

THE TRIANGLE CYTOSKELETON MEETING



NOVEMBER 2ND, 2020

HOSTED VIRTUALLY VIA WHOVA

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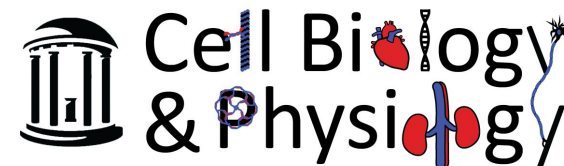
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MEETING ORGANIZERS

Reem Hakeem
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WITH SPECIAL THANKS TO:

Delphine Bull - UNC Chapel Hill
Robert Duronio, PhD - UNC Chapel Hill
Sophia Tintori, PhD - New York University
Dylan Burnette - Vanderbilt University
Tanner Fadero - UNC Chapel Hill

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CYTOSKELETON IN DEVELOPMENT AND DISEASE

CYTOSKELETAL REGULATION OF CELL MECHANICS

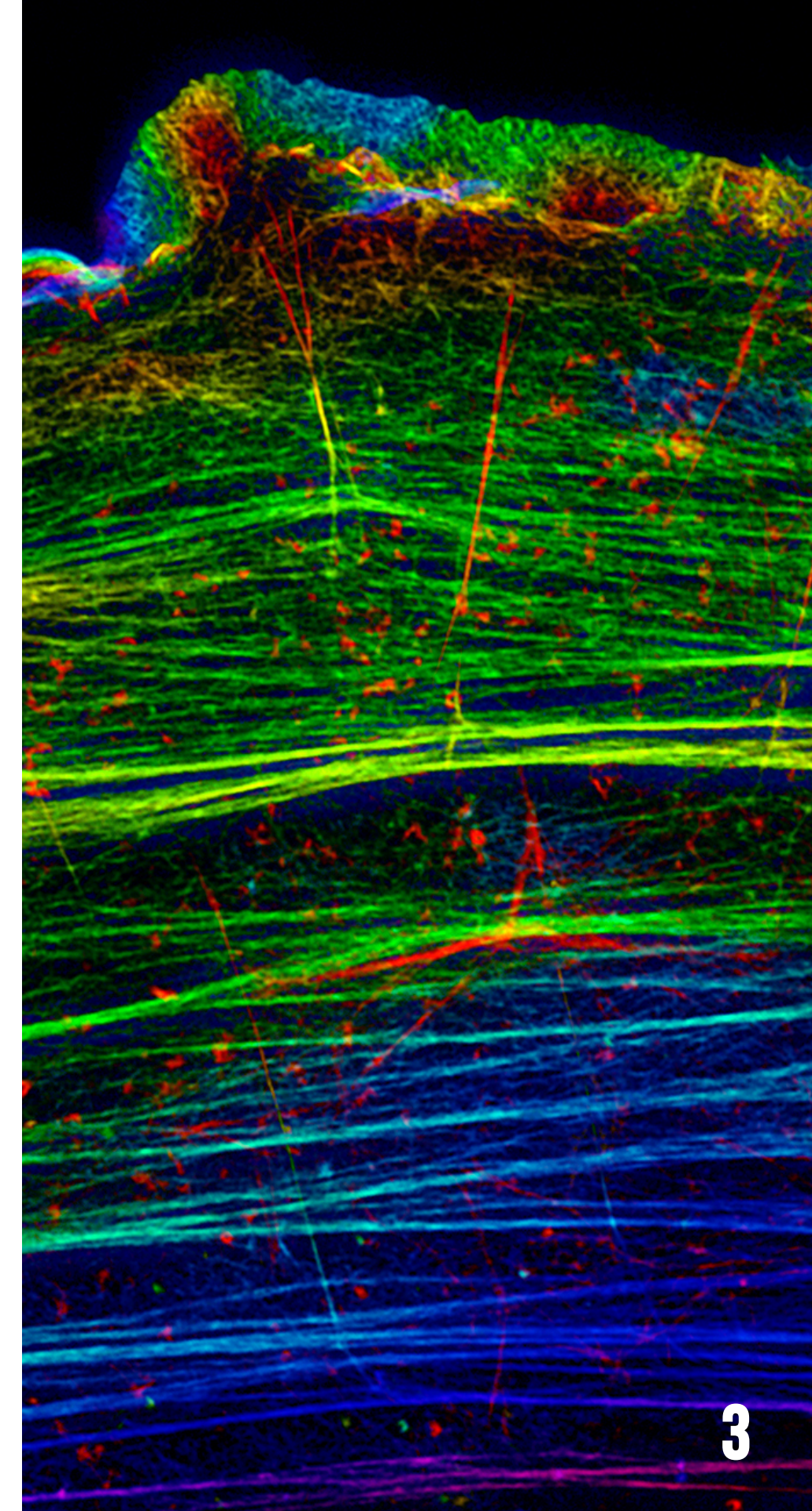
POSTER SESSION 1

PRINCIPLES OF CELL MIGRATION AND ADHESION

REGULATION OF CELL SHAPE AND DIVISION

POSTER SESSION 2

STRUCTURAL BIOLOGY OF THE CYTOSKELETON



TRIANGLE CYTOSKELETON MEETING
NOVEMBER 2ND, 2020 VIA WHOVA

8:50 AM Introduction to Program

**9:00 AM Cytoskeleton in
Development and Disease**

**10:10 AM Cytoskeletal Regulation
of Cell Mechanics**

10:50 AM Poster Session 1

**11:50 AM Principles of Cell Migration
and Adhesion**

12:30PM Lunch

**1:15 PM Regulation of Cell Shape
and Division**

2:40 PM Poster Session 2

**3:30 PM Structural Biology
of the Cytoskeleton**

4:30PM Happy Hour!

CYTOSKELETON IN DEVELOPMENT AND DISEASE

8:50 AM **Welcome and Introduction to Program**

9:00 AM **Nuclear LINC Complex Proteins Regulate Endothelial Cell-Cell Communication**

