Peter Lawson

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Bethesda, Maryland

EMPLOYMENT

Data and Visualization Librarian *Baltimore, MD*
Johns Hopkins Sheridan Libraries and University Museums *Oct. 2020 - Present*

Provides individualized consultations and training to researchers on data discovery, access, and visualization - advancing open science and data literacy practices. Collaborates with researchers to assess needs and lead the development of new data services, support programs, and resources. Drives outreach efforts by creating training opportunities and fostering cross-institutional collaborations to enhance data literacy and research computing outreach and resources.

Leadership:

- Leads and co-leads multiple working groups to expand and improve data services.

- Develops and launches key initiatives to enhance data services and promote research support at Johns Hopkins, including the Johns Hopkins Libraries Data Grant program, Love Data Week (2021–2023, with expanded cross-libraries programming in 2024), and the Data Bytes lunch-and-learn series.

Partnerships and Collaboration:

- Works closely with other units within the library and beyond, including DRCC, Library Applications Group, End User Services, and Research IT to develop and launch essential services, including an expanded data services workstation program, serverless SQL access to larger-than-memory data collections, a virtual data enclave for restricted data, and a high-performance rack-based workstation for supporting data curation during library renovations.

- Serves as the Sheridan Libraries representative on The Institute for Data Intensive Engineering and Science (IDIES). Supports interdisciplinary data science funding initiatives as an annual grant reviewer for the (IDIES) Seed Funding Program (SFP) and the IDIES Summer Student Fellowship (SSF).

- Serves as the data visualization representative in the Institute for Clinical and Translational Research Community and Collaboration Core Dissemination Studio pilot program, supporting researchers in disseminating their research to community stakeholders.

Outreach and Instruction:

- Conducts over 1000 consultations to support researchers' data access, analysis, and visualization, fostering a patron-focused service environment and demonstrating advanced cultural competency in addressing the diverse needs of the research community.

- Creates and delivers strategic workshop series to advance digital scholarship and open science practices across Hopkins, including seven workshops and ten webinars on data visualization and computational methods.

Graduate Researcher, NSF-IGERT Fellow *New Orleans, LA*
Tulane University *May 2014 - Oct. 2020*

Designed and conducted interdisciplinary research in computational topology and digital pathology, focusing on machine learning approaches for cancer diagnostics. Developed scalable computational pipelines, software platforms, and data management systems to support high-throughput analysis and collaborative research. Leveraged entrepreneurial experience to co-found a biomedical startup and secure significant seed funding while advancing innovative point-of-care pathology solutions.

- Designed and conducted research in computational topology, resulting in robust descriptors for whole-slide pathology images, enabling machine learning approaches to the prediction of prostate cancer aggressiveness.

- Deployed a digital pathology annotation platform and custom REST API client, supporting multiple research studies under a unified cyberinfrastructure and eliminated reliance on proprietary software.

- Mentored and trained five undergraduate students in image analysis, machine learning, and independent research.

- Volunteered with Howard-Tilton Memorial Library; developed data curation, preservation, and reuse libguide, develoepd and led an introductory workshop on data visualization in Python, and provided guidance to Tulane technical services for the development of an institutional data repository linked to existing high performance computing resources.

- Co-founded Instapath Inc., a point-of-care pathology company, and implemented GPU parallel processing for real-time post-processing of gigapixel fluorescence images. Developed a web-based image viewer for remote pathological evaluation. Secured over $1.7 million in seed funding.

- Established a laboratory data management system with redundant backups, multi-client shared storage, and wiki documentation.

Intern, Center for Devices and Radiological Health *Silver Spring, MD*
Food and Drug Administration *May 2015 - Aug. 2015*

Project: Medical device adverse events dashboard for CDRH post-market surveillance

Contributed to the development of a medical device adverse events dashboard for post-market surveillance, focusing on integrating and analyzing data to identify reporting trends and enhance the detection of potential medical device failures.

- Integrated data from disparate FDA databases using SQL and RESTful API queries, enabling post-market surveillance analysts to analyze reporting trends.

- Performed data cleaning with the Natural Language Toolkit (NLTK) in Python to resolve inconsistencies in medical device naming conventions, improving the accuracy of trend analyses.

- Developed a Bokeh dashboard in Python to visualize and monitor adverse event reports, identifying trends predictive of potential device failures and facilitating proactive device recalls.

