



2024 Northeast Regional Laboratory Staff and Core Directors Meeting  
October 16<sup>th</sup> – 18<sup>th</sup>, 2024  
Crowne Plaza Albany – The Desmond Hotel  
Albany, NY



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## **Land Acknowledgement**

We acknowledge that we gather and learn on the traditional lands of the Kanien'kehá ka (People of the Flint) and the Muh-he-con-ne-ok (People of the Waters That Are Never Still), known today as the Mohawk Haudenosaunee and the Stockbridge-Munsee Band of Mohicans. Although their westernized names are similar, the Mohawk and Mohican peoples are culturally and linguistically distinct.

The Northeast Regional Laboratory Scientists and Core Directors Organizing Committee, along with all attendees, honor the enduring presence of these Nations and their ancestors, past and present. We are committed to fostering a more inclusive, equitable, and respectful environment for all.

# WELCOME TO NERLSCD 2024

Thank you for joining us for the 19th annual meeting of the Northeast Regional Laboratory Staff and Core Directors (NERLSCD) meeting.

This year's meeting is hosted by the University of Albany, NY, at the Crowne Plaza Albany – The Desmond Hotel, Albany, NY USA. This year's meeting continues the grand tradition started at the first meeting, held at Cornell University, Ithaca, NY, USA, of presenting an outstanding regional forum for core facility administrators, directors, managers, and staff. The meeting offers opportunities to network with colleagues, to learn about biotechnology advances and applications, and to discuss the challenges of implementing shared research resources.

This meeting would not be possible without the support of our speakers who have graciously donated their time to come and share their experiences with us. Active discussion and participation by all meeting attendees are hallmarks of the NERLSCD meeting and we encourage you to continue that tradition.

A meeting of this nature cannot be held without the generous support of our partners and sponsors. Their financial support is crucial for the continued success of this meeting. Take time to browse the over 40 exhibitors who are here for this meeting.

Sincerely,

The NERLSCD Organizing Committee

# NERLSCD 2024 ORGANIZING COMMITTEE

## Meeting Hosts

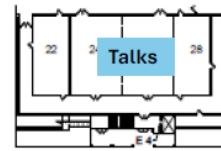
<p><b>Richard Cole</b>            Director, Advanced Light Microscopy &amp; Image Analysis Core, Wadsworth Center            NYS Department of Health            (Albany, NY)</p>	<p><b>Marimar Lopez</b>            Director, Research Cores            Center for Biotechnology and Interdisciplinary Studies            Rensselaer Polytechnic Institute            (Troy, NY)</p>	<p><b>Sridar Chittur</b>            Director, Center for Functional Genomics            State University of New York            (Albany, NY)</p>
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## Organizing Committee

<p><b>President</b>  <b>Stuart Levine</b>            Director, MIT BioMicro Center            Massachusetts Institute of Technology (Cambridge, MA)</p>	<p><b>Treasurer</b>  <b>Tim Bushnell</b>            Director, Center for Advanced Research Technologies            Scientific Director, Flow Cytometry Resource            University of Rochester Medical Center (Rochester, NY)</p>
<p><b>Corporate Liaison</b>  <b>Shahina Maqbool</b>            Director, Epigenomics Shared Facility            Albert Einstein College of Medicine (Bronx, NY)</p>	<p><b>Corporate Liaison</b>  <b>Robert Steen</b>            Director, Biopolymers Facility Department of Genetics            Harvard Medical School (Boston, MA)</p>
<p><b>Webmaster</b>  <b>Andrew Vinard</b>            Director for Research Infrastructure Support            Tufts University (Boston, MA)</p>	<p><b>President-Elect</b>  <b>Dan Mielcarz</b>            Director, DartLab            Dartmouth Cancer Center            Geisel School of Medicine - Dartmouth (Lebanon, NH)</p>
<p><b>Host 2025</b>  <b>Amy Blanchard</b>            Director of Research Cores (YSM)            Yale University (New Haven, CT)</p>	<p><b>Host 2025</b>  <b>Ben Myers</b>            Director of Research Cores (Central)            Yale University (New Haven, CT)</p>
<p><b>John Ashton</b>            Genomics Research Center Director            Functional Genomics Resource Director            Wilmot Cancer Institute Shared Scientific Resources            (Rochester, NY)</p>	<p><b>Jeremy Balsbaugh</b>            Director, Center for Open Research Resources &amp; Equipment (COR<sup>2</sup>E)            Director, UConn Proteomics &amp; Metabolomics Facility            University of Connecticut (Storrs, CT)</p>
<p><b>Roxana del Rio-Guerra</b>            Director, Flow Cytometry and Small Particle Detection Facility            University of Vermont Larner College of Medicine            (Burlington, VT)</p>	<p><b>Julie Dragon</b>            Director, Vermont Integrative Genomics Resource            Director, Vermont Biomedical Research Network Data Science Core            University of Vermont (Burlington, VT)</p>
<p><b>Christian Lytle</b>            Administrative Coordinator for Shared Resources            Laboratory Manager, Molecular Biology &amp; Proteomics Core Facility            Norris Cotton Cancer Center            Geisel School of Medicine at Dartmouth (Hanover, NH)</p>	<p><b>Susanna Perkins</b>            Director, Research Cores and Operations Research Core Administration Office of Research            University of Massachusetts Chan Medical School            (Worcester, MA)</p>
<p><b>W. Kelley Thomas</b>            Director, Hubbard Center for Genome Studies            University of New Hampshire (Durham, NH)</p>	

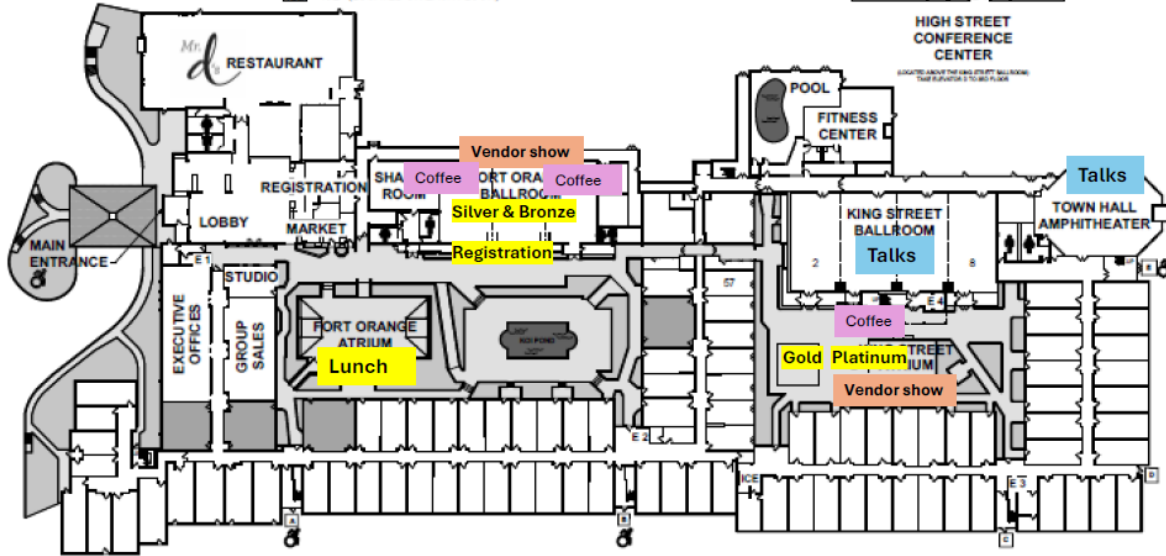
## SPONSOR EXHIBITION LAYOUT

- GARDEN SECTIONS
- MEETING SUITES
- E# ELEVATORS  
ELEVATOR 1 TO FLOORS 1-3  
ELEVATOR 2 TO FLOORS 1-3  
ELEVATOR 3 TO FLOORS 1-4  
ELEVATOR 4 TO THE HIGH STREET CONFERENCE CENTER
- ☐ ROOMS 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 13, 14, 22, 58, 59, 61, 62, 63 AND 64 ARE ONLY AVAILABLE ON THE 2ND OR 3RD FLOORS
- ICE ICE (LOCATED ON EACH FLOOR)

