
Thursday, September 1, 2022

8:00 a.m. – 8:45 a.m. Opening Remarks: Kristy Ainslie, Ph.D., Fred Eshelman Distinguished Professor and Chair, Division Pharmacoengineering & Molecular Pharmaceutics; Professor, UNC Department of Biomedical Engineering, UNC Department of Microbiology and Immunology, UNC-CH.
Alexander Kabanov, Ph.D., Dr.Sc., Mescal Swain Ferguson Distinguished Professor, Division Pharmacoengineering & Molecular Pharmaceutics; Director, Center for Nanotechnology in Drug Delivery; Director, Carolina Institute for Nanomedicine; Director, Carolina Cancer Nanotechnology T32 Training Program, UNC-CH.

Advanced Cell-based Therapeutics

8:45 – 9:30 a.m. Keynote Speaker: “*Biomaterials for Cell Therapy Manufacturing*” – Suzie Pun, Ph.D., Washington Research Foundation Professor of Bioengineering, Adjunct Professor of Chemical Engineering, University of Washington.

9:30 – 10:00 a.m. “*Engineering Next-Generation CAR-T Cells for Cancer Therapy*” – Yvonne Chen, Ph.D., Associate Professor, Microbiology, Immunology & Molecular Genetics; Associate Professor, Chemical and Biomolecular Engineering; Co-Director, Jonsson Comprehensive Cancer Center (JCCC) Tumor Immunology Program, University of California, Los Angeles.

10:00 – 10:30 a.m. **Coffee Break**

10:30 – 11:00 a.m. “*Quality-by-Design-driven Scalable Manufacturing of Immune-Cell Therapies – From Nanomaterials and Sensors to Automation and Data Science*” – Krishnendu Roy, Ph.D., Robert A. Milton Chair; Director, NSF Engineering Research Center (ERC) for Cell Manufacturing Technologies (CMA_T); Director, Marcus Center for Cell-Therapy Characterization and Manufacturing (MC3M); Technical Lead, National Cell Manufacturing Consortium; Director, Center for ImmunoEngineering; Professor, The Wallace H. Coulter Department of Biomedical Engineering at Georgia Institute of Technology and Emory University.

11:00 – 11:30 a.m. “*Targeting the epigenome for cell fate control*” – Timothy L. Downing, Ph.D., Assistant Professor, Department of Biomedical Engineering; Assistant Professor, Department of Microbiology and Molecular Genetics, University of California, Irvine.

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11:30 a.m. – 1:15 p.m. Lunch Break, Exhibition and Poster Session

Synthetic and Natural Polymers

- 1:15 – 1:45 p.m.** *“Synthetic lipoprotein nanotherapeutics”* – Anna Schwendeman, Ph.D., William I. Higuchi Collegiate Professor of Pharmacy, Professor of Pharmaceutical Sciences, Faculty Associate in the Interdepartmental Program in Medicinal Chemistry, University of Michigan.
- 1:45 – 2:15 p.m.** *“Recombinant Biomaterials for Localized Delivery and as Liquid Embolics”* – Hamid Ghandehari, Ph.D., George S. and Dolores Doré Eccles Presidential Endowed Chair, Department of Pharmaceutics and Pharmaceutical Chemistry; Founding Director, Utah Center for Nanomedicine; Founding Co-Director, Nano Institute of Utah; Professor, Department of Biomedical Engineering; Adjunct Professor, Department of Surgery, Division of Otolaryngology, University of Utah.
- 2:15 – 2:45 p.m.** *“Protein-based drug carriers achieve zero-order release of immunosuppressants”* – J. Andrew MacKay, Ph.D., Gavin S. Herbert Associate Professor, Department of Pharmacology and Pharmaceutical Sciences, Department of Biomedical Engineering and Department of Ophthalmology, University of Southern California.
- 2:45 – 3:15 p.m.** *“Immunomodulatory biomaterials for developing cell-based therapeutics”* – Omid Veisheh, Ph.D., Assistant Professor of Bioengineering, CPRIT Scholar in Cancer Research, Rice University.
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- 3:15 – 3:45 p.m. Coffee Break**
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Immunoengineering

- 3:45 – 4:15 p.m.** *“Advancing particulate immunotherapy for autoimmunity and allergy”* – Jamal Lewis, Ph.D., Associate Professor in Biomedical Engineering, University of California, Davis.
- 4:15 – 4:45 p.m.** *“Identification of a trauma-associated dendritic cell subset enriched by pro-regenerative scaffolds and inhibited by fibrotic implants”* – Kaitlyn Sadtler, Ph.D., Earl Stadtman Tenure-Track Investigator, Chief of the Section for Immunoengineering, National Institute of Biomedical Imaging and Bioengineering.
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4:45 – 5:15 p.m. *“Supramolecular Immunomodulators for inflammatory disease”* – Joel Collier, Ph.D., Theodore Kennedy Professor of Biomedical Engineering, Associate Professor in the Department of Immunology, Duke University.