Research Assistant *Wilmington, NC*
NSF CyVerse (Previously iPlant Collaborative) *June 2013 - July 2014*

Supported software testing and development efforts to enhance usability and streamline researcher interactions within the CyVerse cyberinfrastructure. Conducted thorough software testing and integrated new applications, ensuring seamless functionality and alignment with project objectives.

- Implemented and optimized the Genome Wide Association Study (GWAS) workflow to provide an intuitive user experience within the CyVerse platform.

- Conducted software testing and integration for new applications developed for the CyVerse project, in collaboration with multiple project stakeholders.

Bioenvironmental Engineering Journeyman *RAF Lakenheath, UK | Joint Base Langley-Eustis, VA*
United States Air Force *Jan. 2006- Jan. 2010*

Evaluated, managed, and mitigated environmental, occupational, and radiological health hazards to ensure the safety, health, and operational readiness of Air Force personnel. Oversaw multiple occupational health and safety programs at RAF Lakenheath and Joint Base Langley-Eustis.

- Earned the prestigious "Wing Commander's Leadership Award" from among 700 eligible peers, recognizing superior leadership and mentorship skills; selected for a first-line supervisor position on the first promotion attempt.

- Managed the installation-wide respiratory protection program, covering 9,000 personnel assigned to Langley Air Force Base.

- Effectively administered an industrial hygiene, safety, and homeland defense equipment program valued at over $1.1 million.

- Provided expert consultation on industrial safety and hygiene concerns for Civil Engineering government contracts totaling over $10 million.
- Led the development of Langley medical treatment facilities' infectious disease control plan, successfully mitigating the impact of the H1N1 flu outbreak on over 700 hospital personnel.
- Conducted industrial, biological, radiological, and chemical hazard workplace evaluations, ensuring the health and safety of more than 5,000 military and civilian personnel.

EDUCATION

Tulane University, New Orleans, LA   *2014-2020*
Ph.D. Bioinnovation, NSF-IGERT Fellowship

> *Dissertation*: Persistent Homology for the Quantification of Prostate Cancer Morphology in Two and Three-Dimensional Histology.

University of North Carolina at Wilmington,   *2011-2014*
B.S. Computer Science and Biology (Honors), Minor Philosophy

> *Thesis*: Evaluating the Potential of Ensembling Supervised Machine Learning Algorithms to Improve the Robustness of Genomic Prediction when a Mixed Large and Small Effect Size Underlying Genetic Architecture is Present

PUBLICATIONS - REFEREED

P. Lawson, A. B. Sholl, J. Q. Brown, B. T. Fasy, and C. Wenk, Persistent Homology for the Quantitative Evaluation of Architectural Features in Prostate Cancer Histology. *Scientific Reports*, vol 9, 1139. Feb. 2019. https://doi.org/10.1038/s41598-018-36798-y

PUBLICATIONS - NON-REFEREED

P. Lawson, B. Hu, B. T. Fasy, B. Summa, C. Wenk, and J.Q. Brown. Assessment of Sampling Adequacy Using Persistent Homology for the Evaluation of Heterogeneity in 3D Histology Acquired Through Inverted Selective Plane Illumination Microscopy (iSPIM). Clinical and Preclinical Optical Diagnostics II: 1107316, *SPIE European Conferences on Biomedical Optics (ECBO)*, **invited paper**, July 2019. https://doi.org/10.1117/12.2527959

P. Lawson, J. Schupbach, B. T. Fasy, and J. W. Sheppard. Persistent Homology for the Automatic Classification of Prostate Cancer Aggressiveness in Histopathology Images. Proc. SPIE 10956 *Medical Imaging 2019: Digital Pathology*. Mar. 2019. https://doi.org/10.1117/12.2513137

CONFERENCE PRESENTATIONS

P. Lawson, B. Hu, BTF, B. Summa, C. Wenk, and J.Q. Brown. Assessment of Sampling Adequacy Using Persistent Homology for the Evaluation of Heterogeneity in 3D Histology Acquired Through Inverted Selective Plane Illumination Microscopy (iSPIM). Proc. SPIE 11073, Clinical and Preclinical Optical Diagnostics II, (*SPIE European Conferences on Biomedical Optics (ECBO)*), **Invited Talk**, Munich, Germany, July. 19, 2019.

P. Lawson, J. Schupbach, B. T. Fasy, and J. W. Sheppard. Persistent Homology for the Automatic Classification of Prostate Cancer Aggressiveness in Histopathology Images. *Medical Imaging 2019: Digital Pathology*. SPIE, Mar. 18, 2019.