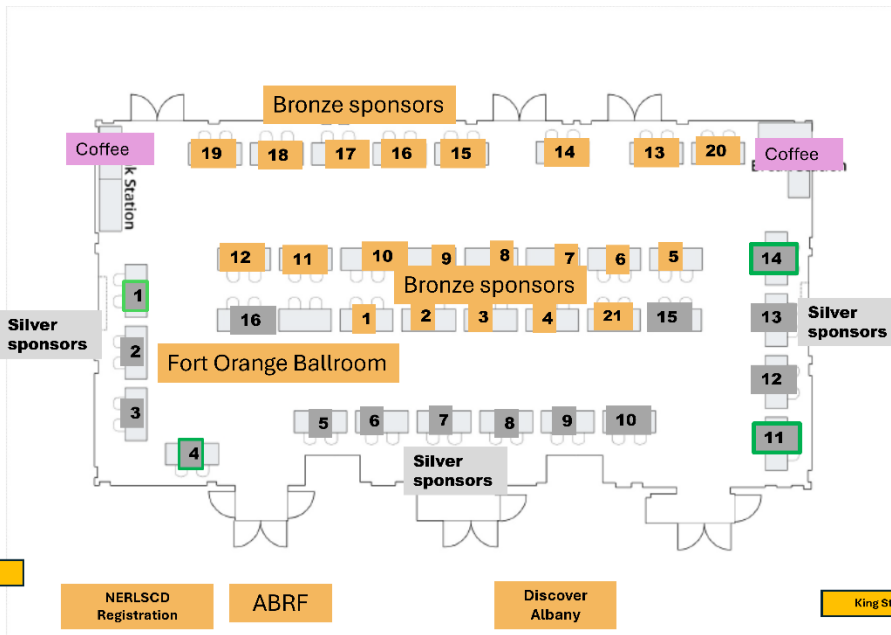


HIGH STREET CONFERENCE CENTER

LOCATED ABOUT THE KING STREET BALLROOM  
TOWNSHIP OFFICE BUILDING



- 1. Volta Labs
- 2. Agilent
- 3. Element
- 4. Bio-Rad
- 5. NanoString
- 6. Eppendorf
- 7. Remi
- 8. Takara Bio
- 9. Nabsys
- 10. Waters
- 11. Tissue Gnostics
- 12. SU Group
- 13. MagBio
- 14. seqWell
- 15. LevitasBio
- 16. BD Biosciences



- 1. Olink Proteomics
- 2. Watchmaker
- 3. IDT
- 4. Machrey-Nagel
- 5. Covaris
- 6. Roche
- 7. Beckman Coulter
- 8. Lexogen
- 9. Singular Genomics
- 10. Bio-Techne
- 11. DNA Script
- 12. Oxford nanopore
- 13. Parse Biosciences
- 14. Stratocore
- 15. Thermo FisherSci
- 16. Nikon
- 17. Arima Genomics
- 18. Next Advance
- 19. Curio Bioscience
- 20. Miltenyi Biotec
- 21. Tecan

