More Storage Capacity in Less Floor Space

Reach into the Future of Low Temperature Storage

- The only -80°C forced air circulation ULT freezer
- Air flow enables faster, uniform heat transfer/freezing
- Only requires 47 ft² / 4.36 m² of floor space
- 288,000 vial capacity / 96 racks
- Low power consumption 0.40 kWh/cu.ft.
- Truly redundant system (refrigeration, display, controls)

- Best Uniformity on the market +/-3.0°C @ -80°C
- Adjustable control set point from -40°C to -80°C
- Fastest temperature recovery from door opening
- Energy balance design

For more information on FARRAR ULC & ULCi brand, visit:
www.farrarscientific.com
30765 State Rt 7 | Marietta, OH  45750 | 740.374.8300
ISBER MISSION
ISBER is a global biobanking organization which creates opportunities for networking, education, and innovations and harmonizes approaches to evolving challenges in biological and environmental repositories.

ISBER VISION
ISBER will be the leading global biobanking forum for promoting harmonized high-quality standards, education, ethical principles, and innovation in the science and management of biorepositories.
Meeting Sponsors

Gold Sponsors

Brooks LIFE SCIENCES

BSI COMPLETE SPECIMEN MANAGEMENT

Silver Sponsor

FLUIDIGM

Bronze Sponsors

Agilent

BRUKER

CORIS LIFE SCIENCES MONITORING

HAMILTON STORAGE

iSPECIMEN

LiCONiC INSTRUMENTS

OPEN SPECIMEN

ttplabtech
Contents
Meeting Sponsors.................................................................................................................................................... 4
Message from the ISBER President and Scientific Program Committee Co-Chairs ............................................................. 6
ISBER 2019-2020 Board of Directors ........................................................................................................................................ 8
ISBER Committee Chairs ........................................................................................................................................... 8
ISBER Committee, Working Group, and Special Interest Group Listing ........................................................................... 9
General Information ................................................................................................................................................ 11
Venue Map ............................................................................................................................................................ 12
Exhibit Hall Floor Map ............................................................................................................................................. 14
Exhibitor Listing ...................................................................................................................................................... 14
Meeting-at-a-Glance ............................................................................................................................................... 15
Meeting Program .................................................................................................................................................... 17
Round Table Discussion Summaries ........................................................................................................................... 24
Symposium Presentation Summaries ........................................................................................................................ 25
Educational Workshop Summaries ........................................................................................................................... 30
Corporate Workshop/Symposium Summaries ........................................................................................................... 33
Poster Sessions ...................................................................................................................................................... 36
Sponsors and Exhibitors .......................................................................................................................................... 41
Message from the ISBER President and Scientific Program Committee Co-Chairs

Dear colleagues and friends,

This year the International Society of Biological and Environmental Repositories (ISBER) is celebrating an important milestone, its 20th anniversary. It represents more than just a passage of time and persistence, but also the culmination of two decades of creativity, innovation and growth. This anniversary provides an opportunity to reflect upon the cherished memories of years gone by while celebrating another year of serving our members, community, and successes.

As we continue our 20th year celebration after an incredible conference in Shanghai, China, the ISBER Board of Directors and the Co-Chairs of the 2019 Americas Regional Meeting welcome you to Minneapolis, MN and hope you have an enjoyable and interesting three days filled with thought provoking presentations, stimulating conversations and fun networking! The city is home to the largest health technology cluster in the United States, with over 350 medical device companies calling this area home. In honor of Bob Dylan, a native of Minnesota, the Scientific Program Advisory Committee chose “Times they are a changin’: Biobanks for the Future” as this regional meeting theme. The theme of the conference, influenced by titles of Bob Dylan’s extensive music catalog, are threaded throughout the meeting symposia.

In keeping with the theme, the regional program will focus on the evolving composition of biobanks and their progressive involvement in research. Biobanks now encompass much of the developing digital world and the regional meeting reflects this by focusing on digital biobanking and the collection of data for research from wearable technology. Biobanks have also expanded to developing living biobanks of cells, disease models, microbiomes and reprogrammed cells – each with complex challenges in maintaining these biobanks for future research. This changing face of biobanking is highlighted by the addendum to the fourth edition of the ISBER Best Practices. This addendum builds upon previous editions of the Best Practices of 2005, 2008, 2012, and 2018 and focuses on the liquid nitrogen (LN2)-based cryogenic storage of living biological and environmental specimens for research and clinical use.

PRECONFERENCE WORKSHOP

New to biobanking? This year, we are offering Biobanking 101 (additional registration required) as a preconference workshop held on Sunday, November 3rd which will introduce practical knowledge on the construction of consents, cold chain management, and harmonizing repository practice.

Participants will have the opportunity to learn about use of tools developed by ISBER to help set up and manage biobanks. Joanne Demchok (National Cancer Institute) will focus on one of ISBER’s tools, the International Repository Locator. Information will be provided about various repository locators and how tools can be accessed and utilized.

Obtaining informed consent for the collection and use of biospecimens can be a tremendous challenge and will be the second topic covered. Helena Ellis (Biobanking Without Borders, LLC) will be conducting a session on “How to write a Biobanking Informed Consent Document”. This workshop will provide easy to implement instructions to write clear biobanking consent forms based on best practices and will help participants understand both challenges and best practices for writing an informed consent document.

Quality and stability of a biospecimen requires proper cold chain management. This will be the third topic covered. Kathi Shea (Brooks Life Sciences) will discuss various methods, tools and best practices for cold chain management. Breakout discussions will help participants to address specific questions and network with other biobankers.

Sunday will end with a welcome reception for all attendees and roundtable discussions hosted by experts.
PROGRAM HIGHLIGHTS

The three day program includes roundtable discussions, a welcome reception, eight symposia sessions, two contributed paper sessions, four educational workshops, a networking reception, and numerous opportunities to network and learn more from our corporate sponsors at workshops and the exhibit hall booths.

The first full day of the program, Monday, is kicked off by an opening address by Debra Garcia, 2019-2020 ISBER President, followed by the keynote speaker Abasi Ene-Obong, CEO and founder of 54gene, who will provide perspective on building a pan-African biobank to promote genomic diversity in population health research.

Following the keynote is plenary Symposium 1: Bringing it back…to the Community: Banking on Diversity and Sharing/All of Us Spotlight and Symposium 2: All Along the Watch Tower: Wearable Data Tracking and Direct to Consumer Genetics Data. The program continues with Corporate Workshops 1 & 2, lunch in the exhibit hall, and Corporate Workshops 3 & 4.

The afternoon sessions open with Symposium 3: Don’t Think Twice, it’s Alright! There are Many Roads to Sustainability and concurrent Symposia 4A: Tangled up in Trypan Blue: Living Biobanks and Symposia 4B: All I Really Want to Do…is Share Data With You: Regulations for Data Sharing and International Collaborations. Monday concludes with an evening networking reception and simultaneous poster session.

Monday will end with a networking event for all attendees.

Tuesday opens with Symposium 5: Forever Young? Biospecimen Quality to Ensure Longevity, followed by the contributed paper sessions and a sponsored lunch symposium. The day concludes with concurrent sessions Symposium 6A: Shelter from the Storm: Keeping Biospecimens Alive and Symposium 6B: Integrating Digital Biospecimens: Don’t Leave Them “Blow-in’ in the Wind” and the closing ceremony.

Four educational workshops will also be offered on Tuesday, November 5th: Consent for Future Use of Biospecimens Under the Revised Common Rule; Pitching Biobanking; If it’s Fitness-for-Purpose You’re Chasing…The Tools, They are a Changin: Leveraging Standards, ISBER Tools and Other Resources; Irreproducible Research Based on Human Biospecimens: Can New Models of Bioresources Ameliorate This Problem?

Please join us for this important opportunity to learn with your colleagues as we reflect on modern and future repository challenges in the closing months of ISBER’s 20th anniversary.

SOCIAL EVENTS

The conference is set in downtown Minneapolis. The Stone Arch Bridge is a short walk away from the conference venue with a spectacular view of the Mississippi River and the Saint Anthony Falls. The sunsets on the bridge are spectacular. Minneapolis is also home to a large number of breweries and distilleries combined with a vibrant restaurant scene. If you choose to pursue your musical interests, a visit to Paisley Park, Prince’s private estate and music production complex is warranted.

ACKNOWLEDGEMENTS

We would like to thank our invited speakers and workshop presenters for their generous contributions to the program. Additional thanks are due to the many ISBER volunteers whose hands-on involvement in the planning and implementation process made the program possible. Members of the ISBER 2019 Regional Meeting and Scientific Program Committee, as well as the Organizing Advisory Committee (OAC), contributed a tremendous amount of time and effort in the last year, resulting in the wonderful program we will soon experience. Additional assistance was provided by the Education and Training Committee who worked so hard to organize the pre-conference and educational workshops.

We would also like to give a special acknowledgement to Marianne Henderson for her tremendous support and guidance to this year’s program committee. Marianne will be stepping down as the OAC’s Chairperson after 6.5 years of service.

We greatly appreciate the support received from our vendors and sponsors, whose participation also made the meeting possible. Please visit the exhibition hall to support the vendors and check out the corporate workshops throughout the meeting schedule.

Finally, we would like to thank the ISBER Heard Office staff under the direction of Ana Torres for their continual support and guidance.

Your feedback is very important to ISBER. The regional meeting is developed and produced by volunteer membership and the success of future meetings relies on your participation and input. As a reminder, please complete the electronic survey at the end of the meeting.
ISBER 2019-2020 Board of Directors

**PRESIDENT**
**MAY 2019 – MAY 2020**
Debra Leiolani Garcia, MPA
San Francisco, USA

**PRESIDENT-ELECT**
**MAY 2019 – MAY 2020**
Daniel Catchpoole, PhD, FFSc
Westmead, Australia

**PAST PRESIDENT**
**MAY 2019 – MAY 2020**
David Lewandowski, BA
Chelmsford, USA

**TREASURER**
**MAY 2017 – MAY 2020**
Piper Mullins, MS
Washington, USA

**SECRETARY**
**MAY 2017 – MAY 2020**
Nicole Sieffert, MBA, CCRC
Galveston, USA

**DIRECTOR-AT-LARGE – AMERICAS**
**MAY 2017 – MAY 2021**
Monique Albert, MSc, PMP
Toronto, Canada

**DIRECTOR-AT-LARGE – EUROPE, MIDDLE EAST AND AFRICA**
**MAY 2017 – MAY 2020**
Alison Parry-Jones, PhD
Cardiff, United Kingdom

**DIRECTOR-AT-LARGE – CHINA**
**MAY 2018 – MAY 2021**
Xun Xu, BSc, PhD
Guangdong, China

**DIRECTOR-AT-LARGE – INDO-PACIFIC RIM**
**MAY 2019 – MAY 2020**
Koh Furuta, MD, PhD
Tokyo, Japan

**EXECUTIVE DIRECTOR**
Ana Torres, MPub, CAE
Vancouver, Canada

ISBER Committee Chairs

**COMMUNICATIONS ADVISORY COMMITTEE CHAIR**
Catherine Seiler, PhD
Lexington, USA

**MEMBER RELATIONS ADVISORY COMMITTEE CHAIR**
Shonali Paul, MBA
Indore, India

**SCIENCE POLICY ADVISORY COMMITTEE CHAIR**
Marianna Bledsoe, MA
Silver Spring, USA

**EDUCATION AND TRAINING ADVISORY COMMITTEE CHAIR**
Kristina E. Hill, MPH, MT(ASCP)
Boca Raton, USA

**NOMINATING COMMITTEE CHAIR**
David Lewandowski, BA
Chelmsford, USA

**STANDARDS ADVISORY COMMITTEE CHAIR**
Daniel Simeon-Dubach, MD, MHA
Walchwil, Switzerland

**GOVERNANCE COMMITTEE CHAIR**
Nicole Sieffert, MBA, CCRC
Galveston, USA

**FINANCE COMMITTEE CHAIR**
Piper Mullins, MS
Washington, DC, USA

**MARKETING ADVISORY COMMITTEE CHAIR**
Kerry Wiles, BSc
Nashville, USA

**ORGANIZING ADVISORY COMMITTEE CHAIR**
Marianne Henderson, MS, CPC
Bethesda, USA
*(Term ended September 30, 2019)*

Zisis Kozlakidis, BSc, PhD, AKC, MBA, FLS
Lyon, France
ISBER Committee, Working Group, and Special Interest Group Listing

EDUCATION AND TRAINING ADVISORY COMMITTEE

Chair: Kristina Hill
Vice-Chair: Diane McGarvey
Members: Marta Castelhano A. Burcu Ergonul Brent Gali Shana Lamers Claire Lewis Tamsin Tarling Heidi Wagner Nicole Sieffert Tatiana Vinardell

GOVERNANCE COMMITTEE

Chair: Nicole Sieffert
Members: Monique Albert Koh Furuta Debra Garcia Alison Parry-Jones Morten Øien Kathy Sexton Stella Somiari

ORGANIZING ADVISORY COMMITTEE

Chair: Zisis Kozlakidis

STANDARDS ADVISORY COMMITTEE

Chair: Daniel Simeon-Dubach
Vice Chair: Clare Allocca
Members: Monique Albert Sergey Anisimov Yehudit Cohen Annemieke De Wilde Bonginkosi Duma Helena Ellis Koh Furuta Shannon McCall Timothy Sharp Karine Sargsyan Brent Schacter Wei Ping Shao Rajeev Singh Dana Valley Rang Wang Peter Watson

MEMBER RELATIONS ADVISORY COMMITTEE

Chair: Shonali Paul
Members: Judith Giri Kayla Gray Marianne Henderson Rogers Kisuule Piper Mullins Benjamin Otto Yunice Shao Xuexun Zhou Avashoni Zwane Judita Kinkorova

FINANCE COMMITTEE

Chair: Piper Mullins
Members: Daniel Catchpoole Debra Garcia David Lewandowski Jesus Monico Nicole Sieffert Rajeev Singh

NOMINATING COMMITTEE

Chair: David Lewandowski
Members: Allison Hubel Buzz Bies Rongxing Gan Shonali Paul Alison Parry-Jones Brent Schacter Kathi Shea

COMMUNICATIONS ADVISORY COMMITTEE

Chair: Catherine Seiler
Vice Chair: Ayat Salman
Members: Robert Hewitt Emily Hubbard Lise Matzke Jim Vaught Carol Weil Andy Zayenga

MARKETING ADVISORY COMMITTEE

Chair: Kerry Wiles
Vice-Chair: Nicole Bollinger
Members: Lokesh Agrawal Jason Chen Debra Garcia Jeff Holyoak Maryann Huie Zisis Kozlakidis Kara Page Kellie Soafer

SCIENCE POLICY ADVISORY COMMITTEE

Chair: Marianna Bledsoe
Vice-Chair: Helen Morrin
Members: Kelsey Dillehay McKillip William Grizzle Rita Lawlor Tohru Masui Elizabeth Mayne Michaela Th. Mayrhofer Hellen Nansumba Alison Parry-Jones Rebekah Rasooly Brent Schacter Lana Skirboil Caomihe Valley-Gilroy Madeleine Williams Wendy Wolf

2019 REGIONAL PROGRAM COMMITTEE


ISBER WORKING GROUPS

• Biospecimen Science
• Enviro-Bio
• Informatics
• International Repository Locator
• Pharma
• Rare Diseases
• Regulatory and Ethics

ISBER SPECIAL INTEREST GROUPS

• Automated Repositories
• Hospital-Integrated Biorepositories
• Living Biobanking
• Pediatric
• Understanding Our Donors
ISBER WOULD LIKE TO ACKNOWLEDGE EACH OF ITS COMMITTEES AND THANK THE VOLUNTEERS FOR THEIR HARD WORK.

- Communications Advisory Committee
  (Currently Recruiting)
- Education and Training Advisory Committee
- Marketing Advisory Committee
  (Currently Recruiting)
- Member Relations Advisory Committee
  (Currently Recruiting)
- Organizing Advisory Committee
- Scientific Program Committee
  (2021 SPC Currently Recruiting)
- Science Policy Advisory Committee
- Standards Committee

Are you interested in helping to lead and form the direction of the organization? Are you interested in joining colleagues from around the world to shape the organization? All ISBER members are eligible to participate on a committee. If you are interested, please reach out to info@isber.org.

