Jotham R. Austin, II, Ph.D.

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ACADEMIC APPOINTMENTS

2005 – 2010	Technical Director of the Cryopreservation and Tomography Core, University of Chicago
2010 –	Facility Director of the Advanced Electron Microscopy Facility, University of Chicago
2014 – 2023	Research Assistant Professor, Department of Department of Molecular Genetics & Cell Biology, University of Chicago
2023 –	Research Associate Professor, Department of Department of Molecular Genetics & Cell Biology, University of Chicago

ACADEMIC TRAINING

1992 – 1996	B.S., Biology, Pennsylvania State University, The Behrend College, PA
1996 – 2001	Ph.D., Graduate Research Training Fellow, Center for the Early Events of Photosynthesis, Arizona State University, AZ
2001 – 2003	NIH Postdoctoral Fellow, University of Colorado, The Boulder Laboratory for 3D Electron Microscopy of Cells, CO
2003 – 2005	USDA Postdoctoral Fellow, University of Colorado, The Boulder Laboratory for 3D Electron Microscopy of Cells, CO

PROFESSIONAL DEVELOPMENT

2014	Management Development Series, '*Getting Started as a New Leader', 'Essentials of Leadership', 'Giving Constructive Feedback'*, Graham School of Continuing Liberal and Professional Studies, University of Chicago, IL
2018	Leadership & Management in Core Facilities, Kellogg School of Management, Northwestern University, IL

FUNDING

(a) Past:

1. NIH S10-OD016220-01. PI: Benjamin Glick. Role: co-wrote proposal. Title: "Electron Microscope for a Multi-User Core Facility." Total Direct Costs: $597,500. Project Period: 06/01/2013 – 06/01/2014.
2. Microbiome Center's Projects Initiative. Title: Desiccation Tolerance in Green Algae from Desert Microbiotic Crust Microbiomes. PI: Zoe Cardon; Co-PIs: Elena Lopez, Jotham

Austin, II. Annual salary recovery or effort: 1.0 CM. Total award amount: $25,000. Direct Costs to J. Austin: $10,429. Project Period: 11/01/2021 – 06/30/2022.

(b) Current:

1. National Science Foundation. Title: QLCI: Quantum Sensing for Biophysics and Bioengineering (QuBBE): Exploiting quantum coherence and correlations to probe structure, dynamics, and function in vivo. PIs: Gregory Engel, Minjung Ryu, Margaret Gardel, Valerie Goss, David Awschalom. Role: Co-I. Annual salary recovery or effort: 1.5 CM. Total award amount: $25,000,000. Direct costs to J. Austin: $150,000. Project Period: 9/1/2021 – 8/31/2026.
2. CBC Catalyst Award. Title: Determination of Tight Junction Structural Organization by Cryo-electron Microscopy. PIs: Cristopher R. Weber, Fatemeh Khalili. Co-PIs: Le Shen, Eduardo Perozo, Jotham Austin, II. Annual salary recovery or effort: 0.24 CM. Total award amount: $250,000. Direct Costs to J. Austin: $7,056 ($50,000 to EM core). Project Period: 6/1/2022 – 5/21/2024.

(c) Pending:

N/A

MAJOR ADVANCED ELECTRON MICROSCOPY CORE INITIATIVES & EQUIPMENT ACQUISITIONS

2016 – 2017	Acquired a Thermo Scientific Falcon 3 Direct Detection Camera for development of Cryo-EM program. Negotiated for no cost; valued at ~$500,000.
2017 – 2019	Strategic Planning, Developmental, Space Planning and Negotiation lead for Cryo-EM/Volume tomography imaging technologies. Efforts included acquisition of three high-end Electron Microscopes: 1) Titan G3i Krios, 2) VolumeScope; 3) Aquilos Dual Beam. ~$12 million total investment. Coordinated/planned space build-out and instrumentation workflows.
2019	Acquired Thermo Scientific MAPS Volume Array Tomography Software for serial section wafers. Selected to be early adapter/user site. Negotiated for no cost; valued at ~$30,000.
2020 – 2021	Strategic Planning, Developmental, Space Planning and Negotiation lead for Cryo-EM/Volume imaging technologies. Efforts led to the acquisition of high-speed Cryo-EM Glacios screening scope and uninterruptable power supply space remediation. ~$3.4 million total investment.
2021 – 2022	Negotiated acquisition of Aquilos 2 Software and integrated Optical Microscope Module (iFLM) upgrade and Krios G31 Windows 10 Upgrade from Thermo Scientific. Negotiated for no cost; valued at ~$670,000.

