**Samantha Cleopatra Lewis, Ph.D.**
Assistant Professor of Cell Biology, Development, and Physiology
Department of Molecular and Cell Biology
email: samlewis@berkeley.edu

## Education

2013 Ph.D. Genetics, Genomics and Bioinformatics
University of California, Riverside

2008 B.S. Zoology
Oregon State University

## Professional Experience

2019- Assistant Professor, Department of Molecular and Cell Biology
University of California, Berkeley

2013-19 Postdoctoral Fellow, Department of Molecular and Cellular Biology
Advisor: Distinguished Professor Jodi Nunnari
University of California, Davis

2008-13 Ph.D. student, Department of Biology
Advisor: Distinguished (now Emeritus) Professor Bradley Hyman
University of California, Riverside

2011-12 Visiting researcher in Mitochondrial Gene Expression
Advisor: Academy Professor Howard Jacobs
University of Tampere

2006-08 Undergraduate researcher, Department of Integrative Biology
Advisor: Professor and Chair, Dee Denver
Oregon State University

## Top 5 Publications with Citation Metrics as of 11/7/23

1. **[523 citations]** **Lewis SC**, Uchiyama LF and J Nunnari. (2016) ER-mitochondria contacts couple mtDNA synthesis with mitochondrial division in human cells. ***Science***, 353(6296): aaf5549. doi: 10.1126/science.aaf5549.

2. **[304 citations]** Denver DR, Dolan P, Wilhelm LJ, Sung W, Lucas-Lledó JI, Howe DK, **Lewis SC**, Okamoto K, Thomas WK, Lynch M, Baer CF. (2009) A genome-wide view of *Caenorhabditis elegans* base-substitution mutation processes. ***Proceedings of the National Academy of Sciences*** 106 (38):16310-4.

3. **[68 citations]** Subramanian K, Jochem A, Le Vasseur M, **Lewis SC**, Paulson BR, Reddy TR, Russell JD, Coon JJ, Pagliarini DJ, and JM Nunnari. Coenzyme Q biosynthetic proteins assemble in a substrate-dependent manner into domains at ER-mitochondria contacts. ***Journal of Cell Biology***, Jan 2019, jcb.201808044

4. **[63 citations]** Hinton Jr. AO, Termini C, Spencer EC, Rutaganira F, Chery D, Roby R, Vue Z, Pack AD, Brady J, Garza-Lopez E, Marshall A, **Lewis SC**, Schuler H, Taylor B, McReynolds MR, Palavicino-Maggio CB. Patching the Leaks: Revitalizing and Reimagining the STEM Pipeline. ***Cell***, 183, 568-575 October 29, 2020.

5. **[43 citations]** **Lewis SC**, Joers P, Willcox S, Griffith JD, Jacobs HT, Hyman BC. (2015) A rolling-circle replication mechanism produces multimeric lariats of mitochondrial DNA in *Caenorhabditis elegans*. ***PLoS Genetics***, 11(2): e1004985.

## Fellowships and Grants

2023 Sloan Research Fellow, Alfred P. Sloan Foundation
2023 Prytanean Faculty Award
2023 Whitman Fellow, Marine Biological Laboratory
2022 United Mitochondrial Disease Foundation Ad Hoc Award
2022 Pilot Award, Stanford Diabetes Research Center
2022-23 Rennie Fund Award, The Rennie Fund for the Study of Epilepsy
2022-23 Society of Hellman Fellows Fund Award
2021-23 Pilot Award, Nathan Shock Centers of Excellence in the Basic Biology of Aging
2020 Shurl and Kay Curci Foundation Grant for New Investigators
2018-23 NIGMS K99/R00 Pathway to Independence Award
2016-19 Burroughs Wellcome Fund Postdoctoral Enrichment Award
2015-18 NIGMS F32 Ruth L. Kirschstein Postdoctoral Fellowship
2010-13 NSF Graduate Research Fellowship
2013 UC Riverside Graduate Dean's Dissertation Research Grant
2008-10 Cota-Robles Predoctoral Diversity Fellowship
2010 New England Biolabs Innovation Research Seed Grant