VISIT WWW.ISBER.ORG FOR MORE INFORMATION
General Information

VENUE

Renaissance Minneapolis Hotel, The Depot
225 3rd Avenue South
Minneapolis, MN 55401, USA
Phone: +1 612-375-1700

REGISTRATION DESK HOURS OF OPERATION

<table>
<thead>
<tr>
<th></th>
<th>Sunday, November 3</th>
<th>Monday, November 4</th>
<th>Tuesday, November 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12:00pm – 1:00pm</td>
<td>7:00am – 7:00pm</td>
<td>7:00am – 5:30pm</td>
</tr>
<tr>
<td></td>
<td>4:00pm – 7:00pm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SPEAKERS SERVICES HOURS OF OPERATION

<table>
<thead>
<tr>
<th></th>
<th>Sunday, November 3</th>
<th>Monday, November 4</th>
<th>Tuesday, November 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4:00pm – 7:00pm</td>
<td>7:00am – 5:00pm</td>
<td>7:00am – 3:45pm</td>
</tr>
</tbody>
</table>

EXHIBIT HALL

<table>
<thead>
<tr>
<th></th>
<th>Sunday, November 3</th>
<th>Monday, November 4</th>
<th>Tuesday, November 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhibit Installation</td>
<td>10:00am – 5:30pm</td>
<td>9:00am – 3:45pm</td>
<td></td>
</tr>
<tr>
<td>Exhibit Take Down</td>
<td></td>
<td></td>
<td>3:45pm – 8:00pm</td>
</tr>
<tr>
<td>Exhibit Hours</td>
<td></td>
<td></td>
<td>6:30pm – 8:00pm</td>
</tr>
<tr>
<td></td>
<td>9:30am – 8:00pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9:00am – 3:45pm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CERTIFICATES OF ATTENDANCE

All attendees will receive a certificate of attendance after completion of the post-conference evaluation. The evaluation will be distributed via email following the meeting.

REGISTRATION RATES (PRICES IN USD)

<table>
<thead>
<tr>
<th></th>
<th>Regular Rate</th>
<th>On-Site Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISBER Member</td>
<td>$395</td>
<td>$445</td>
</tr>
<tr>
<td>Non-ISBER Member</td>
<td>$495</td>
<td>$545</td>
</tr>
<tr>
<td>Student/Technician</td>
<td>$295</td>
<td>$345</td>
</tr>
<tr>
<td>Exhibit Hall Pass</td>
<td>$150</td>
<td>$150</td>
</tr>
</tbody>
</table>

Full conference registration includes participation in scientific symposia and sessions, educational workshops (not including pre-conference workshop: Biobanking 101), a delegate bag, refreshment and conference meals, and invitation to all networking events.

Exhibit hall pass includes access to the exhibit hall, conference meals served in the exhibit hall, and access to all networking events.

NETWORKING EVENTS

All delegates are invited and encouraged to attend the two networking receptions:

Welcome Reception           Sunday, November 3, 6:30pm – 8:00pm
Networking and Poster Reception Monday, November 4, 6:30pm – 8:00pm

PRE-CONFERENCE WORKSHOP: BIOBANKING 101

Date: Sunday, November 3, 1:00pm – 5:00pm
Registration Fee: $95 USD

Pre-registration is required. Further details can be found on page 30.

“MEET THE VENDORS” EXHIBIT HALL ACTIVITY

Get to know our vendors, answer a few questions, and enter for a chance to win:

Grand Prize – $250 gift card
2nd Place Prize – $150 gift card
1 of 12 Runner Up Prizes – $25 gift card

To access the vendor survey, visit:
www.isber.org/isbersurvey
SAM HD
Automated Sample Management System

- Available store ranges from -80°C to +20°C
- Multiple labware types supported
- Sample retrieval in under 70 seconds
- Automated 1D and 2D barcode reading
- Remote monitoring and job submittal
- LIMS integration via dedicated API

1-508-544-7000
www.hamiltoncompany.com
sales@hamilton-storage.com
©2019 Hamilton Storage. All rights reserved.
Isber 2020
April 14-18
Anaheim, CA, USA
Annual Meeting & Exhibits

Roadmap to Accelerating Scientific Discovery

Biobanks have been portrayed as having the promise to unlock biological processes and promote a better tomorrow. Following the advent of the human genome project, biobanks have become the bedrock to accelerating scientific discoveries. Stemming from the success stories is a blueprint that places the biobank community at the forefront of research infrastructure for many generations to come.

In April 2020, global leaders and disruptors from the broad spectrum of the scientific community will converge in the largest international biobank conference, ISBER 2020, to address the impact of biobanks on science and how the related discoveries are establishing a roadmap to extend our knowledge network. From engaging with vulnerable populations to advances in artificial intelligence, experts at ISBER 2020 will highlight critical advances in biobanking and, for the first time, host a debate to discuss the utilization of samples and data in the modern era.

Our ability to transform health and research depends on the voices of all individuals willing to contribute and challenge the roadmap that biobanks are paving. Will you be part of the solution?

Register Now

Join us at the Anaheim Marriott, we’d love to see you there.
Late Breaking Abstract Submission Opening Soon! Watch Your Inbox.

Visit meetings.isber.org/2020
For more information
Exhibit Hall Floor Map

Exhibitor Listing

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Booth #</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2LA</td>
<td>14</td>
</tr>
<tr>
<td>Abbott Informatics</td>
<td>5</td>
</tr>
<tr>
<td>Agilent Technologies</td>
<td>25</td>
</tr>
<tr>
<td>Autoscribe Informatics, Inc.</td>
<td>30</td>
</tr>
<tr>
<td>Bahnson Environmental Specialties, LLC</td>
<td>16</td>
</tr>
<tr>
<td>Bluechip Limited</td>
<td>18</td>
</tr>
<tr>
<td>Brooks Life Sciences</td>
<td>11 &amp; 20</td>
</tr>
<tr>
<td>Bruker BioSpin Corporation</td>
<td>22</td>
</tr>
<tr>
<td>BSI Systems</td>
<td>18 &amp; 10</td>
</tr>
<tr>
<td>College of American Pathologists</td>
<td>17</td>
</tr>
<tr>
<td>CORIS Life Sciences Monitoring, Inc.</td>
<td>32</td>
</tr>
<tr>
<td>Cryotherm</td>
<td>2</td>
</tr>
<tr>
<td>Ellab, Inc.</td>
<td>23</td>
</tr>
<tr>
<td>Farrar Scientific</td>
<td>13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Booth #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluidigm</td>
<td>9</td>
</tr>
<tr>
<td>Freezerworks</td>
<td>6</td>
</tr>
<tr>
<td>Hamilton Storage</td>
<td>21</td>
</tr>
<tr>
<td>ISBER</td>
<td>27 &amp; 28</td>
</tr>
<tr>
<td>iSpecimen</td>
<td>4</td>
</tr>
<tr>
<td>KAYE</td>
<td>7</td>
</tr>
<tr>
<td>Liconic</td>
<td>34</td>
</tr>
<tr>
<td>Micronic/NBS Scientific</td>
<td>24</td>
</tr>
<tr>
<td>OpenSpecimen</td>
<td>8</td>
</tr>
<tr>
<td>PHC Corporation of North America</td>
<td>26</td>
</tr>
<tr>
<td>Scinomix</td>
<td>33</td>
</tr>
<tr>
<td>Thermo Fisher Scientific, Inc.</td>
<td>29</td>
</tr>
<tr>
<td>TTP Labtech</td>
<td>31</td>
</tr>
<tr>
<td>Ziath LLC</td>
<td>3</td>
</tr>
</tbody>
</table>
### Meeting-at-a-Glance

#### SUNDAY, NOVEMBER 3, 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00am – 1:00pm</td>
<td>ISBER Board and Committee Chair Meeting (Invitation only)</td>
<td>Rock Island</td>
</tr>
<tr>
<td>1:00pm – 5:00pm</td>
<td>ISBER Board Meeting (Invitation only)</td>
<td>Rock Island</td>
</tr>
<tr>
<td>10:00am – 5:30pm</td>
<td>Exhibit Installation</td>
<td>Depot Pavilion</td>
</tr>
<tr>
<td>12:00pm – 1:00pm</td>
<td>Registration Open</td>
<td>Great Northern Prefunction</td>
</tr>
<tr>
<td>1:00pm – 5:00pm</td>
<td>PRE-CONFERENCE WORKSHOP: BIOBANKING 101 (pre-registration required)</td>
<td>Zephyr</td>
</tr>
<tr>
<td>4:00pm – 7:00pm</td>
<td>Registration Open</td>
<td>Great Northern Prefunction</td>
</tr>
<tr>
<td>4:00pm – 7:00pm</td>
<td>Speaker Services Open</td>
<td>Luce Line</td>
</tr>
<tr>
<td>5:30pm – 6:30pm</td>
<td>ROUND TABLE DISCUSSIONS</td>
<td>The Conservatory</td>
</tr>
<tr>
<td>6:00pm – 6:30pm</td>
<td>Poster Installation</td>
<td>Depot Pavilion</td>
</tr>
<tr>
<td>6:30pm – 8:00pm</td>
<td>WELCOME RECEPTION WITH EXHIBITS</td>
<td>Depot Pavilion</td>
</tr>
</tbody>
</table>

#### MONDAY, NOVEMBER 4, 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00am – 7:00pm</td>
<td>Registration Open</td>
<td>Great Northern Prefunction</td>
</tr>
<tr>
<td>7:00am – 5:00pm</td>
<td>Speaker Services Open</td>
<td>Luce Line</td>
</tr>
<tr>
<td>7:00am – 8:00am</td>
<td>Coffee and Pastries</td>
<td>Great Northern Prefunction</td>
</tr>
<tr>
<td>8:00am – 9:45am</td>
<td>SYMPOSIUM 1</td>
<td>Great Northern</td>
</tr>
<tr>
<td>9:30am – 8:00pm</td>
<td>Exhibits Open</td>
<td>Depot Pavilion</td>
</tr>
<tr>
<td>9:45am – 10:15am</td>
<td>Networking Break in Exhibit Hall</td>
<td>Depot Pavilion</td>
</tr>
<tr>
<td>10:15am – 11:45am</td>
<td>SYMPOSIUM 2</td>
<td>Great Northern</td>
</tr>
<tr>
<td>12:00pm – 1:00pm</td>
<td>CORPORATE WORKSHOP 1: OPENSPECIMEN</td>
<td>Southern Pacific</td>
</tr>
<tr>
<td>12:00pm – 1:00pm</td>
<td>CORPORATE WORKSHOP 2: BROOKS LIFE SCIENCES &amp; PERKIN ELMER</td>
<td>Zephyr</td>
</tr>
<tr>
<td>12:00pm – 2:45pm</td>
<td>Networking Lunch Break in Exhibit Hall (lunch served from 12:00pm – 1:45pm)</td>
<td>Depot Pavilion</td>
</tr>
<tr>
<td>1:30pm – 2:30pm</td>
<td>CORPORATE WORKSHOP 3: BRUKER BIOSPIN</td>
<td>Southern Pacific</td>
</tr>
<tr>
<td>1:30pm – 2:30pm</td>
<td>CORPORATE WORKSHOP 4: TTP LABTECH</td>
<td>Zephyr</td>
</tr>
<tr>
<td>2:45pm – 4:15pm</td>
<td>SYMPOSIUM 3</td>
<td>Great Northern</td>
</tr>
<tr>
<td>4:15pm – 4:45pm</td>
<td>Networking Break in Exhibit Hall</td>
<td>Depot Pavilion</td>
</tr>
</tbody>
</table>
### MONDAY, NOVEMBER 4, 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:45pm – 6:30pm</td>
<td>SYMPOSIUM 4A</td>
<td>Great Northern</td>
</tr>
<tr>
<td>4:45pm – 6:30pm</td>
<td>SYMPOSIUM 4B</td>
<td>Zephyr</td>
</tr>
<tr>
<td>6:30pm – 8:00pm</td>
<td>NETWORKING RECEPTION AND POSTER SESSION</td>
<td>Depot Pavilion</td>
</tr>
</tbody>
</table>

### TUESDAY, NOVEMBER 5, 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00am – 5:30pm</td>
<td>Registration Open</td>
<td>Great Northern Prefunction</td>
</tr>
<tr>
<td>7:00am – 3:45pm</td>
<td>Speaker Services Open</td>
<td>Luce Line</td>
</tr>
<tr>
<td>7:00am – 8:00am</td>
<td>Coffee and Pastries</td>
<td>Great Northern Prefunction</td>
</tr>
<tr>
<td>8:00am – 9:30am</td>
<td>SYMPOSIUM 5</td>
<td>Great Northern</td>
</tr>
<tr>
<td>8:00am – 9:30am</td>
<td>EDUCATIONAL WORKSHOP 1</td>
<td>Zephyr</td>
</tr>
<tr>
<td>9:00am – 3:45pm</td>
<td>Exhibits Open</td>
<td>Depot Pavilion</td>
</tr>
<tr>
<td>9:30am – 10:00am</td>
<td>Networking Break in Exhibit Hall</td>
<td>Depot Pavilion</td>
</tr>
<tr>
<td>10:00am – 11:30am</td>
<td>CONTRIBUTED PAPER SESSION 1 &amp; 2</td>
<td>Southern Pacific &amp; Zephyr</td>
</tr>
<tr>
<td>11:45am – 1:15pm</td>
<td>AGILENT TECHNOLOGIES CORPORATE LUNCH SYMPOSIUM</td>
<td>Great Northern</td>
</tr>
<tr>
<td>11:45am – 1:15pm</td>
<td>General Lunch in Exhibit Hall</td>
<td>Depot Pavilion</td>
</tr>
<tr>
<td>1:30pm – 3:15pm</td>
<td>SYMPOSIUM 6A</td>
<td>Great Northern</td>
</tr>
<tr>
<td>1:30pm – 3:15pm</td>
<td>SYMPOSIUM 6B</td>
<td>Zephyr</td>
</tr>
<tr>
<td>3:15pm – 3:45pm</td>
<td>Networking Break in Exhibit Hall</td>
<td>Depot Pavilion</td>
</tr>
<tr>
<td>3:15pm – 3:45pm</td>
<td>Poster Take-Down</td>
<td>Depot Pavilion</td>
</tr>
<tr>
<td>3:45pm – 5:15pm</td>
<td>EDUCATIONAL WORKSHOPS 2, 3 &amp; 4</td>
<td>Great Northern, Southern Pacific &amp; Zephyr</td>
</tr>
<tr>
<td>3:45pm – 8:00pm</td>
<td>Exhibit Take-Down</td>
<td>Depot Pavilion</td>
</tr>
<tr>
<td>5:15pm – 5:30pm</td>
<td>Closing Ceremony</td>
<td>Great Northern</td>
</tr>
</tbody>
</table>
# Meeting Program

