

Northeast Regional Chromosome Pairing Conference
(colloquially known as the Pairing Hoedown)
October 23-24, 2015 Fourth Annual Meeting

Harvard Medical School
77 Avenue Louis Pasteur, NRB 350 and NRB 1031
Boston, MA 02115

Co-Organizers

- Niroshi Senaratne, Harvard Medical School (Wu lab)
- Eric Joyce, Harvard Medical School (Wu lab)
- Caroline Kim, Harvard Medical School (Wu lab)
- Jelena Erceg, Harvard Medical School (Wu lab)

Sponsorship By:

- Thermo Fisher Scientific
- The Laurentian University Faculty of Science, Engineering, and Architecture
- Sigma-Aldrich
- Integrated DNA Technologies
- Olympus Scientific Solutions
- Micro Video Systems, Inc.

Overview:

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| Day 1 (Friday Oct 23 rd) | Session 1 | Homology Effects (11.45 am – 1.40 pm) |
| | Session 2 | Pairing and Transvection (2.15 – 3.30 pm) |
| | Session 3 | Techniques for Visualizing Chromosomes (3.55 – 5.40 pm) |
| | Session 4 | Chromatin and Epigenetics I (6 – 7.05 pm) |
| | Session 5 | Chromatin and Epigenetics II (8.30 – 10 pm) |
| Day 2 (Saturday Oct 24 th) | Session 6 | Cohesin, Meiosis, and Mitosis (9 – 10.30 am) |
| | Session 7 | Chromosome Structure and Control (11 am – 12.25 pm) |
| | Session 8 | Chromosome Organization (3.30 – 5.00 pm) |
| | Session 9 | Selection, Evolution and Speciation (5.30 – 6.45 pm) |
| | Session 10 | RNA and Nuclear Structures (8.30 – 10.30 pm) |

Day 1 (Friday Oct 23)

11:30-12:30 PM Group lunch provided (NRB 350) and opening remarks by organizers

11:45-1:40 PM Session 1 – Homology Effects

NRB 350 Chair: Eric Joyce

Ting Wu: Not as crazy as Jack. (10+5)

Jack Bateman: Something crazyish. (10+5)

Huy Nguyen (Bosco lab): It's getting hot in here; condensin II role during heat stress induced genome reorganization. (10)

Vibhuti Rana (Bosco lab): Effect of Heat Shock on Condensin II Levels and Localization. (10+7 shared)

Eugene Gladyshev (Kleckner lab): Nucleating homology is not essential for initiating Repeat-Induced Point mutation in *Neurospora crassa* (10+5)

Annie Cho, Cyrus Zhou, and India Reiss (Johnston lab): Using Natural Variation to Understand Stochastic Gene Processes in the *Drosophila* Eye. (10)

Caity Anderson (Johnston lab): Natural variation reveals Klumpfuss/Wilms' Tumor Suppressor as a repressor of stochastic gene expression in the fly eye. (10+7 shared)

Kayla Viets (Johnston lab): Determining the role of pairing in stochastic gene expression. (10+5)

1:40-2:15 PM Break

2:15-3:30 PM Session 2 – Pairing and Transvection

NRB 350 Chair: Jelena Erceg

Jacob Hart (Bateman lab): SNP analysis to locate genes responsible for chromosome pairing in *Drosophila melanogaster*. (10)

Helen Gandler (Bateman lab): Transvection in *Drosophila melanogaster* as detected through luciferase expression. (10+7 shared)

Sandip De (Kassis lab): Multiple sequences drive long-distance transcriptional activation in trans. (10+5)

Thomas Merritt: It might not be pairing. (10+5)

Simran Baath (Merritt lab): Exploring Transvection in *Drosophila melanogaster* & *Drosophila simulans* Hybrids at the Malic Enzyme Locus. (10+5)

3:30-3:55 PM Break (coffee and snacks will be served)

3:55-5:40 PM Session 3 – Seeing is believing: techniques for visualizing chromosomes

NRB 350 Chair: Niroshi Senaratne

Brian Beliveau (Yin lab): probeMiner: Genome-scale probe discovery with nanoscale effort. (10)

Hiroshi Sasaki (Yin lab): Painting in 3 dimensions: towards whole-cell, 3D Super-Resolution imaging of chromosomes. (10+7 shared)

Mingjie Dai (Yin lab): Multiplexed single-molecule imaging with DNA-PAINT. (10+5)

Sonny Nguyen (Wu lab): Towards Genomewide FISH, and Beyond! (10+5)

Brandon Fields (Kennedy lab): Painting the *C. elegans* genome. (10+5)

Alistair Boettiger (Zhuang lab): Intra-domain bridging interactions underlie Polycomb silencing. (10+5)

Emily Deutschman (Longworth): Lights, Camera, Condense: Visualizing CAP-D3 mediated genome organization in vivo, in real time. (10+5)

