Posters
Wednesday, October 2

1.1 - Deep learning based image restoration with efficient training data acquisition, *Y Azuma and S Onami, RIKEN BDR*

1.2 - Learning to Segment at Multiple Scales: From Brain Areas to Microstructure, *A Balwani and J Miano, Georgia Institute of Technology; J Prasad, University of Chicago; E Dyer, Georgia Institute of Technology & Emory University*

1.3 - Automatic pattern differentiation in multiplexed imaging data
A Baranski, D Mjurden, JP Oliveria, K Vijayaragavan, TJ Montine, SC Bendall and M Angelo, Stanford University

1.4* - Capturing human brain tissue phenotypes with pixel-connected object identification in multiplexed ion beam imaging data, *B Cannon, A Baranski, K Vijayaragavan, D Mrdjen, J Oliveria, and S Bendall, Stanford University*

1.5* - Unbiased analysis method for measurement of red blood cell size and velocity with laser scanning microscopy
E Chaigneau, M Roche and S Charpak, INSERM, Université Paris Descartes

1.6* - Topology-Preserving Deep Image Segmentation for Fine-Scale Biomedical Structures
X Hu, Stony Brook University; F Li, Oregon State University; D Samaras and C Chen, Stony Brook University

1.7* - mm2python: an efficient bridge between micro-manager and python analysis to enable computational microscopy, *B B Chhun, I Ivanov, L Yeh, S Guo, and S B Mehta, Chan Zuckerberg Biohub*

1.8 - The Human Biomolecular Atlas Program (HUBMAP) Integrating Imaging and Omics to Build Human Tissue Maps
R Conroy and D Procaccini, National Institutes of Health

1.9 - It's not just where you are going but how you get there: Learning shape primitives and generative models for whole-brain projectomes, *M Dabagia and E Dyer, Georgia Institute of Technology*

1.10 - A scalable strategy for making whole-brain connectivity map and activity map on histological slice images
L Ding, F Xu, Y Shen, C Yang, Q Zhu and H Wang, University of Science and Technology of China

1.11* - A super-pixel based approach for segmenting cells in tightly clustered environments
O Dzyubachyk, Leiden University Medical Center; B Lelieveldt, Leiden University Medical Center and TU Delft

1.12 - Deep convolutional neural networks for extracting gene expression patterns in the adult mouse brain
P Abed-Esfahani, Krembil Centre for Neuroinformatics; B Darwin, Hospital for Sick Children; J Yin, University of Toronto; S Hill, Krembil Centre for Neuroinformatics; J Lerch, University of Oxford; L French, Krembil Centre for Neuroinformatics

1.13* - Optimizing SRRF microscopy for sub-second, super-resolution imaging of dynamics at centrosomes and cilia
J McNamara, E Farias, G Humphries and N Galati, Western Washington University

1.14* - Accurate whole-cell segmentation in clinical tissue samples by combining convolutional neural networks and multiplexed imaging, *NF Greenwald, L Keren, S Greenbaum, M Fong, G Chaudry, Z Abraham and J Moseley, Stanford University; D Van Valen, California Institute of Technology; M Angelo, Stanford University*

1.15 - Metadata and Performance Tracking for Fluorescent Microscopes I - Metadata
M Hammer, A Rigano, F Farzam, M Huisman, D Grunwald and C Strambio de Castilla; UMass Medical School

1.16* - Implantable Electrocorticography as a Neuroimaging Alternative to Direct Cortical Stimulation Mapping
C Huggins and B Rabinovitz, Longeviti Neuro Solutions

1.17 - Netrin-1/DCC-mediated PLCG1 activation is required for axon guidance and brain structure development
D Kang, Ulsan National Institute of Science and Technology and Korea Advanced Institute of Science & Technology; YR Yang, C Lee, B Park, KI Park, J K Seo, YK Seo and HJ Cho, Ulsan National Institute of Science and Technology; C Lucio, University of Bologna; P Suh, Ulsan National Institute of Science and Technology

