KEY SKILLS & EXPERIENCE

Joha Park, Ph.D.

Intellia Therapeutics, Inc.
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- **RNA Biology, Spatial Omics, Genomics, Gene Editing**
- **Multi-omics:** (sc)RNA-seq, ATAC-seq, WGS/WES, eQTLs
- **AI/ML:** Biological LLM, Variant effect prediction, Genotoxicity
- **Image processing:** 3D confocal/light-sheet microscopy
- **Tools:** PyTorch, Scikit-learn/image, Nextflow, Docker, AWS

Computational biologist with expertise in RNA biology, spatial omics, genomics, and gene editing. Skilled in developing computational frameworks for analyzing large scale sequencing and imaging data by employing advanced bioinformatics tools and AI/ML approaches. Demonstrated track record of conducting high-quality research, which has been published in esteemed journals.

CURRENT POSITION

03/2023 – present **Senior Computational Scientist** *Intellia Therapeutics*
Computational Sciences
Genomic Innovation
Intellia Therapeutics, Inc., Cambridge, MA, US (Remote)

Roles
- Develop platforms for CRISPR-Cas9 off-target discovery and build AI/ML prediction models
- Predict genetic variant effect for de-risking genotoxicity of gene therapy
- Build scalable, reproducible, and streamlined computational analysis pipelines
- Analyze various custom DNA/RNA sequencing datasets

PROFESSIONAL EXPERIENCE

01/2020 – 03/2023 **Postdoctoral Associate/Fellow** *Massachusetts Institute of Technology*
3 yrs 3 mos
The Picower Institute for Learning and Memory
Institute for Medical Engineering and Science
Department of Chemical Engineering
Massachusetts Institute of Technology, Cambridge, MA, US

Roles
- Develop hydrogel-based tissue clearing and expansion methods for spatial omics
- Build a scalable computational framework for 3D light-sheet microscopy
- Generate a single-cell mouse brain reference atlas

03/2019 – 12/2019 **Postdoctoral Researcher** *Seoul National University*
10 months
Center for RNA Research
Institute for Basic Science
Seoul National University, Seoul, Korea

Roles
- Lead projects on mRNA poly(A)-tail length regulations
- Perform conventional and custom NGS library prep & data analysis
- Carry out wet and dry lab experiments for RNA biology

EDUCATION AND TRAINING

2012 – 2019	**Ph.D. in Biological Sciences** (RNA Biology & Bioinformatics) RNA Biology Lab (Advisor: V. Narry Kim) Dissertation: “Poly(A) length regulation: deadenylases and the poly(A) barricade”	*Seoul National University*
2015 – 2018	**Expert Research Personnel** (Compulsory Military Service)	*Republic of Korea Army*
2008 – 2012	**B.S. in Biological Sciences** (*cum laude*)	*Seoul National University*

PUBLICATIONS

*: co-first author, #: co-corresponding author

1 **J. Park***, M. Kim*, H. Yi*, K. Baeg*, Y. Choi, Y.-s. Lee, J. Lim, V. N. Kim (2023) “Short poly(A) tails are protected from deadenylation by the LARP1-PABP complex” ***Nat. Struct. Mol. Biol.,*** 30(3):330–338

2 **J. Park***, S. Khan*, D. H. Yun*, T. Ku, K. L. Villa, J. E. Lee, Q. Zhang, G. Feng, J. Park, E. Nedivi#, K. Chung# (2021) “Epitope-preserving magnified analysis of proteome (eMAP)” ***Sci. Adv.*** 7(16):eabf6589

3 Y. Kim*#, **J. Park***, S. Kim*, M. Kim, M.-G. Kang, C. Kwak, M. Kang, B. Kim, H.-W. Rhee, and V. N. Kim# (2018) “PKR senses nuclear and mitochondrial signals by interacting with endogenous double-stranded RNAs” ***Mol. Cell***, 71(6):1051–1063.e6
- Selected as “Research Highlights” in ***Nat. Chem. Biol.***, 14(11):989

4 H. Yi*, **J. Park***, M. Ha, J. Lim, H. Chang and V. N. Kim (2018) “PABP cooperates with the CCR4-NOT complex to promote mRNA deadenylation and block precocious decay” ***Mol. Cell***, 70(6):1081–1088.e5
- Previewed in ***Mol. Cell***, 70(6):987–988

5 T. A. Nguyen*#, **J. Park***, T. L. Dang, Y.-G Choi, and V. N. Kim# (2018) “Microprocessor depends on hemin to recognize the apical loop of primary microRNA” ***Nucleic Acids Res.***, 46(11):5726–5736

