

Michael A. Cianfrocco, Ph.D.

Assistant Professor, Department of Biological Chemistry
Assistant Professor, Department of Biophysics
Research Assistant Professor, Life Sciences Institute

Email: mcianfro@umich.edu

Education and Training

Education

09/2003-05/2007 BS, Providence College, Providence, United States
08/2007-12/2012 PhD, University of California - Berkeley (Advisor: Eva Nogales), Berkeley, United States

Work Experience

Academic Appointment

07/2017-Present Research Assistant Professor, Life Sciences Institute, University of Michigan - Ann Arbor, Ann Arbor
07/2017-Present Assistant Professor, Department of Biological Chemistry, University of Michigan - Ann Arbor, Ann Arbor
09/2018-Present Assistant Professor, Department of Biophysics, University of Michigan - Ann Arbor, Ann Arbor

Research Position

01/2013-08/2015 Post-doctoral fellow (joint with Samara Reck-Peterson & Andres Leschziner), Harvard Medical School & Harvard University, Boston
09/2015-06/2017 Post-doctoral fellow (joint with Samara Reck-Peterson & Andres Leschziner), University of California - San Diego, La Jolla

Research Interests

- Mechanisms of intracellular transport by the microtubule motor proteins dynein and kinesin
- Building software tools to deploy and manage cryo-EM image analysis on cloud computing resources
- Development of machine learning tools for cryo-EM data collection and analysis

Grants

Current Grants

U-M Cellular Cryo-Electron Tomography -lowering barriers in the cell-to-structure pipeline to expand access to the future of structural biology

Co-I (Principal Investigator:Melanie Ohi)
Arnold and Mabel Beckman Foundation
02/2022 - 08/2027

Collaborative Research: ABI Development: Building a Community Gateway for Cryo-Electron Microscopy Structure Determination

PI
National Science Foundation
07/2018 - 06/2023

R25EY032739:*cryoEDU: An online curriculum and software platform for hands-on learning in single-particle cryoEM and cryoET*

PI (co-PI Mark Herzik)
National Institutes of Health
07/2021 - 06/2024

R21AI152869: *Determining the role of microtubules and motor proteins during early HIV-1 replication*
PI
National Institutes of Health
08/2021 - 07/2023

R01GM143805: *Automated, optimized, intelligent data collection for cryo-EM*
Co-I (Principal Investigator: Gabriel Lander)
National Institutes of Health
09/2021 - 06/2025

R01GM141119: *Mechanisms of kinesin motor protein inhibition*
PI
National Institutes of Health
09/2022 - 06/2027

Past Grants

Substrate selection by the tissue factor-factor VIIa complex
Co-I (Principal Investigator: James Morrissey)
American Heart Association, Inc.
01/2020 - 12/2021

R01CA221289: *GPCR - Linked RhoGEFs in Tumor Growth and Metastasis*
Co-I (Principal Investigator: John Tesmer)
National Institutes of Health-Subcontracts sourced funding through Purdue University
03/2018 - 06/2020

Automated cryoEM processing
PI
ShouTi, Inc.
06/2021 - 12/2021

P50GM082251: *Transport of HIV-1 capsid via microtubule motor proteins dynein and kinesin*
PI
National Institutes of Health-Subcontracts sourced funding through University of Pittsburgh
08/2018 - 07/2020

Patents / Disclosures

Provisional patent filing: DEEP REINFORCEMENT LEARNING-ENABLED CRYO-EM DATA COLLECTION, Author, US, 3/1/2022

Licensed software: Automated cryoEM Pre-Processing using machine learning, 2020-244, Author, US, 5/1/2019

Honors and Awards

National

2013 Post-doctoral fellowship award from the Jane Coffin Childs Memorial Fund (Declined)
2013 - 2017 HHMI Fellow of the Damon Runyon Cancer Research Foundation

Institutional

2017 - present University of Michigan Biological Sciences Scholar

Study Sections, Editorial Boards, Journal & Abstract Review

Study Sections

International

2018 - present Wellcome Trust, (Ad Hoc)
2020 - present Natural Sciences and Engineering Research Council of Canada, (Ad Hoc)

