

Santana M. Lardo

Department of Biological Sciences
Dietrich School of Arts and Sciences, University of Pittsburgh
A527 Langley Hall, 4249 Fifth Avenue, Pittsburgh, PA. USA
Phone: 412 294 3557
Email: sml111@pitt.edu
ORCID ID: 0000-0003-0403-5326

EDUCATION

2018 **B.S., Biology**, University of Pittsburgh at Johnstown
Minor in Philosophy, University of Pittsburgh at Johnstown

CURRENT POSITION

2020 – Present **Research Specialist III**
Advisor: Dr. Sarah J. Hainer. Department of Biological Sciences, University of Pittsburgh
Assessing the role of FACT in ES cell pluripotency
Optimize CUT&RUN technology for multiplexing and streamlined protocol
Apply this chromatin profiling technique to:

- *Examining human patient colon cancer biopsies and IBD*
- *Examining toxoplasma gondii and their life cycle*
- *Mapping the DNA enhancer landscape in dissected mouse and human RPE*
- *Confirming pathSTORM findings on a molecular level*
- *Assessing cell migration and identifying transcriptional targets of MKL*
- *Examining carcinogen treated epithelial cells and the effect of NRF2 in the genome*
- *Profiling protein localization on chromatin in early cardiac macrophage cells*
- *Examining localization of HIRA and H3.3 in ATRX-modeled cell lines*
- *Assessing OCT4 enriched DNA and factor binding efficiency*
- *Examining ADLD disease in mouse fibroblasts and its effect on LaminB1 in the genome*
- *Identifying gene expression changes of NF-PanNETs paired with pathSTORM*
- *Confirming pathSTORM findings of antibiotic treated cells (DRB & FU)*
- *Identifying DNA structural changes in RNase H treated cells*

2022 – Present **Lab Manager**
Advisor: Dr. Sarah J. Hainer. Department of Biological Sciences, University of Pittsburgh

- Organizing lab environment and equipment
- Taking inventory & organizing lab reagents, equipment, and supplies
- Creating and updating schedules, protocols, procedures, and equipment services

PREVIOUS POSITIONS

- 2018 – 2020 **Research Specialist II**
Advisor: Dr. Sarah J. Hainer. Department of Biological Sciences, University of Pittsburgh
See above
- 2016 – 2018 **Undergraduate Research Assistant**
Advisor: Dr. Jill Henning. Department of Biology, University of Pittsburgh at Johnstown.
Cellular Biology, Tick and Lyme Disease research project

PUBLICATIONS

DC Klein, **SM Lardo**, KN McCannell, SJ Hainer. FACT maintains pluripotency factor expression through gene-distal regulation in embryonic stem cells. *bioRxiv* 2021:
doi: <https://doi.org/10.1101/2021.07.30.454509>

Lardo, S. M., Hainer, S. J. Single-Cell Factor Localization on Chromatin using Ultra-Low Input Cleavage Under Targets and Release using Nuclease. *JoVE*, 2022 February 1; J. Vis. Exp. (180), e63536, doi:10.3791/63536 (2022).

J Xu, H Ma, H Ma, W Jiang, M Duan, S Zhao, C Gao, E-R Hahm, **SM Lardo**, K Troy, M Sun, R Pai, DB Stolz, S Singh, RE Brand, DJ Hartman, J Hu, SJ Hainer*, Y Liu*. Super-resolution imaging reveals the evolution of higher-order chromatin folding in early carcinogenesis. *Nature Communications*, 2020 April 20; 11(1): 1899

*denotes co-corresponding authors.

Coby Viner, Charles A. Ishak, James Johnson, Nicolas J. Walker, Hui Shi, Marcela K. Sjöberg-Herrera, Shu Yi Shen, **Santana M. Lardo**, David J. Adams, Anne C. Ferguson-Smith, Daniel D. De Carvalho, Sarah J. Hainer, Timothy L. Bailey, Michael M. Hoffman. Modeling methyl-sensitive transcription factor motifs with an expanded epigenetic alphabet. *bioRxiv* 2023:
doi: <https://doi.org/10.1101/043794>

MENTORING EXPERIENCE

- Kya Foxx, Undergraduate, March 2023 – Present
Cell culture, Bacterial transformation, Miraprep, CRISPR/Cas cell line targeting, Genomic DNA extraction, PCR, Restriction digest

