

Vicky Yao

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Education

- 2018 **Ph.D. in Computer Science** • Princeton University
Dissertation: *Integrative network-based approaches to analyze genomics data*
Adviser: Olga Troyanskaya
Committee: Ryan Adams, Barbara Engelhardt, Coleen Murphy, Mona Singh
- 2011 **M.S. in Statistics** • University of Chicago
Thesis: *Network Inference with Gene Expression Data Using Correlation and Regression-Based Methods*
Adviser: Mathias Drton
- 2011 **B.A. in Economics, Minor in Computer Science** • University of Chicago

Research

- 2019- **Rice University** • Houston, TX
Assistant Professor, Department of Computer Science
- Princeton University** • Princeton, NJ
- 2018-2019 Postdoctoral Research Associate, Lewis-Sigler Institute for Integrative Genomics
- 2012-2018 Graduate Research Assistant, Department of Computer Science
- 2009-2010 Research Intern, Lewis-Sigler Institute for Integrative Genomics
Adviser: Olga Troyanskaya
- NHLBI, National Institutes of Health** • Bethesda, MD
- 2005-2007 Research Intern, Laboratory of Epigenome Biology
Project: *Development of a genome-wide experimental technique that improves on the Chromosome Conformation Capture (3C) method*
Adviser: Keji Zhao

Publications

* indicates co-first authorship

1. R Dannenfels*, G Allen*, B VanderSluis, AK Koegel, S Levinson, SR Stark, **V Yao**, A Tadych, OG Troyanskaya, WA Lim. "Discriminatory power of combinatorial antigen recognition in cancer T cell therapies." *Cell Systems*, 2020.
2. DE Orange*, **V Yao***, J Fak, S Parveen, M Frank, N Blachere, OG Troyanskaya, R Darnell. "Molecular antecedents of rheumatoid arthritis flares." *New England Journal of Medicine*, 2020.

3. JP Roussarie*, **V Yao***, Z Plautz, SE Kasturia, C Albornoz, E Schmidt, L Brichta, A Barnea-Cramer, N Heintz, PR Hof, M Heiman, M Flajolet, OG Troyanskaya, P Greengard. “Selective neuronal vulnerability in Alzheimer’s Disease: a network-based analysis.” *Neuron*, 2020.
4. J Zhou*, IE Schor*, **V Yao**, CL Theesfeld, R Marco-Ferrerres, A Tadych, EEM Furlong, OG Troyanskaya. “Accurate genome-wide predictions of spatio-temporal gene expression during embryonic development.” *PLoS Genetics*, 2019.
5. D Sargin*, RU Chottekalapanda*, K Perit, **V Yao**, D Chu, DW Sparks, S Kalik, OG Troyanskaya, EF Schmidt, N Heintz, P Greengard, EK Lambe. “Mapping the physiological and molecular markers of stress and antidepressant treatment in S100a10 corticostriatal neurons.” *Molecular Psychiatry*, 2019.
6. **V Yao***, R Kaletsky*, W Keyes, D Mor, AK Wong, CT Murphy, OG Troyanskaya. “An integrative tissue-network approach to identify and test human disease genes.” *Nature Biotechnology*, 2018.
7. R Kaletsky*, **V Yao***, A Williams, AM Runnels, A Tadych, S Zhou, OG Troyanskaya, CT Murphy. “Transcriptome analysis of adult *Caenorhabditis elegans* cells reveals tissue-specific gene and isoform expression.” *PLoS Genetics*, 2018.
8. **V Yao***, AK Wong*, OG Troyanskaya. “Enabling Precision Medicine through Integrative Network Models.” *Journal of Molecular Biology*, 2018.
9. AV Rangan, CC McGrouther, J Kelsoe, N Schork, E Stahl, Q Zhu, A Krishnan, **V Yao**, OG Troyanskaya, S Bilaloglu, P Raghavan, S Bergen, A Jureus, M Landen; Bipolar Disorders Working Group of the Psychiatric Genomics Consortium. “A loop-counting method for covariate-corrected low-rank biclustering of gene-expression and genome-wide association study data.” *PLoS Computational Biology*, 2018.
10. A Krishnan*, R Zhang*, **V Yao**, CL Theesfeld, AK Wong, A Tadych, N Volfovsky, A Packer, A Lash, OG Troyanskaya. “Genome-wide prediction and functional characterization of the genetic basis of autism spectrum disorder.” *Nature Neuroscience*, 2016.
11. E Watson, V Olin-Sandoval, MJ Hoy, CH Li, T Louise, **V Yao**, A Mori, AD Holdorf, OG Troyanskaya, M Ralser, AJ Walhout. “Metabolic network rewiring of propionate flux compensates vitamin B12 deficiency in *C. elegans*.” *eLife*, 2016.
12. J Goya*, AK Wong*, **V Yao***, A Krishnan, M Homilius, OG Troyanskaya. “FNTM: a server for predicting functional networks of tissues in mouse.” *Nucleic Acids Research*, 2015.
13. AK Wong, A Krishnan, **V Yao**, A Tadych, OG Troyanskaya. “IMP 2.0: a multi-species functional genomics portal for integration, visualization and prediction of protein functions and networks.” *Nucleic Acids Research*, 2015.
14. M Bansal, ..., **NCI Dream Community**. “A community computational challenge to predict the activity of pairs of compounds.” *Nature Biotechnology*, 2014.
15. Y Guan, **V Yao**, K Tsui, M Gebbia, MJ Dunham, C Nislow, OG Troyanskaya. “Nucleosome-coupled expression differences in closely-related species.” *BMC Genomics*, 2011.

