

Na Young Jun

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Education

Duke University

PH.D. IN NEUROBIOLOGY (EXPECTED DEC 2022, GPA 3.84/4.00)

M.S. IN COMPUTER SCIENCE (EN-ROUTE, GPA 3.95/4.00)

Durham, NC

Aug 2017 - present

Yale University

M.S. IN BIOENGINEERING (GPA 3.63/4.00, RECEIVED MOGAM SCIENCE FOUNDATION SCHOLARSHIP)

New Haven, CT

Aug 2014 - May 2015

Korea University

B.S. IN LIFE SCIENCES (GPA 3.60/4.00, RECEIVED KOREA UNIVERSITY ACADEMIC SCHOLARSHIP)

Seoul, S. Korea

Mar 2009 - July 2014

University of Wisconsin-Madison

STUDENT EXCHANGE PROGRAM (GPA 3.77/4.00, RECEIVED MIRAE ASSET EXCHANGE STUDENT SCHOLARSHIP)

Madison, WI

Sep 2011 - May 2012

Publications

Scene statistics and noise determine the relative arrangement of receptive field mosaics

NA YOUNG JUN, GREG D. FIELD, JOHN PEARSON IN *PNAS*

2021

Inter-Mosaic Coordination of Retinal Receptive Fields

SUVA ROY, NA YOUNG JUN, EMILY DAVIS, JOHN PEARSON, GREG D. FIELD IN *NATURE*

2021

Bubblewrap: Online tiling and real-time flow prediction on neural manifolds

ANNE DRAELOS, PRANJAL GUPTA, NA YOUNG JUN, CHAICHONTAT SRIWORARAT, JOHN PEARSON, IN *NEURIPS*

2021

Connectomic Analysis Reveals an Interneuron with an Integral Role in the Retinal Circuit for Night Vision

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*

2020

Coordinated multiplexing of information about separate objects in visual cortex

NA YOUNG JUN, DOUGLAS A RUFF, LILY E. KRAMER, BRITTANY BOWES, SURYA T TOKDAR, MARLENE R COHEN, JENNIFER M GROH, IN *BIORXIV (UNDER REVIEW)*

2019

Channelrhodopsin Variants Engage Distinct Patterns of Network Activity

NA YOUNG JUN AND JESSICA A. CARDIN, IN *ENEURO*

2018

Convergence and Divergence of CRH Amacrine Cells in Mouse Retinal Circuitry

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*

2018

Conferences

Efficient Coding of Natural Movies Predicts the Optimal Number of Receptive Field Mosaics

NA YOUNG JUN, GREG FIELD, JOHN PEARSON IN *COSYNE*

2022

The Influence of noise and information non-uniformity on the efficient coding of natural scenes

NA YOUNG JUN, GREG FIELD, JOHN PEARSON IN *COSYNE*

2020

Fluctuating Activity (Time-Division Multiplexing) Varies Across Sensory Brain Regions

NA YOUNG JUN, JEFF MOHL, MARLENE COHEN, SURYA TOKDAR, JENNIFER GROH, IN *SOCIETY FOR NEUROSCIENCE*

2018

Optogenetic Tools With Varying Kinetics Differentially Engage Intrinsic Network Resonance *In Vivo*

NA YOUNG JUN AND JESSICA A. CARDIN, IN *SOCIETY FOR NEUROSCIENCE*

2016

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

NEUROBIOLOGY GRADUATE STUDENTS SEMINAR, DUKE UNIVERSITY

Durham, NC
2020

Observe the Unobserved: Inferring Hidden Structure in Multilayer Neural Circuits

NEUROBIOLOGY GRADUATE STUDENTS SEMINAR, DUKE UNIVERSITY

Durham, NC
2018

Novel Optogenetic Tools for Probing Network Activity in the Intact Brain

BIOMEDICAL ENGINEERING MASTER'S GRADUATION TALK, YALE UNIVERSITY

New Haven, CT
2015

***In Vivo* Function of Next Generation Optogenetic Tools**

NEUROBIOLOGY GRADUATE STUDENTS SEMINAR, YALE UNIVERSITY

New Haven, CT
2014

Research Experience

Field Lab (PI: Greg Field) & Pearson Lab (PI: John Pearson), Duke University

DOCTORAL THESIS RESEARCH

Durham, NC
Jul 2018 - Present

- Computational understanding of retinal information processing based on the efficient coding principle.

Groh Lab (PI: Jennifer Groh), Duke University

FIRST YEAR PH.D. ROTATIONS

Durham, NC
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

FIRST YEAR PH.D. ROTATIONS

Durham, NC
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

FIRST YEAR PH.D. ROTATIONS

Durham, NC
Sep 2017 - Jan 2018

- Live-imaging of microglial function in the retina.

Demb Lab (PI: Jonathan B. Demb), Yale University

POSTGRADUATE RESEARCH ASSOCIATE

New Haven, CT
Jul 2015 - Aug 2017

- Characterized new cell types in the mouse retina 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

MASTER'S THESIS RESEARCH

New Haven, CT
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 Channelrhodopsin2 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

CLASS FINAL PROJECT

New Haven, CT
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.

Teaching Experience

Neuromatch Academy Deep Learning

LEAD TEACHING ASSISTANT

Global
2021

- Led a pod of twelve consisting of professors, postdocs, and graduate students, teaching various topics on deep learning and leading discussion sessions.
- Trained seven junior teaching assistants throughout the summer school to help them lead their pods.