Evelyn Metzger, PhD

Curriculum Vitae

Experienced data-driven story teller. Skilled in bioinformatics, R, python, data analysis, creative data visualizations, tool and report development. Product Owner of spatial Data Analysis Services (sDAS) with an emphasis on extracting meaningful biology from complicated spatial 'omics data. Lead data scientist who translates data from cutting-edge technology to biological insight. Works in the exciting space of multi-omics (RNA, protein) spatial profiling and single cell molecular imaging.

Education

Doctor of Philosophy 2016

Degree: PhD in Bioinformatics and Computational Biology

Location: University of Idaho, Moscow, ID

Dissertation title: Genetic Networks, Adaptation, and the Evolution of Genomic Islands of Divergence

Master of Science 2010

Degree: MS in Biology

Location: University Central Florida, Orlando, FL

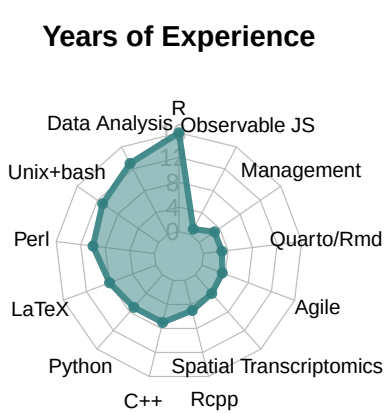
Thesis title: Using Landscape Genetics To Assess Population Connectivity In A Habitat Generalist

Bachelor of Science 2007

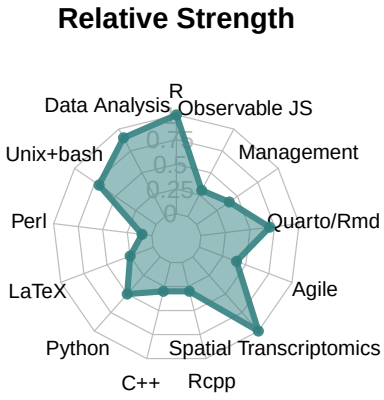
Degree: BS in Biology

Location: University Central Florida, Orlando, FL

Skills



(a) Years of experience in each skill.



(a) Experience relative to other skills. Values approaching 1 indiciate more experience.

Experience

Data Scientist II

Institution: Spatial Informatics and AI, NanoString

Dates: 06/2021 - Present

Details: Managed a development team that launched a cloud-based (AWS) data analysis service to analyze spatial transcriptomic and proteomic data (GeoMx, CosMx). Focus on customer value using semi-automated reporting with publication-ready figures and reproducible results.

Data Scientist I

Institution: Translational Sciences, NanoString

Dates: 04/2020 - 06/2021

Details: Collaborated with subject matter experts to identify the best experimental and statistical designs to answer their spatial biology questions. Areas of focus included oncology, immunology, infectious disease, and healthy tissue atlasing. Several of these projects ended up as publications or conference presentations.

Computational Biologist

Institution: Internal and Customer-facing roles, Adaptive Biotechnologies

Dates: 03/2017 - 03/2020

Details: Analyzed T-cell receptor sequencing data for BioPharma and Academic collaborators and developed internal algorithms for the detection of genotyping errors.

Postdoctoral Associate

Institution: University of Oregon

Dates: 06/2016 - 03/2017

Details: Created workflows and pipelines using virtual machines. Provided statistical consultations for lab members.

Research Assistant

Institution: University of Idaho

Dates: 08/2010 - 06/2016

Details: DNA sequencing, RADseq, Hidden Markov Models, Wet lab experience, and experimental evolution were all part of my research experience. Research was funded in part by a NSF Doctoral Dissertation Improvement Grant (DDIG).

Recent Projects

Spatial Atlas of Human Anatomy (SAHA)

Role: Lead computational biologist

Details: This multi-institutional effort aims to atlas healthy tissue using spatial transcriptomics (CosMx SMI) with up to 6,000 genes and nearly 100 proteins at the single cell and subsceelluar resolution. I have analyzed the liver, colon, bone marrow, ileum, and appendix. So far we have confirmed several hypotheses regarding the underlying tissue biology of these organs, identified unique niches that only spatial transcriptomics can identify, and have quantified novel ligand-receptor interactions. Several talks have been given by the lead PI, Chris Mason, and our first manuscript is in preparation.

Spatial Data Analysis Service

Role: Product Owner

Details: Building off of the success of initial collaborations, we sought to streamline a workflow for analysts to create semi-automatic reports (Quarto) for our fee-for-service researchers. These reports need to be robust enough to tackle the most customer needs yet flexible enough to allow an analyst to incorporate any bespoke analysis, if necessary. These reports serve both as a summary of the results and as a guide to understanding the biological interpretation of the analysis. Interactivity is built in so that other researchers can glean additional information from their data after data delivery. One of my favorite aspects of this project has been teaching junior analysts and developers how to analyze spatial data.

