2023 Annual Meeting
WNAR / IMS
June 18 – 21, 2023

Program & Schedule

Hilton Anchorage
Anchorage, AK
**WNAR/IMS 2023**  
**Conference Schedule**

Please see the Anchorage Hilton map on the last page of the program book.

WiFi Network: WNAR  
Password: BeiGene2023

**WNAR 2023 Post-conference Survey**  
**WNAR Volunteer Interest Survey**

---

**Sunday, June 18, 2023**  
Registration on the Promenade 12:00-1:00pm and 5:00-7:00pm

<table>
<thead>
<tr>
<th>Time</th>
<th>Dillingham / Katma Room</th>
<th>King Salmon / Illiama Room</th>
<th>Aspen/ Spruce room</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00 - 3:00</td>
<td>Short Course 1</td>
<td>Short Course 2</td>
<td></td>
</tr>
<tr>
<td>3:00 - 3:15</td>
<td></td>
<td>Break</td>
<td></td>
</tr>
<tr>
<td>3:15 - 5:00</td>
<td>Short Course 1</td>
<td>Short Course 2</td>
<td>Regional Committee Meeting (4:00-5:00)</td>
</tr>
<tr>
<td>5:00-6:00</td>
<td></td>
<td></td>
<td>Student Committee Meeting</td>
</tr>
<tr>
<td>6:00-8:00</td>
<td>Welcome Reception and 75th WNAR anniversary celebration (Top of the World and Chart Room)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

WNAR = WNAR Invited Session  
IMS = Institute of Mathematical Statistics  
ST = Speed Talk Session
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Contributed Session</td>
</tr>
<tr>
<td>SP</td>
<td>Student Paper Session</td>
</tr>
</tbody>
</table>
**Monday, June 19, 2023**

Registration on the Promenade 8:00-10:30am

<table>
<thead>
<tr>
<th>Time</th>
<th>Katmai Room</th>
<th>Dillingham Room</th>
<th>King Salmon Room</th>
<th>Illiama Room</th>
<th>Aspen Room</th>
<th>Spruce Room</th>
<th>Lupine Room</th>
<th>Fireweed Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 - 10:15</td>
<td>WNAR 1</td>
<td>WNAR 2</td>
<td>WNAR 3</td>
<td>WNAR 4</td>
<td>WNAR 5</td>
<td>SP 1</td>
<td>ST 1</td>
<td></td>
</tr>
<tr>
<td>10:15 - 10:30</td>
<td>Coffee Break on the open area of the 2nd Floor (near Alaska Ballroom)/Poster set-up</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:30 - 12:15</td>
<td>WNAR 6</td>
<td>WNAR 7</td>
<td>WNAR 8</td>
<td>WNAR 9</td>
<td>WNAR 10</td>
<td>SP 2</td>
<td>ST 2</td>
<td>IMS 1</td>
</tr>
<tr>
<td>12:25 - 2:05</td>
<td>Poster Session (Alaska Ballroom) with lunch (odd posters 12:25-1:15, even posters 1:15-2:05) / or Lunch on own</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:15 - 4:00</td>
<td>WNAR 11</td>
<td>WNAR 12</td>
<td>WNAR 13</td>
<td>WNAR 14</td>
<td>IMS 2</td>
<td>SP 3</td>
<td>WNAR 15</td>
<td></td>
</tr>
<tr>
<td>4:00-4:15</td>
<td>Coffee Break on the open area of the 2nd Floor (near Alaska Ballroom)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:15-5:30</td>
<td>Presidential Invited Address (Alaska Ballroom)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:30-8:00</td>
<td>Student Social and Dinner (off site)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*video/zoom (≥ one presentation)

**Abbreviations**

WNAR = WNAR Invited Session
IMS = Institute of Mathematical Statistical
ST = Speed Talk Session
C = Contributed Session
SP = Student Paper Session
<table>
<thead>
<tr>
<th>Time</th>
<th>Katmai Room</th>
<th>Dillingham Room</th>
<th>King Salmon Room</th>
<th>Iliama Room</th>
<th>Aspen Room</th>
<th>Spruce Room</th>
<th>Fireweed Room</th>
<th>Lupine Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 - 10:15</td>
<td>WNAR 16</td>
<td>WNAR 17</td>
<td>WNAR 18</td>
<td>WNAR 19</td>
<td>IMS 3</td>
<td>SP 4</td>
<td>WNAR 20</td>
<td></td>
</tr>
<tr>
<td>10:15 - 10:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coffee Break</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:30 - 12:15</td>
<td>WNAR 21</td>
<td>WNAR 22</td>
<td>WNAR 23</td>
<td>WNAR 24</td>
<td>IMS 4</td>
<td>SP 5</td>
<td>WNAR 25</td>
<td>IMS 5</td>
</tr>
<tr>
<td>12:15 - 1:45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lunch on own</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional Advisory Board Lunch (Top of the World Room)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Investigator's Lunch (Chart Room)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:45 - 3:30</td>
<td>C 1*</td>
<td>C 2</td>
<td>C 3</td>
<td>WNAR 26</td>
<td>IMS 6</td>
<td>WNAR 27</td>
<td>WNAR 28</td>
<td></td>
</tr>
<tr>
<td>3:30-3:45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coffee Break</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:45 - 5:30</td>
<td>WNAR 29</td>
<td>WNAR 30</td>
<td>WNAR 31</td>
<td>WNAR 32</td>
<td>IMS 7</td>
<td>WNAR 33</td>
<td>WNAR 34</td>
<td>Student Comm. Meeting</td>
</tr>
<tr>
<td>6:00-9:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conference Banquet (Alaska Ballroom)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*video/zoom (≥ one presentation)

**WNAR = WNAR Invited Session**

**IMS = Institute of Mathematical Statistics**

**ST = Speed Talk Session**

**C = Contributed Session**

**SP = Student Paper Session**
<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30-8:30</td>
<td>Katmai Rooms</td>
<td>Continental Breakfast for Students and Sponsors: Exploring Industry Opportunities (Denali Room)</td>
</tr>
<tr>
<td>8:30 - 10:15</td>
<td>WNAR 35, WNAR 36, WNAR 37, WNAR 38, WNAR 39</td>
<td>WNAR 35, WNAR 36, WNAR 37, WNAR 38, WNAR 39</td>
</tr>
<tr>
<td>10:15 - 10:30</td>
<td></td>
<td>Coffee Break</td>
</tr>
<tr>
<td>10:30 - 12:15</td>
<td>WNAR 40, WNAR 41*, WNAR 42, WNAR 43, WNAR 44</td>
<td>WNAR 40, WNAR 41*, WNAR 42, WNAR 43, WNAR 44</td>
</tr>
</tbody>
</table>

*video/zoom (≥ one presentation)

- WNAR = WNAR Invited Session
- IMS = Institute of Mathematical Statistics
- ST = Speed Talk Session
- C = Contributed Session
- SP = Student Paper Session
President’s Welcome
June 2023

I am so excited to welcome you to the 2023 WNAR/IMS Conference in beautiful Anchorage, Alaska! This event was originally planned for 2020 and we now have the pleasure of finally gathering together in person. I would like to acknowledge the Indigenous peoples of the lands where WNAR members work and gather and in particular the Dena’ina Athabascan people of the lands of Anchorage. We are committed to building respectful and reciprocal relationships with these communities.

We have a packed and exciting program this year. Our scientific committee has prepared a sizable number of invited (51), contributed (3), and speed talk/poster (2) sessions. An impressive group of students (24) will deliver talks as part of the Student Paper competition. We have 2 short courses: *IT tools and best practices for statistical professionals* by Angelique Zeringue and *Real-World Evidence in Drug Development and Regulatory Decision-Making: Current Status, Challenges, and Opportunities* by Jie Chen. On Sunday evening, we will celebrate the 75th Anniversary of WNAR at the opening mixer, and on Monday afternoon the presidential invited lecture by Dr. Kimberly Sellers titled *Dispersed Methods for Handling Dispersed Count Data* will take place.

We give immense gratitude and appreciation to many wonderful colleagues who have donated their time to make this event possible. This includes our Local Organizer, Jiaqi Huang, and team members Mengli Xiao, Jignshen Wang, Jiayuan Shi, Randy Xin and Heather Cluff. I thank the Department of Biostatistics and Informatics at the University of Colorado for supporting the local organizing committee. I appreciate the enormous effort of the Scientific WNAR Program Committee (Mengli Xiao, Jignshen Wang, Zhixin Lun, Jing Ma, Bo Huang), led by Audrey Hendricks, Wen Zhou, and Hua Zhou. Thanks to Charlotte Gard and all judges for taking on the important work of evaluating student papers and presentations. Thanks to Megan Othus, Gary Chan and Lala Grau for organizing the 75th anniversary celebration of WNAR. Gratitude also goes to the WNAR student representatives (Jen McNichol, Nikola Surjanovic and Riley Lamont) for organizing the student social event. I also want to recognize the outstanding effort of our WNAR Sponsorship lead Fang K Chen. I appreciate the guidance and support from members of the WNAR executive board, Past-president Gary Chan, President-elect Megan Othus, Treasurer Brandie Wagner and Secretary Jessica Minnier; Jan Dasgupta and the Justice, Equity, Diversity and Inclusion (JEDI) committee and the entire WNAR Regional Committee.

I would like to acknowledge SAS, Beigene, Gilead, Regeneron, Springer, and Taylor and Francis for their industry sponsorship of WNAR this year. Particular gratitude goes to SAS, Gilead and Regeneron for donating to WNAR’s JEDI efforts. Finally, I would like to thank everyone for joining us at the 2023 WNAR/IMS conference. I hope everyone has a productive and enjoyable week!

