





Qsep series Bio-Fragment Analyzer

Qsep1: Equipped with 8-hole module for upgrade to 12-hole module

Qsep100: Automated process for 1-100 samples

Qsep400: Automated 4 samples process/run(High-throughput workflow)

> Field

- o Genetic research
- o Clinical diagnosis
- Drug Discovery
- Third party clinical examination
- o Pathogenic microorganism detection or typing
- Sample QC for Next Generation Sequencing
 The third generations of sequencing
- Transgenic animal and plant testing

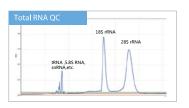
Dog



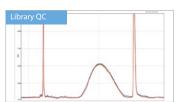


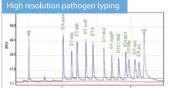
> Application

- o gDNA & total RNA & Fragmented DNA & micro-RNA & mRNA & ct/cf DNA QC
- NGS/SMRT QC
- o CRISPR-Cas gene knockout analysis
- STR/SSR
- o PCR/ Multiplex PCR product analysis
- High-resolution pathogen typing



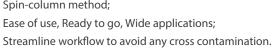
CRISPR





> Nucleic Acid Extraction - Nucleic Acid QC Integration Service

IColumn 12/24 Automated DNA/RNA Purification System Spin-column method;





EzMate Automated Pipetting System

PCR/qPCR sample preparation; HLA typing; SNP detection; DNA/RNA normalization; NGS sample preparation; Protein normalization.



Qsep100 Bio - Fragment Analyzer

Automated process for 1-100 samples;
Rapid analysis;
High sensitivity;
High resolution.



HANGZHOU HOUZE BIO-TECHNOLOGY CO., LTD

Tel: 0571-81060645 Web: www.houzebio.com

Address: Room 1101, 2th Building, No.158 Zixuan Road,

Xihu District, Hangzhou, Zhejiang.

Website: www.bioptic.com.tw E-mail: info@bioptic.com.tw Tel: +886-2-2218-8726

Tel: +886-2-2218-8726 Fax: +886-2-2218-8727

Add: (23141) 4F, No.108-3, Minquan Rd., Xindian Dist., NewTaipei City , Taiwan (R.O.C)



没公生物医疗,生物科技物联网生态价值创领者

Haier Biomedical, leader for creating biotechnology IoT ecological value

海尔生物医疗暨青岛海尔生物医疗股份有限公司,以建立物联网时代的生物科技综合解决方案生态品牌为愿景,以诚信生态、共享平台为价值观,专注于用户体验,始于低温存储、基于IoT平台转型的生物科技综合解决方案服务商。

Haier Biomedical (Qingdao Haier Biomedical Co., Ltd.), originated from cryogenic storage and based on the IoT platform transformation, is a provider of integrated biotechnology solution with the vision of establishing an eco-brand of integrated biotechnology solution in the IoT era, and with the focus on establishing a platform for sharing and ecosystem of trust, as well as the focus on user experience.

• 医用低温冷链产品/Medical cold chain lineup



物联网超低温冰箱 IoT ULT Freezer

智慧物联,碳氢变频,双重节能 ntelligent IoT, HC refrigerant and inverter technology for dual efficiency



低温冰箱 IoT ULT Freezer

碳氢制冷系统, 节能低耗 HC refrigerating system, better energy saving



物联网血液冰箱 IoT blood refrigerator

智慧物联,血液极速达,智控零浪费 Intelligent loT, prompt blood allocation with zero waste

● 医用低温冷链产品/Medical cold chain lineup



物联网试剂/疫苗冰箱 U Reagent/ Vaccine refrigerator 智能感应,准确、及时、高效

智能感应,准确、及时、高效 Smart control with great accuracy, promptness and efficiency

• 生物安全产品/Biological safety lineup





智联生物安全柜/洁净台 loT biological safety cabinet/clean bench 恒风速专利,智护恒久安全 Patented constant air velocity for guaranteed and enduring safety

• 液氮罐产品/Liquid nitrogen container lineup



液氮罐生物容器系列 Biobank series

超大液晶屏、大口径、科学存储 Large LCD touch screen, wide neck and smart storage

• 耗材产品/Consumable lineup





T系列耗材解决方案 T series consumables solution

安全存取、容量更大、医用级品质、专业可靠 Safe storage, larger capacity, medical grade, professional and reliable

• 自动化冷库产品/Auto walk-in cold room lineup



自动化冷库
Auto walk-in cold room
全程库外操作,节能、安全、便捷
Whole process outside operation, energy saving, great safety and convenience

• 信息化产品/Software lineup



BIMS^{灵诚} 系统

BIMS system



U-COOℓ冷链监控系统

U-COOL cold chain monitoring system



MEETING SPONSORS

Diamond



/A、仁生物医疗 **Haier Biomedical**

Gold















Bronze



























INTERNATIONAL SOCIETY FOR BIOLOGICAL AND ENVIRONMENTAL REPOSITORIES

HONORING OUR PAST, CELEBRATING THE PRESENT, AND ENVISIONING OUR FUTURE

ISBER 2019 ANNUAL MEETING & EXHIBITS

May 7 - 10, 2019 • Shanghai, China



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 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.



750 Pender Street, Suite 301, Vancouver, BC V6C 2T7 Canada | T 604.484.5693 | F 604.874.4378



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MESSAGE FROM THE PRESIDENT AND CONFERENCE CHAIRS

Dear colleagues and friends,

On behalf of the International Society for Biological and Environmental Repositories (ISBER) Board of Directors and the Co-chairs of the 2019 Annual Meeting and Exhibits, we welcome you to Shanghai, China. The city is home to one of the largest global financial hubs - as well as being one of the largest medical research and pharmaceutical hubs. Shanghai has always been one of the major gateways of China to the rest of the world, hosting a diverse population and is widely recognized as one of the most multicultural and cosmopolitan cities in the world. The city's long history, as well as its focus on innovation and technological advancement makes it the perfect place to host the 2019 ISBER meeting. This is ISBER's 20th Anniversary year, showcasing the achievements of the society and of its many members. To reflect this, the Scientific Program Advisory Committee chose "Honoring Our Past, Celebrating the Present, and Envisioning our Future" as the meeting theme.

Biobanking activity has been recognised as key to future precision research successes; as a result the biobanking field has grown tremendously in the last twenty years, with evolving best practices and new standards. Developments in medical, environmental, microbial and veterinary fields have benefitted hugely from the knowledge, experience and activity of biobanks around the world. Biospecimen research and biobanking have been instrumental in facilitating new discoveries, the implementation of new processes and creating innovative ways of approaching and solving problems. The challenge now is to demonstrate all these successes to the world, to share our learning from the successes, and failures, and evolve our biobanking practices with relevant evidence.

ISBER celebrates its 20th anniversary with the many internationally renowned speakers and the substantial co-operation of the two affiliate organisations in China: the Biobank Branch, China Medicinal Biotechnology Association (BBCMBA) and China National GeneBank (CNGB). Two sessions are co-organised with the Society for Cryobiology and the Australasian Biospecimen Network Association (ABNA). Over the last year, the Scientific Program Committee has worked hard to ensure the annual meeting delivers interesting, innovative and educational content relevant to all ISBER members. Bringing together the diverse global biobanking communities in discussion and introducing new participants to ISBER will advance not only the society and the field of biobanking and biospecimen research, but also global research capabilities.

PROGRAM HIGHLIGHTS

For the first time, ISBER is hosting pre-conference workshops customized for Repository Technicians while providing topic-driven educational workshops as part of the main conference program. All workshops are designed to inform attendees about specific types of repository activities, and provide great opportunities for learning and knowledge exchange.

The program includes ten symposia sessions, four contributed paper sessions, an innovative technologies session, three special focus sessions and opportunities to attend workshops and symposia run by ISBER's Corporate Partners. In addition, on Friday during the lunch break, there will be roundtable discussions

where you can join the conversations around various biobanking hot topics, including the developments on living biobanks. Additional networking opportunities include discussions with vendors in the large exhibition space and interactions with poster presenters.

The ISBER Working Groups, Special Interest Groups and Committees have the opportunity for in-person meetings, with pre-scheduled meeting times and room bookings for groups to get together and discuss and move forward their exciting work. We welcome your participation in the ISBER Group and Special Interest Groups discussions. The symposia, which have invited speakers from across the biobanking communities, have been developed to give the foundation for exciting discussions of ideas and innovative solutions

SYMPOSIA AND SPECIAL TOPICS SESSIONS

We have invited world leaders in the field of biobanking and beyond who will provide insights into the rapidly evolving research environment and the importance of having practices, and adhering to processes that have been shown to be most effective. On Tuesday, May 7 the speakers in **Symposium 1:**Next Generation Biobanking will highlight our successes and focus on the future of the field. The keynote speaker, Professor Luo Xuegang, will describe how biobanking techniques had to be used and sometimes invented in order to preserve the intact body of a 2,000 year old Chinese queen, discovered in Changsha, China. This will be followed by a short history of ISBER, leading to four provocative presentations by key opinion leaders on the future of biobanking.

The Special Topic Session "Cryobiology and Novel Cryopreservation Technologies" has been created in collaboration with the Society for Cryobiology. It is followed by three concurrent sessions on topics of major interest for the biobanking field. These are **Symposium 2A:** Regional Regulations; Global Implications, **Symposium 2B:** From Policy to Practice: Incorporating Biobanking Standards and Best Practices into Methods and Procedures, and **Symposium 2C:** Biospecimens as the New Currency for Research: Insight from the Banking World.

Wednesday, May 8 activities will open with the riverwalk at 6 AM, followed by corporate partner workshops. The following concurrent sessions will complete the morning schedule: **Symposium 3A:** Utilization as a Key element to Biobank Sustainability: the Past, Present and Planning for Success in the Future, **Symposium 3B:** Biobanking in a Global Research Environment: Respecting Cultural Perspectives and Special Study Population Considerations and **Symposium 3C:** Biobanking and Life Crossroads of Opportunity: Biobanking and Cell Therapy. The **Corporate Lunch Symposia** will be followed by two concurrent Contributed Paper Sessions and the **Innovative Technologies** oral presentations. The day will conclude with the Exhibitor and Poster Networking evening in the Exhibit Hall.

On Thursday, May 9, ISBER will lead on the discussion between participants and members of the ISBER pharma working group and regulatory bodies in China. This is an exciting opportunity to learn and to exchange ideas and experiences within a morning **Special Topic Session**. The review of ISBER's activities and new exciting opportunities and plans will be announced at the **ISBER**





Annual Business Meeting, as well as the recipients of the ISBER Awards. The afternoon will include two concurrent Contributed Paper Sessions leading to the second Special Topics Session: Biobanking in Asia and Oceania, created in partnership with the Australasian Biospecimen Network Association (ABNA). The evening concludes with the ISBER Networking Dinner in the exquisite surroundings of the Bund and the Shanghai riverfront.

On Friday, May 10, three concurrent symposia will discuss major aspects that relate to the future of biobanking: **Symposium 4A:** Using Biobanks for the Future of Targeted Medicine, **Symposium 4B:** Biobanking in China, and **Symposium 4C:** Biospecimen Quality & Research, created in partnership with the Australasian Biospecimen Network Association (ABNA). The Roundtable discussions over lunch will be followed by the **Special Topic Session** on Living Biobanks.

CONTRIBUTED PAPERS SESSIONS AND WORKING GROUP MEETINGS

There are four contributed paper sessions highlighting 28 abstracts selected from over 200 submitted for oral presentation. An additional 10 abstracts will be presented in the innovative technologies session. Two poster sessions will highlight the abstracts that were accepted as posters which will be on display by the exhibit hall. The contributed papers sessions and posters demonstrate the diversity of activity across the ISBER membership and provide a sense of the international expertise and breadth of biospecimen research being performed around the world.

Working group meetings will take place throughout the meeting as indicated in the program. All attendees are encouraged are encouraged to participate, contribute and learn through the exchange of experiences and ideas.

RIVERWALK

The eighth Annual Fun Run Event is transformed this year to a Riverwalk across the picturesque Yangtze boardwalk. Organized by the ISBER Marketing Committee, it is scheduled to begin at 6am on Wednesday, May 8th. Participants are invited to bring their shirts from previous years in celebration of the ISBER 20th year anniversary. All proceeds will benefit the ISBER Travel Award, which provides complimentary registration and travel support for biobankers from emerging countries to attend the ISBER Annual Meeting. Register for the Riverwalk at the registration desk onsite and join us for an invigorating Wednesday morning.

ISBER BUSINESS MEETING

The ISBER Annual Business Meeting on Thursday morning is your chance to learn about the society's achievements within the last year, and an opportunity to preview exciting new developments. ISBER President, David Lewandowski, will present the annual ISBER awards: the ISBER Founder's Award (sponsored by Chart MVE), the ISBER Award for Outstanding Achievement in Biobanking (sponsored by Worthington Industries), the ISBER Distinguished Leadership and Service Award, the ISBER Special Service Awards, and the ISBER Travel Award.



Join us for an exciting evening in the Pearl Room.

Enjoy dinner and network with your colleagues.

Date: Thursday, May 9, 2019 **Time:** 7:00 PM – 11:00 PM

Tickets available at Registration Desk Ticket Price: \$75 USD

Venue: Pearl Room, Convention Centre

Sponsored by:





THE ISBER NETWORKING EVENING

The Networking evening will take place in the Pearl Room at the conference venue on Thursday, May 9th. Enjoy a reception and dinner in one of the most photographed and iconic locations in Shanghai with direct views of the river and network with biobanking colleagues from around the world. Make new connections, foster discussions, and have fun together! Separate registration is required.

ACKNOWLEDGEMENTS

We would like to thank our affiliate organisations in China for their assistance throughout the last year, as well as our invited speakers and workshop presenters for their generous contributions to the program. ISBER extends its great appreciation to the many volunteers whose hands-on involvement in the planning and implementation process made the program possible. Members of the ISBER 2019 Scientific Program Committee and the Organizing Advisory Committee 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

Chairs and members of the Education and Training, Member Relations and Marketing Advisory Committees.

ISBER greatly appreciates the support received from our vendors, sponsors and corporate partners, whose participation also made the meeting possible. Our special thanks go to **Haier Biomedical** and **Chart MVE**, our Diamond Sponsors for this conference. You are encouraged to visit the Exhibit Hall to support the vendors and check out the corporate partner workshops throughout the meeting schedule. Finally, we would like to thank the ISBER Head Office staff for their continual support and guidance.

Your feedback is very important to ISBER. The success of future Annual Meetings relies on your participation, input and feedback. Please complete the electronic survey that will be sent to you at the end of the week as your contribution to future meetings.

On behalf of the ISBER leadership, we welcome you to Shanghai, China, and hope you have an enjoyable, interesting four days filled with thought-provoking presentations, stimulating conversations, networking, and fun!



Zisis Kozlakidis 2019 Program Committee Co-chair



Rongxing Gan 2019 Program Committee Co-chair



Andy Pazahanick 2019 Program Committee Co-chair



David Lewandowski
ISBER President
2018-2019



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MAY 2018 - MAY 2021

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Rose Redfield

Peter Watson

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Rita Lawlor

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Melissa Rawley-Payne Liangliang Ruan Nicole Sieffert Yan Ru Su Billy Schleif

Tatsuaki Tsuruyama Jim Vaught

Hanh Vu Weiye Charles Wang

Xiaoyan Zhang
Xuexun Zhou

ISBER WORKING GROUPS

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

ISBER SPECIAL INTEREST GROUPS

- Automated Repositories
- Hospital-Integrated Biorepositories
- Pediatric



ISBER AWARD WINNERS

ISBER Outstanding Achievement in Biobanking

The ISBER Award for Outstanding Achievement in Biobanking, sponsored by Worthington Industries, is designed to recognize individuals who have made outstanding contributions to the field of biobanking. The award can be given for a single outstanding achievement or a lifetime body of outstanding work in the field.



Marianna Bledsoe, USA



ISBER Founder's Award

The ISBER Founder's Award, sponsored by Chart MVE, recognizes individuals who have provided outstanding leadership to the founding, support, and incorporation of ISBER as an international biobanking society. The recipient of this award is selected by the ISBER Nominating Committee.



William Grizzle, USA



ISBER Distinguished Leadership and Service Award

This award is designed to honor ISBER members who have demonstrated exceptional leadership to further the mission and goals of the society and/or significant, long-standing contributions to the society.



Daniel Simeon-Dubach, Switzerland

ISBER Travel Award

The ISBER Global Expansion Fund supports efforts to increase ISBER's membership and presence worldwide. The ISBER Travel Award provides travel support for individuals from emerging countries who are planning, or are currently managing a repository, to attend the ISBER Annual Meeting.



Anna Pidubbna, Ukraine

ISBER Special Services Awards

The ISBER Special Service Awards recognize individuals who have made exceptional contributions towards the goals of the Society through the performance of a special service or act on behalf of the organization.



Monique Albert,



William Mathieson, Luxembourg



Alison Parry-Jones,



Catherine Seiler,



Xiaoyan Zhang,



GENERAL INFORMATION

Venue

Shanghai International Convention Center

2727 Binjiang Ave LuJiaZui, Pudong Xinqu Shanghai Shi, China, 200000

MEETING DATES: May 7-10, 2019

Conference Registration

Mandarin Hall Foyer

 Monday, May 6
 8:00 AM - 6:00 PM

 Tuesday, May 7
 7:00 AM - 6:00 PM

 Wednesday, May 8
 7:00 AM - 6:00 PM

 Thursday, May 9
 7:00 AM - 5:30 PM

 Friday, May 10
 8:30 AM - 4:00 PM

Speaker Services

ЗА

 Monday, May 6
 8:00 AM - 4:00 PM

 Tuesday, May 7
 7:00 AM - 5:00 PM

 Wednesday, May 8
 7:00 AM - 5:30 PM

 Thursday, May 9
 7:00 AM - 4:15 PM

 Friday, May 10
 8:30 AM - 2:00 PM

Exhibits

Mandarin Hall

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Monday, May 6	12:00 PM - 5:00 PM
Tuesday, May 7	9:00 AM - 4:00 PM

EXHIBIT TAKEDOWN:

Thursday, May 9 2:3	30 PM - 8:00 PM
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EXHIBIT HOURS:

5:30 PM – 8:00 PM
9:00 AM - 7:45 PM
9:00 AM - 2:15 PM
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Annual Meeting Registration (Prices in USD)

	Regular Rate	On-Site Rate	1-Day Pass	2-Day Pass	3-Day Pass
Member	\$930	\$1,055	\$210	\$420	\$630
Non- Member	\$1,230	\$1,355	\$260	\$520	\$780
Technician/ Student	\$680	\$700	\$130	\$260	\$390
Exhibit Hall Pass	\$395	\$395	-		

Full Conference Registration includes participation in scientific symposia and sessions, educational workshops from May 7-10, a delegate bag, refreshment and conference meals, the Welcome Reception, and the Exhibitor and Poster Networking Evening.

Please note that full conference registrations do not include the Pre-conference Workshops for Technicians, the Riverwalk, or the Networking Dinner.

Exhibit Hall Pass includes access to the Exhibit Hall, conference meals served in the Exhibit Hall, and access to the Exhibitor and Poster Networking Evening.

Pre-conference Workshops for Technicians

Date: Monday, May 6, 2019 | 9:00 AM – 5:00 PM

Fee: Members \$150 USD
Non-members \$175 USD
Students/Technicians \$100 USD

Please note that registration for the Technician Workshop is available as an add-on item to your entire conference registration.

add-on item to your entire conference registration.

Please see below for our Technician Workshop descriptions:

SAMPLE DATA MANAGEMENT

Biobanking requires using the full potential of biological samples; this includes not just the physical samples, but also the associated metadata that is collected throughout the lifecycle of the sample. Repository samples can be handled by a number of different functional groups over time. Managing sample inventory, Chain of Custody (CoC), document management, accurate labeling and coordinating the annotation of associated data is imperative for the smooth functioning of any repository. Databases and use of other integrated software tools are a fundamental requirement to support the mission and processes of the repository. This session will explore the basic requirements of a repository IT system; explain the importance of basic data elements; and clarify the ISBER Best Practices for Repository Management Systems and how they can affect the daily rituals of a repository technician.

QA/QC - BENCHMARKING DATA FOR QUALITY METRICS

While the number of biospecimens being collected and distributed is increasing, the complexity of their multiple applications results in higher requirements in the quality management of these biospecimens and associated data. Controlling quality metrics of primary biomaterials, collection variables, preanalytical variables, and different molecular analytes is critical for high-throughput, quantitative downstream assays. It is also essential to avoid introducing institute-dependent intrinsic bias in multiple processing pathways to obtain accurate data. This session will be devoted to an in-depth discussion of evolving tools and metrics for sample quality assessment and how best practices might directly apply to the daily work of biobank technicians.



Educational Workshops

WEDNESDAY, MAY 8, 2019 - 1:30 PM - 2:30 PM

- **Educational Workshop 1:** Facilitating International Collaboration Between the Pharma Industry and China in the Conduct of Clinical Trials and Acquisition of Biospecimens From Chinese Biobanks
- **Educational Workshop 2:** Biobank Standards/ISO
- **Educational Workshop 3:** Lack of Reproducibility in Research Based on Human and Animal Tissues

THURSDAY, MAY 9, 2019 - 9:45 AM - 11:00 AM

- **Educational Workshop 4:** Introduction to Business Planning for Biorepositories, Part 1
- Educational Workshop 5: Biobank Sustainability and Utilization, Part 1
- Educational Workshop 6: ELSI in Asia-Oceania

THURSDAY, MAY 9, 2019 - 11:30 AM - 12:45 PM

- **Educational Workshop 7:** Introduction to Business Planning for Biorepositories, Part 2
- Educational Workshop 8: Biobank Sustainability and Utilization, Part 2
- Educational Workshop 9: Pitching Biobanking to Stakeholders

SHANGHAI RIVERWALK 2019

(Separate Registration Required)

Date: Wednesday, May 8, 2019 Time: 6:00 AM - 7:30 AM Location: Meet at the Registration desk

Ticket Price: \$40 USD for Pre-registration

\$50 USD for On-site registration

ISBER Networking Dinner

(Separate Registration Required)

Thursday, May 9, 2019 Date: Time: 7:00 PM - 11:00 PM

Venue: Pearl Room, Shanghai Convention Centre

Ticket Price: \$75 USD

PLENARY SESSION

Please note that a recording (audio and slides) of Symposium 1 on May 7, 2019 will be available.

POSTER PRESENTATION INFORMATION

Tuesday, May 7 from 4:00 PM – 5:30 PM **Poster Set-Up: Poster Tear-Down:** Thursday, May 9 from 1:45 PM – 2:15 PM

SESSION 1:

Welcome Reception, Tuesday, May 7, 7:00 PM - 8:00 PM

- **Biobanking Tools**
- Biospecimen Research & Science
- Ethical, Legal, and Societal Issues
- Human Specimen Repositories

SESSION 2:

Exhibitor & Poster Networking Evening, Wednesday, May 8, 6:30 PM - 7:30 PM

- **Biobanking Profiles**
- Biodiversity/Environmental/Animal Repositories
- **Hot Topics**
- Innovative Technology
- Repository Automation Technology
- Repository Management
- Repository Standards

SIGN UP FOR THE SHANGHAI **RIVERWALK AND HELP RAISE FUNDS FOR THE ISBER TRAVEL** AWARD!

