Na Young **Jun**

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Education

Duke University — Durham, NC
Ph.D. in Neurobiology (Expected May 2022) — Aug 2017 - present
M.S. in Computer Science (en-route)

Yale University — New Haven, CT
M.S. in Bioengineering — Aug 2014 - May 2015
- GPA 3.63/4.00, Received Mogam Science Foundation Scholarship

Korea University — Seoul, S. Korea
B.S. in Life Sciences — Mar 2009 - July 2014
- GPA 3.60/4.00, Received Korea University Academic Scholarship

University of Wisconsin-Madison — Madison, WI
Student Exchange Program — Sep 2011 - May 2012
- GPA 3.77/4.00, Received Mirae Asset Exchange Student Scholarship

Publications

Scene statistics and noise determine the relative arrangement of receptive field mosaics — 2021
Na Young Jun, Greg D. Field, John Pearson in *PNAS*

Inter-Mosaic Coordination of Retinal Receptive Fields — 2021
Suva Roy, **Na Young Jun**, Emily Davis, John Pearson, Greg D. Field in *Nature*

Bubblewrap: Online tiling and real-time flow prediction on neural manifolds — 2021
Anne Draelos, Pranjal Gupta, **Na Young Jun**, Chaichontat Sriworarat, John Pearson in *Arxiv*

Overcoming coarse coding in visual cortex via multiplexing: neural correlations differ dramatically when stimulus bundles are presented — 2019
Na Young Jun, Douglas A Ruff, Lily E. Kramer, Brittany Bowes, Surya T Tokdar, Marlene R Cohen, Jennifer M Groh, in *bioRxiv (under review)*

Channelrhodopsin Variants Engage Distinct Patterns of Network Activity — 2018
Na Young Jun and Jessica A. Cardin, in *eNeuro*

Connectomic Analysis Reveals an Interneuron with an Integral Role in the Retinal Circuit for Night Vision — 2020
Silvia JH Park, Evan M Lieberman, Jiang-Bin Ke, Nao Rho, Padideh Ghorbani, Pouyan Rahmani, **Na Young Jun**, Hae-Lim Lee, In-Jung Kim, Kevin L Briggman, Jonathan B Demb, Joshua H. Singer, in *eLife*

Convergence and Divergence of CRH Amacrine Cells in Mouse Retinal Circuitry — 2018
Silvia JH Park, Joseph Pottackal, Jiang-Bin Ke, **Na Young Jun**, Pouyan Rahmani, In-Jung Kim, Joshua H Singer, Jonathan B Demb, in *Journal of Neuroscience*

Conferences

The Influence of noise and information non-uniformity on the efficient coding of natural scenes — 2020
Na Young Jun, Greg Field, John Pearson in *Cosyne*

Fluctuating Activity (Time-Division Multiplexing) Varies Across Sensory Brain Regions — 2018
Na Young Jun, Jeff Mohl, Marlene Cohen, Surya Tokdar, Jennifer Groh, in *Society for Neuroscience*

Optogenetic Tools With Varying Kinetics Differentially Engage Intrinsic Network Resonance *In Vivo* — 2016
Na Young Jun and Jessica A. Cardin, in *Society for Neuroscience*

Skills

Programming	PyTorch, Python, MATLAB, Java, R
Experiments	Electrophysiology (intracellular / extracellular neural recording), animal behavior, IHC

Talks

Optimal Spatial Arrangement of ON and OFF Encoders in the Noisy World: Under the Perspective of Information Efficiency — Durham, NC
Neurobiology Graduate Students Seminar, Duke University — 2020

Observe the Unobserved: Inferring Hidden Structure in Multilayer Neural Circuits — Durham, NC
Neurobiology Graduate Students Seminar, Duke University — 2018

Novel Optogenetic Tools for Probing Network Activity in the Intact Brain — New Haven, CT
Biomedical Engineering Master's graduation talk, Yale University — 2015

***In Vivo* Function of Next Generation Optogenetic Tools** — New Haven, CT
Neurobiology Graduate Students Seminar, Yale University — 2014

Comparative *In Vivo* Testing of the Efficacy of New Optogenetic Tools — New Haven, CT
Biomedical Engineering Special Investigation Presentation, Yale University — 2014

Research Experience

Field Lab (PI: Greg Field) & Pearson Lab (PI: John Pearson), Duke University — Durham, NC
Doctoral Thesis Research — Jul 2018 - Present
- Computational understanding of retinal information processing based on the efficient coding principle.

Groh Lab (PI: Jennifer Groh), Duke University — Durham, NC
First year Ph.D. rotations — Apr 2018 - Jun 2018
- Analyzed patterns of neural correlations and time-division multiplexing in visual cortex (V1, V4) with respect to the number of objects in the visual field.

Grill Lab (PI: Warren Grill), Duke University — Durham, NC
First year Ph.D. rotations — Jan 2018 - Apr 2018
- Single-unit recordings of Parkinsonian Rat brain during DBS stimulation to understand how DBS affects brain plasticity.

Kay Lab (PI: Jeremy Kay), Duke University — Durham, NC
First year Ph.D. rotations — Sep 2017 - Jan 2018
- Live-imaging of microglial function in the retina.

Demb Lab (PI: Jonathan B. Demb), Yale University — New Haven, CT
Postgraduate Research Associate — Jul 2015 - Aug 2017
- Elucidated cellular mechanisms for visual processing by the retina.
- Characterized new cell types in the mouse retina, which can be defined based on their structure, function and gene expression.
- Pursued intersectional strategy between Cre and Flop recombinase driven by different promoters and expression of proteins and genetic expression pattern.

Cardin Lab (PI: Jessica A. Cardin), Yale University — New Haven, CT
Master's Thesis Research — Aug 2014 - May 2015
- Studied spontaneous and activated optogenetic tool-induced gamma oscillations in the mouse visual cortex *in vivo*.
- Injected several novel optogenetic tools (Chrimson, Chronos, SwiChR) and Channelrodopsin2 to the V1 cortex of mice brain and compared their *in vivo* activation.
- Conducted extracellular recording to compare spike rates and local field potential between mice with different optogenetic tools.

Advanced Computational Vision (Instructor: Steven Zucker), Yale University — New Haven, CT
Class Final Project — Jan 2015 - May 2015
- Used machine learning methods to generate a neural signal classifier that distinguishes between the brain states: awake or anesthetized, moving or not moving, receiving visual stimuli or not.
- Developed a neural signal classifier to identify cortex layers where the neural signal originated.