

# ADVANCES IN GENOMIC TECHNOLOGY DEVELOPMENT 2023 ANNUAL MEETING

## MONDAY, JUNE 5

5:00 pm Welcome Reception @ Hilton Torrey Pines Fairway Garden

## TUESDAY, JUNE 6

8:00 am Shuttle departs Hilton Torrey Pines to Sanford Consortium

8:00 am Registration Open

8:30 am Welcome and Introduction

Mark Adams, Ph.D., The Jackson Laboratory

Carolyn Hutter, Ph.D., The National Human Genome Research Institute

Stephanie Morris, Ph.D., The National Human Genome Research Institute

### **Genome Technologies: Protein-DNA Interactions**

*Session Moderators: Michal Rozenwald, University of California, Berkeley*

*Jingtian Zhou, Salk Institute for Biological Studies*

8:45 am STAMPing RNA binding protein-RNA networks

*Gene Yeo, Ph.D., MBA, University of California, San Diego*

9:00 am Single-cell and single-molecule profiling of protein-DNA interactions by MACHA

*Sebastian Pott, Ph.D., The University of Chicago*

9:15 am Mapping protein-DNA interactions on single molecules with DiMeLo-seq

*Jeremy Marcus, University of California, Berkeley*

### **Genome Technologies: Genome-wide Methods**

*Session Moderators: Sonya Rozenblat, University of Michigan*

*Vishnu Sunitha Kumary, Ph.D., Epiccypher, Inc.*

9:30 am A methylation footprinting assay for integrative ChIP-seq analysis at single-molecule resolution

*Simon Bourdareau, Ph.D., Stowers Institute for Medical Research*

9:45 am TEM-seq: An ultrasensitive multiomic platform for epitope-targeted DNA methylation mapping

*Bryan Venters, Ph.D., Epiccypher, Inc.*

10:00 am Coffee Break

10:30 am Non-destructive epigenetic sequencing with DNA modifying enzymes

*Rahul Kohli, M.D., Ph.D., University of Pennsylvania*

10:45 am Chromosome conformation mapping using transposable phage Mu

*Peter Freddolino, Ph.D., University of Michigan*

# ADVANCES IN GENOMIC TECHNOLOGY DEVELOPMENT 2023 ANNUAL MEETING

- 11:00 am Concomitant DNA/RNA next-sequencing library preparation from low abundance inputs using a single-reaction ligation approach | *Varsha Rao, Ph.D., Claret Bioscience*
- 11:15 am Quantitative fate mapping: Reconstructing progenitor field dynamics using lineage barcoding  
*Reza Kahlor, Ph.D., Johns Hopkins University*
- 11:30 am Versatile, exponentially scalable methods for single cell molecular profiling  
*Jean-Benoît Lalanne, Ph.D., University of Washington*
- 11:45 am Morning Session Wrap-up and Q&A
- 12:00 pm **Buffet Lunch - Topic Based Seating**
- 1:00 pm **Keynote:** Enhancing genome and transcriptome engineering: new approaches, new challenges  
*Prashant Mali, Ph.D., University of California, San Diego*

## 2023 Opportunity Fund Previews

- 2:00 pm
- *Hanna Liao, University of Washington presents: Jay Shendure, Ph.D., University of Washington*
  - *Maksim Royzen, Ph.D., SUNY Albany*
  - *Ya-Ming Hou, Ph.D., Thomas Jefferson University and Marija Drndic, Ph.D., University of Pennsylvania*
  - *Hugo Medina-Muñoz, Ph.D., UC, San Diego presents: Gene Yeo, Ph.D., MBA, University of California, San Diego and Rahul Kohli, M.D., Ph.D., University of Pennsylvania*
  - *Joanne Yeakley, Ph.D., BioSpyder Technologies, Inc. presents: Bruce Seligmann, Ph.D., BioSpyder Technologies, Inc. and Yang Liu, Ph.D., Yale University*
- 2:30 pm **Coffee Break**

## Single-Molecule Protein Sequencing

Session Moderator: *Keisuke Motone, Ph.D., University of Washington*

- 2:50 pm Towards high accuracy nanopore sequencing of DNA and peptides with MspA  
*Jens Gundlach, Ph.D., University of Washington*
- 3:05 pm Going with the flow: Engineering an electroosmotic flow to transport unfolded proteins against an electroosmotic force | *Giovanni Maglia, Ph.D., University of Groningen*
- 3:20 pm Progress towards long-read single-molecule protein sequencing on an array of unfoldase-coupled nanopores | *Jeff Nivala, Ph.D., University of Washington*