5:15 – 5:45 p.m. *“Engineering trophoblast extracellular vesicle-delivering hydrogels to induce tolerance in islet transplantation”* – Jessica Weaver, Ph.D., Assistant Professor, School of Biological and Health Systems Engineering, Arizona State University.

5:45 – 7:00 p.m. **Exhibition, Snacks, and Poster Session**

Friday, September 2, 2022

Nucleic Acid Delivery

8:00 – 8:30 a.m. *“Biomolecule delivery in plants enabled by nanomaterials”* – Markita Landry, Ph.D., Assistant Professor of Chemical and Biomolecular Engineering, Assistant Professor, Helen Wills Neuroscience Institute, University of California, Berkeley; Faculty Scientist, Molecular Biophysics and Integrated Bioimaging, Lawrence Berkeley National Laboratory; Investigator, Chan-Zuckerberg Biohub.

8:30 – 9:00 a.m. *“Lipid nanoparticle enabled mRNA delivery beyond the liver”* – Gaurav Sahay, Ph.D., Associate Professor, Department of Pharmaceutical Sciences, College of Pharmacy, Oregon State University and Oregon Health and Science University.

9:00 – 9:30 a.m. *“Effects of Self-Amplifying RNA Formulation on Protein Expression and Vaccine Immunogenicity”* – Anna Blakney, Ph.D., Assistant Professor, Michael Smith Laboratories and School of Biomedical Engineering, The University of British Columbia.

9:30 – 10:00 a.m. Leaf Huang Lectureship: *“Biomimetic Nanoparticles for Drug and Gene Delivery”* – Liangfang Zhang, Ph.D., Joan and Irwin Jacobs Chancellor’s Endowed Chair Professor, Department of Nanoengineering; Director, Chemical Engineering Program; Co-Director, Center for Engineering in Cancer, University of California, San Diego.

10:00 – 10:30 a.m. **Coffee Break**

Friday, September 2, 2022

Machine Learning

- 10:30 – 11:00 a.m.** *“Machine Learning-Guided Robotics for the Data-Driven Design of Nanomaterials”* – Adam Gormley, Ph.D., Assistant Professor, Graduate Admissions Co-Director, Department of Biomedical Engineering, Rutgers University.
- 11:00 – 11:30 a.m.** *“Design of Self-Assembling Drug-Excipient Nanoparticles using Machine Learning”* – Daniel Reker, Sc.D., Assistant Professor of Biomedical Engineering, Duke University.
- 11:30 a.m. – 12:00 p.m.** *“Causal Machine Learning Reveals Payload-Specific Polymer Design Criteria for pDNA and RNP Delivery”* – Ramya Kumar, Ph.D., Assistant Professor, Chemical and Biological Engineering, Colorado School of Mines.

12:00 – 1:00 p.m. **Lunch Break, Exhibition and Poster Session**

Late Breaking Talks Selected from Poster Presentations

- 1:00 – 1:20 p.m.** Talk 1
- 1:20 – 1:40 p.m.** Talk 2
- 1:40 – 2:00 p.m.** Talk 3
- 2:00 – 2:20 p.m.** Talk 4
- 2:30 – 3:15 p.m.** Keynote Speaker: *“Acidifying Nanoparticles Restore Lysosomal Acidification and Rescue Autophagic Flux - May I Have a Ribeye Steak for Dinner”* – Mark Grinstaff, Ph.D., William Fairfield Warren Distinguished Professor of Translational Research, Biomedical Engineering, Chemistry, Materials Science and Engineering, and Medicine; Director, NIH T32 Program in Biomaterials; Director, Nanotechnology Innovation Center, Boston University.
- 3:15 – 3:30 p.m.** Announcement of Poster Award Winners and Concluding Remarks: Juliane Nguyen, PhD, Associate Professor and Vice Chair Division of Pharmacoengineering and Molecular Pharmaceutics.