Date: Wednesday, May 8, 2019 Time: 6:00 AM - 7:30 AM

Location: Meet at the Registration Desk

Ticket Price: \$40 USD for pre-registration, \$50 USD for on-site registration

Tickets available at the registration desk



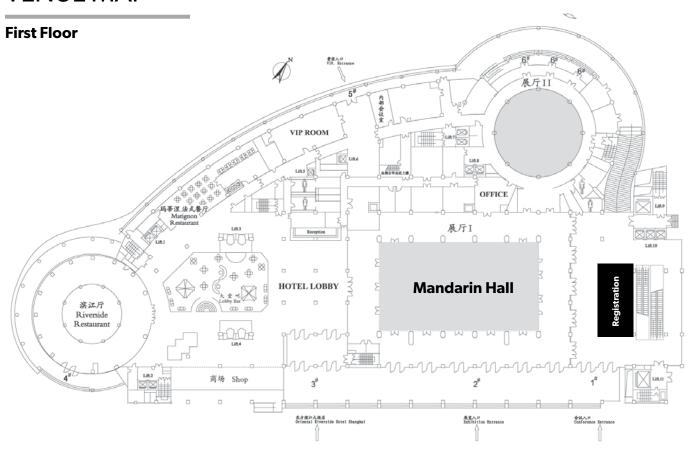








VENUE MAP



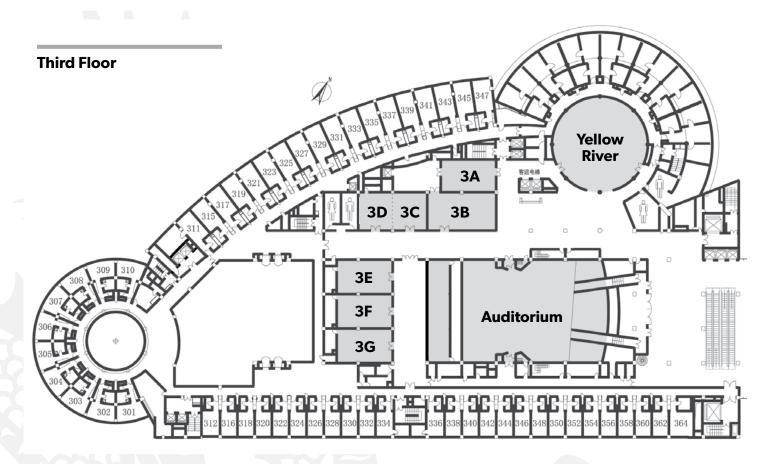
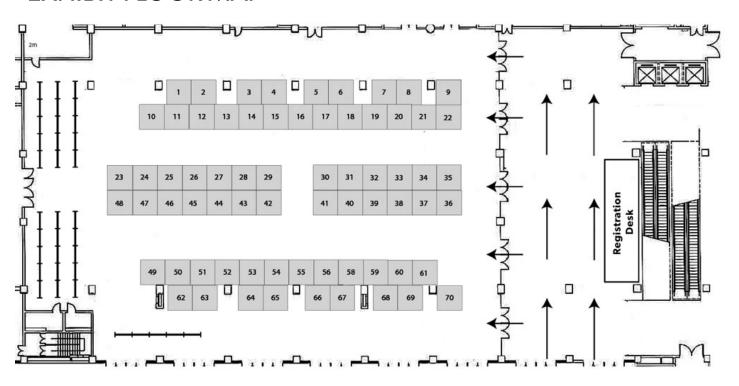




EXHIBIT FLOOR MAP



EXHIBITORS LISTING

Company Name	Booth #	Company Name	Booth #
Abeyance Cryo Solutions	58	Grenier Bio-One GmbH	49
Agilent Technologies (China) Co. Ltd. Shanghai Branch	41	Haier Biomedical	20, 21
Asian Network of Research Resource Centers (ANRRC)	65	Hamilton Storage	42
ASKION GmbH	29	Hangzhou Houze Biotechnology Co., Ltd.	53
Autoscribe Informatics	18	Hong Kong Al Technology Ltd. (CryoBioSystems)	12
Biobank Branch, China Medicinal Biotechnology Association	64	Hope (Shanghai) Biotech Co., Ltd.	23
Beijing iBio-Gene Technology Co, Ltd.	28	International Society for Biological and Environmental Repositories	66, 67
Biologix Group Ltd.	9, 22	Labvantage Solutions Inc.	13, 14
Biosigma SRL	32	LBD Life Sciences Limited	54, 55, 56
BIS Corporation	50	Liconic Instruments	15
Bluechiip Ltd.	59	LVL Technologies	43
Brooks Life Sciences	61, 70	MGI	62
Bruker (Beijing) Scientific Technology Co, Ltd.	25	Micronic	31
Chart MVE	35, 36	OriginCell	33, 34
China National Gene Bank	63	Alphavita Bio-scientific (Dalian) Co.,Ltd. (Panasonic)	26, 27
CryopAL	47, 48	Perkin Elmer	69
Cryotherm GmbH & Co. KG	46	PHC Corporation (Shanghai)	60
Daclan Biotech	44	Shanghai AvanTech Bioscience Co., Ltd.	30
Eppendorf China Ltd.	10, 11	ThermoFisher	52
Fangye Technology Development Corporation	37	Tsubakimoto Chain	24
Farrar Scientific Corp.	45	Unchained Labs	51
Fluidigm Corp China	1	Worthington Industries	16, 17
Genepoint Biological Technology (Shanghai) Co., Ltd.	38, 39	Zhejiang Sorfa Life Science Research Co., Ltd.	19



CONFERENCE-AT-A-GLANCE

MONDAY, MAY 6	5, 2019	
8:00 AM - 4:00 PM	Speaker Services Open	3A
8:00 AM - 6:00 PM	Registration Open	Mandarin Hall Foyer
8:30 AM – 5:30 PM	ISBER Board Meeting (Invitation Only)	3E
9:00 AM – 5:30 PM	Technician Workshop	3C/D
12:00 PM – 5:00 PM	Exhibit Installation	Mandarin Hall
1:00 PM – 5:30 PM	Marble Arch Meeting (Invitation Only)	3G
5:30 PM – 7:00 PM	BIO Editorial Meeting (Invitation Only)	3G

TUESDAY, MAY 7	, 2019	
7:00 AM – 6:00 PM	Registration Open	Mandarin Hall Foyer
7:00 AM – 5:00 PM	Speaker Services Open	3A
8:00 AM – 9:00 AM	Getting to Know ISBER	Auditorium
9:00 AM – 4:00 PM	Exhibitor Installation	Mandarin Hall
9:10 AM – 12:15 PM	Symposium 1 (Plenary): Next Generation Biobanking	Auditorium
12:30 PM – 1:30 PM	General Lunch	3rd Floor Foyer
12:30 PM – 1:30 PM	Corporate Lunch Symposium	Yellow River
1:45 PM – 2:45 PM	Special Topics Session: Focus on Cryobiology and Novel Biopreservation Technology	Auditorium
3:00 PM - 5:30 PM	Symposium 2A/2B/2C (Concurrent)	Auditorium • Yellow River • 3C/D
4:00 PM – 5:30 PM	Poster Installation	Mandarin Hall
5:30 PM – 8:00 PM	Welcome Reception with Exhibits	Mandarin Hall

	AY 8, 2019	WEDNESDAY, M
Meet at Registration Desk	Riverwalk	6:00 AM - 7:30 AM
Mandarin Hall Foyer	Registration Open	7:00 AM – 6:00 PM
3A	Speaker Services Open	7:00 AM – 5:30 PM
3C/D • 3E	Corporate Partner Workshops	7:45 AM – 8:45 AM
Mandarin Hall	Exhibit Hall Open	9:00AM – 7:45 PM
Auditorium • Yellow River • 3C/D	Symposium 3A/3B/3C (Concurrent)	9:00 AM – 12:00 PM
Mandarin Hall	General Lunch	12:15 PM – 1:15 PM
Yellow River	Corporate Lunch Symposium	12:15 PM – 1:15 PM
Auditorium • Yellow River • 3C/D	Workshop 1/2/3 (Concurrent)	1:30 PM - 2:30 PM
Auditorium • Yellow River	Contributed Paper Session 1/2 (Concurrent)	3:00 PM - 5:00 PM
Auditorium	Innovative Technologies	5:15 PM – 6:15 PM
Mandarin Hall	Exhibitor and Poster Networking Evening	6:15 PM – 7:45 PM



Please see the full program for coffee break times.

A gentle reminder that breakfast and coffee are included at the conference hotel. As such, welcome coffee will not be provided each morning, but please join us during our scheduled coffee breaks!



THURSDAY, MA	Y 9, 2019	
7:00 AM – 5:30 PM	Registration Open	Mandarin Hall Foyer
7:00 AM – 4:15 PM	Speaker Services Open	3A
7:15 AM – 8:15 AM	Corporate Partner Workshops	3C/D • 3E
8:30 AM – 9:30 AM	Special Topic Session: Precision Medicine and the Regulatory Environment: Future Opportunities	Auditorium
9:00 AM – 2:15 PM	Exhibit Hall Open	Mandarin Hall
9:45 AM – 11:00 AM	Workshop 4/5/6 (Concurrent)	Auditorium • Yellow River • 3C/D
11:30 PM – 12:45 PM	Workshop 7/8/9 (Concurrent)	Auditorium • Yellow River • 3C/D
12:45 PM – 2:15 PM	General Lunch in Exhibit Hall	Mandarin Hall
1:15 PM – 2:15 PM	ISBER Annual Business Meeting	Yellow River
1:45 PM – 2:15 PM	Poster Takedown	Mandarin Hall
2:15 PM – 4:15 PM	Special Topic Session: Biobanking in Asia and Oceania	Auditorium
2:15 PM – 4:15 PM	Contributed Paper Session 3/4	3C/D • Yellow River
2:30 PM - 8:00 PM	Exhibitor Takedown	Mandarin Hall
4:30 PM – 5:30 PM	Vendor Meeting	3E
7:00 PM – 11:00 PM	ISBER Networking Evening	Pearl Room

FRIDAY, MAY 10,	2019	
8:30 AM – 4:00 PM	Registration Open	Mandarin Hall Foyer
8:30 AM – 2:00 PM	Speaker Services Open	3A
9:15 AM – 12:15 PM	Symposium 4A/4B/4C (Concurrent)	Auditorium • Yellow River • 3C/D
12:30 PM – 1:30 PM	General Lunch	Mandarin Hall
12:30 PM – 1:30 PM	Roundtable Discussions	Mandarin Hall
1:45 PM – 3:45 PM	Special Topic Session: Living Biobanks	Auditorium
4:00 PM – 5:00 PM	ISBER Board of Directors Meeting (Invitation only)	3E



Please see the full program for coffee break times.



A gentle reminder that breakfast and coffee are included at the conference hotel. As such, welcome coffee will not be provided each morning, but please join us during our scheduled coffee breaks!





NOVEMBER 4-5
2019

REGIONAL MEETING MINNEAPOLIS, USA

www.isber.org

ISBER UPCOMING MEETINGS





CONFERENCE PROGRAM

MONDAY, M	AY 6, 2019		
8:00 AM - 6:00 PM	Registration Open		Mandarin Hall Foyer
8:00 AM - 4:00 PM	Speaker Services Oper	1	3A
8:30 AM – 5:30 PM	ISBER BOARD OF DIF	RECTORS MEETING (Invitation Only)	3E
		VORKSHOP (Pre-Registration Required) (India) and Jingman Xu (China)	3C/D
	9:00 AM – 10:00 AM	Biobanking 101 Part 1 Lead Presenter: William Grizzle (USA)	3C/D
	10:00 AM - 10:30 AM	Coffee Break	3C/D Foyer
	10:00 AM – 12:00 PM	Biobanking 101 Part 2 Lead Presenter: William Grizzle (USA)	3C/D
9:00 AM – 5:30 PM	12:00PM – 1:00PM	General Lunch	3C/D Foyer
	1:00PM - 2:30PM	Sample Data Management Lead Presenters: Weiye Charles Wang (China), Zack von Menchhofen (USA)	3C/D
	2:30PM – 3:45PM	Benchmarking Data for Quality Metrics Lead Presenter: Timothy Sharp (USA)	3C/D
	3:45PM - 4:00PM	Coffee Break	3C/D
	4:00PM – 5:00PM	Breakout Discussion (Interactive groups)	3C/D
	5:00PM - 5:30PM	Summary and Q&A	3C/D
12:00 PM – 5:00 PM	Exhibitor Installation		Mandarin Hall
1:00 PM - 5:30 PM	MARBLE ARCH MEET	TING (Invitation Only)	3G
5:30 PM – 7:00 PM	BIOPRESERVATION A	AND BIOBANKING EDITORIAL BOARD MEETING (Invitation Only)	3G

TUESDAY, MAY 7, 2019			
7:00 AM - 6:00 PM	Registration Open	Mandarin Hall Foyer	
7:00 AM – 5:00 PM	Speaker Services Open	3A	
8:00 AM – 9:00 AM	GETTING TO KNOW ISBER Presenters: Kathi Shea (USA), Xun Xu (Chino), Nicole Sieffert (USA)	Auditorium	
	Find out more about ISBER and get the chance to interact with new members. All meeting participants welcome and encouraged to attend.		
9:00 AM – 4:00 PM	Exhibitor Installation		



TUESDAY, MAY 7, 2019

9:10 AM - 12:15 PM

12:30 PM - 1:30 PM

12:30 PM - 1:30 PM

General Lunch

SYMPOSIUM 1 (PLENARY): NEXT GENERATION BIOBANKING

Auditorium

Chairs: Zisis Kozlakidis (France), Rongxing Gan (China), Andrew Pazahanick (USA)

Opening Ceremony and Welcome Remarks

Biobanks underpin and facilitate the national and international research efforts, by providing high-quality, research-ready samples and associated data, according to a set of best practices and standards. Over the last two decades biobanks have multiplied across the world providing the materials with which research has advanced in the era of '-omics' and precision analytics. The view of biobanking has changed and matured as well: from measuring relative volume of collections in the first years, biobanks increasingly considered their ethical, social and legal contexts, the utilization of samples and the implementation of best practices and standards.

This session will provide examples from the last two decades where biobanking has been crucial in supporting scientific progress. It will also explore what the future of biobanking over the next twenty years might look like through a series of 'Next generation Biobanking' presentations.

9:10 AM – 9:35 AM	, ,	
	Hengjun Gao, BBCMBA, Xun Xu, CNGB, Rongxing Gan, ABC, David Lewandowski, ISBER President	
9:35 AM – 10:05 AM	Keynote Lecture: Discovery, Study & Preservation of the Mawangdui Ancient Corpse Xuegang Luo, Central South University, China	
10:05 AM – 10:25 AM	History of Biobanking Jim Vaught, USA	
10:25 AM – 10:40 AM	Coffee Break 3rd Floor Foyer	
10:40 AM – 10:45 AM	Introduction: Next Generation Biobanking	
Evolution of Biobanking Science and Technology to Enable Precision Medicine Initiatives in Academia, Government, Commercial and Direct to Consumer Industries Andrew Brooks, RUCDR Infinite Biologics, Rutgers University, USA		
11:10 AM – 11:30 AM Roche Biosample Repository: Supporting Research Through Integrative Biobanking Suenne Orth, F. Hoffmann-La Roche Ltd., Switzerland		
11:30 AM – 11:50 AM	Development of Advanced Technology for Cryopreservation and Biobanking Dayong Gao, University of Washington, USA	
11:50 AM – 12:10 PM	Academic Innovation and Infrastructure for Next-Generation Biobanking Rohit Gupta, Stanford University, USA	
12:10 PM – 12:15 PM Q&A		

CORPORATE LUNCH SYMPOSIUM: HAIER BIOMEDICAL

∴<u></u> Yellow River

Presenters: Feng Min (China), Wang Wenfu (China), Ren Wenguang (China)

/女女生物医疗 Haier Biomedical

reliow kive

3rd Floor Foyer

IoT is an important part of solutions for application and practical issues frequently encountered in biological sample banks.

When biological storage banks are built on big data connected with IoT, a shared data platform network is structured to include operational rules, standards, best practice and related SOP's. The network links all information with scientists, equipment, samples, and clinical data such as HIS, LIS, EMR, and PACS. Cutting down the time spent to look for data, the system improves work efficiency, accuracy and standardization. It further increases research productivity; decreases work intensity and unnecessary interference of raw data.

IoT also provides a means to organize, and analyze data structure using disease types, samples, or surface characteristics. The results can be a data base that is useful for activities related to basic medical scientific research, new drug discovery and clinical study. Finally, a shared platform with biological sample data information allows colleagues to access common information for sample storage, transfer, testing, data processing and sharing, project work, and scholastic exchange.

*Lunch will be provided for all symposia attendees.

Auditorium

SPECIAL TOPIC SESSION: CRYOBIOLOGY AND NOVEL CRYOPRESERVATION TECHNOLOGY

Presenters: Dayong Gao (USA), Gang Zhao (China)



Low temperature has been utilized to keep living cells and tissues dormant but potentially alive for cryopreservation and biobanking with great impacts on scientific and biomedical applications. This session, co-organised with the Society for Cryobiology, will present the latest ground breaking developments in the area of Cryobiology. The new technologies represent breakthroughs with a significant future impact and are likely to contribute to a paradigm shift in the science and practice of cryobiology.

1:45 PM – 2:05 PM	Bioinspired Materials for Cryopreservation Jianjun Wang, Chinese Academy of Sciences, China
2:05 PM – 2:25 PM	The Effect of Cryopreservation on Tumor Cells, Tissues and Biomacromolecules Baolin Liu, University of Shanghai for Science and Technology, China
2:25 PM – 2:45 PM	Bioencapsulation Technologies for Cryopreservation of Stem Cells Gang Zhao, University of Science and Technology of China, China

1:45 pm - 2:45 PM



TUESDAY, MAY 7, 2019

SYMPOSIUM 2A: REGIONAL REGULATIONS: GLOBAL IMPLICATIONS

Auditorium

Chairs: Marianna Bledsoe (USA), Rita Lawlor (Italy)

In order to ensure the rights of individuals whose personal data and biospecimens are shared broadly, new regulations have been issued in various regions and countries around the globe. These regulations may apply to biobanking and research activities under certain conditions. One example, the EU General Data Protection Regulation (EU-GDPR), imposes strict data protection requirements for the processing of "personal data" in countries in the European Economic Area (EEA) as well as restricted conditions for the transfer of data outside the EEA. In addition, other emerging laws, regulations and policies that affect the use and transfer of biospecimens for research are under development or have been enacted in other countries. These new laws, regulations and policies may have a similar impact on global collaborations.

Symposium 2A/2B/2C (Concurrent) 3:00 PM – 5:30 PM This session will address current and emerging regional data protection and other regulations and their implications on global collaborations and specimen and data sharing, including biobanking activities and multi-national industry-sponsored research.

3:00 PM – 3:20 PM	Coming to a Biobank Near You Soon? Bracing for the Impact of the EU-GDPR on Global Research Jasper Bovenberg, <i>Legal Pathways</i> , <i>Netherlands</i>
3:20 PM – 3:40 PM	Regional Regulations: Global Implications Mark Barnes, Ropes & Gray, LLP, USA
3:40 PM - 4:00 PM	Impact of Legislation on Biobanking: The POPI Act in South Africa Keymanthri Moodley, Stellenbosch University, South Africa
4:00 PM – 4:30 PM	Coffee Break
4:30 PM – 4:50 PM	Regulations on Human Genetic Resources Management in China Yanrong Sun, China National Center for Biotechnology Development, China
4:50 PM – 5:30 PM Panel Discussion	

SYMPOSIUM 2B: FROM POLICY TO PRACTICE: INCORPORATING BIOBANKING STANDARDS AND BEST PRACTICES INTO METHODS AND PROCEDURES

Yellow River

Chairs: Billy Schleif (USA), Liangliang Ruan (China)

This session will focus on informing attendees about ISBER's Best Practices, Fourth Edition (BPs), using examples and comparisons to other international approaches and best practices e.g., OECD, IARC. Key experts will describe the origin, evolution, and voluntary implementation of BPs, in worldwide efforts to improve the quality of biorepositories and expedite research impact. The speakers will highlight the different tools that are based on the ISBER BPs such as the ISBER Self-Assessment Tool, the SPREC (Standard PREanalytical Code) Tool, and the Internal Audit Tool. Attendees will appreciate the added value of adopting BPs into new standards as expected practice, using external providers such as the College of American Pathologists Biorepository Accreditation Program and the ISO biobanking standard.

Symposium 2A/2B/2C (Concurrent)
3:00 PM – 5:30 PM

3:00 PM – 3:10 PM	Introduction Hengjun Gao, BBCMBA, China
3:10 PM – 3:35 PM	CAP Biorepository Accreditation: Seven Years Strong and Evolving to Support Precision Medicine Shannon McCall, <i>Duke University, USA</i>
3:35 PM – 4:00 PM	How to Read the "ISO 20387:2018 General Requirements for Biobanking" Koh Furuta, Council for Industrial Use of Biological and Environmental Repositories (CIBER), Japan
4:00 PM – 4:30 PM	Coffee Break
4:30 PM – 5:00 PM	ISBER Best Practices and Tools to Facilitate Quality Management of Biobanks Daniel Simeon-Dubach, medservice, Switzerland
5:00 PM – 5:30 PM	SPREC: the Quintessential Biospecimen Quality Fingerprint Alexander Hundt, Integrated BioBank of Luxembourg, Luxembourg



TUESDAY, MAY 7, 2019

SYMPOSIUM 2C: BIOSPECIMENS AS THE NEW CURRENCY FOR RESEARCH: INSIGHT FROM THE **BANKING WORLD**

Room 3C/D

Chairs: Daniel Catchpoole (Australia), Benjamin Otto (Germany)

Financial banks serve the community by controlling the transfer of money from those who have it to those who need it. It can be said that the biospecimens are the currency of a biobank. By taking a look at biobanking through the prism of financial banking models, where biospecimens are the currency, then biobankers are the transactors, the general public are the investors, the government/ hospitals are the regulators and the researchers are the consumers. This session will provide an interesting look at how biobanks are operated at the local level as well as a wider discipline. The presentations in this session will be followed by a panel discussion.

	3:00 PM – 3:05 PM	Introduction Daniel Catchpoole, The Children's Hospital at Westmead, Australia		
Symposium 2A/2B/2C (Concurrent) 3:00 PM – 5:30 PM	3:05 PM – 3:30 PM	Facilitating the Consumers' and Benefiting the Investors' Li Biobankers: Experience From the Born in Guangzhou Coho Xiu (Sue) Qiu, Guangzhou Women and Children's Medical Center, Ch	ort Study	or
	3:30 PM – 3:55 PM	The German National Cohort Matthias Nauck, University of Greifswald, Germany		
	3:55 PM – 4:15 PM	Coffee Break		
	4:15 PM – 4:40 PM	Biobanks Through the Eyes of the Financial System as Broke Soo Yong Tan, National University of Singapore (NUS) and Institute o	•	MCB), Singapore
	4:40 PM – 5:05 PM	How Blockchain can enable a Global "Citizen Owned" Mul Daniel Uribe, <i>Genobank.io</i> , USA	ti-Omic Digital Biobank	
	5:05 PM – 5:30 PM	How Commercial Biobanks are Helping Industry to Develo Can Academic Biobanks Learn From Them? Robert Hewitt, Biosample Management Ltd, UK	p New Drugs and Diagno:	stics: What
4:00 PM - 5:30 PM	Poster Installation in E	xhibit Hall		Mandarin Hall
	WELCOME RECEPTION Sponsored by Haier Bion	ION IN EXHIBIT HALL nedical	ルム 生物医疗 Haier Biomedical	Mandarin Hall

5:30 PM - 8:00 PM

Join us for cake. refreshments, and hors d'oeuvres in the Exhibit Hall while networking with colleagues, exhibitors, and poster presenters. Cake-cutting will take place at 6:30 PM!

Poster presenters will be by their posters and available for discussion from 7:00 PM to 8:00 PM.

WEDNESDAY, MAY 8, 2019

Registration Desk	ISBER RIVERWALK (Separate Registration Required)	6:00 AM - 7.30 AM
Mandarin Hall Foyer	Registration Open	7:00 AM - 6:00 PM
3A	Speaker Services Open	7:00 AM – 5:30 PM

CORPORATE PARTNER WORKSHOPS (Open to all participants)





Corporate Workshop 1A: Applied Innovations to Protect Sample Integrity and Improve Efficiency

Presenter: Dr. Andy Brooks, Chief Scientific Officer Brooks Life Sciences & Chief Operating Officer and Director of Technology Development of RUCDR Infinite Biologics (USA) and Kathi Shea, Senior Director Global Operations, BioStorage Technologies, Brooks Life Sciences (USA)

Dr. Brooks present an overview of a new fully integrated, DNA extraction and quantification platform which is sample type and nucleic acid agnostic. Recently launched at RUCDR Infinite Biologics, this high throughput system combines a Perkin Elmer cell::explorer™ system with integrated instruments from Brooks Life Sciences. Dr. Brooks will highlight how this integrated platform supports both clinical and direct to consumer applications whilst enabling a range of time and cost efficiencies.

Kathi Shea will present on applied efficiencies within a biorepository, highlighting how sample integrity and efficiencies are assured

Corporate Workshop 1B: Are you sure about the quality of your biobank samples? Biobank Samples QC from Agilent 3c/D

Presenter: Elisa Viering, MS Agilent Technologies, (Germany); Steffi Sandke, PhD, Coordination Office and Scientific Management University Hospital Heidelberg (Germany); Kyle Luttgeharm, Agilent Technologies (USA)

The quality of DNA and RNA derived from the biospecimens archived in the biobank is crucial to the success of downstream applications. Assessing the sample quality prior storage, during and after storage is a way to ensure the sample quality. In this workshop, we will introduce Agilent DNA/RNA quality control solution for biobank, and a retrospective analysis on quality of DNA samples from the Heidelberg CardioBiobank (HCB) aimed at assessing the standardized DNA sample quality control process will be shared.

7:45 AM - 8:45 AM

Auditorium

Yellow River



WEDNESDAY, MAY 8, 2019

9:00 AM – 7:45 PM Exhibit Hall Open Mandarin Hall

SYMPOSIUM 3A: UTILIZATION AS A KEY ELEMENT TO BIOBANK SUSTAINABILITY: THE PAST, PRESENT AND PLANNING FOR SUCCESS IN THE FUTURE

Chairs: Huaijian (Alex) Guo (Canada), Daniel Simeon-Dubach (Switzerland)

Sustainability is a complex and ongoing challenge for biobanks around the world. Over the past several years, ISBER has been examining the dimensions of sustainability to help biobanks find solutions. One of the major issues is the low utilization rate of many of the world's biobanks, regardless of the sector and size. Utilization can be defined in many ways, which makes it difficult to compare or define success for the use of collections. Each biobank has its own local constraints for use of its collections and what stakeholder communities that it can serve. Also, there are various metrics that can be employed to evaluate utilization of samples and data, and these will be discussed as part of the overall introduction to the complexity of pathways to sustainability for current and future biobanks. The invited speakers in the session will highlight their ongoing management of sustainability and how utilization targets and rates are determined in their organization's biobank(s).