P. Lawson, B. Hu, B. T. Fasy, C. Wenk, and J. Q. Brown, Quantifying Prostate Cancer Morphology in 3D Using Light Sheet Microscopy and Persistent Homology" Diagnosis and Treatment of Diseases in the Breast and Reproductive System IV. *SPIE BiOS*, San Francisco, CA, Mar. 14, 2018.

INVITED PRESENTATIONS

P. Lawson *Managing Your PhD: Tools and Techniques for Bringing Order to a Chaotic PhD*. **Invited Talk**. Bioinnovation Colloquium Series, Tulane University, New Orleans, LA, Feb. 17, 2021.

P. Lawson. *Investigating topological descriptors for the grading of prostate cancer*. **Invited Talk**. Montana State University, Bozeman, MT, May 2017.

CONTRIBUTED PRESENTATIONS

J. Frye, J. Kaplan, T. Lippincott, C. Terwiesch., T. Dai (Moderator), P. Lawson (Moderator) . ChatGPT, AI, and the Future of Higher Education: A Virtual Panel Discussion. Johns Hopkins Data-Intensive Social Science Speaker Series. Feb. 2023

B. T. Fasy, Q. Brown, P. Lawson, C. Miller, and C. Wenk. (Presented by B. T. Fasy). Towards an Automated Quantitative Diagnosis of Prostate Cancer. BD2K All-Hands Grantee Meeting, NIH, Nov. 2015.

POSTER PRESENTATIONS

P. Lawson, E. Berry, J.Q. Brown, B. T. Fasy, and C. Wenk, "Topological Descriptors for Quantitative Prostate Cancer Morphology Analysis." Conference on Digital Pathology, SPIE Medical Imaging. Feb. 2017. *Honorable Mention, Digital Pathology Poster Award*

PATENTS

Disposable biopsy staining kit and related methods and systems. WO2019195677A1 WIPO (PCT). Samuel Jacob Luethy, Jonathon Quincy Brown, David Benjamin Tulman, Andrew Blake Sholl, Peter Joseph Lawson, Mei Wang. Published October 2019.

GRANTS

Contributing Author

2/21/19   *Rapid pathology evaluation system for biopsies*, Cancer Prevention & Research Institute of Texas (CPRIT), $3,000,000. Role: Contributing Author. PI Mei Wang (Instapath Inc.)

7/1/18 - 12/31/19   *STTR Phase I: An automated digital pathology lab for rapid on-site processing and imaging of tissue biopsies*, National Science Foundation. STTR Phase I. NSF 1820258, $225,000.00. Role: Contributing Author. PI Mei Wang (Instapath Inc.). Co-PI Quincy Brown (Biomedical Engineering, Tulane University)

8/1/17 - 7/31/21   *QuBBD: Collaborative Research: Quantifying Morphologic Phenotypes in Prostate Cancer - Developing Topological Descriptors for Machine Learning Algorithms*, National Science Foundation and National Institutes of Health, NSF-DMS 1664848, $479,293. Role: Student - Contributing Author. Co-PIs Carola Wenk(Computer Science), Quincy Brown (Biomedical Engineering), Andrew Sholl (Pathology), and Brian Summa (Computer Science) at Tulane and with Brittany Fasy at Montana State University; $899,999 total grant amount.

9/15/15 - 8/31/17   *QuBBD: Collaborative Research: Towards Automated Quantitative Prostate Cancer Diagnosis*, National Science Foundation and National Institutes of Health, NSF-DMS 1557750, $52,931. Role: Student - Contributing Author. PI Carola Wenk (Computer Science - Tulane), PI Quincy Brown (Biomedical Engineering - Tulane) and with Brittany Fasy (Computer Science - Montana State University); $99,570 total grant amount.

HONORS AND AWARDS

DataWorks! Exemplary Achievment Award $25,000 Award. Team StrokeFAIR: Andreia Faria, Brenda Johnson, Peter Lawson, David Fearon. Jan. 2024.

DataWorks! FASEB DMP Challenge Winner $1,000 Award. Team StrokeFAIR: Andreia Faria, Brenda Johnson, Peter Lawson, David Fearon. Apr. 2023.

Texas Medical Center Accelerator Prize $25,000 Award. Rice Business Plan Competition. Peter Lawson, Mei Wang, David Tulman. Houston TX. Nov. 2018.

