

Geoffrey F. Schau

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FORMAL EDUCATION

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

PROFESSIONAL EXPERIENCE

Sole Proprietor <i>BrighterBioDesigns</i>	2019-present <i>Portland, Oregon, USA</i>
Applied Research Engineer <i>Microsystems Engineering, Inc.</i>	2012-2015 <i>Lake Oswego, Oregon, USA</i>
Biomedical Engineering Intern <i>RH Ventures, Inc.</i>	2011-2012 <i>Terre Haute, Indiana, USA</i>
Engineering Intern <i>Boston Scientific, Inc.</i>	Summer, 2011 <i>Arden Hills, Minnesota, USA</i>

PUBLICATIONS AND PREPRINTS

- **Schau, G.F.**, et al., “Unsupervised Feature Manifold Learning for Rapid Annotation of Multiplexed Single-Cell Imaging Data” (*in preparation*)
- **Schau, G.F.**, et al., “Transfer Learning Approach to Predict Metastatic Origin from Histopathological Whole Slide Images” (*in preparation*)
- **Schau, G.F.**, et al., “DISSECT: DISentangle Sharable ConTent for Multimodal Integration and Crosswise-mapping” (*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*)
- **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,” *J. Med. Imag.* 7(1), 012706 (2020), doi: 10.1117/1.JMI.7.1.012706.
- Thibault, G., Riesterer, J., Stoltz, K., Loftis, K., **Schau, G.F.**, Stempinski, 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

- Unsupervised Morphology Learning for Single-Cell Sub-Population Detection, *CSBC-PSO Image Analysis Workshop*, Seattle, WA, USA, 2020
- 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, *Oregon Bioengineering Symposium*, Oregon State University, Corvallis, OR, USA, 2019
- Histological Feature Dissimilarity between Primary and Metastatic Cancer, *IMO Workshop V9.0 Tumor Board Evolution*, Moffitt Cancer Center, Tampa, FL, USA, 2019
- Neural Estimation of Metastatic Origin, *NCI Mathematical Oncology/CSBC-PSO 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

Giersch Conference & Summer School in Frankfurt am Main Fellowship Award	2020
Learning Meaningful Representations of Life Workshop, NIH Travel Award	2019
NeurIPS 2019 Travel Award	2019
Integrated Mathematical Oncology Workshop on Tumor Board Evolution Travel Award	2019
CSBC-PSO West Coast Symposium Junior Investigator Team Award (\$36,600)	2019
InventOR Impact Award (\$5,000)	2019
OCSSB Travel Award to International Association of Breast Cancer Researchers Conference	2019
OCTRI Biomedical Innovation Program Funding Team Award (\$40,000)	2018
AMIA National Student Design Competition Team Award (3rd place)	2016
National Library of Medicine Pre-Doctoral Training Fellowship Award	2015

TEACHING, MENTORING, AND SERVICE

Program Committee	Machine Learning in Computational Biology (MLCB)	2019
Team Lead	Simulation Team, CSBC Junior Investigator Project	2019
Lecturer	“Neural Networks in a Nutshell”, OCSSB Lecture Series, <i>OHSU</i>	2019
Lecturer	“Deep Learning in Biomedicine”, CDCB Lecture Series, <i>OHSU</i>	2018-2019
Judge	Intel Northwest Science Expo	2016-2018
Teaching Assistant	ECE 203: Analog Circuit Analysis, <i>Portland State University</i>	2015
Teaching Assistant	ECE 102: Engineering Programming, <i>Portland State University</i>	2015
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

REFERENCES

Young Hwan Chang, PhD Principal Investigator, Quantitative BioImaging Laboratory chanyo@ohsu.edu	PhD Mentor <i>Oregon Health & Science University</i>
Joe W. Gray, PhD Director, OHSU Center for Spatial Systems Biomedicine grayjo@ohsu.edu	PhD Committee Member <i>Oregon Health & Science University</i>
Christopher Corless, MD, PhD Executive Director, Knight Diagnostic Laboratories corlessc@ohsu.edu	PhD Committee Member <i>Oregon Health & Science University</i>
Laura M. Heiser, PhD Professor, Biomedical Engineering heiserl@ohsu.edu	PhD Committee Chair <i>Oregon Health & Science University</i>