Symposium 3A/3B/3C (Concurrent)

9:00 AM - 12:00 PM

	9:00 AM – 9:10 AM	Introduction Daniel Simeon-Dubach, medservice, Switzerland
1	9:10 AM – 9:35 AM	Sustainability Today and Tomorrow: How Sustainable Biobank Can Support Sustainable Translational Medicine Jun Mei Zhou, Shanghai Children's Hospital, China
	9:35 AM – 10:00 AM	Biobank Sustainability : What are Best Practices or Keys-to-Success Stories? Paul Hofman, University of Côte d'Azur, France
	10:00 AM – 10:25 AM	Utilization Rates and Sustainability Considerations in Pharma Kirstin Goldring, <i>AstraZeneca, UK</i>
	10:30 AM – 11:00 AM	Coffee Break in Exhibit Hall Mandarin Hall
	11:00 AM – 11:25 AM	Sustainability and Utilization in Biobanking: Time for a Change? Marianne Henderson, National Cancer Institute, USA
	11:25 AM – 12:00 PM	Panel Discussion

SYMPOSIUM 3B: BIOBANKING IN A GLOBAL RESEARCH ENVIRONMENT: RESPECTING CULTURAL PERSPECTIVES AND SPECIAL STUDY POPULATION CONSIDERATIONS IN BIOBANKING

Chairs: Shonali Paul (India), Yan Ru Su (USA)

Studies have shown that certain populations or groups have specific beliefs and perspectives about the use of their biospecimens for research, and these may vary considerably across the globe or even within a given country. Furthermore, there may be special considerations for certain populations, such as pediatric populations, that need to be addressed in the design and operation of biobanks. Respecting the interests and needs related to such groups and addressing cultural perspectives is critical in biobanking and biospecimen research. Addressing these considerations secures the necessary inclusion of populations in important research studies, is fundamental to establishing trust, and therefore critical for biobank social sustainability.

In this session, speakers will describe their experiences in understanding the cultural perspectives, needs and special considerations of certain biobank study populations and discuss how they have been addressed in the design, operation and governance of biobanks.

Symposium 3A/3B/3C (Concurrent)

9:00 AM - 11:45 AM

9:00 AM – 9:05 AM	Introduction
9:05 AM – 9:30 AM	Embracing the Occult Challenges in Pediatric Research William Schleif, Johns Hopkins All Children's Pediatric Biorepository, USA
9:30 AM – 9:55 AM	Born in Shanghai: Reconciliation of the Challenges and Feasibility for the Melding of Research with Biobank Profile Weiye Charles Wang, Xinhua Hospital, School of Medicine Shanghai Jiao Tong University, China
9:55 AM – 10:25 AM	Engaging with Our Indigenous Community to Develop a Culturally Responsive Biobank in New Zealand Helen Morrin, University of Otago Christchurch, New Zealand
10:30 AM – 11:00 AM	Coffee break in Exhibit Hall Mandarin Hall
11:00 AM – 11:20 AM When Culture and Biobanking Intersect: Perspectives from South Africa Keymanthri Moodley, Stellenbosch University, South Africa	
11:20 AM – 11:45 AM	Q&A



WEDNESDAY, MAY 8, 2019

SYMPOSIUM 3C: LIFE CROSSROADS OF OPPORTUNITY: BIOBANKING AND CELL THERAPY Chairs: David Lewandowski (USA), Dayong Gao (USA)

Room 3C/D

This session will explore the key role biobanking plays in the exponential expansion of the cellular therapy field. From pre-clinical development to administration of commercially available products, repositories are needed in all phases. The speaker presentations will focus on a "bench top" to "bedside" discussion around the emerging repository needs in cellular therapy. Attendees will learn how the ISBER Best Practices are

David Lewandowski, ISBER President, Brooks Life Sciences, USA

influencing this important field.

9:00 AM - 9:10 AM

Development of Advanced Technology for Optimal Cryopreservation of Human Immunocyte Symposium 3A/3B/3C 9:10 AM - 9:35 AM With Automated Banking Systems for Cell-based Immunotherapeutics (Concurrent) Xiaowen Peter He, Origincell Technology Co., Ltd., China 9:00 AM - 12:00 PM Biobanking in a Cell Therapy Manufacturing Operation 9:35 AM - 10:00 AM Chongren Weng, Tessa Therapeutics, Singapore Production to Patient: Managing the Cell Therapy Supply Chain 10:00 AM - 10:30 AM Robert Jones, Cryoport, UK Mandarin Hall 10:30 AM - 11:00 AM Coffee Break in Exhibit Hall

Precision Medicine in the Community Setting: Opportunities and Challenges 11:00 AM - 11:25 AM Donna Russell, Precia Group, USA

Panel Discussion 11:25 AM - 12:00 PM Led by Dr. Dayong Gao

General Lunch in the Exhibit Hall 12:15 PM - 1:15 PM **CORPORATE LUNCH SYMPOSIUM** (Open to all participants)

> Alternative Storage Options for Cryopreservation Presenter: Presenter: Buzz Bies, Vice President & GM, Chart Inc. (USA)

Introduction

This seminar will provide an overview of a low energy consumption and high reliability alternative to standard mechanical freezers. It will examine the pain points of mechanical freezer use and the alternative Vario liquid nitrogen freezer. Additionally, the Fusion self-sustaining liquid nitrogen freezer will be presented. This portion of the discussion will focus on how the Fusion may provide opportunities to place this freezer in locations without easy access to liquid nitrogen infrastructure.



Yellow River

Mandarin Hall

EDUCATIONAL WORKSHOPS (Open to all participants)

Collaboration Between the Pharma Industry and China in the Conduct of Clinical Trials and Acquisition of 1:30 PM - 2:30 PM **Biospecimens From Chinese Biobanks**

Auditorium

Presenters: Alex Guo (Canada), Melissa Rawley-Payne (USA), Liangliang Ruan (China)

Workshop 1: Facilitating International

Workshop 2: Biobank Standards/ISO

Presenters: Clare Allocca (USA), Marianna Bledsoe (USA), Koh Futura (Japan), Daniel Simeon-Dubach (Switzerland)

Workshop 3: Lack of Reproducibility in Research Based on Human and Animal Tissues

Presenters: William Grizzle (USA)

2:30 PM - 3:00 PM

12:15 PM - 1:15 PM

Coffee Break in the Exhibit Hall

Mandarin Hall





WEDNESDAY	(, MAY 8, 2019 CONTRIBUTED PAP	ER SESSION 1: HUMAN BIOREPOSITORIES AND MANAGEMENT Auditorium			
	CHALLENGES	ert (USA) , Debra Garcia (USA)			
	3:00 PM – 3:15 PM	National Liver Disease Biobank as an Important Tool for Biomarker Discovery Birendra Yadav (<i>India</i>)			
	3:15 PM – 3:30 PM	Mind Over Matter: Confronting Challenges in Post-Mortem Brain Biobanking for Glioblastoma Multiforme Cassandra Griffin (Australia)			
Contributed Paper Session 1/2 (Concurrent)	Establishing Repository (Bio-Bank) of Biological Samples for Testing Biological Markers as 3:30 PM – 3:45 PM Predictors of Important Maternal and Fetal Outcomes in a Developing Country Setting Muhammad Ilyas (Pakistan)				
3:00 PM – 5:00 PM	3:45 PM – 4:00 PM	Policies to Increase Utilization In Clinical Biobanks Jufang Huang (China)			
	4:00 PM – 4:15 PM	4:00 PM – 4:15 PM Challenges When Moving Old Samples to New Systems Daniel Kelly (USA)			
	4:15 PM – 4:30 PM	Challenges and Solutions From Establishing India's First and Only Commercial Biobank: Use of Biospecimens and Data for R&D Services and Healthcare Products for Improving Patient Lives Jugnu Jain (India)			
	4:30 PM – 4:45 PM	A Study of Integrated Biobanking Systems Frank Gao (USA)			
		ER SESSION 2: ETHICAL LEGAL AND SOCIAL ASPECTS IN BIOBANKING y-Jones (UK), Jason Chen (China)			
	3:00 PM – 3:15 PM	Legislation of the ABS Law in Korea and its Implication for BRCs Kyungsook Ahn (<i>Korea</i>)			
	3:15 PM – 3:30 PM	Challenges and Practice on Ethical Governance in a Comprehensive Hospital Biobank in Western China Juan-Juan Gao (China)			
Contributed Paper Session 1/2	3:30 PM – 3:45 PM	Activities of Biobank at Tertiary Cancer Centre in India Rahul Previn (<i>China</i>)			
(Concurrent) 3:00 PM – 5:00 PM	3:45 PM – 4:00 PM	Chinese Culture Specific Multi-Social Media as a Platform for Biobanking and Clinical Research-Related Researchers and Public Education Campaign in the Small Video Era Manli Wu (China)			
	4:00 PM – 4:15 PM	Future Biobanking: Technology or Science Driven Pasquale De Blasio (Italy)			
	4:15 PM – 4:30 PM	Consequences of Applying GDPR for Data Transfer Agreement and Material Transfer Agreement Dorota Krekora-Zajac (<i>Poland</i>)			
	4:30 PM – 4:45 PM	Returning Genetic Results to Research Biobank Subjects – A Challenging Experience from the Colorado Center for Personalized Medicine Stephen Wicks (USA)			



WEDNESDAY, MAY 8, 2019

	INNOVATIVE TECHI Chairs: Andy Pazah	NOLOGIES Auditorium Auditorium	
	5:15 PM – 5:20 PM	Introduction	
	5:20 PM – 5:25 PM	Performance Comparison Between Micro Electro Mechanical Systems Tracking Tags and Other Labelling Strategies for Cryotubes Fernando Gomez-Romano (Spain)	
	5:25 PM – 5:30 PM	Gene Delivery to Hearts During Ex Vivo Perfusion Storage Dawn Bowles (USA)	
	5:30 PM – 5:35 PM	Application of Apoptotic Inhibitors on the Cryopreservation of Human Cultured T Cells Meixia Wang (China)	
	5:35 PM – 5:40 PM	Biomarker Profiling by NMR Metabolomics: Using Biobank Partnerships to Build the Evidence-base for Clinical Use Salla Ruosaari (Finland)	
5:15 PM – 6:15 PM	5:40 PM – 5:45 PM	Effective Annotation of Autopsy Specimens for Better Understanding of Tumour Heterogeneity Cherie Blenkiron (New Zealand)	
	5:45 PM – 5:50 PM	Holograms Can Aid the Manual Handling of Frozen Samples Jenny Åkerblom (<i>Sweden</i>)	
	5:50 PM – 5:55 PM	New Developments in NGS sample Quality Control – from FFPE RNA to Cell-Free DNA Elisa Viering (Germany)	
	5:55 PM – 6:00 PM	Introduction to Artificial Intelligence-Assisted Clinical Biobank Screening System Shijian Liu (China)	
	6:00 PM – 6:05 PM	A Model for Implementing a Network of Biobanks in a Country Hugo Alberto Barrera-Saldaña (Mexico)	
	6:05 PM – 6:10 PM	Maintaining Chain of Condition in Automated BioBanks Chris Wolfenden (UK)	
	6:10 PM – 6:15 PM	Conclusion & Wrap Up	
6:15 PM -7:45 PM		STER NETWORKING EVENING d poster presenters while enjoying refreshments and hors d'oeuvres in the	
	Poster presenters will	be by their posters and available for discussion from 6:30 PM to 7:30 PM.	

THURSDAY, MAY 9, 2019

7:00 AM - 5:30 PM Registration Open Mandarin Hall Foyer 7:00 AM - 4:15 PM Speaker Services Open

CORPORATE PARTNER WORKSHOPS (Open to all participants)





7:15 AM - 8:15 AM

Corporate Workshop 3A: Navigating Through the Ever-Changing Technologies of Sample Management

3C/D

Presenter: Donat Elsener

During this workshop, we will discuss the importance of sample integrity, system flexibility, traceability, and reliability, as it pertains to automated sample management. As the need to control these subjects continues to escalate, more organizations are looking to automation to help improve sample tracking and temperature stability while lowering labor and operating costs. This workshop will teach you how to navigate through these industry shifts, while maintaining precise sample management, and utilizing innovative technologies with customized solutions to fit your specific needs.

Corporate Workshop 3B: Using LIMS Implementation Accelerators to Speed Labs into Production

Presenter: Mark Cada and Jeramy Webb

Biobanking and diagnostics labs deploying LIMS can go live faster using purpose-built accelerators. LabVantage Solutions discusses the advantages of pre-configured, pre-packaged LIMS for more rapid, lower cost, lower risk implementations.



THURSDAY, N	ЛАҮ 9, 2019				
,	· · · · · · · · · · · · · · · · · · ·	IITIES	MEDICINE AND THE REGULATORY ENV	IRONMENT: Auditorium	
8:30 AM - 9:30 AM	Clinical trials and other samples with clinical doften needed in large in terms of the procure	r research initiatives ata – and, because t quantities. This sessi ement and availabilit	in the era of precision medicine are based on the associations are often weak, these high-con will describe the research regulatory framy of samples for precision medicine initiative allenges and opportunities for the future.	quality samples are nework in China	
9:00 AM – 2:15 PM	Exhibit Hall Open			Mandarin Hall	
9:45 AM – 11:00 AM	EDUCATIONAL WORKSHOPS (Open to all Participants)				
	Educational Workshop 4: Introduction to Business Planning for Biorepositories, Part 1		Educational Workshop 5: Biobank Sustainability and Utilization, Part 1 Yellow River	Educational Workshop 6: ELSI in Asia- Oceania Biobanks 3C/D	
	Auditorium Presenters: Daniel S (Switzerland), Mariann (USA), Kirstin Goldrin	e Henderson	Presenters: Marianna Bledsoe (USA), Rita Lawlor (Italy), William Grizzle (USA), Xi Zhang (China)	Presenters: Tatsuaki Tsuruyama (Japan), Vu Thi My Hanh (Vietnam), Daniel Catchpoole (Australia), Jajah Fachiroh (Indonesia)	
11:00 AM - 11:30 AM	Coffee Break in the Ext	hibit Hall		Mandarin Hall	
	EDUCATIONAL WO	RKSHOPS (Open to	all Participants)		
11:30 AM – 12:45 PM	Educational Worksho to Business Planning Part 2	•	Educational Workshop 8: Biobank Sustainability and Utilization, Part 2 Yellow River	Educational Workshop 9: Pitching Biobanking to Stakeholders 3C/D	
11.30 AW 12.43 TW	Auditorium Presenters: Daniel S (Switzerland), Mariann Kirstin Goldring (UK)		Presenters: Marianna Bledsoe (USA), Rita Lawlor (Italy), William Grizzle (USA), Xi Zhang (China)	Presenters: Suzanne Vercauteren (Canada), Daniel Catchpoole (Australia)	
12:45 PM – 2:15 PM	General Lunch in the E	xhibit Hall		Mandarin Hall	
1:15 PM – 2:15 PM		ISBER ANNUAL BUSINESS MEETING Members – Join us to learn more about ISBER's activities, financials, strategic plan and leadership!			
1:45 PM – 2:15 PM	Poster Take Down				
	SPECIAL TOPICS SESSION: BIOBANKING IN ASIA AND OCEANIA Created in partnership with the Australasian Biospecimen Network Association (ABNA) australasian biospecimen network Association (ABNA)				
	Chairs: Tatsuaki Tsuruyama (Japan), Hanh Vu (Vietnam), Daniel Catchpoole (Australia)				
	Asia and Oceania are some of the largest and most diverse areas of the planet, both in terms of human populations, as well as environmental biodiversity. This 'Biobanking in Asia and Oceania' session will include presentations on the common challenges in biobanking across this geographical area, and ask speakers who have faced, and to some degree have addressed, specific issues to present their experiences. Some of the presented challenges will include: (i) Low- and Middle Income Country (LMIC) -specific barriers and opportunities for funding, (ii) ethical and legal issues on biobanking, (iii) IT barriers, (iv) utilization of samples and accessibility to biobanks, and (v) standards and expectations.				
	environmental biodive in biobanking across the issues to present their -specific barriers and co	ersity. This 'Biobankii his geographical are experiences. Some opportunities for fun	ng in Asia and Oceania' session will include a, and ask speakers who have faced, and to of the presented challenges will include: (i) l ding, (ii) ethical and legal issues on biobanki	presentations on the common challenges some degree have addressed, specific .ow- and Middle Income Country (LMIC)	
Special Session/ Contributed Paper	environmental biodive in biobanking across the issues to present their -specific barriers and co	ersity. This 'Biobankii his geographical are experiences. Some opportunities for fun	ng in Asia and Oceania' session will include a, and ask speakers who have faced, and to of the presented challenges will include: (i) l ding, (ii) ethical and legal issues on biobanki	presentations on the common challenges some degree have addressed, specific .ow- and Middle Income Country (LMIC)	
Special Session/ Contributed Paper Session 3/4 (Concurrent)	environmental biodive in biobanking across the issues to present their -specific barriers and c samples and accessibi	ersity. This 'Biobankin' his geographical are experiences. Some opportunities for fun lity to biobanks, and	ng in Asia and Oceania' session will include ta, and ask speakers who have faced, and to of the presented challenges will include: (i) I ding, (ii) ethical and legal issues on biobanki I (v) standards and expectations.	presentations on the common challenges some degree have addressed, specific .ow- and Middle Income Country (LMIC)	
Contributed Paper Session 3/4	environmental biodive in biobanking across the issues to present their -specific barriers and c samples and accessibit 2:15 pm – 2:30 pm	ersity. This 'Biobankin's geographical are experiences. Some opportunities for funlity to biobanks, and Introduction Biobanking and Xun Xu, BGI, China	ng in Asia and Oceania' session will include ha, and ask speakers who have faced, and to of the presented challenges will include: (i) I ding, (ii) ethical and legal issues on biobanki I (v) standards and expectations.	presentations on the common challenges some degree have addressed, specific .ow- and Middle Income Country (LMIC)	
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Contributed Paper Session 3/4 (Concurrent)	environmental biodive in biobanking across the issues to present their -specific barriers and cosamples and accessibit 2:15 pm - 2:30 pm 2:30 pm - 2:50 pm 2:50 pm - 3:10 pm	ersity. This 'Biobankin's geographical are experiences. Some exper	ng in Asia and Oceania' session will include to a, and ask speakers who have faced, and to of the presented challenges will include: (i) I ding, (ii) ethical and legal issues on biobankil (v) standards and expectations. Omics Cost ia and Oceania and Cancer Institute, Vietnam ank and Development of Technology for Interest of the session of the ses	presentations on the common challenges some degree have addressed, specific Low- and Middle Income Country (LMIC) ng, (iii) IT barriers, (iv) utilization of	
Contributed Paper Session 3/4 (Concurrent)	environmental biodive in biobanking across the issues to present their -specific barriers and cosamples and accessibit 2:15 pm - 2:30 pm 2:30 pm - 2:50 pm 2:50 pm - 3:10 pm 3:10 pm - 3:30 pm	ersity. This 'Biobankin's geographical are experiences. Some exper	ng in Asia and Oceania' session will include to a, and ask speakers who have faced, and to of the presented challenges will include: (i) I ding, (ii) ethical and legal issues on biobanki I (v) standards and expectations. Omics Cost iia and Oceania and Cancer Institute, Vietnam ank and Development of Technology for Increase & Innovation, Korea Ileritage Project University of Adelaide, Australia Biobank Network for Promotion of Utilizat	presentations on the common challenges some degree have addressed, specificow- and Middle Income Country (LMIC) ng, (iii) IT barriers, (iv) utilization of	



	CONTRIBUTED PAP	ER SESSION 3: DEVELOPMENTS IN BIOBANKING AND BIOSPECIMEN 3C/E	
		ring (UK) , Alexander Hundt (Luxembourg)	
	Optimization of a Dual RNA/DNA Extraction Procedure From Flash-Frozen Brain Tumor Samples Representing a Large Pediatric Brain Tumor Cohort Containing a Range of Uni Types in Support of the Creation of a Pediatric Brain Tumor Atlas David Gery Stokes (USA)		
	2:30 PM – 2:45 PM	Tumor Cell Content and RNA Integrity of Surgical Tissues from Different Types of Tumors and Its Correlation with Ex Vivo and In Vivo Ischemia Xiao-Hui Zheng (China)	
Special Session/ Contributed Paper Session 3/4 (Concurrent) 2:15 PM – 4:00 PM	2:45 PM – 3:00 PM	Specimen Evaluation, Quality Assurance Project (SE'QAP): Assessing Quality within the Historic Alaska Area Specimen Bank Carolynn DeByle (USA)	
	3:00 PM – 3:15 PM	RAVEN Biorepository and Panel Development for Comparative Evaluation of Ultrasensitive HIV Reservoir Assays Mars Stone (USA)	
	3:15 PM – 3:30 PM	Quality Management Practices for Operations at NIST's Marine Environmental Specimen Bank Amanda Moors (USA)	
	3:30 PM – 3:45 PM Development of the Full Process Management System for Biological Sample Processing Huan Chen (China)		
	3:45 PM – 4:00 PM	Second Party Audits of Human Research Biobanking Organisations From a Responsible Sourcing Perspective Tina Bossow (Denmark)	
	CONTRIBUTED PAP	ER SESSION 4: BIOBANKING PRACTICES ACROSS THE WORLD Yellow Rive	
	Chairs: Marianna B	ledsoe (USA), Jufang Huang (China)	
	2:15 PM – 2:30 PM	Implementing Personalized Medicine in the CCPM Biobank: Strategies for Cost Reduction and Sustainability in Biorepository-Based Genetic Testing Kristy Crooks (USA)	
	2:30 PM – 2:45 PM	PHI and Prostate Cancer – Optimal Management Judita Kinkorova (<i>Czechia</i>)	
Special Session/ Contributed Paper Session 3/4 (Concurrent) 2:15 PM – 4:00 PM	2:45 PM – 3:00 PM	The Israel Registry and Biobank of Autism (IRBA) Julie Carmel (Israel)	
	3:00 PM – 3:15 PM	Challenges of Setting up a Bio Repository in a LMIC setting in Pemba: an Island in Sub Sahar Africa Sunil Sazawal (India)	
	3:15 PM – 3:30 PM	St. Luke's Medical Center's Efforts in Establishing a Human Cancer Biobank, a First in the Philippines Loraine Kay Dela Rosa Cabral (Philippines)	
	3:30 PM – 3:45 PM	Collection Strategy for Sustainability: a Study of Sample Use Alison Parry-Jones (UK)	
	3:45 PM – 4:00 PM	Evolving Population Data Linkage Services to Transform Large-scale Biobanking Services Katrina Irvine (Australia)	
2:30 PM-8:00 PM	Exhibitor Takedown		
4:30 PM-5:30 PM	VENDOR MEETING	(Invitation Only)	
7:00 PM-11:00 PM	ISBER NETWORKIN	G DINNER (Separate Registration Required) Pearl Room (within venue)	



FRIDAY, MAY	10, 2019		
8:30 AM – 4:00 PM	Registration Open	Manda	rin Hall Foyer
8:30 AM – 2:00 PM	Speaker Services Oper	n	3A
	SYMPOSIUM 4A: USING BIOBANKS FOR THE FUTURE OF TARGETED MEDICINE Chairs: Marianne Henderson (USA), Zisis Kozlakidis (France)		Auditorium
	The future of biobanking is likely to include operational models where large infrastructural facilities (such as biobanks) are linked closer to 'direct to consumer' private providers. In that context biobanks might become the point of convergence for the samples and associated data between private and public sectors. This session will look to the current integration of biobanking in targeted medicine.		
	biomarker tests in hum	gate the interaction(s) between direct to consumer genomic tests and clinical an healthcare and environmental studies and the integration of those samples biobanking infrastructures.	
	9:15 AM – 9:25 AM	Introduction	
Symposium 4A/4B/4C (Concurrent) 9:15 AM – 12:15 PM	9:25 AM – 9:50 AM	Translation of Biomarker Discovery into Improved Patient Care: Key Role of Biobanks Dianne Chadwick, University Health Network, Canada	
3.137111 12.131111	9:50 AM – 10:15 AM	Direct to Consumer Approaches to Building Microbiome Samples for Research Martha Carlin, <i>The BioCollective, LLC, USA</i>	
	10:15 AM – 10:45 AM	Coffee Break	
	10:45 AM – 11:10 AM	Application of Clinical Biobank in Screening Diagnostic Markers in Different Stages of Hepatocellular Carcinoma Ning Li, Capital Medical University, China	
	11:10 AM – 11:35 AM	Combinatorial Genomic and Biobanking Approaches to Precision Medicine Madhuri Hegde, PerkinElmer Inc., USA	
	11:35 AM – 12:15 PM	Q&A / Panel Discussion	
		DBANKING IN CHINA In (China), Menghong Sun (China)	Yellow River
Symposium 4A/4B/4C (Concurrent) 9:15 AM – 12:15 PM	9:15 AM – 9:35 AM	Evaluation of Sample Integrity Towards Effective Usage and Scientific Values of Collecti Weiye Charles Wang, Xinhua Hospital, School of Medicine Shanghai Jiao Tong University, China	ion
	9:35 AM – 9:55 AM	The Perspective of Virtual Biobank for Utilitizing Cancer Biospecimen Resources Lianhai Zhang, <i>Peking University Cancer Hospital, China</i>	
	9:55 AM – 10:15 AM	Biobank: Supporting the Cutting Edge Scientific Research and Clinical Translation Duojiao Wu, <i>Fudan University, China</i>	
	10:15 AM – 10:45 AM	Coffee Break	
	10:45 AM – 11:05 AM	Major Challenges Faced by Biobanks in China and CNGB's Approach for a Better Samp Bo Wang, China National GeneBank, China	le Sharing
	11:05 AM – 11:25 AM	Communication Between Biobankers and Doctors Jufang Huang, Central South University, China	
	11:25 AM – 11:45 AM	Biobankers in China Xuexun Zhou, Avantech, China	



FRIDAY, MAY 10, 2019

SYMPOSIUM 4C: BIOSPECIMEN QUALITY & RESEARCH

3C/D

Chairs: Andy Pazahanick (USA), Yan Li (China)

It has been reported that the degradation of biospecimens caused in the pre-analytical phase may account for 60% – 80% of laboratory testing errors in routine clinical diagnostics. A considerable effort has been made to assess the impacts of pre-analytical factors on sample quality and try to standardize the pre-analytical procedures. However, due to the lack of appropriate biomarkers, the pre-analytical quality of biospecimens still remains challenging to measure or quantify. A researcher who receives only frozen sample aliquots generally cannot track the pre-freeze handling of the sample and thereby eliminate the samples handled by incorrect procedures.

