Anna Clemencia Guerrero, PhD

James S. McDonnell Postdoctoral Fellow at the Santa Fe Institute
Phone: 520-906-6230 | Email: acg@santafe.edu

EDUCATION

Arizona State University, PhD in Biology and Society *2023*
MS in Biology and Society *2020*
Arizona State University, Barrett, the Honors College, BS in Microbiology; *summa cum laude* *2017*

RESEARCH

Postdoctoral Fellow Santa Fe Institute *August 2023–present*
Advisors: Drs. Chris Kempes and Manfred Laubichler
Topic: Developing image networks for modeling conceptual evolution in science

External researcher University of Chicago, Department of Chemistry *2022–present*
Advisor: Dr. Aaron R. Dinner
Topic: Computational image processing and history of research about contractile systems in cells

Doctoral student Arizona State University, Center for Biology and Society *2017–2023*
Advisors: Drs. Jane Maienschein, Manfred Laubichler, Beckett Sterner, and Karl Matlin
Topic: History and philosophy of images and concepts in microbiology
Dissertation: *Images and the Development of the Microbial Biofilm Concept*

Research Assistant Marine Biological Laboratory *2020–2023*
Advisors: Drs. Karl Matlin and Jane Maienschein
Topic: History and philosophy of cell biology and synthetic cell research

Jacques Barzun Fellow American Philosophical Society *2022*
Supervisor: Dr. Adrianna Link
Topic: Collections and public programming in the history of biology; Emil Witschi Papers

Graduate researcher Arizona State University, The Biodesign Institute *2018–2020*
Advisors: Drs. César Torres and Steven Hart
Topic: Confocal imaging techniques in biofilm research

Undergraduate researcher Arizona State University**,** School of Life Sciences *2015–2017*
Advisor: Drs. Rebecca Fisher, Dale DeNardo, and Steve Elliott
Topic: Anatomy and physiology of reptile musculoskeletal systems
Honors thesis: "The relationship among vertebral osteology, microhabitat, and prey-capture methods in snakes"

Undergraduate researcher Harvard University, Harvard Forest *2016*
Advisors: Dr. Neil Pederson and Clarisse Hart
Topic: Representation of forest development and regeneration over long time scales

GRANTS / AWARDS

- Whitman Center Fellowship – Marine Biological Laboratory. *2025*
- Lou Schuyler Postdoctoral Research Award *2025*
- Santa Fe Institute Micro Working Group Workshop Grant *2024*
- James S. McDonnell Foundation Postdoctoral Fellowship *2023*
- Santa Fe Institute Micro Working Group Workshop Grant *2022*
- American Philosophical Society Jacques Barzun Fellowship *2022*
- (Co-I) National Science Foundation grant on contractile cell systems (MCB 2201235) *2021*
- Arizona State University Graduate Excellence Award, College of Liberal Arts and Sciences *2020*

- John Templeton Foundation Ideas Challenge on the Science of Purpose Winner *2020*
- (Co-I) National Science Foundation Synthetic Cells and Rules of Life Grant (SES 1946506) *2020*
- National Science Foundation Graduate Research Fellowship *2019*
- Ford Foundation Pre-Doctoral Fellowship, Honorable Mention *2019*
- European Research Council IDEM Travel Grant *2019*
- National Science Foundation Travel Grant *2019*
- Arizona State University School of Life Science RTI Award *2019*
- Arizona State University Graduate College Fellowship, Spring, Fall *2019*
- with Embryo Project Team, Hazen Education Award from the History of Science Society *2018*
- Arizona State University Moeur Award *2017*
- National Science Foundation REU Grant Recipient – Harvard Forest *2016*
- School of Life Sciences Undergraduate Research Scholar, Arizona State University *2015*
- Mayo Physicians of Tomorrow Scholar, Rochester, MN *2015*
- New American University Scholar, Arizona State University *2013*
- National Hispanic Scholar *2013*