National

2018 - present National Center for Cryo-EM Access & Training (NCCAT) - Review user applications for access to cryo-EM instruments and training
2020 - present National Science Foundation, (Ad Hoc)

Institutional

2019 Lichter Fund - Ophthalmology, (Ad Hoc)

Editorial Boards / Journal & Abstract Reviews

2017 - present Proceedings of the National Academy of Sciences
2017 - present Journal of Structural Biology
2018 - present Journal of Biological Chemistry
2019 - present Journal of Cell Biology
2020 - present Cell
2020 - present Nature Communications
2020 - present Journal of Molecular Biology
2021 - present Journal of Visual Experiments
2021 - present Computer Methods and Programs in Biomedicine
2021 - present Journal of the American Chemical Society
2022 - present Chemical Reviews

Teaching

Mentorship

Postdoctoral Fellow

07/2017-06/2020 Jennifer Cash, University of Michigan
01/2018-Present Somaye Badieyan, University of Michigan
09/2018-Present Yilai Li, University of Michigan

Graduate Student

05/2018-Present Zhenyu Tan, University of Michigan
05/2018-12/2020 Sarah Kearns, University of Michigan
05/2019-Present Emily Eberhardt, University of Michigan
06/2019-Present Lily Hahn, University of Michigan
05/2021-Present Nicholas Vangos, University of Michigan

Undergraduate Student

08/2017-08/2018 Prateek Sharma, University of Michigan
08/2017-08/2018 Nathan Werner, University of Michigan
06/2019-08/2019 Chase Lindeboom, Michigan State University
06/2019-08/2019 Mack Williams, Xavier University
09/2021-Present Han Liu, Virginia Polytechnic Institute
09/2021-Present Le Yang, University of Michigan
09/2021-Present Chuteng Li, University of Washington
09/2021-12/2022 Benjamin Walls, Northeastern University

01/2022-Present Zhehao Chen, University of Washington
 01/2022-06/2022 Chuck Lagai, Ponom College
 06/2022-08/2022 Ronald Jamieson, University of Michigan

Teaching Activity

International

09/2017-09/2017 Applications of machine learning to cryo-EM - Data science masters class ETH Zurich Computer Science
 03/2018-03/2018 Instructor at Cold Spring Harbor 2018 Cryo-Electron Microscopy Course to help students learn data processing while also leveraging cloud computing resources
 06/2018-06/2018 Cryo-EM Workshop at University of Michigan
 03/2019-03/2019 Instructor at Cold Spring Harbor 2019 Cryo-Electron Microscopy Course to help students learn data processing while also leveraging cloud computing resources
 07/2019-07/2019 Co-organizer of Cryo-EM Workshop at American Crystallographic Society 2019 Annual Meeting with Wen Jiang & Cathy Lawson
 03/2020-03/2020 Instructor at Cold Spring Harbor 2020 Cryo-Electron Microscopy Course to help students learn data processing while also leveraging cloud computing resources. [Canceled due to COVID-19]
 06/2020-06/2020 Cryo-EM Workshop at University of Michigan [Cancelled due to COVID-19]
 06/2022-06/2022 Cryo-EM Workshop at University of Michigan, University of Michigan
 08/2022-08/2022 Co-organizer of Cryo-EM Workshop at American Crystallographic Society 2022 Annual Meeting with Mark Herzik
 11/2022-11/2022 Instructor at Cold Spring Harbor 2022 Cryo-Electron Microscopy Course to help students learn data processing while also leveraging cloud computing resources

National

04/2019-04/2019 Cornell University - CHM7880 Structural Methods in Biochemistry [Guest lecturer (remote) using cloud computing for hands-on demo of cryo-EM image analysis]