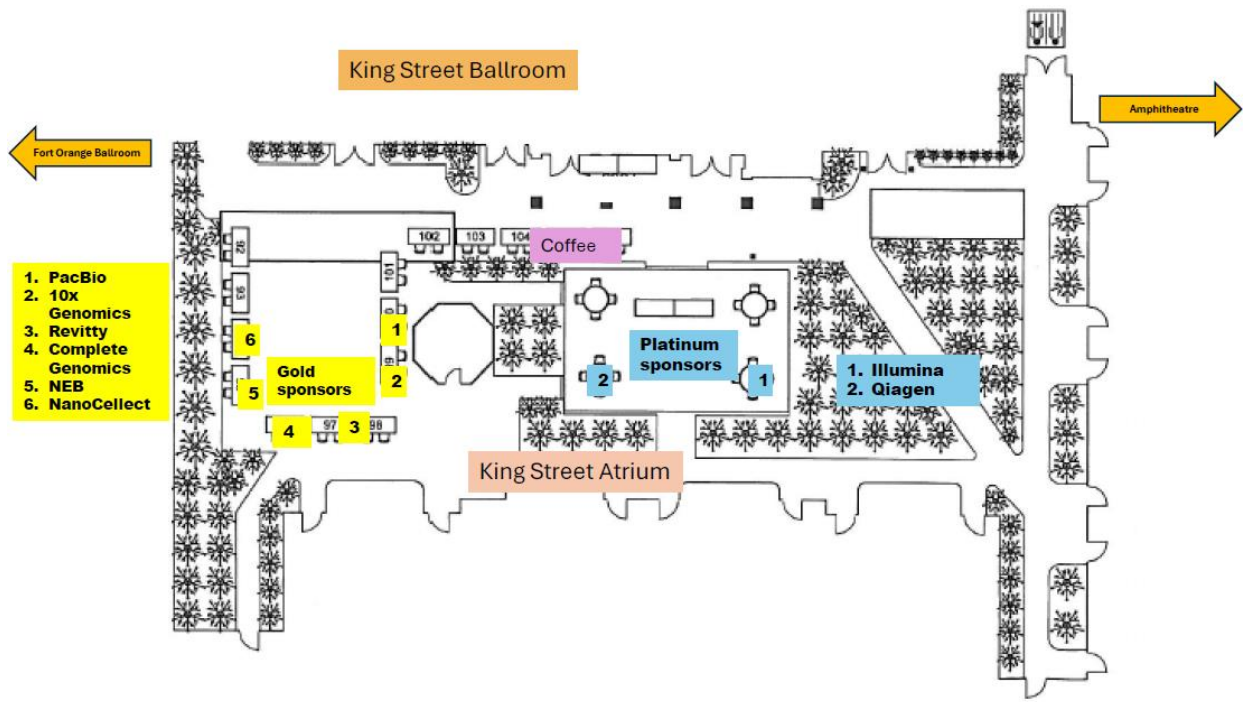
Volta Labs  
Gravi

NERLSCD  
Registration

ABRF

Discover  
Albany

King Street Ballroom



# NERLSCD 2024 PROGRAM AT A GLANCE

Wednesday, October 16, 2024					
12:00 - 7:30pm	REGISTRATION OPEN. <b>Location: Fort Orange Courtyard</b>				
2:00 - 4:00pm	PLATINUM SPONSOR WORKSHOP: Qiagen Speaker: Samuel J. Rulli, Jr., PhD, <b>Location: 26 High Street</b>				
3:00 - 5:00pm	NORTHEAST CORE ADMIN (NE-CAN) Meeting <b>Location: 24 High Street</b>				
3:30 - 5:30pm	PLATINUM SPONSOR WORKSHOP: Illumina Speaker: Fiona Kaper, Carolyn Conant, Kristina Fontanez, <b>Location: Shaker room</b>				
6:00 - 9:00pm	OPENING RECEPTION. Albany Institute for History and Art.				
9:00pm	NERLSCD After Dark. <b>Location: Mr. D's Lounge</b>				
Thursday, October 17, 2024					
8:00 - 6:00pm	REGISTRATION OPEN. <b>Location: Fort Orange Courtyard</b>				
8:00 - 9:00am	BREAKFAST <b>Location: Fort Orange Atrium</b>				
9:00 - 9:15am	WELCOME - Sridar Chittur, Richard Cole, and Marimar Lopez <b>Location: King Street Ballroom</b>				
9:15 - 10:05am	KEYNOTE ADDRESS 1- Leveraging core technologies to probe host-pathogen interactions in the gut. Nick Mantis Chief, Microbial Pathogenesis and Immunology, New York State Department of Health <b>Location: King Street Ballroom</b>				
10:05 - 10:15am	PLATINUM SPONSOR QIAGEN: EZ Nucleic Acid Isolation and TNA NGS Library Kits. Samuel Rulli, Ph.D. <b>Location: King Steet Ballroom</b>				
10:15 - 10:30am	BREAK/NETWORK– King Street Atrium and Fort Orange Ballroom				
10:30 – 11:30am	ROUNDTABLE- Single Cell Proteomics <b>Location: King Street Ballroom</b>				
11:45 – 1:00pm	LUNCH AND NETWORKING <b>Location: Fort Orange Atrium, King Street Atrium, and Fort Orange Ballroom</b> (BSL3 Lab user meeting <b>Location: Fort Orange Atrium</b> )				
1:00 – 2:00pm	CONCURRENT BREAKOUT 1 SESSIONS				
	<i>Implementing New analytic pipelines for mass spectrometry</i> Chair: Jeremy Balsbaugh <b>Location: 24 High Street</b>	<i>Spatial Tissue Profiling in 2025: Switching Gears</i> Chair: Ioannis Vlachos <b>Location: Town Hall (ground floor)</b>	<i>Strategies for Training and Continuing Education in Flow Cytometry:</i> Chair: Dan Mielcarz <b>Location: Shaker Room</b>	<i>From Samples to Final Data; Helping Users Make and Use Imaging Pipelines</i> Chair: Jim Chambers <b>Location: 28 High Street</b>	<i>Service Contracts</i> Chair: Susanna Perkins <b>Location: 26 High Street</b>
2:00 – 3:00pm	KEYNOTE ADDRESS 2- Neuracell core facility: Robust and Reproducible Human Pluripotent Stem Cell-Derived 2D and 3D Brain Cell Models. Sally Temple Scientific Director, Neural Stem Cell Institute <b>Location: King Street Ballroom</b>				
3:00 – 3:10pm	PLATINUM SPONSOR ILLUMINA: Illumina Innovations Roadmap. Ryan Hegarty. <b>Location: King Steet Ballroom</b>				

3:10 – 3:30pm	AFTERNOON BREAK AND NETWORKING. <b>Location: King Street Atrium and Fort Orange Ballroom</b>			
3:30 – 4:45pm	CONCURRENT BREAKOUT 2 SESSIONS			
	<i>Flavors of single-cell technologies- opportunities and challenges.</i> Chair: Bony De Kumar <u>Gold Sponsor:</u> PacBio <b>Location: King Street Ballroom</b>	<i>The AI Frontier: Transforming Shared Resource Services in Biomedical Research</i> Chair: Michael Cammer <b>Location: 28 High Street</b>	<i>Managing Users Expectations</i> Chair: Roxana Del Rio Guerra <b>Location: 24 High Street</b>	<i>Bioinformatics- support for different technologies</i> Chair: James VanEe <b>Location: 26 High Street</b>
4:45 - 7:00pm	VENDOR SHOW AND POSTER SESSION <b>Location: King Street Atrium and Fort Orange Ballroom</b>			
7:00pm	DINNER ON YOUR OWN			
<b>Friday, October 18, 2024</b>				
8:00 - 12:00pm	REGISTRATION OPEN. <b>Location: Fort Orange Courtyard</b>			
8:00 -9:00pm	BREAKFAST <b>Location: Fort Orange Atrium</b>			
9:00 – 9:45am	PLENARY: Investigations of the Extreme; from Deep Caves to Space Metagenomics Speaker: Scott Tighe <b>Location: King Street Ballroom</b>			
9:45 – 9:55am	ABRF MARKETPLACE. Speaker: Nate Herzog. <b>Location: King Street Ballroom</b>			
10:00 –11:00am	CONCURRENT BREAKOUT 3 SESSIONS			
	<i>The Wild Wild West Of Next-Gen: New Tech Showdown</i> Chair: Sara Goodwin <u>Gold SPONSOR:</u> COMPLETE GENOMICS <b>Location: 24 High Street</b>	<i>All you wanted to ask about a career in core facilities, but were afraid to ask.</i> Chairs: Marimar Lopez, Rich Cole <u>Gold Sponsor:</u> NEB <b>Location: 26 High Street</b>	<i>Novel technologies: 1) Photoinduced force microscope; 2) Building nanoscale structures using DNA</i> Chair: Kaye Thomas <u>Gold Sponsor:</u> Revvity <b>Location: 28 High Street</b>	
11:00 – 11:15am	MORNING BREAK AND NETWORKING. <b>Location: King Street Atrium and Fort Orange Ballroom</b>			
11:15 – 12:15pm	CONCURRENT BREAKOUT 3 SESSIONS			
	<i>Training the next generation of Core Scientists</i> Chair: John Ashton <b>Location: 28 High Street</b>	<i>How do you change culture? Intellectual contribution from core personnel to the research</i> Chair: Julie Dragon <b>Location: Town Hall (ground floor)</b>	<i>Creating a Data Management Core – moving beyond the plan</i> Chair: Stuart Levine <b>Location: 24 High Street</b>	<i>Cores role in the greening of labs</i> Chair: Andrew Vinard <b>Location: King Street Ballroom</b>
12:15 – 1:00pm	KEYNOTE ADDRESS 3- Neither fish nor Fowl a cautionary tale for scientists contemplating administration. <i>Sheenah Mische</i> Exec. Director, Division of Advanced Research Technologies NYU School of Medicine <b>Location: King Street Ballroom</b>			
1:00 – 1:10pm	TOM VOLKERT MEMORIAL MENTORSHIP AWARD Presented by Stuart Levine <b>Location: King Street Ballroom</b>			
1:10 – 1:15pm	CONCLUDING REMARKS Stuart Levine, NERLSCD President <b>Location: King Street Ballroom</b>			
1:15pm	LUNCH <b>Location: Fort Orange Atrium</b>			
	<b>SEE YOU NEXT YEAR AT YALE! OCTOBER 2025 YALE UNIVERSITY</b>			



Registration from Wednesday, Oct-16<sup>th</sup> at 12 noon through Friday, Oct-18<sup>th</sup> at 12 noon.

## **WEDNESDAY, OCTOBER 16<sup>TH</sup>**

### **Pre-Meeting Workshops**

2:00 - 4:00 pm

Platinum Sponsor Workshop: QIAGEN: Samuel J. Rulli, Jr., Ph.D. Director Global Product Manager RNAseq Profiling and NGS Assay Technologies. **“Never Waste a Sample! Multiomics Workflows Starting From a Single Sample”** (26 High Street)

3:00 - 5:00 pm

**Northeast Core Administrators Network (NE-CAN) meeting** (24 High Street)

3:30 - 5:30 pm

Platinum Sponsor Workshop: Illumina: Fiona Kaper, VP, Head of Assay R&D, Carolyn Conant, Director, Systems Integration. Kristina Fontanez, Sr Director, Product Development, Assay R&D Dept **“: Discussion Forum: Innovations that support Multiomics”** (Shaker Room)

### **Opening reception**

6:00 pm – 9:00 pm

- At the Albany Institute for History & Art (125 Washington Ave., Albany, NY)  
*Transportation will be provided.*

## **THURSDAY, OCTOBER 17<sup>TH</sup>**

8:00 am Registration & Breakfast (*Fort Orange Courtyard and Atrium*)

9:00 am Welcome to NERLSCD 2024! (*King Street Ballroom*)

Sridar Chittur, Richard Cole, & Marimar Lopez (2024 NERLSCD Hosts) & Mark Eagen (CEG)

9:15 am: Keynote 1

Nick Mantis, Ph.D., Chief, Microbial Pathogenesis and Immunology, New York State Department of Health  
**“Leveraging core technologies to probe host-pathogen interactions in the gut”** (*King Street Ballroom*)