## SUNDAY, NOVEMBER 3, 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00am – 1:00pm</td>
<td>ISBER Board of Directors and Committee Chairs Meeting <em>(Invitation only)</em></td>
<td>Rock Island</td>
</tr>
<tr>
<td>1:00pm – 5:00pm</td>
<td>ISBER Board of Directors Meeting <em>(Invitation Only)</em></td>
<td>Rock Island</td>
</tr>
<tr>
<td>10:00am – 5:30pm</td>
<td>Exhibit Installation</td>
<td>Depot Pavilion</td>
</tr>
<tr>
<td>12:00pm – 1:00pm</td>
<td>Registration Open</td>
<td>Great Northern Prefunction</td>
</tr>
<tr>
<td>1:00pm – 5:00pm</td>
<td><strong>PRE-CONFERENCE WORKSHOP: BIOBANKING 101</strong> <em>(pre-registration required)</em></td>
<td>Zephyr</td>
</tr>
<tr>
<td></td>
<td><strong>Chairs:</strong> Judita Kinkorova, Tim Sharp</td>
<td></td>
</tr>
<tr>
<td>1:00pm – 1:05pm</td>
<td><strong>Introduction</strong></td>
<td></td>
</tr>
<tr>
<td>1:05pm – 1:20pm</td>
<td><strong>ISBER Tools Highlight: International Repository Locator</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Joanne Demchok, National Cancer Institute</strong></td>
<td></td>
</tr>
<tr>
<td>1:20pm – 2:30pm</td>
<td><strong>How to Write an Informed Consent Document</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Helena Ellis, Biobanking Without Borders</strong></td>
<td></td>
</tr>
<tr>
<td>2:30pm – 2:45pm</td>
<td>Networking Break</td>
<td></td>
</tr>
<tr>
<td>2:45pm – 3:55pm</td>
<td><strong>Cold Chain Management</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Kathi Shea, Brooks Life Sciences</strong></td>
<td></td>
</tr>
<tr>
<td>3:55pm – 5:00pm</td>
<td><strong>Breakout Discussion (Interactive Groups)</strong></td>
<td></td>
</tr>
<tr>
<td>4:00pm – 7:00pm</td>
<td>Registration Open</td>
<td>Great Northern Prefunction</td>
</tr>
<tr>
<td>4:00pm – 7:00pm</td>
<td>Speaker Services Open</td>
<td>Luce Line</td>
</tr>
<tr>
<td>5:30pm – 6:30pm</td>
<td><strong>ROUND TABLE DISCUSSIONS</strong></td>
<td>The Conservatory</td>
</tr>
<tr>
<td></td>
<td><strong>Blood for Collection (B4C) Workgroup: A Multicenter Collaboration Investigating Blood Collection Volumes in Human Research</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Facilitator:</strong> Hanluen Kuo, The University of Kansas Cancer Center</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Biosamples Open Governance Using Blockchain</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Facilitator:</strong> Daniel Uribe, Genobank.io</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Sample Reconciliation - Challenges and Solutions</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Facilitator:</strong> Cathy Seiler, Kaleido Biosciences</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Living Biobank Special Interest Group - Goals and Directions</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Facilitator:</strong> Jedediah Lewis, Organ Preservation Alliance</td>
<td></td>
</tr>
<tr>
<td>6:00pm – 6:30pm</td>
<td>Poster Installation</td>
<td>Depot Pavilion</td>
</tr>
<tr>
<td>6:30pm – 8:00pm</td>
<td><strong>WELCOME RECEPTION WITH EXHIBITS</strong></td>
<td>Depot Pavilion</td>
</tr>
</tbody>
</table>

**Join us for refreshments and hors d’oeuvres in the exhibit hall while networking with colleagues and exhibitors, and perusing the abstract posters.**

## MONDAY, NOVEMBER 4, 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00am – 7:00pm</td>
<td>Registration Open</td>
<td>Great Northern Prefunction</td>
</tr>
<tr>
<td>7:00am – 5:00pm</td>
<td>Speaker Services Open</td>
<td>Luce Line</td>
</tr>
<tr>
<td>7:00am – 8:00am</td>
<td>Coffee and Pastries</td>
<td>Great Northern Prefunction</td>
</tr>
</tbody>
</table>
MONDAY, NOVEMBER 4, 2019

8:00am – 9:45am  SYMPOSIUM 1: BRINGING IT BACK... TO THE COMMUNITY: BANKING ON DIVERSITY & SHARING/ALL OF US SPOTLIGHT  
Chairs: Allison Hubel, Rita Lawlor, Billy Schleif  
Great Northern

Prevention and precision medicine for all relies on biobanks and research studies that include specimens from diverse populations to answer questions that are generalizable and specific for certain populations. Inclusion of diverse, underserved and specialized populations in research requires special attention to governance structures and active approaches to community engagement. Attention to privacy and trust relationships is a significant element of success. This symposium will discuss the opportunities and challenges in precision medicine and prevention for all, community engagement, IRB governance with a highlight on the activities of All of Us Cohort and other large studies that impact communities.

8:00am – 8:10am  ISBER Welcome and Opening Remarks  
Debra Garcia, Allison Hubel, Rita Lawlor, Billy Schleif

8:10am – 8:35am  Keynote Lecture: Increasing Precision in Medicine: Accessing the Most Genetically Diverse Continent  
Abasi Ene-Obong, 54gene

8:35am – 8:55am  The Networked Approach to Biorepository Science: Big Opportunities and Big Challenges  
Aaron Goldenberg, Case Western Reserve University; Kyle Brothers, University of Louisville

8:55am – 9:25am  Every Specimen Has a Story: Engaging with Biobanking Community Advisory Boards  
Karen Meagher, Mayo Clinic; David Kotsonas, Community Advisory Board; Betty Smith, Community Advisory Board

9:25am – 9:45am  Panel Discussion

9:30am – 8:00pm  Exhibits Open  
Depot Pavilion

9:45am – 10:15am  Networking Break in Exhibit Hall  
Depot Pavilion

10:15am – 11:45am  SYMPOSIUM 2: ALL ALONG THE WATCH TOWER: WEARABLE DATA TRACKING AND DIRECT TO CONSUMER GENETICS DATA  
Chairs: Helena Ellis, Rita Lawlor  
Great Northern

The digital health industry has sprung up quickly in recent years. Easy access to direct to consumer genetics for ancestry and health risk analysis, personal digital health trackers to monitor constantly vital statistics, and lifestyle have contributed significantly to this growth. In 2018, it was predicted that venture capitalists and health systems would invest in the region of $7 billion in digital health solutions including wearables and biosensors like Fitbits, precision medicine and genomics, mobile diagnostics, and clinical decision support via telemedicine. Whilst the FDA regulates medical devices, it does not regulate all genetic services or wearable devices.

Wearable data tracking and direct to consumer genetics data have many elements in common. They enable the individual to produce vast amounts of health-related data that are an incredible source of data for research and public health, they raise privacy concerns, and they open a market for individual selling of personal data. In this session, we will discuss the implications of such bio-voyeurism, whether (and how) such data should be shared and banked for future research use and the challenges to be overcome to facilitate such sharing. We will address potential policy gaps and self-regulation recommendations required to ameliorate privacy concerns and other ethics and governance issues related to big data banking.

10:15am – 10:35am  Wireless Health and Performance Monitoring Systems  
Azar Alizadeh, GE Research

10:35am – 10:55am  Digitizing the Patient: Objective Data that Complements Biobanks  
Jorge Nieva, USC/Norris Cancer Center

10:55am – 11:15am  Direct-to-Consumer Genetic Testing: Promise, Pitfalls & Perils  
Ellen Matloff, My Gene Counsel

11:15am – 11:45am  Panel Discussion
**MONDAY, NOVEMBER 4, 2019**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
</table>
| 12:00pm – 1:00pm | **CORPORATE WORKSHOP 1: OPENSPECIMEN - WORLD’S MOST WIDELY USED OPEN SOURCE BIOSPECIMEN MANAGEMENT SOFTWARE**  
Srikanth Adiga, OpenSpecimen | Southern Pacific |
| 12:00pm – 1:00pm | **CORPORATE WORKSHOP 2: THE IMPORTANCE OF SAMPLE MANAGEMENT IN PRECISION MEDICINE: A HIGH-THROUGHPUT BIOBANKING WORKFLOW SOLUTION**  
Andrew Brooks, RUCDR, Brooks Life Sciences; Mark Dupal, PerkinElmer Applied Genomics | Zephyr |
| 12:00pm – 2:45pm | Networking Lunch Break in Exhibit Hall (lunch served from 12:00pm – 1:45pm) | Depot Pavilion |
| 1:30pm – 2:30pm | **CORPORATE WORKSHOP 3: ADVANTAGES OF SOP-BASED NMR DIAGNOSTICS FOR THE QUALITY AND FUTURE-PROOFING OF BIOBANK SAMPLES**  
Eduardo Nascimento, Bruker BioSpin Corp. | Southern Pacific |
| 1:30pm – 2:30pm | **CORPORATE WORKSHOP 4: CAN YOU JUSTIFY AUTOMATING YOUR STORAGE?**  
Issa Issac, TTP Labtech; Paul Lomax, TTP Labtech | Zephyr |
| 2:45pm – 4:15pm | **SYMPOSIUM 3: DON’T THINK TWICE, IT’S ALRIGHT! THERE ARE MANY ROADS TO SUSTAINABILITY**  
Chair: Marianne Henderson  
Facilitators: Helena Ellis, Daniel Simeon-Dubach | Great Northern |
| 2:45pm – 2:55pm | Introduction  
Marianne Henderson, National Cancer Institute |  |
| 2:55pm – 3:35pm | Setting the Stage: Sustainable Biobanks in Minnesota  
Keith Barker, Bell Museum of Natural History; Cole Drifka, Biorepository and Laboratory Services (BLS), University of Minnesota; Bharat Thyagarajan, Advanced Research and Diagnostics Laboratory, University of Minnesota; Mine Çiçek, Mayo Clinic Bioservices |  |
| 3:35pm – 4:15pm | Interactive Panel Discussion |  |
| 4:15pm – 4:45pm | Networking Break in Exhibit Hall | Depot Pavilion |
### MONDAY, NOVEMBER 4, 2019

**SYMPOSIUM 4A: TANGLED UP IN TRYPAN BLUE: LIVING BIOBANKS**  
*Chairs: Allison Hubel, Xuefeng Liu*

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:45pm – 5:15pm</td>
<td>PDX Mouse Models Integrated into a Precision Medicine Initiative for Ovarian Cancer</td>
<td>Tim Starr, University of Minnesota</td>
</tr>
<tr>
<td>5:15pm – 5:40pm</td>
<td>Genome Resource Banking of Genetically Modified Rodents and Current Challenges</td>
<td>Yuksel Agca, University of Missouri</td>
</tr>
<tr>
<td>5:40pm – 6:05pm</td>
<td>Developing an Off-the-Shelf Living Tissue Supply</td>
<td>Jedediah Lewis, Organ Preservation Alliance</td>
</tr>
<tr>
<td>6:05pm – 6:30pm</td>
<td>Cryopreservation of Cells and Spores by Encapsulation</td>
<td>Alptekin Aksan, University of Minnesota</td>
</tr>
</tbody>
</table>

**SYMPOSIUM 4B: “ALL I REALLY WANT TO DO”... IS SHARE DATA WITH YOU: REGULATIONS FOR DATA SHARING AND INTERNATIONAL COLLABORATIONS**  
*Chairs: Marianna Bledsoe, Amanda Moors*

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:45pm – 5:05pm</td>
<td>“I ain’t lookin’ to block you up”: International Collaboration and Data Flow Under the EU GDPR</td>
<td>Heidi Beate Bentzen, University of Oslo</td>
</tr>
<tr>
<td>5:05pm – 5:25pm</td>
<td>Impact of US Privacy Law and GDPR on Data Sharing for Research Purposes</td>
<td>David Peloquin, Ropes &amp; Gray LLP</td>
</tr>
<tr>
<td>5:25pm – 5:45pm</td>
<td>Rapidly Evolving Challenges and Opportunities of Access and Benefit Sharing (ABS) Rules for Biodiversity Collections and Research</td>
<td>Scott Miller, Smithsonian Institution</td>
</tr>
<tr>
<td>5:45pm – 6:30pm</td>
<td>Panel Discussion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Additional participants: Rita Lawlor, Judita Kinkorova</td>
<td></td>
</tr>
</tbody>
</table>

**NETWORKING RECEPTION AND POSTER SESSION**  
*Depot Pavilion*

Join us for refreshments and hors d’oeuvres in the exhibit hall while networking with colleagues, exhibitors, and poster presenters. Poster presenters will be by their posters and available for discussion from 6:30pm to 7:30pm.
**TUESDAY, NOVEMBER 5, 2019**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00am – 5:30pm</td>
<td>Registration Open</td>
<td>Great Northern Prefunction</td>
</tr>
<tr>
<td>7:00pm – 3:45pm</td>
<td>Speaker Services Open</td>
<td>Luce Line</td>
</tr>
<tr>
<td>7:00am – 8:00am</td>
<td>Coffee and Pastries</td>
<td>Great Northern Prefunction</td>
</tr>
<tr>
<td>8:00am – 9:30am</td>
<td><strong>SYMPOSIUM 5: FOREVER YOUNG? BIOSPECIMEN QUALITY TO ENSURE LONGEVITY</strong></td>
<td>Great Northern</td>
</tr>
<tr>
<td></td>
<td><strong>Chairs: David Lewandowski, Amanda Riffel</strong></td>
<td></td>
</tr>
<tr>
<td>8:00am – 8:05am</td>
<td><strong>Introduction</strong></td>
<td>Amanda Riffel, Children’s Mercy Hospital</td>
</tr>
<tr>
<td>8:05am – 8:25am</td>
<td><strong>Defining Quality In Tissue Biospecimens</strong></td>
<td>Stephen Hewitt, National Cancer Institute</td>
</tr>
<tr>
<td>8:25am – 8:45am</td>
<td><strong>What Is the Role of Pre-Analytical Variables on Thrombosis Biomarkers in a Diverse Population of Cancer Patients?</strong></td>
<td>Elizabeth Duffy, Boston Medical Center</td>
</tr>
<tr>
<td>8:45am – 9:05am</td>
<td><strong>Delta-S-Cys-Albumin: A Lab Test that Quantifies Cumulative Exposure of Archived Human Blood Plasma and Serum Samples to Thawed Conditions</strong></td>
<td>Chad Borges, Arizona State University</td>
</tr>
<tr>
<td>9:05am – 9:30am</td>
<td><strong>Question and Answer Session</strong></td>
<td></td>
</tr>
<tr>
<td>8:00am – 9:30am</td>
<td><strong>EDUCATIONAL WORKSHOP 1: CONSENT FOR FUTURE USE OF BIOSPECIMENS UNDER THE REVISED COMMON RULE</strong></td>
<td>Zephyr</td>
</tr>
<tr>
<td></td>
<td><strong>Mariana Bledsoe, Independent Consultant, William Grizzle, University of Alabama at Birmingham, David Peloquin, Ropes &amp; Gray LLP</strong></td>
<td></td>
</tr>
<tr>
<td>9:00am – 3:45pm</td>
<td>Exhibits Open</td>
<td>Depot Pavilion</td>
</tr>
<tr>
<td>9:30am – 10:00am</td>
<td>Networking Break in Exhibit Hall</td>
<td>Depot Pavilion</td>
</tr>
<tr>
<td>10:00am – 11:30am</td>
<td><strong>CONTRIBUTED PAPER SESSION 1: GOTTA SERVE SOMEBODY – ETHICS AND STANDARDS</strong></td>
<td>Southern Pacific</td>
</tr>
<tr>
<td></td>
<td><strong>Chairs: Debra Garcia, Cheryl Michels</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Giving Patients, the Public, and Health-Care Providers a Voice in Pediatric Mental Health Biobanking</strong></td>
<td>James Shih, BC Children’s Hospital BioBank</td>
</tr>
<tr>
<td></td>
<td><strong>The Cost of Utilizing a Permission to Contact (PTC) Platform to Support Research: A Retrospective Access Example</strong></td>
<td>Karlene Carvalho, BC Cancer Agency</td>
</tr>
<tr>
<td></td>
<td><strong>Analysis of Three Internationally Recognized Biobanking Standards</strong></td>
<td>Tamsin Tarling, University of British Columbia</td>
</tr>
<tr>
<td></td>
<td><strong>Patients Enhancing Research Collaborations at Holden: The Consolidation of Disparate Biorepository Enrollment Procedures</strong></td>
<td>Laura Jacobus, The University of Iowa</td>
</tr>
</tbody>
</table>
## TUESDAY, NOVEMBER 5, 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00am – 11:30am</td>
<td><strong>CONTRIBUTED PAPER SESSION 2: MODERN TIMES – DATA AND SCIENCE</strong></td>
</tr>
<tr>
<td></td>
<td><em>Chairs: Ping Guan, Diane McGarvey</em></td>
</tr>
<tr>
<td></td>
<td>Innovative Devices for Community-Based Development of Germplasm Repositories</td>
</tr>
<tr>
<td></td>
<td>Yue Liu, Louisiana State University</td>
</tr>
<tr>
<td></td>
<td>BRoTHER – A Regional Biobank Network in Europe</td>
</tr>
<tr>
<td></td>
<td>Judita Kinkorova, University Hospital Pilsen</td>
</tr>
<tr>
<td></td>
<td>NASA Institutional Scientific Collection (ISC) at Ames Research Center</td>
</tr>
<tr>
<td></td>
<td>Ryan Scott, NASA, Wyle Labs</td>
</tr>
<tr>
<td></td>
<td>Human Lung Development from Canalicular Through Alveolar Stages Made Accessible by a Novel</td>
</tr>
<tr>
<td></td>
<td>Pediatric Biorepository</td>
</tr>
<tr>
<td></td>
<td>Gloria Pryhuber, University of Rochester Medical Center</td>
</tr>
<tr>
<td></td>
<td>Moffitt Cancer Center’s Biospecimen Pilot Project Process: Improving Access to Biospecimens</td>
</tr>
<tr>
<td></td>
<td>Edward R. Seijo, H. Lee Moffitt Cancer Center</td>
</tr>
<tr>
<td></td>
<td>Standardizing Pre-analytical Workflows for Deriving Cell Free DNA from Venous Whole Blood</td>
</tr>
<tr>
<td></td>
<td>Jordan Lee Pleskatt, The George Washington University</td>
</tr>
<tr>
<td>11:45am – 1:15pm</td>
<td><strong>CORPORATE LUNCH SYMPOSIUM: IS YOUR CELL-FREE DNA SAMPLE FIT FOR PURPOSE? BIOBANK SAMPLES QC</strong></td>
</tr>
<tr>
<td></td>
<td><em>Lunch will be served within this session</em></td>
</tr>
<tr>
<td></td>
<td>Great Northern</td>
</tr>
<tr>
<td>11:45am – 1:15pm</td>
<td>General Lunch in the Exhibit Hall</td>
</tr>
<tr>
<td></td>
<td>Depot Pavilion</td>
</tr>
<tr>
<td>1:30pm – 3:15pm</td>
<td><strong>SYMPOSIUM 6A: SHELTER FROM THE STORM: KEEPING BIOSPECIMENS ALIVE</strong></td>
</tr>
<tr>
<td></td>
<td><em>Chairs: Daniel Simeon-Dubach, Amy Skubitz</em></td>
</tr>
<tr>
<td></td>
<td>Keeping heterogeneous systems alive is a particular challenge for living biobanks. Speakers in</td>
</tr>
<tr>
<td></td>
<td>this session will expand upon the challenges outlined in Symposium 4A to include challenges of</td>
</tr>
<tr>
<td></td>
<td>preserving heterogeneous systems such as microbiome, human tumors and other biospecimens</td>
</tr>
<tr>
<td></td>
<td>containing numerous cell types.</td>
</tr>
<tr>
<td>1:30pm – 1:55pm</td>
<td>The RAMS Registry/Repository: Biobanking for Microbiome Research in Women’s Reproductive Health</td>
</tr>
<tr>
<td></td>
<td>and Pregnancy</td>
</tr>
<tr>
<td></td>
<td>Gregory Buck, Virginia Commonwealth University</td>
</tr>
<tr>
<td>1:55pm – 2:20pm</td>
<td>Biobanks in LMIC: Global Efforts Needed to Foster Pediatric Cancer Research</td>
</tr>
<tr>
<td></td>
<td>Rania Labib, Children’s Cancer Hospital-57357-Egypt</td>
</tr>
<tr>
<td>2:20pm – 2:45pm</td>
<td>Conditionally Reprogrammed Normal and Tumor Cells – A Living Biobank – For Precision Medicine</td>
</tr>
<tr>
<td></td>
<td>Xuefeng Liu, Lombardi Comprehensive Cancer Center, Georgetown University</td>
</tr>
<tr>
<td>2:45pm – 3:15pm</td>
<td>Panel Discussion</td>
</tr>
</tbody>
</table>
**SYMPOSIUM 6B: INTEGRATING DIGITAL BIOSPECIMENS: DON’T LEAVE THEM “BLOWIN’ IN THE WIND”**