Institutional

07/2017-08/2017 Cryo-EM summer course: Microscope basics and sample preparation. This course met once a week over 5 weeks to provide students, post-docs, staff, and faculty with basic background information on cryo-EM. 38 individuals signed up for the course.
 11/2017-11/2017 Biophysics 520 - Biophysical Methods. Guest lectures on cryo-electron microscopy (4 classes x 1.5 hr each)
 12/2017-12/2017 Presented 'How to give a chalk talk' to CDB post-doctoral fellow organization
 08/2018-12/2018 Biological Chemistry 660 - (co-Instructor) Molecules of Life: Protein Structure, Function, and Dynamics
 08/2018-12/2018 Biophysics 520 - Biophysical Methods. Guest lectures on cryo-electron microscopy (4 x 1.5 hr)
 08/2018-12/2018 Chemical Biology 501 - Guest lecture on cryo-electron microscopy (1x1.5 hr)
 08/2018-12/2018 Biophysics 440 - Biophysical Methods. Guest lecture on cryo-electron microscopy for senior level undergraduates (1 x 1.5 hr)
 01/2019-05/2019 Biophysics 602 - Principles of Macromolecular Crystallography . (1 x 1.5 hr)
 10/2019-11/2019 Biophysics 520 - Biophysical Methods. Guest lectures on cryo-electron microscopy (3 x 1.5 hr)
 01/2021-04/2021 Biophysics 602 - Principles of Macromolecular Crystallography . (1 x 1.5 hr)
 08/2022-12/2022 Biophysics 520 - Biophysical Methods. Guest lectures on cryo-electron microscopy (3 x 1.5 hr), University of Michigan
 08/2022-12/2022 Biological Chemistry 713 - Emerging areas of biochemistry: Cryo-EM - Where are we now and where are we going?

08/2022-12/2022 Biological Chemistry 660 - (co-Instructor) Molecules of Life: Protein Structure, Function, and Dynamics, University of Michigan

Dissertation Committees

07/2017-04/2018 Kristen Schimert, Regulation of kinesin-3 motor protein activity, University of Michigan, Biophysics Graduate Program, Committee Member

07/2017-12/2020 Amanda Erwin, VacA structure, University of Michigan, CDB, Committee Member

05/2018-12/2020 Sarah Kearns, Tubulin methylation by SETD2, University of Michigan, Chemical Biology, Chair

05/2018-12/2021 Alexandra Rizo, Uncovering substrate loading mechanism of Hsp70 and different disaggregation state of Hsp104 upon binding to different substrates, University of Michigan, Program in Chemical Biology, Committee Member

05/2018-05/2022 Fabienne Birkle, Mechanisms of blood clotting, University of Michigan, Biological Chemistry, Committee Member

05/2018-Present Nirupama Sumangala, Cytochrome P450, University of Michigan, Biophysics Graduate Program, Committee Member

05/2018-Present Tyler McCullough, Polyketide synthases, University of Michigan, Biological Chemistry, Committee Member

05/2020-Present Ritvija Agrawal, KASH5-Dynein mechanism, University of Michigan, MCDB, Committee Member

05/2018-Present Zhenyu Tan, Regulation of kinesin activity, University of Michigan, Biophysics Graduate Program, Chair

05/2020-Present Qi Geng, Kinesin-3 regulation, University of Michigan, CDB, Committee Member

01/2021-Present Emily Ellinger, Regulation of RNA polymerase by RNA aptamers, University of Michigan, Biological Chemistry, Committee Member

09/2019-Present Chae Kyung Jeon, Native mass spectrometry of macromolecular assemblies, University of Michigan, Chemistry, Committee Member

01/2021-Present Nicholas Bockhaus, Structural studies of flavivirus proteins, University of Michigan, Biological Chemistry, Chair

05/2019-Present Emily Eberhardt, Microtubule trafficking via outer mitochondrial membrane protein Miro, University of Michigan, CMB, Chair

05/2018-Present Sharon Garrott, Regulation of dynein activity by Nudel, University of Michigan, Biological Chemistry, Committee Member

05/2021-Present Nicholas Vangos, Microtubule recognition by EML2, University of Michigan, CMB, Chair