Posters
Wednesday, October 2

1.18 - Probing the role of SORL1 and endocytic network dysfunction in Alzheimer's disease pathogenesis using human neuronal models, *A Knupp, R Martinez, S Mishra and J Young, University of Washington*

1.19 - Optimization of 3D imaging mass cytometry workflow for studying lymphovascular invasion in breast cancer
L Kütt, ETH Zürich and University of Zürich; R Catena and B Bodenmiller, University of Zürich

1.20* - SSBD: an open database for sharing quantitative data and microscopy images of biosystems dynamics
K Kyoda, and KHL Ho, RIKEN BDR; Y Tohsato, RIKEN BDR and Ritsumeikan University; H Itoga, and S Onami, RIKEN BDR

1.21* - Reverse engineering cell competition using automated microscopy and machine learning
A Bove, D Gradeci, C Soelistyo, S Banerjee, G Charras and A Lowe, University College London

1.22* - Multiplexed imaging of hiPSC differentiation to cardiomyocytes, *J Luethi and L Pelkmans, University of Zürich*

1.23 - Characterizing z-line architecture in striated muscle
T Morris, J Naik and A Grosberg, University of California, Irvine

1.24* - Intermediate progenitors support migration of neural stem cells into dentate gyrus outer neurogenic niches
B R Nelson, Seattle Children's Research Institute; R D Hodge and R A M Daza, Allen Institute for Brain Science; P Tripathi, Seattle Children's Research Institute, I M Pimeisl and S J Arnold; Albert Ludwigs University; R F Hevner, University of California, San Diego

1.25 - A high throughput assay to study endosomal pH in neurons
Q Ouyang, M Pescosolido, M Schmidt and E M Morrow, Brown University

1.26* - A **deep learning approach to integrating multiplexed imaging, -omics, and clinical data to predict outcome in glioblastoma,** *R Rashid, P Sorger and S Santagata, Harvard Medical School*

1.27 - Entropy Analysis of High Resolution Images of Peptide Self-Organized Peptides
S Rath, B Macmillan, J Francis-Landau and H Zareie, University of Washington; B Ustundag, Istanbul Technical University

1.28* - An automated framework for centromere fragmentation detection using cascaded ensemble of multiple Convolutional Neural Network based deep learning frameworks, *K Roy, University of Alberta and Jadavpur University; C W Lewis and G Chan, University of Alberta; D Bhattacharjee, Jadavpur University*

1.29* - Automated Meibomian Gland segmentation and analysis using Deep Learning, *A M M Chowdhury and R K Saha, Gwangju Institute of Science and Technology; H S Hwang, Hallym University; E Chung, Gwangju Institute of Science and Technology*

1.30* - A complete map of axo-axonic synapses revealed by a dense segmentation of a volume from layer 2/3 of mouse primary visual cortex, *C Schneider-Mizell, A Bodor, and F C Collman, Allen Institute for Brain Science; S Dorkenwald, N L Turner and T Macrina, Princeton Neuroscience Institute; D Bumbarger, J Buchanan, M Takeno, R Torres, G Mahalingam, and D Kapner, Allen Institute for Brain Science; K Lee, N Kemnitz, J Zung, W Silversmith, W Wong, R Lu, J Wu, D Ih, and I Tartavull, Princeton Neuroscience Institute; E Froudarakis, Baylor School of Medicine; S Popovych and D Buniatyan, Princeton Neuroscience Institute; J Reimer and A S Tolias, Baylor School of Medicine; H S Seung, Princeton Neuroscience Institute; R C Reid and NM da Costa, Allen Institute for Brain Science*

1.31* - High content imaging identifies unique primary pulmonary artery endothelial cells subpopulations in response to insulin-like growth factor 1 treatment, *C Kim, G Seedorf and S Abman, University of Colorado Anschutz Medical Campus; D Shepherd, University of Colorado Anschutz Medical Campus and Arizona State University*

1.32 - SpineYOLO: A deep learning tool for identification of dendritic spines
M Smirnov, B Scholl, E Gonzalez, J Christie and R Yasuda, Max Planck Florida Institute for Neuroscience

