# Geoffrey F. Schau

⟨ schau.geoffrey@gmail.com ⟩ ⟨ +1 224 622 6010 ⟩ ⟨ schaugf.github.io ⟩ ⟨ Portland, OR, USA ⟩

#### RESEARCH INTERESTS

My current research interests concern the application of computational methods that integrate imaging and genomics data, particularly at single-cell resolution, in the context of cancer biology.

#### FORMAL EDUCATION

Oregon Health & Science University  Doctor of Philosophy in Biomedical Engineering	2020 (expected) Portland, Oregon, USA
Portland State University  Master of Science in Electrical Engineering	2015 Portland, Oregon, USA
Rose-Hulman Institute of Technology Bachelor of Science in Biomedical Engineering	2012 Terre Haute, Indiana, USA

#### PROFESSIONAL EXPERIENCE

Oregon Health & Science University PhD Candidate	2015-present Portland, Oregon, USA
BrighterBioDesigns Sole Proprietor	2019-present Portland, Oregon, USA
Microsystems Engineering, Inc. Applied Research Engineer	2012-2015 Lake Oswego, Oregon, USA
RH Ventures, Inc. Biomedical Engineering Intern	2011-2012 Terre Haute, Indiana, USA
Boston Scientific, Inc. Manufacturing Engineering Intern	Summer, 2011 Arden Hills, Minnesota, USA

#### PUBLICATIONS AND PREPRINTS

- Schau, G.F., "Estimating Shared Information Content through Unsupervised Imaging-Omics Domain Translation at Single-Cell Resolution" (in preparation)
- Schau, G.F., "Levering Histological Feature Dissimilarity between Primary and Metastatic Cancers for the Prediction of Metastatic Origin" (in preparation)
- Schau, G.F., Burlingame, E.A., Thibault, G., Anekpuritanang, T., Wang, Y., Gray, J.W., Corless, C., Chang, Y.H., "Predicting Primary Site of Secondary Liver Cancer with a Neural Estimator of Metastatic Origin (NEMO)", BioRxiv, 2019 (under review)
- Burlingame, E.A., McDonnell, M., **Schau, G.F.**, Thibault, G., Lanciault, C., Morgan, T., Corless, C., Gray, J.W., Johnson, B., Chang, Y.H., "SHIFT: virtual immunofluorescence staining of histologically-stained tissue by deep learning" (under review)
- Thibault, G., Riesterer, J., Stoltz, K., Loftis, K., Schau, G.F., Stempinksi, E., Lopez, C., Chang, Y.H., Gray, J.W., "Computer Vision Techniques for Cancerous Cell Analysis in FIB-SEM Images", *Proceedings of Microscopy and Microanalytics*, Vol. 25, 2019
- Schau, G.F., Dane, M., Thibault, G., Gray J.W., Heiser, L., Chang, Y.H., "Variational Autoencoding Tissue Response to Microenvironment Perturbation", *Proc. SPIE Medical Imaging*, Vol. 10949, 2019

• Schau, G.F., "Device, Method, and Algorithm to Assess Changes in Cardiac Output via Intracardiac Impedance Monitoring" Master's Thesis, Portland State University, Portland, OR, USA, 2015.

## **ORAL PRESENTATIONS**

- Estimating Mutual Information Content of Biomedical Data Modalities through Self-Supervised Domain Translation, NeurIPS Workshop: Learning Meaningful Representations of Life, Vancouver, Canada, 2019
- Deep Neural Estimation of Metastatic Origin of Liver Cancer, Frontiers of AI-Assisted Care Scientific Symposium (FAC), Stanford University, Palo Alto, CA, USA, 2019
- Predicting Primary Site of Secondary Liver Cancer with a Neural Estimator of Metastatic Origin (NEMO) PacNow Quantitative Biology Symposium, OHSU, Portland, OR, USA, 2019
- SHIFT.AI: Accelerated Imaging Analytics, InventOR Pitch Competition, Portland, OR, USA, 2019
- Deep Learning for Biomedical Domain Translation, BME Seminar, OHSU, Portland, OR, USA, 2019
- (Invited Speaker) Seeing More: Deep Learning in Biomedicine BME Retreat, Portland, OR, USA, 2019
- Variational Autoencoding Tissue Response to Microenvironment Perturbation, SPIE Medical Imaging, San Diego, CA, USA 2019