05/2019-Present Hye Jee Lily Hahn, Regulation of vacuole trafficking by Vac17, University of Michigan, CDB, Co-Chair

Memberships in Professional Societies

2015 - Present American Society for Cell Biology

2015 - Present Biophysical Society

2018 - Present Microscopy Society of America

2019 - Present American Crystallographic Association

Committee/Service

Institutional

2017 - present LSI Cryo-Electron Microscopy Facility oversight committee, Faculty member

2017 - present LSI Core Diversity, Equity & Inclusion Strategic Planning Team, Faculty member

2018 - present Biological Chemistry - Admissions committee, Member

2018 - 2019 Biological Chemistry - Development committee, Member

Scholarly Activities

Presentations

Extramural Invited Presentation

Speaker

1. Cryo-EM studies of human TFIID reveal a dynamic conformational landscape that is modulated by TFIIA and core promoter DNA, The Scripps Research Institute, 08/2012, La Jolla, CA
2. Structural snapshots of promoter binding by TFIID, Providence College, 04/2013, Providence, RI
3. Cryo-electron microscopy image processing in the cloud: High performance at low cost, University of Michigan, 08/2015, Ann Arbor, MI
4. Dual modes of dynein regulation by Lis1, SoCal Cryo-EM Meeting, 10/2016, La Jolla, CA
5. Cloud computing for cryo-EM, New York Structural Biology Center, 11/2016, New York, NY
6. Lis1 has two distinct modes of regulating dynein's mechanochemical cycle, Biophysical Society Annual Meeting 2017, 02/2017, New Orleans, LA
7. PRP Science Drivers: Cryo-electron microscopy as a fast-growing, 'big data' tool for discovering new biology, CENIC 2017, 03/2017, La Jolla, CA
8. COSMIC2 science gateway demo, Science Gateways 2017 Conference, 10/2017, University of Michigan, Ann Arbor, MI, USA
9. Software tools to deploy and manage cryo-EM jobs in the cloud, Workshop on Advanced Topics in EM Structure Determination: Challenges and Opportunities. Hosted by NRAMM, 10/2017, New York Structural Biology Center / Simons Electron Microscopy Center, New York, NY, USA
10. Cloud computing tools for cryo-EM, SBGrid Webinar, 03/2018, Online webinar (broadcast globally)
11. Cloud computing for cryo-EM (panel discussion), Panel discussion at 3rd annual computational methods in cryo-EM meeting, 03/2018, Lake Tahoe, CA, USA
12. Conditional generative adversarial networks for denoising cryo-EM data, SEMC-NYSBC Workshop on Deep Learning, 04/2018, New York, NY, USA
13. University of Michigan: A Working Structural Biology Core with cryo-EM and native MS, Midwest Association of Core Directors 9th Annual Meeting, 10/2018, Case Western Reserve University, Cleveland, Ohio, US
14. Integrating native mass spectrometry and cryo-EM for 21st century structural biology, Thermo Fisher Scientific, 02/2019, Waltham, MA
15. Cloud computing tools for cryo-EM, University of California - Berkeley, 04/2019, Berkeley, CA, USA
16. Deep learning and image analysis tools for automated processing of cryo-EM data, University of California - San Francisco, 04/2019, San Francisco, CA, USA
17. Mechanisms of microtubule-based transport, Cornell University - Cornell Biophysics Colloquium Series, 10/2019, Ithaca, NY
18. Cloud computing for cryo-EM (panel discussion) [Canceled due to COVID-19], 4th International Symposium on Cryo-3D Image Analysis, 03/2020, Lake Tahoe, CA, USA
19. Tools to facilitate & accelerate cryoEM structure determination, Instruct-ERIC (European Research Infrastructure Consortium), 10/2020, Virtual
20. CryoEM as a case study of Globus data transfer, bio-IT World, 10/2020, Virtual
21. Cloud computing tools for cryoEM, CryoEM Current Practices Webinar series, NIH, 01/2021, Virtual
22. Rules of the road: Molecular stop signs for kinesin motor proteins, Case Western Reserve University, 10/2021, Cleveland, OH, USA
23. Machine learning approaches to automate single particle cryo-EM data acquisition, 4th International Symposium on Cryo-3D Image Analysis 2022, 03/2022, Lake Tahoe, CA, USA
24. Artificial intelligence-enabled cryo-EM structure determination, Johns Hopkins University School of Medicine, 04/2022, Baltimore, MD, USA
25. Hands-on Single-Particle Cryo-EM Data Analysis with cryoEDU, American Crystallographic

