he serves on the editorial board of Cryobiology and has also served on the editorial board of Biology of Reproduction for several years.

**Vision:** Despite its increasing importance, Cryobiology is still underappreciated by other disciplines, policymakers, and funding agencies. Recognition of the importance of Cryobiology as a scientific discipline and availability of adequate research funding are vital to the future of our Society and scientific advancement in our field. If elected, I would work with fellow board members and focus my efforts on developing strategies (1) to raise the profile of our Society and Cryobiology as a scientific discipline, (2) to communicate the importance of Cryobiology research to policymakers and funding agencies, and (3) to strengthen interactions between our Society and related societies/industry.

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**Xiaoming He, Ph.D.**  
**University of Maryland, College Park, MD,**  
**United States**

**Biography:** Dr. He is a Professor of Bioengineering at the University of Maryland. He received his PhD in 2004 from the University of Minnesota-Twin Cities with research focused on using both low and high temperatures for cancer therapy. His postdoc training in Massachusetts General Hospital/Harvard Medical School from 2004-2007 was focused on cryopreservation of stem cells and reproductive cells by low-CPA vitrification and understanding of the

physicochemical processes associated with biopreservation at ambient temperature. His current research is focused on developing micro and nanoscale biomaterials and devices to engineer totipotent, pluripotent, and multipotent stem cells for tissue regeneration, cancer therapy, and assisted reproduction. He has extensive experience on the application of hydrogel microencapsulation and nanotechnology for banking mammalian cells including various stem and reproductive cells with minimized organic solvents such as DMSO, and for enhancing the safety and efficacy of cryotherapy. Dr. He has published more than 100 papers and many of them are in highly ranked journals (impact factor > 10) such as Nature Communications, Advanced Materials, ACS Nano, ACS Central Science, and Advanced Functional Materials with him being the corresponding author. His pioneering work in the field has been rewarded by multiple NSF and NIH grants/awards and the American Cancer Society Research Scholar Grant. Dr. He is a reviewer of various funding agencies globally including the NIH, NSF, and American Heart Association in USA, Sir Jules Thorn Charitable Trust in UK, European Research Council, Canadian Institute of Health Research, Dutch Technology Foundation STW, Utrecht in The Netherlands, Swiss National Science Foundation, and Research Grants Council in Hong Kong. He is an associate editor of Journal of Medical Devices and editorial board member of Scientific Reports, and an academic editor of PLOS ONE. He is serving as the Vice Chair/Chair Elect of the American Society of Mechanical Engineers (ASME) Biotransport Committee. Lastly, he is an elected fellow of the American Institute of Medical and Biological Engineering (AIMBE) and the ASME.

**Vision:** Since my first attendance of the Society of Cryobiology Annual Meeting was in 2002, I have made many friends in this great community. I am grateful for the help on my research and services from multiple members who I was fortunate to meet through the

society. Therefore, I feel the society is like a big and warm family that can provide tremendous support for junior/mid-career researchers to grow and hopefully achieve their career goal. My vision is therefore to facilitate the growth of this family and the interactions among the family members. This includes the formation of mentorship pairs between our junior/mid-career members who might need help and the kind senior faculty in this family who have always been there to give a hand. Due to the multidisciplinary nature of my research, I have also been participating in the activities in other societies such as the ASME, Society for Biomaterials, and BMES. I will take advantage of every opportunity to promote the Society for Cryobiology among those communities. Lastly, as an editor of multiple journals, I will advocate the research from this community for publication in those journals to further broaden the impact of the work from this great community. Declaration of Competing

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**Peter Kilbride, Ph.D**

**Asymptote, GE Healthcare, Cambridge, UK**

**Biography:** Dr Peter Kilbride has been the Senior Research Scientist at Asymptote Ltd., now a subsidiary of General Electric Company, since 2015. In his position he has been involved in and managed a range of projects, including: Non-Newtonian cryopreservation techniques; Developing large volume freeze-drying protocols for entomopathogenic fungi and lactobacillus bacteria; Developing optimal cryopreservation techniques for regenerative medicine applications such as T-cell therapies; Working with GMP compliant cold-chain delivery; Working on thymus tissue cryopreservation; and Designing and

constructing state-of-the-art cryolab facilities. These projects have received internal and external funding from the Medical Research Council (UK), Innovate UK, And the European Union.