Danielle Buglak - University of North Carolina Chapel Hill

Non-canonical roles of an RNA-binding protein in axonal development and microtubule regulation

Fernando Alsina, PhD - Duke University

Asymmetric regulation of centrosome activity during neural development requires the RNA-binding protein Orb2

Beverly Robinson - Emory University

10:00 AM **Coffee Break**

CYTOSKELETAL REGULATION OF CELL MECHANICS

10:10 AM

Splice it like it's hot: Splice forms of F-actin capping protein affect skeletal muscle cell morphology and dynactin levels

Emma Hinkle - University of North Carolina Chapel Hill

Exploring a novel class of cis-regulators of integrin that impact focal adhesion dynamics

INVITED SPEAKER: Thomas Barker, PhD - University of Virginia

10:50 AM

Poster Session 1

ARHGAP17, a Cdc42-specific GAP, localizes to invadopodia and regulates their turnover

Gabriel Kreider-Letterman, Abel Castillo, and Rafael Garcia-Mata - University of Toledo

Signal transmission along Cytoskeleton filaments

Christian Hunley and Marcelo Marucho - University of Texas at San Antonio

Planar cell-cell signaling through Fat2 restricts WAVE complex-dependent protrusions to the leading edge

Audrey M. Williams and Sally Horne-Badovinac - University of Chicago

Hyaluronan Regulation at the Developing Synapse

Emily S. Wilson, Warren Knudson, and Karen Litwa - East Carolina University

Focal adhesion characterization during neuronal differentiation of iPSC-derived neurons