**Chairs:** Stephen Hewitt, Cheryl Michel

Digital pathology, along with digital radiology imaging systems, is becoming the new norm within clinical digital imaging. They are incredible resources for immediate review of disease status and tissue samples. The session will focus on digital imaging from radiology and pathology and its potential as a biobanking and research resource to catalogue disease, track the progression of disease and/or recovery, and use as a diagnostic tool. This session will also explore the innovative area of digital imaging as a learning tool to develop artificial intelligent (AI) systems and the potential use of AI systems to provide quality control, analysis of sample composition and computer assisted evaluation of disease.

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30pm – 2:00pm</td>
<td>Advancing Digital Biobanking: Impact of Digital Pathology and Computational Pathology Tools</td>
<td>Great Northern</td>
</tr>
<tr>
<td></td>
<td><em>Anil Parwani, The Ohio State University</em></td>
<td></td>
</tr>
<tr>
<td>2:00pm – 2:25pm</td>
<td>Digital Pathology and AI – Future Opportunities</td>
<td>Great Northern</td>
</tr>
<tr>
<td></td>
<td><em>Michael Feldman, University of Pennsylvania Health System</em></td>
<td></td>
</tr>
<tr>
<td>2:25pm – 2:50pm</td>
<td>Diagnostic Consensus through Image Search – Lessons Learned from Searching in TCGA Repository of Whole Slide Images</td>
<td>Southern Pacific</td>
</tr>
<tr>
<td></td>
<td><em>Hamid Tizhoosh, Kimia Lab, University of Waterloo</em></td>
<td></td>
</tr>
<tr>
<td>2:50pm – 3:15pm</td>
<td>Establishing a Searchable Imaging Data Commons: Mining Digital Pathology and Tumor Imaging</td>
<td>Great Northern</td>
</tr>
<tr>
<td></td>
<td><em>David Gutman, Emory University</em></td>
<td></td>
</tr>
</tbody>
</table>

3:15pm – 3:45pm Networking Break in Exhibit Hall

3:15pm – 3:45pm Poster Take-Down

3:45pm – 5:15pm **EDUCATIONAL WORKSHOP 2: IRREPRODUCIBLE RESEARCH BASED ON HUMAN BIOSPECIMENS: CAN NEW MODELS OF BIORESOURCES AMELIORATE THIS PROBLEM?**

*William Grizzle, University of Alabama at Birmingham; Shannon McCall, Duke University School of Medicine*

3:45pm – 5:15pm **EDUCATIONAL WORKSHOP 3: IF IT’S FITNESS-FOR-PURPOSE YOU’RE CHASIN’… THE TOOLS, THEY ARE A CHANGIN’: LEVERAGING STANDARDS, ISBER TOOLS AND OTHER RESOURCES**

*Clare Allocca, National Institute of Standards & Technology; Marianna Bledsoe, Independent Consultant; Koh Furuta, Council for Industrial Use of Biological and Environmental Repositories (CIBER)*

3:45pm – 5:15pm **EDUCATIONAL WORKSHOP 4: PITCHING BIOBANKING**

*Suzanne Vercauteren, BC Children’s Hospital Biobank; Daniel Catchpoole, The Tumour Bank – CCRU*

3:45pm – 8:00pm Exhibit Take-Down

5:15pm – 5:30pm Closing Ceremony
Round Table Discussion Summaries

**The Conservatory**
Sunday, November 3 | 5:30pm – 6:30pm

**BLOOD FOR COLLECTION (B4C) WORKGROUP: A MULTICENTER COLLABORATION INVESTIGATING BLOOD COLLECTION VOLUMES IN HUMAN RESEARCH**

*Facilitator: Hanluen Kuo, The University of Kansas Cancer Center*

Originating from the ISBER 2018 Annual Meeting in Dallas, TX, we established a workgroup that has collected data from biorepository requests spanning institutions located in Australia, Canada, the UK and the US. We have also compiled data from different vendors and a variety of extraction kits. Our goal is to investigate the lack of standardization that exists between the blood collection and storage protocols at different institutions, the assays they intend to use, and the potential of compromising the health from willing research participants and donors. We would like to have a discussion on the current data we have gathered with others in the biorepository field to see what their experiences are and if there is interest for more collaboration and contribution to this investigation.

**BIOSAMPLES OPEN GOVERNANCE USING BLOCKCHAIN**

*Facilitator: Daniel Uribe, Genebank.io*

How Blockchain can enable donors to keep track of their biospecimens and corresponding data sets while participating in a biobank. How can donors be contacted or re-consented with privacy?

**SAMPLE RECONCILIATION – CHALLENGES AND SOLUTIONS**

*Facilitator: Cathy Seiler, Kaleido Biosciences*

When receiving samples from clinical trials, external researchers, or other sources, a process of sample reconciliation must take place. This includes ensuring that all the samples that you were supposed to receive were received (and you didn’t get any extra), that you’ve received the associated sample metadata, and that this data can be associated with the samples that have been received. Though facilitated by sample tracking systems, the process of sample reconciliation can be a detailed and often tedious process. In the context of a clinical trial, it can also involve many external partners such as central laboratories, data management, clinical operations and CROs. This roundtable will discuss challenges that people have faced in reconciling samples and data and the solutions that have worked to make it an easier and more streamlined process.

**LIVING BIOBANK SPECIAL INTEREST GROUP – GOALS AND DIRECTIONS**

*Facilitator: Jedidiah Lewis, Organ Preservation Alliance*

ISBER recently announced the launch of the new “Living Biobanking” special interest group. In this roundtable discussion, members of the ISBER community will discuss goals for the group and brainstorm future directions.

---

**LAUNCH OF UPDATED COURSE!**

**ESSENTIALS OF BIOBANKING**
formerly “Introduction to biobanking”

*Designed by biobankers for biobankers.*

**WHAT ARE THE BENEFITS TO YOU AND YOUR ORGANIZATION FROM TAKING THIS COURSE?**

- **Acquire** knowledge required for operating and managing biobanks and biospecimen research
- **Gain** knowledge of applying ISBER Best Practices, Fourth Edition
- **Help** your biobank prepare for certification or accreditation (ISO, CTRNet, CAP)
- **Access** new content on the topic of biobank planning
- **Be an invaluable** asset to your organization by acquiring knowledge of key biobanking elements
- **Receive** a record of completion

Available in English and French

*ISBER MEMBER PRICE: $195 USD*

For more information visit: [www.isber.org](http://www.isber.org)
Advisory Board (CAB) Network over the last twelve years. We will describe the evolution of the Mayo Clinic Community Advisory Board (CAB) Network. The CAB Board includes Betty Smith, PhD; Karen Meagher, Community Advisory Board; and David Kotsonas, PhD, Mayo Clinic. The CAB Network was created to be inclusive and representative of the communities that have contributed to the Mayo Clinic biobank, so everyone is a beneficiary of the initiative.

Unfortunately, African-Americans and all those of African descent are under-represented in the human genome project due to the unavailability of African-centric genetic studies. This places Africans and all those of African descent at a disadvantage when it comes to access to personalized medicine. 54gene is a robust repository of biological specimens that will generate data to drive bespoke solutions to healthcare and patient management. In doing this, we are giving back to the communities that have contributed to the biobank, so everyone is a beneficiary of the initiative.

The science of biobanking is being transformed by innovative new approaches to networked science. Networked biorepositories, which link data and biosamples across multiple sites, are often built with the intention of increasing the diversity of samples available for research as well as conducting studies with larger overall sample sizes. They also raise a number of novel challenges related to ethical, legal, and social issues (ELSI). In this presentation, Drs. Aaron Goldenberg and Kyle Brothers will discuss emerging ELSI that are raised by networked biorepositories, with a particular focus on different approaches taken by centralized biorepository networks and decentralized biorepository networks. The All of Us Research Program, the largest research effort ever undertaken by the NIH, will be discussed as a case study to demonstrate these points, with a particular focus on the way its centralized strategy has affected its missions to include diverse communities in research and to engage with underrepresented communities in its development and oversee.

Every specimen has a story: engaging with biobanking community advisory boards

Karen Meagher, PhD, Mayo Clinic; David Kotsonas, Community Advisory Board; Betty Smith, Community Advisory Board.

We will describe the evolution of the Mayo Clinic Community Advisory Board (CAB) Network over the last twelve years. A bioethics researcher from the Biomedical Ethics Research Program will describe the different forms of community engagement. The merits and limitations of CABs will be described in relationship to other forms of community engagement including deliberative democracy, focus groups with biobank donors, and community-based participatory research (CBPR). As a case study, the biomedical ethics researcher will walk through the return of pharmacogenomics results to biobank participants, including how the Rochester, Minnesota CAB worked with genetics and bioethics researchers to inform how results would be communicated to biobank participants. As ISBER is in Minnesota this year, a CAB member will come from our Rochester, Minnesota area site and describe what it is like to provide advice to the Mayo Clinic Bioethics Research Program, biobank researchers, and biobank leadership. In addition, the CAB member and bioethics researcher will reflect on the network annual biorepository retreat which occurs every fall and includes biobank leaders, bioethicists, and community members.

The Networked Approach to Biorepository Science: Big Opportunities and Big Challenges

Aaron Goldenberg, PhD, MPH, Case Western Reserve University; Kyle Brothers, MD, PhD, University of Louisville.

The science of biobanking is being transformed by innovative new approaches to networked science. Networked biorepositories, which link data and biosamples across multiple sites, are often built with the intention of increasing the diversity of samples available for research as well as conducting studies with larger overall sample sizes. They also raise a number of novel challenges related to ethical, legal, and social issues (ELSI). In this presentation, Drs. Aaron Goldenberg and Kyle Brothers will discuss emerging ELSI that are raised by networked biorepositories, with a particular focus on different approaches taken by centralized biorepository networks and decentralized biorepository networks. The All of Us Research Program, the largest research effort ever undertaken by the NIH, will be discussed as a case study to demonstrate these points, with a particular focus on the way its centralized strategy has affected its missions to include diverse communities in research and to engage with underrepresented communities in its development and oversee.

Every specimen has a story: engaging with biobanking community advisory boards

Karen Meagher, PhD, Mayo Clinic; David Kotsonas, Community Advisory Board; Betty Smith, Community Advisory Board.

We will describe the evolution of the Mayo Clinic Community Advisory Board (CAB) Network over the last twelve years. A bioethics researcher from the Biomedical Ethics Research Program will describe the different forms of community engagement. The merits and limitations of CABs will be described in relationship to other forms of community engagement including deliberative democracy, focus groups with biobank donors, and community-based participatory research (CBPR). As a case study, the biomedical ethics researcher will walk through the return of pharmacogenomics results to biobank participants, including how the Rochester, Minnesota CAB worked with genetics and bioethics researchers to inform how results would be communicated to biobank participants. As ISBER is in Minnesota this year, a CAB member will come from our Rochester, Minnesota area site and describe what it is like to provide advice to the Mayo Clinic Bioethics Research Program, biobank researchers, and biobank leadership. In addition, the CAB member and bioethics researcher will reflect on the network annual biorepository retreat which occurs every fall and includes biobank leaders, bioethicists, and community members.

Keynote Lecture – Increasing Precision in Medicine: Accessing the Most Genetically Diverse Continent

Abasi Ene-Obong, PhD, 54gene

There are ongoing efforts to improve the human genome project to make it more representative of the world population as well as to make it as diverse as possible. Improvement in its diversity will ensure that genomic data is available for the use of people everywhere in the world. The importance of genomic data is immense, as it helps to predict disease occurrence as well as to guide the design of drugs for targeted therapy.

Unfortunately, Africa remains under-represented in the human genome project, due to the unavailability of African-centric genetic studies. This places Africans and all those of African descent at a disadvantage when it comes to access to personalized medicine. 54gene is a robust repository of biological specimens that will generate data to drive bespoke solutions to healthcare and patient management. In doing this, we are giving back to the communities that have contributed to the biobank, so everyone is a beneficiary of the initiative.