HONORS, PRIZES, AND AWARDS

1996	Outstanding Undergraduate Research Achievement, Pennsylvania State University, PA
2004	Second author but equal contribution to Plant Cell, 2004, Apr 16 (4):836-856: selected by the "Faculty of 1000" as one of the most important articles of the year in the plant sciences

INVITED SPEAKING (Academic)

2004 Invited speaker, Research Center for Ultra-High Voltage Electron Microscopy, Osaka University, Japan
Technical Notes on High Pressure Freezing and Freeze Substitution

2004 Invited speaker, Graduate School of Science Education, Hiroshima University, Japan
Visualizing Nano-Machines in a Cellular Context Using Electron Tomography

2006 Invited speaker, Cryo-Preservation Workshop and Lecture, Microscopy and Microanalysis Conference, Chicago, IL
High Pressure Freezing/Freeze Substitution of Plant Cells for 3D Electron Tomographic Studies

2007 Invited speaker, Danforth Plant Science Center, St. Louis, MO
Microtubules, Plastoglobules and 3D Electron Microscopy

2007 Invited speaker, Chicago State University, IL
Electron Microscopy: Seeing More Than Just a Pretty Picture

2008 Invited speaker, Cryo-Preservation Workshop and Lecture, Microscopy and Microanalysis Conference, Albuquerque, NM
Is High Pressure Freezing the Best Technique Available, For Sample Preservation, That You Are Not Taking Advantage Of?

2010 Invited speaker, University of Pennsylvania, PA, Biochemistry Department
How I Learned to Stop Worrying and Trust My TEM Images

2011 Invited speaker, Cryo-Preservation Workshop and Lecture, Microscopy and Microanalysis Conference, Nashville, TN
High Pressure Freezing: "The Do's and Don'ts for the Best Results"

2015 Invited speaker, Pennsylvania State University, Erie, PA, Department of Biology
What Can Electron Microscopy Teach Us About Cells?

2016 Invited speaker, ETH, 50th Anniversary of High-Pressure Freezing Meeting, Zurich, Switzerland
Is Bigger Better: How Big of a Sample Can We High-Pressure Freeze? Theory vs Practice

2018 Invited Lecturer, Chinese Pharmaceutical University, Nanjing, China, Department of Biochemistry
Introduction to Electron Microscopy and Its Applications

2019 Research Seminar, BMB Structure Club, University of Chicago, IL
O' Krios, Where Art Thou? And Everything Else You Wanted to Know About Cryo-EM

2020 Invited speaker, UT Southwestern, Virtual Thermo Scientific Research Spotlight
Large Volume Electron Microscopy: Seeing the Space Between Structures and Dynamics

2020 Invited Speaker, I2SL-International Institute for Sustainable Laboratories Conference (virtual)
Designing a Core Space for High End Electron Microscopes

2022 Invited Speaker, M3S-Midwest Microscopy and Microanalysis Meeting, Northwestern University, IL
Cytoneme Ultrastructure Revealed Through Advanced Cryopreservation and Volumetric Imaging of the Early Embryo

INVITED SPEAKING (Outreach)

2011 Earth awareness week lecture, South Suburban College, South Holland, IL
A Sustainable Busy Life: Tilapia, Potatoes, and Homebrew, Oh My!

2012 Science outreach lecture, Blue Room Café, Hammond, IN
Zombies and Cell Biology: Using Electron Microscopy to See Where Science and Fiction Meet

2012 BSD film series lecture, University of Chicago, IL
Bioengineering a Sustainable Defense Against Zombies: Making Plants Work Against the Horde

2013 Art and Science lecture, Layne Jackson Art Studio, Chicago, IL
Zombies and Cell Biology: Where Science and Science Fiction Meet

2014 Guild Literary Complex lecture, Shubas, Chicago, IL
Applied Words: Unseen Worlds

2015 Interview, Young Women's Leadership Charter School, Chicago, IL
Can Plants Drown?

2017 Art and Science lecture, Paul Henry Gallery, Hammond, IN
The Art and Science of Electron Microscopy

2018 Art and Science lecture, Agitator Co-operative Gallery, Chicago, IL
Electron Microscopy: Seeing Small, but Thinking Big

