

Program for 2025 Retreat of the Center for Biomolecular Condensates
Location: Brauer Hall, James McKelvey School of Engineering, Danforth Campus
April 30, 2025

07:30 - 08:25: Breakfast – Brauer Hall

08:30: Kickoff and Overview: Rohit Pappu, Brauer Hall, Room 012

08:40 - 11:20 Session 1 – Interphases, Interfaces, & Microphases, Brauer Hall, Room 012

Session 1 Chair: Andrea Soranno

08:40 - 09:05: **Yifan Dai:** *Phase transition pathways encode physicochemical properties of biomolecular condensates* (20 minutes for the talk followed by 5 minutes for Q&A)

09:10 - 09:30: **Md Shakil bin Kashem:** *Quantum sensing of the intracellular environment* (15 minutes for the talk followed by 5 minutes for Q&A)

09:35 - 09:55: **Dylan Tomares:** *Quantifying different modes of charge regulation of intrinsically disordered proteins* (15 minutes for the talk followed by 5 minutes for Q&A)

09:55 - 10:10: Short break

10:10 - 10:30: **Yuanxin Qiu:** *Tracking single molecule dynamics in condensates* (15 minutes for the talk followed by 5 minutes for Q&A)

10:35 - 10:55: **Min Kyung Shinn:** *Microphase separation of RRM-containing proteins* (15 minutes for the talk followed by 5 minutes for Q&A)

11:00 - 11:20: **Vicky Liu:** *Microphases, macrophases, and clustering-aided percolation of RRM-containing proteins* (15 minutes for the talk followed by 5 minutes for Q&A)

11:20 - 11:35: Short Break

11:35 - 12:30: Session 2 – Keynote Session, Chair, Rohit Pappu

11:35 – 11:40: Introduction of Keynote Speaker

11:40 – 12:20: Keynote Talk **Dr. Priya Banerjee** from the University at Buffalo: *Viscoelasticity and aging dynamics of single and multi-component condensates*

12:20 – 12:30: Q&A

12:35 - 13:40: Lunch – Brauer Hall Atrium

13:45 - 16:20: Session 3 – Functions of condensates and compositional specificity, Brauer Hall, Room 012

Session 3 Chair: Matthew Lew

13:45 - 14:10: Alex Holehouse: *Chemical specificity of intrinsically disordered regions* (20 minutes for the talk followed by 5 minutes for Q&A)

14:15 - 14:35: Abira Ganguly: *Functions and determinants of condensates formed by the nuclear envelope integral membrane protein NEMPI* (15 minutes for the talk followed by 5 minutes for Q&A)

14:40 - 15:00: Yuan Hong: *Nuclear envelope repair mediated by NEMPI condensates* (15 minutes for the talk followed by 5 minutes for Q&A)

15:05 - 15:25: Yuna Ayala: *Walking the Tightrope: TDP-43 Condensates in Health and Disease* (15 minutes for the talk followed by 5 minutes for Q&A)

15:30 - 15:50: Michael Chen: *Transition state of beta-amyloid governs its electrochemical activity* (15 minutes for the talk followed by 5 minutes for Q&A)

15:55 - 16:20: Abhinav Diwan: *Condensates in complex cells – Effectors of physiology and therapeutic targets* (20 minutes for the talk followed by 5 minutes for Q&A)

16:20 - 16:40: Short Break

16:40 - 18:30: Session 4 – Emerging topics and technologies

Session 4 Chair: Dmitri Nusinow

16:40 - 17:05: Meredith Jackrel: *MATRIN-3 an ALS-associated RNA-binding protein forms spherical and wormlike assemblies that depend on RNA and pathogenic mutations* (20 minutes for the talk followed by 5 minutes for Q&A)

17:10 - 17:30: Yuefeng Ma: *Directed evolution of intrinsically disordered proteins* (15 minutes for the talk followed by 5 minutes for Q&A)

17:30 - 17:50: Jeff Lotthammer: *Accurate predictions of conformational ensembles of disordered proteins with STARLING* (15 minutes for the talk followed by 5 minutes for Q&A)

17:50 - 18:10: Ryan Emenecker: *GOOSE: Applying IDR design to synthetic condensates* (15 minutes for the talk followed by 5 minutes for Q&A)

18:10 - 18:30: Shankar Mukherji: *Organelle cloaking shields* (15 minutes for the talk followed by 5 minutes for Q&A)