Internal Spatial toolkits

Role: Contributor, Creator, and Maintainer

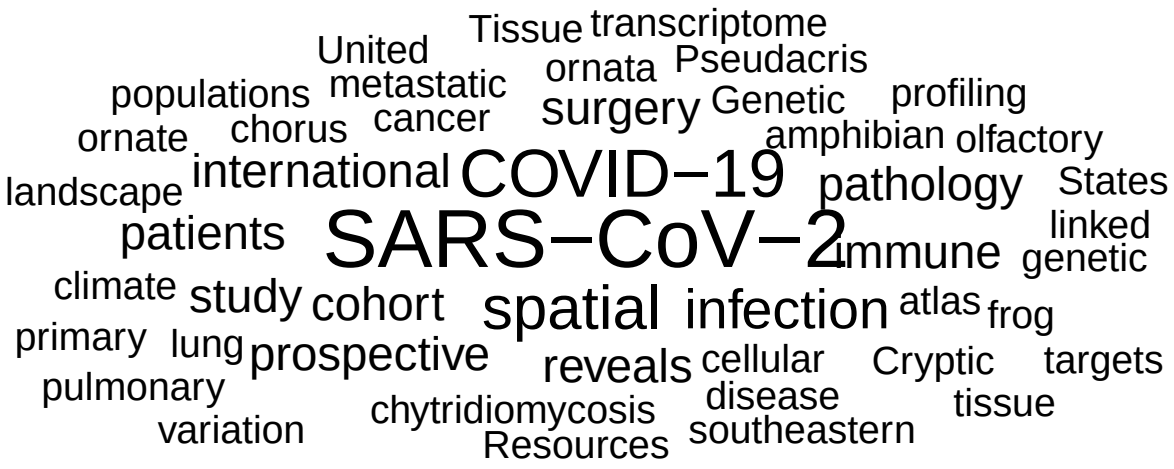
Details: CosMxDAS and GeoMxDAS are internal R packages developed for use in our fee-for-service offerings. While internal, these are completely developed packages with user-stories, unit tests, and vignettes. CosMx-napari is an in-house data visualization and image processing tool written in python.

Publications

Citation Statistics as of May 26 2024.

- h-index: 19

- i10-index: 23
- citations: 2592



(a) Word cloud of article titles.

Please note

Showing publications from the last three years. Please note, I changed my legal name in April of last year. Past publications reflect former name. For a full list of publications, please visit my google scholar page: https://scholar.google.com/citations?user=St7QVnoAAAAJ&hl=en.

Select Publications

Butler, Daniel, Christopher Mozsary, Cem Meydan, Jonathan Foox, Joel Rosiene, Alon Shaiber, David Danko, et al. 2021. "Shotgun Transcriptome, Spatial Omics, and Isothermal Profiling of SARS-CoV-2 Infection Reveals Unique Host Responses, Viral Diversification, and Drug Interactions." *Nature Communications 2021 12:1* 12 (March): 1–17. https://doi.org/10.1038/s41467-021-21361-7.

Delorey, Toni M., Carly G. K. Ziegler, Graham Heimberg, Rachelly Normand, Yiming Yang, Åsa Segerstolpe, Domenic Abbondanza, et al. 2021. "COVID-19 Tissue Atlases Reveal SARS-CoV-2 Pathology and Cellular Targets." *Nature 2021 595:7865* 595 (April): 107–13. https://doi.org/10.1038/s41586-021-03570-8.

Freed-Pastor, William A., Laurens J. Lambert, Zackery A. Ely, Nimisha B. Pattada, Arjun Bhutkar, George Eng, Kim L. Mercer, et al. 2021. "The CD155/TIGIT Axis Promotes and Maintains Immune Evasion in Neoantigen-Expressing Pancreatic Cancer." *Cancer Cell* 39 (October): 1342–1360.e14. https://doi.org/10.1016/J.CCELL.2021.07.007.

Khan, Mona, Seung Jun Yoo, Marnick Clijsters, Wout Backaert, Arno Vanstapel, Kato Speleman, Charlotte Lietaer, et al. 2021. "Visualizing in Deceased COVID-19 Patients How SARS-CoV-2 Attacks the Respiratory and Olfactory Mucosae but Spares the Olfactory Bulb." *Cell* 184. https://doi.org/10.1016/j.cell.2021.10.027.

Narayan, Vivek, Julie S. Barber-Rotenberg, In Young Jung, Simon F. Lacey, Andrew J. Rech, Megan M. Davis, Wei Ting Hwang, et al. 2022. "PSMA-Targeting TGF -Insensitive Armored CAR t-Cells in Metastatic

Castration Resistant Prostate Cancer: A Phase 1 Trial." *Nature Medicine* 28 (April): 724. https://doi.org/10.1038/S41591-022-01726-1.

Park, Jiwoon, Jonathan Foox, Tyler Hether, David C. Danko, Sarah Warren, Youngmi Kim, Jason Reeves, et al. 2022. "System-Wide Transcriptome Damage and Tissue Identity Loss in COVID-19 Patients." *Cell Reports Medicine* 3 (February): 100522. https://doi.org/10.1016/J.XCRM.2022.100522.

Rendeiro, André F., Hiranmayi Ravichandran, Yaron Bram, Vasuretha Chandar, Junbum Kim, Cem Meydan, Jiwoon Park, et al. 2021. "The Spatial Landscape of Lung Pathology During COVID-19 Progression." *Nature* 593 (May): 564–69. https://doi.org/10.1038/s41586-021-03475-6.

Schlam, Ilana, Sarah E. Church, Tyler D. Hether, Krysta Chaldekas, Briana M. Hudson, Andrew M. White, Emily Maisonet, Brent T. Harris, and Sandra M. Swain. 2021. "The Tumor Immune Microenvironment of Primary and Metastatic HER2− Positive Breast Cancers Utilizing Gene Expression and Spatial Proteomic Profiling." *Journal of Translational Medicine* 19 (December): 1–14. https://doi.org/10.1186/S12967-021-03113-9/FIGURES/5.