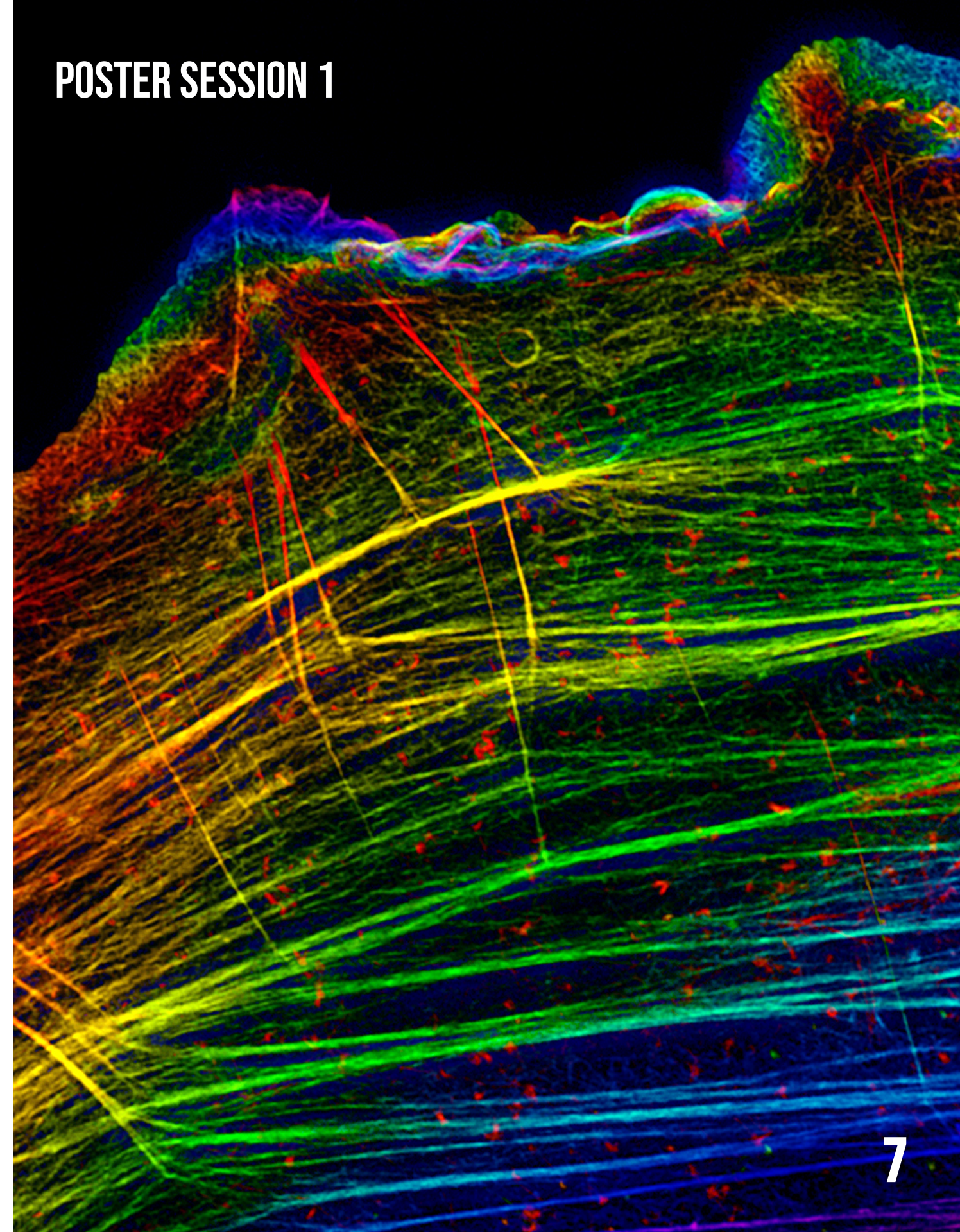
Amanda Petritsch, and Karen Litwa - East Carolina University

Microtubule minus-end stability is dictated by the tubulin off-rate

Claire Strothman, Veronica Farmer, Goker Arpag, Nicole Rodgers, Marija Podolski, Stephen Norris, Ryoma Ohi, and Marija Zanic - Vanderbilt University

Cryo-EM sheds light on how katanin severs microtubules

Elena A. Zehr, Agnieszka Szyk, Ewa Szczesna, and Antonina Roll-Mecak - NIH-NINDS



The roles of site-specific O-GlcNAc modification in regulating the intermediate filament cytoskeleton

Duc Huynh, Heather Tarbet, Po-Han Chen, Brett Condon, Jimin Hu, Timothy Smith, Timothy O'Brien III, Jen-Tsan Chi, and Michael Boyce - Duke University