Elizabeth Juarez-Colunga
2023 WNAR President
### Officers of the Western North American Region of the International Biometric Society

#### Elected Officers and Representatives (Regional Committee)

<table>
<thead>
<tr>
<th>Office</th>
<th>Year(s)</th>
<th>Officer</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
<td>2023</td>
<td>Elizabeth Juarez-Colunga</td>
<td>University of Colorado Anschutz Medical Campus</td>
</tr>
<tr>
<td>Secretary/Correspondent</td>
<td>2022-25</td>
<td>Jessica Minnier</td>
<td>Oregon Health &amp; Science University</td>
</tr>
<tr>
<td>Treasurer</td>
<td>2020-26</td>
<td>Brandie Wagner</td>
<td>University of Colorado Anschutz Medical Campus</td>
</tr>
<tr>
<td>Program Coordinator</td>
<td>2022-23</td>
<td>Lingling An</td>
<td>University of Arizona</td>
</tr>
<tr>
<td>President Elect</td>
<td>2023</td>
<td>Megan Othus</td>
<td>Fred Hutchinson Cancer Research Center</td>
</tr>
<tr>
<td>Past President</td>
<td>2023</td>
<td>Gary Chan</td>
<td>University of Washington</td>
</tr>
</tbody>
</table>

#### Representatives At-Large

<table>
<thead>
<tr>
<th>Years</th>
<th>Members</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023-25</td>
<td>Natalie Gasca</td>
<td>California Council on Science and Technology</td>
</tr>
<tr>
<td>2023-25</td>
<td>Yu-Ru Su</td>
<td>Kaiser Permanente Washington Health Research Institute</td>
</tr>
<tr>
<td>2022-24</td>
<td>Ting Ye</td>
<td>University of Washington</td>
</tr>
<tr>
<td>2022-24</td>
<td>Yiliang Zhu</td>
<td>University of New Mexico</td>
</tr>
<tr>
<td>2021-23</td>
<td>Charlotte Gard</td>
<td>New Mexico State University</td>
</tr>
<tr>
<td>2021-23</td>
<td>Julia Palacios</td>
<td>Stanford University</td>
</tr>
</tbody>
</table>

#### IBS Council Representatives

<table>
<thead>
<tr>
<th>Years</th>
<th>Members</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021-25</td>
<td>Megan Othus</td>
<td>Fred Hutchinson Cancer Research Center</td>
</tr>
<tr>
<td>2021-25</td>
<td>Lang Wu</td>
<td>University of British Columbia</td>
</tr>
<tr>
<td>2021-25</td>
<td>Elizabeth Juarez-Colunga</td>
<td>University of Colorado Anschutz Medical Campus</td>
</tr>
</tbody>
</table>

#### Appointments

**RAB – Regional Advisory Board**

<table>
<thead>
<tr>
<th>Years</th>
<th>Members</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2022-2024</td>
<td>Neby Bekele</td>
<td>Exelisix</td>
</tr>
<tr>
<td></td>
<td>Chiung-Yu Huang</td>
<td>University of California, San Francisco</td>
</tr>
<tr>
<td>Members</td>
<td>Role</td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------------</td>
<td></td>
</tr>
<tr>
<td>Jennifer McNichol</td>
<td>Co-Chair</td>
<td></td>
</tr>
<tr>
<td>Nikola Surjanovic</td>
<td>Co-Chair</td>
<td></td>
</tr>
<tr>
<td>Riley Lamont</td>
<td>Co-Chair Elect</td>
<td></td>
</tr>
<tr>
<td>Sakib Salam</td>
<td>Webmaster</td>
<td></td>
</tr>
<tr>
<td>Suni Godbole</td>
<td>Member</td>
<td></td>
</tr>
<tr>
<td>Yu-Ru Su, PhD</td>
<td>WNAR Journal Club Advisor</td>
<td></td>
</tr>
<tr>
<td>Karen A. Kopciuk, PhD</td>
<td>Mentor</td>
<td></td>
</tr>
</tbody>
</table>

**Justice, Equity, Diversity, and Inclusion (JEDI) Committee**

<table>
<thead>
<tr>
<th>Role</th>
<th>Year(s)</th>
<th>Member</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Founding Chair</td>
<td>2021-23</td>
<td>Nairanjana (Jan) Dasgupta</td>
<td>Washington State University</td>
</tr>
<tr>
<td>Founding Member</td>
<td>2021-23</td>
<td>Sonia Jain</td>
<td>University of California, San Diego</td>
</tr>
<tr>
<td>Founding Member</td>
<td>2021-23</td>
<td>Brian Williamson</td>
<td>Kaiser Permanente Washington Research Institute</td>
</tr>
<tr>
<td>Founding Member</td>
<td>2021-23</td>
<td>Maricela Cruz</td>
<td>University of Washington</td>
</tr>
<tr>
<td>Founding Member</td>
<td>2021-23</td>
<td>Audrey Hendricks</td>
<td>University of Colorado Anschutz Medical Campus</td>
</tr>
<tr>
<td>Member</td>
<td>2022-24</td>
<td>Natalie Gasca</td>
<td>California Council on Science and Technology</td>
</tr>
</tbody>
</table>

**WNAR Conference Organizers**

<table>
<thead>
<tr>
<th>Role</th>
<th>Member</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Organizer</td>
<td>Jiaqi Huang</td>
<td>Alaska Department of Fish and Game</td>
</tr>
<tr>
<td>Program co-Chair</td>
<td>Audrey Hendricks</td>
<td>University of Colorado Anschutz Medical Campus</td>
</tr>
<tr>
<td>Program co-Chair</td>
<td>Wen Zhou</td>
<td>Colorado State University</td>
</tr>
<tr>
<td>IMS Program Chair</td>
<td>Hua Zhou</td>
<td>University of California, Los Angeles</td>
</tr>
<tr>
<td>Committee Member</td>
<td>Jingshen Wang</td>
<td>University of California, Berkeley</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>Committee Member</td>
<td>Mengli Xiao</td>
<td>University of Colorado Anschutz Medical Campus</td>
</tr>
<tr>
<td>Committee Member</td>
<td>Bo Huang</td>
<td>Pfizer</td>
</tr>
<tr>
<td>Committee Member</td>
<td>Zhixin Lun</td>
<td>University of Colorado Anschutz Medical Campus</td>
</tr>
<tr>
<td>Committee Member</td>
<td>Jing Ma</td>
<td>Fred Hutchinson Cancer Center</td>
</tr>
</tbody>
</table>

### 2023 WNAR Student Paper Competition Committee

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charlotte Gard (Chair)</td>
<td>New Mexico State University</td>
</tr>
<tr>
<td>Fang Chen</td>
<td>SAS</td>
</tr>
<tr>
<td>Shuai Chen</td>
<td>University of California, Davis</td>
</tr>
<tr>
<td>Chad He</td>
<td>Fred Hutchinson Cancer Center</td>
</tr>
<tr>
<td>Alexander Kaizer</td>
<td>Colorado School of Public Health</td>
</tr>
<tr>
<td>Eric Kawaguchi</td>
<td>University of Southern California</td>
</tr>
<tr>
<td>Kayleigh Keller</td>
<td>Colorado State University</td>
</tr>
<tr>
<td>Jane Lange</td>
<td>Oregon Health &amp; Science University</td>
</tr>
<tr>
<td>Hong Li</td>
<td>University of California, Davis</td>
</tr>
<tr>
<td>Yu-Ru Su</td>
<td>Kaiser Permanente Washington Health Research Institute</td>
</tr>
<tr>
<td>Brandie Wagner</td>
<td>Colorado School of Public Health</td>
</tr>
<tr>
<td>Brian Williamson</td>
<td>Kaiser Permanente Washington Health Research Institute</td>
</tr>
<tr>
<td>Katie Wilson</td>
<td>University of Washington</td>
</tr>
<tr>
<td>Shangyuan Ye</td>
<td>Oregon Health &amp; Science University</td>
</tr>
<tr>
<td>Guo Yu</td>
<td>University of California, Santa Barbara</td>
</tr>
<tr>
<td>Qian Zhao</td>
<td>Stanford University</td>
</tr>
</tbody>
</table>
**Presidential Invited Address**

**Kimberly Sellers, Ph.D.**
Professor of Mathematics and Statistics, Georgetown University in Washington, DC
Principal Researcher, Center for Statistical Research and Methodology Division, U.S. Census Bureau.

**Bio**
Kimberly Sellers is a Professor of Mathematics and Statistics, specializing in Statistics at Georgetown University in Washington, DC; and a Principal Researcher with the Center for Statistical Research and Methodology Division of the U.S. Census Bureau. A DC-area native, she completed her BS and MA degrees in Mathematics at the University of Maryland College Park, and obtained her PhD in Mathematical Statistics at The George Washington University. Prof. Sellers held previous faculty positions at Carnegie Mellon University as a Visiting Assistant Professor of Statistics, and the University of Pennsylvania School of Medicine as an Assistant Professor of Biostatistics and Senior Scholar at the Center for Clinical Epidemiology and Biostatistics (CCEB) before her return to the DC area. Her primary research interests and expertise center on statistical methods for count data that contain data dispersion with methodological interests in distribution theory, regression analysis, multivariate analysis, stochastic processes, and time series analysis. She recently authored the book, *The Conway-Maxwell-Poisson Distribution* (Cambridge University Press, 2023), which is the first comprehensive reference on the distribution and the flexible statistical methods derived using it to analyze dispersed count data. Sellers is an Elected Member of the International Statistical Institute (2018), and a Fellow in the American Statistical Association (ASA; 2021) and the Association for Women in Mathematics (2023) in recognition of her research, and active contributions to diversifying the fields of mathematical and statistical sciences with respect to gender and race/ethnicity. She was the 2017-2018 Chairperson for the ASA’s Committee on Women in Statistics, and the inaugural chairperson of the ASA’s Justice, Equity, Diversity, and Inclusion (JEDI) Outreach Group (2021-2022).