#### POSTER PRESENTATIONS

- Histological Feature Dissimilarity between Primary and Metastatic Cancer, IMO Workshop V9.0 Tumor Board Evolution, Moffitt Cancer Center, Tampa, FL, USA, 2019
- Estimating Mutual Information Content of Biomedical Data Modalities through Self-Supervised Domain Translation, NeurIPS Workshop: Learning Meaningful Representations of Life, Vancouver, Canada, 2019
- Neural Estimation of Metastatic Origin, NCI Mathematical Oncology/CSBC-PSON West Coast Symposia, OHSU, Portland, OR, USA, 2019
- Deep Learning Approach for Assessment of Microenvironment Signals on Phenotypic State of Triple Negative Breast Cancer, *International Association of Breast Cancer Research*, Egmond An Zee, The Netherlands, 2019
- Principle Feature Manifolds of Multicellular Growth Response to Microenvironment Perturbation, OHSU Research Week, Portland, OR, USA, 2018
- SHIFT: Predicting Biomarker Distribution in Medical Images through Speedy Histopathological to Immunofluorescent Translation, OHSU Commercialization Conference, OHSU, Portland, OR, USA, 2018
- Developmental Discordance Analysis for Single-Cell RNA-seq, *Intelligent Systems for Molecular Biology*, Prague, Czech Republic, 2017
- Consensus Representation of Lineage Expression (CREoLE) for Single-Cell RNA-seq, *Intelligent Systems for Molecular Biology*, Orlando, FL, USA, 2016

## SELECTED AWARDS

Integrated Mathematical Oncology Workshop on Tumor Board Evolution (Travel Award)	2019
NeurIPS Workshop: Learning Meaningful Representations of Life (Travel Award)	2019
CSBC-PSON West Coast Symposium Junioer Investigator (Team Award, \$36,600)	2019
InventOR Impact Award (\$5,000)	2019
OHSU Center for Spatial Systems Biomedicine to IABCR (Travel Award)	2019
OCTRI Biomedical Innovation Program Funding Award (Team Award, \$40,000)	2018
AMIA National Student Design Competition (Team Award, 3rd place)	2016
National Library of Medicine Pre-Doctoral Fellowship	2015

# TEACHING, MENTORING, AND SERVICE

Program Committee	Machine Learning in Computational Biology (MLCB)	2019
Team Lead	Simulation Team, CSBC Junior Investigator Project	
Lecturer	"Neural Networks in a Nutshell", OCSSB Lecture Series, OHSU	2019
Lecturer	"Deep Learning in Biomedicine", CDCB Lecture Series, OHSU	2018-2019
${f Judge}$	Intel Northwest Science Expo	2016-2018
Teaching Assistant	ECE 203: Analog Circuit Analysis, Portland State University	2015
Teaching Assistant	ECE 102: Engineering Programming, Portland State University	2015
${f Judge}$	FIRST Robotics Design Competition	2014-2017

#### INTELLECTUAL PROPERTY

Title	Application Number	Filing Date
Translation of Images of Stained Biological Material	62/787,088	December 31, 2018
Translation of Images of Stained Biological Material	62/885,777	August 12, 2019

## SKILLS AND INTERESTS

Computational: Python, R, MATLAB, bash, slurm, condor, Unity (VR), LATEX Engineering: Analog circuitry, machining, soldering, CAD, 3D printing

Interests: Skiing, mountaineering, cooking, board games, oil painting, rock climbing

## REFERENCES

Young Hwan Chang, PhD chanyo@ohsu.edu PhD Mentor Oregon Health & Science University

Joe W. Gray, PhD grayjo@ohsu.edu

PhD Committee Member Oregon Health & Science University

Laura M. Heiser, PhD

heiser@ohsu.edu

DhD Committee Chain

PhD Committee Chair Oregon Health & Science University