This session will review the developed biomarker candidates in different common biospecimens, including DNA, RNA, proteins, peptides, and metabolites, and discuss the available and future platforms for specimen quality assessment and corresponding applications in biobanks and clinical labs.

Symposium 4A/4B/4C (Concurrent) 9:15 AM - 12:15 PM

9:15 AM – 9:45 AM	Biospecimen Science: The Evidence Base for Controlling and Mitigating Pre-analytical Variation Helen Moore, U.S. National Cancer Institute, USA
9:45 AM – 10:15 AM	Optimizing Quality of Human Specimens for Downstream 'Omics' Analysis Rohit Gupta, <i>Stanford University, USA</i>
10:15 AM – 10:45 AM	The Use of Process Qualification for Cold Chain Workflow Development in Embryo Biorepository Activities Timothy Sharp, TMRW Life Sciences, USA
10:45 AM – 11:15 AM	Quality in Biospecimens: Logistical Perspectives Bruce Brown, Thermo Fisher/ Fisher Clinical Services, USA
11:15 AM – 11:45 AM	A New Peptidomic Tool for Controlling Bio-sample Quality and Optimizing Handling Procedure Jinghua Han, Institute of Biophysics, CAS, China
11:45 AM – 12:15 AM	Panel Discussion

ROUND TABLE DISCUSSIONS WITH LUNCH (Pre-registration Required)

Mandarin Hall

Grab your lunch and join a table. Please visit the registration desk for more information.

Revolutionizing Temperature Control Storage from +4C to 80C: Storage, Blast, Rate Freeze or Thaw

Modular and Flexible Solutions

Facilitator: Sylvain Riendeau, Farrar Scientific Corp, USA

Biobanking Education: Landscape of Different Opportunities for Different Types of Learners

Facilitator: Karine Sargsyan, Biobank Graz - Medical University of Graz, Austria

Risk Management Strategy for Biobanks: Principles and Practice

Facilitator: Brigitte Jaksa, Biobank Graz - Medical University of Graz, Austria

Longitudinal Biobanking for Biomedical Research

Facilitator: Helen Moore, U.S. National Cancer Institute, USA

12:30 PM-1:30 PM

Information Management of Clinical-grade Stem Cell Lifecycle

Facilitator: Hong Mei Zhou, Shanghai East Hospital, China

The Development of Hospital-based Biobank

Facilitator: Xiaonan Kang, Renji Hospital, China

Biobanking Networks: Benefits and Challenges

Facilitator: Rose Boutros, Australia and New Zealand Children's Haematology/Oncology Group Biobanking

Network, Australia

Next Generation Living Biobanks

Facilitators: Zisis Kozlakidis, International Agency for Research on Cancer/World Health Organization, France;

Xuefeng Liu, Georgetown University Medical Center, USA

The Aboriginal Heritage Project: A Case for Anthropological Collections

Facilitator: Yassine Souilmi, University of Adelaide, Australia

Mandarin Hall 12:30 PM-1:30 PM General Lunch





FRIDAY, MAY 10, 2019

SPECIAL TOPIC SESSION: LIVING BIOBANKS

Auditorium

Chairs: Xuefeng Liu (USA), Baolin Liu (China), JinFei Chen (China)

As one of the next generation of biobanks, living biobanks (iPSC, immune cells, organoids, CRC, PDX, etc.) and related functional analyses are rapidly growing in basic research, clinics, and industry (especially immune-oncology and targeting therapies). Living Biobanks represent a very interesting and important future direction in the global biobanking field. Many cancer centers, CROs, and pharmaceutical companies are developing their own living biobank platforms for the discovery of novel biomarkers/targets.

This session will discuss many aspects in living biobanks, including basic science, technologies, cryopreservation and applications. This discussion should help further understand the basic sciences and broader applications of living biobanks, and can also help to develop standards and policies in this area.

1.45	PM-1	3.45	PM

4:00 PM-5:00 PM

1:45 PM – 1:50 PM	Introduction Xuefeng Liu, Georgetown University Medical Centre, USA
1:50 PM – 2:15 PM	Diagnostic Haplotype Nucleosome Shift in Prostate Cancer Based on Living Biobank Yu Xiao, Zhongnan Hospital of Wuhan University, China
2:15 PM – 2:40 PM	Next Generation Models for Bio-banking, Basic and Translational Research Seema Agarwal, Georgetown University, USA
2:40 PM – 3:05 PM	Establishment of Oral Squamous Cell Carcinoma Tissue Sample Bank and Its Living Biological Bank Wantao Chen, Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai Research Institute of Stomatology, China
3:05 PM – 3:30 PM	IL-6 Trans-Signaling Robustly Promotes the Expansion and Antitumor Activity of CAR T Cells Peng Li, Guangzhou Institutes of Biomedicine and Health, Chinese Academy of Sciences, China
3:30 PM – 3:45 PM	Panel Discussion
ISBER Board of Directo	rs Meeting (Invitation Only)



ISBER ROUNDTABLE DISCUSSION TOPIC SUMMARIES

REVOLUTIONIZING TEMPERATURE CONTROL STORAGE FROM +4C TO -80C: STORAGE, BLAST, RATE FREEZE OR THAW- MODULAR AND FLEXIBLE SOLUTIONS

Facilitator: Sylvain Riendeau, Farrar Scientific Corp, USA

From traditional small to large scale Biobank, BioRepository and freezer farms growth constraints. Farrar Scientific will provide an overview of new solutions available across the community for current-80C low temperature freezer long term storage solutions (600 Liters-Cold wall evaporators) in comparison to large volume storage capacity from 4,100 (288,000 vial capacity) Liters to 20,000 Liters forced air flow circulation solutions for small samples to bulk storage. These new solution are modular and some can be fully scalable, consuming less energy and less square foot requirement, while greatly improving air temperature uniformity within the storage chamber as low as +/- 3.0C Vs existing cold wall -80C ULT freezer having +/- 6.0C Overall temperature uniformity, including full redundancy of refrigeration, control and air flow system.

There is also available new large scale temporary solutions for biobankers who have reached maximum storage capacity and require temporary large scale storage solution for bulk product application.

BIOBANKING EDUCATION: LANDSCAPE OF DIFFERENT OPPORTUNITIES FOR DIFFERENT TYPES OF LEARNERS

Facilitator: Karine Sargsyan, Biobank Graz - Medical University of Graz, Austria

This round table topic is intended to discuss about the emergence of training opportunities in the biobanking environment and their evolution over the years. The dialogue will be carried out about how the education aspect evolved and could be improved to meet learners' needs and face current biobanking trends. Biobanking education also contributes to the effort to harmonize and standardize practices among biobanks.

RISK MANAGEMENT STRATEGY FOR BIOBANKS: PRINCIPLES AND PRACTICE

Facilitator: Brigitte Jaksa, Biobank Graz - Medical University of Graz, Austria

In general a risk is an event or condition that, if it occurs, could have negative effect on an organization. Risk Management is the process of identifying, assessing, responding to, monitoring, and reporting risks. Therefore a risk management strategy defines how risks associated with the organization will be identified, analyzed, and managed. It outlines how risk management activities will be performed, recorded, and monitored templates and practices for recording and prioritizing risks.

The aim of risk management is to prevent that risks becoming a problem or to minimize the damage which could occur because of risks. By consistently searching and analyzing possible risks, a possible operational blindness is also eliminated. Risks can be classified as strategic (f. e. political risks) or operational risks (f. e. project risks, technological risks, social and financial risks).

One of the methods we have when we're identifying risks is a SWOT (Strengths and Weaknesses, Opportunities and Threats) analysis. When we use this tool we are analyzing internal factors (Strengths and Weaknesses), and external factors (Opportunities and Threats). As the risks for a biobank are very comprehensive an own risk management strategy should be implemented for every biobank.

The workshop should show how a practice-orientated risk management strategy could be implemented for a biobank.

LONGITUDINAL BIOBANKING FOR BIOMEDICAL RESEARCH

Facilitator: Helen Moore, U.S. National Cancer Institute, USA

Collection and banking of tissue, blood, and other biospecimens over time can provide a rich resource for researchers trying to understand how disease develops and changes over time and over the course of drug treatments. This roundtable invites discussion of methodologies for engaging research participants and their medical providers in longitudinal biobanking programs, as well as operational strategies for serial biospecimen collections.

INFORMATION MANAGEMENT OF CLINICAL-GRADE STEM CELL LIFECYCLE

Facilitator: Hong Mei Zhou, Shanghai East Hospital, China

In recent years, stem cell technology and development have been a hot spot. With the investment by the government and breakthrough innovation of researchers, Chinese stem cell industry has formed a complete industrial chain. All links of the stem cell industry chain have a good space for development, and the stem cell bank has become the core of the entire industry. So far, more than 100 medical institutes have been filing by NHFPC and the CFDA. How to build a perfect information system of clinical-grade stem cell bank become an urgent problem. Shanghai East Hospital is one of the first 30 stem cell clinical research institutions registered by the NHFPC and the CFDA. In order to ensure the quality of stem cell, we have built an information system that covers the whole process of stem cell life.

The general principle of building a stem cell bank information system including: 1, Follow regulations, guidelines and best practices 2, In accordance with the management path and work flow 3, Construction of B/S model and modularized design 4, Configuration of ports and information integration 5, Focus on the generality, reusability and extensibility of the system 6, Have a perfect auxiliary function.

THE DEVELOPMENT OF HOSPITAL-BASED BIOBANK

Facilitator: Xiaonan Kang, Renji Hospital, China

Hospital-based biobank is a main type of the bioresources repository facilities besides the national biobanks and large cohort studies-based projects. How to manage the hospital-based biobank to meet the basic and clinical medical research? How to set up the appropriate discipline about ethics could sustain





the development, which need the stakeholders, managers, biobankers, and researchers to discuss and corporate: how to design the infrastructure of the biobank, how to practice the Standard management, how about the data-returning, how to make access to the network of biobank?

BIOBANKING NETWORKS: BENEFITS AND CHALLENGES

Facilitator: Rose Boutros, Australia and New Zealand Children's Haematology/Oncology Group Biobanking Network, Australia

Biobank networks represent a way to promote biobank sustainability through a number of mechanisms. Networks can allow resource sharing between biobanks, reducing the need for infrastructure duplication and the reinvention of solutions to common problems. Networks can also allow samples from multiple biobanks to be accessed by researchers through streamlined application processes, to build larger sample cohorts for more robust research. Biobank protocols can be more easily shared within a formal biobank network, improving standardization and harmonization of practices. Importantly, all of these advantages are also attractive to potential funding bodies, which may see a biobank network (or a biobank that is part of a network) as a better site for investment than an isolated stand-alone biobank. However, despite the appeal of biobank networks, starting a biobank network is very different from establishing an actual biobank. Many people may feel unsure as to where to start, and how to achieve success. The Australian and New Zealand Children's Hematology/ Oncology Group (ANZCHOG) - Biobanking Network (ANZCHOG-BN) was founded in 2017, through collaborations between existing biobanks and comprises all 7 Australian and 2 New Zealand pediatric cancer biobanks (https://anzchog-bn.org/). A letter to the editor detailing the establishment of the ANZCHOG-BN will be published in an upcoming issue of Biopreservation and Biobanking. Speaking from practical experience in networking cancer biobanks in Australasia, the facilitators will outline how to build a new biobank network, including key requirements for success, securing network sponsors, suggested sequences of events, and approximate timelines.

NEXT GENERATION LIVING BIOBANKS

Facilitators: Zisis Kozlakidis, International Agency for Research on Cancer/World Health Organization, France; Xuefeng Liu, Georgetown University Medical Center, USA

Recent scientific advances in cryopreservation have enabled the prospect of establishing "living biobanks" that store viable, functional tissue or replicable cell types for years to decades. This could have a significant impact across basic biological research, medicine and the biopharma industry; however, the effects of such applications are underexplored. For example, banking and long-term storage of stem cells or stem-like cells in different stem cell platforms represent a fundamental resource, preserving the original features of stem cells for patient-specific clinical applications. The round table will present the first thoughts of the ISBER Living Biobanks SIG and will initiated the discussion on further actions.

THE ABORIGINAL HERITAGE PROJECT: A CASE FOR ANTHROPOLOGICAL COLLECTIONS

Facilitator: Yassine Souilmi, The Australian Centre for Ancient DNA, University of Adelaide, Australia

In partnership with the Australasian Biospecimen Network Association (ABNA)

We outline the Aboriginal Heritage Project, a collaboration between the Australian Centre of Ancient DNA (ACAD) and the South Australian Museum that aims to reconstruct the genetic history of Aboriginal Australia. The project leverages the unparalleled collection of 6,000 hair samples curated by the SAM along with cultural, morphometric and genealogical data, which were collated by Norman B. Tindale and Joseph B. Birdsell during extensive anthropological expeditions across Australia between 1926 to 1963. The project aims to ultimately provide a reference map that current and future generations of Aboriginal people can use to retrace their ancestry – including the displaced Stolen Generations and their descendants – while illuminating this remarkable but still mostly unknown chapter of human history to the rest of world.

We present our outreach activities, which involve re-consenting the hair samples through in-depth consultation with Aboriginal Australian families and communities, along with results that reveal striking phylogeographic patterns dating back to the initial colonisation of Australia. The project's success and unique results highlight the importance of anthropological museum collections, and the role they can play in reconstructing genetic ancestry, and repatriation of remains. In addition, such collections can be used to study local populations adaptation to local environments, and provide unique insights on health.



ISBER PRESENTATION SUMMARIES

Symposium 1 (Plenary): Next Generation Biobanking

KEYNOTE LECTURE: DISCOVERY, STUDY & PRESERVATION OF THE MAWANGDUI ANCIENT CORPSE

Xuegang Luo, Central South University, China

Mawangdui (MWD) ancient corpse is a very valuable medico-biological sample preserved by the ancients which was unearthed in 1972 from the MWD Tombs of the Han Dynasty. Pathologic examination suggested that the epidemiology and pathology of diseases such as coronary heart disease and cholelithiasis can be traced back more than 2000 years. Assessment of the preservation 30 years after unearthing demonstrated that the MWD ancient corpse is in a good preserving status. But the ultrastructure and chemical analysis found that the ancient corpse has undergone some changes at the cellular and biomolecular level. The environments of conservation for the MWD ancient corpse have been improved following a three-level protection model which been developed for the first time.

HISTORY OF BIOBANKING

Jim Vaught, USA

Historically, pathology anatomy collections were the first bioanks. Generally, these pathology collections were the most prevalent in the origins of biobanks over 100 years ago. These collections were (and still are) necessary for patient diagnoses in clinical centers. Biobanking grew out of the recognition that such collections can also contribute significantly to biomedical research endeavors. One of the oldest and largest such collections, the U.S. Armed Forces Institute of Pathology was started during the U.S. Civil War (1861 to 1865). Over the decades the value of such pathology collections to research led to more organized efforts to leverage such diagnostic specimen collections into translational research programs. Meanwhile over the past 30 years, studies involving biospecimen collections became more prevalent in clinical trials, epidemiology studies, biomarker discovery and development, and other assorted applications. Biobanking is now considered a cornerstone in the development of personalized (or precision) medicine, and also contributes to public health policy development. The diversity of specimen types collected for such studies has expanded to a variety of tissue, liquid and cellular samples procured and processed in multiple formats.

EVOLUTION OF BIOBANKING SCIENCE AND TECHNOLOGY TO ENABLE PRECISION MEDICINE INITIATIVES IN ACADEMIA, GOVERNMENT, COMMERCIAL AND DIRECT TO CONSUMER INDUSTRIES

Andrew Brooks, RUCDR Infinite Biologics, Rutgers University, USA

The biobanking field continues to evolve in a manner that very few people may have predicted. This evolution has had a direct impact on how science today is conducted and the role

of biosamples in research, clinical development, wellness, and healthcare. Biobanking has evolved beyond the storage of samples and is now the driving force behind the prospective collection of a growing variety of biological specimens. In addition, the collaborative nature of sample and data utilization is helping redefine the importance of sample quality and governance. In short, new biobanking applications and standards are beginning to define the way in which we do research, learn about our molecular selves, and provide insights to managed care. This presentation will review where we have been and where we are going when it comes to both the science and art of biobanking.

ROCHE BIOSAMPLE REPOSITORY: SUPPORTING RESEARCH THROUGH INTEGRATIVE BIOBANKING

Suenne Orth, F. Hoffmann-La Roche Ltd., Switzerland

At Roche, we have a biobank containing over 5 million globally collected samples supporting our efforts in developing therapies to address unmet medical needs. We believe the proper management of these samples and their associated data are requiring, more than ever, new specific biobanking capabilities.

Therefore, we are working to apply an integrative and agile service approach, providing high quality samples with meaningful data, that are easy to access.

To do this we partner closely with Roche Biomedical R&D to leverage the full potential of our sample sets. We are doing our part by empowering science through samples, helping to bring the right treatments to the right patients at the right time.

DEVELOPMENT OF ADVANCED TECHNOLOGY FOR CRYOPRESERVATION AND BIOBANKING

Dayong Gao, University of Washington, USA

Low temperature has been utilized to keep living cells and tissues dormant but potentially alive for cryopreservation and biobanking with great impacts on scientific and biomedical applications, including tissue engineering, regenerative medicine, cellular/gene therapy, stem cell/organ transplantation, as well as conservation of endangered species. However, there is a critical contradiction between the purpose of the cryopreservation and experimental findings: the cryopreserved cells and tissues can be fatally damaged by the cryopreservation process itself. Contrary to popular belief, the challenge to the life of living cells and tissues during the cryopreservation is not their ability to endure storage at cryogenic temperatures (below -190 $\hat{a}_{,,f}$); rather it is the lethality associated with mass and energy transport within an intermediate zone of low temperature (-15 to -130 $\hat{a}_{,,f}$) that a cell must traverse twice, once during cooling and once during warming. The central theme of this presentation is to report (1) the magnificent milestones and achievements of cryobiology research, and (2) great advances and development of novel technology for long-term cryopreservation and biobanking.



ACADEMIC INNOVATION AND INFRASTRUCTURE FOR NEXT-GENERATION BIOBANKING

Rohit Gupta, Stanford University, USA

How do biobanks in academia evolve to support the rapidly changing technologies and promote sample utilization across individual collections? Can biobanks play a bigger part in the foundation of next generation assays and analytics? In academia, labs often build out their own repositories to align with grant requirements and assay development. Biobanks have done much to standardize infrastructure related to sample processing, cryopreservation, and storage; however, there is now a growing demand for improved techniques, resources, and infrastructure to support the complexity of new technologies and improve reproducibility. This includes promoting the translation of samples into data and limiting the proliferation of freezer farms.

Stanford is helping usher in the next-generation of biobanking by supporting academic labs with novel methodologies and hardened tools necessary to advance their research and promote sample utilization. The Stanford Biobank has optimized sample processing protocols necessary to perform novel cellular phenotyping and omic profiling, while also improving sample management infrastructure designed to network individual biobanks. Of significance, the program has developed a cutting-edge informatics solution, known as BioCatalyst, whereby self-governed catalogs of samples can be automatically annotated with both clinical (EHR, REDCap, etc) and molecular 'omics' data through a secure, queryable platform that promotes bringing the compute to the data and fosters sample sharing. Ultimately, by helping scientists accelerate their own discoveries and promoting collaboration through enhanced specimen and data sharing platforms, the Stanford Biobank envisions a richer systems biology approach that improves clinical outcomes and technology development in research.

Symposium 2A: Regional Regulations: Global Implications

COMING TO A BIOBANK NEAR YOU SOON? BRACING FOR THE IMPACT OF THE EU-GDPR ON GLOBAL RESEARCH

Jasper Bovenberg, Legal Pathways, Netherlands

The European General Data Protection Regulation (EU-GDPR) does not stop at the borders of Europe. It aims to protect data subjects residing in the EU, no matter where their personal data are being processed and regardless of whether the controller or processor is established in the EU or elsewhere on the planet. So the EU-GDPR may apply to your biobank or you may be involved in a global project that is governed by the EU-GDPR. My presentation will discuss when, exactly, the EU-GDPR applies to controllers outside the EU or to processing of personal data outside the EU, what it means if your biobank or global project has to face the EU-GDPR as well as ways to move your science forward anyhow.

REGIONAL REGULATIONS: GLOBAL IMPLICATIONS

Mark Barnes, Ropes & Gray, LLP, USA

The EU-GDPR poses substantial obstacles to the sharing of personal data (and biospecimens that are accompanied by personal data) across national boundaries, and imposes limits on the secondary research uses of personal data and, derivatively, identified biospecimens. This talk will identify those problems in EU-GDPR text and interpretation, and will discuss possible solutions to these problems.

IMPACT OF LEGISLATION ON BIOBANKING: THE POPI ACT IN SOUTH AFRICA

Keymanthri Moodley, Stellenbosch University, South Africa

The Protection of Private Information (POPI) Act was signed into law in South Africa on 19 November 2013. Regulations have been completed and the Act will be implemented during 2019 or 2020. The Act incorporates special personal information which includes health information such as biometric data - identifying information based on physical, physiological or behavioural classification based on blood typing, DNA analysis, finger-printing, retinal scanning or voice recognition. However, all data collected in the course of medical practice and research is included. There will be implications for samples and data exported out of South Africa. This Act will therefore impact on data and samples donated to and stored in biorepositories in the country and abroad. While scientists are advocating for broad consent where samples and data are collected for biobanking, the POPI Act refers to the principles of minimality and specificity. Future use of data is restricted unless the patient consents or there is a Code of Conduct to enable storage of samples and data. Tiered consent will make provision for both specific and broad consent but the decision-making will be placed in the hands of sample donors and research participants. Over the next few months, the impact of the POPI Act on biobanking will emerge.

REGULATIONS ON HUMAN GENETIC RESOURCES MANAGEMENT IN CHINA

Yanrong Sun, China National Center for Biotechnology Development, China

The presentation will introduce the regulations on human genetic resources management in China, including sampling, collecting, researching, developing or exporting human genetic resources in China.

Symposium 2B: From Policy to Practice: Incorporating Biobanking Standards and Best Practices into Methods and Procedures

ISBER BEST PRACTICES AND TOOLS TO FACILITATE QUALITY MANAGEMENT OF BIOBANKS

Daniel Simeon-Dubach, medservice, Switzerland

The International Society for Biological and Environmental Repositories (ISBER) was founded nearly 20 years ago with the main objective of developing harmonized principles in the science and management of repositories. One of ISBER's most



important tasks is still to update and publish ISBER Best Practices (BP). The content of the BP reflects the collective knowledge and experience of ISBER members who are experts in biobanking and repository management. To demonstrate ISBER's international character, the ISBER the 4th edition of Best Practices was translated into multiple languages so biobankers worldwide can read BP in their native language.

The 4th edition saw some relevant updates and expansions in different areas including quality management systems (QMS). This reflects the growing demand for solutions to this issue. To support QMS, ISBER has developed several BP-based tools. These tools will now be updated based on the 4th edition. In addition, new BP-based tools will be developed that will further improve the quality of biorepositories.

The implementation of ISBER BP and other standards will improve the quality of biomedical research. However, this will be associated with additional costs. But the global cost of non-reproducibility is much higher. And there are new requirements from the authorities, which are strong incentives for investing in the QMS of a biorepository.