Posters
Wednesday, October 2

1.33 - Quantification and visualization of tissue microenvironments and cellular interactions by clustering neighborhoods using CytoMAP, *C Stoltzfus, J Filipek, B Olin and M Gerner, University of Washington*

1.34* - Innovative in vitro plant cell technology platform for the benefit of plant research and plant breeding
M Temerinac-Ott, ScreenSYS GmbH; P Schaub, ScreenSYS GmbH and University of Freiburg; E Rossa, S Walsh, O Tietz and M Germer, ScreenSYS GmbH; J Dawson, ScreenSYS GmbH and University of Freiburg; Q Yu, SV Mahlitz, D Wang and J Weyen, ScreenSYS GmbH; K Palme, ScreenSYS GmbH and University of Freiburg; O Dovzhenko, ScreenSYS GmbH

1.35* - The Temporal Dynamics of Ligand Treated MCF10A Cells Using Cyclic Immunofluorescent Imaging Data
L Ternes, Oregon Health & Science University; C Mills, K Subramanian, Y Wang and C Yapp, Harvard Medical School; S Gross, Oregon Health & Science University; LINCS MCF10A Consortium; J Gray, Oregon Health & Science University; P Sorger, Harvard Medical School; L Heiser and Y Chang, Oregon Health & Science University

1.36* - Intracranial pulse waves derived from dynamic MRI, *HU Voss, Weill Cornell Medicine*

1.37 - Simulation of live-cell imaging system reveals hidden uncertainties in cooperative binding measurements
M Watabe, RIKEN BDR; S Arjunan, The University of New South Wales; W X Chew, University of Malaya; K Kaizu and K Takahashi, RIKEN BDR

1.38 - AQuA: flexible and accurate quantification of astrocyte activity
Y Wang, Virginia Tech; N DelRosso, T Vaidyanathan, M Cahill, M Reitman, and S Pittolo, University of California, San Francisco; X Mi and G Yu, Virginia Tech; K Poskanzer, University of California, San Francisco

Will present poster pitch lightning talk preceding poster session

Posters
Thursday, October 3

2.1* - **Deep learning solutions for the automatic segmentation of mitochondria on EM images**
D Franco, University of the Basque Country; A Muñoz-Barrutia, Universidad Carlos III de Madrid; I Arganda-Carreras, University of the Basque Country

2.2 - A neuroinformatics resource for benchmarking machine-learning models
N Bhagwat, M Naeemi, J Whitesell and J Harris, Allen Institute for Brain Science

2.3 - Response of Actin Dynamics to Extracellular Cues Measured and Characterized by Optical Flow
L Campanello, University of Maryland College Park; R Lee, University of Maryland School of Medicine; M Hourwitz, J Fourkas, and W Losert, University of Maryland College Park

2.4 - Spatial Analysis of Highly Multiplexed Microscopy Data, *NP Canete, AL Cunningham, AN Harman and E Patrick, Westmead Institute for Medical Research and the University of Sydney*

2.5* - Sequencing the 3-D genome of single cells with an automated image analysis workflow
Z Chiang, Harvard University, A Payne, MIT, P Reginato, Harvard University, S Mangiameli, Broad Institute, E Boyden, MIT, F Chen, Broad Institute, J Buenrostro, Harvard University

2.6* - Single-cell based analysis of leading-edge dynamics upon drug perturbation by deep learning-based subcellular motility phenotyping, *H J Choi and C Wang, Worcester Polytechnic Institute; L Woodbury, University of Arkansas; K Lee, Worcester Polytechnic Institute*

2.7* - Interactive, Symmetry Guided Registration to the Allen Mouse Brain Atlas,
M Cicconet and D Hochbaum, Harvard Medical School

2.8* - **Developing "Vessel-on-Chip" technology to generate three-dimensional vasculature using human iPSCs**
A Cochrane, D Nahon, M deGraaf, M Vila Cuenca, O Halaidych, X Cao, F van de Hil, C Mummery and V Orlova, Leiden University Medical Center

2.9 - Map cell states in large tissue regions at single molecule resolution
S Codeluppi, LE Borm, A Mossi Albiach and S Linnarsson, Karolinska Institutet