18:30 - 20:00: Poster session

20:00: End of retreat

LIST OF POSTER PRESENTERS

Posters from the Dai Lab

1. Michael Chen

Posters from the Holehouse Lab

2. Borna Novak
3. Aidan Flynn
4. Stephen Plassmeyer
5. Ramiz Somjee

Posters from the Jackrel Lab

6. Sabrina Talir
7. Madalyn Bochantine

8. Chris Camitta

Posters from the Lew Lab

9. Yiyang Chen

Posters from the Mahjoub Lab

10. Moe Mahjoub

Posters from the McNeill Lab

11. Bilal Hakim

12. Hui Zhang

13. Ling Zhang

Posters from the Mukherji Lab

14. Jolee Zhou

Posters from the Nusinow Lab

15. Stefanie King

Posters from the Pappu Lab

16. Matthew King

17. Vicky Liu

18. Gaurav Mitra

19. Avnika Pant

20. Kiersten Ruff

21. Min Kyung Shinn

22. Dylan Tomares

23. Ruoyao Zhang

Posters from the Silva Lab

24. Heather Struckman

Posters from the Zhong Lab

25. Wenwen Tian

LIST OF ATTENDEES

Attendees from the Ayala Lab

1. Yuna Ayala

Attendees from the Corbo Lab

2. Joseph Corbo

Attendees from the Dai Lab

3. Michael Chen

4. Yifan Dai

5. Angelina Liu

6. Yuefeng Ma

7. Leshan Yang

8. Wen Yu

Attendees from the Diwan Lab

9. Abhinav Diwan

10. Kenji Lim

Attendees from the Holehouse Lab

11. Graham Bachman

12. Freya Beinart

13. Ryan Emenecker

14. Aidan Flynn
15. Alex Holehouse
16. Alex Keeley
17. Jeff Lotthammer
18. Borna Novak
19. Jackie Pelham
20. Stephen Plassmeyer
21. Ramiz Somjee

Attendees from the Jackrel Lab

22. Madalyn Bochantine
23. Chris Camitta
24. Joey Fritsche
25. Darcy Harris
26. Meredith Jackrel
27. April Lopez
28. Anuradhika Puri
29. Sabrina Talir

Attendees from the Lew Lab

30. Yiyang Chen
31. Suraj Khochare
32. Matthew Lew
33. Zhihang Li
34. Yuanxin Qiu
35. Brian Sun

Attendees from the Mahjoub Lab

36. Moe Mahjoub

Attendees from the McNeill Lab

37. Abira Ganguly
38. Bilal Hakim
39. Yuan Hong
40. Helen McNeill
41. Hui Zhang
42. Ling Zhang

Attendees from the Mukherji Lab

43. Janna May Angeles
44. Joe Glichowski
45. Md Shakil bin Kashem
46. Shankar Mukherji
47. Jordan Stevens
48. Jolee Zhou

Attendees from the Nusinow Lab

49. Stefanie King
50. Dmitri Nusinow

Attendees from the Okuno Lab

51. Yusuke Okuno

Attendees from the Pappu Lab

- 52. Souradeep Ghosh
- 53. Liwen Gu
- 54. Matthew King
- 55. Vicky Liu
- 56. Gaurav Mitra
- 57. Avnika Pant
- 58. Rohit Pappu
- 59. Kiersten Ruff
- 60. Min Kyung Shinn
- 61. Dylan Tomares
- 62. Ruoyao Zhang

Attendees from the Reichardt Lab

- 63. Courtney Reichardt

Attendees from the Silva Lab

- 64. Anastasia Khokhlova
- 65. Heather Struckman

Attendees from the Soranno Lab

- 66. Anshuman Jaysingh
- 67. Nirnay Samanta
- 68. Andrea Soranno
- 69. Madison Stringer

Attendees from the Tsai Lab

- 70. Tony Tsai

Attendees from the Vahey Lab

- 71. Michael Vahey

Attendees from the Weihl Lab

- 72. Eileen Lynch
- 73. Chris Weihl

Attendees from the Zhong Lab

- 74. Wenwen Tian
- 75. Lihua Zhang
- 76. Xuehua Zhong

Other Attendees

- 77. Nathaniel Huebsch – BME
- 78. Jennifer Richards – OTM
- 79. Priya Banerjee – University at Buffalo