CAP BIOREPOSITORY ACCREDITATION: SEVEN YEARS STRONG AND EVOLVING TO SUPPORT PRECISION MEDICINE

Shannon McCall, Duke University, USA

The College of American Pathologists (CAP) harnesses the power of 50+ years of clinical laboratory accreditation expertise to provide a comprehensive accreditation program for biorepositories. This presentation will begin with an overview of the CAP Biorepository Accreditation Program since it began in 2012. Attendees will then learn about common problem areas identified during CAP on-site inspections, and obtain recommendations for addressing these areas within their own repositories. Finally, the presentation will cover the current evolution of the CAP Biorepository Accreditation Program in response to US Precision Medicine initiatives. In this area, clinical care decisions and clinical research decisions are sometimes based on tests of the same limited human patient samples. This has reinforced the need for high quality biospecimen management throughout the sample lifecycle.

SPREC: THE QUINTESSENTIAL BIOSPECIMEN QUALITY FINGERPRINT

Alexander Hundt, Integrated BioBank of Luxembourg, Luxembourg

Definition, origins and development of SPREC. The relevance, significance and application of SPREC as the universal biospecimen quality fingerprint in the context of current international best practices for biobanking. The influence of best practices on SPREC development.

HOW TO READ THE "ISO 20387:2018 GENERAL REQUIREMENTS FOR BIOBANKING"

Koh Furuta, Council for Industrial Use of Biological and Environmental Repositories (CIBER), Japan

ISO 20387 was published in August, 2018. ISO 20387 is prepared for the purpose of providing general requirements for biobanking. Explanations of several points of ISO20387; definition of biobanks, intended audiences, impartiality, confidentiality, fit for the intended purposes, validation and verification, and option A and option B, are provided in this presentation. Further, additional information regarding conformity assessment and "ISO/AWI TR 22758: Implementation guide for ISO 20387" will be discussed.

Symposium 2C: Biospecimens as the New Currency for Research: Insight from the Banking World

FACILITATING THE CONSUMERS' AND BENEFITING THE INVESTORS' LIABILITIES AND OBLIGATIONS FOR BIOBANKERS: EXPERIENCE FROM THE BORN IN GUANGZHOU COHORT STUDY

Xiu (Sue) Qiu, Guangzhou Women and Children's Medical Center, China

Based on our experience in running the Born in Guangzhou Cohort Study (BIGCS) and the affiliated biobank, the following contents will be presented:

- 1. Examples and experience about sharing the information derived from the biospecimens with collaborators.
- 2. Attitudes of the BIGCS participants towards the collection, storage, and use of the biospecimens.
- 3. Cost-effectiveness analysis of biobanking in the BIGCS.

THE GERMAN NATIONAL COHORT

Matthias Nauck, University of Greifswald, Germany

The German National Cohort (CNG) is a large epidemiological study, encompassing 200,000 participants between 20 and 69 years of age all over Germany. The recruitment of the study was started in 2014 and applies highly standardized procedures for the examination of the participants, e.g. including the cardiovascular system, Diabetes, cognitive function, lung function, musculoskeletal system, oral health, sensory organs, physical activity, and anthropometry. In addition, sampling, processing and storage of several different biomaterials is also standardized at an outstanding level. Aim of the study is to gain information of the early development of several diseases. The study is sponsored mainly by the Federal Ministry of Education and Research (BMBF), the participating Federal States, the Helmholtz Association and the participating institutions with a total amount of 270 million € for a time period of 10 years. The CNG as a non-profit association is owner of the data and biomaterials and supports scientific purposes only. Several expert panels develop strategies for research to improve the scientific outcome of the study and consequently the health status of the population.



BIOBANKS THROUGH THE EYES OF THE FINANCIAL SYSTEM AS BROKERS OF BIOSPECIMENS

Soo Yong Tan, National University of Singapore (NUS) and Institute of Molecular and Cell Biology (IMCB), Singapore

Just as a commercial bank acts as the broker between the investor who deposits funds in the bank and the consumer who borrows money from the bank to develop goods and services as the commodity, so biobanks often act as the broker between patients who donate specimens and the researcher who accesses tissues to generate knowledge in research. Similarly, financial institutions create a diverse range of financial products for the consumer whilst biobanks process tissues into derivatives (frozen samples, FFPE material, tissue microarrays, cell lines, xenografts etc). Monetary authorities and government bodies regulate commercial banks just as IRBs, Tissue Committees govern the operation of biobanks. Yet there are significant differences. Whilst an investor deposits funds with a financial institution expecting financial returns on their investment, patients make a gift of tissues as an investment for the greater public good. In this talk, I will also propose the concept of the biobank as a super-broker, and not just a bank of tissue specimens but a bank of data derived from them.

HOW BLOCKCHAIN CAN ENABLE A GLOBAL "CITIZEN OWNED" MULTI-OMIC DIGITAL BIOBANK

Daniel Uribe, Genobank.io, USA

One of the biggest advantages of blockchain is that it can keep a record of scarce or unique digital assets. If we consider Human Multi-Omics Variants as Unique and Scarce Data sets, then we can represent them as "Non-Fungible Tokens" to recognize ownership and marginal contribution of each contributor/patient/user. During our presentation, we'll be presenting a possible architecture of how a Decentralized & "User Owned" Network of Multi-Omics data sets can be built considering a "Privacy by Design" Approach as well (GDPR).

HOW COMMERCIAL BIOBANKS ARE HELPING INDUSTRY TO DEVELOP NEW DRUGS AND DIAGNOSTICS: WHAT CAN ACADEMIC BIOBANKS LEARN FROM THEM?

Robert Hewitt, Biosample Management Ltd, UK

Commercial biobanks play a major role in providing samples to researchers in the pharmaceutical and biotechnology industries, supporting the development of new drugs and diagnostics. Despite their importance, very little has been published about commercial biobanks. This presentation will examine how commercial biobanks operate and how they are regulated internationally. It will also ask (1) what academic biobanks can learn from them and (2) how academic and commercial biobanks should interact.

Symposium 3A: Utilization as a Key element to Biobank Sustainability: the Past, Present and Planning for Success in the Future

SUSTAINABILITY TODAY AND TOMORROW: HOW SUSTAINABLE BIOBANK CAN SUPPORT SUSTAINABLE TRANSLATIONAL MEDICINE

Jun Mei Zhou, Shanghai Children's Hospital, China

Biospecimen from all categories of diseases are important resources for translational medical research. During last two decades, large amounts of biobanks have been set up all around the world covering tumors, congenital birth defects, bacterial infection, etc. The biobanks were funded up by governments, institutes or corporations, etc. for the ultimate purpose of benefitting patients. However, most of the biobanks are facing with problems such as low utility percentage and sustainability obstacles. This presentation will focus on the challenges of sustainability from the prospects of financial support, social propaganda, as well as the development of biological techniques especially on high-throughput screening, etc.

BIOBANK SUSTAINABILITY: WHAT ARE BEST PRACTICES OR KEYS-TO-SUCCESS STORIES?

Paul Hofman, University of Côte d'Azur, France

Due to the crucial role of biobanks in research programs and biomarker development (particularly in the field of personalized medicine in oncology), an understanding of biobanking sustainability is mandatory. Simply starting to collect specimens without any strategic planning and cost analysis can rapidly lead to failure of a biobank. Components vital to sustainability include fostering public support, cost-effective banking, funding development, standardized protocols, and interoperability. However, the term sustainability is often used to mean fiscally self-sustaining, but this restricted definition is not sufficient for biobanking. Instead biobank sustainability should certainly be considered within a framework of different domains – not only financial, but also operational, science development, high level of research programs, innovative projects and also social visibility and supports. Different actions lead to this sustainability including setting up indicators (quality, accreditation, publications from the biobank and made in collaboration with academic and private partners, patents, etc), optimization of traceability of using samples, potential for duplication of collection of interest, etc.

UTILIZATION RATES AND SUSTAINABILITY CONSIDERATIONS IN PHARMA

Kirstin Goldring, AstraZeneca, UK

In this presentation I will discuss the types of samples collected and stored in AstraZeneca and discuss some of the challenges in interpreting sample utilisation of different sample sets. I will present data on utilisation of samples from our biobanks and strategies to improve utilisation and maximise the value of our collections. I will also discuss considerations for samples to support different therapy areas to ensure that our scientists can access the samples they need in a timely manner.



SUSTAINABILITY AND UTILIZATION IN BIOBANKING: TIME FOR A CHANGE?

Marianne Henderson, National Cancer Institute, USA

ISBER has hosted several symposia focused on the various aspects of repository management toward sustainability. The three pillars of Financial, Operational and Social Sustainability organize three ways to focus efforts toward responsible biobanking management that can lead to long term success in supporting research, clinical care and global health. Each Biobank must custom fit their management and business practices to fit their purpose and their stakeholder community. With biobanking becoming a key infrastructure for precision medicine, sustainability of quality biospecimen resources for the long-term has become even more paramount. Unfortunately, it is becoming clear that the global utilization of biobanked resources is very low. This talk will focus on elements of sustainability and utilization, while asking: Do we need new biobanking models, tools, or approaches?

Symposium 3B: Biobanking in a Global Research Environment: Respecting Cultural Perspectives and Special Study Population Considerations in Biobanking

EMBRACING THE OCCULT CHALLENGES IN PEDIATRIC RESEARCH

William Schleif, Johns Hopkins All Children's Pediatric Biorepository, USA

Pediatric biobanking continues to evolve under the direction of unmet needs in this dynamic and vulnerable population. Opportunities for scientific breakthroughs and medical benefits are great, however, these advances should not come at the expense of unnecessary risk to the patients we serve. At the Johns Hopkins All Children's Pediatric Biorepository, we act as custodians for the children, parents, and medical scientists involved in our research community. Our biorepository services support an entire spectrum of prospective investigator-initiated studies and clinical trials, operated under a high level of transparency designed to address the negative stigmas associated with biomedical research. These efforts raise challenges, some that are obvious and some that are hidden, that can impede study design and implementation for even the most experienced investigators. This presentation will share some of these issues and explore pragmatic approaches towards resolving them, without jeopardizing the trust and engagement of the next generation of study participants.

ENGAGING WITH OUR INDIGENOUS COMMUNITY TO DEVELOP A CULTURALLY RESPONSIVE BIOBANK IN NEW ZEALAND

Helen Morrin, University of Otago, New Zealand

New Zealand is bicultural and therefore we have an ethical and legal requirement to incorporate our indigenous Māori people's cultural values into our biobanking practices. With consultation we have partnered and undertaken a 20 year journey with Māori, to address cultural concerns such as:

• The desire for tissue to remain in New Zealand

- Culturally appropriate tissue handling practices
- Specimen return or disposal with a karakia (blessing)
- And the concept of collective ownership of genes and data, which presents extra challenges in the new era of globalisation and databanks.

This presentation reflects on our journey and looks to the future. It describes the culturally inclusive operational procedures we have developed both within our tertiary hospital where we operate and within our biobank, that have assisted Māori to be comfortable with donating their tissues and incorporate Māori guardianship into every aspect of our biobank.

WHEN CULTURE AND BIOBANKING INTERSECT: PERSPECTIVES FROM SOUTH AFRICA

Keymanthri Moodley, Stellenbosch University, South Africa

Biobanking is embedded in a context of multi-disciplinarity that has created a new discourse in health research involving diverse stakeholders. African genetic diversity lies at the core of the controversy that surrounds data and sample mining. African samples are highly sought after internationally and the unidirectional flow of samples out of Africa over the past several decades has raised concerns about exploitation. These concerns were voiced as recently as the Ebola outbreak in West Africa over the past 2 years where samples left the continent in the absence of adequate consent or material transfer agreements. Such events have impacted negatively on the relationships of trust that ought to exist between researchers and communities. Superimposed on the general concerns about exploitation on the continent are complex heterogenous cultural contexts and indigenous belief systems that create unique views with respect to ownership, storage and export of biospecimens. This talk will reflect such perspectives from research participants, researchers and Community Advisory Board (CAB) members gleaned from empirical research conducted in South Africa. A community engagement model will be presented to address cultural and other concerns.

BORN IN SHANGHAI: RECONCILIATION OF THE CHALLENGES AND FEASIBILITY FOR THE MELDING OF RESEARCH WITH BIOBANK PROFILE

Weiye Charles Wang, Xinhua Hospital, School of Medicine Shanghai Jiao Tong University, China

Some specific considerations for prenatal and pediatric populations will be discussed, with a focus on the design and operation of biobank profile for Shanghai Birth Cohort (SBC for short) and beyond. We are proud that our work of biobanking is already making a positive impact on SBC. We have been working hard to do even more through operation and management that are embodied within three major themes: design, collection of samples and data and comprehensive management. We have been expanding to a new strategic model for harmony to bank resources for population and clinical research, that is, Early Life Plan (ELP for short) for multiple pediatric case cohorts on the way. Especially we have developed ELP into an alliance biobank for research in early life. In addition, our experiences in understanding the cultural perspectives, needs and special considerations of SBC and Alliance for ELP will be described. The discussion



will also cover how we reconcile challenges and feasibilities to establish alliance biobank to contribute to our vision in ELP.

Symposium 3C: Life Crossroads of Opportunity: Biobanking and Cell Therapy

DEVELOPMENT OF ADVANCED TECHNOLOGY FOR OPTIMAL CRYOPRESERVATION OF HUMAN IMMUNOCYTE WITH AUTOMATED BANKING SYSTEMS FOR CELL-BASED IMMUNOTHERAPEUTICS

Xiaowen Peter He, Origincell Technology Co., Ltd., China

Human peripheral blood mononuclear cells (PBMCs) and its components are quite important bio-specimens in both clinical and academic studies, especially for serving as precursors for potential immunotherapy development in translational medicine. The cryopreservation of PBMCs is a critical issue left non-elucidated thoroughly in the field of bio-preservation. And lots of key factors, especially those related to leuko-apheresis, cold-chain transportation, cyroprotectant, program-controlled freezing and thawing, remain to be examined about their impacts on the quality of PBMC cryopreservation.

To fulfill this purpose, we carried out a systematic investigation of relevant factors to define new key factors and ways in which they affect the PBMC cryopreservation. In addition to cell viability and recovery, we subsequently performed the phenotypic and functional analysis of immune cells to further assess effects of these factors on the quality of cryopreservation and thawing. With the determination to develop a fully automatic banking system, the potentiality of cryopreserved PBMC can be further strengthened and expanded.

BIOBANKING IN A CELL THERAPY MANUFACTURING OPERATION

Chongren Weng, Tessa Therapeutics, Singapore

Biobanking plays an integral part in a cell therapy manufacturing operation, from the receipt of starting material collected from donors or patients, to the storage and distribution of final cell therapy product to the patients. However, in this domain of managing biological materials for human use, there are stringent regulatory and quality requirements to consider. The current Good Manufacturing Practice (cGMP) aspects of biobanking will be presented to provide an insight to life as a biobanker in a cell therapy manufacturing operation.

PRODUCTION TO PATIENT: MANAGING THE CELL THERAPY SUPPLY CHAIN

Robert Jones, Cryoport, UK

The presentation will summarize the complexities surrounding the supply chain of cell therapy manufacturing and logistics. By comparison, the supply chain for small molecule & Diologic drugs is relatively easy and is a mature industry with robust, tested solutions. The cell therapy industry is new, rapidly evolving and growing - many of the technologies employed are traditional and out dated, but innovation is rapidly increasing in this field and new technology is being developed to help manage some of the

complexities and challenges in the management of critical, valuable and irreplaceable biological products. For cell therapies to become first line therapy for large indications, the supply chain must be robust, reliable, traceable and affordable. The presentation will highlight the challenges and how new technologies will provide some of the solutions.

PRECISION MEDICINE IN THE COMMUNITY SETTING: OPPORTUNITIES AND CHALLENGES

Donna Russell, Precia Group, USA

While there have been many advances in targeted diagnostics and treatments, many community hospitals are not set up to offer these promising therapies to their patients. There is an emerging need for biobanking expertise to safeguard the transport and storage of biological material for clinical use so that precision medicine is available in the community hospital where most patients receive their care. This talk will address the opportunities and unique challenges of bringing precision medicine to the community setting.

Special Topics Session: Biobanking in Asia and Oceania

Created in partnership with the Australasian Biospecimen Network Association (ABNA)

BIOBANKING AND OMICS COST

Xun Xu, BGI, China

The China National GeneBank (CNGB) has built an integrated infrastructure of "Three banks and Two platforms". "Three Banks" represents the Biorepository, Bio-informatics Data Center and Living Biobank, while "Two Platforms" includes a Digitalization Platform and Synthesis and Editing Platform.

Based on the system of "storing reading, and writing" genetic information, the CNGB has established a public-welfare, open, supportive and leading platform which operates to principles and guidelines that enable the exchange and sharing of data and genetic resources. This facilitates genetic resource exploration and industrial transformation of omics knowledge in the areas of personalized medicine, agricultural breeding, marine development and microbial application, and helps develop innovative new technologies, products and models, which help cure disease, and advance the objective of allowing all of humanity to lead healthy lives.

In this presentation, I will introduce how we use the automation, big data and new technology in molecular biology to improve the efficiency and accelerate the application. A few cases of CNGB in how to use biobank to support precision medicine will also be introduced.

BIOBANKING IN ASIA AND OCEANIA

Dao Van Tu, National Cancer Institute, Vietnam

The presentation will focus on issues faced in Asia and Oceania and feature speakers who have faced, and to some degree have addressed, specific issues faced by Asian and Oceanian biobanks. These issues include: (i) environmental issues such as temperature, humidity, and weather, (ii) LMICs issues such as



funding for start-ups, (iii) cultural differences and societal issues, (iv) ethical and legal issues, (v) IT barriers, (vi) usage and accessibility to biobanks issues, and (vii) standards and expectations.

HUMAN SERUM BANK AND DEVELOPMENT OF TECHNOLOGY FOR IN VITRO DIAGNOSTICS ASSESSMENT

Kyungsook Ahn, Resources & Innovation, Korea

Infectious diseases are a major challenge for human health. They can spread unexpectedly anywhere and must be dealt with globally. To manage the infection, the country must be prepared in three directions: development of diagnostic kits, vaccines and therapeutics. The blood of infected patients is essential for these activities and the serum banks that provides high quality, well annotated samples is a key in developing and validating in-vitro diagnostic products.

There are several publicly funded biobanks in Korea that collect human biological samples from infected patients as well as normal blood donors. But disease research and product development studies require pre-designed collection of samples and need to establish cooperative relations with various organizations. We are establishing a global network and signed MOU for cooperation with Tanzania, Kenya and Togo to collect rare infected blood that is not in Korea. Also, there is an ongoing project for preparation of national standard sera that will contribute globally to diagnose infected patients. This research is supported by a grant (19173MFDS334) from Ministry of Food and Drug Safety in 2019.

THE ABORIGINAL HERITAGE PROJECT

Raymond Tobler, University of Adelaide, Australia

We outline the Aboriginal Heritage Project: a collaboration between the Australian Centre of Ancient DNA (ACAD), the South Australian Museum (SAM), and Aboriginal Australian families, that aims to reconstruct the genetic history of Aboriginal Australia.

The project leverages the unparalleled collection of 5000+ hair samples curated by the SAM along with cultural, morphometric and genealogical data, which were collated by Joseph B. Birdsell and Norman B. Tindale during extensive anthropological expeditions across Australia between 1926 to 1963. We present our outreach activities, which involve re-consenting the hair samples through in-depth consultation with Aboriginal Australian families and communities, along with results that reveal striking phylogeographic patterns dating back to the initial peopling of Australia.

Ultimately, we aim to provide a reference map that current and future generations of Aboriginal people can use to retrace their ancestry – including the displaced Stolen Generations and their descendants – whilst illuminating this remarkable but still largely unknown chapter of human history to the rest of world.

DEVELOPMENT OF BIOBANK NETWORK FOR PROMOTION OF UTILIZATION OF BIOBANK TOWARD REALIZATION OF GENOMIC MEDICINE IN JAPAN

Soichi Ogishima, Tohoku Medical Megabank Organization, Tohoku University, Japan

We have started the project aiming at research and development of biobank network connecting the three major biobanks (Biobank Japan, Six National Center Biobank Network, and Tohoku Medical Megabank) and the university hospital's biobanks in Japan. This project also aims at research and development of operational support for promotion of utilization of biospecimen and data stored in biobank toward realization of genomic medicine. For this aim, we are developing a biobank cross\(\) search system on biospecimen and data stored in biobanks in biobank networks. To develop biobank cross-ksearch system, at first, we are investigating user needs, and we are examining advancement of the biobank crossl-search system including addition of quality control data of biospecimen to search item, that is the minimum common data of biospecimen and data in biobank, with paying close attention to the international standardization. After development of the biobank crossksearch system, we will examine the coordination function of fast access to biospecimen and data to meet the requests by academic/commercial users using the biobank cross-search system. Utilization across various biobanks will be promoted by our biobank crossl-search system.

Symposium 4A: Using Biobanks for the Future of Targeted Medicine

TRANSLATION OF BIOMARKER DISCOVERY INTO IMPROVED PATIENT CARE: KEY ROLE OF BIOBANKS

Dianne Chadwick, University Health Network, Canada

Biomarker discovery is central to targeted medicine initiatives. For nearly 20 years, the University Health Network (UHN) Biobank, located in Canada's largest academic hospital system, has provided biospecimen support of basic, translational and clinical research. To meet the unique needs of each study, custom workflow is developed with input from multidisciplinary teams comprised of clinician and basic scientists. One example of UHN Biobank support involves tumour cell enrichment by laser capture microdissection prior to next generation sequencing. This has resulted in the discovery of new cancer biomarkers in pancreatic cancer, and the development of a clinical trial that incorporates microdissection into the workflow. Through close communication with the clinicians and researchers, Biobanks can be key partners in high impact biomarker discovery and the development of new treatment options.

COMBINATORIAL GENOMIC AND BIOBANKING APPROACHES TO PRECISION MEDICINE

Madhuri Hegde, PerkinElmer Inc., USA

We have developed a high-throughput metabolomics platform combined with genomic sequencing for population-wide health initiatives and screening programs. It is becoming a standard in the world's largest health initiatives and trials, and it is now being applied to profile the entire collection of the UK Biobank with 500.000 samples. Genomics provides qualitative data



about an individual's genomic make up whereas metabolomics provides a functional read-out of an individual's health status enabling early detection of disease when performed on a regular basis. In this presentation, we show that metabolic profiling of genetic variants in all FH genes reveals a specific metabolic signature underlying FH, including increases in all apoB carrying lipoprotein subclasses, which have been suggested to have a causal role in CVD, independent of LDL cholesterol. We demonstrate that LDL levels are inadequate to capture the metabolic signature of FH, and that detailed metabolic profiling can be useful in discriminating FH from lifestyle-induced dyslipidemias or polygenic forms of hypercholesterolemia. We also demonstrate that high-throughput metabolomics provides an efficient way to screen for FH followed up by confirmation by next generation sequencing (NGS) based molecular analysis. Familial hypercholesterolemia (FH) is one of the most common congenital metabolic disorders predisposing to premature cardiovascular disease (CVD). The prevalence is 1 in 230, but it is severely underdiagnosed with less than 10% of the affected individuals identified. The classical feature of the condition is severely elevated LDL cholesterol, caused by a mutation in a single gene in the LDL receptor pathway. However, recent studies have shown that the condition is more complex than previously thought, with multiple causal genes and largely unknown effects on lipoprotein metabolism. Moreover, carriers of FH mutations do not necessarily have elevated LDL levels, but their cardiovascular risk is still elevated compared to noncarriers. Thus, comprehensive metabolic screening including both classical LDL cholesterol and fine-grained lipoprotein subclass measures can provide complementary information for FH pathophysiology and improve detection of this underdiagnosed disorder. We conclude that population-wide metabolic screening programs could help to identify FH patients more accurately than LDL screening alone. Combined with a FH NGS panel (including the genes APOB, LDLR & PCSK9), high-throughput metabolomics can provide a better understanding of the molecular effects of FH and discriminate from polygenic forms of the disease and other dyslipidemias, facilitating better targeting of treatment. The approach offers the opportunity to enhance detection of FH for prevention of premature heart disease. This presentation will also cover application specific to heathly whole genome sequencing initiatives through Biobanking for preventive precision medicine.

DIRECT TO CONSUMER APPROACHES TO BUILDING MICROBIOME SAMPLES FOR RESEARCH

Martha Carlin, The BioCollective, LLC, USA

Ms. Carlin will discuss the Direct to consumer approach that her company, the BioCollective has taken to build a biobank of viable human fecal samples available for research. The presentation will cover, human subjects research consents, simplification of sample collection, validation for various use cases in research (DNA/RNA, metabolomics, proteomics, and culturing) unique processing methods for replicating aliquots and approaches to data and sample sharing. The BioCollective is building a broad population focused bank of microbiome samples (age 1-102 yrs) and making the samples available for purchase or collaboration with data sharing. This unique approach has already identified some key areas of potential research across the current classifications of disease.