- Benjamin Shaffer, Lab Technician, Jan 2023 – March 2023
CUT&RUN
- Gang Li, Principal Investigator, Jan 2023
CUT&RUN
- Aigbirhemwen Woghiren-Afegbua, Graduate student, July 2021 – present
Cell culture, CRISPR/Cas cell line targeting, Genomic DNA extraction, Miraprep
- Mika Wesley, Undergraduate student, Aug 2021 – present
Cell culture, Genomic DNA extraction, Miraprep, CRISPR/Cas cell line targeting
- Rithika Sankar, Graduate student, Oct 2021 – present
CUT&RUN, Cell culture
- Trirupa Chakraborty, Graduate student, Sept 2021 – Oct 2021
CUT&RUN
- Jasmine Dioguardi, Graduate student, Feb 2021 – July 2022
CUT&RUN, Cell culture, Miraprep, CRISPR/Cas cell line targeting
- Braulio Bonilla, Postdoctoral Researcher, Jan 2021 – present
Cell culture, Genomic DNA extraction, CRISPR/Cas cell line targeting
- Emily Brown, Research Specialist II, Aug 2020 – present
CUT&RUN, Cell culture, Miraprep, Genomic DNA extraction, CRISPR/Cas cell line targeting
- Rody Kingston, Graduate student, Aug 2020 – Oct 2020
CUT&RUN, Cell culture
- Kris Troy, Research Specialist II, January 2020 – March 2020
CUT&RUN
- Kayla Komondor, Graduate student, Feb 2020 – April 2020
CUT&RUN, Cell culture
- Sanchirmaa Namjilsuren, Graduate student, Feb 2020 – April 2020
CUT&RUN, Cell culture, Miraprep, Genomic DNA extraction
- Mitch Lesko, Graduate student, Aug 2019 – Nov 2019
CUT&RUN, Cell culture
- Sarah Tripplehorn, Graduate student, Feb 2019 – present
CUT&RUN, Cell culture, CRISPR/Cas cell line targeting
- Alex Francette, Graduate student, Feb 2019 – April 2019
CUT&RUN, Cell culture
- Shunran Zhang, Graduate student, Nov 2018 – Feb 2019
CUT&RUN, Cell culture
- Benjamin Patty, Graduate student, Nov 2018 – present
CUT&RUN, Cell culture

LABORATORY AND TECHNICAL EXPERIENCE

- **Cell and tissue culture** of human and mouse pluripotent stem cells and other mammalian cell lines

- **Molecular biology:** CRISPR/Cas cell line targeting, cloning, PCR, q-PCR, genomic DNA and protein extraction, isolation, & purification, restriction digest, BSA protein assay, western blot assay, CUT&RUN, ATAC, agarose gel electrophoresis & extraction, DNA library preparation for sanger sequencing
- **Imaging:** microscopy
- **Cell transfection:** lipofection
- **Bacteria:** culture, competent cell preparation, manipulation, and transformation using Miniprep/Maxiprep/Miraprep techniques
- **Computational skills:** Unix applications for deep sequencing data analysis, MS software suite

TRAININGS AND CERTIFICATIONS

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| 2023 – Present | Diversity & Inclusion Certificate , University of Pittsburgh |
| 2018 – Present | Bloodborne Pathogen Training , University of Pittsburgh |
| 2018 – Present | Chemical Hygiene Training , University of Pittsburgh |
| 2018 – Present | Shipment of Dangerous Goods Trainings , University of Pittsburgh |
| 2018 – Present | Responsible Conduct of Research Training , University of Pittsburgh |
| 2018 – Present | BioSafety Training , University of Pittsburgh |
| 2018 – Present | Environmental Health & Safety Training , University of Pittsburgh |

VOLUNTEER AND LEADERSHIP EXPERIENCE

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| 2016 – 2018 | Judiciary Hearing Board , University of Pittsburgh at Johnstown |
| 2015 – 2018 | Academic Integrity Board , University of Pittsburgh at Johnstown |
| 2015 – 2018 | Alpha Phi Omega , University of Pittsburgh at Johnstown <i>Community Service Fraternity, Fundraising Chair</i> |
| 2013 – 2018 | Black Action Society , University of Pittsburgh at Johnstown <i>Vice President, Chair of Fundraising and Community Service Committee</i> |
| 2013 – 2018 | Student Government Association , University of Pittsburgh at Johnstown <i>Treasurer, Chair of Allocations Committee</i> |
| 2010 – 2017 | Resident Summer Girls Camp & Day Camp Counselor , Sarah Heinz House Boys and Girls Club of America <i>Supervised & planned activities for ages 6-17. Specialized in supervision and training of all counselors in training ages 15-18.</i> |