**Title: Dispersed Methods for Handling Dispersed Count Data**

**Abstract:**
While the Poisson distribution is a classical statistical model for count data, it hinges on the constraining equi-dispersion property (i.e. that the mean and variance equal). This assumption, however, does not usually hold for real count data; over-dispersion (i.e. when the variance is greater than the mean) is a more common phenomenon for count data, however data under-dispersion has also been prevalent in various settings. It would be more convenient to work with a distribution that can effectively model data (over- or under-) dispersion because it can offer more flexibility (and, thus, more appropriate inference) in the statistical methodology. This talk introduces the Conway-Maxwell-Poisson distribution along with several associated statistical methods motivated by this model to better analyze count data under various scenarios (e.g. distributional theory, generalized linear modeling, control chart theory, and count processes). As time permits, this talk will likewise acquaint the audience with available associated tools for statistical computing.
Short course I

IT tools and best practices for statistical professionals

**Instructor:** Angelique Zeringue, PhD, Senior Consultant and Data Science Competency Lead, Daugherty Business Solutions

**Instructor’s biography:** As the Principal Consultant and Data Science Competency Lead at Daugherty Business Solutions, Dr. Zeringue is an accomplished data scientist with extensive expertise in insight oriented statistical modeling, clustering, natural language processing (NLP), predictive modeling, anomaly detection, optimization, and a myriad of other machine learning and data analytics techniques. She has successfully managed a wide range of projects, including those involving database design for electronic medical records, claims, pharmacy, supply chain, and market research data. She has been working across numerous data platforms, from PostgreSQL to Hadoop to Big Query, and has garnered a stellar reputation for outstanding communication on complex methodology to non-technical audiences. Dr. Zeringue has presented at numerous national conferences, sharing her knowledge and passion for data science with a global audience. As a dedicated contributor to the field, she has co-authored multiple journal articles and a book chapter, plus mentor and leader to junior analysts.

**Description:** Companies run on data. To manage those data needs and uses in the business world, IT professionals have developed tools and practices for better data management, code management, communication between teams, automation of routine tasks, and speeding up analysis and code development. While these processes and standards are rarely taught in statistical programs, they can provide a great benefit to statistical professionals. The purpose of this seminar is to share these best practices and tools. Attendees will learn:

- Relational database concepts, including an introduction to free SQL database tools and coding
- How to develop and implement a basic data governance strategy
- Strategies for making code clearer, more organized, and reusable
- Use of free version control software for better tracking of code changes
- Tools and approaches for automating routine tasks, such as updating data, producing clinical trial reports, checking for code errors, and other efforts
- Open-source software and packages for making documentation faster and easier
- Options for enabling better tracking and sharing of data changes and analysis results
Short course II

Real-World Evidence in Drug Development and Regulatory Decision-Making: Current Status, Challenges, and Opportunities

**Instructor:** Jie Chen, Ph.D., Chief Scientific Officer, Elixir Clinical Research

**Instructor’s biography:** Dr. Jie Chen is the Senior Vice President and head of Biometrics, Overland Pharmaceuticals and a visiting member of the Center for Innovative Study Design, Stanford University. Before joining Overland in 2020, he was a distinguished Scientist in biostatistics at Merck Research Laboratories (US). He also worked as a global group head and/or senior director in several multinational biopharmaceutical companies including AstraZeneca, Merck Serono, and Novartis. Dr. Chen has over 25 years of experience in biopharmaceutical R&D and has been invited to give short courses at ASA Regulatory-Industry Statistics Workshops and EMA statistics symposium and deliver invited / keynote speeches at national or international conferences. He is a member of the editorial boards for the Contemporary Clinical Trials and the Journal of Biopharmaceutical Statistics and also a co-lead for one of the ASA RWE Scientific Working Group sub-teams. Jie has co-authored a book on Medical Product Safety Evaluation: Biological Models and Statistical Methods (with Heyse and Lai) and published over 40 papers in peer-reviewed statistics journals. He is a Fellow of the ASA.

**Description:** Real-world data (RWD) and real-world evidence (RWE) have traditionally been used in medical product development. Since the passage of the 21st Century Cures Act in 2016, the use of RWD and RWE in product development and regulatory decision has received increasing attention. Recently, the US Food and Drug Administration issued several guidance documents on the use of RWD and RWE to support regulatory decision-making for drugs and biologics. This short course will provide an overview on current development, challenges, and opportunities in use of RWE in drug development and regulatory decision-making. Some preliminary knowledge about medical product development and regulatory decision process is helpful, but not required, to understand how RWD and RWE can be used in the design, conduct, analysis, and result interpretation of RCTs and in regulatory decision. The short course will (1) provide an overview of medical product development processes including preclinical discovery and research, clinical development phases, and post-approval life-cycle management, (2) present regulatory agencies and their requirements, relevant guidance documents and approval processes, (3) describe the traditional use of RWD and RWE in medical product development and regulatory decision-making, (4) discuss the assessment of fit-for-purpose RWD, estimands of RWE studies, target trial emulation, evidence synthesis, use of digital health technologies, decentralized clinical trials, RWD and RWE for rare diseases, (5) a roadmap for formulating RWE studies and causal inference frameworks, and (6) challenges and opportunities when using RWE in drug development and regulatory decision-making. Illustrative examples are given throughout the lecture. The target audience includes statisticians and quantitative scientists who are engaged in research, development (especially clinical trials), regulatory process, and life-cycle management of medical products.
WNAR Code of Conduct Policy

All participants are required to follow the WNAR code of conduct policy

As a professional organization composed of diverse individuals, WNAR is committed to fostering a culture of inclusion, professionalism and civil discourse that cultivates a respectful environment where ideas are exchanged openly and freely. WNAR is committed to creating a professional environment for participants at all stages of their careers, and especially for our more junior members.

Inappropriate, unprofessional, harassing, or threatening behavior is not tolerated at the WNAR annual meeting or any other WNAR event. This includes threatening physical or verbal interactions, deliberate intimidation, stalking, sexual images in public spaces, unauthorized or inappropriate photography or recording, inappropriate or unwanted physical contact, unwelcome sexual attention, or verbal harassment. Verbal harassment includes harassing comments relating to race, ethnicity, religion, gender, gender identity or expression, sexual orientation, disability, veteran status, or other protected statuses, and will not be tolerated in our community.

All meeting participants must comply fully with the WNAR Code of Conduct. Participants include, but are not limited to, conference attendees, guests, staff, contractors, vendors, and exhibitors. The Code applies to social events as well as all scientific sessions, workshops, tutorials, roundtables, and short courses.

If you have any knowledge of a violation to the WNAR Code of Conduct, please contact a member of the event staff (identified by their badges, or present at the registration desk) immediately and/or email wnar@wnar.org. If there are any concerns regarding the Code of Conduct, please contact wnar@wnar.org.
**Scientific Program**

Monday, June 19 8:30-10:15

**WNAR Invited 1**  
Monday, June 19, 2023  
Katmai Room

**Improving Efficiency in Randomized Controlled Trials by Leveraging Baseline Variables**

Organizer & Chair: Ting Ye, University of Washington

8:30  **Toward better practice of covariate adjustment in randomized controlled trials**
Yanyao Yi, Eli Lilly and Company

8:55  **Robust methods to improve efficiency and reduce bias in estimating survival curves in randomized clinical trials**
Min Zhang, University of Michigan

9:20  **To adjust or not to adjust? Estimating the average treatment effect in randomized experiments with missing covariates**
Anqi Zhao, National University of Singapore

9:45  **Floor Discussion**
Discussant: Frank Bretz, Novartis

**WNAR Invited 2**  
Monday, June 19, 2023  
Dillingham Room

**Innovative statistical methodologies on network modeling and analysis**

Organizer: Wen Zhou, Colorado State University

Chair: Yuan Zhang, The Ohio State University

8:30  **Network Community Detection Using Higher-Order Structures**
Ji Zhu, University of Michigan

8:55  **K-sample testing for multinomials, with applications in text data analysis**
Tracy He, Harvard University

9:20  **Nonparametric inference on network effects of general relationship network data**
Wen Zhou, Colorado State University
9:45  **Spectral clustering via adaptive layer aggregation for multi-layer networks**

Yang Feng, New York University

**WNAR Invited 3**  Monday, June 19, 2023  King Salmon Room

**Recent advances in the statistical modeling and analysis of complex spatial data**

Organizer & Chair:  Huiyan Sang, Texas A&M University

8:30  **Local Bayesian models for non-stationary spatial data**

Bani Mallick, Texas A&M University

8:55  **Spatial Heterogeneous Additive Partial Linear Model: A Joint Approach of Bivariate Spline and Forest Lasso**

Zhengyuan Zhu, Iowa State University

9:20  **Reinforcement Learning and Step Selection Analysis for Animal Movement Data**

Toryn Schafer, Texas A&M University

9:45  **Bayesian Nonparametric Density Estimation on Complex Domains**

Huiyan Sang, Texas A&M University

**WNAR Invited 4**  Monday, June 19, 2023  Illiama Room

**The net benefit/chance of a longer survival**

Organizer & Chair:  Isao Yokota, Hokkaido University

8:30  **Regression modelling for net chance of a longer survival: pseudo-observation approach**