Moderator

1. 3DEM GRC: Image processing developments in cryoEM [Canceled due to COVID-19], Three-dimensional electron microscopy Gordon Research Conference, 06/2020, Barcelona, Spain
2. M&M: Image processing developments in cryoEM (virtual), Microscopy & Microanalysis Annual Meeting, 08/2020, Milwaukee, WI
3. Biophysical Society CryoEM SubGroup Annual Symposium, Biophysical Society, 02/2021, Virtual
4. 3DEM GRC: Innovations in algorithms and software, 3DEM GRC, 11/2021, Waterville, NH, USA

Publications/Scholarship

Peer-Reviewed

Journal Article

1. **Cianfrocco MA**, Kassavetis GA, Grob P, Fang J, Juven-Gershon T, Kadonaga JT, Nogales E: Human TFIIID binds to core promoter DNA in a reorganized structural state, *Cell*.152(1-2): 120-131, 01/2013. PM23332750
2. Taylor DW, Ma E, Shigematsu H, **Cianfrocco MA**, Noland CL, Nagayama K, Nogales E, Doudna JA, Wang HW: Substrate-specific structural rearrangements of human Dicer, *Nature Structural and Molecular Biology*.20(6): 662-670, 06/2013. PM23624860
3. Ciferri C, Chandramouli S, Leitner A, Donnarumma D, **Cianfrocco MA**, Gerrein R, Friedrich K, Aggarwal Y, Palladino G, Aebersold R, Norais N, Settembre EC, Carfi A: Antigenic Characterization of the HCMV gH/gL/gO and Pentamer Cell Entry Complexes Reveals Binding Sites for Potently Neutralizing Human Antibodies, *PLoS Pathogens*.11(10)01/2015. PM26485028
4. Ciferri C, Chandramouli S, Donnarumma D, Nikitin PA, **Cianfrocco MA**, Gerrein R, Feire AL, Barnett SW, Lilja AE, Rappuoli R, Norais N, Settembre EC, Carfi A: Structural and biochemical studies of HCMV gH/gL/gO and pentamer reveal mutually exclusive cell entry complexes, *Proceedings of the National Academy of Sciences of the United States of America*.112(6): 1767-1772, 02/2015. PM25624487
5. **Cianfrocco MA#**, Leschziner AE: Low cost, high performance processing of single particle cryo-electron microscopy data in the cloud, *eLife*.4(MAY): 1-10, 05/2015. PM25955969
6. Cui J, Zhu Q, Zhang H, **Cianfrocco MA**, Leschziner AE, Dixon JE, Xiao J: Structure of Fam20A reveals a pseudokinase featuring a unique disulfide pattern and inverted ATP-binding, *eLife*.604/2017. PM28432788
7. Coleman RA, Qiao Z, Singh SK, Peng CS, **Cianfrocco MA**, Zhang Z, Piasecka A, Aldeborgh H, Basishvili G, Liu WL: p53 dynamically directs TFIIID assembly on target gene promoters, *Molecular and Cellular Biology*.37(13)07/2017. PM28416636
8. **Cianfrocco MA#**, Wong M, Youn C, Wagner R, Leschziner AE: COSMIC2: A Science Gateway for Cryo-Electron Microscopy, *Practice & Experience in Advanced Research Computing*.July 09-13, 2017: 1-5, 07/2017
9. **Cianfrocco MA#**, Wong M, Youn , C : COSMIC2 – A science gateway for cryo-electron microscopy, *Gateways 2017*.October 23-25, 2017: 1-3, 10/2017
10. DeSantis ME*, **Cianfrocco MA***, Htet ZM*, Tran PT, Reck-Peterson SL, Leschziner AE: Lis1 Has Two Opposing Modes of Regulating Cytoplasmic Dynein, *Cell*.170(6): 1197-1208.e12, 09/2017. PM28886386
11. Xu J, Lahiri I, Wang W, Wier A, **Cianfrocco MA**, Chong J, Hare AA, Dervan PB, DiMaio F, Leschziner AE, Wang D: Structural basis for the initiation of eukaryotic transcription-coupled DNA repair, *Nature*.551(7682): 653-657, 11/2017. PM29168508
12. Wang P, Tseng KF, Gao Y, **Cianfrocco MA**, Guo L, Qiu W: The Central Stalk Determines the Motility of Mitotic Kinesin-14 Homodimers, *Current Biology*.28(14): 2302-2308.e3, 07/2018. PM30017487
13. **Cianfrocco MA#**, Lahiri I, DiMaio F, Leschziner AE: cryoem-cloud-tools: A software platform to deploy and manage cryo-EM jobs in the cloud, *Journal of Structural Biology*.203(3): 230-235, 09/2018. PM29864529
14. Cash JN, Urata S, Li S, Ravala SK, Avramova LV, Shost MD, Silvio Gutkind J, Tesmer JJ G#, **Cianfrocco MA#**: Cryo-electron microscopy structure and analysis of the P-Rex1-Gβγ signaling scaffold, *Science Advances*.5(10)10/2019. PM31663027