Spatio-temporal organization of microtubules in fibroblast-like cells

Ekaterina Zvorykina - Lomonosov Moscow State University

Biophysical parameters governing septin assembly

Benjamin Woods, Ian Seim, Kevin Cannon, Jessica Liu, Grace McCaughlin, and Amy Gladfelter - UNC Chapel Hill

The cell junction protein Polychaetoid/ZO-1 ensures junction robustness during morphogenetic movements of Drosophila embryogenesis

A. Schmidt, T. Finegan, and M. Peifer, - UNC Chapel Hill

Generation of an iPSC-derived human astrocyte and brain organoid model to investigate proteostasis of the astrocytic intermediate filament cytoskeleton

Rachel A. Battaglia, Adriana Beltran, Karina Kinghorn, Jasmine Robinson, Raluca Dumitru, Namritha Ravinder, Erik Willems, Rhonda Newman, Jason Potter and Natasha Snider - UNC Chapel Hill

The Nuclear Lamina Experiences Tension Caused by Chromatin Condensation

Brooke Danielsson, Elina Mantyla, Jolene Cabe, Teemu Ihalainen, and Daniel Conway - Virginia Commonwealth University

MyoXVI and Coro1A function in TRIM-regulated neuronal morphogenesis

Chris T. Ho, Shalini Menon, and Stephanie L. Gupton - UNC Chapel Hill

Structural Insights into Disease-Causing Mutations in Human Nonmuscle Myosin-2A

Krishna Chinthalapudi and Sarah M Heissler - The Ohio State University

PRINCIPLES OF CELL ADHESION AND MIGRATION

11:50 AM **Spatial segregation of plasma membrane signaling components in the blebs by actin retrograde flow**

Ankita Jha, PhD - NIH-National Heart, Lung, and Blood Institute

What are lamellipodia for anyway?

INVITED SPEAKER: James Bear, PhD - University of North Carolina Chapel Hill

12:30 AM **Lunch**

REGULATION OF CELL SHAPE AND DIVISION

- 1:15 PM** **Actin-independent, microtubule-dependent cleavage-furrow ingression in Chlamydomonas**
INVITED SPEAKER: Masayuki Onishi, PhD - Duke University
- Nonmuscle Myosin II Drives Actomyosin Bundling at Nascent Adherens Junctions**
Hui-Chia Yu-Kemp, PhD - University of North Carolina Chapel Hill
- Presentation by Lumicks**
- How to make microtubules and build the mitotic spindle**
KEYNOTE SPEAKER: Sabine Petry, PhD - University of Princeton
- 2:30 PM** **Coffee Break**
- 2:40 PM** **Poster Session 2**

Resolving Structural Changes During the Digestion of Fibrin Fibers

Spencer R. Lynch, Brittany E. Bannish, and Nathan E. Hudson - East Carolina University

Structural Basis of Mechanosensation in Nonmuscle Myosins

Sarah M. Heissler, James R. Sellers, and Krishna Chinthalapudi - The Ohio State University

RNA localization to centrosomes supports error-free mitosis

Pearl V. Ryder, Junnan Fang, and Dorothy A. Lerit - Emory University School of Medicine