10:05 am: Platinum sponsor talk: Qiagen. Samuel Rulli, Ph.D. **“EZ Nucleic Acid Isolation and TNA NGS Library Kits.”** (*King Street Ballroom*)

10:15 -10:30 am: Morning break and Networking (*King Street Atrium and Fort Orange Ballroom*)

10:30 –11:30 am: Round-table Discussion: **Single-Cell Proteomics** (*King Street Ballroom*)

Olga Vitek (Northeastern University), Virginie Sjoelund (Northeastern University), and Kenneth Moore (Thermo Fisher Scientific)

11:45 am – 1pm: Lunch and Networking (*Fort Orange Atrium, King Street Atrium and Fort Orange Ballroom*) plus BSL3 Laboratory User Open Discussion (*Fort Orange Atrium: Reserved table*)

1:00 pm: Concurrent Breakout Sessions, 1 hr./vendor talk 10 minutes

**Breakout Session 1: Implementing new analytic pipelines for mass spectrometry-based proteomics and metabolomics** – Session Chair: Jeremy Balsbaugh, University of Connecticut (*24 High Street*)

Breakout speakers: Timothy Moore (University of Connecticut), Kyle Swovick (University of Rochester Medical Campus), Xiaoyang Su (Robert Wood Johnson Medical School, Rutgers University)

**Breakout Session 2: Spatial Tissue Profiling in 2025: Switching Gears on Prep** – Session Chair: Ioannis Vlachos, Broad Institute of MIT and Harvard (*Town Hall*)

Gold sponsor presentation: 10X Genomics

**Breakout Session 3: Strategies for training and continuing education in flow cytometry: what do our users need to know?** Session Chair: Dan Mielcarz, Dartmouth University (*Shaker Room*)

Breakout speakers: Michael Kissner (Columbia University), Steven Polter (University of Rochester)

Gold sponsor presentation: NanoCollect Mark Clark, Technical Sales Specialist, **“The Future of Image-Guided Cell Sorting.”**

**Breakout Session 4: From samples to final data: helping users make and use imaging pipelines** – Session Chair: Jim Chambers, University of Massachusetts Amherst (*28 High Street*)

Breakout speakers: Doug Taatjes (University of Vermont)

**Breakout Session 5: Service contracts: explore your options!** Session Chair: Susanna Perkins, University of Massachusetts Chan Medical School (*26 High Street*)

Breakout speakers: Daniel Kouns (University of Massachusetts), Alex Garcia (Thermo Fisher Scientific), Michael Shroyer (Remi Group)

2:00 pm: Keynote 2 (*King Street Ballroom*)

Sally Temple, Ph.D., Scientific Director, Principal Investigator, and Co-Founder of the Neural Stem Cell Institute

**“Neuracell core facility: robust and reproducible human pluripotent stem cell-derived 2D and 3D brain cell models.”**

3:00 pm: Platinum sponsor talk: Illumina. Ryan Hegarty, Sr Sales Specialist. **“Illumina Innovations Roadmap.”** (*King Street Ballroom*)

3:10 – 3:30 pm: Afternoon break and Networking (*King Street Atrium & Fort Orange Ballroom*)

3:30 – 4:45 pm: Concurrent Breakout Sessions, 1 hr./vendor talk 10 minutes

Breakout Session 1: Flavors of single-cell technologies- opportunities and challenges – Session Chair: Bony De Kumar, Yale University (*King Street Ballroom*)

Breakout speakers: Spyros Darmanis (Gene), Ioannis Vlachos (Broad Institute of MIT and Harvard), Tsung-Chih Chen (Yale University)

Gold sponsor talk: PacBio. Minqian Wang, PhD, Territory Account Manager. Shaping the future of sequencing together.

Breakout Session 2: The AI frontier: transforming shared resource services in biomedical research – Session Chair: Michael Cammer, NYU Langone (*28 High Street*)

Breakout Session 3: Managing users' expectations – Session Chair: Roxana del Rio-Guerra, University of Vermont (*24 High Street*)

Breakout speakers: Jeremy Balsbaugh (University of Connecticut), Julie Dragon (University of Vermont), Scott McCallum (Rensselaer Polytechnic Institute)

Breakout Session 4: Bioinformatics support for different technologies – Session Chair: James VanEe, Cornell University (*26 High Street*)

Breakout speakers: Stephanie Byrum (University of Arkansas for Medical Sciences), Jeffery Caplan (University of Delaware), Emily Guswa (University of Vermont)

4:45 – 7:00 pm: **Vendor show and poster session** (*King Street Atrium & Fort Orange Ballroom*)

7:00 pm: Dinner (on your own)

9:30 pm – 11:30pm: NERLSCD Afterdark (*Mr. D's Lounge*)

## **FRIDAY, OCTOBER 18<sup>TH</sup>**

8:00 – 9:00 am: Registration & Breakfast (*Fort Orange Courtyard & Atrium*)

9:00 – 9:45 am: Plenary Session

Scott Tighe, Technical Director of the University of Vermont's Advanced Genomics Laboratory  
**“Beyond the Bench to the Extreme; Sulfur Caves, Antarctica, Space Genomics, and Beyond”** (*King Street Ballroom*)

9:45 – 9:55 am: **ABRF Marketplace** Nate Herzog, University of Vermont (*King Street Ballroom*)

10:00 – 11:00 am: Concurrent Breakout Sessions, 1 hr./vendor talk 10 minutes

Breakout Session 1: The wild wild west of next-gen: new tech showdown – Session Chair: Sara Goodwin, Cold Spring Harbor Laboratory (*24 High Street*)

Breakout speakers: Michael Zody (New York Genome Center), Paul Collier (Weill Cornell Medicine), Scott Tighe (University of Vermont)

Gold sponsor talk: Complete Genomics. Kristina Badenhorst, Technical Sales Specialist. **Introduction to Complete Genomics and DNBSEQ Technology: Enabling Multi-omic Applications with Flexible Cost-Effective High-Quality Sequencing.**

Breakout Session 2: **Your career path** – Session Charis: Marimar Lopez – Rensselaer Polytechnic Institute & Richard Cole – NYS Department of Health (*26 High Street*)

Breakout speakers: Amy Gordon (Rensselaer Polytechnic Institute), Spencer Bruce (NYS Department of Health), Katherin Dovidenko (Rensselaer Polytechnic Institute)

Gold sponsor talk: New England Biolabs. Sivagami Chavadi, Senior Field Applications Scientist. **“NEBNext: Celebrating 15 years of innovation! Enabling faster, streamlined, high-performance sample prep solutions to address NGS challenges.”**

Breakout Session 3: **Novel technologies: photoinduced force microscope, building nanoscale structures using DNA** – Session Chair: Kaye Thomas, University of Rochester Medical Center (*28 High Street*)

Gold sponsor talk: Revvity. Robert Burden, Principal Sales Specialist. **Focus on the signal not the noise.**

11:00 – 11:15 am: Morning break and Networking (*King Street Atrium & Fort Orange Ballroom*)

11:15 am – 12:15 pm: Concurrent Breakout Sessions, 1 hr./vendor talk, 10 minutes

Breakout Session 1: **Training the next generation of core scientists** – Session Chair: John Ashton, University of Rochester (*28 High Street*)

Breakout speakers: Chris Hallee (Massachusetts Institute of Technology), Steve Eyles (University of Massachusetts Amherst), Ying-Wai Lam (University of Vermont)

Breakout Session 2: **How do you change the culture: intellectual contributions from core personnel to the research** – Session Chair: Julie Dragon, University of Vermont (*Town Hall*)

Breakout speakers: Katia Solchurch (University of Virginia), Chris Hemme (University of Rhode Island), Heather Driscoll (Norwich University)