## Honors and Awards

2023 R.R. Bensley Award in Cell Biology, American Association for Anatomy
2022 Juneteenth Award in Honor of Black Scholarship, Vanderbilt University. Basic Sciences
2022 Scialog Fellow, Research Corporation for Science Advancement
2020 Winkler Scholar Award
2019 Kelsey Wright Award for Excellence, Mitochondrial Medicine Society
2018 Best Poster Award, Cell Symposia: "Multifaceted Mitochondria"
2015 EMBO Symposium on mtDNA and Neurodegeneration Travel Scholarship
2013 John Webster Dissertation Research Award, Society of Nematologists
2012 Carl Storm Award, Gordon Conference on Mitochondria and Chloroplasts
2011 Selected to attend the 61st Lindau Nobel Laureate Meeting: Physiology/Medicine
2011 ASBMB Symposium on Mitochondrial Biology Travel Scholarship
2011 Best Poster Award, Society of Nematologists Annual Meeting
2011 N.A. Cobb Nematology Foundation Research Award
2008 Dr. JoAnne Trow Woman of Distinction Award, OSU Memorial Union
2007 Howard Hughes Research Fellows Program (summer)
2007 Diversity Mentoring Award, Society for Molecular Biology and Evolution
2007 E.P.A. National Competition in Sustainable Student Design Finalist ($10K prize)
2006 Oregon Subsurface Biosphere Initiative Research Fellow (summer)
2004 American Chemical Society Scholarship
2004 Science Leadership Award, Oregon Business/Professional Women's Organization

## Professional Organizations

Sigma Xi
American Society for Cell Biology
BioImaging North America
Genetics Society of America

## Invited seminars/presentations (selected)

2023 American Society for Cell Biology CellBio Keynote - *Upcoming*
2023 UNC Chapel Hill Cell Biology and Physiology seminar speaker
2023 Chan Zuckerberg Initiative Biohub Seminar Speaker
2023 UCSF Biochemistry Seminar Speaker
2023 Yale University Genetics Seminar Speaker
2023 University of Pennsylvania Perelman School of Medicine Seminar Speaker

2023 University of Michigan - Special Seminar by student invitation
2023 Oregon State University Pharmacology Seminar Speaker
2022 Gordon Research Conference on Mitochondria and Chloroplasts
2022 Vanderbilt University Basic Sciences Seminar Speaker
2022 Allen Institute for Cell Science Special Seminar
2022 Columbia University Biology Seminar Speaker
2021 University of British Columbia Molecular Biology Seminar Speaker
2021 University of Massachusetts, Amherst - Special Seminar by student invitation
2021 University of Washington, Seattle Pharmacology Seminar Speaker
2021 University of Richmond Seminar Speaker
2020 University of Utah Seminar Speaker
2020 HHMI Leading Edge Symposium Invited Speaker
2020 Innovative Genomics Institute Seminar Speaker
2020 UCB Department of Nutritional Sciences and Toxicology Seminar Speaker
2020 Society for Neuroscience Symposium Speaker
2019 American Biomedical Research Conference for Minority Students Invited Speaker
2019 UMDF Symposium on Mitochondrial Medicine Speaker
2019 UCSD SoM, Dept. of Cellular and Molecular Medicine Invited Speaker
2019 UCSC Dept. of Molecular, Cell and Developmental Biology Seminar Speaker
2019 University of Pennsylvania, Dept. of Biology Invited Speaker
2019 Stanford University School of Medicine, Dept. of Biochemistry Invited Speaker
2018 ASCB Microsymposium Talk, Session on Organelle homeostasis
2018 Harvard SPH, Dept. of Molecular Metabolism Seminar Speaker
2016 ASCB Minisymposium Talk, Session on Inter-organelle membrane contacts
2016 Symposium on “Game-Changing Microscopy Across Biological Scales” Invited Speaker