Isao Yokota, Hokkaido University

8:55  **Regressions for Generalized Pairwise Comparisons: from the Probabilistic Index to the Net Treatment Benefit**

Mickael De Backer, International Drug Development Institute

9:20  **Estimating individualized treatment rules by optimizing the adjusted probability of a longer survival**

Ying-Qi Zhao, Fred Hutchinson Cancer Center
9:45 **Graphing the Probability of Longer Survival to Assess the Efficacy of New Cancer Therapies**

Michael LeBlanc, Fred Hutchinson Cancer Center

---

**WNAR Invited 5**

**Monday, June 19, 2023**

Aspen Room

**Novel statistical methods for data collection and integration**

Organizer: Zehang Li, University of California, Santa Cruz

Chair: Le Bao, The Pennsylvania State University

8:30 **A case-control sampling strategy for zero-inflated models with an application to female sex worker mapping in sub-Saharan Africa**

Le Bao, The Pennsylvania State University

8:55 **Integrative Heterogeneous Learning for Intensive Complex Longitudinal Data**

Annie Qu, University of California, Irvine

9:20 **Bayesian active questionnaire design for verbal autopsies**

Zehang Li, University of California, Santa Cruz

9:45 **Tree-informed Bayesian multi-source domain adaptation: cross-population probabilistic cause-of-death assignment using verbal autopsy**

Zhenke Wu, University of Michigan

---

**Student Paper 1**

**Monday, June 19, 2023**

Spruce Room

Chair: Caroline Colijn, Simon Fraser University

8:30 **Fatty acid based dietary estimation when calibration coefficients are unavailable**

Jennifer McNichol, University of Victoria

8:50 **Analysing demographic parameters of anadromous Dolly Varden (Salvelinus malma malma) using Bayesian multi-state capture-recapture modelling**

Arjun Banik, University of Victoria

9:10 **A nonstationary spatial covariance model for data on graphs**

Michael Christensen, Duke University
Quantile-Parameterized Meta-B Distributions and their Application to Survival Analysis

Bryan McNair, Colorado School of Public Health, University of Colorado Anschutz Medical Campus

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30</td>
<td>Bayesian semiparametric variable selection with shrinkage prior</td>
<td>MingAn Yang, University of New Mexico</td>
</tr>
<tr>
<td>8:35</td>
<td>Inverse Leverage Effect for Cryptocurrencies and Meme Stocks: A Comprehensive Framework</td>
<td>Steven Kou, Boston University</td>
</tr>
<tr>
<td>8:40</td>
<td>Detecting Changes in Quantile Regression Models with Application to Urinary Glycosaminoglycans (GAGs) Data</td>
<td>Ramadha Piyadi Gamage, Western Washington University</td>
</tr>
<tr>
<td>8:45</td>
<td>Methods to Analyze Shedding Data in Vaccine Studies</td>
<td>Kenneth Liu, Merck &amp; Co., Inc.</td>
</tr>
<tr>
<td>8:50</td>
<td>The Effect of Misusing Error Rates on Reproducibility</td>
<td>Melinda McCann, Oklahoma State University</td>
</tr>
<tr>
<td>8:55</td>
<td>Clustering of functional data prone to complex heteroscedastic measurement error</td>
<td>Andi Mai, Indiana University - Bloomington</td>
</tr>
<tr>
<td>9:00</td>
<td>Questions</td>
<td></td>
</tr>
<tr>
<td>9:20</td>
<td>Variable selection in modeling clustered data via within-cluster resampling</td>
<td>Shangyuan Ye, Oregon Health and Science University</td>
</tr>
<tr>
<td>9:25</td>
<td>Meta-Regression Methods for Rare-Event Data</td>
<td></td>
</tr>
</tbody>
</table>

Chair: Hao Feng

Speed Talk 1

Monday, June 19, 2023

Lupine Room
Brinley Zabriskie, Brigham Young University

9:30  **When a Cusum Stops, What Confidence Is There that the Alarm Is Not False?**  
Moshe Pollak, Hebrew University of Jerusalem

9:35  **A new metric to evaluate algorithm complexity for group testing**  
Christopher Bilder, University of Nebraska-Lincoln

9:40  **Bias correction in estimating proportions by pooled testing**  
Graham Hepworth, The University of Melbourne

9:45  **Estimating the impact of sugar-sweetened beverages taxes in California on mean body mass index (BMI) and obesity prevalence using the synthetic control method**  
Catherine Lee, Kaiser Permanente Northern California, Division of Research

9:50  **Questions**

---

**Monday, June 19 10:30-12:15**

**WNAR Invited 6**  
Monday, June 19, 2023  
Katmai Room

**Recent Development on Categorical Data Analytics**

Organizer & Chair:  
Krishna Saha, Central Connecticut State University

10:30  **Causal Discovery for Categorical Data via Classification with Optimal Label Permutation**  
Yang Ni, Texas A&M University

10:55  **Relative risk, risk difference, or something else? Presenting meaningful treatment measures for binary outcomes in clinical studies**  
Claudia Pedroza, McGovern Medical School at The University of Texas Health Science Center at Houston

11:20  **Bayesian regression model with suppressed mortality: An application to drought and health impact study**  
Yeongjin Gwon, University of Nebraska Medical Center

11:45  **Benchmarking of a Bayesian single cell RNAseq differential gene expression test for dose-response study designs**
WNAR Invited 7  
Monday, June 19, 2023  
Dillingham Room

Statistics in Biosciences (SIBS): Real world challenges and recent methodological developments

Organizer & Chair:  Organizer: Joan Hu, Simon Fraser University, Canada; Chair: Anqi (Angela) Chen, Simon Fraser University, Canada

10:30  Statistical Learning and Dynamic Optimization in Kidney Paired Donation Programs

Peter Song, University of Michigan – Ann Arbor, USA

10:55  Learning Sparse Time-Varying Log-Ratios of Longitudinal Metabolomics in Relation to Birth Outcomes

Zhen Chen, NICHD/NIH, USA

11:20  Non-Markovian Multistate Models

Lupe Guadalupe Gómez-Melis, Universitat Politècnica de Catalunya-BarcelonaTech, Spain

11:45  How can we use wastewater viral signals to tell about COVID-19 hospitalizations?

Ken Peng, Simon Fraser University, Canada

WNAR Invited 8  
Monday, June 19, 2023  
King Salmon Room

Novel Network and Image Methods

Organizer & Chair:  Bailey Fosdick, University of Colorado Anschutz Medical Campus

10:30  Higher-order accurate two-sample network inference and network hashing

Yuan Zhang, The Ohio State University

10:55  Unbiased and Robust Analysis of Co-localization in Super-resolution Microscope Images

Hui Zhang, Northwestern University

11:20  Doubly sparse network learning using node features
Causal Inference and Fairness for Complex Data Analysis

Organizer & Chair: Yang Feng, New York University

10:30 Eigen selection in spectral clustering: a theory-guided practice
Yingying Fan, University of Southern California

10:55 Neyman-Pearson and equal opportunity: when efficiency meets fairness in classification
Xin Tong, University of Southern California

11:20 Equality of opportunity in Neyman-Pearson classification
Lucy Xia, Hong Kong University of Science and Technology

11:45 Optimal Nonparametric Inference with Two-Scale Distributional Nearest Neighbors
Jinchi Lv, University of Southern California
11:20  The synthetic instrument
Linbo Wang, University of Toronto

Student Paper 2  Monday, June 19, 2023  Spruce Room

Chair: Ramadha Piyadi

10:30  Approximating Multi-arm Deep Learners with In-situ Trained Ensemble of Shallow Artificial Neural Networks
Ved Piyush, University of Nebraska - Lincoln

10:50  Towards Causal Discovery with Statistical Guarantees
Shreya Prakash, University of Washington

11:10  Necessary and Sufficient Conditions for the Chi-square and Normal Approximations in Large Contingency Tables
Chong Wu, Rutgers University

11:30  A New Criterion for Determining a Cutoff Value Based on the Biases of the Incidence Proportions in the Presence of Outcome Misclassifications
Norihiro Suzuki, Tokyo Medical University

Speed Talk 2  Monday, June 19, 2023  Lupine Room

Chair: Qian Zhao

10:30  Space-time Models for Landscape Structure and Habitat Change Effects on the Abundance of Wintering Neotropical Migratory Shorebirds
Avishek Chakraborty, University of Arkansas

10:35  A hierarchical modeling framework for estimating individual- and population-level reproductive success from movement data
Joe Eisaguirre, US Geological Survey, Alaska Science Center

10:40  Latent Trait Shared Parameter Mixed Models for Missing Ordinal Ecological Momentary Assessment Data
John Cursio, University of Chicago

10:45  High Dimensional Portfolio Selection with Cardinality Constraints
Yifeng Guo, The University of Hong Kong

10:50  Cox model-based kernel function for clinical data
       Seungyeoun Lee, Sejong University

10:55  Biclustering Multivariate Longitudinal Data with Application to Recovery Trajectories of White Matter After Sport-Related Concussion
       Jaroslaw Harezlak, Indiana University

11:00  Questions

11:15  Identifying gene-environment associations using k-partite network analysis
       Mira Park, Eulji University

11:20  Conditional or Unconditional Logistic Regression for Matched Case-Control Studies?
       Fei Wan, Washington University in St Louis

11:25  Statistical Assessment of Biomarker Replicability using MAJAR Method
       Song Zhai, Merck

11:30  Random Forests and Phenotype Clustering
       Barbara Bailey, San Diego State University

11:35  Joint analysis of Human and food metabolomics for health-driven biomarker detection.
       Sakaiza Rasolofomanana Rajery, University of Colorado Anschutz Medical Campus