Breakout Session 3: **Creating a data management core: moving beyond the plan** – Session Chair: Stuart Levine (Massachusetts Institute of Technology) (*24 High Street*)

Breakout Session 4: **Cores/labs in the future: going green** – Session Chair: Andrew Vinard (Tufts University) (*King Street Ballroom*)

Breakout speakers: Chuck Blanchette (Boston Children’s Hospital)

12:15 – 1:00 pm: Keynote #3 (*King Street Ballroom*)

Sheenah Mische, Ph.D., Associate Professor, Department of Pathology at NYU Grossman School of Medicine

**“Neither fish nor fowl: a cautionary tale for scientists contemplating administration”**

1:00 pm: Tom Volkert Memorial Mentorship Award Presentation & Closing Remarks

Stuart Levine, NERLSCD President

1:15 pm: Lunch (*Fort Orange Atrium*)

# NERLSCD 2024 PROGRAM: SPONSOR ABSTRACTS

## WEDNESDAY, OCTOBER 16<sup>TH</sup>

### Pre-Meeting Workshops

2:00 - 4:00 pm

Platinum Sponsor Workshop: QIAGEN: Samuel J. Rulli, Jr., Ph.D., Director Global Product Manager RNAseq Profiling and NGS Assay Technologies. **Never Waste a Sample! Multiomics Workflows Starting From a Single Sample.** (24 High Street)

Abstract: Have you ever asked yourself: Do we miss (or even waste) genomic and transcriptomic information by considering only one analyte? How would the picture change if all analytes could be investigated? You can get a complete picture from your precious samples by stabilizing and isolating multiple analytes from the same blood draw or tissue sample to generate robust and reproducible insights. It might be easier than you think to start isolating circulating tumor cells (CTCs), cell-free DNA (cfDNA) and circulating RNAs from blood samples or capturing the complete picture of DNA, RNA and protein from your tissue samples. And you don't have to do it all at once. Storage of samples until you are ready to analyze them increases your flexibility to plan your studies and accelerate your research. Join QIAGEN as we talk about how sample stabilization, isolation, NGS library preparation and digital PCR and biological insights in the multiomics world can take your research to a new level.

3:00 pm - 5:00 pm

**Northeast Core Administrators Network (NE-CAN) meeting** (26 High Street)

Abstract: Come join us for our annual Regional Core Administration Meeting. This is a forum, open to all, not just administrators! We will get to exchange ideas and propose varied approaches to Cores and career-related problem-solving. Walk-in at any time during this session. Light refreshments will be provided.

3:30 - 5:30 pm

Platinum Sponsor Workshop: Illumina: Fiona Kaper, VP, Head of Assay R&D, Carolyn Conant, Director, Systems Integration. Kristina Fontanez, Sr Director, Product Development, Assay R&D Dept “: **Discussion Forum: Innovations that support Multiomics**” (Shaker Room)

Abstract: Come to this session to learn more about the latest in Illumina's Innovation roadmap including single cell, proteomics, and our newest sequencing chemistry, XLEAP-SBS. Experts from our research and development leadership team will have an open discussion on our plans and ask for your feedback.

## THURSDAY, OCTOBER 17<sup>TH</sup>

9:00 am: Opening Welcome

Mark Egan, CEO, Capital Region Chamber and Center for Economic Growth

9:15 am: Keynote 1 (*King Street Ballroom*)

Nick Mantis, Ph.D., Chief, Microbial Pathogenesis and Immunology, New York State Department of Health

**“Leveraging core technologies to probe host-pathogen interactions in the gut**

10:05 am: Platinum sponsor talk: Qiagen. Samuel Rulli, Ph.D. **“EZ Nucleic Acid Isolation and TNA NGS Library Kits.”** (*King Street Ballroom*)

Abstract: The EZ2 Connect revolutionizes lab workflows by enabling the efficient extraction of RNA, DNA, and total nucleic acid from diverse sample types, including FFPE, liquid biopsy samples, cells, tissues, and whole blood. Leveraging the QIAseq multimodal RNA/DNA library kits, researchers can seamlessly construct RNA, DNA, or TNA (total nucleic acid) libraries from a single sample, suitable for whole genome, whole transcriptome, or probe-based hybrid-capture protocols. This session will demonstrate the comprehensive workflow for total nucleic acid (TNA) from sample to insight.

10:15 am: Coffee Break (*King Street Atrium & Fort Orange Ballroom*)

10:30 am: Round Table Discussion: **Single Cell Proteomics** (*King Street Ballroom*) – Session Chair: Marimar Lopez (Rensselaer Polytechnic Institute)

Round Table Speakers: Olga Vitek (Northeastern University), Virginie Sjoelund (Northeastern University), Ken Moore (Thermo Fisher Scientific)

11:45 am: Lunch (*Fort Orange Atrium*) plus BSL3 laboratory user –open discussion (*Fort Orange Atrium –reserved table*)

1:00 pm: Concurrent Breakout Sessions, 1 hr./vendor talk 10 minutes

Breakout Session 1: Implementing new analytic pipelines for mass spectrometry-based proteomics and metabolomics – Session Chair: Jeremy Balsbaugh, University of Connecticut (*24 High Street*)

Breakout speakers: Timothy Moore (University of Connecticut), Kyle Swovick (University of Rochester Medical Campus), Xiaoyang Su (Robert Wood Johnson Medical School, Rutgers University)

Breakout Session 2: Spatial Tissue Profiling in 2025: Switching Gears – Session Chair: Ioannis Vlachos, Broad Institute of MIT and Harvard (*Town Hall*)

Breakout speakers: Bony de Kumar (Yale) and Jonathan Preall (Cold Spring Harbor)

Gold sponsor presentation: 10X Genomics. Pat Murphy, PhD, Science & Technology Advisor. **“The 10x ecosystem: Quality data, innovations, workflow flexibility, and support help you get the most out of shared resources”**

Abstract: 10x Genomics technologies—and our latest innovations in Visium Spatial, Chromium Single Cell, and Xenium In Situ, make your workflows easier, more efficient, and more cost effective. In this session, we will delve into our latest innovations, how the three platforms complement one another, and how they are unlocking constraints and expanding possibilities within core facilities.

Breakout Session 3: Strategies for training and continuing education in flow cytometry: what do our users need to know? Session Chair: Dan Mielcarz, Dartmouth University (*Shaker Room*)

Breakout speakers: Michael Kissner (Columbia University), Steven Polter (University of Rochester)

Gold sponsor presentation: NanoCollect, Mark Clark, Technical Sales Specialist, **“The Future of Image-Guided Cell Sorting.”**

Abstract: Imaging techniques are of vital use to researchers to study cells in their physiologically relevant states. VERLO, NanoCollect's new image-guided cell sorter, captures high-resolution images of cells, providing spatial information and enhancing cell sorting precision. It acquires single-cell images, generating detailed datasets for cell analysis and sorting. Applications include label-free cell structure analysis, cell-cell interactions, nuclear translocation, and cell organelle staining. NanoCollect, will give a brief introduction into VERLO's capabilities and applications.

Breakout Session 4: From samples to final data: helping users make and use imaging pipelines – Session Chair: Jim Chambers, University of Massachusetts Amherst (*28 High Street*)

Breakout speakers: Doug Taatjes (University of Vermont)

Breakout Session 5: Service contracts: explore your options! Session Chair: Susanna Perkins, University of Massachusetts Chan Medical School (*26 High Street*)

Breakout speakers: Daniel Kouns (University of Massachusetts), Alex Garcia (Thermo Fisher Scientific), Michael Shroyer (Remi Group)

2:00 pm: Keynote 2 (*King Street Ballroom*)

Sally Temple, Ph.D., Scientific Director, Principal Investigator, and Co-Founder of the Neural Stem Cell Institute

**“Neuracell core facility: robust and reproducible human pluripotent stem cell-derived 2D and 3D brain cell models.”**

3:00 pm: Platinum sponsor talk: Illumina. Ryan Hegarty, Sr Sales Specialist. **“Illumina Innovations Roadmap.”** (*King Street Ballroom*)

Abstract: As core lab directors and genomics technology users come together in person to discuss and collaborate, we will be covering the latest in technology and product developments from Illumina.