6 K. T. You, **J. Park**, and V. N. Kim (2015) "Role of the small subunit processome in the maintenance of pluripotent stem cells" ***Genes Dev.***, 29(19):2004–2009

7 T. A. Nguyen, M. H. Jo, Y.-G. Choi, **J. Park**, S. C. Kwon, S. Hohng, V. N. Kim# and J.-S. Woo# (2015) “Functional anatomy of the human Microprocessor” ***Cell***, 161(6):1374–1387

8 Y.-K. Kim, G. Wee, **J. Park**, J. Kim, D. Baek, J.-S. Kim#, and V. N. Kim# (2013) “TALEN-based knockout library for human microRNAs” ***Nat. Struct. Mol. Biol.***, 20(12):1458–1464

Links: Google Scholar, PubMed

HONORS AND AWARDS

2022 – 2023 Picower Postdoctoral Fellows, *The Picower Institute for Learning and Memory, MIT*

2021 AKN Outstanding Research Awards, *Association of Korean Neuroscientists*

2019 Conference Scholarship, *Keystone Symposia: Small Regulatory RNAs*

2019 Best Dissertation Awards, *School of Biological Sciences, SNU*

2008 – 2012 Presidential Science Scholarship, *Korea Science and Engineering Foundation*

INTERNATIONAL CONFERENCES

2019 Cell Symposia: Regulatory RNAs — ***short talk***
"Poly(A) barricade as a rate-limiting factor that shapes poly(A) tail length"

2018 CSHL Meeting: Regulatory & Noncoding RNAs — ***short talk***
"PKR senses nuclear and mitochondrial signals by interacting with endogenous dsRNAs"

2017 CSHL Meeting: Eukaryotic mRNA Processing — ***short talk***
"Genome-wide evaluation of the role and specificity of deadenylases"

2016 EMBL Symposium: The Complex Life of mRNA — *poster*

2016 IMBA: 11th Microsymposium on Small RNAs — *poster*

2014 Keystone Symposia: RNA Silencing — *poster*

INVITED TALKS

08/2023 Special Seminar – *Graduate School of Medical Science and Engineering, KAIST*

11/2022 Special Seminar – *Yonsei University College of Medicine*

08/2022 Young Global Leader Symposium – *Dept. of Chemical and Biomolecular Engineering, KAIST*

07/2022 Department Seminar – *Department of Pharmacology, SNU College of Medicine*

05/2022 Young Investigator Seminar Series – *Department of Biomedical Engineering, UNIST*

TEACHING EXPERIENCE

2022 Kaufman Teaching Certificate Program, *Massachusetts Institute of Technology*

2014 Teaching Assistant, Advanced RNA Biology Lab, *School of Biological Sciences, SNU*

2013 Teaching Assistant, Biology Lab 2, *School of Biological Sciences, SNU*

2012 Teaching Assistant, Biology Lab 1, *School of Biological Sciences, SNU*

2011 Tutor, Basic Course for Biology, *School of Biological Sciences, SNU*

TECHNICAL EXPERTISE

Computational biology

- General skills
  - Unix/Linux, AWS cloud computing environment
  - Programming languages: Python, R, Rust
  - Python scientific computing libraries: NumPy, SciPy, Pandas, etc.
  - Python machine learning frameworks: Scikit-learn, PyTorch
  - Building a reproducible analysis pipeline: Nextflow, Snakemake, Docker, Singularity
  - Efficient data visualization: Matplotlib, Seaborn, Plotly

- Next-generation sequencing (NGS)
  - (sc)RNA-seq, ATAC-seq, Amp-seq, CLIP-seq, TAIL-seq, etc.
  - Statistical analysis for genome-wide, transcriptomic studies
  - Tools: Samtools, Picard, Scanpy, Seurat, STAR, Bedtools, etc.
- Image processing
  - Concurrent programming for large-scale images
  - 2D/3D rigid and non-rigid biomedical image registration
  - Convolutional Neural Networks
  - Tools: PyTorch, Zarr, Dask, Scikit-image, OpenCV, ImageJ/Fiji, Imaris, etc.

Wet experiments

- Routine experiments
  - Molecular cloning: Gibson, Golden Gate assembly
  - Mammalian, bacterial cell culture
  - DNA and siRNA transfection
  - Quantitative RT-PCR
  - Immunoprecipitation
  - Western blotting
- RNA biology
  - Custom sequencing library preparation
  - Custom high-resolution poly(A)-tail length assay
  - Tet-On inducible reporter cell line generation
  - RNA co-immunoprecipitation
  - Lentiviral transduction
  - *In vitro* transcription
  - Northern blotting
  - Luciferase reporter assay
- Tissue clearing and expansion
  - SHIELD clearing
  - Expansion microscopy: eMAP