Symposium 2: All Along the Watch Tower: Wearable Data Tracking and Direct to Consumer Genetics Data

Great Northern

Monday, November 4 | 10:15am – 11:45am

Wearable Data Tracking and Direct to Consumer Genetics Data

Azar Alizadeh, PhD, GE Research

Digitizing the Patient: Objective Data that Complements Biobanks

Jorge Nieva, MD, USC/Norris Cancer Center

Genomic information on cancer is interesting. When it is tied to clinical outcome data, it is useful. But clinical outcomes are not purely driven by tumor characteristics, they are also driven by characteristics of the patient and the interaction of the patient and the tumor at the reference time that the tumor specimen was taken. A tumor sampled at the end of life and the same tumor sampled in stage 1 may have identical gene profiles, but the clinical outcome data will look very different to the person performing the survival analysis. This presentation will discuss new digital tools that can quantify health of the patient, making it possible for clinicians, biobanks, and drug developers to control for patient factors when analyzing outcome data. Both smartphone -based and in-clinic assessment tools will be discussed.

Direct-to-Consumer Genetic Testing: Promise, Pitfalls & Perils

Ellen Matloff, MS, CGC, My Gene Counsel, LLC

It is estimated that 100 million people will have undergone direct-to-consumer (DTC) genetic testing by the year 2021. Many companies now offer these services, each with variable qualities, amounts, and types of data. How will that genetic data
be used – by consumers, companies, government, health care providers, big data aggregators, and pharma? The promise of genetic data, as well as the risks, will be discussed.

**SYMPOSIUM 3: DON’T THINK TWICE, IT’S ALRIGHT! THERE ARE MANY ROADS TO SUSTAINABILITY**

*Great Northern*

Monday, November 4 | 2:45pm – 4:15pm

**BELL MUSEUM OF NATURAL HISTORY**

*Keith Barker, PhD*

The Bell Museum of Natural History is Minnesota’s official natural history museum, established by the legislature in 1872 and held in trust by the University of Minnesota. For over a century, the museum has preserved and interpreted Minnesota’s rich natural history. The museum’s scientific collections contain over one million specimens, representing every county in Minnesota and various locales around the globe.

**BIOREPOSITORY AND LABORATORY SERVICES (BLS), UNIVERSITY OF MINNESOTA**

*Cole Drifka, PhD*

The University of Minnesota’s Biorepository and Laboratory Services (BLS) program provides centralized biospecimen support to researchers, including tissue procurement, processing, histology, storage, and digital imaging services. Across all functions, BLS currently supports on average 80 unique projects each month within and outside of the University of Minnesota.

**ADVANCED RESEARCH AND DIAGNOSTICS LABORATORY, UNIVERSITY OF MINNESOTA**

*Bharat Thyagarajan, MBBS, PhD, MPH*

The Advanced Research and Diagnostic Laboratory (ARDL) is a central biochemistry laboratory primarily serving large federally funded multi-center studies and industry clients outside of the University of Minnesota.

We provide the latest technology and clinical laboratory testing services to researchers and other customers via a 16,000-square-foot customized facility. Constructed in 2013, the ARDL facility is recognized worldwide as a front-runner in innovative design and operational excellence.

Our services include:

- a) Coordinating biospecimen collection and processing, specimen testing and analysis, specimen storage, and quality control and quality assurance for large multi-center studies and clinical trials
- b) High-volume Immunoassay Testing Platforms
- c) Mass Spectrometer Center that performs sample analysis, quantitative proteomics, assay development and assay validation
- d) Biorepository services that provide long-term sample storage, cell cryopreservation, DNA sample storage and power back-up protection

**MAYO CLINIC BIOSERVICES**

*Mine Çiçek, PhD*

Mayo Clinic seeks to advance research and to improve health for all people, in collaboration with scientists in both industry and academia. Part of what makes Mayo Clinic Bioservices unique is its highly trained, specialized staff. Staff members are researchers themselves; they’ve been “in the trenches,” so they’re able to meet with bioservices clients in the design phase. Mayo Clinic Bioservices is dedicated to supporting cutting-edge biomedical research with state-of-the-art biospecimen processing, storage and shipping services. Laboratory services are highly automated; this focus on technology ensures predictable, uniform processes, resulting in high quality outcomes. Mayo Clinic has made a significant, long-term and ongoing investment in the Community Advisory Board for continued guidance of the bioservices program. Researchers and collaborators can pursue their scientific goals confident in the ethics of Mayo’s approach.

**SYMPOSIUM 4A: TANGLED UP IN TRYPSAN BLUE: LIVING BIOBANKS**

*Great Northern*

Monday, November 4 | 4:45pm – 6:30pm

**PDX MOUSE MODELS INTEGRATED INTO A PRECISION MEDICINE INITIATIVE FOR OVARIAN CANCER**

*Tim Starr, PhD, University of Minnesota*

We have established an ovarian cancer precision medicine initiative at the University of Minnesota. Our goal is to integrate genomic, clinical and functional data from patient samples to improve therapeutic options. Part of this initiative includes establishment of PDX mouse models for testing chemotherapy resistance. This presentation will describe our efforts to use PDX models in this initiative, including descriptions of the challenges this approach entails.

**GENOME RESOURCE BANKING OF GENETICALLY MODIFIED RODENTS AND CURRENT CHALLENGES**

*Yuksel Agca, DVM, PhD, University of Missouri*

There have been profound advances in the development of assisted reproductive technologies (ARTs; superovulation, in-vitro fertilization, micro-insemination, in-vitro embryo culture and transfer) during the past several decades. These ARTs in combination with novel genome editing methodologies (e.g. CRISPR / Cas9) have allowed creation of so many genetically modified (GM) animal models including mouse, rat, pig, non-human primates, drosophila and zebrafish to study genetics origins of human diseases and disorders. These animal models have made substantial contributions for the progression of biomedical and human health. To this end, genome resource banking (GRB) is the systematic collection, cryo-storage, and re-distribution of cryopreserved germplasm (sperm, oocytes, and embryos) as well as embryonic and induced pluripotent stem cells from GM organisms in an organized, logistical, and secure manner. Currently, there is still an enormous need for efficient germplasm biotechnologies, novel cryopreservation protocols,
sensitive and reliable methods to screen cryopreserved germplasm. This would collectively ensure distribution high-quality, pathogen-free germplasm from these unique models of human diseases. In this presentation, emphasis will be given to current challenges regarding germplasm cryobanking of GM laboratory mouse and rats.

DEVELOPING AN OFF-THE-SHELF LIVING TISSUE SUPPLY

Jedediah Lewis, JD, Organ Preservation Alliance

Recent advances in cryopreservation have created the prospect of providing a wide variety of living tissues off-the-shelf in the near future. ISBER has established a “Living Biobank” special interest group to explore applications for banking tumors, neural tissue, organ slices, and other biosamples for functional studies. This talk will provide context for this new area, tracing the arc of cryopreservation developments in related fields such as organ transplantation, tissue grafting, oncofertility, and tissue biomanufacturing and discussing how these advances could be applied to advance biobanking.

CRYOPRESERVATION OF CELLS AND SPORES BY ENCAPSULATION

Alptekin Aksan, PhD, University of Minnesota

Cryopreservation of cells and spores requires cryoprotectant agents to be present extra-/intracellularly. Most cell membrane permeable cryoprotectant agents are cytotoxic (and even mutagenic), especially at room temperature. This creates significant challenges. The main mechanisms of damage the cryoprotectant agents protect biologicals against are associated with the kinetic and thermodynamic transitions of the extra-/intracellular aqueous milieu. In this presentation; we first describe the different mechanisms of damage induced during freeze/thaw and at cryogenic temperatures, and then introduce different methods (such as encapsulation in hydrogels) and processing practices that could be applied in order to minimize, and potentially eliminate, cytotoxic cryoprotectant use.

SYMPOSIUM 4B: “ALL I REALLY WANT TO DO”… IS SHARE DATA WITH YOU: REGULATIONS FOR DATA SHARING AND INTERNATIONAL COLLABORATIONS

Zephyr

Monday, November 4 | 4:45pm – 6:30pm

“I AIN’T LOOKIN’ TO BLOCK YOU UP”: INTERNATIONAL COLLABORATION AND DATA FLOW UNDER THE EU GDPR

Heidi Beate Bentzen, LLM, University of Oslo

The European Union General Data Protection Regulation (EU) 2016/679 (GDPR) seeks to harmonize data protection law in the EU. It clarifies the distinction between human biological samples and genetic data. Genetic data is explicitly considered a special category of personal data in the GDPR, subject to strict protection. However, not only protection, but also free movement of personal data within the EU is an objective of the GDPR.

The key information on international collaboration and data sharing within and outside of the EU based on the GDPR will be presented. The EU does not consider countries such as the United States to offer an adequate level of data protection, thus the transatlantic data sharing possibilities are more limited than within the EU. Furthermore, the territorial scope of the GDPR is wide. It will in several instances apply to the processing of personal data of data subjects who are in the EU also where a controller or processor is outside the EU. Some keys to success to collaborate internationally when working with partners across sectors will be suggested.

IMPACT OF US PRIVACY LAW AND GDPR ON DATA SHARING FOR RESEARCH PURPOSES

David Peloquin, JD, Ropes & Gray LLP

This presentation will provide an overview of the challenges posed to research data sharing activities by privacy laws. Topics addressed will include HIPAA, US state law, and the European Union’s General Data Protection Regulation. The speaker will address current areas of regulatory uncertainty and provide a summary of approaches taken to share data for research purposes while complying with privacy laws.

RAPIDLY EVOLVING CHALLENGES AND OPPORTUNITIES OF ACCESS AND BENEFIT SHARING (ABS) RULES FOR BIODIVERSITY COLLECTIONS AND RESEARCH

Scott Miller, PhD, Smithsonian Institution

The Nagoya Protocol on Access and Benefit Sharing (ABS) under the Convention on Biological Diversity, and its varied implementation by individual countries, has created confusion in the biodiversity research and collections community. The presentation will address what ABS includes and how it is implemented at national and international levels; how ABS is being addressed by other international bodies in agriculture, medicine, and other fields, such as the Commission on Genetic Resources in Food and Agriculture; current discussions about ABS and “digital sequence information”; and how biobanks can best respond to ABS and related issues.

SYMPOSIUM 5: FOREVER YOUNG? BIOSPECIMEN QUALITY TO ENSURE LONGEVITY

Great Northern

Tuesday, November 5 | 8:00am – 9:30am

DEFINING QUALITY IN TISSUE BIOSPECIMENS

Stephen Hewitt, MD, PhD, National Cancer Institute

Historically, quality of tissue has been defined by subjective metrics based most commonly on histomorphology. Although histomorphology remains an essential metric of tissue quality, the quality of the individual bioanalytes – protein, RNA and DNA must be defined to ensure that the tissue is fit for purpose. As the preservation of tissue for biomedical research has a long history, closely tied to pathology practice, before the application of molecular biologic techniques, unwinding the preservation systems to define reproducible objective metrics of quality and subsequently dissect the process of preservation to determine what factors impact quality has been required. Although the
quality of all the metrics follows together, RNA is clearly the most sensitive metric for tissue quality. A “fit-for-purpose” approach to defining quality metrics and how they support research into tissue quality will be described.

WHAT IS THE ROLE OF PRE-ANALYTICAL VARIABLES ON THROMBOSIS BIOMARKERS IN A DIVERSE POPULATION OF CANCER PATIENTS?

Elizabeth Duffy, MA, Boston Medical Center

In a two and a half year study with 262 subjects, we aimed to examine the effect of three pre-analytic variables (PAVs) frequently encountered in hospital or research laboratories on thrombosis biomarkers in a racially diverse cancer population. Cancer is known to increase the risk of thromboembolism, but few biomarkers have been evaluated for PAVs in a cancer population. We focused our investigation to newly diagnosed, treatment naïve adult patients that were controlled for age, race and sex. All elements of the study were controlled by rigorous standard operating procedures (SOPs); including blood draw, blood processing, labeling, storage, testing, and analysis. PAVs studied were delay to processing, delay to testing and freeze-thaw cycles. This project underscores the importance of considering pre-analytic variables in blood processing, sample testing, storage, and assay quality control procedures during measurement of thrombosis and inflammation biomarkers.

DELTA-S-CYS-ALBUMIN: A LAB TEST THAT QUANTIFIES CUMULATIVE EXPOSURE OF ARCHIVED HUMAN BLOOD PLASMA AND SERUM SAMPLES TO THAWED CONDITIONS

Chad Borges, PhD, Arizona State University

Exposure of blood plasma/serum (P/S) to thawed conditions (> -30 °C) can produce biomolecular changes that skew measurements of biomarkers within archived patient samples, potentially rendering them unfit for molecular analysis. Since freeze-thaw histories are often poorly documented, objective methods for assessing molecular fitness prior to analysis are needed. This presentation will describe the development of a 10-µL, dilute-and-shoot, intact-protein mass spectrometric assay of albumin proteoforms called “ΔS-Cys-Albumin” that serves as an endogenous marker of P/S exposure to thawed conditions based on the inexorable ex vivo S-cysteinylation (oxidizability) of albumin. In summary, average values of ΔS-Cys-Albumin in matched, fresh P/S samples from a population of non-acute cardiac patients were determined. The multi-reaction mechanism that drives changes in albumin S-cysteinylation is known and the rate law for it was established and accurately modeled in P/S—enabling back-calculation of the time at which unknown P/S specimens have been exposed to the equivalent of room temperature. Blind challenges and an unanticipated case study of samples collected under NIH sponsorship and intended for distribution by NIH ultimately demonstrated the functional utility of the ΔS-Cys-Albumin assay.

SYMPOSIUM 6A: SHELTER FROM THE STORM: KEEPING BIOSPECIMENS ALIVE

Great Northern

Tuesday, November 5 | 1:30pm – 3:15pm

THE RAMS REGISTRY/REPOSITORY: BIOBANKING FOR MICROBIOME RESEARCH IN WOMEN’S REPRODUCTIVE HEALTH AND PREGNANCY

Gregory Buck, PhD, Virginia Commonwealth University

The vaginal microbiome has an impact on women’s reproductive health and pregnancy. The view that the healthy vaginal microbiome is associated with a microbiota dominated by species of Lactobacillus has recently been challenged by studies of different demographic and racial populations. These studies are dependent on biobanks prospectively collecting, processing and storing samples for analysis using high throughput genomic, transcriptomics, metabolomic, proteomic and other omic platforms. Our work, supported by grants from the NIH Human Microbiome Project, the NIH Eunice Kennedy Shriver National Institute of Child Health and Human Development, and the Global Alliance to Prevent Prematurity and Stillbirth, required establishment of the Research Alliance for Microbiome Science (RAMS) Registry/Repository. The RAMS Registry includes research coordinators, sample processing technicians, freezers for sample storage, and an integrated digital sample management system. The Registry maintains over 250,000 samples (swabs, blood, urine, birth products, meconium and stool, etc.) from several independently funded research projects. Analysis of these samples has led to novel findings concerning the impact of the vaginal and related microbiomes on women’s reproductive health and pregnancy.

BIOBANKS IN LMIC: GLOBAL EFFORTS NEEDED TO FOSTER PEDIATRIC CANCER RESEARCH

Rania Labib, PhD, Children’s Cancer Hospital-57357-Egypt

Finding a cure for childhood cancers is a huge mission, especially in a limited resource country where research in this field is a challenge. There is not enough data available regarding how much LMICs contribute to research. There is great role of disparities in cancer etiology, treatment and response. Unavailability of quality specimens from these regions of the world has hindered inclusion of this specific racial/ethnic group in international population studies and other biomedical studies. This has led to their under-representation in different genomic projects such as HapMap, with the result that there is no available genomic data to detect biological differences and provide different treatment responses in this population.