Differential Interactome of a DCTN4 (dynactin p62) Variant

Elliot Mattson and Trina A. Schroer - John Hopkins University

Cytoskeletal dynamics during *C. elegans* muscle progenitor migration

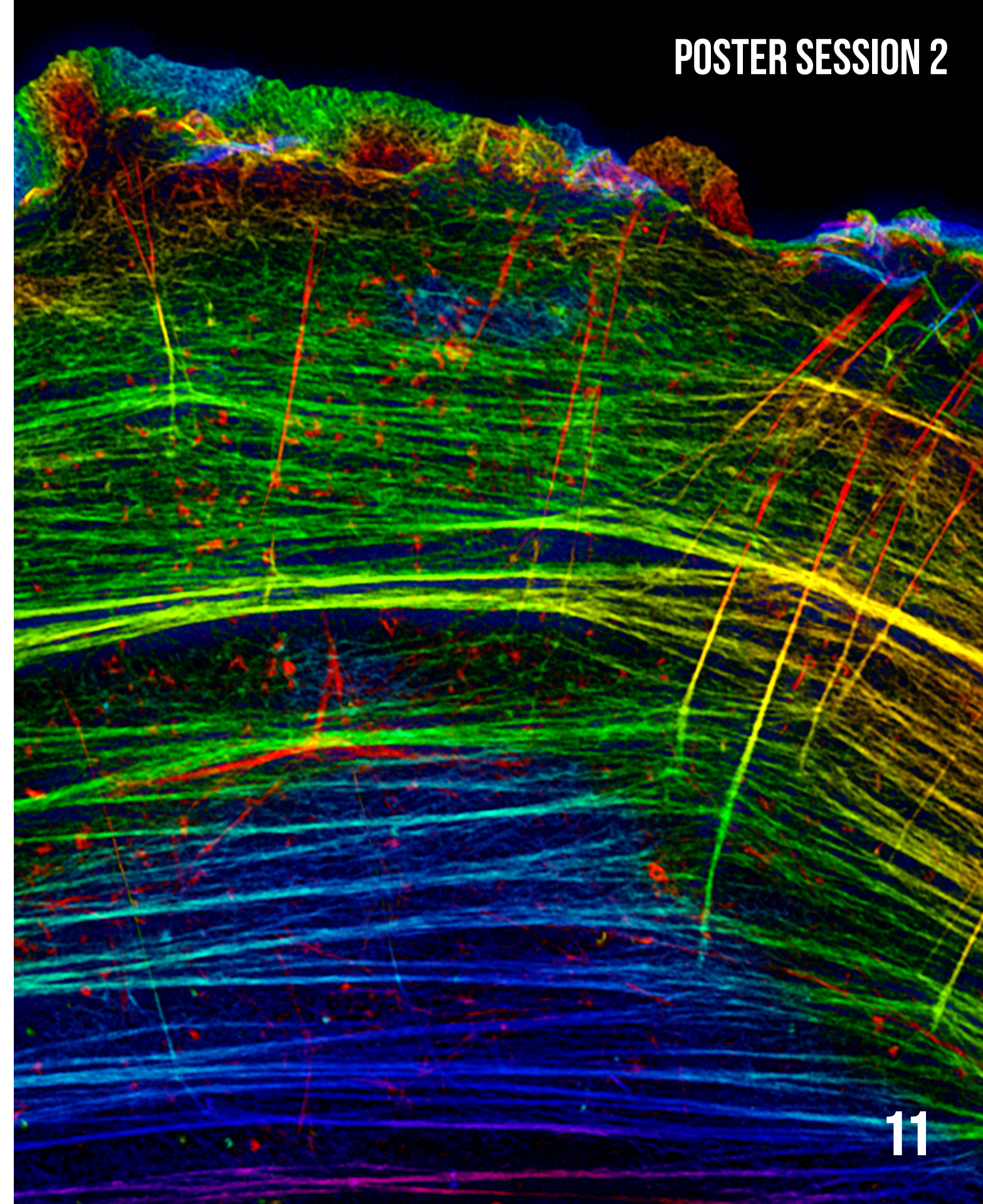
Ononah B. Ahmed, Rebecca C. Adikes, Nuri Kim, Qinyun Zhao, Ziji Zhang, Kaitlyn Swayze, Bob Goldstein, Ariel M. Pani, Yuefan Deng, and David Q. Matus - Stony Brook University

VASP ubiquitination regulates actin dynamics and neuronal morphology

Laura McCormick and Stephanie Gupton - UNC Chapel Hill

GEF-H1 Activation during Frustrated Phagocytic Spreading

M. Kern, L. Menozzi, T. Watanabe, D. Marston, M. Azoitei, E.T. O'Brien III, M. Falvo, K. Hahn and R. Superfine - UNC Chapel Hill



The Physical Basis of Curvature Sensing By Septins

Kevin Cannon, Wenzheng Shi, Ehssan Nazockdast, and Amy Gladfelter - UNC Chapel Hill

Generation of Trypanosoma brucei CRISPR/Cas9 knockouts of to understand the role of tubulin post-translational modifications in flagellar motility