WORK PUBLISHED / PRESENTATIONS

PUBLICATIONS

- Guerrero, Anna C., Dinner, Aaron, Kamath, Krishna, and Damerow, Julia. "PicAxe: creating an open-source image extraction tool for large and diverse corpora of text-image PDF documents." 2024. *DH2024 Book of Abstracts*. Zenodo. https://doi.org/10.5281/zenodo.13761079.
- Guerrero, Anna, Maienschein, Jane, Matlin, Karl, Walton, Jennifer. *Seeing Cells (2023), a permanent science exhibit at the MBL. https://www.mbl.edu/research/research-centers/eugene-bell-center/featured-projects/seeing-cells-exhibit.*
- Guerrero, Anna, Maienschein, Jane, Walton, Jennifer. *Seeing Life (2023), a permanent historical exhibit at the MBL. https://www.mbl.edu/about/history-archives/seeing-life-exhibit.*
- Ronai, I., Greslehner, G.P., Boem, F. *et al.* "Microbiota, symbiosis and individuality summer school" meeting report. *Microbiome* **8,** 117 (2020). https://doi.org/10.1186/s40168-020-00898-7.
- *Guerrero, Anna. "Apgar Score." Embryo Project Encyclopedia* (2022-01-21). ISSN: 1940-503 https://hdl.handle.net/10776/13318.
- Guerrero, Anna, "Virginia Apgar (1909–1974) - Image". *Embryo Project Encyclopedia* (2021-08-12). ISSN: 1940-5030 https://hdl.handle.net/10776/11416.
- Guerrero, Anna, Santora, Emily, "Invasive and Non-Invasive Methods for the Diagnosis of Endometriosis" (2010), by Albert L. Hsu, Izabella Khachikyan, and Pamela Stratton." *Embryo Project Encyclopedia* (2020-06-30). ISSN: 1940-5030 https://hdl.handle.net/10776/13156.
- Guerrero, Anna, Santora, Emily, "Leuprorelin as a Treatment for Endometriosis". *Embryo Project Encyclopedia* (2019-11-30). ISSN: 1940-5030 https://hdl.handle.net/10776/13136.
- Guerrero, Anna, "De Monstruorum Causis, Natura et Differentiis (On the Reasons, Nature and Differences of Monsters) (1616), by Fortunio Liceti". *Embryo Project Encyclopedia* (2018-11-29). ISSN: 1940-5030 https://hdl.handle.net/10776/13087.
- Guerrero, Anna, "Fortunio Liceti (1577–1657)". *Embryo Project Encyclopedia* (2018-06-25). ISSN: 1940-5030 https://hdl.handle.net/10776/13075.

- Guerrero, Anna, "DNA and X and Y Chromosomes". *Embryo Project Encyclopedia* (2017-02-06). ISSN: 1940-5030 https://hdl.handle.net/10776/11398.
- Guerrero, Anna, "Southern Gastric Brooding Frog-Image". *Embryo Project Encyclopedia* (2017-02-06). ISSN: 1940-5030 https://keep.lib.asu.edu/items/175289.
- Guerrero, Anna. *Forest Time (2016)*. Scientific and philosophical exhibit at the Harvard Forest Fisher Museum. http://harvardforest.fas.harvard.edu/blog/anna-guerrero.

PRESENTATIONS

- "AI and Pictures" Visiting Lecture at the William H. Neukom Institute for Computational Science, Dartmouth University. April 17, 2025.
- "Embryo Project 20-Year Anniversary Seminar: Communicating Health and Reproductive Science Data." Arizona State University. February 26, 2025.
- "PicAxe: Creating an Open-source Image Extraction Tool for Large and Diverse Corpora of Text-Image PDF Documents." Digital Humanities 2024, Roy Rosenzweig Center for History and New Media at George Mason University. August 8, 2024.
- "How (Not) to Study the Evolution of Scientific Concepts with Computers." Complex Systems Summer School, Santa Fe Institute. June 24, 2024.
- "What do Scientific Images Represent?" Guest seminar, St. John's College. April 24, 2024.
- "How Should We Analyze Scientific Images?" Slice of Science at the Santa Fe Institute. February 12, 2024.
- "All Science is Design." ACtioN Symposium – Complexity of Civilization at the Santa Fe Institute. November 11, 2023.
- "How did Bacteria become the Earliest Common Ancestor?" Feasible Metabolisms Workshop at the Santa Fe Institute. August 24, 2023.
- "What is a Synthetic Cell, and How Do We Know?" with Jarrett Joubert and Shane Jinson. International Society for the History, Philosophy, and Social Studies of Biology Conference. July 12, 2023.
- "Seeing the 'Organism' in Microorganism: The Influence of Images on Anton van Leeuwenhoek's 17th Century Concept of Animalcules." Joint Atlantic Seminar for the History of Biology. April 15, 2023.
- "Representing Evolving Scientific Concepts with Machines." with Drs. Kelle Dhein, Jeff Lockhart, Maell Cullen, and Helena Miton. James S. McDonell Foundation-Santa Fe Institute Postdoc Conference. March 28, 2023.
- "On the Other Side of the Archive: Lessons from Processing the Emil Witschi Papers at the American Philosophical Society." American Philosophical Society, April 14, 2022.
- "Images as Social Agents and Historical Ledgers in Knowledge Systems." Santa Fe Institute, April 4, 2022.
- "Studying Images in the History of Microbiology." American Philosophical Society, January 18, 2022.
- "Quantifying Concepts and their Influence." Digital History of Science Working Group with the Consortium for History of Science, Technology and Medicine. December 1, 2021.
- "Seeing Cells: A Historical Exhibit about Evolving Concepts." to the Cyborg Cell Working Group at the Marine Biological Laboratory, October 20, 2021.
- "Making Visual Arguments about the History of Biology." Marine Biological Laboratory—University of Chicago Fall course on Visualization and Biology, September 2, 2021.
- "Images and Imagining Cyborg Cells." NSF Synthetic Cells and Rules of Life Program. March 30, 2021.
- "Groupness in the History of Microbiology." Visual Cultures in Natural History, the Life Sciences, and Medicine with the Consortium for History of Science, Technology and Medicine. February 19, 2021.
- "Finding Practical Intersections between Art and Science." Natural Science for Artists and Designers

course at the Emily Carr University of Art + Design. October 5, 2020.