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3:35 pm Single molecule oligopeptide fingerprinting based on templated self-assembly of oligonucleotide structures | *Henry Hess, Ph.D., Columbia University*

3:50 pm Structural profiling of native proteins using fluorosequencing, a single molecule protein sequencing technology | *Jagannath Swaminathan, Ph.D., University of Texas at Austin, Erisyon, Inc.*

## Flash Talks & Poster Previews

4:05 pm *Evan Boyle, Ph.D., University of California, San Diego*  
*Qishan (Lisa) Liang, University of California, San Diego*  
*Christopher Thomas, University of Washington*  
*Jonathan Craig, Ph.D., University of Washington*  
*Amr Makamreh, Northeastern University*  
*Hyeon-Jin Kim, University of Washington*  
*Daphne Kontogiorgos-Heintz, University of Washington*  
*Allison Hickman, Ph.D., EpiCypher, Inc.*  
*Qi Qiu, Ph.D., University of Pennsylvania*  
*Yue (May) Wu, Salk Institute for Biological Studies*  
*Ignas Mazelis, Harvard University*  
*Autum Koenigs, Harvard University*

4:35 pm Poster Session

6:00 pm Group Dinner - Catered by Bella Vista at Sanford Consortium

8:00 pm Shuttle pick up to return to Hilton Torrey Pines

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# ADVANCES IN GENOMIC TECHNOLOGY DEVELOPMENT 2023 ANNUAL MEETING

## WEDNESDAY, JUNE 7

8:00 am Shuttle pick up at Hilton La Jolla Torrey Pines

8:30 am **Keynote:** Global insights into RNA nucleotide variants, isoforms and stability  
*Xinshu (Grace) Xiao, Ph.D., University of California, Los Angeles*

### **Flash Talks and Poster Previews**

9:30 am *Hope Eden, Johns Hopkins University*  
*Min Cheol Kim, University of California, San Francisco*  
*Po-Hsiang Hung, Ph.D., Stanford University*  
*Raeline Valbuena, Stanford University*  
*Caroline McCormick, Northeastern University*  
*Oleksandra Fanari, Northeastern University*  
*Han Wan, Yale University*  
*Miao Liu, Yale University*  
*Paul Hook, Ph.D., Johns Hopkins University*  
*Antonio Vela Gärtner, New York University Langone Health*  
*Zhuoyu Zhang, Northeastern University*

10:00 am Coffee Break

### **Local Experts Introduction and Discussion**

*Session Moderator: Mark Adams, Ph.D., The Jackson Laboratory*  
*Gene Yeo, Ph.D., MBA, University of California, San Diego*

10:30 am *Ana Moreno, Ph.D., Navega Therapeutics*  
*Aaron Parker, Ph.D., J.D., Bristol Myers Squibb*  
*Ranjan Batra, Ph.D., Locanabio, Inc.*  
*Holly Chrzanowski Winter, MS, Locanabio, Inc.*  
*Stephanie Dusaban Gonzales, Ph.D., Goodwin*  
*Jon Gonzales, Ph.D., ZS*  
*Katannya Kapeli, Ph.D., Trotana Therapeutics*  
*Jaclyn Einstein, Ph.D., Trotana Therapeutics*  
*Peter Chu Ph.D., Eclipse Bioinnovations*  
*Sergio Duron Ph.D., Enlaza Therapeutics*  
*Adam Mullick, Ph.D., Ionis Pharmaceuticals, Inc.*

12:10 pm Buffet Lunch

# ADVANCES IN GENOMIC TECHNOLOGY DEVELOPMENT 2023 ANNUAL MEETING

1:15 pm Poster Session

## Genome Technologies

Session Moderators: *Pratibha Jagannatha, University of California, San Diego*  
*Shawn Cai, Stanford University*