11:40  Comparative variable selection stability in time-to-event models
       Andy Kaempf, Oregon Health & Science University

11:45  Questions

---------------------------------------------------------------------
IMS 1  Monday, June 19, 2023  Fireweed Room
---------------------------------------------------------------------

Spatial Bayesian Analysis and Causal Inference

Organizer:  Annie Qu, University of California, Irvine
Chair:  Annie Qu, University of California, Irvine
10:30  De-confounding causal inference using latent multiple-mediator pathways  
Yubai Yuan, Pennsylvania State University  

10:55  Learning Network Properties without Network Data -- A Correlated Network Scale-up Model  
Xiaoyue Niu, Pennsylvania State University  

11:20  Bayesian analysis of multivariate binary longitudinal data: Metabolic Syndrome during the menopausal transition  
Wesley Johnson, University of California, Irvine  

11:45  How close and how much? Linking health outcomes to spatial distributions of built environment features  
Veronica Berrocal, University of California, Irvine  

Monday, June 19 12:25-2:05  
Poster Session 1  12:25-1:15  Monday, June 19, 2023  
1. CANCELED  
3. Bayesian semiparametric variable selection with shrinkage prior  
MingAn Yang, University of New Mexico  
5. Inverse Leverage Effect for Cryptocurrencies and Meme Stocks: A Comprehensive Framework  
Steven Kou, Boston University  
7. Detecting Changes in Quantile Regression Models with Application to Urinary Glycosaminoglycans (GAGs) Data  
Ramadha Piyadi Gamage, Western Washington University  
9. Methods to Analyze Shedding Data in Vaccine Studies  
Kenneth Liu, Merck & Co., Inc.  
11. The Effect of Misusing Error Rates on Reproducibility  
Melinda McCann, Oklahoma State University  
13. Clustering of functional data prone to complex heteroscedastic measurement error  
Andi Mai, Indiana University - Bloomington
15. Variable selection in modeling clustered data via within-cluster resampling
   Shangyuan Ye, Oregon Health and Science University

17. Meta-Regression Methods for Rare-Event Data
   Brinley Zabriskie, Brigham Young University

19. When a Cusum Stops, What Confidence Is There that the Alarm Is Not False?
   Moshe Pollak, Hebrew University of Jerusalem

21. A new metric to evaluate algorithm complexity for group testing
   Christopher Bilder, University of Nebraska-Lincoln

23. Bias correction in estimating proportions by pooled testing
   Graham Hepworth, The University of Melbourne

25. Estimating the impact of sugar-sweetened beverages taxes in California on mean body mass index (BMI) and obesity prevalence using the synthetic control method
   Catherine Lee, Kaiser Permanente Northern California, Division of Research

Poster Session 2  1:15-2:05  Monday, June 19, 2023

2. Space-time Models for Landscape Structure and Habitat Change Effects on the Abundance of Wintering Neotropical Migratory Shorebirds
   Avishek Chakraborty, University of Arkansas

4. A hierarchical modeling framework for estimating individual- and population-level reproductive success from movement data
   Joe Eisaguirre, US Geological Survey, Alaska Science Center

   John Cursio, University of Chicago

8. High Dimensional Portfolio Selection with Cardinality Constraints
   Yifeng Guo, The University of Hong Kong

10. Cox model-based kernel function for clinical data
    Seungyeoun Lee, Sejong University
12. Biclustering Multivariate Longitudinal Data with Application to Recovery Trajectories of White Matter After Sport-Related Concussion

Jaroslaw Harezlak, Indiana University


Mira Park, Eulji University

16. Conditional or Unconditional Logistic Regression for Matched Case-Control Studies?

Fei Wan, Washington University in St Louis

18. Statistical Assessment of Biomarker Replicability using MAJAR Method

Song Zhai, Merck

20. Random Forests and Phenotype Clustering

Barbara Bailey, San Diego State University

22. Joint analysis of Human and food metabolomics for health-driven biomarker detection.

Sakaiza Rasolofomanana Rajery, University of Colorado Anschutz Medical Campus

24. Comparative variable selection stability in time-to-event models

Andy Kaempf, Oregon Health & Science University

Monday, June 19 2:15-4:00

WNAR Invited 11

Monday, June 19, 2023

Katmai Room

Change-point analysis: algorithm, inference and applications

Organizer: Yue Niu, The University of Arizona

Chair: Selena Niu, University of Arizona

2:15 Some multiple changepoint applications to climate data

Robert Lund, University of California - Santa Cruz

2:40 Graph-based Multiple Change-point detection

Hao Chen, University of California Davis

3:05 Repro samples method for irregular inference problems

Minge Xie, Rutgers University
3:30 Simultaneous jump detection and curve estimation

Ning Hao, University of Arizona

WNAR Invited 12
Monday, June 19, 2023
Dillingham Room

Advances in statistical methods for studying cellular heterogeneity in genomics data

Organizer & Chair: Jiebiao Wang, University of Pittsburgh

2:15 Robust probabilistic modeling for single-cell multimodal mosaic integration and imputation

Kathryn Roeder, Carnegie Mellon University

2:40 Identifying and quantifying alternative transcripts from single-cell RNA sequencing data

Wei Li, University of California, Riverside

3:05 Accurate identification of locally aneuploid cells by incorporating cytogenetics information in single-cell data analysis

Ziyi Li, University of Texas MD Anderson Cancer Center

3:30 Individual-specific reference panel recovery improves cell-type-specific inference

Hao Feng, Case Western Reserve University

WNAR Invited 13
Monday, June 19, 2023
King Salmon Room

Statistical Advances in Methods for Data Integration

Organizer: Yiwang Zhou, Assistant Professor, Department of Biostatistics, St. Jude Children's Research Hospital

Chair: Peter Song, Professor, Department of Biostatistics, University of Michigan

2:15 GhostKnockoff inference empowers identification of putative causal variants in genome-wide association studies

Zihuai He, Assistant Professor, Department of Neurology & Neurological Sciences Department of Medicine (Biomedical Informatics Research), Stanford University

2:40 A Tree-based Model Averaging Approach for Personalized Treatment Effect Estimation from Heterogeneous Data Sources
3:05 Longitudinal Self-Learning of Individualized Treatment Rules in a Nutrient Supplementation Trial with Missing Data
Yiwang Zhou, Assistant Professor, Department of Biostatistics, St. Jude Children’s Research Hospital

3:30 Robust angle-based transfer learning in high dimensions
Tian Gu, Postdoctoral Research Fellow, Department of Biostatistics, Harvard University

---

**WNAR Invited 14** Monday, June 19, 2023 Illiama Room

Integrative Analysis of Multi-Modal Data with applications in risk prediction, neuroimaging, and genomic studies

Organizer & Chair: Jin Jin, Johns Hopkins University

2:15 Enhancing the study of microbiome-metabolome interactions: a transfer-learning-inspired approach
Yue Wang, University of Colorado Anschutz Medical Campus

2:40 A High-dimensional multi-exposure mediation model to unravel brain structural-functional connectome interactions
Aiying Zhang, Department of Psychiatry, Columbia University Medical Center

3:05 Integration of multiview microbiome data and microbiome-wide association data for causal discoveries of trait-metabolite associations
Lei Fang, Department of Statistics, University of Kentucky

3:30 Data integration framework for disease risk prediction integrating summary-level information of multiple models with disparate sets of covariates
Jin Jin, Johns Hopkins University

---

**IMS 2** Monday, June 19, 2023 Aspen Room

Current Advances in Complex Data Analysis

Organizer & Chair: Paromita Dubey, University of Southern California
2:15 **Single Index Fréchet Regression**  
Hans-Georg Müller, University of California, Davis

2:40 **Nonparametric regression on Lie groups with measurement errors**  
Byeong Park, Seoul National University

3:05 **Learning Gaussian DAGs from Network Data**  
Oscar Hernan Madrid Padilla, UCLA

3:30 **Geometry Aware Exploratory Data Analysis for Random Objects**  
Paromita Dubey, University of Southern California

---

**Student Paper 3**  
**Monday, June 19, 2023**  
**Spruce Room**

**Chair:** Alex Kaizer

2:15 **Detecting Hidden Ancestry**  
Riley Lamont, University of Colorado Denver

2:35 **Simulating Longitudinal Single-cell RNA Sequencing Data**  
Elizabeth Wynn, University of Colorado Anschutz Medical Campus

2:55 **Robust statistical inference for very recent and strong incomplete selective sweeps**  
Seth Temple, University of Washington

3:15 **Working towards inclusivity in genetic studies: Estimating accurate population structure with small reference sample sizes**  
Souha Tifour, University of Colorado Denver

3:35 **Modified Jacknife Empirical Likelihood Test for Mean Residual Life Functions**  
Jordan Davis, California State University, San Bernadino

---

**WNAR Invited 15**  
**Monday, June 19, 2023**  
**Lupine Room**

**Adapting and developing methodology to address challenges in small sample studies**

**Organizer & Chair:** Subodh Selukar, St. Jude Children's Research Hospital
2:15  **Stratified randomization in small randomized Phase 2 trials**  
Megan Othus, Fred Hutchinson Cancer Center

2:40  **Efficacy designs for ultra-rare patient populations – Examples from pediatric brain tumor trials**  
Arzu Onar-Thomas, St. Jude Children's Research Hospital

3:05  **Dynamic stopping rules for phase I studies to reduce the overall sample size**  
Sean Devlin, Memorial Sloan Kettering Cancer Center

3:30  **Accounting for chronic Graft-versus-Host Disease status when evaluating transplant success for pediatric studies**  
Subodh Selukar, St. Jude Children's Research Hospital

---

**Tuesday, June 19 8:30-10:15**

**WNAR Invited 16**  
Tuesday, June 20, 2023  
Katmai Room

**Innovative Statistical Methodology Development in Precision Medicine**

Organizer & Chair:  
Lei Liu, Washington University in St. Louis

8:30  **Gaussian Graphical Model-based Heterogeneity Analysis for Cancer Precision Medicine**  
Shuangge Ma, Yale University

8:55  **Innovative precision medicine methods in subgroup identification for Alzheimer’s disease**  
Lei Liu, Washington University in St. Louis

9:20  **INFORBLER: Bayesian Federated Learning via Information Assembler**  
Changgee Chang, Indiana University

---

**WNAR Invited 17**  
Tuesday, June 20, 2023  
Dillingham Room

**New frontiers in Bayesian disease mapping: Spatio-temporal models for infection disease dynamics and forecasting**
8:30 A multivariate spatiotemporal model for tracking COVID-19 incidence and death rates in socially vulnerable populations

Brian Neelon, Professor, Professor, Medical University of South Carolina

8:55 Similarity- and neighborhood-based dynamic models for infection data: Uncovering the complexities of the COVID-19 infection risks.