Katherine Wentworth, Subash Godar, Lucy Fischer, and Joshua Alper - Clemson University

α -catenin Activation at Adherens Junctions Controls Vinculin Enrichment at Focal Adhesions

Vidal Bejar-Padilla, Vani Narayanan, Jolene Davis, and Daniel E. Conway - Virginia Commonwealth University

Halo-FSM: Fluorescent Speckle Microscopy using halo Tag Protein to visualize protein dynamics in living cell

Jiali Zhu, Amanda Brown, Bryan Heck, Emily Bartle, Ehssan Nazockdast and Paul Maddox - UNC Chapel Hill

A new biosensor design reveals conformational changes of single molecules in living cells

Bei Liu, Nicholas K. Pinkin, Fred Pimenta, and Klaus M. Hahn - UNC Chapel Hill

Cell size and spindle architecture control mitotic duration by affecting the timing of checkpoint silencing

Mathew Bloomfield, Jing Chen, and Daniela Cimini - Virginia Tech

Adapting the Forest Fire Model to Intracellular Waves

Melissa Kissling, Abby Bull, Leonard Campanello, and Wolfgang Losert - UNC Chapel Hill

Axonal accumulation of neurofilaments is associated with abnormal RNA metabolism and TDP-43 pathology

Maryam Faridounnia, Rachel Battaglia, Adriana Beltran, Baggio Evangelista, Todd Cohen, Ashley Ezzell, Diane Armao, and Natasha Snider - UNC Chapel Hill

Single-particle tracking of cortical dynein reveals mechanisms of force generation and regulation during mitotic entry in the C. elegans single-cell embryo