**All Publications**

1. Begeman A, Babaian A, **Lewis SC**. Metatranscriptomic analysis uncovers prevalent viral ORFs compatible with mitochondrial translation. ***mSystems***. 2023 May 18:e0100222. doi: 10.1128/ msystems.01002-22. Epub ahead of print. PMID: 37199915.
2. Mays A, et al [52 co-authors]. Juneteenth in STEMM and the barriers to equitable science. ***Cell***, 2023 Jun 8;186(12):2510-2517. doi: 10.1016/j.cell.2023.05.016. Epub 2023 Jun 8.
3. Smolka JA & **Lewis SC**. In Situ Analysis of Mitochondrial DNA Synthesis Using Metabolic Labeling Coupled to Fluorescence Microscopy**.** In: Nicholls, TJ, Uhler, JP, Falkenberg, M. (eds) Mitochondrial DNA. ***Methods in Molecular Biology***, vol 2615, 2023. Humana, New York, NY.
4. Marshall A, Pack AD, Owusu SA, Hultman R, Drake D, Rutaganira FUN, Namwanje M, Evans CS, Garza-Lopez E, **Lewis SC**, Termini CM, AshShareef S, Hicsasmaz I, Taylor B, McReynolds MR, Shuler H, Hinton AO. Navigating racialized microaggressions in STEM. ***Pathogens and Disease***, 2021 Jun 3;79(5):ftab027.
5. Hinton Jr. AO, Termini C, Spencer EC, Rutaganira F, Chery D, Roby R, Vue Z, Pack AD, Brady J, Garza-Lopez E, Marshall A, **Lewis SC**, Schuler H, Taylor B, McReynolds MR, Palavicino-Maggio CB. Patching the Leaks: Revitalizing and Reimagining the STEM Pipeline. ***Cell***, 183, 568-575 October 29, 2020.
6. Subramanian K, Jochem A, Le Vasseur M, **Lewis SC**, Paulson BR, Reddy TR, Russell JD, Coon JJ, Pagliarini DJ, and JM Nunnari. Coenzyme Q biosynthetic proteins assemble in a substrate-dependent manner into domains at ER-mitochondria contacts. ***J Cell Biol***, Jan 2019, jcb.201808044; DOI: 10.1083/jcb.201808044.
7. Mallat A, Uchiyama LF, **Lewis SC**, Fredenburg RA, Terada Y, Ji N, Nunnari J, Tseng C. (2018) Discovery and characterization of selective small molecule inhibitors of the mammalian mitochondrial division dynamin DRP1. ***BBRC***, Mar 27, pii: S0006-291X(18)30711-3.

8. **Lewis SC**, Uchiyama LF and J Nunnari. (2016) ER-mitochondria contacts couple mtDNA synthesis with mitochondrial division in human cells. ***Science***, 353(6296): aaf5549. doi: 10.1126/science.aaf5549.
9. **Lewis SC**, Joers P, Willcox S, Griffith JD, Jacobs HT, Hyman BC. (2015) A rolling-circle replication mechanism produces multimeric lariats of mitochondrial DNA in Caenorhabditis elegans. ***PLoS Genetics***, 11(2): e1004985.
10. Joers P, **Lewis SC**, Fukuoh A, Parhiala M, Ellila S, Holt IJ, Jacobs HT. (2013) Mitochondrial transcription terminator family members mTTF and mTerf5 have opposing roles in coordination of mtDNA synthesis. ***PLoS Genetics*** 9(9): e1003800.
11. Poinar G, **Lewis SC**, Hagen N, Hyman BC. (2011) Systematic affinity of the sea urchin parasite, *Echinomermella matsi*. ***Nematology*** 13:747-753.
12. Hyman BC, **Lewis SC**, Tang S, Wu Z. (2010) Rampant gene rearrangement and haplotype hypervariation among nematode mitochondrial genomes. ***Genetica*** 139(5): 611-5.
13. Denver DR, Dolan P, Wilhelm LJ, Sung W, Lucas-Lledó JI, Howe DK, **Lewis SC**, Okamoto K, Thomas WK, Lynch M, Baer CF. (2009) A genome-wide view of Caenorhabditis elegans base-substitution mutation processes. ***PNAS*** 106 (38):16310-4.
14. **Lewis SC**, Dyal LA, Hilburn CF, Weitz S, Liau WS, Lamunyon CW, Denver DR. (2009) Molecular evolution in Panagrolaimus nematodes: origins of parthenogenesis, hermaphroditism and the Antarctic species P. davidi. ***BMC Evolutionary Biology*** 9(1):15.

**Recent Highlights and commentaries on our work**
Prytanean Alumnae Society
Gasman, M. Forbes "Black Scientists Ask: "Why Does Science Have A Racism Problem?"
Ziviani and Scorrano, *Nature*, 538, 326–327 "The organelle replication connection"
Bonekamp and Larsson, *Cell*, 172, 388-388.e1 "Snapshot: Mitochondrial Nucleoid"
Cell Press "100 Inspiring Black Scientists"
Mesche, E. Berkeley Science Review Faculty Profile Samantha Lewis