15. Park SH, Ayoub A, Lee YT, Jing X, Kim HS, Zheng W, Zhang B, An SJ, Zhang Y, **Cianfrocco MA#**, Su M, Dou Y, Cho US: Cryo-EM structure of the human MLL1 core complex bound to the nucleosome, *Nature communications*.10(1)01/2019. PM31804488
16. Spriggs CC, Badieyan S, Verhey KJ, **Cianfrocco MA#**, Tsai B: Golgi-associated BICD adaptors couple ER membrane penetration and disassembly of a viral cargo, *Journal of Cell Biology*.219(5)05/2020. PM32259203
17. Seervai RN H, Jangid RK, Karki M, Tripathi DN, Jung SY, Kearns SE, Verhey KJ, **Cianfrocco MA**, Millis BA, Tyska MJ, Mason FM, Kimryn Rathmell W, Park IY, Dere R, Walker CL: The Huntingtin-interacting protein SETD2/HYPB is an actin lysine methyltransferase, *Science Advances*.6(40)09/2020. PM33008892
18. Cash JN, Kearns S, Li Y, **Cianfrocco MA#**: High-resolution cryo-EM using beam-image shift at 200 keV, *IUCrJ*.7: 1179-1187, 11/2020. PM33209328
19. Lu TW, Aoto PC, Weng JH, Nielsen C, Cash JN, Hall J, Zhang P, Simon SM, **Cianfrocco MA#**, Taylor SS#: Structural analyses of the PKA RII β holoenzyme containing the oncogenic DnaJB1-PKAc fusion protein reveal protomer asymmetry and fusion-induced allosteric perturbations in fibrolamellar hepatocellular carcinoma, *PLoS Biology*.18(12 December)12/2020. PM33370777
20. Kearns S, Mason FM, Rathmell WK, Park IY, Walker C, Verhey KJ, **Cianfrocco MA#**: Molecular determinants for α -tubulin methylation by SETD2, *Journal of Biological Chemistry*.297(1)07/2021. PM34157286
21. Koenning M, Wang X, Karki M, Jangid RK, Kearns S, Tripathi DN, **Cianfrocco MA**, Verhey KJ, Jung SY, Coarfa C, Ward CS, Kalish BT, Grimm SL, Rathmell WK, Mostany R, Dere R, Rasband MN, Walker CL, Park IY: Neuronal SETD2 activity links microtubule methylation to an anxiety-like phenotype in mice, *Brain*.144(8): 2527-2540, 08/2021. PM34014281
22. Li L, Conradson DM, Bharat V, Kim MJ, Hsieh CH, Minhas PS, Papakyrikos AM, Durairaj AS, Ludlam A, Andreasson KI, Partridge L, **Cianfrocco MA**, Wang X: A mitochondrial membrane-bridging machinery mediates signal transduction of intramitochondrial oxidation, *Nature Metabolism*.3(9): 1242-1258, 09/2021. PM34504353
23. Calyam P, Wilkins-Diehr N, Miller M, Brookes EH, Arora R, Chourasia A, Jennewein DM, Nandigam V, LaMar MD, Cleveland SB, Newman G, Wang S, Zaslavsky I, **Cianfrocco MA**, Ellett K, Tarboton D, Jeffery KG, Zhao Z, González-Aranda J, Perri MJ, Tucker G, Candela L, Kiss T, Gesing S: Measuring success for a future vision: Defining impact in science gateways/virtual research environments., *Concurrency Computat Pract Exper*.33:e6099: 1-10, 10/2021
24. Solon AL, Tan Z, Schutt KL, Jepsen L, Haynes SE, Nesvizhskii AI, Sept D, Stumpff J, Ohi R#, **Cianfrocco MA#**: Kinesin-binding protein remodels the kinesin motor to prevent microtubule binding., *Science Advances*.7(47)11/2021. PM34797717
25. Hotta T, Haynes S, Blasius TL, Gebbie M, Eberhardt EL, Sept D, **Cianfrocco MA**, Verhey K, Nesvizhskii A, Ohi R: Parthenolide destabilizes microtubules by covalently modifying tubulin., *Current Biology*.31(4): 900-907, 02/2021. PM33482110
26. Budaitis BG, Badieyan S, Yue Y, Blasius TL, Reinemann DN, Lang MJ, **Cianfrocco MA**, Verhey KJ: A kinesin-1 variant reveals motor-induced microtubule damage in cells, *Current Biology*.32(11): 2416-2429.e6, 06/2022. PM35504282
27. Gicking AM, Ma TC, Feng Q, Jiang R, Badieyan S, **Cianfrocco MA**, Hancock WO. Kinesin-1, -2 and -3 motors use family-specific mechanochemical strategies to effectively compete with dynein during bidirectional transport, *eLife*. 2022 Sep 20;11:e82228. doi: 10.7554/eLife.82228. PMID: 36125250.

