

# Hannah Kim

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## Research Interest

COMPUTATIONAL BIOLOGY | ALGORITHM DEVELOPMENT | EVOLUTIONARY GENOMICS | VIRAL EVOLUTION

## Education

### Temple University

PHD BIOINFORMATICS

• Advisor: Dr. Sergei L Kosakovsky Pond

Philadelphia, PA

08/2019 - current

### Carnegie Mellon University

MS COMPUTATIONAL BIOLOGY

Pittsburgh, PA

08/2015 - 12/2016

### Carnegie Mellon University

BS CHEMISTRY

Pittsburgh, PA

08/2010 - 05/2013

## Relevant Experience

- 2021-2022 **Bioinformatics Engineer**, Lifetime Omics
- 2017-2019 **Bioinformatics Analyst / Software Engineer**, Children's Hospital of Philadelphia
  - 2017 **Research Programmer**, Computational Biology Department, Carnegie Mellon University
  - 2016 **Graduate Researcher**, Computational Biology Department, Carnegie Mellon University
  - 2016 **Course Developer**, Computational Biology Department, Carnegie Mellon University
- 2013-2014 **Post-Baccalaureate Researcher**, Department of Biological Sciences, Carnegie Mellon University
- 2012-2013 **Undergraduate Student Researcher**, Department of Chemistry, Carnegie Mellon University
- 2011 **Student Intern, Summer Research Institute**, Department of Biological Sciences, Carnegie Mellon University

## Publications

### PUBLISHED

- Huzar, J., **Kim, H.**, Kumar, S., Miura, S. (2022). MOCA for integrated analysis of gene expression and genetic variation in single cells. *Frontiers in Genetics*, 13:831040. doi:10.3389/fgene.2022.831040
- Ding, Y., **Kim, H.**, Madden, K., Loftus, J., Chen, G., Allen, D., Zhang, R., Xu, J., Chen, C., Xu, Y., Tasian, S., Tan, K. (2021). Network Analysis Reveals Synergistic Genetic Dependencies for Rational Combination Therapy in Philadelphia Chromosome-like Acute Lymphoblastic Leukemia. *Clinical Cancer Research*, 27(18). doi:10.1158/1078-0432.CCR-21-0553
- Tarca, A. L., Pataki, B. Á., Romero, R., Sirota, M., Guan, Y., Kutum, R., Gomez-Lopez, N., Done, B., Bhatti, G., Yu, T., Andreoletti, G., Chaiworapongsa, T., **The DREAM Preterm Birth Prediction Challenge Consortium**, Hassan, S. S., Hsu, C., Aghaepour, N., Stolovitzky, G., Csabai, I., Costello, J. C. (2021). Crowdsourcing assessment of maternal blood multi-omics for predicting gestational age and preterm birth. *Cell Reports Medicine*, 2(6). doi:10.1016/j.xcrm.2021.100323
- Ichikawa, Y., Bruno, V. M., Woolford, C. A., **Kim, H.**, Do, E., Brewer, G., Mitchell, A. P. (2021). Environmentally contingent control of *Candida albicans* cell wall integrity by transcriptional regulator Cup9. *Genetics*, 218 (3). doi: 10.1093/genetics/iyab075
- Tao, Y., Rajaraman, A., Cui, X., Cui, Z., Chen, H., Zhao, Y., Eaton, J., **Kim, H.**, Ma, J., Schwartz, R. (2021). Assessing the Contribution of Tumor Mutational Phenotypes to Cancer Progression Risk. *PLOS Computational Biology*, 17(3).

doi:10.1371/journal.pcbi.1008777

He, B., Gao, P., Ding, Y., Chen, C., Chen, G., Chen, C., **Kim, H.**, Tasian, S. K., Hunger, S. P., Tan, K. (2020). Diverse noncoding mutations contribute to deregulation of cis-regulatory landscape in pediatric cancers. *Science Advances*, 6(30). doi:10.1126/sciadv.aba3064

Lin, C., Jain, S., **Kim, H.**, Bar-Joseph, Z. (2017). Using neural networks for reducing the dimensions of single-cell RNA-Seq data. *Nucleic Acids Research*, 45(17). doi:10.1093/nar/gkx681

## PREPRINT

Tao, Y., Rajaraman, A., Cui, X., Cui, Z., Eaton, J., **Kim, H.**, Ma, J., Schwartz, R. (2019). Improving personalized prediction of cancer prognoses with clonal evolution models. *bioRxiv*. doi:10.1101/761510

## Presentations

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\* *presenting author*

### CONTRIBUTED PRESENTATIONS

**Kim, H.\***, Kosakovsky Pond, S. L. (2022). PRIME Evolutionary Imputation (PREI). Flash Talk: International Conference on Intelligent Biology and Medicine, Philadelphia, PA.