2020 Panel participant, Graduate Recruitment Initiative Team (GRIT), University of Chicago, IL
Sharing of Diverse Perspectives

2023 MarsCon 2023, Virginia Beach, VA
Participated on six panels about the science in fiction.

2023 Rotary Club of Munster, Munster, IN
My Career as a Scientist and Author

2023 Jr. Science Café, Museum of Science and Industry, Chicago, IL
Participated as a Science Professional—Lecture and Hands-on activity

PROFESSIONAL SOCIETIES

American Society of Plant Biologists
Microscopy Society of America
The Authors Guild

EDUCATION

College (B.A., B.S.):

1999 – 2000 Co-lecturer/lab developer, BIOL 350 at Arizona State University: "Plant Molecular Biology Techniques"

1997 – 2005 Undergraduate Summer Research Mentor for: Pam Roy, Zach Scott, Katie Lundeen, Liz Frost, Erin White, Tom Gonzalez

2008 – 2010 Co-lecturer, MGCB 344 at the University of Chicago: "Electron Microscopy"

2020 Guest lecturer, BIOS 10603 at the University of Chicago: "Multi-scale Modeling of Biological Systems II"

2021 Guest lecturer, NSCI 20100 at the University of Chicago: "Lab Video: Sample Preparation and Connectomics"

2021 Guest lecturer, Chicago State University: "Applications of Electron Microscopy"

Graduate Programs (Masters, Ph.D.):

2018 4-day Electron Microscopy lecture series, Chinese Pharmaceutical University,

Nanjing, China

Research Training: High School Students and Teachers

2010 Electron microscopy lab demonstrations for the AP Biology class for visiting students from Urban Prep Academies

2016 – 2017 Supervised Polina Bondarenko and Lucy Liu from the Illinois Mathematics and Science Academy as part of the Student Inquiry and Research (SIR) program

Research Training: Undergraduates (B.A., B.S.)

2017 Worked with Chery Cherian from Melina Hale's group to develop large sample high-pressure freezing method for his honors thesis; he graduated with Research Honors

Research Training: Medical Students (M.D.)

None

Research Training: Graduate Students (Ph.D.)

2005 – 2012 Thesis committee member for Tera Lavoie, Department of Pulmonology

Research Training: Postdoctoral Fellows and Visiting Research Fellows

2012 – 2015 Worked with postdoctoral fellow Amin Nasser from Bob Haselkorn's lab on electron tomography of *Anabaena*

2013 – 2014 Worked with visiting research fellow Vicente Mariscal Romero from Bob Haselkorn's lab on electron tomography of *Anabaena*

Research Training: Other

2005 – Training UChicago core facility users (~40 including graduate students, postdoctoral fellows, undergraduates, high school students and PIs), impacting the following Divisions, and Departments:

Biological Sciences Division

Molecular Genetics and Cell Biology
Biochemistry and Molecular Biology
Neurobiology
Pathology
Ben May Department for Cancer Research
Microbiology
Organismal Biology and Anatomy
Pharmacological and Physiological Sciences
Pediatrics
Radiology
Ophthalmology and Visual Science
Endocrinology
Pathology

Physical Sciences Division

Chemistry

Geophysical Sciences
Physics

Pritzker School of Molecular Engineering
Immunoengineering
Materials Systems for Sustainability and Health
Quantum Engineering

Marine Biological Laboratory
Bell Center
Ecosystems Center

2014 Hosted research scientist Andrew Maselli, faculty member and Electron Microscopy Facility Director from Chicago State University, as a sabbatical visitor

EXTRAMURAL SERVICE

2015 Volunteer, The National Science Teachers Association Meeting
2020 Served on the NIH S10 Study Section for High-End or Shared Electron Microscope Systems; “Acting Chair”
2023 Served on the NIHM Instrumentation S10 Program

MANUSCRIPT REVIEWING

International Journal of Plant Sciences
Journal of Cell Science
Journal of Microscopy
Communications Biology - Nature
Plant Cell

GRANT REVIEWING

2016 The Netherlands Organization for Scientific Research (NOW, the Dutch Research Council)
2020 M.J. Murdock Charitable Trust