Reviews

1. **Cianfrocco MA**, Nogales E: Regulatory interplay between TFIID's conformational transitions and its modular interaction with core promoter DNA, *Transcription*.4(3)06/2013. PM23863784
2. **Cianfrocco MA**, Leschziner AE: Traffic control: Adaptor proteins guide dynein-cargo takeoff, *EMBO Journal*.33(17): 1845-1846, 09/2014. PM25061224
3. **Cianfrocco MA***, Desantis ME*, Leschziner AE, Reck-Peterson SL: Mechanism and Regulation of Cytoplasmic Dynein, *Annual Review of Cell and Developmental Biology*.31: 83-108, 11/2015. PM26436706
4. Baldwin PR, Tan YZ, Eng ET, Rice WJ, Noble AJ, Negro CJ, **Cianfrocco MA**, Potter CS, Carragher B: Big data in cryoEM: automated collection, processing and accessibility of EM data, *Current Opinion in Microbiology*.43: 1-8, 06/2018. PM29100109
5. **Cianfrocco MA#**, Kellogg EH#: What Could Go Wrong? A Practical Guide to Single-Particle Cryo-EM: From Biochemistry to Atomic Models, *Journal of Chemical Information and Modeling*.60(5): 2458-2469,

05/2020. PM32078321

6. Eberhardt EL*, Ludlam AV*, Tan Z*, **Cianfrocco MA#**: Miro: A molecular switch at the center of mitochondrial regulation, *Protein Science*.29(6): 1269-1284, 06/2020. PM32056317