5:40-6:00 PM Break

6-7:05 PM Session 4 – Chromatin and Epigenetics I

NRB 350 Chair: Huy Nguyen

Tingting Duan (Geyer lab): Hit and run: the role of an architectural protein in spermatogenesis. (10+5)

Xin Chen: Breaking the symmetry— exploring molecular and cellular mechanisms underlying asymmetric histone inheritance during *Drosophila* male germline stem cell asymmetric division. (10)

Matthew Wooten (Chen lab): How is asymmetric histone distribution established? (10)

Rajesh Ranjan (Chen lab): How is histone asymmetry recognized by mitotic machinery? (10)

Jonathan Snedeker (Chen lab): Dynamics at replication fork and implications. (10+10 shared)

7:05-8:30 PM Group dinner provided in NRB 350

8:30-10:00 PM Session 5 – Chromatin and Epigenetics II
NRB 1031 (NOTE ROOM CHANGE) Chair: Eric Joyce

Victoria Meller: Short RNA and X chromosome recognition. (10+5)

Kami Ahmad: Cooperativity of transcription factors for Polycomb states. (10+5)

Payal Ray: Role of Polycomb proteins in Epigenetic silencing. (10+5)

Jeff Sekelsky: When and why did Drosophila chromosomes get to be so weird? (10+5)

Victoria Blake (Kassis lab): A tale of two pairing-dependent engrailed alleles. (10+5)

Leila Rieder (Larschan lab): Zn-finger TX factor seeks GA repeat binding partner. (10+5)

Day 2 (Sat Oct 24)

(Light breakfast provided outside NRB 1031)

9-10:30 AM Session 6 – Cohesin, Meiosis, and Mitosis NRB 1031 Chair: Niroshi Senaratne

Jaclyn Fingerhut (Yamashita lab): The role of Ada2a in Drosophila meiosis. (10+5)

Adrienne Perkins (Bickel lab): The Effect of Oxidative Stress on Meiotic Chromosome Segregation in Drosophila Oocytes. (10+5)

Kim McKim: Cohesins, pairing and other important events in early meiosis. (10+5)

Jason Stumpff: Chromosome clustering during mitosis prevents formation of micronuclei. (10+5)

Amity Manning: Chromosome cohesion and genome stability. (10+5)

Stephen Hinshaw (Harrison lab): Do ciliates count their chromosomes? (10+5)

10:30-11:00 AM Break

11-12:25 PM Session 7 – Chromosome structure and control NRB 1031 Chair: Teresa Rzezniczak

Don Fox: Polyploid Mitosis and Frequent Aneuploidy During Programmed Organ Development. (10)

Benjamin Stormo (Fox lab): Incompatible with Mitosis? How polyploid chromosomes affect division. (10+7 shared)

Kristin Scott: Centromere inactivation in trans (in fission yeast centromeres). (10+5)

Amanda Larracuente: Revealing structure and inferring dynamics of satellite DNAs using deep single molecule real time sequencing in Drosophila. (10+5)

Barbara Mellone: Centromere specification and dynamics in flies. (10)

Jason Palladino (Mellone lab): Ectopic centromere assembly induces chromosomal instability in Drosophila. (10+7 shared)

12:25-3:30 PM Group lunch provided in NRB 350/ Break

3:30-5:00 PM Session 8 – Chromosome organization
NRB 1031 Chair: Haein Kim

Anton Goloborodko (Mirny lab): Condensation and segregation of sister chromatids by loop extruding proteins. (10)

Geoffrey Fudenberg and Maxim Imakaev (Mirny lab): Formation of Chromosomal Domains in Interphase by Loop Extrusion. (10+10 shared)

Balint Kacsoh (Bosco lab): Social learning and dialects in Drosophila are affected by aging and chromatin structure. (10)

Lita Bozler (Bosco lab): More on social learning in Drosophila, with some crazy ideas on genetic memory. (10+7 shared)

Michelle Longworth: dCAP-D3 regulates cell fate determination in a non-cell autonomous manner. (10+5)

Jelena Erceg (Wu lab): Dynamics of chromosome organization during Drosophila embryogenesis. (10+5)

5:00-5:30 PM Break (coffee and snacks will be served)

5:30-6.45 PM Session 9 – Selection, Evolution, and Speciation
NRB 1031 Chair: Stephen Hinshaw

Nitin Phadnis: The molecular basis of speciation in Drosophila. (10+5)

Leah Rosin (Mellone lab): The co-evolution of CENP-A and CAL1 underlies centromere divergence in Drosophila. (10)

Chin-chi Chen: Chaperone-mediated transcription is necessary for centromere establishment. (10+7 shared)

Kiara Eldred (Johnston lab): Mechanisms Governing Stochastic Expression of Color Opsins in the Human Eye. (10+5)

Ruth McCole (Wu lab): Ultraconserved elements: a journey into genomic deep space. (10+5)