2.10* - Alzheimer's Detection and Analysis with Copula Generated Random Graphs
A Danielson and J Cao, Simon Fraser University

2.11 - The interplay between solid lipid nanoparticles and the TGF-beta pathway in human prostate cells
F Garcia-Fossa and M Bispo de Jesus, University of Campinas

2.12 - Quantitative analysis of somatic and nuclear morphology reflect diverse cortical cell types in mouse visual cortex, *L Elabbady, S Seshamani and C Schneider-Mizell, Allen Institute for Brain Science; S Dorkenwald, Princeton University; A L Bodor, Allen Institute for Brain Science; N L Turner, A M Wilson, T Macrina and J A Bae, Princeton University; D J Bumbarger, J Buchanan, M M Takeno, R Torres, G Mahalingam and D Kapner, Allen Institute for Brain Science; D Buniatyan, Princeton University; E Froudarakis, Baylor College of Medicine, C Jordan, D Ih, N Kemnitz, K Lee, R Lu and S Popovych, Princeton University; J Reimer and A S Tolias, Baylor College of Medicine; H S Seung, Princeton University, N M da Costa, R Reid, F C Collman, Allen Institute for Brain Science*

2.13* - A morphospace analysis of Physarum polycephalum behavioural ecology
L Epstein, J Smith, Z Dubois and K Harrington, University of Idaho

2.14* - Assessing the distribution of recombination proteins during C. elegans meiotic progression using machine learning, *C Espenel, AM Villeneuve and C Girard, Stanford University School of Medicine*

2.15 - Data Augmentation for Immune Cell Tracking using Random Walk Models and Generative Adversarial Networks, *K Fujimoto, S Seno, H Shigeta, T Mashita, Y Uchida, M Ishii and H Matsuda, Osaka University*

2.16* - Leading edge maintenance in migrating neutrophil-like HL-60 cells is an emergent property of branched actin growth, *R Garner, Stanford University; E Koslover, University of California, San Diego; A Spakowitz, Stanford University; J Theriot, Howard Hughes Medical Institute at the University of Washington*

2.17 - Large Scale Segmentation of DNA-Labeled Brain Microstructures Using Deep Semantic Preprocessing
L Saadatifard, A Mobiny, P Govyadinov, G Chen, H Van Nguyen and D Mayerich, University of Houston

2.18 - Metadata and Performance Tracking for Fluorescent Microscopes II - Optics
M Hammer, A Rigano, F Farzam, M Huisman, D Grunwald and C Strambio de Castilla, UMass Medical School

2.19 - Metadata and Performance Tracking for Fluorescent Microscopes III - MetaMax
M Huisman, UMass Medical School; C Smith, TU Delft; M Hammer, UMass Medical School; R Ulbrich, Scientialux; D Grünwald, UMass Medical School

2.20* - Revealing Architectural Order with Label-free Imaging and Deep Learning
S Guo, J Folkesson, AP Krishnan, I Ivanov, L Yeh and B Chhun, Chan Zuckerberg Biohub; M Keefe and D Shin, University of California, San Francisco; N Cho and M Leonetti, Chan Zuckerberg Biohub; T Nowakowski, University of California, San Francisco; SB Mehta, Chan Zuckerberg Biohub

2.21* - Semi-automated segmentation of subcellular features in sbfSEM image stacks of taste buds
B High, D Volz, R Yang and T Finger, University of Colorado School of Medicine

2.22 - Spatio-temporal analysis of structural plasticity in hippocampal dendritic spines
Y Ishii, University of Tokyo; H Okuno, Kagoshima University; H Fujii and H Bito, University of Tokyo

2.23* - Multiscale Mapping of Cellular Alterations in Brain Tissue
J Jahanipour and X Li, University of Houston; D Maric, NINDS and NIH; B Roysam, University of Houston

2.24* - A 3D imaging and quantitative analysis within intact tissue, *D Kaczynska and S Kanatani, Karolinska Institutet; N Tanaka, Keio University School of Medicine; P Uhlén, Karolinska Institutet*