APPLICATION OF CLINICAL BIOBANK IN SCREENING DIAGNOSTIC MARKERS IN DIFFERENT STAGES OF HEPATOCELLULAR CARCINOMA

Ning Li, Capital Medical University, China

Symposium 4B: Biobanking in China

EVALUATION OF SAMPLE INTEGRITY TOWARDS EFFECTIVE USAGE AND SCIENTIFIC VALUES OF COLLECTION

Weiye Charles Wang, Xinhua Hospital, School of Medicine Shanghai Jiao Tong University, China

As demand for biological samples linked to biomedical research continues to grow, appropriate collection for effective usability become increasingly valuable. To that end, evaluation of true values of collection at earlier stage becomes more critical in order to avoid any issues related to design, operation and management that might attenuate usability of samples. It is fairly common for a biobank to report outcome of collection by showing the number of samples of each type and number of recruited subjects from which samples are collected. Such information would be meaningless since it does not present little values for users to figure out sample usability.

The presentation will address this issue by evaluating what I called the "sample integrity", which is controlled by information elements and a strong logical association within samples. The goal is to evaluate collection with "integrity" to determine a group of samples that share a defining characteristic. The group of samples are processed together to address certain scientific questions. In a word, evaluation of sample integrity should help biobankers improve collection, management and increase professionalism of biobankers.

THE PERSPECTIVE OF VIRTUAL BIOBANK FOR UTILITIZING CANCER BIOSPECIMEN RESOURCES

Lianhai Zhang, Peking University Cancer Hospital, China

Cancer specimens are important resources for both clinical cancer investigations and basic science researches. Most of these resources are limited within their owners' community and not accessible for outsider. To build a virtual and centralized biobank meeting current regulation from government and law is essential for future broader collaborations.

BIOBANK: SUPPORTING THE CUTTING EDGE SCIENTIFIC RESEARCH AND CLINICAL TRANSLATION

Duojiao Wu, Fudan University, China

Biobanks are invaluable resources in cutting edge research and clinical translation. In this talk, we will discuss the role of biobanks in basic research of tumor immunology, as well as the relevance and applicability of biobanks in precision medicine. Particularly, we will share our examples and experience of meaningful research and clinical uptake stemming from the biobank. In summary, carefully designed biobanks can provide critical research and infrastructure support for clinical genetics in the era of precision medicine.



MAJOR CHALLENGES FACED BY BIOBANKS IN CHINA AND CNGB'S APPROACH FOR A BETTER SAMPLE SHARING

Bo Wang, China National GeneBank, China

In the era of precision medicine, biobanks play an important role in collection, processing, transportation, storage, and data analysis of biological samples. This presentation will provide an insight to CNGB's (China National GeneBank) approach to facilitate sample/data sharing and standardization. In particular, CNGB aims to build bridges between sample/data facilities and users via a data portal, the CNGBdb.

COMMUNICATION BETWEEN BIOBANKERS AND DOCTORS

Jufang Huang, Central South University, China

In China, biobanking is rapidly developing science which supports the advancement of translational medicine and precision medicine. Doctors, as the leading figures of clinical services, are increasingly aware of the importance of preserving and using the human genetic resources. However they don't have enough experience in this area. Moreover, majority of the hospitals lack overall planning for the construction of clinical biobanks, which directly leads to difficulties when using clinical resources by the clinicians. Here, we will introduce how we communicated, collaborated and shared knowledge with the doctors regarding biopreservation and biobanking, including standards, management methods and SOPs drafting.

BIOBANKERS IN CHINA

Xuexun Zhou, Avantech, China

In the last decade, biobanking got great development and progress in China. Network, standardization, automation, sustainable are more and more realized in biobank. The number of biobanks in China increased staggeringly, which brought in more and more professional biobankers to devote themselves in biobanking. These biobanker professionals are working several categories include biospecimens registering, handling, managing, data processing and biobanking science. In order to build up standardized biobanks in China, we have been working closely combined.

Symposium 4C: Biospecimen Quality & Research

BIOSPECIMEN SCIENCE: THE EVIDENCE BASE FOR CONTROLLING AND MITIGATING PRE-ANALYTICAL VARIATION

Helen Moore, National Cancer Institute, USA

Biospecimen pre-analytical factors can influence analytical data and therefore have the potential to affect research reproducibility. Biospecimen Science is the systematic study of the effects of biospecimen collection, processing, storage, and distribution conditions and the mitigation of such effects. This presentation will discuss efforts by the U.S. National Cancer Institute and others to grow the field of Biospecimen Science, describe some

of the observations to date, and discuss approaches for the application of new information to evidence-based best practices. The relationship between Biospecimen Science and Quality Management will be discussed as well as the key role of annotation in biobanking. Finally, the incorporation of evidence-based approaches to biobanking will be discussed in the context of a new biobanking program, the Cancer Moonshot Biobank.

OPTIMIZING QUALITY OF HUMAN SPECIMENS FOR DOWNSTREAM 'OMICS' ANALYSIS

Rohit Gupta, Stanford University, USA

The modern era of science has opened the door to robust assays that allow us to deeply characterize human biology. As research technologies rapidly evolve at the bench, academic biobanks are essential to educating, optimizing, and adapting novel protocols and methods that align the hypothesis to how we procure and process human samples. Whether it be proteomics assays examining chemokine and cytokine signatures in the immune systems, or time-sensitive metabolomic and lipidomic assays, or cellular phenotyping that keeps phosphorylation signals intact immediately following collection, or dissocating solid tissues for fresh single-cell analysis, it is critical to minimize artifacts and capture the most in vivo profile on human subjects. In this talk, I will review optimization methods, lessons learned, and biomarker testing that was performed for various cutting-edge technologies in an effort to provide proper standardization for the relevant assays downstream.

THE USE OF PROCESS QUALIFICATION FOR COLD CHAIN WORKFLOW DEVELOPMENT IN EMBRYO BIOREPOSITORY ACTIVITIES

Timothy Sharp, TMRW Life Sciences, USA

Increased sensitivity of analysis and direct introduction of biologics for therapeutic use, has led to higher requirements for cold chain monitoring in the supply and control of biologicals. Demand for a complete understanding of environmental conditions through the processing, finishing, storage, and distribution events of a specimen supply chain has grown over the past decade, leading to improved technologies for monitoring however; workflow integration is often a challenge.

This presentation covers the use of process qualification methodology for the creation and development of a sensitive cryogenics logistics and specimen management system for managing of human embryos from the point of vitrification through thawing for implantation. We shall walk through the development cycle for parameter development, how control technologies were qualified for use, and how monitoring and response through telemetry analysis feedback loops are used to control the system outcomes.

QUALITY IN BIOSPECIMENS: LOGISTICAL PERSPECTIVES

Bruce Brown, Thermo Fisher/ Fisher Clinical Services, USA

As the field of personalized medicine continues to mature, quality data becomes more vital. Biorepositories will be a central factor in safeguarding the biospecimens which will fuel this field. Standardized, high-quality sample processing is



critical. However, best practices in managing biorepositories to ensure Quality in biospecimens can often be underappreciated. Specimen tracking, storage, retrieval, and shipping involve multiple practical issues that need to be addressed to ensure that highest sample quality. The most careful sample processing will be undermined if the samples are not maintained at the proper storage temperature throughout the life-cycle of the sample. Many aspects of a biospecimen's lifecycle are outside of the hands of biorepositories. Considerations for management of an active collection will be discussed.

A NEW PEPTIDOMIC TOOL FOR CONTROLLING BIO-SAMPLE QUALITY AND OPTIMIZING HANDLING PROCEDURE

Jinghua Han, Institute of Biophysics, CAS, China

High quality clinical samples are critical for meaningful interpretation of data obtained in both basic and translational medicine. More specifically, optimized pre-analysis handling to bio-sample is crucial for avoiding biased analysis in a clinical setting. A universally applicable method for the evaluation of sample quality and pre-analysis handling is therefore in great demand. The fingerprint pattern of low molecular weight (LMW) peptides in sera is directly associated with sample quality and handling process. Our previous studies for enrichment/isolation of LMW peptides have shown that LMW peptides can be enriched by silica meso-porous material in a sensitive and high-throughput manner. Here, a peptide profile approach utilizing meso-porous silica chip-based sample preparation combined with MALDI MS analysis was used as a new platform for evaluation of bio-sample quality in human plasma specimen.

This novel method can complete the entire sample preparation procedure in a short period of time (< 40 min), requires minimum amounts of sample (< 10 uL), is of high sensitivity (LOD 10 ng/mL) as well as high reproducibility (CV% < 15%). According to the acquired LMW peptide spectra, we were able to distinguish the sera samples processed under different conditions (including different storage temperature, time, and freezing/thaw cycles) with the help of bioinformatic tools , and identify the samples that had significantly changed due to the inappropriate processing. Based on the percentage of significantly changed peaks in LMW peptide mass spectrum after handling, a judgment standard was established that can be used to evaluate the status of preservation of a biological sample. In addition, our principle study established recommendations for storage time, storage temperature and freeze/thaw conditions.

Special Topic Session: Living Biobanks

DIAGNOSTIC HAPLOTYPE NUCLEOSOME SHIFT IN PROSTATE CANCER BASED ON LIVING BIOBANK

Yu Xiao, Zhongnan Hospital of Wuhan University, China

Conditional reprogramming cells (CRC) technology, an essential technology in living biobank, is invented by Prof. Xuefeng Liu at Georgetown University Medical School. The CRC technology can provide long-term cultures of primary cells from both normal and bladder cancer tissues with distinct clinical backgrounds and follow-up data, without changing their genotypes, which could provide a tool for the study of human prostate cancer heterogeneity between different individuals.

We have observed a rare EGFR germline mutation cosegregates with prostate cancer in a pedigree. The novel mutation is pathogenic translocated and haplotypely physically linked. Based on series of technology in living biobank, we have cultured and analyzed the conditional reprogrammed prostate cells from the pedigree, to estimate tumor burden from nucleosomal distribution of alleles, as well as to cluster SNP into pseudohaplotype according to tumor nucleosome signal. Moreover, tumor fraction agrees with copy number derived tumor burden has been estimated for nucleosomal distribution. Finally, we obtained a small molecule inhibitor for the rare mutation validated by the conditional programmed prostate cells from the pedigree.

NEXT GENERATION MODELS FOR BIO-BANKING, BASIC AND TRANSLATIONAL RESEARCH

Seema Agarwal, Georgetown University, USA

Historically, cells that are derived directly from human tumors or healthy tissue have been difficult to propagate in vitro and in vivo. This represents an unmet need, as in vitro preclinical models are essential tools for both basic and translational research, including drug discovery and drug target identification. I will discuss next generation in vitro and in vivo cancer models that are cost-effective, rapid, robust and reliable. Conditional reprogramming (CR) cell technology is an in vitro patient-derived cell line model system where CR cells can be bio-banked and used for various basic and translational applications. These include regenerative medicine, drug sensitivity testing, molecular and genomic profiling, pathway analyses and xenograft studies. The zebrafish tumor metastasis (ZTM) model is a next generation in vivo model system that utilizes 48-hour post-fertilized embryos. It works for tissue material as well as for cell cultures thereby making it an extremely useful model system to evaluate the tumor cell behavior and biology in the presence of its own stromal component. The zebrafish tumor models required very small amounts of tissue material so it is feasible to establish patient-derived zebrafish xenograft models. These zebrafish models could be used for a variety of applications, including metastatic potential of primary tumors in real time, genetic screening to identify molecular drivers for metastasis, drug screening, and to study potential tumor-stroma interactions important for tumor growth and metastasis. A key advantage of this model is that, these models can be established in 3-7 days compared to 3-7 months for the mouse model. Thus far, no other in vivo model system exists that can provide



the rapid, real-time investigation of metastasis (migration, intravasation and extravasation) and cost-effective drug screening platform that works in a very short period of time.

ESTABLISHMENT OF ORAL SQUAMOUS CELL CARCINOMA TISSUE SAMPLE BANK AND ITS LIVING BIOLOGICAL BANK

Wantao Chen, Shanghai Research Institute of Stomatology, China

In vitro proliferation of cells isolated from human tumors or normal tissues has always been a difficult problem in medical and even life science. For decades, scientists have been trying to develop methods to amplify and study primary tumors and normal cells in vitro. Up to now, cancer cell lines established by traditional methods are still the main pillars of cellular, molecular cancer biology research. Conditional reprogramming (CR) is a new method to obtain a large number of primary epithelial cells or cancer cells from healthy tissue or human cancer tissue samples in vitro, which can be subculture and amplified. The CR cell lines from some type cancer and normal tissues constitute Living Biological Bank.

The CR technology introduced in this topic is simple and greatly shorten the culture time of primary cells. The team of Xuefeng Liu of Georgetown University has built and used this CR technology to screen the combination of chemotherapeutic drugs for patients and achieved effective clinical results. And the results were published in the New England Journal of Medicine. The Department of Oral, Maxillofacial and Head and Neck Oncology of the Ninth People's Hospital affiliated to the Medical College of Shanghai Jiao Tong University has successfully cultured more than 50 cases CR cell lines from oral cancer patients and their matched normal epithelial tissues. The CR cell lines using this culture technique, relying on the samples of oral and maxillofacial tumor tissues and the Bioinformatics Database from the public service platform in Shanghai. This public service platform has collected and stored the tumor tissues of more than 12,000 patients with oral cancers, with their related tissues, their genetic and epigenetic molecular database. This platform provides a strong guarantee for this oral cancer living biobank.

The primary culture technology of CR for oral cancers is expected to be used in molecular target exploring, clinical drug screening, and improve the individualized chemotherapeutic regimen for oral cancers. This report will further standardize the primary culture technology of oral cancer CR and provide reliable data and reference for clinical transformation research.

This work was supported by the National Program on Key Research Project of China (2016YFC0902700) and Shanghai Municipal Science and Technology Commission Funded Project (18DZ2291500).

IL-6 TRANS-SIGNALING ROBUSTLY PROMOTES THE EXPANSION AND ANTITUMOR ACTIVITY OF CAR T CELLS

Peng Li, Chinese, Academy of Sciences, China

Chimeric antigen receptor T (CART) cell immunotherapy targeting CD19 positive B cells malignancies induces promising clinical remissions. However, the treatments are often accompanied with high levels of IL-6 characterized cytokine release syndrome (CRS). Previous studies had shown that sIL-6R are constitutively present in high concentrations in serum. Therefore, when the level of IL-6 is elevated (above nomogram per ml), sIL-6R combines with IL6 to form the IL-6/slL-6R complex (trans-signaling). The IL-6 trans-signaling plays important roles in regulating immune responses, cell survival, apoptosis, and proliferation. To our knowledge, comprehensive assessment of the IL-6 signaling in biologic functions of CAR T has not been well addressed. We thus tested whether the IL-6 trans-signaling promotes expansion and anti-tumor activity of CAR T. We found that the levels of serum IL-6 and IL-6/sIL-6R complex were positively correlated with anti-CD19 CAR T cell expansion and anti-leukemia response in patients. To simulate the IL-6 trans-signaling, we next constructed a constitutively expression of Hyper IL-6 (HIL-6) with various CAR T cells. Anti-tumor efficacy of HIL-6-CART cells were confirmed in leukemia (anti-CD19) and solid tumors (anti-MUC1 and anit-GPC3 CART cells targeting lung cancer and hepatocellular carcinoma, respectively). Our results demonstrate that HIL-6-CART cells are more effective for suppressing tumor growth and more persistent in xenograft models. Transcriptomic profiling analysis revealed that the expression of genes that facilitate T-cell migration, early memory differentiation and the IL-6/GP130/STAT3 signaling was upregulated in HIL-6 simulated CART cells compared to the ones without HIL-6 overexpression. Taken together, these results showed that IL-6 trans-signaling can significantly enhanced the expansion anti-tumor activity of CAR T cells via GP130/STAT3 activation.



ISBER EDUCATIONAL WORKSHOP SUMMARIES

Pre-conference Technician Workshop

BIOBANKING 101

Presenter: William Grizzle (USA)

SAMPLE DATA MANAGEMENT

Presenters: Weiye Charles Wang (China), Zack von Menchhofen (USA)

Biobanking requires using the full potential of biological samples; this includes not just the physical samples, but also the associated meta data that is collected throughout the lifecycle of the sample. Repository samples can be handled by a number of different functional groups over time. Managing sample inventory, Chain of Custody (CoC), document management, accurate labeling and coordinating the annotation of associated data is imperative for the smooth functioning of any repository. Databases and use of other integrated software tools are a fundamental requirement to support the mission and processes of the repository. This session will explore the basic requirements of a repository IT system; explain the importance of basic data elements; and clarify the ISBER Best Practices for Repository Management Systems and how they can affect the daily rituals of a repository technician.

QA/QC - BENCHMARKING DATA FOR QUALITY METRICS

Presenter: Timothy Sharp (USA)

While the number of biospecimens being collected and distributed is increasing, the complexity of their multiple applications put forward higher requirements in the quality management of these biospecimens and associated data. Controlling quality metrics of primary biomaterials, collection variables, preanalytical variables, as well as different molecular analytes is critical for high-throughput, quantitative downstream assays. It is also essential to avoid introducing institute-dependent intrinsic bias in multiple processing pathways to obtain accurate data. This session will be devoted to an in-depth discussion of evolving tools and metrics for sample quality assessment and how best practices might directly apply to the daily work of biobank technicians.

Workshop 1: Facilitating International Collaboration Between the Pharma Industry and China in the Conduct of Clinical Trials and Acquisition of Biospecimens From Chinese Biobanks

Presenters: Alex Guo (Canada), Melissa Rawley-Payne (USA), Liangliang Ruan (China)

This workshop will introduce the challenges in conducting industry sponsored clinical trial research in China as well as acquiring biospecimens from Chinese biobanks outside of clinical trials. The workshop will bring regulators, academic and hospital partners, Chinese biobanks and Pharma together to understand the point of view of each of these key stakeholders. Regulators will have an opportunity to highlight the regulatory landscape in China for both clinical trials and acquisition of biospecimens

from Chinese biobanks outside of clinical trials. Academic and hospital partners, Chinese biobanks and Pharma will have an opportunity to discuss the challenges encountered from each point of view.

For clinical trials, specific topics will include HGR application and self-inspection process, collection and exportation of specific sample types and volumes, and intellectual property (IP) requirements including positions on IP of each stakeholder. For acquisition of biospecimens from China biobanks, topics will include understanding the Chinese regulatory requirements to obtain these biospecimens as well as the documentation required. The objective will be to determine opportunities for solutions to the challenges encountered to support these research collaborations.

Workshop 2: Biobank Standards/ISO

Presenters: Clare Allocca (USA), Marianna Bledsoe (USA), Koh Futura (Japan), Daniel Simeon-Dubach (Switzerland)

Recognizing that the needs of different biobanks can be extremely diverse, what are the tools from which a biobank might select to enhance quality for fitness for purpose? A vast array of selected tools will be briefly described before a more in-depth look at standards options. An interactive dialogue on the standalone and complementary application of standards, best practices, and other resources to achieve fitness-for-purpose through quality biobanking processes and products. This workshop will serve both as a continuation of the 2018 ISBER workshop ISO and ISBER and CAP, Oh My! and as a foundation for understanding biobanking standards in the context of the broad spectrum of tools available to biobanks to address quality.

Workshop 3: Lack of Reproducibility in Research Based on Human and Animal Tissues

Presenters: William Grizzle (USA)

There is currently a perceived problem with lack of reproducibility of research results especially results using human tissues. Some of this variability is due to statistics (small sample sets and exclusion of data inappropriately) as well as to specific analytical approaches of investigators to research; however, some problems with reproducibility likely are due to bias introduced by pre-analytical variables of biospecimens such as processing variables. The requests of investigators for biospecimens may be problematic so that the biospecimens provided by biorepositories may not meet the actual needs of the research projects. This workshop focuses on variables that may impact biorepositories, the biospecimens they provide to investigators, and the reproducibility and quality of research based on use of provided biospecimens.

Based on the current literature, this workshop will discuss tissue requests by investigators and why biospecimens provided to meet these requests may or may not strongly support specific research projects. Causes of irreproducibility of tissue-based research will be presented. Also, the importance of educating investigators as to problems in reproducibility that may affect their requests for biospecimens and the quality of their research will be discussed.



Educational Workshop 4 & 7: Introduction to Business Planning for Biorepositories

Presenters: Daniel Simeon-Dubach (Switzerland), Marianne Henderson (USA), Kirstin Goldring (UK)

Quality specimens from biorepositories are key infrastructures to support reproducible research. Sustaining biorepositories requires robust management. There is a clear imperative for the use of quality human biological samples and associated data in basic, pre-clinical and clinical research which has led to an increased reliance of biobanking infrastructures to support these research demands. Biorepositories, which are often based in clinical and academic setting, are relied on as key infrastructures, which must meet ongoing and emerging needs for a range of quality specimen types and associated data for the stakeholders they serve. Consequently, biorepositories must ensure ongoing sustainability through sound business planning with the ability to adapt to future market requirements.

We recently published a paper that provided insight on qualitative and quantitative aspects of biorepository business planning. Due to many variabilities, including the diversity of biorepositories in terms of size, sample type, specificity of research area, sector, and resource requirements, the applicability and level of business planning may differ. There is not a one size fits all model of sustainability planning. We recognize that most biobankers have an academic / scientific background and that managerial skills like drafting a business plan may not be one of their key competences. This workshop will provide the basic elements that should be considered when drafting a biorepository business plan.

In our workshop we will outline these basic considerations and have discussions about the importance of each aspect of a plan. As a key take away from the workshop, participants will have the opportunity to draft, present and receive feedback on the vision and mission for their biorepository, key elements of any business plan.

Educational Workshop 5 & 8: Biobank Sustainability and Utilization

Presenters: Marianna Bledsoe (USA), Rita Lawlor (Italy), William Grizzle (USA), Xi Zhang (China)

Ensuring optimal biospecimen utilization is critical to biobank sustainability. Biobanks must be able to demonstrate that their biospecimens are well utilized in order to justify continued support from funding agencies and sponsors. In addition, donors expect that their biospecimens will be utilized for important scientific research. Therefore, effective biospecimen utilization is critical for both financial and social sustainability of biobanks. However, several recent surveys in the US and worldwide indicate that biospecimen utilization is a major concern of many biobank managers.

This workshop will address the issues that affect biospecimen utilization and suggest ways that biobanks can optimize the utilization of biospecimens within their collections. Presenters and workshop attendees will discuss the factors that affect biospecimen utilization such as market research and the identification of a scientific need, choice of biobank design, biospecimen quality and fitness-for-purpose, informed consent issues, access policies and procedures and marketing approaches. The format for the workshop will include introductory didactic presentations,

as well as interactive small group discussions in which attendees will share their experiences and successful approaches to ensure effective utilization of the biospecimens within their collections.

Educational Workshop 6: ELSI in Asia-Oceania Biobanks

Presenters: Tatsuaki Tsuruyama (Japan), Vu Thi My Hanh (Vietnam), Daniel Catchpoole (Australia), Jajah Fachiroh (Indonesia)

This workshop will provide background to ELSI issues in Asia-Oceania biobanks before presenting IC format using documentation or ISBER Best Practices if possible. Explain in the context of paternalism and altruism in Asia. The workshop will also discuss format of Material Transfer Agreements (MTA) regarding custodianship/stewardship of samples and associated data, and address regulatory impediments to using Asian biobank specimens in global research and trials.

Educational Workshop 9: Pitching Biobanking to Stakeholders

Presenters: Suzanne Vercauteren (Canada), Daniel Catchpoole (Australia)

Over the last decade recognition of the practice of biobanking has dramatically increased and in many academic centres biobanking has become standard practice. However, stakeholder engagement for biobanks is often limited and challenging. Many stakeholders in the biobanking process including patients, the general public, hospital administration, universities, 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. This will allow biobankers to be prepared with tools to help pitch the importance and role of biobanks to key stakeholders when necessary. 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 etc.

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

Pre-registered attendees of the workshops 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 presentation.

All members will receive a written version of the elevator pitches presented at the workshop with permission of the presenters.