Alan Edwards, John Linehan, Vincent Boudreau, and Paul Maddox - UNC Chapel Hill

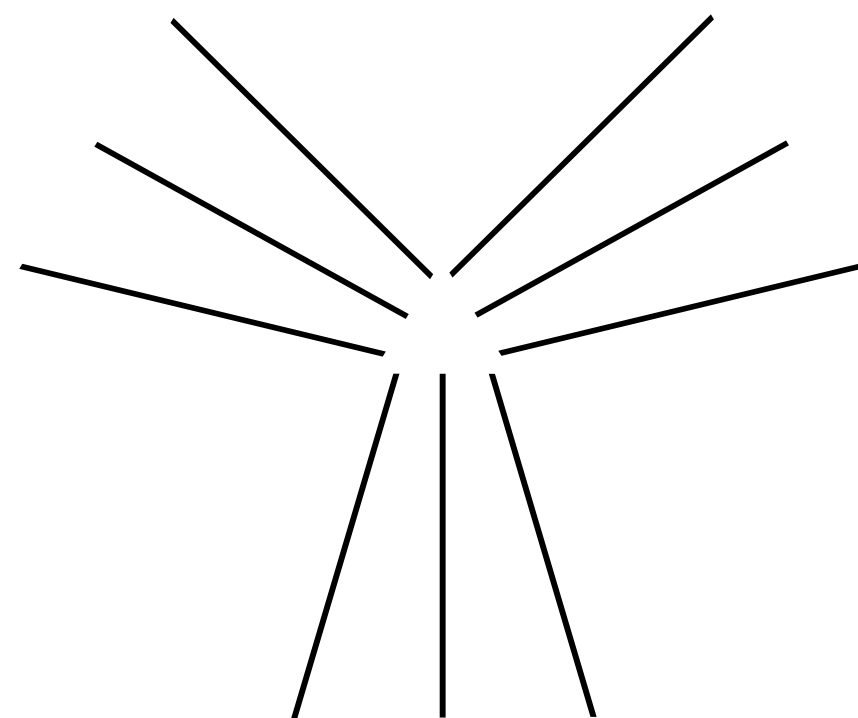
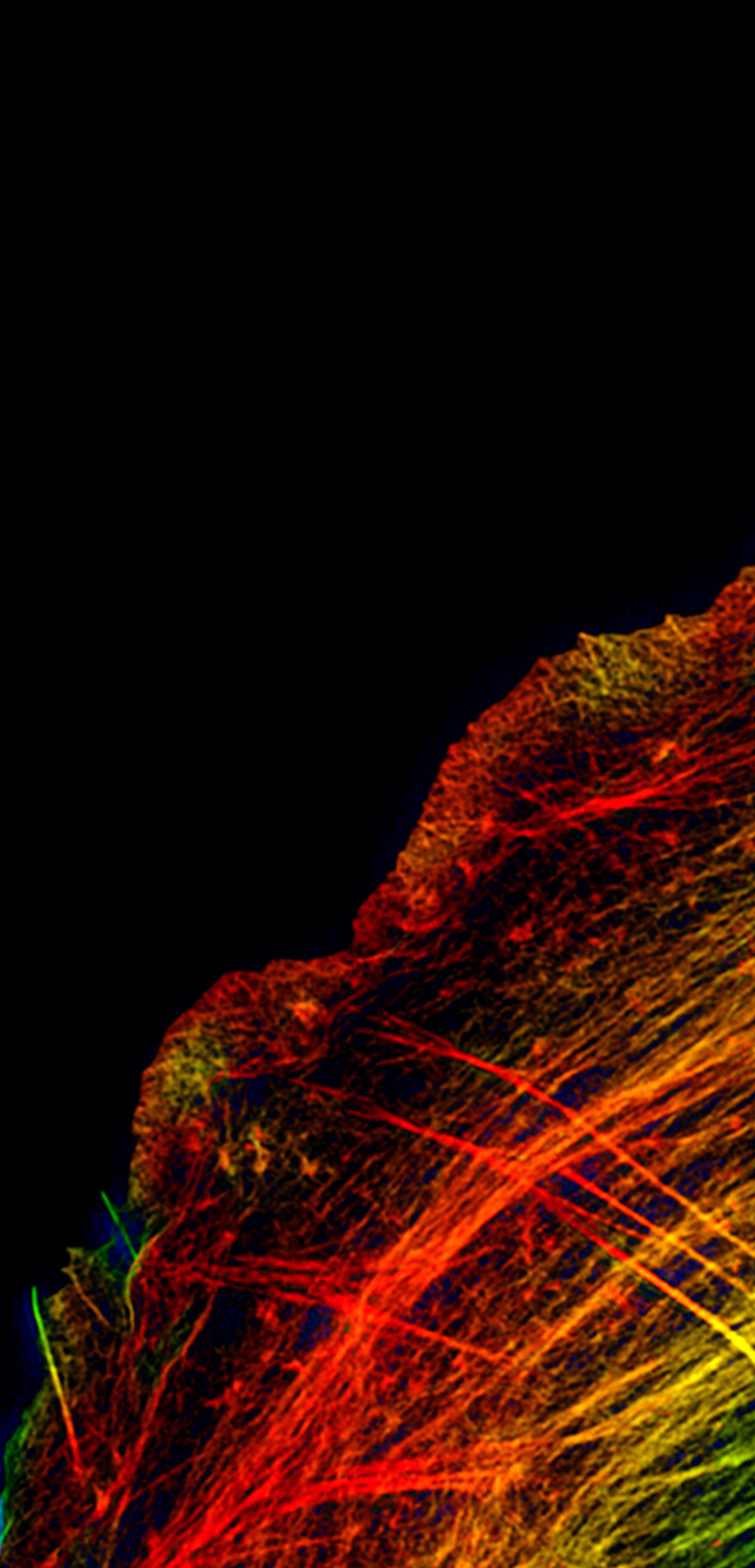
STRUCTURAL BIOLOGY OF THE CYTOSKELETON

3:30 PM **How enzymes add short and long glutamate chains to tubulin tails to functionalize microtubules**
Krishna Kishore Mahalingan, PhD - NIH-National Institute of Neurological Disorders and Stroke

Expanding the Structural Biologist's Toolbox with High-Resolution Cryo-EM
INVITED SPEAKER: Alberto Bartesaghi, PhD - Duke University

4:20 PM **Closing Remarks/ Presentation of Awards**

4:30 PM **Social Hour**



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