3:10 – 3:30 pm: Afternoon break and Networking (*King Street Atrium & Fort Orange Ballroom*)

3:30 – 4:45 pm: Concurrent Breakout Sessions, 1 hr./vendor talk 10 minutes

Breakout Session 1: Single cell multiomics – Session Chair: Bony De Kumar, Yale University (*King Street Ballroom*)

Breakout speakers: Spyros Darmanis (Gene), Ioannis Vlachos (Broad Institute of MIT and Harvard), Tsung-Chih Chen (Yale University)

Gold sponsor talk: PacBio. Minqian Wang, PhD, Territory Account Manager. **“Shaping the future of sequencing together”**

Abstract: Hear from PacBio on the latest product development updates and our ever-expanding multiomics tool kit. Learn how we have partnered with ABRF to enable you with better access to PacBio sequencing.

**Breakout Session 2: The AI frontier: transforming shared resource services in biomedical research** – Session Chair: Michael Cammer, NYU Langone (*28 High Street*)

Breakout Session 3: Managing users' expectations – Session Chair: Roxana del Rio-Guerra, University of Vermont (*24 High Street*)

Breakout speakers: Jeremy Balsbaugh (University of Connecticut), Julie Dragon (University of Vermont), Scott McCallum (Rensselaer Polytechnic Institute)

Breakout Session 4: Bioinformatics support for different technologies – Session Chair: James VanEe, Cornell University (*26 High Street*)

Breakout speakers: Stephanie Byrum (University of Arkansas for Medical Sciences), Jeffery Caplan (University of Delaware), Emily Guswa (University of Vermont)

4:45 pm Vendor show and Poster Session *King Street Atrium & Fort Orange Ballroom*)

## **FRIDAY, OCTOBER 18<sup>TH</sup>**

9:00 – 9:45 am: Plenary Session

Scott Tighe, Technical Director of the University of Vermont's Advanced Genomics Laboratory

**“Travels from microbiology to space metagenomics”** (*King Street Ballroom*)

9:45 – 9:55 am: ABRF Marketplace, Nate Herzog, University of Vermont

10:00 – 11:00 am: Concurrent Breakout Sessions, 1 hr./vendor talk 10 minutes

**Breakout Session 1: The wild wild west of next-gen: new tech showdown** – Session Chair: Sara Goodwin, Cold Spring Harbor Laboratory (*24 High Street*)

Breakout speakers: Michael Zody (New York Genome Center), Paul Collier (Weill Cornell Medicine), Scott Tighe (University of Vermont)

Gold sponsor talk: Complete Genomics. Kristina Badenhorst, Technical Sales Specialist.

**“Introduction to Complete Genomics and DNBSEQ Technology: Enabling Multi-omic Applications with Flexible Cost-Effective High-Quality Sequencing”**

Abstract: In the rapidly advancing field of multi-omics, access to cutting-edge, affordable, and flexible sequencing technologies is critical for researchers and labs of all sizes. Complete Genomics, driven by the powerful DNBSeq technology, offers a versatile range of sequencers that provide unmatched flexibility, enabling breakthroughs in both genomics and transcriptomics. From the compact and accessible E25 to the ultra-high-throughput T7, Complete Genomics provides scalable solutions tailored to diverse research needs. Moving beyond traditional NGS, Complete Genomics is proud to bring the innovative STOmics Stereo-Seq technology to the market. This pioneering technology is revolutionizing spatial transcriptomics with nanoscale resolution, species-agnostic capabilities, and customizable fields of view, pushing the boundaries of research. As a leader in high-quality, cost-effective sequencing solutions, Complete Genomics continues to stand at the forefront of scientific innovation.



**Breakout Session 2: Your career path** – Session Chairs: Marimar Lopez – Rensselaer Polytechnic Institute & Richard Cole – NYS Department of Health (26 High Street)

Breakout speakers: Amy Gordon (Rensselaer Polytechnic Institute), Spencer Bruce (NYS Department of Health), Katherin Dovidenko (Rensselaer Polytechnic Institute)

Gold sponsor talk: New England Biolabs. Sivagami Chavadi, Senior Field Applications Scientist. **“NEBNext: Celebrating 15 years of innovation! Enabling faster, streamlined, high-performance sample prep solutions to address NGS challenges.”**

Abstract: For over 15 years, New England Biolabs (NEB) has been at the forefront of NGS sample preparation, offering solutions that streamline workflows, minimize inputs, and enhance library yield and quality. The NEBNext portfolio includes over 100 products designed for preparing samples from various DNA and RNA types across multiple sequencing platforms. NEBNext products have been referenced in over 30,000 publications. To meet the evolving demands of the NGS field, NEB has introduced new kits to tackle challenges in library preparation. The NEBNext UltraExpress kits for DNA and RNA library prep significantly reduce hands-on and overall preparation time, with fewer bead clean-ups, resulting in substantial reductions in the number of tips and tubes needed. These kits also increase ease of use, allowing for a single adaptor dilution and one PCR cycling condition for a wide range of inputs, in a single optimized automatable workflow. NEB is also expanding its NEBNext Enzymatic Methyl-seq (EM-seq) product line for methylome sequencing, including a new EM-seq v2 for a broader input range, in addition to a kit for 5hmC detection and a specialized enzymatic fragmentation reagent suitable for methylation analysis workflows.

**Breakout Session 3: Novel technologies: photoinduced force microscope, building nanoscale structures using DNA** – Session Chair: Kaye Thomas, University of Rochester Medical Center (28 High Street)

Gold sponsor talk: Revvity. Robert Burden, Principal Sales Specialist. **“Focus on the signal not the noise”**

Abstract: The majority of sequencing reads are wasted on abundant and uninformative sequences that limit the ability to detect lower abundance signals. CRISPR/Cas9-based ribodepletion strategies offer multiple benefits over traditional methods employed to remove these abundant or uninformative fragments prior to sequencing. Moreover, the flexibility of CRISPR-Cas9-based ribodepletion methods makes them ideal for emerging applications, including metatranscriptomic studies, single-cell sequencing, rare disease detection, and transcriptomic assays. For research use only. Not for use in diagnostic procedures.

11:00 – 11:15 am: Morning break and Networking (*King Street Atrium & Fort Orange Ballroom*)

11:15 am – 12:00 pm: Concurrent Breakout Sessions, 1 hr./vendor talk, 10 minutes

**Breakout Session 1: Training the next generation of core scientists** – Session Chair: John Ashton, University of Rochester (28 High Street)

Breakout speakers: Chris Hallee (Massachusetts Institute of Technology), Steve Eyles (University of Massachusetts Amherst), Ying-Wai Lam (University of Vermont)

**Breakout Session 2: How do you change the culture: intellectual contributions from core personnel to the research** – Session Chair: Julie Dragon, University of Vermont (*Town Hall*)

Breakout speakers: Katia Solchurch (University of Virginia), Chris Hemme (University of Rhode Island), Heather Driscoll (Norwich University)

**Breakout Session 3: Creating a data management core: moving beyond the plan** – Session Chair: Stuart Levine (Massachusetts Institute of Technology) (*24 High Street*)

**Breakout Session 4: Cores/labs in the future: going green** – Session Chair: Andrew Vinard (Tufts University) (*King Street Ballroom*)

Breakout speakers: Chuck Blanchette (Boston Children's Hospital)

12:15 – 1:00 pm: Keynote #3 (*King Street Ballroom*)

Sheenah Mische, Ph.D., Associate Professor, Department of Pathology at NYU Grossman School of Medicine