Dr Kilbride obtained his Ph.D from University College London in the field of “Mathematics and Low Temperature Biology”, in a joint program with Asymptote. His Ph.D focused on large volume cryopreservation of a bio-artificial liver for clinical delivery. His undergraduate program was in Physics at King’s College London, with his final project examining the detection of oral cancers using novel spectrographic techniques. A principal aim of his research involves linking together developments from different fields to benefit cryopreservation problems.

Dr Peter Kilbride has published eight first author papers in journals including Cryobiology, Tissue Engineering, PLoS One, PeerJ, and BioResearch Open Access.

Since 2013 he has been actively involved in the Society for Cryobiology including organising the ICYR events and for the 2016 conference and organising student moderator sessions for the 2017 meeting. He has been sitting on the Student and Publication committees of the Society since 2017.

He has been awarded the 1<sup>st</sup> prize at the 2015 Organ Banking Summit; 1<sup>st</sup> prize for the Medical Research Council’s Centenary Challenge writing competition in 2013; and best student presentation at the 2013 Society for Low Temperature Biology Annual Meeting.

**Vision:** If elected to the position of Governor in the Society for Cryobiology there are three primary areas I would like to develop further.

The first is to develop a career development programme that focuses on students and early-stage researchers. I would do this through designing career focused online content and organising career-led events

during the Society’s meetings. I think it is important to connect junior cryobiologists to senior scientists as it can be a mutually beneficial relationship.

The second strand would be to help standardise the field and cement the Society as the go-to experts in cryobiology, through an increase in publishing general cryopreservation protocols and gold standard techniques to develop new protocols (such as criteria for post-thaw tests, time points, regulatory approval etc.). There are many cryo groups not involved in the society and as well as helping to standardise the field, this would increase the profile and perhaps membership of the society.

The third area I would like to pursue would involve increasing the profile of the Society in disparate cryopreservation groups, and increase industrial sponsorship of the Society in areas such as regenerative medicine where the criticality of cryopreservation is becoming more widely appreciated.

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**Estefania Paredes, Ph.D**  
**University of Vigo, Spain**

**Biography:** Estefania Paredes is a Research Professor at the Universidade de Vigo, Spain. She received a degree in Oceanography from Universidade de Vigo in 2008. Estefania received her PhD in Oceanography in 2014 with several awards and honours from her own university and the Royal Academy of Doctors of Spain as well as a patent.

Her PhD focussed on the Cryopreservation of marine invertebrate early-life stages and the development of applications for Ecotoxicology and Aquaculture. During her PhD years she

enjoyed several research stays in New Zealand at Cawthron Institute under the direction of Dr. Serean Adams and in USA at the University of Tennessee under the direction of Dr. Peter Mazur and his research fellows, Dr. Stanley Leibo and Dr. Fritz Kleinhans.

She moved to Mazur's lab in 2014 for her postdoc until 2016. Where she focussed her interest on vitrification and ultra-fast laser warming working in several test organisms like mice, zebrafish or yeast. During her postdoc years she had participated in projects funded by NIH or SBIR from the US government. In 2017 she moved back to Spain and got involved in several projects that obtained H2020 European funding in order to start her own lab at the marine research station ECIMAT that belongs to the Universidade de Vigo. She presently leads the Marine Biological Resource Functional Preservation Service at the Universidade de Vigo, which is tightly involved in the EMBRC "European Marine Biological Resource Centre".

After being in the research field of cryobiology since 2008 when she started her PhD, Estefania current research interests are the development of cryopreservation protocols for marine organisms using the latest technology and methods available within the cryobiology community. Study the specific challenges of applying vitrification to aquatic species and further the basic knowledge on marine organism's cells and behaviour during cryopreservation both from the theoretic and practical point of view. Estefania has worked in developing cryopreservation protocols for 6 species of marine invertebrates, more than a dozen species of marine microalgae, mice, zebrafish and yeast.

She has been a member of the Society for Cryobiology since 2010 and she has been awarded with the student travel award several times and later she has organized, chaired and co-chaired several sessions in the

2015 and 2016 meetings in Ostrava and Ottawa. Dr. Paredes has also been active with the International Young Cryobiology Researchers (ICYR) group, she was involved in different parts of the organization of the ICYR activities in 2016 and 2017. She currently serves in the Awards committee and the Student committee.