6.45-8:30 PM Group dinner provided (NRB 350)

8:30-10:30 PM Session 10 – RNA and Nuclear structures
NRB 1031 Chair: Jack Bateman

Igor Sharakhov: Effects of chromosome-nuclear envelope interactions on nuclear architecture (10+5)

George Spracklin (Kennedy lab): RNA links germline immortality and chromosome pairing (10+5)

Heather Wallace (Bosco lab): Condensin II regulates stability and maintenance of Drosophila telomeres (10+5)

Kevin Lu (Yamashita lab): The nucleolus fragments in germline stem cells with age (10+5)

Madhav Jagannathan (Yamashita lab): Uncovering the unappreciated role of satellite DNA in genome maintenance (10+5)

Yukiko Yamashita: TBD (10+5)

Gio Bosco: TBD (30, or whenever he gets tired)

Saturday evening – 10:30 PM onward, refreshments and entertainment (NRB 350)

Party with the Wu Lab! A reception will follow the talks (in the same building). Mix, mingle, and enjoy. Refreshments will be provided. And of course, karaoke.

Meeting Directions

The meeting will be held in Room 350 and 1031 in the NRB (New Research Building) which is located at 77 Avenue Louis Pasteur in Boston. We highly recommend taking a taxi from the airport. If you need parking, a public lot is available at 333 Longwood Ave (\$35 for >6 hrs).

When you get to our (big glass) building, go in the right hand set of glass doors, up the stairs, and then straight down the wide corridor for about 20 seconds until you reach a security desk on your right. Let the guard know that you are on the list of attendees for the Pairing Conference, after which you will be asked to sign in and then given an ID. Then, take the elevators to the third floor. Room 350 is just a few steps from the elevator on your right. Room 1031 is on the tenth floor; take a left once you get off the elevator and walk down the hallway for about 10 seconds, you will then see the conference room on your right.

Meeting Website

<http://www.homologyeffects.org/meetings>

Meeting wireless

HMS Public Wireless will be available. Select HMS Public Wireless in your computer's wireless network settings and allow it to connect. Launch a web browser. A page will come up that asks you to accept the terms and conditions. Once you do, you have networking.

Research Groups Represented

| | <u>Number of attendees</u> |
|---|----------------------------|
| Kami Ahmad (Fred Hutchinson Cancer Research Center) | 1 |
| Erez Aiden (Baylor College of Medicine) | 1 |
| Jack Bateman (Bowdoin College) | 5 |
| Welcome Bender (Harvard Medical School) | 2 |
| Sharon Bickel (Dartmouth College) | 1 |
| Giovanni Bosco (Dartmouth College) | 6 |
| Steven Carr (Broad Institute of MIT and Harvard) | 1 |
| Xin Chen (Johns Hopkins University) | 8 |
| George Church (Harvard Medical School) | 1 |
| Monica Colaiacovo (Harvard Medical School) | 1 |
| Angela DePace (Harvard Medical School) | 1 |
| Nick Dyson (MGH/Harvard Medical School) | 1 |
| Don Fox (Duke University) | 2 |
| Pamela Geyer (University of Iowa) | 2 |
| Steve Harrison (Harvard Medical School) | 1 |
| Robert Johnston (Johns Hopkins University) | 11 |
| Judy Kassis (NICHD/NIH) | 3 |
| Scott Kennedy (Harvard Medical School) | 6 |
| Nancy Kleckner (Harvard University) | 2 |
| Amanda Larracuenta (University of Rochester) | 1 |
| Erica Larschan (Brown University) | 3 |
| Bernardo Lemos (Harvard School of Public Health) | 1 |
| Michelle Longworth (Cleveland Clinic) | 2 |
| Amity Manning (WPI) | 2 |
| Kim McKim (Rutgers University) | 1 |
| Vicky Meller (Wayne State University) | 1 |
| Barbara Mellone (University of Connecticut) | 6 |
| Thomas Merritt (Laurentian University) | 3 |
| Leonid Mirny (MIT) | 3 |
| Nitin Phadnis (University of Utah) | 1 |
| Oliver Rando (University of Massachusetts Medical School) | 1 |
| Payal Ray (Bowdoin College) | 1 |
| Soumya Raychaudhuri (Brigham and Women's/HMS) | 1 |
| Adrian Salic (Harvard Medical School) | 1 |
| Kristin Scott (Duke University) | 1 |
| Jeff Sekelsky (UNC Chapel Hill) | 1 |
| Igor Sharakhov (Virginia Tech) | 1 |
| Jason Stumpff (University of Vermont) | 3 |
| Ting Wu (Harvard Medical School) | 12 |
| Yukiko Yamashita (University of Michigan) | 5 |
| Peng Yin (Wyss Institute/Harvard University) | 4 |
| Xiaowei Zhuang (Harvard University) | 1 |
| TOTAL | 112 |