

Alexander N. Jambor

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EDUCATION

University of California, San Diego, 4.00 GPA
Bioinformatics and Systems Biology PhD Student
San Diego, CA
2022 - Present

University of Wisconsin-Madison, 3.80 GPA
BS, Physics, Chemistry. Minor in Mathematics
Madison, WI
2014 - 2017

RESEARCH EXPERIENCES

University of California, San Diego
Rotation Student under Dr. Trey Ideker
San Diego, CA
Sept. 2022 - Dec. 2022

- Re-architected DCell, a visible neural network model that predicts yeast cell growth phenotype, into a graph convolutional neural network with hierarchical pooling layers

University of California, San Diego
Rotation Student under Dr. Hannah Carter
San Diego, CA
Jan. 2023 - Mar. 2023

- Performed GWAS analysis on TCGA data to identify germline SNPs that are predictive of patient response to immune checkpoint blockade therapy

University of California, San Diego
Rotation Student under Dr. Wei Wang
San Diego, CA
Mar. 2023 - Present

- Analyzed RNA-seq and ATAC-seq data of human tumor-infiltrating lymphocytes to infer gene regulatory networks and identify transcription factors that are differentially expressed between CD8+ T cell subpopulations

University of Wisconsin-Madison
Research Intern under Dr. Paul Campagnola
Madison, WI
July, 2018 - July, 2021

- Used SHG microscopy to characterize ECM remodeling in osteoarthritis, ovarian cancer, idiopathic pulmonary fibrosis, and mammary tumors
- Investigated cell motility in serous tubal intraepithelial carcinoma lesions by seeding cells onto 3D-printed biomimetic scaffolds.
- Contributed to the development of several lab technologies, including a Monte Carlo simulation package for modeling SHG emission, SHG tomographic reconstruction, and a generative adversarial network for creating synthetic SHG images

University of Wisconsin-Madison
Student Researcher under Dr. John Berry
Madison, WI
June 2016 - June 2018

- Investigated the C-H amination of non-allylic sulfamate esters catalyzed by diruthenium paddlewheel-type catalysts, as well as various reactions of the nitride species $\text{Ru}_2(\text{chp})_4\text{N}$

TEACHING EXPERIENCES

University of Wisconsin-Madison
Teaching Assistant, Department of Chemistry

Madison, WI
Jan. 2018 - May 2018

University of Wisconsin-Madison
GUTS Tutor

Madison, WI
Sept. 2016 - May 2017

ACADEMIC PUBLICATIONS

A. N. Jambor, E. M. Shelton, R. Kijowski, C. R. Henak, P. J. Campagnola. (2021) "Assessing collagen alterations in enzymatic degradation models of osteoarthritis via second harmonic generation microscopy." *Osteoarthritis and Cartilage*.

D. S. James, **A. N. Jambor**, H. Chang, Z. Alden, K. B. Tilbury, N. K. Sandbo, P. J. Campagnola. (2019) "Probing remodeling ECM in idiopathic pulmonary fibrosis via Second Harmonic Generation microscopy analysis of macro-supramolecular collagen structure." *Journal of Biomedical Optics*.

K. Gant, **A. N. Jambor**, Z. Li, E. Rentchler, P. Weisman, L. Li, M. S. Pantakar, P. J. Campagnola. (2021) "Evaluation of Collagen Alterations in Early Precursor Lesions of High Grade Serous Ovarian Cancer by Second Harmonic Generation Microscopy and Mass Spectrometry." *Cancers*.

S. V. Park, A. R. Corcos, **A. N. Jambor**, T. Yang and John F. Berry. (2022) "Formation of the N \equiv N Triple Bond from Reductive Coupling of a Paramagnetic Diruthenium Nitrido Compound." *Journal of the American Chemical Society*.

ABSTRACTS

A. N. Jambor, E. M. Shelton, R. Kijowski, C. R. Henak, P. J. Campagnola. (2020) "Assessing trypsin and collagenase degradation as in vitro models for osteoarthritis via second harmonic generation microscopy." ORS 2020 Annual Meeting. Abstract and Poster.

WORKS IN PROGRESS

A. N. Jambor*, A. Varela-Alvarez, T. Yang, M. J. Trenerry, B. E. Haines, D. G. Musaev, J. F. Berry. "Origins of Selectivity in Ru₂-Catalyzed C-H Amination." In preparation.

SKILLS

- Python (PyTorch, TensorFlow, NumPy, SciPy, Pandas, SymPy), C, C++, R, Linux
- Graph Neural Networks, Transformers, VAEs, GANs, Convolutional NNs, Interpretable ML, Generalized Linear Models, Support Vector Machines, t-SNE, UMAP, k-NN
- Belief Networks, Monte Carlo Algorithms, Maximum Likelihood Estimation, EM Algorithms, Hidden Markov Models, Matrix Factorization
- DNA-seq, RNA-seq, ChIP-seq, methyl-seq, ATAC-seq, Multi-modal Integration, Genome Wide Association Studies, Motif Recognition, Sequence Alignment, Genome Assembly, Pattern Matching, Burrows-Wheeler Transform

REFERENCES

Paul Campagnola, Professor
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John Berry, Lester R. McNall Professor
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