Helena Baptista, Professor of the Practice, NOVA IMS - Nova Information Management School, Universidade Nova de Lisboa, Lisboa, Portugal

9:20 Space-time infectious disease modeling, nowcasting, counterfactuals and non pharmaceutical interventions

Andrew Lawson, Distinguished University Professor of Biostatistics, Medical University of South Carolina, USA

9:45 Spatio-temporal dynamic models augmented by adaptive Gaussian Markov random fields, with applications to prediction and forecasting COVID-19 infection risks and infection spread

Ying MacNab, Associate Professor of Biostatistics, School of Population and Public Health, University of British Columbia, Canada
Advances in Scalable Regression Models for Complex Data

Organizer & Chair: Andee Kaplan, Colorado State University

8:30 **Log-Gaussian Cox Process Modeling of Large Spatial Lightning Data using Spectral and Laplace Approximations**
Maryclare Griffin, University of Massachusetts Amherst

8:55 **A new BART prior for flexible modeling with categorical predictors**
Sameer Deshpande, University of Wisconsin

9:20 **Bayesian adaptive and interpretable functional regression for exposure profiles**
Daniel Kowal, Rice University

9:45 **A Bayesian Zero-Inflated Dirichlet-Multinomial Regression Model for Multivariate Compositional Count Data**
Matthew Koslovsky, Colorado State University

New developments in nonparametric and semiparametric methods for complex data

Organizer & Chair: Yuan Jiang, Oregon State University

IMS 3 Tuesday, June 20, 2023 Aspen Room

8:30 Missing data with refreshment sample in semi-parametric regression models
Jing Wang, University of Illinois Chicago

8:55 Sparse conditional functional quantile regression models with measurement error
Carmen Tekwe, Indiana University Bloomington

9:20 Statistical inference for mean functions of 3D functional objects
Lily Wang, George Mason University

9:45 Evaluation of transplant benefits with the U.S. Scientific Registry of Transplant Recipients by semiparametric regression of mean residual life
Ge Zhao, Portland State University
**Chair:** Hua Zhou, UCLA

**8:30** A Bayesian hierarchical model for mortality surveillance of COVID-19 related deaths using verbal autopsy
Yu Zhu, University of California, Santa Cruz

**8:50** Semi-parametric inference of the effective reproduction number using minimal compartmental models
Isaac Goldstein, UC Irvine

**9:10** Tree-Regularized Bayesian Latent Class Analysis for Improving Dietary Pattern Subtyping in Small-Sized Subpopulations
Mengbing Li, University of Michigan

**9:30** Hierarchical Shrinkage Partition Priors with an application to Mouse Tracking Data
Ziyi Song, University of California, Irvine

**9:50** On Outcome and Sampling Weights: An In-depth Look at the Dueling Weights
Tuo Lin, University of California, San Diego

---

**WNAR Invited 20**

**Tuesday, June 20, 2023**

**Lupine Room**

**Advances in stochastic models for repeated events**

**Organizer & Chair:** Kristen Miller, University of Colorado Anschutz Medical Campus

**8:30** Network Hawkes process models for exploring latent hierarchy in social animal interactions
Tian Zheng, Columbia University

**8:55** Stratified regression of non-Poisson process data with zero-truncation
Anqi (Angela) Chen, Simon Fraser University

**9:20** Efficiency in estimation with binary coarsening of count data
Elizabeth Juarez-Colunga, University of Colorado Anschutz Medical Campus

---

**Tuesday, June 20 10:30-12:15**
Advanced causal inference methods with applications in large-scale observational data in biomedical research

Organizer & Chair: Cheng Zheng, University of Nebraska Medical Center

10:30 A Reference-Free R-learner for Treatment Recommendation
Ying Zhang, University of Nebraska Medical Center

10:55 Synthetic Control with Informed Weights
Samuel Wang, Cornell University

11:20 A joint directed acyclic graph estimation model to detect aberrant brain connectivity in schizophrenia
Aiying Zhang, Columbia University

11:45 FDR Controlled Multiple Testing for Union Null Hypotheses
Ran Dai, University of Nebraska Medical Center

Estimating SARS-CoV-2 transmission: study design and statistical analysis

Organizer & Chair: Tracy Qi Dong, Fred Hutchinson Cancer Center

10:30 Virus transmission and sequence data: quantifying and accounting for sampling biases in phylogeography
Caroline Colijn, Simon Fraser University

10:55 Retrospective, Observational Studies for Estimating Vaccine Effects on the Secondary Attack Rate of SARS-CoV-2
Fei Gao, Fred Hutchinson Cancer Center

11:20 Vaccine efficacy against transmission: statistical and epidemiological considerations
Lee Kennedy-Shaffer, Vassar College
Novel methods to identify & use surrogate markers in clinical trials

Organizer & Chair: Yunshan Duan, University of Texas at Austin

10:30 On Adaptive Randomization in Time-to-Event Clinical Trials
Navneet Hakhu, University of California, Irvine

10:55 Surrogacy Validation with Illness-Death Models and Principal Stratification Methods
Emily Roberts, University of Iowa College of Public Health

11:20 Nonparametric estimation of the causal effect of a stochastic threshold-based intervention
Lars van der Laan, University of Washington

11:45 Flexible Evaluation of Surrogate Markers with Bayesian Model Averaging
Yunshan Duan, University of Texas at Austin

WNAR Invited 24 Tuesday, June 20, 2023 Illiama Room

Novel statistical methods in cancer research

Organizer & Chair: Krithika Suresh, University of Michigan

10:30 Projecting the impact of multicancer early detection tests on stage at diagnosis: a modeling approach
Jane Lange, Oregon Health & Science University

10:55 Personalized estimates of reduction in cancer mortality risk from integrating prognostic models with hazard ratios from randomized clinical trials
Matthew Schipper, University of Michigan

11:20 Approximate Maximum Likelihood Estimation in the Mixture Cure Model from Aggregated Data with Application to Cervical Cancer Prevention
John Rice, University of Michigan

11:45 Model Agnostic Explanation of Survival Prediction Models for Prostate Cancer
Krithika Suresh, University of Michigan
Computational and statistical methods for large-scale biobanks and diverse types of “omics” data from diverse ancestries

Organizer & Chair: Jin Zhou, UCLA

10:30 Knockoff-based statistics for the identification of putative causal loci in genetic studies
Iuliana Ionita-Laza, Columbia University

10:55 Deconvoluting cell-state trajectory distribution from bulk RNA sequencing data
Jian Yang, Westlake University

11:20 Statistical methods for biobanks linking medical records with genetic data
Bogdan Pasaniuc, UCLA

11:45 Fast and accurate RNA-Seq data normalization for formalin-fixed paraffin-embedded samples
Xinlei (Sherry) Wang, University of Texas at Arlington

Student Paper 5

Chair: Maryclare Griffin

10:30 Extending People-like-Me Predictions with Mahalanobis distance for Personalized Healthcare: An application to a Longitudinal Study of Growth in Children
Xin Jin, University of Colorado

10:50 A new class of non-inferiority margins for designing active-controlled trials
Antonio Olivas-Martinez, University of Washington

11:10 Asymmetric Predictability: an information theoretic approach to causal inference
Soumik Purkayastha, University of Michigan

11:30 Unification of methods for estimating time-varying treatment effects from a covariate balance perspective
Yige Li, Harvard University

11:50 Generalized functional linear regression models with a mixture of complex function-valued and scalar-valued covariates prone to measurement error
**WNAR Invited 25**  
Tuesday, June 20, 2023  
Lupine Room

**Navigating High-Dimensionality for Analyzing Complex Data**

Organizer & Chair: Wen Zhou, Colorado State University

10:30 **Estimation and Inference for Differential Networks**  
Mladen Kolar, University of Chicago

10:55 **fastkqr: A Fast Algorithm for Kernel Quantile Regression**  
Boxiang Wang, University of Iowa

11:20 **Reproducible or not: a data adaptive nonparametric procedure to define and assess reproducibility across high-throughput studies**  
Austin Ellingworth, Colorado State University

11:45 **SNR Estimation under High-dimensional Linear Models**  
Xiaodong Li, University of California, Davis

**IMS 5**  
Tuesday, June 20, 2023  
Fireweed Room

**Machine Learning and Data Science for Complex Data**

Organizer & Chair: Annie Qu, University of California, Irvine

10:30 **Data Science Ethics Issues for Statisticians**  
Jessica Utts, University of California, Irvine