2.25* - Scalable Global Feature Aligner for Large Datasets
D Kapner, R Torres, G Mahalingam, NM da Costa, Allen Institute for Brain Science; S Saalfeld, HHMI Janelia Research Campus; K Khairy, St. Jude Children's Research Hospital

2.26* - mFISH-Survey: Software for automation, data acquisition and processing in a pipeline environment
B Long, Allen Institute for Brain Science; R Serafin, University of Washington; N Mei and R Nicovich, Allen Institute for Brain Science

2.27* - Single-molecule characterization of actin velocities in living cells, *C Miller and A Dunn, Stanford University*

2.28 - Deep learning for characterization of neuroinflammation in traumatic brain injury
K Milligan and A Balwani, Georgia Tech; A Maguire, Auburn University; S Margulies and E Dyer, Georgia Tech

2.29 - Brainwide atlas of cortical pyramidal neuron morphology, *A Narasimhan, J Palmer, C Elowsky, J Mizrachi, K Umadevi Venkataraju and R Palaniswamy, Cold Spring Harbor Laboratory; J Gornet, Columbia University; U Sumbul, Allen Institute for Brain Science; D F Albeanu and P Osten, Cold Spring Harbor Laboratory*

2.30 - A high-throughput pipeline for addressing the Correspondence Problem through spatial transcriptomics in intact tissue, *R Nicovich, M Taormina, M Gorham, K Berry, T Nguyen, E Garren, E Thomsen, B Long, B Levi, C Baker, B Tasic, J Close, E Lein and H Zeng Allen Institute for Brain Science*

Posters
Thursday, October 3

2.31 - Hidden Conformations of Short Peptides from Molecular Dynamics Trajectories by Hilbert curve Transformation, *S Rath, T Hennig, P Fischer-Marques, J Francis-Landau, T Jorgenson, R Overney and M Sarikaya, University of Washington*

2.32* - Development of scalable 5D analysis pipeline to study internalization events of cargo in cells using lattice light-sheet imaging, *X Ruan, University of California, Berkeley; S Arumugam, Institut Curie, PSL Research University; R Gaudin and F Aguet, Harvard Medical School; C Wunder, Institut Curie, PSL Research University; E Betzig, University of California, Berkeley and Janelia Research Campus; L Johannes, Institut Curie, PSL Research University; T Kirchhausen, Harvard Medical School; S Upadhyayula, University of California, Berkeley and Harvard Medical School*

2.33* - A framework for spine-based morphological analysis of neurons from Electron Microscopy data
S Seshamani, L Elabbady and F Collman, Allen Institute of Brain Science

2.34 - Automated methods for quantitative analysis of cells in histological brain sections
A Thompson and R Amor, Queensland Brain Institute, The University of Queensland

2.35 - The Reconstrue stack: a cloud-native, open source neuroimaging platform, *J Tigue, Reconstrue*

2.36* - Dotdotdot - automated workflow for quantification and analysis of RNA transcripts in individual nuclei
M Tippani, K Maynard, Y Takahashi and B Phan, Lieber Institute for Brain Development, Johns Hopkins Medical Campus; D Weinberger, T Hyde and K Martinowich, Lieber Institute for Brain Development, Johns Hopkins Medical Campus and Johns Hopkins School of Medicine; A Jaffe, Lieber Institute for Brain Development, Johns Hopkins Medical Campus, Johns Hopkins University School of Medicine, Johns Hopkins University and Johns Hopkins Bloomberg School of Public Health

2.37 - Automated atlas refinement in 3D, *D Young, S Fazel Darbandi, G Schwartz, Z Bonzell, D Yuruk, M Nojima, and J Rubenstein, University of California, San Francisco; W Yu, Institute of Molecular and Cellular Biology at the Agency for Science, Technology and Research; S Sanders, University of California, San Francisco*

2.38* - SynQuant: An Automatic Tool to Quantify Synapses from Microscopy Images
Y Wang and C Wang, Virginia Tech; P Ranefall, Uppsala University; G Broussard, Princeton University; G Shi and L Tian, University of California, Davis; G Yu, Virginia Tech

Will present poster pitch lightning talk preceding poster session