**Professional Service**

Extramural

| | |
|---|---|
| 2022-current | Rare Disease Diversity Coalition, Working group on Research and Clinical Trials |
| 2022 | National Fellowship Evaluation, organization for Graduate Women in Science (GWIS) |
| 2021 | NIH Study Section Service – NIGMS K99 review panel |
| 2021 | DOD grant review panel service |
| 2020-current | Ad hoc reviewer for *Cell*, *Science*, *Science Advances*, *Molecular Cell*, and *Nature Communications Science Advances*, *Scientific Reports*, *Bioessays* |
| 2020-current | Bioimaging North America, Committee on Diversity and Inclusion |
| 2020 | ASCB Annual Meeting Minisymposium Co-chair, "Lipids and organelle trafficking" |

Departmental Service:

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| 2021-current | First-year MCB Graduate Advisor (seven students) |
| 2020 | MCF training grant steering committee. |
| 2020-current | Inclusive MCB Steering Committee |
| 2020 | Organizing committee, UCB Cell Biology Retreat |
| 2019 | Organizing committee for the 17th Annual Advanced Imaging Workshop, where I also Chaired a session of presentations on the visualization of organelle biology. |

University Service:

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| 2020-current | UCB College of Letters and Sciences Working Group on Academic Parenting |

Classroom Teaching:
MCB 133L Cell Biology and Physiology Laboratory (Spring 2021, Fall 2021, Spring 2022, Fall 2022, Spring 2023, Spring 2024)
MCB 104 Genetics, Genomics, and Cell Biology (Spring 2024)

Guest lectures:
NST 250 Advanced Metabolic Biology (Instructor: David Moore; Fall 2022)
MCB 230 Advanced Cell Biology (Instructor: James Hurley; Spring 2023)

**Research Funding**
*Current:*

1 R35GM147218-01 09/15/22-8/31/27
NIH/NIGMS MIRA Award
Lewis (PI)
Systems analysis of mitochondrial genome maintenance in physiological context
Total cost: $2,093,793 USD

Sloan Research Fellow 09/01/23-8/31/25
Alfred P. Sloan Foundation
Lewis (PI)
Heterogeneity of mitochondrial form and function in peripheral sensory nerves
Total cost: $75,000 USD

CZI Measuring Metabolism Across Scales 12/01/23-11/30/25
Lewis (PI)
Simultaneous capture of organelle dynamics and analyte concentration in vivo
Total cost: $500,000 USD

Center for CRISPR Target Discovery Award 03/01/23-2/28/24
Innovative Genomics Institute of UC Berkeley
Lewis (PI)
Tuning mitochondrial genome abundance in vivo
Total cost: $250,000 USD

Research Award 01/01/23-12/31/24
United Mitochondrial Disease Foundation
Lewis (PI)
Animal models of mitochondrial DNA depletion syndromes
Total cost: $100,000 USD

*Pending*

National Science Foundation CAREER Award 03/01/24-2/28/29
Lewis (PI)
Mitochondrial genome partitioning and quality control
Total cost: $1,584,000 USD

Trainees and Mentoring

*Current Postdoctoral scholars in Lewis Lab*
John Smolka, Ph.D. UC Davis
Tejashree Waingankar, Ph.D. Indian Institute of Science

*Current Graduate Students in Lewis Lab*
Eve Kakudji, MCB Ph.D. student
Adam Begeman, MCB Ph.D. candidate, NSF Graduate Fellow
Casadora Boone, Metabolic Biology Ph.D. candidate, Graduate Division Mentored Research Fellow

*Current Undergraduates in Lewis Lab*
Bezawit Danna, UC LEADS UCLA '24
Alexandra Viret, MCB '26
Yomn Hammad, SEED BioE '26
Da'Shaun Stewert, Mol Envir Biol '25
Clara Szalay, MCB '25

*Qualifying Exam Committees Served 2020-23*
Cyrus Ruediger, MCB
Evan Groover, Plant and Microbial Biology
Rachael McMinimy, MCB
Srividya Chandrasekhar, MCB
Matthew Kukurugya, MCB
Sridurgadevi Kolla, MCB
Rachel Jansen, MCB
Amandine Rapp, Nutritional Sciences and Toxicology
Samvardhini Sriharan, MCB
Lily Nguyen, Neuroscience
Samantha Kraus, Chemistry

*Thesis Committees Served 2020-23*
Cyrus Ruediger, MCB
Rachael McMinimy, MCB
Samantha Smith, MCB
Adrianne Zhong, Physics
Isabel Serrano, Integrative Biology
Amandine Rapp, Nutritional Sciences and Toxicology
Srividya Chandrasekhar, MCB