7. Li Y, **Cianfrocco MA#**: Cloud computing platforms to support cryo-EM structure determination, *Trends in Biochemical Sciences*.47(2): 103-105, 02/2022. PM34895958

Pre-prints

1. Su M, Zhang H, Schawinski K, Zhang C, **Cianfrocco MA#**: Generative adversarial networks as a tool to recover structural information from cryo-electron microscopy data, *bioRxiv*.<https://doi.org/10.1101/256108>, 02/2018

2. Fan Q*, Li Y*, Yao Y, Cohn J, Liu S, Vos S#, **Cianfrocco MA#**. CryoRL: Reinforcement Learning Enables Efficient Cryo-EM Data Collection, *arXiv*. <https://arxiv.org/abs/2204.07543>. 04/2022.

3. Li Y*, Fan Q*, Cohn J, Demers V, Lee JY, Yip L, **Cianfrocco MA#**, Vos S#. Optimized path planning surpasses human efficiency in cryo-EM imaging, *bioRxiv*. <https://doi.org/10.1101/2022.06.17.496614>. 06/2022.

Posters

1. Sousa A, Bock M, **Cianfrocco MA**, Toth C: Molecular characterization of lichen growth properties on rock substrates, *The FASEB Journal*.20, (5): a922-a923, 2006

2. **Cianfrocco MA**, Taylor B, Toth C: Characterization of antizyme function in a yeast complementation system, *The FASEB Journal*.20, (4): a48-a48, 2006

3. **Cianfrocco MA**, Ophus C, Glaeser RM, Nogales E, Leschziner AE: Optimal defocus imaging of gold clusters in cryo-EM, Gordon Research Conference - 3DEM, 2014

4. Piasecka A, Song L, **Cianfrocco MA**, Wong V, Wang S, Hargitai J, Rice W, Nogales E, Coleman RA, Liu W-L: Structural and Dynamic Regulation of TFIIID-Mediated Transcription Initiation Complex Assembly by the Tumor Suppressor P53 Protein, *Biophysical Journal*.106, (2): 485a, 2014

5. **Cianfrocco MA**, Leschziner AE: Cryo-electron microscopy image processing in the cloud: High performance at low cost, Gordon Research Conference - 3DEM, 2015

6. DeSantis ME, Htet Z, **Cianfrocco MA**, Tran PT, Leschziner AE, Reck-Peterson SL: TWO ALTERNATIVE MODES OF DYNEIN REGULATION BY LIS1., *MOLECULAR BIOLOGY OF THE CELL*.27, 2016

7. DeSantis ME, Htet Z, **Cianfrocco MA**, Tran PT, Leschziner AE, Reck-Peterson SL: TWO ALTERNATIVE MODES OF DYNEIN REGULATION BY LIS1, *MOLECULAR BIOLOGY OF THE CELL*.27, 2016

8. **Cianfrocco MA**, Htet Z, DeSantis ME, Reck-Peterson S, Leschziner AE: Structural studies of the dynein/Lis1 complex, Gordon Research Conference - Muscle and Molecular Motors, 2016

9. Coleman RA, Singh SK, Peng CS, **Cianfrocco MA**, Zhang Z, Rice W, Eng E, Liu W-L: Nanoscale Probing of the p53 Tumor Suppression Transcription Machinery, *Biophysical Journal*.110, (3): 232a, 2016

10. **Cianfrocco MA**, DeSantis ME, Htet ZM, Tran PT, Leschziner AE, Reck-Peterson SL: Lis1 has Two Distinct Modes of Regulating Dynein's Mechanochemical Cycle, Biophysical Society Annual Meeting 2017, 2017

11. Lu T-W, **Cianfrocco MA**, Zhang P, Taylor S: Fusion Protein, DNJB1-PRKACA, as a Cancer Driver, *Biophysical Journal*.112, (3): 489a, 2017

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