

# Won June (Kevin) Cho

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## EDUCATION

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### The Johns Hopkins University

Master of Science in Chemical and Biomolecular Engineering  
GPA: 3.96/4.0

Expected to Graduate Feb 2024  
**Baltimore, MD, USA**

### The Johns Hopkins University

Bachelor of Science in Chemical and Biomolecular Engineering  
Minor in Applied Mathematics & Statistics  
GPA: 3.8/4.0

Aug 2018 - May 2022  
**Baltimore, MD, USA**

## PROJECTS

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### Semantic Segmentation of Human Skin Tissue H&E Images to Extract Cellular Biomarkers of Aging

*Graduate Student Researcher*

- Performed digital annotations of serially sectioned skin H&E tissue images and registered the z-stack images for preprocessing.
- Built a supervised DeepLabV3+ image segmentation model in PyTorch and post-processing pipeline to find novel biomarkers of aging.

### Virtual Stain Conversion of IHC Pancreatic Tissue Images to H&E Using Generative Models

*Graduate Student Researcher*

- Performed image registration on pancreatic tissue IHC-HE image pairs and preprocessed the image pairs for training.
- Currently fine-tuning pix2pix (GAN) model and image-to-image Schrödinger bridge (SGM) model to compare sampled image quality.

### Kaggle Competition- "HuBMAP- Hacking the Human Vasculature"

*Independent Kaggle Project*

- Participated independently in the above Kaggle competition to sharpen image segmentation techniques— [established workflow](#) from image preprocessing to training, tuning, and inferencing different types of state-of-the-art detection and segmentation models.

## EXPERIENCES

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### Johns Hopkins Institute of Nanobiotechnology Laboratory— [Wirtz Lab](#)

*Graduate Student Researcher*

Sep 2022 – Present  
**Baltimore, MD, USA**

- Digitized, annotated, and preprocessed serially sectioned histological slides for quantification of in-situ cell morphology such as extracellular matrix (ECM) structure and cell-to-cell/cell-to-tissue spatial interactions.
- Participated in designing an image registration, segmentation/generation model, and post-processing pipeline using Python/MATLAB.

### Novartis Institutes of BioMedical Research ([NIBR](#))

*Oncology Data Science Intern*

Jun 2022 – Aug 2022  
**Cambridge, MA, USA**

- Researched and programmed a process in R to analyze/refine gene signatures and calculate gene signature scores from different kinds of cancer patients' bulk RNA-Seq data and pseudobulk single cell RNA-Seq (scRNA) data ([link to poster](#)).
- Deconvolved the application of in-house gene signatures in the in-house clinical biomarker analysis workflow.

### Johns Hopkins Institute of Nanobiotechnology Laboratory— [Mao Lab](#)

*Undergraduate Research Assistant*

May 2021 – Jun 2022  
**Baltimore, MD, USA**

- Collaborated on multiple projects focused on drug/gene delivery using lipid/polymer nanoparticle-based immunoengineering approaches, such as host antigen presenting cell (APC) targeted mRNA cancer vaccine and oral liver-targeted malaria pDNA vaccine.
- Formulated and optimized pDNA/mRNA LNPs (lipid nanoparticles), performed and analyzed in vitro transfection/proliferation assays, designed and conducted mice in-vivo screenings/tumor studies and their following immunoassays to evaluate in vivo antitumor efficacy.

### Cowell Biodigm Co.

*Data Science Intern*

Jun 2020 - Sep 2020  
**Seoul, South Korea**

- Researched several inhibitors that target oncogenes/tumor-suppressor genes and programmed an [independent project in R](#) where differential gene analysis of patient RNA-Seq data was followed by pathway analysis to screen for drug targets for new compounds.

## SKILLS

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**Languages/Frameworks/Libraries/Others:** Python, MATLAB, R / [PyTorch](#), [Ray](#), [Tidyverse](#) / [OpenCV](#), [Openslide](#) / [Github](#), [ImageJ](#), [Linux](#)

**General:** Image segmentation/generation/registration, Immuno-oncology, Immuno-engineering, RNA-Seq Analysis

**Others:** Native in English, Native in Korean, Limited Chinese, [Personal DL/AI blog](#)

## PUBLICATIONS

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- [Multi-step screening of DNA/lipid nanoparticles and co-delivery with siRNA to enhance and prolong gene expression](#)

Zhu, Shen, et al. *Nature Communications* (2022)