- "What Can Drawings of Cyborg Cells Teach Us?" Cyborg Cell Working Group, NSF Synthetic Cells and Rules of Life Program. September 3, 2020.
- "How to Draw a Cyborg Cell." Cyborg Cell Working Group, NSF Synthetic Cells and Rules of Life Program. July 29, 2020.
- "Making Even Better Scientific Images." Scientific Communication course (BIO 591) at Arizona State University, School of Life Sciences. February 5, 2020.
- with Dr. Christy Spackman. "Disrupting Lab Work: Exploring the Role of Art in the Practice and Communication of Biology." Life Science Ethics Series at Arizona State University. October 30, 2019.
- "How Images Shape the Concept of Regeneration in Microbial Communities." International Society for the History, Philosophy, and Social Studies of Biology Conference. July 11, 2019.
- "Making Better Scientific Images." Scientific Communication (BIO 591) course at Arizona State University, School of Life Sciences. February 13, 2019.
- "The Relationship Between Vertebral Osteology and Microhabitat and Prey-capture Methods in Snakes." Barrett, Celebrating Honors Symposium at Arizona State University. April 12, 2017.
- "Drawing Conclusions: The Art of Forests over Time." Harvard Forest Summer Symposium. August 2016.
    - Read more at: http://harvardforest.fas.harvard.edu/blog/anna-guerrero.

TEACHING APPOINTMENTS

Academic Associate – History of Biology (online) (BIO 316 / HPS 330) *Spring 2025*
School of Life Sciences, Arizona State University

Academic Associate – Biology and Society (online) (BIO 311 / HPS 340) *Spring 2024/ Fall 2024*
School of Life Sciences, Arizona State University

Academic Associate – History of Medicine (online) (BIO 318 / HPS 331) *Fall 2023*
School of Life Sciences, Arizona State University

Teaching Assistant – Biomedical Research Ethics (online) (BIO 416/ HPS 410) *Spring 2023*
School of Life Sciences, Arizona State University

Teaching Assistant – History of Medicine (online) (BIO 318 / HPS 331) *Fall 2021*
School of Life Sciences, Arizona State University

Capstone Project Advisor –Biology and Society Undergraduate Research (BIO 495) *Fall 2021*
School of Life Sciences, Arizona State University

Teaching Assistant – Research Colloquium in Biology and Society (BIO 314) *Spring 2019*
School of Life Sciences, Arizona State University

Research Assistant – Bioethics (BIO 312) *Summer 2018*
School of Life Sciences, Arizona State University

Instructor – Scientific Illustration (BIO 494 / HPS 494 / BIO 591 / HPS 591) *Spring 2018–Fall 2023*
The Embryo Project Encyclopedia, Arizona State University

Seminar Instructor – Life Sciences Career Paths (BIO 189) *Fall 2017*
School of Life Sciences, Arizona State University

Teaching Assistant – Introduction to Microbiology Lab (MIC 206) *Fall 2017*
School of Life Sciences, Arizona State University

TECHNICAL SKILLS

Languages: Python
Computational Environments: Jupyter
Other: GitHub, PyTorch

REVIEW WORK

University of Chicago Press (Topic: data communication and visualization) *2022*

SCIENCE EDUCATION & COMMUNICATION

Consultant *January 2024–present*
Eugene Bell Center for Regenerative Biology and Tissue Engineering, Marine Biological Laboratory
- Transforming exhibit materials about the history of cell biology to online format for broad audiences
- Script writing for in-person and virtual tours

Research Assistant *August 2020–July 2023*
Eugene Bell Center for Regenerative Biology and Tissue Engineering, Marine Biological Laboratory
- *Summer 2022*: installation in Lillie Library
- *Spring 2023*: Online exhibit: https://www.mbl.edu/research/research-centers/eugene-bell-center/featured-projects/seeing-cells-exhibit

Jacques Barzun Fellow *2023*
American Philosophical Society (APS)
- Library collections and public programming in the history of biology
- Contribute original historical and scientific panel, "When Stars Align," to *Pursuit & Persistence: 300 Years of Women in Science* at the APS Museum, March 31 to December 30

Contributor / Managing Editor *August 2017–August 2019*
The Embryo Project Encyclopedia, Arizona State University

Scientific Fact Checker and Script Editor *May 2017–May 2018*
Pearson Education, Remote

Summer Fellow – NSF Research Experience for Undergraduates *May 2016–August 2016*
Harvard Forest, Harvard University
- generate six original paintings and for public exhibit in Harvard Forest Fisher Museum to communicate forest development and regeneration over long time scales
- present lecture to scientists and general public
- read more: https://harvardforest.fas.harvard.edu/blog/anna-guerrero

VOLUNTEER WORK

- **Advisor to Hispanic Women in Corporate and Freelancing** *2020-present*
- **Scientific Illustrator**, AskNature, The Biomimicry Institute *2017–2018*
- **Co-Founder and Graphic Designer**, Laboratory Casual *2014-2016*