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POSTER SESSION 1: TUESDAY, MAY 7

Poster presenters will be at their posters from $7:00 \, \text{PM} - 8:00 \, \text{PM}$

ID	TITLE	PRESENTER	COUNTRY
PBT1	$Implementation\ Of\ A\ Software\ Framework\ for\ Data\ Validation\ According\ To\ CEN/TS-A\ Proof\ Of\ Concept$	Karine Sargsyan	Austria
PBT2	The Role of Prior Training in the Initial Operation of Specimen Collection in China	Shanshan Zhang	China
PBT3	NMR based Quality Control and Generation of Standardized Spectral Information	Manfred Spraul	Germany
PBR1	Cryopreservation of Whole Tumor Tissue	Ashley A Fletcher	United States
PBR2	Frequencies of HLA Class I Alleles in HIV-1 Infected SM Cohort and MSM Cohort of China	Jianping Sun	China
PBR3	Optimization of Human Skin Biopsies Derived Fibroblast Culture for Reprogramming into Induced Pluripotent Stem Cells	Kathleen Mommaerts	Luxembourg
PBR4	Effect of -80°C Storage on RNA from Snap Frozen Placental Tissue	Ellen A. Schneider	United States
PBR5	DMSO Protects Protein from Degradation During Exosome Storage	Ying Hu	China
PBR6	The Mechanism Underlying Sperm Cryoinjury for Semen Cryopreservation in Small Ruminants	Guobo Quan	China
PBR7	Influence of Different Collection Conditions on RNA Integrity of Tissue Samples	Hongwei Peng	China
PBR8	The Effects of Resveratrol on Goat Sperm Quality Parameters During Cryopreservation	Chun Rong Lv	China
PBR9	Separation and Clinical Value of Immune Cells in Ascites and Hydrothorax	Zhongnan Yin	China
PBR10	Biobanking of Canine Adipose-Derived Mesenchymal Stem Cells (cAD-MSCs) for Clinical Application: Effect of a 7 Year-Long Cryopreservation on Stemness Features	Annalisa Guercio	Italy
PBR11	Optimizing Thawing Temperature to Improve the Quality of Cryopreserved Human Peripheral Blood Mononuclear Cells	Yanhong Xu	China
PBR12	Utility of serum indices for the quality control of biobanked serum samples	EunJung Hong	Korea (the Republic of)
PBR13	Analysis of feasibility and stability of single cell transcriptomics in patient derived cryopreserved blood cells	Lalita Wadhwa	United States
PBR14	Preanalytical Impacts of FFPE Specimens on Next Generation Sequencing (NGS) Analysis	Helen Moore	United States
PBR15	Assessment of the Suitability of RNA Extracted from Archived FFPE Tissue Blocks for Use in $\ensuremath{qRT-PCR}$	Micheline Sanderson	South Africa
PBR16	A Comparison of Quality Assessment Methods Specified in SOPs Contributed to the Biospecimen Research Database's SOP Library	Helen Moore	United States
PBR17	Quantification of the DNA integrity affecting the genome data quality in the analytical phase	Sung-Mi Shim	Korea (the Republic of)
PBR18	CR cells from pleural effusion identifies therapy for NSLSC patient with primary resistance to TKI	Hui Li	China
PBR19	Combined TCGA database retrieval and analysis with experimental verification of clinical samples in biobank to find HCC related genes	Qing Ye	China
PBR20	thm:thm:thm:thm:thm:thm:thm:thm:thm:thm:	Midie Xu	China
PBR21	Full Cold Chain in An Automatic Cryopreservation System Reverses the Reduction of Cell Viability and Functional Activities Cause by Temperature Fluctuation	Yanhong Xu	China
PBR22	Comparative Analysis of the Advantages and Disadvantages of Different Storage Methods of Tissue Samples	Yanzi Gu	China
PBR23	Exploring the Improvement of Cryopreserving Human Peripheral Blood Mononuclear Cells	Aiping Zang	China
PBR24	Clinical Use of Cryopreserved Whole Adipose Tissue	Michael Badowski	United States
PBR25	Techa River Population Cancer Morbidity and Mortality and Mayak Worker Cancer Mortality	Daniel O Stram	United States
PBR27	Living biobanking of human solid tissues as highest possible quality method of cryopreservation.	Sharmeela A Kaushal	United States
PBR28	Establishment and Characterization of Patient-derived CIN Cell Model Containing Episomal HPV18 Virus	Hui Li	China
PBR29	Effect of Vitro Ischemia and delayed processing Time on Quality of Fresh tissues in biobank	Dan Guo	China
PBR30	CircRNAs expression and the association with clinicopathological characteristics in human papillary thyroid carcinoma	Dan Guo	China



ID	TITLE	PRESENTER	COUNTRY
PBR31	PD-L1 expression and the association with malignant behavior in pheochromocytomas/ paragangliomas	Anqi Wang	China
PBR32	Diversifying Biosample Collections to Fuel Immuno-Oncology Research Studies. The Experience of the Nice University Hospital Biobank (BB-0033-00025)	Paul Hofman	France
PBR33	Subsets of T Cell Expression on Hand-Foot-Mouth Disease Children with Enterovirus 71 in Different IFITM3-rs12252 Genotypes	Junking Li	China
PBR34	Optimal cryopreservation of viable Buffy Coat using the new CoolCell device	Pauline Lambert	Luxembourg
PBR36	The Evaluation of Genomic Identity of the Cell Specimens in the TMM Biobank	Kazuki Kumada	Japan
PBR37	A novel gene panel for detection of oral squamous cell carcinoma	Kun Wu	China
PBR38	Human Leukaemia cells (HL-60) Proteomic and Biological Signatures Underpinning Cryodamage are Differentially Modulated by Novel Cryo-additives	Noha A Al-Otaibi	Saudi Arabia
PE1	What Egyptians Think? Knowledge, Attitude, and Opinions of Egyptian Patients towards Biobanking Issues	Ahmed Samir Abdelhafiz	Egypt
PE2	Consent, the Pivot in Research in Ghana; Breast Care International Best Approach	Isaac Ewuah Mensah	Ghana
PE3	The National Measure for Biological Research Resources in Korea	Tae-Eun Jin	Korea (the Republic of)
PE4	ELSI Helpdesk	Camilla Östergren	Sweden
PE5	Communication with Biobank Participants -from the Experience of Tohoku Medical Megabank Project	Fuji Nagami	Japan
PE6	Using Our Brains Donor Program Supporting Neuroscience Research	Toni McCrossin	Australia
PE7	Donor Privacy Protection: from the Perspective of Front-line Staff of Biobank	Zongning Zhou	China
PE8	The Efficiency of Different Preaching Schemes of Consent Informing in Biosample Collection Event from Newly-enrolled freshmen	Jufang Huang	China
PE9	Broad Consent for Use of Tissues in Future Research in Singapore	Jing Yeo	Singapore
PE10	Multifactor problems the biobanking regulation in Mexico	Violeta Alejandra Tovar-Vivar	Mexico
PHS1	Assessment of Feasibility of Investigation of Non-targeted and Transgenerational Effects among Offspring of Radiation Exposed Individuals	Tamara Azizova	Russian Federation
PHS2	Assessment of Feasibility of a Study of Lung Cancer Pathogenesis in Mayak Workers Internally Exposed to Alpha-particles	Galina Zhuntova	Russian Federation
PHS3	HIV Biobanking in Ukraine: from the Strategy to Action Plan	Anna Piddubna	Ukraine
PHS4	Development and Validation of an Immune Related, Prognostic Signature and Nomogram in Ovarian Cancer	Sheng Li	China
PHS5	Four novel biomarkers for bladder cancer identified by weighted gene co-expression network analysis	Xin Yan	China
PHS6	Establishment and management of urogenital tumor biobank in Chinese population	Yu Xiao	China
PHS7	Effects of Temperature on DNA Quality and Stability: Some Practical Considerations for DNA Banking in Low to Middle Income Countries	Maria Mikaela J. Libunao	Philippines
PHS10	Overview of the Russian Health Studies Program and Summary of Key Research Findings	Barrett Nicholas Fountos	United States
PHS11	Trust—The Building Block for a Successful Biorepository	Talishiea Croxton	Nigeria
PHS12	Research and Development of Biobank Network and Operational Support for Promotion of Utilization of Biobank toward Realization of Genomic Medicine	Soichi Ogishima	Japan
PHS15	Generating and Banking Patient Derived Cell Lines: Adding to the Biorepositories Repertoire	Thomas Ribar	United States
PHS16	Quality Control Mechanisms For Establishment Of BioRepository Of Mother-Child Cohort In Pemba Island: Africa	Saikat Deb	Tanzania, United Republic of
PHS17	Genomic and biological comparison of Conditionally Reprogrammed Cell culture with their parental patient-derived xenografts	Xuefeng Liu	United States
PHS18	Best Practices for Establishing a Biobank in an Academic Institution in Singapore	Jing Yeo	Singapore
PHS19	Facilitating Rare Cancer Biobanking in Manchester, UK	Sharzad Moghadam	United Kingdom
PHS21	Radiation Dose Reconstruction for the Techa River and Mayak Worker Cohorts	Bruce Alan Napier	United States
PHS22	The Vanderbilt Pediatric Biorepository for Congenital Heart Disease	Yan Ru Su	United States



ID	TITLE	PRESENTER	COUNTRY
PHS23	The pathological dissection and biobank collection of Whipple radical specimen	Qing Ye	China
PHS24	Setting up a Transplant Research Biobank at an Academic Medical Center	Rajeev Singh	United States
PHS25	Tumor-associated Antigen Specific T-cell immunity In HBV-associated Hepatocellular Carcinoma	Chaoran Zang	China
PHS28	Establishment of Beijing Biobank of Clinical Resources (BBCR) for Mental Disorders	Guofu Zhang	China
PHS29	Current status of resources and work performance of the Korea Gynecologic Cancer bank	Hyunja Kwon	Korea (the Republic of)

POSTER SESSION 2: WEDNESDAY, MAY 8

Poster presenters will be at their posters from $6\!:\!30\,PM\text{-}7\!:\!30\,PM$

ID	TITLE	PRESENTER	COUNTRY
PBP1	The Australia and New Zealand Children's Haematology/Oncology Group (ANZCHOG) Biobanking Network	Rose Boutros	Australia
PBP2	Establishment of clinical biobank for Women and Children in South China	Xiaoqiong Gu	China
PBP3	Biobank Profile - China National GeneBank	Xun Xu	China
PBP4	Primary Care Based Biobanking: A new concept?	Ayat Salman	Canada
PBP5	The Biobanca del Mediterraneo (BBM) of the Istituto Zooprofilattico Sperimentale (IZS) of Sicily: an Important Resource in Medical Research for Storage of Biological Specimens in Accordance with ISO 9001:2015	Annalisa Guercio	Italy
PBP6	The Nsw Brain Tissue Resource Centre: An Australian Brain Bank	Donna Sheedy	Australia
PBP7	Role and Mission of non-profit Boundary Organization, CIBER, to Promote Biobanking as a Business	Junko Ikeda	Japan
PBP8	Biobanking as Basis for Biomarker Research: Model of Biobank Graz	Franziska Vogl	Austria
PBP9	Biobank Sweden – The Implementation of a New Swedish Biobank Infrastructure	Lena Thunell	Sweden
PBP10	Biobank Graz – Hub of Cooperations in Clinical Research	Karine Sargsyan	Austria
PBP12	Telethon Network of Genetic Biobanks: high-quality service for rare diseases	Sara Gibertini	Italy
PBP13	Human Biospecimens Collection for Bio-Medical Research: Obstacles and Solutions. The NYU Langone Health (NYULH) Experience.	Paolo Cotzia	United States
PBP14	Improvement of the service quality promotes sustainable development of biobank	Guangqi Qin	China
PBP16	"Biobank issues?- Put a Sample Service Coordinator into your research-life"	Eva Ortega-Paino	Sweden
PBP17	Training Future Experts in Next Generation Biobanking. MSc Biobanks and Complex Data Management at the Université Côte d'Azur, Nice, France	Paul Hofman	France
PBP18	Bio-banking Platform for Precision Cancer Medicine at the Southwest Hospital	Yemiao Chen	China
PBP19	A Brief Introduction of CHCMU BioBank Center	Xiang Zheng	China
PBP21	Past, Present and Future of the Victorian Cancer Biobank	Wayne Ng	Australia
PBP22	Biobanking for Clinical and Translational Research Programs: an Integrated and Innovative Model for a Hydrid Academic-Community Cancer Center	Zuanel Diaz	United States
PBE1	Biodiversity-Pathogenic Microoganisms	Liu Pan Pan	China
PBE2	Of Mice and Men: Establishing a Sustainable Pre-Clinical Biobank for the University of Newcastle	Cassandra Griffin	Australia
PBE3	Biobank at Biomedical Primate Research Centre (BPRC), Rijswijk, The Netherlands: Implementation of the 3Rs Principles (Replacement, Reduction and Refinement)	Ivanela lankova Kondova	Netherlands
PBE4	Biobanking of Indian Wild/Endangered Species	Sambasiva Rao Brahmasani	India
PHT3	Small, But Mighty: The 20 Year Journey Of A Hospital Embedded Paediatric Tumour Bank.	Li Zhou	Australia
PHT4	Next Generation Living Biobanks for Precision Onocology	Xuefeng Liu	United States
PHT5	Practicality of Next Generation Sequencing in a Low income African Setting with A focus on Whole Genome Sequencing of Multi-drug Resistant M. tuberculosis isolates from Uganda	Edgar Health Kigozi	Uganda



ID	TITLE	PRESENTER	COUNTRY
PHT7	The Intelligent Database for Clinical and Molecular Classification of Oral and Maxillofacial Cancers	Zhen Zhang	China
PHT8	DNA Fingerprinting – An Innovative Way to Re-Identify Clinical Trial Biospecimens with Missing Labels	Melissa Rawley-Payne	United States
PIT1	A novel computational drug repositioning approach based on integration of transcriptoms and drug-target mapping	Zi-hang Zeng	China
PIT2	Construction of "DEEP FACTS" tumor intelligent research platform based on Biobank	Sheng Li	China
PIT3	Living Biobanks And Precision Medicine	Lin-Gao Ju	China
PIT4	Sample quality control of cell-free DNA	Elisa Viering	Germany
PIT5	The Nightingale Experience — Biomarker Profiling by NMR Metabolomics: Using Biobank Partnerships to Build the Evidence-base for Clinical Use	Salla Ruosaari	Finland
PIT6	Color Two-dimensional Code	Jun Zhang	China
PIT7	Industry accelerators and components assist in implementing CLIA diagnostic labs best practices into production faster	Jeramy Webb	United States
PIT8	New Technology for Automated Decapping of Large Volume Labware	Donat Elsener	United States
PIT9	Towards a Mental Health and Friendly Biobanking Environments: Psychological feeling Based Biobank Repository Planning and Space Design.	Manli Wu	China
PIT10	Issues Related To IT Security In Adopting Specialized Commerical Biobanking Systems For Managing Patient's Data	Chon Boon Eng	Singapore
PIT11	Data Privacy: Achieving Compliance and Efficiency Via Configurable Data Masking	Jeramy Webb	United States
PIT12	Higher DNA Yield for Epidemiological Studies: A Better Method for DNA Extraction from Blood Clot	Guangdi Zhou	China
PIT13	Let Your Tubes Fly! Re-imagining Established Technology for Efficient and High Quality Biobanking	Paul Lomax	United Kingdom
PIT14	Unlocking the Value of Human Biospecimens via an Interoperable, Ontologicaly Unified IT System for Clinical, Biosample Analyses and Patient Health Status Data and Biosamples	Panagiotis Katsaounis	Greece
PRA1	Application of Automated Storage System in the Operation of Biobanking	Hongwei Peng	China
PRA2	Comparison of the Capacity of Stationary Liquid Nitrogen Storage Tank to Supply Liquid Nitrogen to Storage Devices in Different Operating Modes	Shanshan Zhang	China
PRA3	FW2018 Meets Biorepository Need for Automation, Accuracy, and Efficiency	Kareemah Suleiman	Nigeria
PRA4	Automation In Biobanking: Biospecimen Data Entry Using A Custom Script	Arsham Javaherdashti	Canada
PRM1	Leveraging Cloud-based LIMS for Managing Tissue Samples at RGCIRC Biorepository to Facilitate Cancer Research	Shonali Paul	India
PRM2	An Economics Approach To Defining Cancer Biobank Outputs	Amanda Rush	Australia
PRM3	Using e-Data Linkage for Clinical Annotation of Samples in Cancer Biobanks: A Pilot Study	Catherine Jane Kennedy	Australia
PRM4	Reusing Leftover Sera Obtained during the Health Care Process as Prospective Samples for Research Purposes or Technical Validations	Montserrat Torà	Spain
PRM5	Discovering hidden biobanks in our public hospitals.	Daniel Robin Catchpoole	Australia
PRM6	Adoption of an open source biobanking informatics platform to streamline the tissue repository data	Hui Keng Magdalene Koh	Singapore
PRM8	Comparison of tissue samples collection and storage in biobank and clinical departments	Zongning Zhou	China
PRM9	A Documentary Workflow Solution for Biobank Data Management	Tiziana Franchin	Italy
PRS1	Establishing a QA/QC Unit at MIDGAM: a Key to Standardization and Successful Downstream Applicability	Dr. Yehudit Cohen	Israel
PRS2	Survey amongst the Downloaders of the ISBER Best Practice 4th Edition	Daniel Simeon-Dubach	Switzerland
PRS3	The International Standard (ISO/AWI 20388 & 23105) for Animal and Plant Resource Collection, Processing, Preservation and Transportation in Biobank	Jason Chen	China
PRS4	Assessment of Standardized Processes - A Retrospective Analysis on Quality of DNA Samples from the Heidelberg CardioBiobank (HCB)	Tanja Heimberger	Germany
PRS5	Definitive Guidelines for Blood Collection Volumes in Human Research: A Collaborative Multicenter Experience	Rajeev Singh	United States





ID	TITLE	PRESENTER	COUNTRY
PRS6	Research in RNA Preservation of Pancreas Tissue	Lei Tian	China
PRS7	Implementation of ISO 20387 in Swedish Healthcare Integrated Biobanks	Kristina Lind	Sweden
PRS8	How much DNA Quality is Necessary for Biobanking?	Stephanie Maiwald	Germany
PRS9	Implementing ISO20387 in a Systems Toxicology Test Facility	Edouard Dargaud	Switzerland
PRM10	Repository Operations Management	Garth Llewelyn Swartz	South Africa
PRM11	Challenges of Bringing Together Multiple Individual Biobanks: Implementing a New Centralised Service Model	Judith Heads	Australia
PRM12	Needs and Requirements in Biobanking – Facing Challenges far beyond Biosamples	Steffi Sandke	Germany
PRM14	Do we Need an Expiration Date for Biobanks?	Franziska Vogl	Austria
PRM15	Education in Biobanking: Training and Knowledge Transfer for a Highly Interdisciplinary Field	Karine Sargsyan	Austria
PRM16	Biobanking in a SA Context: Implementation and Setup Challenges in a Developing Country	Engela Helena Conradie	South Africa
PRM17	Stakeholder Analysis of a Clinical Academic Biobank	Karine Sargsyan	Austria
PRM18	Dasman Diabetes Biobank Kuwait – Operations Overview	Devarajan Sriraman	Kuwait
PRM19	Getting involved in clinical research in a large comprehensive research Chinese hospital: how can biobanks help?	Manli Wu	China
PRM20	Creating a Toolbox for Standardized Project Management in a Rapidly Growing Biobank	Katheryn Shea	United States
PRM21	Accurate Modeling of the Institution-wide Impact of ULT Freezer Assets on Energy Use and Electricity Costs	Dean Shehu	United States



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ASIAN NETWORK OF RESEARCH RESOURCE CENTERS (ANRRC)

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The Asian Network of Research Resource Centers (ANRRC) was established in 2009 to promote cooperation among biological resource centers in Asia-Pacific region. The working goals are to provide a platform for networking and collaboration among experts and to meet the challenges of managing diverse biological resources, building an infrastructure for scientific researches, and preservation of biodiversity and genetic resources in the region.

ANRRC has 107 member institutes from 16 countries. Most of the members are publicly-funded bioresource centers, biobanks, biorepositories and culture collections dealing with microorganism, animal, plant, and human-derived specimens. There are four working committees; information management, biobanking of human-derived specimens, biodiversity & regulation and

international affairs & standardization. ANRRC is an affiliate partner of ISBER.

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AUTOSCRIBE INFORMATICS

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The Matrix Gemini Biobank Management System from Autoscribe Informatics tracks the collection, processing, storage and distribution of biospecimens and associated data under exacting regulatory control. Samples are tracked at all times to form a complete chain of custody. Aliquots, pooled samples and derivatives of each sample may be associated and closely monitored, along with patient genealogy records and other key metadata to identify samples for research. The Matrix Gemini Biobank Management System allows easy update of system workflows and screens using the unique Matrix configuration tools (no coding involved). The system can be easily be extended to include a full LIMS capability to manage laboratory testing, where required.

Key benefits include: A single system for storing and maintaining samples leading to significant improvements in traceability and time saving; Dual desktop/browser user interfaces allow remote authorized users to interact with the system e.g. add sample collection data, search for suitable samples for a study etc.; Sample inventory updated continuously thus offering researchers up-to-date sample availability; Allows full traceability of samples, subsamples and their derivatives thus providing compliance with regulatory demands e.g. Human Tissue Act or similar. To find out more please visit Autoscribe Informatics on booth #18.



BIOBANK BRANCH, CHINA MEDICINAL BIOTECH ASSOCIATION (BBCMBA)

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The Biobank Branch, China Medicinal Biotech Association (BBCMBA) was established in 2009 with a vision to treasure biospecimens, implement standards, apply full utilisation of resources and protect property rights. BBCMBA is a national committee which works on promoting the standardisation of biobanking in



China. The slogan of BBCMBA is: Industry standard, Education and training, Academic communication and International cooperation.



BEIJING IBIO-GENE TECHNOLOGY CO, LTD

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Beijing IBIO-GENE Technology Co., Ltd is committed to "biobank building and automatic sample management". Headquartered is in Beijing, it provides a complete solutions to institutions of China (mainland China, Hong Kong, Macao and Taiwan) for research, medical, pharmaceutical and government.



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Biologix Group Limited is specialized in the R & D, production and sales of complete biobanking solutions and high-quality laboratory supplies. CryoKING, a brand by Biologix, offers one-stop biobanking services, which are characterized by integrated biobanking designs, full biobanking supplies, and comprehensive biobanking training. With professional designs, advanced techniques, and safe & efficient management, CryoKING covers every phase of biobanking and offers complete biobanking products to general users.



BIOSIGMA SRL

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Based on MEMS technology, the Bluechiip tag contains no electronics and so, it is impervious to autoclave, gamma sterilisation, humidification, centrifuging and cryogenic storage unlike typical RFID. Compared to traditional tracking technologies like labels or barcodes, Bluechiip does not require line-of-sight for the readings. Therefore, it can be read through ice buildup.



BROOKS LIFE SCIENCES

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Brooks Life Sciences, a division of Brooks Automation, (Nasdaq: BRKS) provides the lifescience 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.



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Today, worldwide more than 6,000 employees are working on this permanent challenge at over 90 locations on all continents. Bruker continues to build upon its extensive range of products and solutions, its broad base of installed systems and a strong reputation among its customers. Being one of the world's leading analytical instrumentation companies, Bruker is strongly committed



to further fully meet its customers' needs as well as to continue to develop state-of-the-art technologies and innovative solutions for today's analytical questions.



CHART MVE

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CNGB/BGI

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Beijing Genomics Institute at Shenzhen, a non-profit institution incorporated under the laws of China ("BGI-Research"). China National Gene Bank (CNGB), which was approved by National Development and Reform Commission (NDCR) of People's Republic of China, and ran and administered by BGI-Research, was established in October 2011 with a vision to act as a platform for integrating resources and capabilities to support the development of the life sciences and bio-economy in China and to lead the innovation, exploration and testing of new genomics technologies. CNGB's mission is to collect, preserve and utilize genomic resources, and to build a network fostering global communication and collaboration on biodiversity conservation and genetic resources utilization.



CRYOPAL

47, 48

Cryopal, subsidiary of Air Liquide group, has been dedicated to the development and manufacturing of cryogenic storage solutions for more than 50 years. Cryopal offers complete ranges of cryogenic equipments for the preservation and transportation of biological samples as well as storage and transfer of cryogenic liquids. Cryopal is a key actor in cryobiology applications including medically assisted reproduction, oncology, research, immunology, gene therapy, tissue banking, bone marrow, stem cells and cord blood. Cryopal also proposes a full range of services including cryogenic room design and audit, training, preventive and curative maintenance, equipment rental and turn-key solutions. Its subsidiary, Cryopal Biobanque Solutions, offers the safe storage of your biological samples in a secure dedicated building.

Bio-One, Cryopal's distributor and services provider for China, supplies cutting-edge solutions in cell biology, in vivo imaging of small animals, liquid handling technology in R&D and urodynamic equipments for hospitals.



CRYOTHERM GMBH & CO. KG

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Welcome to Cryotherm! Since 55 years, we are the specialists for the construction and manufacturing of vacuum super insulated cryobio repository freezers, liquid nitrogen supply systems and transfer pipes for cryogenic liquid gases that are used in many different industries such as food industry, chemical facilities, medicine, research or biotechnology. We develop innovative and market-oriented solutions for our customers' individual processes. Your application - our solution. Your demand - our support for you. Contact us today for more information about Cryotherm. 55 years - Excellence in Engineering - Made in Germany.



DACLAN BIOTECH

44

Danclan Biotech is committed to cryogenic storage and monitoring system. We are dedicating our passion, talent and energy to a better solution for cryogenic preservation. All the inspirations of Danclan origine from concerns of users, including bio-bank managers, IVF center administrators, hospital doctors, university professors and institute researchers.

The brand newly designed CryoSmart storage system provides a super low evaporation rate, real-time liquid nitrogen level (in mm) display, and internal temperature display for an aluminum cryo freezer (from 2400 2ml vails to 6000 vails). The system is connect with unique "KIRIN" cloud platform with wireless technologogy. Automatic filling system is also available for this system. Thanks to its advanced liquid level measuring technology, vapor phase storage is realized for an aluminum freezer.