**Vision:** The cryobiology research community has two very unique qualities, first of all it is highly interdisciplinary which, is a source for new approaches and ideas. Secondly, but not less important, the cryobiology research community is quite tightly interconnected and interrelated and that is mostly due to the role of the Society for Cryobiology and its efforts to provide an open environment for researchers to interact, exchange ideas and work together. I believe these two factors must be treasured by encouraging all those who approach Cryobiology from a side discipline to become members, interact and stay in the field so we all can benefit from new technologies being developed, new points of view, new approaches. Everyone in the Society has/knows something that will contribute to the advance of the field and that makes us stronger as a discipline.

I would be honoured to serve the Society as a Governor-at-Large. If elected, I will pursue the following initiatives: I would like to keep promoting and caring for the role of the student members and those new ones approaching the Society as part on my involvement with the committees I am currently working on paying special attention to ICYR, student awards and communication. I would also like to re-inforce the presence of the Society in Social Media and Media in general, as means for the members to keep in touch and minimizing the gap between professors and students to facilitate interaction. Finally, I am also interested in enhancing the role of postdocs and young faculty in the society with the purpose of

providing chances for moving forward their career and or keep collaborations in the field of cryobiology in their future research. I strongly believe that Investing in the actual students, postdocs and young faculty that, will become the leaders of their fields in the future, is a good way to ensure the long term good health of the Society.

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**Gang Zhao, Ph.D.**  
**University of Science and Technology of China, Hefei, China**

Dr. Gang Zhao has been a professor at University of Science and Technology of China (USTC), the director of Laboratory of Cryobiomedical Engineering and the deputy director of Biomedical Engineering Research Center at USTC. Dr. Zhao received his doctoral degree in 2004, studying cell cryopreservation under the guidance of Dr. Dayong Gao, and completed a postdoctoral fellowship with Prof. Jiming Yang, working on the thermodynamics of cryobiology. He was a JSPS (Japan Society for Promotion of Science) research fellow with Prof. Takamatsu Hiroshi at Kyushu University working on cryobiophysical properties of endothelial cells. In addition, Dr. Zhao received the Anhui Provincial Award for Science and Technology in 2010 and the Career Award for Young Teachers of USTC in 2013. His research interests include cryobiology, micro/nanotechnologies, biomedical microsystems and intelligent instruments. He has published over 110 research papers and holds more than 20 patents.

Dr. Zhao has been an active member of the Society for cryobiology, ASME, IEEE, and TERMIS. He is a member of the editorial board for Biopreservation and Biobanking, and he

was also the Guest Editor of CryoLetters. Currently, Dr. Zhao is serving as a member of the board of governors (Class of 2017) for our society for cryobiology, and he also belongs to both the SfC Membership and the Publication Committees. During the term of office, he successfully hosted CRYO2017, as the Conference Co-Chairman, where he mobilized more than 30 volunteers to ensure that everything can go efficiently during the meeting. Under the great effort of Dr. Zhao and the local committee, the annual meeting has been very successful. He was also the deputy secretary general for the 41st Annual Meeting of the Society for Cryobiology in 2004 (Beijing). More recently, he was an invited keynote speaker and session chair at the 54th Annual Meeting of the Society for Cryobiology (2017, Hefei), an invited speaker and session chair at the 51st Annual Meeting of the Society for Cryobiology (2014, Savannah, Georgia). Dr. Zhao is also an active member and one of the main leaders for several BME related Chinese academic societies.

**Vision:** The Society for Cryobiology has made a profound impact on the exploration of life in the frozen world since its founding. A new generation of young scientists is attracted to this amazing subject Cryobiology. Many of you may have observed the increasing submissions of research articles by Chinese authors to the journal of Cryobiology and CryoLetters, which is ultimately a bright spot for Society of Cryobiology and also prompt the new opportunity for developing our scientific discipline in China. I believe we need to attract more Chinese colleagues to join the society for a prompt advance of Cryobiology. After successfully hosting of CRYO2017, I am utterly optimistic that we can drive smart brains into the field of Cryobiology, which will eventually serve our Society and produce advanced development in the low-temperature science and technology. If I am elected to serve on the Board of Governors, I can be in a better position to support the

young researchers interested in cryobiology, and be able to better promote the cooperation of the Society for Cryobiology and the relevant Chinese academic societies. I wish to share my experience in promoting the development of cross disciplinary technologies.

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