10:55 **Analysis of tensor or data objects in metric spaces**  
Heping Zhang, Yale University

11:20 **Scalable and robust joint models for longitudinal and survival outcomes**  
Jin Zhou, University of California, Los Angeles

11:45 **Recent Development for AI/ML for Drug Discovery**  
Haoda Fu, Eli Lilly and Company
### Tuesday, June 20 1:45-3:30

**Contributed 1**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:45</td>
<td>Detection of Fine-Scale Population Structure in Genetic Summary Data with Summix</td>
<td>Adelle Price, University of Colorado Anschutz Medical Campus</td>
</tr>
<tr>
<td>2:05</td>
<td>Propensity Score Matching For Real World Effectiveness Research: A Comparison Of Approaches To Addressing Time</td>
<td>Samantha Roberts, University of Colorado Anschutz Medical Campus</td>
</tr>
<tr>
<td>2:25</td>
<td>Towards reliable empirical evidence in methodological biostatistical research: recent developments and remaining challenges</td>
<td>Anne-Laure Boulesteix, LMU Munich, Germany* (virtual)</td>
</tr>
<tr>
<td>2:45</td>
<td>Dynamic Prediction of Non-Gaussian Functional Outcomes with Fast Generalized Functional Principal Components Analysis</td>
<td>Ying Jin, University of Colorado Anschutz Medical Campus* (virtual)</td>
</tr>
<tr>
<td>3:05</td>
<td>A Mixed-Effect Logic Regression Model for Meta-Analysis and Inference</td>
<td>Enakshy Dutta, Department of Statistics, University of Nebraska-Lincoln* (virtual, student paper competition)</td>
</tr>
</tbody>
</table>

**Contributed 2**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:45</td>
<td>Elastic Priors to Dynamically Borrow Information from Historical Data in Clinical Trials</td>
<td>Ying Yuan, The University of Texas MD Anderson Cancer Center</td>
</tr>
<tr>
<td>2:00</td>
<td>Controlled variable selection with a biased sample using tilted knockoff</td>
<td>Qian Zhao, Stanford University</td>
</tr>
<tr>
<td>2:15</td>
<td>The textures of sarcoidosis: quantifying lung disease through variograms</td>
<td>William Lippitt, University of Colorado Anschutz Medical Campus</td>
</tr>
</tbody>
</table>
2:30 Adaptive algorithms for repeated biomarker testing: promise and cautions for early detection of cancer
Tracey Marsh, Fred Hutchinson Cancer Center

2:45 A Likelihood-based Interval Design for Phase I Clinical Trials
Baolin Wu, University of California - Irvine

3:00 Using simultaneous regression calibration to study the effect of multiple error-prone exposures on disease risk utilizing biomarkers developed from a controlled feeding study
Cheng Zheng, University of Nebraska Medical Center

Contributed 3 Tuesday, June 20, 2023 King Salmon Room

Chair: Mengbing Li & Brinely Zabriskie

1:45 In Defense of (Unrestricted) Spatial Regression
Dale Zimmerman, University of Iowa

2:00 Choosing the number of clusters in unsupervised time series clustering of diurnal multipollutant air pollution patterns
Brittney Marian, University of Southern California

2:15 Parametric tests for hierarchical structured component models for pathway analysis
Taesung Park, Seoul National University

2:30 A Bayesian approach to assess the effects of temperature on aphid transmitted potato viruses
Oswaldo Villena, Georgetown University

2:45 Biomedical Oriented Logistic Dantzig Selector (BOLD Selector) for Biomarker Selection and its Applications to Patient Group Differentiation across Parkinsonism Spectrum
Frederick Kin Hing Phoa, Institute of Statistical Science, Academia Sinica

3:00 Catch me if you can: Localizing signals with knockoff e-values
Paula Gablenz, Stanford University
New methods for contemporary data analysis

Organizer & Chair: Zhihua Su, University of Florida (Mengyan Li, Bentley University)

1:45  **Network Functional Autoregression Model**
Yanyuan Ma, Pennsylvania State University

2:10  **Semi-supervised Triply Robust Inductive Transfer Learning**
Mengyan Li, Bentley University

2:35  **Response Variable Selection in Multivariate Linear Regression**
Zhihua Su, University of Florida

3:00  **Sufficient Dimension Reduction for Poisson Regression**
Jianxuan Liu, Syracuse University

Recent advances in analysis of time-to-event data

Organizer & Chair: Gang Li, University of California, Los Angeles (UCLA)

1:45  **Inferring random change point from left-censored longitudinal data by segmented mechanistic nonlinear models, with application in HIV surveillance study**
Hongbin Zhang, University of Kentucky

2:10  **Scalable and robust censored linear regression with applications to biobank studies**
Hua Zhou, UCLA

2:35  **Probability scale residuals for interval-censored data**
Eric Kawaguchi, University of Southern California

3:00  **Concordance in censored regression analysis**
Zhezhen Jin, University of Columbia
Advancing Associational and Causal Insights from Large-scale Data

Organizer & Chair: Jinyuan Liu, Vanderbilt University, Department of Biostatistics

1:45 Long Story Short: Omitted Variable Bias in Causal Machine Learning
Carlos Cinelli, University of Washington, Department of Statistics

2:10 Demystifying Causal Interpretations from High-dimensional Potential Outcomes: Applications to Microbiome Data
Jinyuan Liu, Vanderbilt University, Department of Biostatistics

2:35 Detecting High-dimensional association in large scale genomic data by pairwise composite likelihood
Qunhua Li, Penn State University, Department of Statistics

3:00 Prediction Intervals with High Dimensional Models: With Applications in LASSO and Deep Neural Networks
Zhe Fei, UC Riverside, Statistics Department

Recent Advances in Statistical Methods for Complex Data Analysis

Organizer & Chair: Panpan Zhang, Vanderbilt University Medical Center

1:45 The Statistical Triangle
Jiashun Jin, Carnegie Mellon University

2:10 Double Anchoring Events Based Sigmoidal Mixed Model: An Application in Alzheimer’s Disease Progression
Panpan Zhang, Vanderbilt University Medical Center

2:35 Doubly Robust Estimation under Covariate-induced Dependent Left Truncation
Ronghui Xu, University of California, San Diego

3:00 Power-enhanced Simultaneous Test of High-dimensional Mean Vectors and Covariance Matrices with Application to Gene-set Testing
Advanced meta-analysis methods for real-world data

Organizer & Chair: Mengli Xiao, University of Colorado Anschutz Medical Campus

3:45 An iterative method for detecting outlying studies in meta-analysis
Chong Wu, University of Texas MD Anderson Cancer Center

4:10 A Bayesian model for combining standardized mean differences and odds ratios in the same meta-analysis
Lifeng Lin, University of Arizona

4:35 An overview and comparison of recently proposed methods for estimating the reference interval from a meta-analysis
Lianne Siegel, University of Minnesota

5:00 Meta-Analyses with Between-Study Heterogeneity: A Lesson Learned from Modeling Unknown Covariates
Mengli Xiao, University of Colorado Anschutz Medical Campus

Advances in Statistical and Computational Methods for Omics Data Analysis

Organizer: Wei Sun, Fred Hutchinson Cancer Center
Chair: Si Liu, Fred Hutchinson Cancer Center

3:45 DNAcycP: A Deep Learning Attempt at Mechanical Properties of DNA
Keren Li, University of Alabama at Birmingham

4:10 Network Inference and Deep Learning for Multi-Omics Classification
Katerina Kechris, University of Colorado Anschutz Medical Campus

4:35 Cluster Analysis of Longitudinal Profiles for Compositional Count Data to Study the Competition-Colonization Trade-Off in Ecology
Yuan Jiang, Oregon State University

5:00 Robust Normalization and Integration of Single-cell Protein Expression across CITE-seq Datasets
Ye Zheng, Fred Hutchinson Cancer Center

WNAR Invited 31 Tuesday, June 20, 2023 King Salmon Room

Statistical challenges developing and evaluating risk prediction models in modern cohorts
Organizer & Chair: Yu-Ru Su, Biostatistics Division, Kaiser Permanente Washington Health Research Institute, USA

3:45 Prediction modeling with EHR data--we’re not in inference anymore
Yates Coley, Biostatistics Division, Kaiser Permanente Washington Health Research Institute, USA

4:10 Risk projection for time-to-event outcome from population-based case-control studies leveraging summary statistics from the target population
Li Hsu, Public Health Sciences Division, Fred Hutchinson Cancer Center, USA

4:35 Assessing risk model calibration with missing covariates
Yei-Eun Shin, Department of Statistics, Seoul National University, South Korea

5:00 Accommodating population differences when validating risk prediction models
Ruth Pfeiffer, Division of Cancer Epidemiology and Genetics, National Cancer Institute, NIH, HHS, USA

WNAR Invited 32 Tuesday, June 20, 2023 Illiama Room

Modern approaches to modeling longitudinal and survival data
Organizer & Chair: Susan Mikulich Gilbertson, University of Colorado Anschutz Medical Campus

3:45 Modeling longitudinal data in patients with focal epilepsy
Kristen Miller, University of Colorado Anschutz Medical Campus

4:10 Random forests for survival data: which methods work best and under what conditions?
Combining longitudinal self-report and biomarker information to develop recommendations for evaluating marijuana use in adolescents

Susan Mikulich Gilbertson, University of Colorado Anschutz Medical Campus

TREAT NOW: Statistical Challenges and Solutions for a Multi-Site Outpatient COVID-19 Randomized Trial

Alexander Kaizer, University of Colorado Anschutz Medical Campus

Computational and statistical methods for advancing precision medicine in a “data explosion” era

Organizer: Jin Zhou, UCLA

Chair: Lei Liu, Washington University in St. Louis

3:45 Statistical models for Biobank-scale data

Sriram Sankararaman, UCLA

4:10 Improving efficiency in the estimation of individualized treatment rules via pairwise comparison

Yichi Zhang, The University of Rhode Island

4:35 Developing generalizable risk prediction models utilizing bio bank data by enforcing calibration

Jinbo Chen, Developing generalizable risk prediction models utilizing bio bank data by enforcing calibration

5:00 Floor Discussion

Haoda Fu, Eli Lilly and Company

Combining Structured and Unstructured Electronic Health Record Data for Clinical Outcomes Prediction: Is the Sum Greater Than its Parts?