**Kim, H.\***, Shank, S., Kosakovsky Pond, S. L. (2022). PProperty Informed Models of Evolution (PRIME). Poster: The 31st KSEA Northeast Regional Conference, Hybrid.

Hu, Y., Chen, C., Ding, Y., **Kim, H.**, Tan, K. (2019). Synergistic Control Genes in Cancer Gene Networks as Targets for Combination Therapy. Poster: Children's Hospital of Philadelphia Research Poster day and Scientific Symposium, Philadelphia, PA.

## Awards, Fellowships, & Grants

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2022	<b>Selected Attendee Support</b> , Scientists and Engineers Early Career Development Workshop	\$ 200
2022	<b>KSEA Excellent Poster Award</b> , The 31st KSEA Northeast Regional Conference	\$ 100
2022	<b>CST Three-Minute Thesis Competition 2nd Place Award</b> , Temple University	\$ 250
2015	<b>Departmental Merit Fellowship</b> , Carnegie Mellon University	\$ 3000
2013	<b>Mellon College of Science Research Honors</b> , Carnegie Mellon University	
2012	<b>Summer Undergraduate Research Fellowship</b> , Carnegie Mellon University	\$ 3500

## Doctoral Coursework

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F2022	<b>EPSY-8985 Teaching in Higher Education</b>
F2020	<b>BIOL-5128 Genomics and Infectious Disease Dynamics</b>
F2020	<b>BIOL-8210 Seminar: "Ecoevo discuss"</b>
F2020	<b>STAT-8109 Applied Statistics and Data Science</b>
S2020	<b>BIOL-5241 Genomics and Evolutionary Biology of Parasites</b>
S2020	<b>CIS-5517 Data-Intensive and Cloud Computing</b>
S2020	<b>CIS-5523 Knowledge Discovery and Data Mining</b>
F2019	<b>BIOL-5111 Genomics in Medicine</b>
F2019	<b>BIOL-5466 Topics in Bioinformatics</b>
F2019	<b>BIOL-8210 Seminar Biol 8210 at Center for Computational Genetics and Genomics</b>

## Teaching Experience

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\* *awarded Research Assistantship unless otherwise noted*

F2020 BIOL-3111/5111 Genomics in Medicine, Teaching Assistant  
S2020 BIOL-1012 General Biology II, Teaching Assistant  
F2019 BIOL-2112 Introduction to Cellular and Molecular Biology, Teaching Assistant

## Outreach & Professional Development

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### LEADERSHIPS

**Temple University Korean Graduate Student Association (TKGSA)**, Founding Member & Treasurer, 03/2022-  
**College of Science and Technology-Graduate Student Organization (CST-GSO)**, DEI Representative, 12/2021-  
**College of Science and Technology Diversity, Equity, and Inclusion Committee**, Student Representative, 11/2021-  
**Biology Graduate Student Society (BGSS)**, Vice President, 09/2021-

### PROFESSIONAL MEMBERSHIPS

**Korean-American Innovative Technology Engineers and Entrepreneurs (KITEE)**, 04/2022-  
**Society for the Study of Evolution (SSE)**, 04/2022-  
**AnitaB.org**, 09/2021-  
**Society for Molecular Biology and Evolution (SMBE)**, 01/2021-  
**Korean-American Scientists and Engineers Association (KSEA)**, 02/2020-  
**Philadelphia Korean Scholars Association (PKSA)**, 06/2019-

### COMMUNITY INVOLVEMENT

**Frontiers in Oncology**, Ad Hoc Reviewer (1x/yr), 06/2022  
**George Washington Carver Science Fair**, Science Fair Judge, 03/2022

### CERTIFICATES

**Matrix Algebra for Engineers**, Coursera 2022  
**Viruses and How to Beat Them: Cells, Immunity, Vaccines**, IsraelX 2022

## Coding Languages

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PYTHON, R, MATLAB, BASH, JAVASCRIPT, GOLANG