- 2:45 pm High-throughput identification and characterization of human and viral transcriptional activation and repression domains | *Lacramioara Bintu, Ph.D., Stanford University*
- 3:00 pm Harnessing the template switching activity of MarathonRT for quantitative detection of low abundance RNA in RNA-seq and single-cell applications | *Li-Tao Guo, Ph.D., Yale University*
- 3:15 pm Finding Clipped Tails: Developing an innovative NGS approach to discover the specific loci targeted for histone H3 N-terminal tail proteolysis | *Benjamin Weekley, University of Southern California*
- 3:30 pm A genome-integrated reporter assay for systemic interrogation of long-range enhancer-promoter interactions | *Yawei Wu, Washington University in St. Louis*
- 3:45 pm Targets and functions of the mammalian snoRNAome  
*Tao Pan, Ph.D., University of Chicago*
- 4:00 pm Rapid exploration of combinatorial protein design to identify enhanced  
*Marley Giddens, Columbia University*
- 4:15 pm [Coffee Break](#)
- 4:30 pm [Keynote](#): Protein design using deep learning  
*David Baker, Ph.D., University of Washington*
- 5:30 pm [Shuttle - Sanford Consortium to Liberty Station](#)
- 8:30 pm [Shuttle - Liberty Station to Sanford Consortium to Hilton La Jolla Torrey Pines](#)
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# ADVANCES IN GENOMIC TECHNOLOGY DEVELOPMENT 2023 ANNUAL MEETING

THURSDAY, JUNE 8

8:00 am Shuttle pick up at Hilton La Jolla Torrey Pines

## Sequencing Technology Development

Session Moderator: Joonwon Kim, Ph.D., University of California, San Diego

8:30 am Electro-optical zero-mode waveguides  
*Meni Wanunu, Ph.D., Northeastern University*

8:45 am Controlled Translocation Through Biological Nanopore Readers  
*Anna Schibel, Ph.D., Electronic Biosciences*

9:00 am Improving biological nanopores for precision nucleic acid sequencing using a computational microscope  
*Jingqian Liu, University of Illinois Urbana-Champaign*

9:15 am Single molecule DNA/RNA sequencing technology based on parallel Raman scattering readout in a coupled nanochannel/nanopore system | *Steven Brueck, Ph.D., Armonica Technologies*

## Synthetic Nucleic Acid Synthesis Technology

Session Moderator: Beatrice Adelizzi, Ph.D., DNA Script

9:30 am Chemical synthesis and non-chromatographic purification of long RNA oligonucleotides containing naturally occurring modifications | *Maksim Royzen, Ph.D., SUNY Albany*

9:45 am Solid-Phase Chemo Enzymatic Synthesis of an AEGIS tRNA Using Convertible Nucleobase for a Position Selective Genetic Code Expansion | *Nilesh Karalkar, Ph.D., Foundation for Applied Molecular Evolution*

10:00 am Coffee Break

10:15 am A DNA programming environment  
*Sasha Levy, Ph.D., Stanford University*

10:30 am Architect Directed DNA Synthesis  
*Adim Moreb, Ph.D., Duke University*

## GREGoR Consortium

10:45 am GREGoR Presentation | *Matt Wheeler, M.D., Ph.D., Stanford University*

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## NHGRI Programs

11:00 am *Carolyn Hutter, Ph.D., NHGRI*  
*Stephanie Morris, Ph.D., NHGRI*  
*Temesgen Fufa, Ph.D., NHGRI*  
*Katie Bardsley, NHGRI*

12:00 pm [Buffet Lunch](#)

## Sequencing: DNA and RNA Modifications

*Session Moderators: Sepideh Tavakoli, Northeastern University*  
*Yvonne Yee, Northeastern University*

1:00 pm Novel chemical probes for sequencing multiple DNA modifications  
*Linlin Zhao, Ph.D., University of California, Riverside*

1:15 pm METHYL-SENTRY: Feasibility study of a nanopore diagnostic tool to detect hypermethylated biomarkers  
*Ariel Pearson, Goeppert, LLC.*

1:30 pm Multiplexed Detection of RNA Modifications | *Gudrun Stengel, Ph.D., Alida Biosciences*

1:45 pm Single RNA-level analysis of full-length HIV-1 RNAs reveals functional redundancy of N6-methyladenosine modifications | *Sanggu Kim, Ph.D., Ohio State University*

2:00 pm Progress toward large-scale de novo direct RNA sequencing using mass spectrometry  
*Shenglong Zhang, Ph.D., New York Institute of Technology*

2:15 pm Single-molecule detection and quantification of pseudouridine in the human transcriptome  
*Sara Rouhanifard, Ph.D., Northeastern University*

2:30 pm Morning and Afternoon Session Wrap-up and Q&A

2:45 pm [Coffee Break](#)

## Wrap-up and Future Directions

3:00 pm Feedback and Future Directions

4:00 pm Closing Remarks | *Mark Adams, Ph.D., The Jackson Laboratory*

4:15 pm [Shuttle drop off at The Hilton La Jolla Torrey Pines](#)