Besides, Danclan also developed "plug type liquid level and temperature monitor" for standard liquid nitrogen tanks. Liquid level and temperature can be monitored on a standard tank very conveniently. Danclan provides customized solution for any brand tanks. You may use a Thermo tank, a MVE tank, or a Washington tank. We always have a solution for your tank. Monitor your tanks and samples online without changing a new tank. That's the unique value we are providing to customers.

eppendorf

EPPENDORF CHINA LTD.

10, 11

Eppendorf is a leading life science company that develops and sells instruments, consumables, and services for liquid-, sample-, and cell handling in laboratories worldwide. Its product range includes pipettes and automated pipetting systems, dispensers, centrifuges, mixers, spectrometers, and DNA amplification equipment as well as ultra-low temperature freezers, fermentors, bioreactors, ${\rm CO}_2$ incubators, shakers, and cell manipulation systems. Consumables such as pipette tips, test tubes, microtiter plates, and single-use bioreactor vessels complement the range of highest-quality premium products.

Eppendorf was founded in Hamburg, Germany in 1945 and has more than 3,100 employees worldwide. The company has



subsidiaries in 26 countries and is represented in all other markets by distributors.



FANGYE TECHNOLOGY

37

Fangye Technology Development Co.,Ltd. is professional factory of plastic labwares, including SBS 2D cryovials, 2D cryovials, common cryovials, saliva collector, centrifuge tubes, pipette tips, PET bottles, etc. We pay great efforts in developing latest products to meet your demand.



FARRAR SCIENTIFIC CORP.

45

1

Farrar Scientific is a group of engineers and technicians based in Marietta, OH. We developed and grew our company through the design and manufacturing of specialty high-performance, low temperature refrigeration systems for the Pharmaceutical, Biotech, Research, CRO's and CMO's, with need-based custom capabilities.

Collectively we bring over 100 years of experience in the design and remediation of high performance, low temperature conditioning systems.

Farrar Scientific and Lowenco, world leading manufacturers of low temperature controlled storage and rate freeze/thaw chambers, bring together state of the art low temperature cold storage solutions for the Pharmaceutical, Bioprocessing and Biorepository market.



FLUIDIGM CORP CHINA

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 CyTOF® and microfluidics capabilities, we provide an unprecedented view into health and disease through our unique combination of innovative mass cytometry, tissue imaging and genomics solutions.

Researchers depend on our systems to uncover important disease pathways, find valuable new molecular biomarkers and deeply profile important cell populations down to single cell resolution. 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.



GENEPOINT BIOLOGICAL TECHNOLOGY (SHANGHAI) CO., LTD.

38, 39

Genepoint Biological Technology (Shanghai) Co, Ltd is driven by innovative technology and focuses on the new initiatives, technology application and process control on cryogenic biomaterial, which includes the latest generation of cryogenic cell storage automation system and total solution of alternative energy options. We are committed to promote the intelligence, automation, and IoT technology and explore the new operation mode in the cryogenic biomaterial system. The improved quality and well managed biomaterials would finally assist the step up of Precision Medicine.

Our core business includes:

- Automated Storage systems for Cryogenic Biomaterial
- Lab environment monitoring systems
- Customer tailored Biobank design and turn-key projects
- Logistics and data tracking services
- Safety Management consulting services



GREINER BIO-ONE INTERNATIONAL GMBH

49

Greiner Bio-One specialises in the development, production and distribution of high-quality plastic laboratory products. The company is a technology partner for hospitals, laboratories, universities, research institutes, and the diagnostic, pharmaceutical and biotechnology industries. Greiner Bio-One is split into three divisions – Preanalytics, BioScience and Sterilisation. As an Original Equipment Manufacturer (OEM), ea of custom-made design developments and production processes for the life sciences and medical sectors. In 2017, Greiner Bio-One International GmbH generated a turnover of 473 million euros and had over 2,200 employees, 26 subsidiaries and numerous distribution partners in over 100 countries. Greiner Bio-One is part of Greiner AG, which is based in Kremsmünster (Austria).

以文、生物医疗 Hojer Biomedical

HAIER BIOMEDICAL

20. 21

Haier Biomedical or Qingdao Haier Biomedical Co., Ltd. was founded to focus on design, manufacturing, marketing and sales of low temperature storage equipment for biomedical samples. Using the concept of IoT, the company has become a provider of comprehensive solutions for various biotechnological challenges. Operating globally, Haier Biomedical provides complete storage solutions for biological sample banks, blood safety, vaccine safety, medical supplies and reagent safety, as well.

The company tackles new national challenges and meets high demands on blood supply management and vaccine safety, designing and implementing intelligent global networks and safe solutions for IoT-based blood management systems and vaccinations.



As of the first quarter of 2019, the company's storage solutions for biological sample banks are found in strategic projects of national importance such as China Bone Marrow Bank, China National Gene Bank, and Chinese Genetic Resources Bank. Haier-supported sample storage facilities are also operating in Shanghai Ruijin Hospital, Beijing 301 Hospital, and West China Hospital of Sichuan. Haier low-temperature equipment and sample management systems have been installed in over five-hundred bio-storage banks. The company has significantly contributed to the advancement of China's biological technology and research.

HAMILT®N STORAGE

HAMILTON STORAGE

42

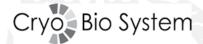
Hamilton Storage provides ultra-low temperature automated sample management solutions for the life science industries. Our product line includes -80°C and -20°C automated storage systems, decapping and barcode reading devices, as well as consumables. Visit us to learn about our latest products for biobanking: SAM HD for high-density -80°C sample storage in a small footprint, ColdScan on the LabElite® I.D. Reader for 2D barcode reading of frozen samples, and the 6-channel head on the LabElite decapping devices to decap 24-well tube racks. Our systems integrate with Hamilton Robotics' automated liquid handling workstations for complete biobanking solutions.



HANGZHOU HOUZE BIOTECHNOLOGY CO., LTD.

Hangzhou Houze Bio-Technology Co., Ltd. is a high-tech biological enterprise integrating sales, promotion and after-sales service of scientific instruments, consumables and reagents. The company was established in June 2013. With the excellence of product quality and the development of the marketing team, the market space has gradually expanded, the marketing network covers the whole country, and the high-quality and dedicated service has won the trust and praise of many companies, and has risen rapidly in the field of biological equipment.

With the core value of "customer first, service attentively", the company always takes the customer service and provides comprehensive service as the service tenet, and improves the technical service level in the process of continuous development and improvement. We believe that through our continuous efforts and pursuit, we will be able to achieve mutual benefit and win-win with service providers.



HONG KONG AI TECHNOLOGY LTD (CRYOBIOSYSTEMS)

12

Exclusively dedicated to Life Science and Biodiversity, Cryo Bio System strives to provide scientists and physicians with the groups' expertise in the field of cryopreservation of biological samples,

with innovative and High Security products.

With 30 years of experience, Cryo Bio System is today recognized internationally for the quality of its products.

Our complete range of products intended for human application allows the freezing at very low temperature of any biological sample whatever its physical state. Our unique high-security concept for long-term cryopreservation guarantees unsurpassed security and storage quality.

Cryo Bio System is present in more than 70 countries through 5 subsidiaries (Italy, the Netherlands, the United States, India and China) and a network of high performance distributors.



HOPE (SHANGHAI) BIOTECH CO., LTD.

23

HOPE BIOTECH Co., Ltd. specializes in cryopreservation of biological samples and human assisted reproductive technology. It specializes in clinical biological samples, cells and stem cells, human sperm, eggs and embryos, and bacteria. Long-term preservation of viruses and viruses provides a total solution: technical consulting, solution design, hardware resource integration and digital platform construction. Through strategic cooperation with international first-class hardware and software suppliers, Hope Biotech is based on ultra-low temperature closed storage technology, combined with international advanced biological bank management system to achieve long-term, safe, stable and traceable preservation of biological samples for Chinese users. Hope Biotech provides tailor-made intelligent management system for biological samples. Hope Biotech has a team of professional software, hardware engineers and management team with rich industry experience. We are committed to building Chinese biobanks.



INTERNATIONAL SOCIETY FOR BIOLOGICAL AND ENVIRONMENTAL REPOSITORIES 66, 6

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.



LABVANTAGE SOLUTIONS INC.

13, 14

LabVantage Solutions, Inc. is the leading global laboratory informatics provider. Our industry-leading LIMS and ELN solution and world-class services are the result of 35+ years of experience in laboratory informatics. LabVantage offers a comprehensive portfolio of products and services that enable companies to innovate faster



in the R&D cycle, improve manufactured product quality, achieve accurate recordkeeping and comply with regulatory requirements.

LabVantage is a highly configurable, web-based LIMS/ELN that powers hundreds of laboratories globally, large and small. Built on a platform that is widely recognized as the best in the industry, LabVantage can support hundreds of concurrent users as well as interface with instruments and other enterprise systems. It is the best choice for industries ranging from pharmaceuticals and consumer goods to molecular diagnostics and bio banking. LabVantage domain experts advise customers on best practices and maximize their ROIs by optimizing LIMS implementation with a rapid and successful deployment.



LBD LIFE SCIENCES LIMITED

54, 55, 56

LBD Life Sciences China Limited is the subsidiary of TTP Labtech, focusing on serving customer in biotech/pharmaceutical companies and research institutions in China.

TTP Labtech has firmly established itself as a global developer and manufacturer of high quality, robust and innovative automated laboratory equipment for both the academic and industrial sectors of pharmaceutical and biotech research.

TTP Labtech offers a portfolio of products that minimise assay volumes, reduce material handling costs and put the discovery tools back in the hands of the scientist. LBD is also the distributor of some excellent instruments and reagents including MSD BioMicroLab KBiosystems TAP Biosystems Titian and EDC CV8000 Micronic and Ziath.



LICONIC INSTRUMENTS

15

Liconic Instruments (Booth#15) is known worldwide as a leading manufacturer of automated plate, tube, and vial stores for life science sample management. Customers include top pharmaceuticals, biotech companies, CROs, governments, and academic research institutes.

Liconic creates products that address the growing complexity of laboratory automation. Building on 25 years of providing automated solutions, Liconic offers a robust line of biobanking systems, each built "fit-for-purpose".

The BioLix™ line includes:

- STT (Fully automated biorepository, smallest footprint)
- SAB (High-density, high-throughput, rack based)
- FAB (High-density, high-throughput, tube based)
- STC (Widest range of capacities and applications)
- STV (Fully automated, wide capacity range, cryogenic (<-180°C) storage)



LVL TECHNOLOGIES

43

LVL technologies GmbH & Co. KG is a supplier of consumables for laboratory automation and automated liquid handling since 1986. The main focus of our product range are sample storage solutions in the standardized 96 SBS Format like: Deep Well Plates, Reservoirs, Microtiter Plates, alphanumeric coded tube rack system and our 2D Tube Rack System SAFE®.

The product line of the 2D coded tubes SAFE® launched in 2013. Since then we were able to win numerous customers from sectors like human and veterinarian diagnostics, biopharma, transfusion medicine, clinical chemistry and other research fields who are now satisfied clients.

At the moment LVL has to offer various volumes starting at 200 μ up to 5ml, external and internal thread types and a highly customizable 2D tube rack system to fit all the different needs of our customers. Associated infrastructure such as scanners and cappers are also part of the product range. This year we are launching our brand new 2D 200 μ Tube. Which is the next complementation of the 2D Tube Family SAFE®.

To ensure that all of our 2D Tubes SAFE® will work with your automated storage system we can provide a certificate of compatibility.



MGI

62

MGI Tech Co., Ltd. (MGI), a subsidiary of BGI Group, is committed to enabling effective and affordable healthcare solutions for all. Based on its proprietary technology, MGI produces sequencing devices, equipment, consumables and reagents to support life science research, medicine and healthcare.

MGI's multi-omics platforms include genetic sequencing, mass spectrometry and medical imaging. Providing real-time, comprehensive, life-long solutions, its mission is to develop and promote advanced life science tools for future healthcare.

MICRONIC

MICRONIC

31

Micronic is an independent organization with its headquarters located in Lelystad, the Netherlands. Micronic produces and assembles its labware in certified Class 7 clean rooms which are located in the Netherlands and the United States. Our labware equipment is also assembled in-house. Micronic is an ISO 9001 and 14001 certified company.

Micronic products are applied worldwide in the (research) laboratories of university hospitals, forensics, agricultural, veterinary and governmental institutes, as well as companies in biotech, food, chemical and pharmaceutical industries.



Origincell® 原能细胞

ORIGINCELL TECHNOLOGY GROUP CO.,LTD. 33, 34

Origincell Technology Group Co.,Ltd. was jointly founded by well-known entrepreneur Jianguo Qu and Canature Environmental Products Co., Ltd. Origincell is committed to four major business sectors: the R&D and manufacturing of world-leading cell biology automation, automated storage, cell preparation, and cell medical equipment; R&D, products, clinical application, and industrialization of world-leading cell biology technologies; nationwide regional clinical cell resource bank network construction, and cell biology storage, operation and management; incubation and investment in excellent cell biology projects.

Origincell is headquartered in the Life Science Industry Park in the core area of Shanghai Zhangjiang Hi Tech Industrial Development Zone. The park occupies a land area of over 60 mu and a construction area of over 70,000 square meters. Origincell has obtained the ISO9001 certification of China Quality Certification Center and boasts clinical 10-million-grade large cell resource storage banks and cell preparation centers, as well as internationalstandard cell biology product quality inspection platforms, cell biology public precise instrument & equipment platforms, and innovative and open state-level R&D lab platforms. Origincell has established multiple joint labs and cell therapy clinical centers with Zhongshan Hospital, Changzheng Hospital, Institute Pasteur of Shanghai, Chinese Academy of Sciences, Shanghai University of Medicine & Health Sciences, Fudan University, etc., gathering first-rate leading enterprises and outstanding talents in the field of cell biology from home and abroad. Their shared goal is to jointly create replicable interconnected model bases in Zhangjiang for the cell biology industry.

Origincell, guided by the founding idea that "Cell healthy sure we are! Cell young so we are! Cell happy longevity! " and the entrepreneurial mission of "No paupers in the world, No patients on the earth ", will work with all our colleagues in the life science industry to jointly fight for the noble goal of constructing a beautiful and healthy world for all people.

Panasonic

ALPHAVITA BIO-SCIENTIFIC CO.,LTD. (PANASONIC)

26, 27

Alphavita Bio-scientific (Dalian) Co.,Ltd.has 2 core research and development teams, 7 marketing centers, 200 partners and 1000 terminal customers.Company's business began in the low temperature storage products research and development, production and sales, can provide range of - 192 ~ 8 biological medical cryogenic storage products. We provides cryogenic storage solutions for biological sample Banks, blood, vaccines, pharmaceutical reagents and laboratory scenes, further improves the intelligent level of products and equipment based on the Internet of things technology, Integration of new generation information technology, Internet of things technology and manufacturing.



PERKIN ELMER

69

PerkinElmer is a global company committed to innovating for a healthier world. Our dedicated team of 12,000 employees worldwide are passionate about providing customers with an unmatched experience as they help solve critical issues especially impacting the diagnostics, discovery and analytical solutions markets.

PerkinElmer offers instruments, reagents, assay platforms, and software to hospitals, medical labs, clinicians, and medical research professionals to help improve the health of our families. In addition, with applications expertise across your genomics workflow – from extraction to analysis - we enable the generation of accurate, reproducible results critical to all researchers.

Specifically, PerkinElmer chemagen Technology is a key player in the field of automated nucleic acid isolation with a vast experience in developing solutions for DNA and RNA purification for applications as diverse as sequencing, HLA typing, biobanking, and pathogen detection.

Together we can help you advance innovation in genomics research, offering complete workflow solutions that enable researchers to translate assays into clinical applications.

рнсы

PHC CORP (SHANGHAI)

60

PHC Corporation (Shanghai) Ltd. is a wholly-owned subsidiary of PHC Holdings Corporation in China. Its predecessor is the scientific research and medical department of Sanyo Electric Machinery International Trade Co., Ltd. and it has been providing well-known laboratory and medical storage equipment in China for a long time. Our core products include ultra-low temperature freezers, blood bank refrigerators, pharmaceutical refrigerators, Co2 incubators, and laboratory autoclaves, flake ice maker, etc.

In order to meet the development needs of biological sample bank, precise medical treatment and cell therapy research, the company has been developing new technologies and developing many new products in recent years. In 2015, it was certified by ISO17025 CNAS and Shanghai Technical Supervision Bureau. It officially provided calibration services for experimental equipment products for customers, and provided overall solutions for major medical institutions, research institutes and related enterprises.

In 2018, our business and product brand changed to "PHCbi".





SHANGHAI AVANTECH BIOSCIENCE CO., LTD

Established in 2000, Shanghai Avantech Biotechnology Co., Ltd. ("Avantech") is an overall service provider in biobanks. Avantech adheres to the business philosophy of "specialty, innovation and service" and adopts the business model of "product + service" to provide professional, comprehensive and efficient overall solutions for customers with the planning and construction, product supply, operation support, transformation and application of biological sample.

At present, Avantech has set up resident offices in many large and medium-sized cities in China, and provided products and services for more than 4,000 clients. We have constructed the first million-level automatic biobank in China, and the biobank has operated successfully for three years.

Thermo Fisher

THERMOFISHER

52

30

Thermo Fisher Scientific Inc. (NYSE: TMO) is the world leader in serving science, with revenues of more than \$23 billion and approximately 70,000 employees globally. Our mission is to enable our customers to make the world healthier, cleaner and safer. We help our customers accelerate life sciences research, solve complex analytical challenges, improve patient diagnostics, deliver medicines to market and increase laboratory productivity. Through our premier brands – Thermo Scientific, Applied Biosystems, Invitrogen, Fisher Scientific and Unity Lab Services – we offer an unmatched combination of innovative technologies, purchasing convenience and comprehensive services. For more information, please visit www.thermofisher.com.



TSUBAKIMOTO CHAIN

24

Tsubakimoto Chain develops and installs automatic storage systems.

We have sold appoximately 70 units to biobanks, universities and pharmaceutical companies.

Large volumes of DNA samples and cells are kept in micro tubes and are stored in a refrigerated environment.

2D codes can be used for preventing a pick failure.

We have a -150 °C automated, ultra-low temperature storage unit to our lineup.

With liquid nitrogen cooling, you can keep your samples safely for extended periods.

Picking is also carried out within the -150 $^{\circ}\text{C}$ environment, so the samples are not exposed.

LABS

UNCHAINED LABS

51

Here's the deal. We're all about helping biologics researchers break free from tools that just don't cut it. Unleashing problem-tackling products that make a huge difference in the real science they do every day. That's our mantra, our promise and we own it.



WORTHINGTON INDUSTRIES

16, 17

Worthington is proud to offer secure, smart cold chain sample storage, transportation and data management. All products are shipped with care to customers around the globe from its Theodore, Alabama facility. For more information on the complete line of liquid nitrogen storage freezers, refrigerators, dewars, shippers and accessories, visit WorthingtonIndustries.com/LifeSciences.

Worthington Industries (NYSE: WOR) is a leading global manufacturing company with 2018 fiscal year sales of \$3.6 billion. Headquartered in Columbus, Ohio, USA, Worthington, and its 12,000 employees worldwide, has more than 60 years in manufacturing excellence with a reputation for high-quality products, rigorous safety and regulatory compliance and world-class customer service for the alternative fuels, agriculture, automotive, construction, industrial gas, oil and gas, and now life sciences markets.



ZHEJIANG SORFA LIFE SCIENCE RESEARCH CO., LTD

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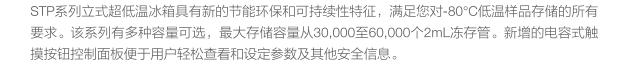
We manufacture cryogenic vials and accessories for biobanking.

With manufacturing experience over 10 years, our cryovials are available in regular type, 2D barcoded type and SBS format type and we are continuing expanding our product lines. OEM serivice is available.



Thermo Scientific Standard Performance Ultra-Low Freezer (STP Series) Thermo Scientific 标准性能超低温冰箱 (STP系列)

Providing the dependability your -80°C storage requires with new energy-savings and sustainability features, our STP ultra-low freezers feature a range of upright models, maximizing storage capacity from 30,000 up to 60,000 2mL vials. A newly enhanced capacitive touch button interface enables easy access to setpoints and other performance and security information.









热线 800 810 5118 电话 400 650 5118 www.thermofisher.com





ISBER PROVIDES THE FOLLOWING TOOLS TO THE BIOBANKING COMMUNITY:

SELF-ASSESSMENT TOOL (SAT) FOR REPOSITORIES

SAT for ISBER Best Practices for Repositories, 4th Edition coming soon!

IBBL'S 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 and individualized report which includes the results and statistics obtained by all biorepositories who have participated.

ALL ISBER TOOLS ARE AVAILABLE FREE TO MEMBERS!

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.

VISIT ISBER.ORG



Abeyance Cryo Solutions | Preserving Potential

DESIGNED FOR SAMPLES BY USERS

SIMPLE & SECURE -190°C LN2 VAPOR STORAGE

INCREASE CAPACITY | IMPROVE ERGONOMICS | STAY CONNECTED









Top 10 Pharma



Professor, Immunology



Top US Cancer Center



"My favorite freezer to use!" Pediatric Transplant Nurse





Major Public Cord Blood Bank







您将如何 对您的样本 进行管理?

How Are You Managing Your Sample Collection?

我们提供全自动化 样本存储方案.

We offer automated sample storage solutions.



Hamilton BiOS®

-80°C大型自动化 样本存储系统

Automated Sample Storage down to -80°C



SAM HD

-80°C小型自动化 样本存储系统

Automated Sample Storage down to -80°C



Verso®

-20°C中大型自动化 样本存储系统

Automated Sample Storage down to -20°C



LabElite® DeCapper

自动化开盖仪 Automated Screw Cap Decapper



STORAGE

www.hamiltoncompany.com 800-310-5866 sales@hamilton-storage.com



LabElite® I.D. Reader with ColdScan

自动化条码扫描仪 Automated Barcode Reading

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CryoKING, a brand by Biologix, offers the complete solution of biobanking which is characterized by integrated biobanking designs, full biobanking supplies and comprehensive biobanking trainings. With professional designs, advanced techniques, and safe & efficient management, CryoKING covers every phase of biobanking and offers complete and one-stop biobanking services.

Biologix Group Limited



NOTES		





腾泉作为世界知名企业TTP Labtech在大中华区的总部和中国技术中心,目前,全球范围内包括牛津。剑桥、清华、北大、中科院系统、罗氏、恒瑞、药明康德等在内的众多知名大学、科研院所、跨国药企和国内知名企业均和我们保持长期良好的合作关系。

气动式自动化存储系统 Sample management



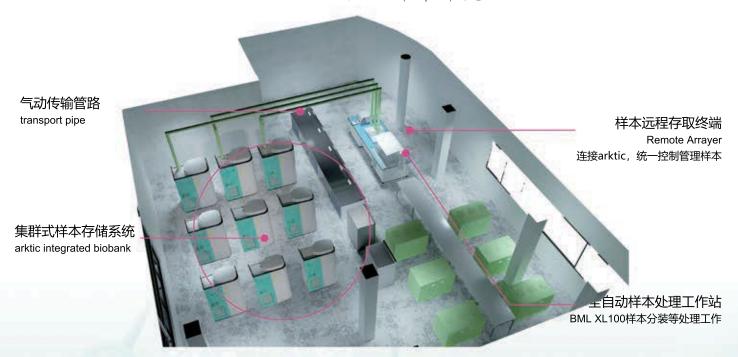
arktic -80°C

- 令 气动传输 Air driven, "Cherry Picking"
- 商效式闪电出库 Each vial retrieved in seconds
- 最高存储密度 Capacity as high as 200,000 tubes/set
- 多台并联,统一管理 Manage space and overheads efficiently
- ▶ 让样本"飞"-独创远程传输 Remote delivery system



comPOUND -20°C

百万级自动化生物样奉库建议方案



稳定性:独立运行,集群式管理,降低运营风险

灵活性: 不受空间制约, 摆放不同楼层

独立性: 不同实验室样本分中心管理, 互不干扰

经济性:逐年递增的扩容计划降低维护成本

上海腾泉生物科技有限公司 LBD Life Sciences China Limited

电话 Tel□021-51088608

网址 Web□www.lbd-life.com

Welcome to our booth 54-56! Activities the scene, where exquisite little gift!





"ALL ABOUT THE SAMPLE"

一切为了样本智能化样本解决方案,确保样本完整性。

- ❷ FluidX 二维码样本冻存管
- ❷ 及冻存盒,高密度冻存板
- ❷ 通用二维码扫码仪
- ❷ 多种规格开关盖机



自动化存储解决方案

深低温冷冻及冷链解 决方案 样本管理软件解决 方案 样本存储, 实验室服务及运输

样本耗材及仪器设备

Brooks 展台: 61 和 70

了解更多 - www.brookslifesciences.com 联系我们 - www.brookslifesciences.com/contact-us