Ian D. Dryg, Ph.D.

New York, NY • (563) 940-3841 • iddryg@gmail.com • www.linkedin.com/in/idryg • US Citizen

Innovative and motivated scientist looking for exciting opportunities in R&D and Bioinformatics/Data Science.

- Experienced research scientist with 9 years of experience using a variety of wet lab and bioinformatics techniques to study brain inflammation (PhD), and immuno-oncology (post-PhD).
- Strong interest in further exploring data science, bioinformatics/computational biology, next-gen sequencing technologies, digital pathology, and spatial biology technologies.

SKILLS

Technical Expertise	Computational	Molecular Biology
• Confocal Microscopy • Immunohistochemistry (IHC) • Electron Microscopy • Flow Cytometry • Bioconjugation (EDC:NHS) • Electrophysiology • Polymer Chemistry	• Python (Pandas, Numpy, Scipy, Matplotlib, plotnine, sklearn, Pythologist) • R (DESEQ2, Seurat, tidyverse) • Git / Version Control • Data Analysis & Visualization • Image Analysis • FIJI (ImageJ)	• Primary Cell Isolation • ELISA • Cell Culture • PCR • Protein Chemistry

EXPERIENCE

SCIENTIST 2022 – Current
COMPUTATIONAL BIOLOGIST II 2021 – 2022
Dana-Farber Cancer Institute **Boston, MA / New York, NY**

- Interfaces as a bridge between clinical experts (Pathologists) and computational experts (Data Scientists).
- Conducted in-depth analyses on various clinical studies, from mining and rearranging large multi-institution datasets to exploring hypotheses from individual research labs.
- Utilized python for data wrangling, analysis, and visualization of large datasets, including OncDRS (a database of cancer patients at Dana-Farber related institutions) and several single-cell spatial datasets from stained tissue biopsies of clinical trials
- Performed spatial analysis of multiplexed immunofluorescence tissue samples to test hypotheses and better understand how spatial organization of cells affects clinical outcomes in cancer. Utilized our custom-made pipeline for spatial biology called Pythologist (python + pathologist).
- Analyzed various RNA sequencing datasets using standard tools in R, including bulk RNA-seq (DESEQ2) and single-cell RNA-seq (Seurat).

POSTDOCTORAL RESEARCH SCIENTIST – Cancer Immunology 2020 – 2021
NYU Langone Health – Advisor: Amanda Lund **New York, NY**

- Applied CODEX multiplexed immunohistochemistry with 26+ markers to visualize and quantify high-dimensional, spatially resolved distribution of cells in human melanoma and lymph node metastasis
- Collaborated with multiple labs integrating multiplexed IHC and spatial transcriptomics data to train a machine learning model for cancer prognosis prediction
- Utilized leading bioinformatics tools (in R) to analyze bulk RNA-Seq (DESEQ2) and Single-Cell RNA-Seq (Seurat) datasets
- Identified enriched transcriptional phenotypes in tumor-associated and -egressed immune cells, including differential expression analysis and gene ontology/GSEA

GRADUATE RESEARCHER (PhD in Bioengineering) 2013 – 2019
University of Washington – Advisors: Buddy Ratner, James Bryers, Bill Shain **Seattle, WA**

- Extensive experience implementing *in vivo* and *in vitro* experiments to understand the effects of engineered biomaterial parameters on the foreign body reaction resulting in data for several publications and pilot grant funding of $50,000 (Institute for Translational Health Sciences at UW).
- Completed immunohistological analyses (IHC, fluorescence) on various tissues (primarily CNS) from end to end: animal implant surgeries, tissue preparation in sectioning, antibody staining, tissue clearing or expansion, fluorescence microscopy, data acquisition, analysis and data visualization.
- Led development of pHEMA/GMA co-polymer with stiffness/pore tunability for device/tissue interfacing.
- Published multiple peer reviewed journal articles, presented at 20+ internal & international conferences.
- Built network of local collaborators in order to facilitate polymeric brain implant testing in a rat model.
- Isolated primary immune and neurological cells and performed multi-parameter flow cytometry.
- Mentored, supervised, and trained 1 undergraduate and 1 graduate student researcher who have continued successful scientific and medical careers.

GRADUATE RESEARCHER (MS in Biomedical Engineering) 2012 – 2013
Purdue University – Advisor: Pedro Irazoqui **West Lafayette, IN**

- Designed and conducted an *in vivo* study testing the functionality and brain tissue response to flexible microwire electrodes using a novel magnetic insertion method resulting in 1 first author peer reviewed article.
- Designed in-house amplifiers, electrophysiology rig, and neural signal processing program (MATLAB).

EDUCATION

PHD – BIOENGINEERING 2019
University of Washington **Seattle, WA**

MASTER OF SCIENCE – BIOMEDICAL ENGINEERING 2013
Purdue University **West Lafayette, IN**

BACHELOR OF SCIENCE – BIOMEDICAL ENGINEERING (Minor: Mathematics) 2012
Purdue University **West Lafayette, IN**

SELECT PRESENTATIONS

- 2022 Society for Immunotherapy of Cancer (SITC) – Boston, MA
    - Exploring Features and Parameters for Neighborhood Analysis in Human Cancer Multiplexed Immunofluorescence Data
- 2022 Society for Immunotherapy of Cancer (SITC) – Boston, MA
    - Standardizing the analysis of spatial imaging features in tumor samples

SELECT PUBLICATIONS

2022 Barkley D, Moncada R, Pour M, Liberman DA, **Dryg I**, Werba G, Wang W., Baron M, Rao A, Xia B, França GS, Weil A, Delair DF, Hajdu C, Lund AW, Osman I, Yanai I. “Recurrence of cancer cell states across diverse tumors and their interactions with the microenvironment.” Nature Genetics 54 (8), 1192-1201.

2022 Maria Steele, **Ian Dryg**, Dhaarini Murugan, Julia Femel, Haley du Bois, Cameron Hill, Sancy Leachman, Young Hwan Chang, Lisa Coussens, Abhinav Jaiswal, Ines Delclaux, Sunny Son, Niroshana Anandasabapathy, Amanda Lund. “T cell egress via lymphatic vessels is tuned by antigen encounter and limits tumor control.” Nature Immunology (In Press)

2021 **I. Dryg**, Y. Xie, M. Bergmann, G. Urban, W. Shain, U.G. Hofmann. “Long-term in vivo Monitoring of Gliotic Sheathing of Ultrathin Entropic Coated Brain Microprobes with Fiber-based Optical Coherence Tomography.” Journal of Neural Engineering (2021).

2017 C. Boehler, C. Kleber, N. Martini, Y. Xie, **I. Dryg**, T. Stieglitz, U. Hofmann, M. Asplund. "Actively controlled release of Dexamethasone from neural microelectrodes in a chronic in-vivo study." Biomaterials (2017). Print.

2015 **Dryg, Ian**, Matthew Ward, Kurt Qing, Henry Mei, Jeremy Schaffer, and Pedro Irazoqui. "Magnetically Inserted Neural Electrodes: Tissue Response and Functional Lifetime." Transactions on Neural Systems and Rehabilitation Engineering (2015). Print.