Organizer: Kathryn Colborn, University of Colorado Anschutz Medical Campus
Chair: Katharina Kann, University of Colorado Boulder

3:45 Application of the Knockoff Filter to High Dimensional Structured EHR Data for Postoperative Complication Surveillance
Kathryn Colborn, University of Colorado Anschutz Medical Campus

4:10 Model Fusion Techniques for Combining Structured and Unstructured EHR Data
Yaxu Zhuang, University of Colorado Anschutz Medical Campus

4:35 Combining Structured and Unstructured EHR Data for Postoperative Complication Surveillance Using Deep Learning
Mohammed Al-Garadi, Vanderbilt University

5:00 Natural Language Processing Techniques for Postoperative Complication Surveillance
Cory Paik, University of Colorado Boulder

WNAR Invited 34 Tuesday, June 20, 2023 Lupine Room

Innovative Methods for Joint Modeling and Dynamic Prediction
Organizer & Chair: Lihui Zhao, Northwestern University

3:45 Dynamic Risk Prediction of Survival in Liver Cirrhosis: A Comparison of Landmarking Approaches
Mitchell Paukner, Northwestern university

4:10 Joint modeling in presence of informative censoring on the retrospective time scale with application to palliative care research
Quran Wu, University of Florida

4:35 Joint modeling of high-dimensional longitudinal biomarkers and a time-to-event outcome
Jiehuan Sun, University of Illinois at Chicago

5:00 Dynamic Risk Prediction for Cardiovascular Events
Lihui Zhao, Northwestern University

Wednesday, June 21 8:30-10:15
Considerations and best practices for using race, ethnicity, ancestry in different areas of statistics and data science research

Organizers: Audrey Hendricks, University of Colorado Anschutz Medical Campus
Maricela Cruz, Kaiser Permanente Washington Health Research Institute
Chair: Audrey Hendricks, University of Colorado Anschutz Medical Campus

8:30 Decoding Race
Mariah Tso, University of California Los Angeles

8:55 Opportunities and challenges for disaggregation of race and ethnicity data using electronic health records
Miguel Marino, Oregon Health and Science University

9:20 Challenges and considerations of using race, ethnicity, and ancestry labels in genomics research
Betzaida Maldonado, University of Colorado Anschutz Medical Campus

9:45 Floor Discussion
Maricela Cruz, Kaiser Permanente Washington Health Research Institute

Inference methods for big, complex and heterogeneous data

Organizer: Minge Xie, Rutgers, The State University of New Jersey
Chair: Ming-hui Chen, University of Connecticut

8:30 SAM – A Shared Atoms Model for Dependent Clustering of Multiple Groups
Yuan Ji, University of Chicago

8:55 On constructing the confidence interval on clonality and entropy
Lu Tian, Stanford University

9:20 Cointegrated Matrix Autoregressive Models
Han Xiao, Rutgers University

9:45 Meta-analysis of variability in survival outcomes in precision oncology trials
Recent Development on Integration of Auxiliary Data

Organizer & Chair: Fei Gao, Fred Hutchinson Cancer Center

8:30 Robust score tests for incomplete covariates and a time-to-event outcome with high-dimensional auxiliary variables
Kin Yau Wong, The Hong Kong Polytechnic University

8:55 Data integration for mediation analysis with moment restriction models
Fan Xia, University of California, San Francisco

9:20 Harmonization and data integration for neuropsychological batteries
Gary Chan, University of Washington

9:45 Floor Discussion
Fei Gao, Fred Hutchinson Cancer Center

Breakthroughs in statistical methods for spatial transcriptomics and multiplex imaging data

Organizer & Chair: Thao Vu, Colorado School of Public Health

8:30 Joint Statistical Modeling for Morphological and Molecular Features in Multi-section Cancer Spatial Transcriptomics Data
Jian Hu, Emory University

8:55 SMASH: Scalable Method for Analyzing Spatial Heterogeneity of Genes in Spatial Transcriptomics Datasets
Souvik Seal, Colorado School of Public Health

9:20 Platform-Independent Pipelines for Analysis of Multiplex Tissue Imaging Data
Mansooreh Ahmadian, Colorado School of Public Health

9:45 Floor Discussion
Advances in modeling of epidemics

Organizer: Elizabeth Juarez-Colunga, University of Colorado Anschutz Medical Campus
Chair: Bryan McNair, University of Colorado Anschutz Medical Campus

8:30 A joint Bayesian hierarchical model for estimating SARS-CoV-2 genomic and subgenomic RNA viral dynamics and seroconversion
Tracy Qi Dong, Fred Hutchinson Cancer Center

8:55 Social network analysis and community detection on spread of COVID-19
Saman Muthukumarana, University of Manitoba

9:20 Modeling disease transmission dynamics with a time-varying coefficient state-space model
Kayleigh Keller, Colorado State University

Wednesday, June 21 10:30-12:15

Getting to the Gut of the Matter: New Statistics for Studying the Microbiome

Organizer: Michael Wu, Fred Hutchinson Cancer Center
Chair: Amari Little, Fred Hutchinson Cancer Center

10:30 Assessing the conditional correlation between individual genomic features and microbial taxa
Michael Wu, Fred Hutchinson Cancer Center

10:55 Robust and comprehensive mapping of microbe-outcome relationships via zero-inflated quantile processes
Wodan Ling, Weill Cornell Medicine

11:20 Developing statistical methods to compare Phylogenetic Trees with non-identical leaf sets
Maria Valdez, University of Washington

11:45 **Accurate estimation in microbial source tracking**
Lingling An, University of Arizona

---

WNAR Invited 41  Wednesday, June 21, 2023  Dillingham Room

**Advances in Single-Cell and Spatial Transcriptomics***

**Organizer:** Lingling An, University of Arizona  
**Chair:** Hongmei Jiang, Northwestern University

10:30 **Accurate and scalable spatial domain detection via integrated reference-informed segmentation for spatial transcriptomics**
Xiang Zhou, University of Michigan

10:55 **Spatially Variable Gene Detection in Integrated Single-cell and Spatial Transcriptomics Data**
Yiwen Liu, University of Arizona* (virtual)

11:20 **Spatial Transcriptomics with Giotto Suite, A Framework for Multi-omics Integration**
Joselyn Chávez-Fuentes, Mount Sinai

11:45 **FastQDesign: A realistic FASTQ-based framework for ScRNA-seq study design issues**
Chien-wei Lin, Medical College of Wisconsin

---

WNAR Invited 42  Wednesday, June 21, 2023  King Salmon Room

**Registries and repositories: opportunities and challenges**

**Organizer:** Laura Pyle, University of Colorado Anschutz Medical Campus  
**Chair:** Leslie Lange, University of Colorado Anschutz Medical Campus

10:30 **Challenges of combining data from biobanks and prospective cohorts in a genetics/genomics consortium**
Leslie Lange, University of Colorado Anschutz Medical Campus
10:55  **Genomic analyses in population-scale biobanks: ascertainment bias and digital phenotyping impact inference of complex trait architecture**

Chris Gignoux, University of Colorado Anschutz Medical Campus

11:20  **Environmental and cultural confounding of fine-scale population structure with increasing sample size in genomic studies**

Katie Marker, University of Colorado Anschutz Medical Campus

11:45  **Secondary analyses of clinical trial and EHR data from multisite research consortia**

Laura Pyle, University of Colorado Anschutz Medical Campus

**Spatial Models for Rich Data in Ecology and Public Health**

Organizer & Chair: Maryclare Griffin, University of Massachusetts Amherst

10:30  **Understanding Tree Demography Using Overlapping Lidar Scans and Spatial Entity Resolution**

Andee Kaplan, Colorado State University

10:55  **A mechanistic model for invasive tree species**

Yawen Guan, University of Nebraska Lincoln

11:20  **Regularized latent trajectory models for spatio-temporal population dynamics**

Xinyi Lu, Colorado State University

11:45  **Data Visualization in Statistical Research**

Joshua French, University of Colorado Denver

**New advancements in personalized medicine under complex regimens and high dimensional data**

Organizer & Chair: Maiying Kong, University of Louisville

10:30  **Statistical methods for assessing treatment effects on ordinal outcomes using observational data**
Maiying kong, University of Louisville
Susmita Datta, University of Florida
11:20  Multiple robust estimation and information integration for marginal causal effect under binary outcomes
Ming Wang, Case Western Reserve University
11:45  Doubly Robust Methods for Selecting Optimal Treatment
Qi Zheng, University of Louisville

WNAR 2023 Post-conference Survey
WNAR Volunteer Interest Survey
Anchorage Parking Information

There is limited hotel parking and typically held for guests of the hotel (https://www.hilton.com/en/hotels/anchorage/). We encourage you to look into parking at Easy Park at the Chinook or Coho Parking Lots, street parking is also a limited option.

https://www.easyparkalaska.com/locations

WNAR 2023 Post-conference Survey

WNAR Volunteer Interest Survey