**“Neither fish nor fowl: a cautionary tale for scientists contemplating administration”**

1:00 pm: Tom Volkert Memorial Mentorship Award Presentation & Closing Remarks

Stuart Levine, NERLSCD President

1:15 pm: Lunch (*Fort Orange Atrium*)

# NERLSCD 2024 POSTER ABSTRACTS

**Authors:** Ponnaluri VKC, Panchapakesa V, Evanich D, Erijman A, Langhorst B, and Williams L. (New England Biolabs)

**Title:** NEBNext EM-seq v2: A streamlined methylation detection method.

**Abstract:** DNA methylation is an important epigenetic regulator of gene expression. In the human genome cytosines are methylated in the CpG context and are often clustered in CpG rich regions associated with gene regulation. Traditionally, sodium bisulfite conversion was used to distinguish 5-methylcytosines and 5-hydroxymethylcytosines from cytosines. Sodium bisulfite is a chemical-based detection method that damages DNA and introduces significant sequencing bias. NEBNext®Enzymatic Methyl-seq (EM-seq™) is an enzymatic approach that minimizes DNA damage therefore enabling longer insert sizes, lower duplication rates and a more accurate quantification of methylation compared to bisulfite sequencing.

**Authors:** Yates JL, Bhattacharyya A, Howard J, Lee WT, Mantis N, Pata J, and Song R. (NYSDOH Wadsworth Center)

**Title:** Wadsworth Center Immunology Core Facility: Instrumentation and Representative Data

**Abstract:** The Immunology Core at the Wadsworth Center provides access to state-of-the-art flow cytometers for phenotypic analysis and cell sorting. Core instruments include a 4-color BD FACS Calibur, 18-color BD FACS Symphony A3, 9-color BD FACS Aria II sorter, and a 24-color BD FACS Symphony S6 sorter. Experienced core staff routinely assist users with experimental design, multi-color panel design, data collection, analysis, and interpretation. We will present representative data from several projects that includes detection of the bacterium *Borrelia burgdorferi* following trans-well migration, ex-vivo detection of the *Borrelia burgdorferi* surface protein DbpA-specific B cells from immunized mice, and a longitudinal characterization of Spike-specific B cells following SARS-CoV-2 immunization.

**Authors:** Farrington T<sup>1,2</sup>, Gray TA<sup>1</sup>, Derbyshire KM<sup>1</sup> (<sup>1</sup>NYSDOH Wadsworth Center, <sup>2</sup>Association for Public Health Laboratories)

**Title:** Visualizing calcium flux in mycobacterial cell-cell interactions

**Abstract:** A novel form of horizontal gene transfer has been described in mycobacteria that is called distributive conjugal transfer (DCT). DCT serves as an experimental system to study mycobacterial cell-cell interactions and the signal transduction networks that respond to cell-cell contact. Our data show that calcium is required for signal transduction following cell contact in DCT. Central roles for calcium in eukaryotic cell signaling are well-described and broadly accepted, but it is less clear whether calcium plays comparable roles in prokaryotes. A calmodulin-GFP fusion protein, GCaMP, exhibits increased fluorescence intensity upon calcium binding. Therefore, fluorescence intensity is an indicator of free calcium. Here we use GCaMP fluorescence microscopy to visualize calcium flux events that occur in live cell DCT cultures. We observed two classes of calcium flux events that we termed a flicker and a flare. Flickers are on/off events that occur in both mono- and co-culture and happen independently of contact with another cell. Flares are on-only events that are observed more frequently in coculture. We speculate that calcium flares result from cell-cell contact between a donor and recipient cell. Our goal is to rigorously quantify flare events in coculture compared to monoculture. This is the first demonstration at a single-cell level that calcium may play a role in cell contact responses in mycobacteria. The information gained from this project about the role of calcium in these signal transduction networks can be applied to further studies including the area of host-pathogen cell interactions that occur during mycobacterial infections.

**Authors:** Ramirez-Puebla T, Welch JM, Borisy G (ADA Forsyth Institute)

**Title:** Sectioning overcomes the bacterial cell wall barrier to fluorescence in situ hybridization

**Abstract:** Simultaneous visualization of many bacterial species via fluorescence in situ hybridization (FISH) in a biofilm remains a challenge due to the cell wall barrier of certain Gram-positive taxa. Strong enzymatic procedures required to permeabilize difficult Gram-positive microbes result in disruption or loss of Gram-negative bacteria. Here we demonstrate a protocol that enables the hybridization of difficult bacteria, while preserving the microarchitecture of all bacteria within a biofilm. We first embed the sample in a glycol methacrylate resin to preserve the structure of the biofilm. Embedment is followed by sectioning which physically cuts through the cell wall barrier, allowing probe entry. We tested the protocol on common oral species and demonstrate marked improvement in signal intensity and homogeneity of difficult Gram-positive taxa compared to standard whole cell mount procedures. Our results support the idea that the cell wall is the major barrier preventing efficient hybridization in whole mount samples. By physically overcoming the cell wall barrier, our protocol provides a universal procedure to visualize all bacteria in a mixed community.

**Authors:** Taylor Fennelly<sup>1</sup>, Siva Chavadi<sup>2</sup>, Michael Benway<sup>2</sup>, Adrian Reich<sup>2</sup>, Brad Langhorst<sup>2</sup>, Huw Ree<sup>3</sup>, Russell Buckley-Taylor<sup>3</sup>, Robert Steen<sup>1</sup> (<sup>1</sup>Harvard Medical School, <sup>2</sup>New England Biolabs, <sup>3</sup>SPT Labtech)

**Title:** Enhancing Fast, High-Throughput NGS Library Generation with Automation of NEBNext UltraExpress Methods in Harvard Medical School's NGS Core Facilityschittur@gmail.com

**Abstract:** The BPF Genomics Core at Harvard Medical School has automated both the NEBNext® UltraExpress™ DNA Library Prep and NEBNext UltraExpress FS DNA Library Prep Workflows utilizing SPT Labtech's firefly® liquid handling platform. These efforts have yielded an accessible and streamlined method of generating high-quality libraries for Illumina sequencing with a single adapter dilution and PCR cycling condition across the entire input range of the kit. Here we demonstrate not only the ease of automating NEB's UltraExpress kits and the user-friendly nature of the firefly® system, but also the ability to achieve high quality and reproducible libraries and sequencing data generated using this method. We prepared libraries from 10ng to 200ng (recommended input range) of DNA and demonstrated the continuity of data quality no matter where samples fall within the input range. As a high throughput genomics core facility, automated solutions are paramount for delivering high quality next generation sequencing data with quick turnaround times for the variety of projects brought to the BPF by our clients. The automation of the NEBNext UltraExpress kits has produced our fastest method for producing libraries for Illumina Sequencing yet, allowing us to improve our sequencing services and make NGS faster and more accessible to our research community.

**Authors:** Florian Wruck, Darek Sliwa, Andrea Candelli (LUMICKS)

**Title:** C-Trap: A single-molecule platform for uncovering biological mechanisms

**Abstract:** This poster presents an in-depth exploration of LUMICKS' C-Trap technology, an innovative instrument that combines optical tweezers with advanced fluorescence microscopy to significantly advance molecular biology research. The C-Trap allows researchers to manipulate and observe single molecules in real-time, providing unprecedented insights into the mechanical and biochemical properties of biomolecules. We focus on its crucial role in studying the dynamics and structure-function relationships of essential biomolecules, including proteins, nucleic acids, and chromatin, as well as their complex interactions. By enabling simultaneous manipulation and visualization, the C-Trap facilitates a deeper understanding of how these biomolecules function and interact under physiological conditions. Key topics include its applications in DNA replication and repair, where the C-Trap allows for the direct observation of replication fork progression and the activities of repair enzymes. In transcription studies, the technology provides insights into the mechanisms of RNA polymerase activity and regulation. The C-Trap also advances RNA and protein dynamics research by enabling the study of RNA & protein folding, interactions, and processing. Additionally, we explore its use in investigating biomolecular condensates, shedding light on phase separation phenomena and the formation and ageing of membrane less organelles. In the field of mechanobiology, the C-Trap aids in understanding how mechanical forces influence biological processes at the molecular level. By leveraging the capabilities of the C-Trap technology, researchers can gain a comprehensive understanding of fundamental biological processes, which has significant implications for the development of novel therapeutic strategies and the advancement of molecular biology.