There is a need for global efforts to increase in biomedical research aimed at developing personalized medicine. This in turn, will require a supply of high quality clinically annotated biospecimens fit-for-all research. Hence, having biorepositories established in different regions to standardize procedures supported by evidence-based science for all sample procurement, processing, storage, and distribution processes is a basic requirement.
**CONDITIONALLY REPROGRAMMED NORMAL AND TUMOR CELLS – A LIVING BIOBANK – FOR PRECISION MEDICINE**

**Xuefeng Liu, MD, Lombardi Comprehensive Cancer Center, Georgetown University**

We describe a general method, Conditional Reprogramming (CR), that rapidly expands both normal and malignant epithelial cells from diverse anatomic sites and mammalian species and does not require transfection with exogenous viral or cellular genes. Establishment of cell cultures from both normal and tumor tissue is highly efficient. Perhaps most important, cell cultures can be generated readily from core biopsies as well as cryopreserved human specimens. Normal breast and prostate cultures retain a normal karyotype and differentiation potential and cell lines derived from tumors retain their tumorigenic phenotype. We will describe several approaches that allow to enrich cancer cells from urine (for bladder cancer), blood (for prostate cancer), and pleural effusion (for non-small cell lung carcinoma). We also reported that these cancer cells from liquid biopsies were used to identify therapies for the patients. The ability to produce inexhaustible cell populations from small biopsies and cryopreserved specimens has the potential to transform biobanking repositories and current pathology practice by enabling genetic, biochemical, metabolomic, proteomic, and biological assays, including chemosensitivity testing as a functional diagnostics tool for precision cancer medicine.

**SYMPOSIUM 6B: INTEGRATING DIGITAL BIOSPECIMENS: DON’T LEAVE THEM “BLOWIN’ IN THE WIND”**

**Zephyr**

Tuesday, November 5 | 1:30pm – 3:15pm

**ADVANCING DIGITAL BIOBANKING: IMPACT OF DIGITAL PATHOLOGY AND COMPUTATIONAL PATHOLOGY TOOLS**

**Anil Parwani, MD, PhD, MBA, The Ohio State University**

Automated whole slide imaging (WSI) scanners are now rendering diagnostic quality, high-resolution images of entire glass slides and combining these images with innovative digital pathology and artificial intelligence tools that are making it possible to integrate imaging into all aspects of pathology workflow including anatomical, clinical and molecular pathology. This is an especially exciting time in biobanking as these exciting tools and technology are rapidly becoming an integral component of the pathology practice, and will provide opportunities for innovations and advances in biobanking. This lecture will provide an overview of digital pathology and AI tools currently being used in the pathology workflow and to provide practical insights into the use of these technologies into transforming the workflow of a modern biobank. A framework of knowledge will be provided by an extended and interactive Q&A session which will serve to demystify the use of WSI and image analysis tools for biobanking applications, implementation challenges and pearls.

**DIGITAL PATHOLOGY AND AI – FUTURE OPPORTUNITIES**

**Michael Feldman, MD, PhD, University of Pennsylvania Healthcare System**

This presentation will focus on digital pathology and ML/AI tools that enable diagnostics and research. It will review elements of both as well as provide a vision of the future and how new workflows may be enabled in the digital pathology workspace. Future imaging technologies will also be introduced.

**DIAGNOSTIC CONSENSUS THROUGH IMAGE SEARCH – LESSONS LEARNED FROM SEARCHING IN TCGA REPOSITORY OF WHOLE SLIDE IMAGES**

**Hamid Tizhoosh, PhD, Kimia Lab, University of Waterloo**

Can we build diagnostic consensus using large repositories of histopathology images? The emergence of digital pathology has opened new horizons for histopathology and other related fields such as histology and cytology. Computer programs, most notably artificial-intelligence algorithms, can now operate on biopsy samples and assist pathologists during the diagnostic process. Whereas classification and segmentation methods have obvious benefits for some stages of this process, image search and retrieval may be a fundamental shift in diagnostic pathology by providing access to evidently diagnosed cases in existing repositories. This would offer “virtual peer review” to increase the accuracy and help to decrease the waiting time for diagnosis through computational consensus building. In this talk, some results for searching in the largest public repository (TCGA program) of digitized biopsy samples of almost 11,000 patients depicting different types of malignancies will be reported. Based on the analysis of findings, image search appears to be a reliable platform to exploit the archived (and so far unused) knowledge in digital repositories of histopathology images.

**ESTABLISHING A SEARCHABLE IMAGING DATA COMMONS: MINING DIGITAL PATHOLOGY AND TUMOR IMAGING**

**David Gutman, MD, PhD, Emory University**

Our team built the Cancer Digital Slide Archive, a web-based resource housing all 25,000+ digital pathology slides from the TCGA. Since then, we have developed the Digital Slide Archive (DSA), a flexible open-source slide management platform. We will highlight some of our ongoing work developing the DSA platform, including image analysis, visualization of machine-derived and human generated annotations, and analysis workflows.

The DSA is also being used to visualize data from the Human Tumor Atlas Network (HTAN), which is one of the NCI Moonshot projects. We will highlight some of our latest work demonstrating the visualization and analysis of new multiSpectral imaging technologies such as CODEX and cyCIF.
Educational Workshop Summaries

**PRE-CONFERENCE WORKSHOP: BIOBANKING 101**

*Zephyr*

Sunday, November 3 | 1:00pm – 5:00pm

*Pre-registration required. Registration fee of $95.

**ISBER TOOLS – INTERNATIONAL REPOSITORY LOCATOR**

*Joanne Demchok, National Cancer Institute*

The availability of a searchable (online) repository locator, is crucial to research infrastructure. To maximize the value of a specimen or collection, a researcher must be able to locate it. In addition, to generate data that contains statistical rigor, researchers may need to locate and access specimens from multiple repositories. An international repository locator (IRL), containing multiple repositories, would increase accessibility of repositories among key stakeholders including ISBER members, researchers, funding bodies, governments, and private industry.

The Working Group currently includes ISBER members from nine countries: Australia, France, Germany, Italy, the Netherlands, Qatar, Switzerland, the UK and the USA, with collective expertise in informatics, repository management, database management, and online locators.

**HOW TO WRITE AN INFORMED CONSENT DOCUMENT**

*Helena Ellis, Biobanking Without Borders*

All too often consent forms are written in language that is difficult to understand, with lots of legalese to fulfill regulatory requirements but without significant attention as to whether or not the form actually imparts key information to participants in an understandable manner. In the US the average person reads at the 7th or 8th grade level, so how can we make documents and the risks of genetic tests understandable? It takes an interest and time to review and revise the typical consent form, but the payoffs are substantial. There are many published guides and tools to help researchers write a comprehensible, reasonable length consent form, with simple words and conversational language. This workshop will provide easy to implement, step by step instructions to write clear biobanking consent forms based on published health literacy principles.

**COLD CHAIN MANAGEMENT**

*Kathi Shea, Brooks Life Sciences*

Time and temperature are two variables known to impact sample integrity. In this course we will focus on the approaches for managing the cold chain throughout the lifecycle of a sample. Various methods and tools that can be used for selection and qualification of shipping containers, work stations and storage units will be discussed, along with approaches that can be used for measuring and monitoring of temperature during sample acquisition, processing, handling, storage and distribution.

**WORKSHOP 1: CONSENT FOR FUTURE USE OF BIOSPECIMENS UNDER THE REVISED COMMON RULE**

*Zephyr*

Tuesday, November 5 | 8:00am – 9:30pm

**Presenters:** Marianna Bledsoe, Independent Consultant; William Grizzle, University of Alabama at Birmingham; David Peloquin, Ropes & Gray LLP

In January of 2017, the US federal government issued the first major revision to the Federal Policy for the Protection of Human Subjects in Research (the Common Rule) to address changes in the ethical and scientific landscape since the policy was first published in 1991. The revised Common Rule includes changes that significantly affect biobanking. The general compliance date for most of the Common Rule’s provisions was January 21, 2019.

Among the most significant changes related to biobanking in the revised Common Rule is a new provision for broad consent for the storage, maintenance, and research use of identifiable information and biospecimens for future research [45 CFR 46.116(d)]. This broad consent allows participants to consent to future research on their biospecimens and associated data using a consent form that differs from the standard informed consent. The use of the broad consent allows secondary research using the biospecimens to meet an exemption that relies on a limited IRB review if certain conditions are met.

The new broad consent provision has a significant limitation. If a participant refuses to provide broad consent, an IRB can never subsequently waive informed consent for the use of the participant’s biospecimens and associated data. This restriction requires significant tracking capability within an institution and, in some cases, even across institutions.

In this workshop, presenters and attendees will discuss the interpretation of this provision of the revised Common Rule, various strategies for implementing informed consent for future use of biospecimens under the revised Common Rule, and potential alternatives that exist under the revised Common Rule. Case examples will be used to illustrate various approaches that may be used under the Rule.

The format for the workshop will include several short introductory presentations, followed by an extensive, interactive discussion in which attendees will share their experiences and successful approaches to implement consent for future research on biospecimens and associated data under the revised Common Rule.
WORKSHOP 2: IRREPRODUCIBLE RESEARCH BASED ON HUMAN BIOSPECIMENS: CAN NEW MODELS OF BIORESOURCES AMELIORATE THIS PROBLEM?

Great Northern
Tuesday, November 5 | 3:45pm – 5:15pm

Presenters: William Grizzle, University of Alabama at Birmingham; Shannon McCall, Duke University School of Medicine

Perceived irreproducibility in research results using human tissue may be due to experimental design, exclusion of data, analytical approaches and statistics or may be secondary to bias associated with biospecimens including preanalytical variability, biosource operations and biospecimens that are suboptimal. This workshop focuses on tissue variables that may impact research with human biospecimens. Problems can be exacerbated when new models such as reproducible biospecimens are developed or added to an existing biosource. Irreproducibility increases if investigators and biosource personnel are not adequately educated as to its causes. Personnel should be trained in new biosource models before their adoption, e.g., living biobank.

Specific areas that will be addressed are the following:

- Pre-analytical variables that affect the usefulness of human tissues in research include: donor variables, changes secondary to initial diagnosis, warm and cold ischemia, tissue damage during surgery, limitations and errors imposed by collection, processing, storage and/or distribution of biospecimens, and variables of renewable biospecimens and their optimal use
- Quality assurance including quality control
- Sources of bias associated with the use of biospecimens in research including patient-derived renewable biospecimens
- Biospecimen features necessary to support research based on specific technologies and preparations that may require macro/microdissection
- Storage parameters and distribution approaches affecting biospecimens including renewable biospecimens
- Tissue utilization of biospecimens including renewable biospecimens
- Challenges in meeting future research needs

Drs. McCall and Grizzle are experienced diagnostic and research pathologists with knowledge of biosources, translational research, biorepository sciences and biosource modifications needed for renewable biospecimens. A ten-minute discussion period will allow questions from participants and sharing of ideas.

WORKSHOP 3: IF IT’S FITNESS-FOR-PURPOSE YOU’RE CHASIN’ … THE TOOLS, THEY ARE A CHANGIN’!
LEVERAGING STANDARDS, ISBER TOOLS AND OTHER RESOURCES

Southern Pacific
Tuesday, November 5 | 3:45pm – 5:15pm

Presenters: Clare Allocca, National Institute of Standards & Technology; Marianna Bledsoe, Independent Consultant; Koh Furuta, Council for Industrial Use of Biological and Environmental Repositories (CIBER)

Biobanking standards and best practices are critical for ensuring that biospecimens are fit for purpose and that the results of studies using biospecimens from biobanks are meaningful and reproducible. Multiple standards and tools are available or under development, with a general goal of maximizing fitness-for-purpose of biological materials and associated data (BMAD). Included among these tools are standards falling under the umbrella of ISO 20387 general requirements for biobanks. ISBER also offers a number of tools, the most broad-ranging of which is the ISBER Best Practices (4th Edition + Addendum). Additionally, there are several other resources (e.g., CAP, CTRNet) available to facilitate other approaches to fitness-for-purpose in biobanks. How can biobanks use these best practices, tools and standards together to meet their individual goals and achieve fitness-for-purpose for their biobank?

In this workshop, a mapping of the ISBER Best Practices 4th Edition against ISO 20387 will be presented. The differing goals of these and other tools will be examined, and paths of simultaneous implementation discussed in the context of multiple biobank scenarios/goals. Presenters will discuss how these tools can be used to meet specific requirements of ISO 20387 as well as the general pursuit of fitness-for-purpose. Among the tools to be introduced are the ISBER Self-Assessment Tool (SAT) and ISBER Self Auditing Tool.

A panel will discuss the application of this integrated map, with several case studies to demonstrate the considerations that come into play, and examine potential outcomes. The panel discussion will be followed by an audience question and answer session and interactive dialogue on the stand-alone and complementary application of standards, best practices, and other resources, including those apart from ISBER (e.g., CAP and CTRNet) to achieve fitness-for-purpose through quality biobanking processes and products.

A significant number of biobanks may find that their pursuit of ISBER tools and other instruments will have taken them a significant distance towards implementation of the ISO 20387 standard. This workshop will build upon concepts described during previous ISBER workshops and will serve to help participants understand how biobanking standards, taken together with the broad spectrum of tools now available, can help to improve quality in biobanking.
WORKSHOP 4: PITCHING BIOBANKING

Zephyr

Tuesday, November 5 | 3:45pm – 5:15pm

Presenters: Suzanne Vercauteren, BC Children’s Hospital Biobank; Daniel Catchpoole, The Tumour Bank – CCRU

Over the last decade recognition of the practice of biobanking has dramatically increased and in many academic centres biobanking has become routine. However, stakeholder engagement for biobanks is often limited and challenging. Many stakeholders in the biobanking process including patients, the general public, hospital administration, industry but also researchers and clinicians have no or little concept about the role and function of biobanks to advance research. This results in underuse and underfunding of biobanks. There is an obvious need to engage and educate stakeholders to increase the operational and financial viability of biobanks. However, many biobanks struggle with how and when to present the importance of biobanking to key players. An elevator pitch is a brief, persuasive speech that can be used to spark interest in a topic such as biobanking. We propose to develop elevator pitches for stakeholders in biobanking so that all biobankers have tools to persuade key stakeholders. Key stakeholders for which elevator pitches will be created include the public, patients, researchers, clinicians and nurses, administration of hospital or academic institution, industry, advocacy groups.

The objective of the workshop is to have attendees develop elevator pitches for a target audience to raise awareness and use of biobanks. This elevator pitch should contain key messages for the specific target group and should be no longer than 30 seconds.

Attendees of this workshop will be divided into working groups. Following a brief introduction to the purpose of the session, the groups will be given a target audience for which to develop a 30 second elevator pitch. The elevator pitch should describe key messages for the specific target group. Each working group will present their elevator pitch to the whole group with a discussion after each pitch.

All members will receive a written version of the elevator pitches presented at the workshop with permission of the presenters.
Corporate Workshop/Symposium Summaries

**CORPORATE WORKSHOP 1: OPENSPECIMEN - WORLD’S MOST WIDELY USED OPEN SOURCE BIOSPECIMEN MANAGEMENT SOFTWARE**

**Presenter:** Srikanth Adiga, OpenSpecimen

Attend this session to learn how OpenSpecimen is used in leading research centers like Johns Hopkins, UPitt, UPenn, UMass, Emory, UC Davis, Washington University, and others to manage different kinds of biospecimen collections: e.g., prospective biobanking, longitudinal (clinical study/trial), animal, etc.

**Learning Objectives:**
1. Real-world case studies of OpenSpecimen usage in different centers
2. Integration with REDCap, EPIC, etc.
3. Collecting specimen annotations and reporting (i.e., finding specimens of interest)
4. How your center can adopt OpenSpecimen

**CORPORATE WORKSHOP 2: THE IMPORTANCE OF SAMPLE MANAGEMENT IN PRECISION MEDICINE: A HIGH-THROUGHPUT BIOBANKING WORKFLOW SOLUTION**

**Presenter:** Andrew Brooks, Chief Operating Officer and Director of Technology Development of RUCDR Infinite Biologics, Chief Scientific Officer Brooks Life Sciences; Mark Dupal, Director of Market Development, PerkinElmer Applied Genomics

The increased acceptance and implementation of precision medicine, direct to consumer genomics and applications such as regenerative medicine have driven the need and adoption for the storage of primary samples and the isolation and storage of high quality, high molecular weight nucleic acid. One reason for primary sample and nucleic acid storage is the value of the information held within the sample.

Efficient and effective storage ensuring sample integrity is of the utmost importance; retention of sample information with the associated phenotypic insight can provide a wealth of genetic and environmental information that can be unlocked in an attempt to better understand disease and health. In this workshop we explore industry collaborations to provide a solution to the increased need for efficient sample management and nucleic acid extraction that meet today's increased requirement for higher throughput full workflow solutions.