Women's Health and Wellness Prize - $15,000 Award. Rice Business Plan Competition. Peter Lawson, Mei Wang, David Tulman. Houston TX. Nov. 2018.

2nd Place - Tulane National Business Model Competition. Peter Lawson, David Tulman, Mei Wang. New Orleans, LA. 2017.

Tulane Novel Tech Challenge - 1st Place. $10,000 Award. Peter Lawson, Mei Wang, David Tulman. (Presented by P. Lawson). Tulane University. New Orleans, LA. 2017

1st Place - International Business Model Competition. $30,000 Award. Peter Lawson. David Tulman, Mei Wang. Mountain View, CA. 2017

UNIVERSITY SERVICE

Johns Hopkins University

2024	Member, Selection Committee - Data Access Librarian
2024	Member, Love Data Week Planning Committee
2023 - 2024	Member, Community and Collaboration Core Dissemination Studio Pilot, Institute for Clinical and Translational Research, Johns Hopkins Medicine
2023	Member, Selection Committee for Associate Dean of Technology Strategy and Digital Services
2023	Member, Selection Committee for Open Source Programs Office (OSPO) Program Manager
2023	Poster Judge, Institute for Data Intensive Engineering and Science (IDIES) Annual Symposium
2023	Co-Chair, Love Data Week Planning Committee
2022	Poster Judge, Institute for Data Intensive Engineering and Science (IDIES) Annual Symposium
2022	Member, Institute for Data Intensive Engineering and Science (IDIES) Executive Committee
2021 - 2022	Selection Committee for Sheridan Libraries Manager of Collection Development
2019 - Present	Sheridan Libraries Social Sciences Collection Committee
2019 - Present	Official Representative, Inter-University Consortium for Political and Social Research (ICPSR)

Tulane University

2017	Founding Committee Member, Bioinnovation Colloquium

PROFESSIONAL SERVICE

Professional Community Committees:

2024	Member, Campus Research Computing Consortium (CaRCC) Anaconda Transition Working Group

Grant Proposal Reviewer:

2024	Reviewer, Institue for Data Intensive Engineering and Science (IDIES) - SEED Funding Program
2023	Reviewer, Institue for Data Intensive Engineering and Science (IDIES) - SEED Funding Program

Teaching:

2024	Helper, 2024 URSSI Summer School in Research Software Engineering, GW University
2021	Helper, Network of the National Library of Medicine Library Carpentry workshop

CERTIFICATIONS AND TRAINING

Sept. 2024 - Present	Leadership in Analytics and Data Science (LEADS). Johns Hopkins Medicine Data Trust, and the Technology Innovation Center, Johns Hopkins University.
Sept. 2024	NASA Open Science Skills Training, NASA Transform to Open Science (TOPS).
Sept. 2023	SAFE Zone, Gender & Sexuality Resources, Johns Hopkins Center for Diversity & Inclusion.
Jan. 2023	Best Practices in University Teaching, Center for Teaching Excellence and Innovation, Johns Hopkins University.
Apr. 2020	Research Data Management Library Academy, Virtual.
Aug. 2019	The Carpentries Instructor Training, Compute Canada, Virtual.

DEVELOPED TRAINING

Johns Hopkins University

2024	Reproducible Research with JupyterLab
2023	Command Line Wizardry
2023	Introduction to Data Visualization in Tableau
2023	Introduction to the Unix Command Line
2022	Debugging your Python Code
2022	Speeding up your Python Code
2022	Discovering Data for Research
2022	Introduction to Regular Expressions
2021	Reproducible Computation with Binder
2019	Introduction to Data Cleaning with OpenRefine

DEVELOPED WORKSHOPS

Johns Hopkins University

- Introduction to Data Visualization in R
- Designing Effective Data Visualizations
- Introduction to Data Visualization in Python
- Data Visualization in R with ggplot2
- Interactive Data Visualization in R with Shiny (two-part series)
- Creating Effective Scientific Figure
- Persistent Homology for Low-Dimensional Medical Images Topological Methods in Machine Learning and Artificial Intelligence Workshop

Tulane University

- Persistent Homology for Low-Dimensional Medical Images Topological Methods in Machine Learning and Artificial Intelligence Workshop

Charleston University

- *Persistent Homology for Low-Dimensional Medical Images* Topological Methods in Machine Learning and Artificial Intelligence Workshop. Charleston, SC. May 2019

COMMUNITY SERVICE

- Volunteer, LA FIRST LEGO League State Championship, 2015, Holy Cross School, New Orleans, LA.