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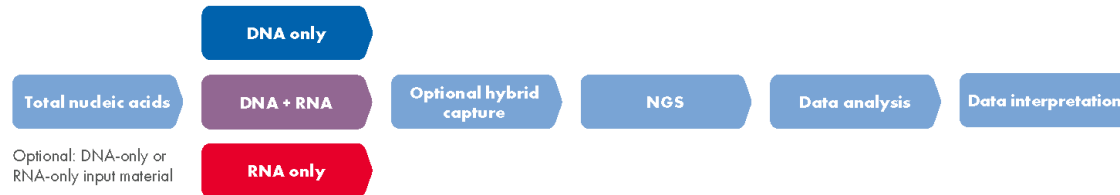


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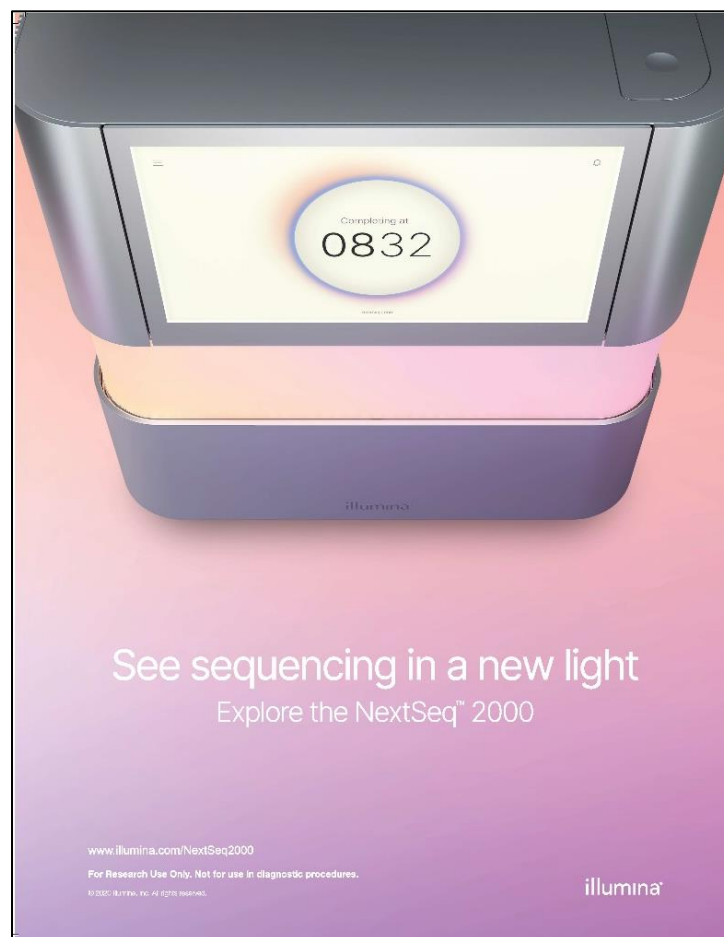


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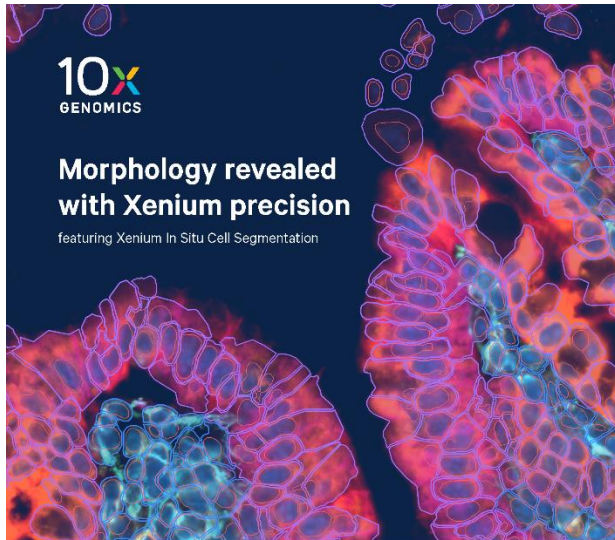


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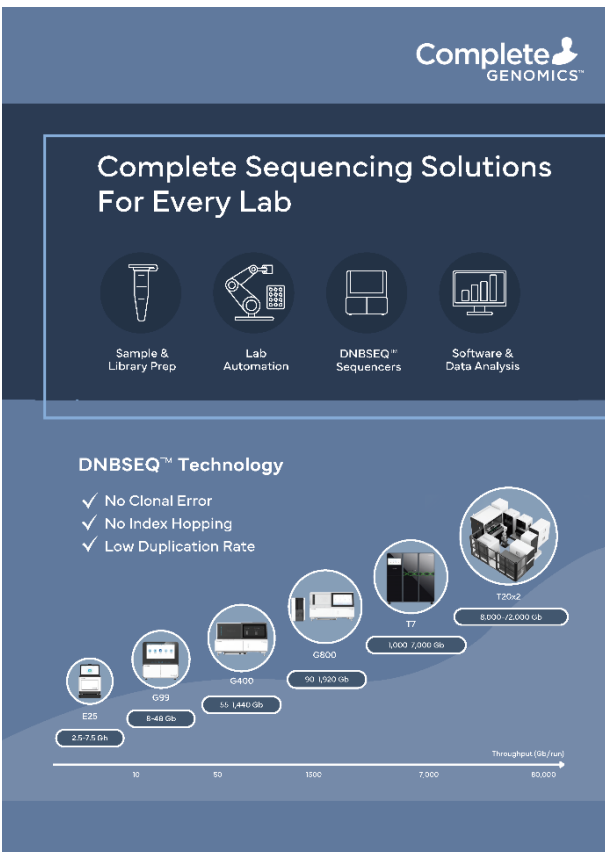


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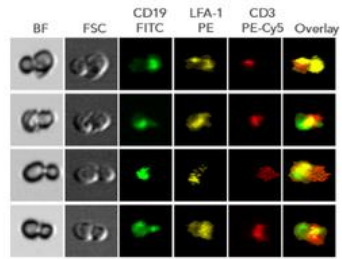
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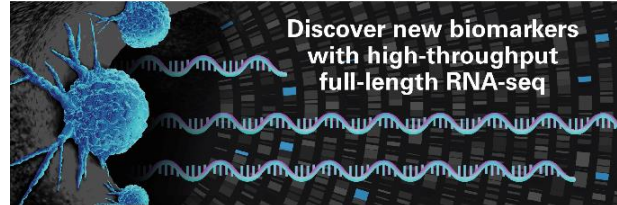


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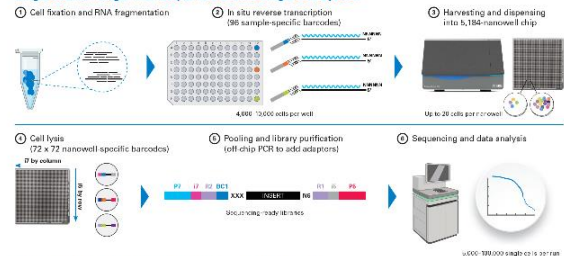
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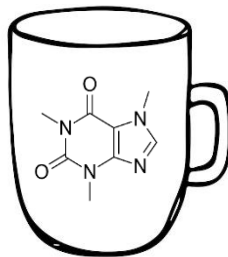
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