# Hannah Kim

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## Research Interest

VIRAL EVOLUTION | ALGORITHM DEVELOPMENT | DISEASE DYNAMICS

## Education

**Temple University** *Philadelphia, PA*
PhD Bioinformatics *08/2019 - 05/2024*
- Advisor: Dr. Sergei L Kosakovsky Pond

**Carnegie Mellon University** *Pittsburgh, PA*
MS Computational Biology *08/2015 - 12/2016*

**Carnegie Mellon University** *Pittsburgh, PA*
BS Chemistry *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*. 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*. 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., Aghaeepour, 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*. 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

** presenting author*

### Contributed Presentations

**Kim, H.***, Shank, S., Kosakovsky Pond, S. L. (2022). PRoperty 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

| | | |
|---|---|---|
| 2022 | **KSEA Excellent Poster Award**, The 31st KSEA Northeast Regional Conference | *$ 100* |
| 2022 | **CST Three-Minute Thesis Competition 2nd Place Award**, Temple University | *$ 250* |
| 2015 | **Departmental Merit Fellowship**, Carnegie Mellon University | *$ 3000* |
| 2013 | **Mellon College of Science Research Honors**, Carnegie Mellon University | |
| 2012 | **Summer Undergraduate Research Fellowship**, Carnegie Mellon University | *$ 3500* |

## Teaching Experience

** awarded Research Assistantship unless otherwise noted*

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|---|---|
| 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 |

## Doctoral Coursework

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

## Outreach & Professional Development

### Professional Memberships

**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-*
**AnitaB.org**, Member, *09/2021-*
**Biology Graduate Student Society (BGSS)**, Vice President, *09/2021-*
**Society for Molecular Biology and Evolution (SMBE)**, Member, *01/2021-*
**Korean-American Scientists and Engineers Association (KSEA)**, Member, *02/2020-*
**Philadelphia Korean Scholars Association (PKSA)**, Member, *06/2019-*

### Volunteering

**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

python , R , MATLAB , bash , javascript , GoLang