**Learning Objectives:**
1. Why preserving sample integrity through automated cold chain sample management is vital for sample viability and throughput efficiency
2. High throughput nucleic acid extraction workflow technology advancements
3. Quantification and nucleic acid normalization techniques
4. The importance of high quality nucleic acid extraction
5. Example case study workflows of automated sample management and nucleic acid extraction workflows and the importance to future precision medicine treatments
“ALL ABOUT THE SAMPLE”
Smarter Sample Solutions to Protect Sample Integrity

- FluidX Next-Gen Sample Storage Tubes
- Storage Boxes, Cryoracks and HD Trays
- Versatile Code Readers
- Variety of Tube Cappers & Decappers
- Automated Storage Systems at Room Temperature, -20°, -80° & -190°C

See us on Booth #11 & 20
Learn more - www.brookslifesciences.com
Contact us - www.brookslifesciences.com/contact-us
CORPORATE WORKSHOP 3: ADVANTAGES OF SOP-BASED NMR DIAGNOSTICS FOR THE QUALITY AND FUTURE-PROOFING OF BIOBANK SAMPLES

Southern Pacific

Monday, November 4 | 1:30pm – 2:30pm


NMR QC-Biobank Solution is a fully standardized 600 MHz IVDr platform. This includes SOPs for sample preparation and qualification of plasma, serum, urine, CSF and contains extracts of body fluids, cells and tissues. The customer can share this NMR-date around the world. The user benefits from the WISYWYG solution with NMR diagnostics with highest reproducibility and transferability.

CORPORATE WORKSHOP 4: CAN YOU JUSTIFY AUTOMATING YOUR STORAGE?

Zephyr

Monday, November 4 | 1:30pm – 2:30pm

Presenters: Issa Isaac, Sales Manager – Midwest, TTP Labtech; Paul Lomax, Product Manager, TTP Labtech

Any investment in automation usually requires a sound business plan to justify the cost of installation and ongoing running costs. This workshop considers the factors determining whether automation is viable for a biobank and will provide attendees with a framework to evaluate current manual workflows against automated solutions on a cost per sample basis. This will help to determine whether automation is viable based on the use case and help to build a business case to justify it. The workshop will also consider fully and partially automated approaches to storage, demonstrating that automation can be relevant in a range of settings and not just the largest biobanks.

Learning objectives:
1. Fully appreciate the real costs of manual storage practices
2. Identify the key factors in considering the benefits of automation in any organisation large or small
3. Be able to fully quantify the cost per sample of automated storage vs manual
4. Consider the potential wider benefits of automation vs manual storage

5. Consider other factors such as environmental policies
6. Plan flexible short and long term strategies
# Poster Sessions

<table>
<thead>
<tr>
<th>FINAL ID</th>
<th>TITLE</th>
<th>PRESENTER</th>
<th>PRESENTER INSTITUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA-01</td>
<td>The National Center Biobank Network (NCBN) in Japan</td>
<td>Reiko Miyahara</td>
<td>National Center for Global Health and Medicine, Japan</td>
</tr>
<tr>
<td>PA-02</td>
<td>The Total Cancer Care (TCC) Biobank at the Moffitt Cancer Center: Report of 13-years of Experience</td>
<td>Erin M. Siegel</td>
<td>H. Lee Moffitt Cancer Center &amp; Research Institute, United States</td>
</tr>
<tr>
<td>PA-03</td>
<td>Role of Biorepository in Prospective Sample Collection for Biomarker Discovery</td>
<td>Sangita Paul</td>
<td>University Health Network, Canada</td>
</tr>
<tr>
<td>PA-04L</td>
<td>The Gundersen Cancer Biobank, a Multi-Decade Resource for Cancer Research</td>
<td>Craig Richmond</td>
<td>Gundersen Health System, United States</td>
</tr>
<tr>
<td>PA-05L</td>
<td>Establishment of a Biorepository and Logistics Hub for the Kidney Precision Medicine Project</td>
<td>Victoria M. Blanc</td>
<td>University of Michigan Medical School, United States</td>
</tr>
<tr>
<td>PB-01</td>
<td>The National Marine Mammal Tissue Bank</td>
<td>Amanda Moors</td>
<td>National Institute of Standards and Technology, United States</td>
</tr>
<tr>
<td>PC-01</td>
<td>Determining Quality of Biobanked Tissue Specimens</td>
<td>Paige Muir</td>
<td>UBC Department of Pathology, Canada</td>
</tr>
<tr>
<td>PC-02</td>
<td>Formalin Fixation in the Clinical Setting: To What Extent do Delays to Processing of Formalin-Fixed, Paraffin-Embedded Clinical Biospecimens Impact Nucleic Acid Quality?</td>
<td>William Mathieson</td>
<td>Integrated Biobank of Luxembourg, Luxembourg</td>
</tr>
<tr>
<td>PC-03</td>
<td>Design, Implementation and Results of a Quality Control Initiative for Archived DNA Biospecimens</td>
<td>James Juan</td>
<td>Intermountain Healthcare, United States</td>
</tr>
<tr>
<td>PC-04</td>
<td>Obtaining High Quality Nucleic Acids from FTA Cards for the Creation of Biological Sample Collection Stored at Room Temperature</td>
<td>Alvaro Jimenez</td>
<td>Instituto de Investigación Biomédica de Málaga-IBIMA, Spain</td>
</tr>
<tr>
<td>PC-05</td>
<td>High Quality DNA from Blood Clots for the Creation of Strategic Collections of High Interest in Biobanking</td>
<td>Virginia Chamorro</td>
<td>Instituto de Investigación Biomédica de Málaga-IBIMA, Spain</td>
</tr>
<tr>
<td>PC-06</td>
<td>What Protocol is Best for Obtaining High Quality DNA from Buffy Coat?</td>
<td>Jesús Ortega-Pinazo</td>
<td>Instituto de Investigación Biomédica de Málaga-IBIMA, Spain</td>
</tr>
<tr>
<td>PC-07</td>
<td>Researcher Requested Fresh Human Tissue Samples, 2015 - 2018: Increase in Custom Fresh Sample Preparation Types</td>
<td>Randal L. Mandt</td>
<td>The Ohio State University (OSU), United States</td>
</tr>
<tr>
<td>PC-08</td>
<td>Prolonged Ischemia Time on Tissue Quality: Effect on RNA Isolated from Kidney, Lung, Breast, and Heart Tissue</td>
<td>Stella Somiari</td>
<td>Windber Research Institute, United States</td>
</tr>
<tr>
<td>PC-09</td>
<td>Plasma Lactate as a Quality Indicator for Stored Specimens</td>
<td>Shyanne Zubal</td>
<td>Intermountain Healthcare, United States</td>
</tr>
<tr>
<td>PC-10L</td>
<td>Testing the Quality and Stability of Plasma Protein and Whole Blood RNA in Archived Loggerhead Sea Turtle Blood, Caretta caretta</td>
<td>Jennifer Ness</td>
<td>National Institute of Standards and Technology, United States</td>
</tr>
<tr>
<td>PD-01</td>
<td>Development of an Access Portal to Coordinate Biobanking Research</td>
<td>Alan E. Bauck</td>
<td>Kaiser Permanente Northwest, United States</td>
</tr>
<tr>
<td>PD-02</td>
<td>Bringing Biobanking to the Community: Helping to Close the Gap in Cancer Disparities</td>
<td>Brittany T. Ivey</td>
<td>Medical University of South Carolina, United States</td>
</tr>
<tr>
<td>PE-01</td>
<td>Digital Image Biorepository of Malignant, Benign and Normal Tissues with Associated Quality and Clinical Data</td>
<td>Randal L. Mandt</td>
<td>The Ohio State University (OSU), United States</td>
</tr>
<tr>
<td>PE-02</td>
<td>Method for Fecal Sample Processing for Microbiome Studies and Biobanking</td>
<td>Raul De Jesus Cano</td>
<td>The BioCollective, LLC, United States</td>
</tr>
<tr>
<td>PE-03L</td>
<td>Establishing a Science-Driven Biobank for Cancer Moonshot Research Programs</td>
<td>Ping Guan</td>
<td>National Cancer Institute, United States</td>
</tr>
<tr>
<td>PF-01</td>
<td>Research Resources for Measurement of Thrombosis Biomarkers in Cancer Patients</td>
<td>Michelle A. Berny-Lang</td>
<td>National Cancer Institute, United States</td>
</tr>
<tr>
<td>PF-02</td>
<td>Biobank Platforms in Clinical Trials: A Strategic Role for Specific Samples</td>
<td>Beatriz Martínez</td>
<td>Instituto de Investigación Biomédica de Málaga-IBIMA, Spain</td>
</tr>
<tr>
<td>PF-03</td>
<td>Development of a Biobanking Workflow for the Implementation of Cardiac Troponin, a New Clinical Laboratory Assay</td>
<td>Stephanie Falwell</td>
<td>UC DAVIS HEALTH, United States</td>
</tr>
<tr>
<td>PF-04</td>
<td>Streamlined Tissue Homogenization for High-Throughput Nucleic Acid Extraction from Pediatric CNS Tumors</td>
<td>Jennifer Cross</td>
<td>Johns Hopkins All Children’s Pediatric Biorepository, United States</td>
</tr>
<tr>
<td>FINAL ID</td>
<td>TITLE</td>
<td>PRESENTER</td>
<td>PRESENTER INSTITUTION</td>
</tr>
<tr>
<td>----------</td>
<td>----------------------------------------------------------------------</td>
<td>------------------------</td>
<td>------------------------------------------------------------</td>
</tr>
<tr>
<td>PG-01</td>
<td>Sample Quality Control of Cell-Free DNA</td>
<td>Kyle Luttgeharm</td>
<td>Agilent Technologies R&amp;D and Marketing GmbH &amp; Co KG, United States</td>
</tr>
<tr>
<td>PG-02</td>
<td>Use of Micro-Electro-Mechanical Systems (MEMS) Technology to Evaluate Specimen Temperature Profiles during Various Biobanking Processes</td>
<td>Joseph Kessler</td>
<td>Medpace Labs, United States</td>
</tr>
<tr>
<td>PG-03</td>
<td>Microfabrication can Provide Low-cost Customizable Counting Chambers for Standardized Estimation of Sperm Concentration</td>
<td>Yue Liu</td>
<td>Louisiana State University AgCenter, United States</td>
</tr>
<tr>
<td>PG-04</td>
<td>The Fluidigm® Advanta™ Sample ID Genotyping Panel Enables Sample Quality Control by Detecting Sample Contamination and Accurately Distinguishing Related Samples</td>
<td>Honrado Lopez</td>
<td>Fluidigm Corporation, United States</td>
</tr>
<tr>
<td>PG-05</td>
<td>A Comparison Between Automated Storage Refrigeration and Manual ULT Technology Identifying Improvements in Temperature Uniformity to Protect Sample Integrity</td>
<td>Chris Wolfenden</td>
<td>Brooks Life Sciences, United Kingdom</td>
</tr>
<tr>
<td>PG-06</td>
<td>Accurate Modeling of the Institution-wide Impact of ULT Freezer Assets on Energy Use and Electricity Costs</td>
<td>Dean Shehu</td>
<td>UCSF, United States</td>
</tr>
<tr>
<td>PG-07</td>
<td>Enabling Biobanks to Achieve ISO 20387 Compliance Using a Cloud-based LIMS</td>
<td>Shonali Paul</td>
<td>CloudLIMS Software Solutions, India</td>
</tr>
<tr>
<td>PG-08</td>
<td>A Worldwide Study of the Factors Affecting Sustainable Biobanking Operations and Technology-based Solutions Enabling Smart and Just-in-Time Biobanking Strategies to Increase Utilization</td>
<td>Emily Hubbard</td>
<td>iSpecimen, United States</td>
</tr>
<tr>
<td>PG-09</td>
<td>Accreditation by A2LA to ISO 20387:2018 – The New Standard of Excellence for Biobanking</td>
<td>Chris Gunning</td>
<td>A2LA, United States</td>
</tr>
<tr>
<td>PG-10L</td>
<td>BCRQUEST.com Network – Shared Value and Sustainability</td>
<td>Outi Törmwall</td>
<td>BC Platforms, Switzerland</td>
</tr>
<tr>
<td>PG-11L</td>
<td>Biobanking Re-imagined. The Repurposing Of Established Pneumatic Technology For Efficient High Quality Biobanking</td>
<td>Paul Keith Lomax</td>
<td>TTP Labtech, United Kingdom</td>
</tr>
<tr>
<td>PH-01</td>
<td>Synergy in the Biobank System Production After the Merger of Local Nodes</td>
<td>Tatiana Díaz</td>
<td>Instituto de Investigación Biomédica de Málaga-IBIMA, Spain</td>
</tr>
<tr>
<td>PH-02</td>
<td>Building an Outward-Facing Biospecimen Resource for Arizona Researchers: The Arizona Biospecimen Consortium (ABC) Creates The Arizona Biospecimen Locator (ABL)</td>
<td>Rosy Singh</td>
<td>St. Joseph’s Hospital &amp; Medical Center, Barrow Neurological Institute, United States</td>
</tr>
<tr>
<td>PH-03</td>
<td>Adoption of an Open-Source Biospecimen Information Management System by a High-Throughput, CAP Accredited Biorepository</td>
<td>Dave A. Mulvihill</td>
<td>Washington University in St. Louis, United States</td>
</tr>
<tr>
<td>PH-04L</td>
<td>NIST Biorepository Tools: Freezer Visual Information System (FreezerVIS)</td>
<td>Jared M. Ragland</td>
<td>National Institute of Standards and Technology, United States</td>
</tr>
<tr>
<td>PH-05L</td>
<td>NIST Biorepository Tools: Freezer Check</td>
<td>Jared M. Ragland</td>
<td>National Institute of Standards and Technology, United States</td>
</tr>
<tr>
<td>PH-06L</td>
<td>Use of the Biobanking 3.0 Concept to Analyze the Output of Internal Development Projects Regarding Quantity, Quality and Stakeholder Needs at Biobank Graz</td>
<td>Daniel Simeon-Dubach</td>
<td>medservice, Switzerland</td>
</tr>
<tr>
<td>PH-07L</td>
<td>Development of an Integrated Biobank Data Management Software System for Use by Biobank Staff, as well as for Researchers to Access Required Samples</td>
<td>Sahar Jahangiri</td>
<td>Create Fertility Centre, Canada</td>
</tr>
<tr>
<td>PI-01</td>
<td>ISBER Best Practices to Support Quality Management System of Biobanks</td>
<td>Daniel Simeon-Dubach</td>
<td>medservice, Switzerland</td>
</tr>
<tr>
<td>PI-02</td>
<td>Survey Amongst the Downloaders of the ISBER Best Practice 4th Edition</td>
<td>Daniel Simeon-Dubach</td>
<td>medservice, Switzerland</td>
</tr>
<tr>
<td>PI-03</td>
<td>ISO 20387, ISBER Best Practices, and Other ISBER Tools: Working Together to Ensure Fitness-for-Purpose</td>
<td>Clare M. Allocca</td>
<td>National Institute of Standards and Technology, United States</td>
</tr>
<tr>
<td>PI-01</td>
<td>ISBER Tools to Facilitate Quality Biobanking</td>
<td>Debra L. Garcia</td>
<td>ISBER, United States</td>
</tr>
<tr>
<td>O-08</td>
<td>NASA Institutional Scientific Collection (ISC) at Ames Research Center</td>
<td>Ryan T. Scott</td>
<td>NASA, Wyle Labs, United States</td>
</tr>
</tbody>
</table>
PRIM&R advances the highest ethical standards in the conduct of biomedical, behavioral, and social science research through education, membership services, professional certification, public policy initiatives, and community building.