Selected Seminars & Conferences

Invited Talks & Seminars

WiDS (Women in Data Science) Houston, October 2020.
BioSciences Department Colloquia, Rice University, October 2020.
Machine Learning Seminar, Rice University, November 2019.
Carnegie Mellon University (School of Computer Science), March 2019.
NHGRI Seminar, NIH, February 2019.
University of Maryland (Department of Computer Science), February 2019.
Bioinformatics Seminar, UCLA, February 2019.
NLM Seminar, NIH, January 2019.
Models, Inference & Algorithms, Broad Institute, December 2017.

Conference Talks

“Furthering understanding of human diseases through integrative cross-species analysis.”
ISMB, Orlando, FL, July 2016.

Teaching & Mentoring

- 2020- **COMP 670: Graduate Seminar in Computational Biology**, *Rice University*
 Development of discussion-based graduate seminar covering computational methods and discoveries in biomedical research; Fall 2020 covered applications in cancer research (11 graduate students enrolled)
- 2020- **COMP 572: Bioinformatics: Networks**, *Rice University*
 Development and teaching of graduate-level course covering computational aspects of biological network analysis (29 upper-level undergraduate and graduate students enrolled)
- 2017 **Django Girls**, *Princeton University*
 Coach for programming workshop for women with no coding experience
- 2012-2013 **COS 323: Computing for the Physical and Social Sciences**, *Princeton University*
 Assistant Instructor, ~90 students (Fall 2012), ~80 students (Fall 2013)

PhD Students

- 2020- Lechuan Li, *Department of Computer Science, Rice University*
- 2020- Sunny Kim, *Department of Computer Science, Rice University*
- 2020- Qiliang Liang, *Department of Computer Science, Rice University*

Undergraduates

- 2020- Nancy Cui, *Department of Bioengineering, Rice University*
- 2020- Jason Tan, *Department of Computer Science, Rice University*
- 2020- Xueyan Mu, *Department of Computer Science, Rice University*

Thesis Committees

- 2020 Baoyi Zhang, “Characterization of Molecular Aberrations Behind Racial Disparity of Prostate Cancer,” *Department of Chemical and Biomolecular Engineering, Rice University*
- 2020 Sarah Hall-Swan, “Structural modeling, analysis, and comparison of peptide-HLA complexes with applications to cancer immunotherapy,” *Department of Computer Science, Rice University*
- 2020 Minjie Wang, “Integrative Generalized Convex Clustering Optimization and Feature Selection for Mixed Multi-View Data,” *Department of Statistics, Rice University*
- 2019 Shaoheng Liang, “Latent periodic process inference from single-cell RNA-seq data,” *Department of Computer Science, Rice University*

Honors & Awards

- 2019 CPRIT Scholar, *Cancer Prevention & Research Institute of Texas*
- 2013 Facebook API Award, *HackPrinceton*
- 2011 Gordon Wu Fellow, *Princeton University*
- 2011 Google API Award, *Princeton Startup Weekend*
- 2007 Regional 1st Place, National Finalist, *Junior Sciences and Humanities Symposium*
- 2007 Semifinalist, *Intel Science Talent Search*
- 2006 Regional Finalist, *Siemens Competition in Math, Science, and Technology*

Service & Professional Activities

- 2020 Program Committee Member, *ISMB (Systems Biology and Networks)*
- 2020 Graduate Admissions Committee, *Department of Computer Science, Rice University*
- 2019 Poster Prize Committee Member, *ISMB*
- 2016 Poster Committee Member, *ISMB*