High-quality education and resources for professionals involved in research ethics and oversight

Take advantage of PRIM&R offerings and join a vibrant, supportive community of your peers in the field. Become a member to receive program discounts and access to special exclusive resources, including the SBER Network and free webinar recordings.
primr.org/membership

Certification
primr.org/certification

Conferences
primr.org/conferences

Webinars
primr.org/webinars

At Your Doorstep Courses
primr.org/ayd

Ethical Research Oversight Course
primr.org/EROC

Faculty Roster
PRIM&R is always looking to add new voices to the list of volunteers we call on to help develop and present our educational programs.
primr.org/teach

Workshops On Demand - NEW!
primr.org/online-learning
Sample Integrity for Biologicals

-196°C to +25°C

Be sure to stop by booth #34 at ISBER REGIONAL MEETING
see our newest automated cryogenic storage solutions

NOVEMBER 3-5 MINNEAPOLIS, USA

MAIN FEATURES

> Proven sample integrity
> Highest storage density
> Best energy performance
> Unrivaled temperature uniformity and stability
> Intuitive system operation
> Seamless LIMS integration
> Unique no defrost cycle design
> Redundant refrigeration
> Large worldwide user base
> Precision system size scaleability

www.liconic.com
FREEZER FAILURES ARE DEVASTATING

DON'T WAIT FOR AN EMERGENCY

Protect your valuable samples with CORIS Life Sciences Monitoring. CORIS combines the most advanced, wireless plug-and-play hardware with simple, cloud-based software to provide a comprehensive solution to your reporting and alerting needs. The result is reduced lab personnel work load and peace-of-mind regarding the safety of your samples. The unique features of the CORIS system include:

- Automated reports with graphs to meet ISBER best practices
- Three-tier alert escalation with complete customizability
- Customized reports to satisfy any auditor or regulator
- Biospecimen stability temperature thresholds
- Complements Biorepository Proficiency Testing (PT) Program, if temperature relevant
- Real-time monitoring of temperatures (as low as -250°C)
- Permanent temperature audit trail
- Remote access to sensor data via computer or mobile device
- Alert notifications via text, email, or phone call
- No limits to number of thresholds or recipients
- Identifies problems nights, weekends, holidays...24/7/365

Our software, solutions, and benefits are based on what you need.

Stop by Booth 32 to learn more!

info@corismonitoring.com
212-710-2973
www.corismonitoring.com
Sponsors and Exhibitors

A2LA is an internationally recognized accreditation body, whose primary mission is to provide comprehensive accreditation services for laboratories, inspection bodies, proficiency testing providers, reference materials producers and product certification bodies. Assessments are conducted using international standards and field specific technical requirements developed in cooperation with government and industry.

Abbott Informatics provides leading Laboratory Information Management Systems (LIMS) solutions that have served customers around the world for more than 30 years. The Abbott Informatics’ STARLIMS solutions improve the reliability of laboratory sampling processes, support compliance with global regulatory requirements and industry standards, and provide comprehensive reporting, monitoring and analysis capabilities.

Agilent is a leader in life sciences, diagnostics and applied chemical markets. The company provides laboratories worldwide with instruments, services, consumables, applications and expertise, enabling customers to gain the insights they seek. Agilent’s expertise and trusted collaboration give them the highest confidence in our solutions.

Autoscribe Informatics Inc

Whatever your Biobank Management needs, the Matrix Biobank Management System is easily adapted to suit them. Our simple to use graphical configuration tools set Matrix apart from other Biobank software solutions. Store and retrieve biospecimens while optimizing storage, managing data and tracking test results. Dual desktop and web applications provide maximum flexibility to work in the laboratory, across the internet, even offline. Please visit our booth to discover Matrix Biobank Management System.

Bahnson Environmental Specialties, LLC

Bahnson Environmental Specialties, an Emcor Company, is a leading manufacturer of high volume custom low temperature reach-in and walk-in freezers serving the pharmaceutical/biotech industry, contract biorepositories, and other critical product storage industries. For a complete review of our offerings of controlled environmental/stability rooms/chambers and services, visit our website.

Bluechiip offers a sample management suite of products for biobanks. Our system allows users to quickly register samples in batches and guide the user to the specific storage and retrieval location. The consumables have a Bluechiip wireless tag embedded inside that doesn’t get affected by cryogenic temperatures, ice buildup and can even sense temperature at every scan. Therefore, the Bluechiip system solves issues like labels falling off or 2D barcodes not being able to read due to frost.

Brooks Life Sciences, a division of Brooks Automation, provides the life science industry with the most comprehensive portfolio of sample management solutions, enabling researchers worldwide to accelerate innovation and improve patient health. We offer automated storage, cryopreservation, informatics, sample storage, lab services, transportation, consumables and instruments. Technologies and services span the entire cold chain supporting research, GMP, pre/clinical, cell therapy, and biologics.
Based on the complete standardization of NMR analysis of biospecimens, Bruker has developed a biobanking solution for QC of incoming samples for storage. A comprehensive number of quality parameters is delivered, from pre-analytics to degradation state or unreported drugs. NMR can deliver many metabolic information using the same spectra, which can be stored together with the metadata. Such standardized spectra are completely exchangeable between biobanks and research groups.

BSI Systems (BSI and BioShare) is a collection of specimen inventory and management products for your facility. BSI manages your biobank with validated software that tracks the complete life cycle of all specimens within your repository. BioShare is a platform for sharing specimens and/or datasets with others in the research community by providing a central location for researchers to search, submit requests, and track requester correspondence.

As the world’s largest organization of board-certified pathologists and leading provider of laboratory accreditation, including accreditation for biorepositories, and proficiency testing programs, the College of American Pathologists (CAP) serves patients, pathologists, and the public by fostering and advocating excellence in the practice of pathology and laboratory medicine worldwide. For more information, read the 2018 CAP Annual Report at CAP.ORG.

CORIS Life Sciences Monitoring provides remote 24/7 temperature monitoring of laboratory freezers at budget-friendly prices. Automated reporting, escalating and fully-customizable alerts, and artificial intelligence are just a few of our system’s unique features. Our cloud-based platform does not require an on-site PC or server, and our patented technology does not require holes in firewalls—making it easy to get approval from your IT department. Contact us for a free quote.

For more than 50 years and with our own development, engineering and manufacturing departments, CryoTherm fulfills nearly every cryogenic need of our customers in the areas of life science, medicine, research and aerospace all over the world. For more information please visit us at www.cryothers.de or www.cryothersinc.com.

At the ISBER Regional Meeting we would like to introduce our BIOSAFE® LN2 freezer line with capacities from 2000 up to 123,000 [2ml tubes] together with our new BIOSAFE®smart level control and monitoring unit. Whether as a stand-alone system, or together with our software packages BIOSAFE®view and BIOSAFE®Track, BIOSAFE® LN2 freezer are providing all feature and options that a state of the art biorepository nowadays needs.

Ellab is a one-stop shop for all your validation and monitoring requirements. Ellab manufactures a wide variety of wireless data loggers, wired thermocouple validation systems and continuous monitoring systems that can be used in many pharmaceutical applications. These systems can record temperature, RH, CO2, pressure, vacuum and conductivity. Our equipment is available for purchase, rental, or our validation team can come on-site and perform qualification, validation or calibration services.

Farrar Scientific specializes in ultra-low temperature cascade refrigeration engineering for the pharmaceutical, biotechnology and biorepository applications. Our ULC -80C chamber offers: Redundant refrigeration systems and controls, -80°C forced air circulation +/- 3C uniformity, faster temp. recovery, 145 cu.ft storage capacity, 47 sq.ft. of floor space, 288,000 vials storage, dynamic refrigeration control, energy balance design, power consumption is less than 4.8 kw.
Improving life. It’s what drives us each day. At Fluidigm, we empower our customers to reveal meaningful insights in health and disease, identify actionable markers to inform life decisions and accelerate the development of more effective therapies. We focus on the most pressing needs in translational and clinical research, including cancer, immunology and immunotherapy. Harnessing proprietary microfluidics capabilities, we provide an unprecedented view into health and disease through our unique combination of innovative genomics solutions. As a trusted partner of leading academic, government, pharmaceutical, biotechnology and plant and animal research laboratories worldwide, we strive to increase the quality of life for all.

Configurable software solutions for biological sample and study management. Track sample data across multiple freezers while managing workflow. Flexible and user-friendly, Freezerworks puts the laboratory in control with easy to build fields, screens, and reports. Safeguard data with comprehensive security features, 21 CFR part 11 compliance, and cryogenic-safe barcode labeling.

Since 2007, Hamilton Storage, an affiliate entity of Hamilton Company, has been a global leader in the design and manufacture of automated storage systems for biological and compound samples. By safeguarding the integrity of even the most precious samples, our solutions and expert knowledge empower researchers to reach new heights of laboratory efficiency while remaining focused on life science research.

ISBER is a global biobanking organization which creates opportunities for networking, education, and innovations and harmonizes approaches to evolving challenges in biological and environmental repositories. ISBER fosters collaboration, creates education and training opportunities, provides an international showcase for state-of-the-art policies, processes, and research findings, and innovative technologies, products, and services. Together, these activities promote best practices that cut across the broad range of repositories that ISBER serves.

iSpecimen was founded to address a critical challenge: how to connect life science researchers who need human biospecimens with the billions of specimens available in healthcare organizations worldwide. Our ground-breaking iSpecimen Marketplace solves this problem, reinventing the biospecimen procurement process to accelerate medical discovery.

Kaye - First in Thermal Validation & Environmental Monitoring
The Kaye product range is relied upon by the world’s leading pharmaceutical and biotechnology companies to validate and monitor critical assets and processes as required by governing regulatory bodies.

LiCONiC specializes in the design and manufacture of automated sample storage solutions used in laboratories and applications with special climate requirements. We are experts in sample management and tracking for the biorepository, blood banking, and
compounds in storage markets. Our 20+ years of leadership in this field has led to an installation base of several thousands of systems in operation worldwide. LiCONiC continually expands its product portfolio to address a rapidly evolving industry.

**Micronic / NBS Scientific**  
Booth 24

Micronic manufactures innovative low temperature sample storage solutions—such as tubes, caps, and racks—to satisfy even the most complicated research applications in the life science industry. Micronic also manufactures high-quality laboratory automation equipment—such asappers, decappers, and code readers—to streamline laboratory workflows. NBS Scientific is a Micronic distributor in the USA that also delivers other resources scientists need to discover groundbreaking insights in the lab.

**OpenSpecimen**  
Booth 8

OpenSpecimen is a comprehensive biobanking informatics platform used in 70+ biobanks across 16 countries. For example, Johns Hopkins, Emory, UPitt, UPenn, MSKCC, CUMC, Washington University, UC Davis, TJU, UUtah, UTexas, UMaryland, UMiami and so forth. It permits users to enter/retrieve data about specimen collection, storage, QA, and distribution of biospecimens. It enables biobanks to collect high-quality specimen annotations and powerful reporting module to find specimens of interest.

**PHC Corporation of North America**  
Booth 26

PHC Corporation of North America is a leader in laboratory equipment for biopharmaceutical, life sciences, academic, healthcare and government markets. The company is a subsidiary of PHC Holdings Corporation, Tokyo, Japan, which is a global healthcare company. Product lines under the PHCb brand include energy efficient VIP® ECO, TwinGuard® and ultra-low temperature freezers, cryogenic and biomedical freezers, pharmacy refrigerators, incubators, autoclaves and plant growth chambers.

**Scinomix**  
Booth 33

Scinomix provides laboratory automation solutions to customers in the life science industry. Currently, we meet a strong niche-market need for labeling tubes, vials and plates in many life science applications. We strive to be a leading provider in our field by committing to quality, reliability, value, and customer service. We strongly value each of our customers, and exceeding customer expectations is the motivation that drives our business.

**Thermo Fisher Scientific**  
Booth 29

Thermo Fisher Scientific is the world leader in serving science. Our mission is to enable our customers to make the world healthier, cleaner and safer. Through our Thermo Scientific brand, we help customers accelerate innovation and enhance productivity.

**TTP Labtech**  
Booth 31

TTP Labtech develops and manufactures robust automated solutions for automated sample storage and low volume liquid handling. Biobanking solutions from ambient to -80°C for 2D bar-coded tubes offer truly scalable solutions for libraries from 50,000 to 500,000+ samples with unique modular interconnectivity and pneumatic remote delivery. Biobanking reimagined!

**Ziath LLC**  
Booth 3

Ziath specializes in the development of innovative instrumentation control and information management products designed to simplify automation processes in life science organizations, from academia to the biotech and pharma industries.

Ziath prides ourselves on product development, customization and looks to provide a truly bespoke experience for each customer. Our customer-centric approach guarantees you access to high-quality scientific support.
Connect Globally to Leading Professionals in Biobanking

ISBER is the only global forum that addresses harmonization of scientific, technical, legal, and ethical issues relevant to repositories of biological and environmental specimens. Through ISBER, benefit from the opportunity to connect to a global group of professionals in biobanking.

BENEFITS OF MEMBERSHIP INCLUDE:

- Free access to the ISBER Best Practices for Repositories and ISBER Self-Assessment Tool (SAT)
- Opportunity to connect with a global group of professionals in biobanking through the ISBER Members-only Forum
- Access to Biopreservation and Biobanking (BIO), ISBER’s official journal
- Reduced registration rates to ISBER meetings
- Stay informed with the latest biorepository news through the online ISBER News

NEW ISBER MEMBERS RECEIVE 15% OFF THEIR FIRST-YEAR OF MEMBERSHIP!
READY TO JOIN? VISIT ISBER.ORG!

ALREADY A MEMBER? RENEW YOUR MEMBERSHIP FOR 2020 NOW BY SIGNING IN TO YOUR ACCOUNT!

Head Office: Suite 301, 750 West Pender Street, Vancouver, BC, Canada, V6C 2T7
T: 1-604-484-5693 • F: 1-604-874-4378 E: info@isber.org W: www.isber.org

leading since 1999
ISBER PROVIDES THE FOLLOWING TOOLS TO THE BIOBANKING COMMUNITY:

**SELF-ASSESSMENT TOOL (SAT) FOR REPOSITORIES**

**IBBL BIOREPOSITORY PROFICIENCY TESTING (PT) PROGRAM**
Allows laboratories working with biospecimens to compare their performance to that of other expert laboratories from different sectors all over the world. PT works as an external quality assessment tool to verify the accuracy, precision and efficiency to laboratories’ processing and testing methods.

**PRE-ANALYTICAL BIOREPOSITORY EXTERNAL QUALITY ASSESSMENT (EQA) SURVEY**
Allows participants to benchmark their pre-analytical practices to other biorepositories. Participants receive an individualized report which includes the results and statistics obtained by all biorepositories which have participated.

**INTERNATIONAL REPOSITORY LOCATOR (IRL)**
Helps investigators locate biospecimen data repositories by developing a directory of repository information that can be searched online.

**STANDARD PRE-ANALYTICAL CODE (SPREC)**
Identifies and records the main pre-analytical factors that may have impact on the integrity of sampled clinical fluids and solid biospecimens and their simple derivatives during collection, processing and storage.

**BIOSPECIMEN STABILITY TESTING CALCULATOR (STABCALC)**
Determines sample stability, including freeze-thaw stability and storage stability. STABCALC facilitates stability studies performed by biobanks on different types of biospecimens by identifying potential variabilities in pre-analytical procedures.

**NEUROLOGICAL DISEASE METADATA**
Access metadata related to the biorepository level, the collection level and the individual sample level. Housed in a RedCap server, this tool has been configured in the scope of neurological disease collections, but can be used for other disease collections too.

**ALL ISBER TOOLS ARE AVAILABLE FREE TO MEMBERS!**

VISIT ISBER.ORG
The sample tracking you need. 
The workflow you’ll love.

Advanta Sample ID Genotyping Panel

Ensuring sample integrity from acquisition through data reporting is critical. You need to confidently eliminate mix-ups and low-quality specimens prior to distribution or costly downstream analysis.

Transform your laboratory productivity with DNA fingerprinting enabled with nanoscale automation. The Advanta™ Sample ID Genotyping Panel empowers you to efficiently assess sample identity and quality with 96 informative SNPs, using a Biomark HD™ workflow that you’ll love.

Meet us at the ISBER 2019 Regional Meeting
Minneapolis, MN | November 3–5

Learn more: fluidigm.com/sample-id
CUSTOMIZABLE BIOSPECIMEN TRACKING SOFTWARE

TRY IT FOR FREE AT WWW.BSISYSTEMS.COM

Email us at BSI@imsweb.com • Call us at (301) 628-1 BSI