Yichao Li, Ph.D.

Bioinformatics Research Scientist, St. Jude Children's Research Hospital

Yichao.Li@stjude.org | https://YichaoOU.github.io

Research Interest

- Genetics and Epigenetics of Hematopoiesis and Blood Diseases
- New Methods for Genome Editing Studies
- Genomics Data Analysis and Visualization
- Machine Learning and Deep Learning

Education

Ohio University   **2012 - 2018**

- Ph.D., Electrical Engineering and Computer Science

Ohio University

- M.S., Mathematics   **2014 - 2017**
- M.S., Computer Science   **2012 - 2015**

Capital Normal University   **2008 - 2012**

- B.S., Biological Science

Patent

- Hoffmann, R., Frolov, A., Spiller, S., **Li, Y**. and Welch, L.R., Universität Leipzig and Ohio University. (2017). Method and means for the non-invasive diagnosis of type ii diabetes mellitus. U.S. Patent Application 15/101,885.

Publications

- Lazzarotto, C. R., Malinin, N. L., **Li, Y**., Zhang, R., Yang, Y., Lee, G. H., Cowley, E., He, Y., Lan, X., Jividen, K., Katta, V., Kolmakova, N. G., Petersen, C. T., Qi, Q., Strelcov, E., Maragh, S., Krenciute, G., Ma, J., Cheng, Y., & Tsai, S. Q. (2020). CHANGE-seq reveals genetic and epigenetic effects on CRISPR–Cas9 genome-wide activity. ***Nature Biotechnology.***
- Qi, Q., Cheng, L., Tang, X., He, Y., **Li, Y.**, Yee, T., Shrestha, D., Feng, R., Xu, P., Zhou, X., Pruett-Miller, S. M., Hardison, R. C., Weiss, M. J., & Cheng, Y. (2020). Dynamic CTCF binding directly mediates interactions among cis-regulatory elements essential for hematopoiesis. ***Blood***.
- Foster, J. M., Grote, A., Mattick, J., Tracey, A., Tsai, Y. C., Chung, M., Cotton, J. A., Clark, T. A., Geber, A., Holroyd, N., Korlach, J., **Li, Y**., Libro, S., Lustigman, S., Michalski, M. L., Paulini, M., Rogers, M. B., Teigen, L., Twaddle, A., … Ghedin, E. (2020). Sex chromosome evolution in parasitic nematodes of humans. ***Nature Communications.***
- Grote, A#., **Li, Y#**., Liu, C., Voronin, D., Geber, A., Lustigman, S., Unnasch, T. R., Welch, L., & Ghedin, E. (2020). Prediction pipeline for discovery of regulatory motifs associated with brugia Malayi molting. ***PLoS Neglected Tropical Diseases.***
- Lee, K. Y., Sharma, R., Gase, G., Ussar, S., **Li, Y.**, Welch, L., Berryman, D. E., Kispert, A., Bluher, M., & Kahn, C. R. (2017). Tbx15 Defines a Glycolytic Subpopulation and White Adipocyte Heterogeneity. ***Diabetes***.
- Spiller, S., **Li, Y.,** Blüher, M., Welch, L., & Hoffmann, R. (2017). Glycated lysine-141 in haptoglobin

improves the diagnostic accuracy for type 2 diabetes mellitus in combination with glycated hemoglobin HbA1c and fasting plasma glucose. ***Clinical Proteomics.***

- Spiller, S., **Li, Y.,** Blüher, M., Welch, L., & Hoffmann, R. (2018). Diagnostic accuracy of protein glycation sites in long-term controlled patients with type 2 diabetes mellitus and their prognostic potential for early diagnosis. ***Pharmaceuticals.***
- **Li, Y.,** Liu, Y., Juedes, D., Drews, F., Bunescu, R., & Welch, L. (2020). Set cover-based methods for motif selection. ***Bioinformatics***.
- **Li, Y.,** Mullin, M., Zhang, Y., Drews, F., Welch, L. R., & Showalter, A. M. (2020). Identification of Cis-Regulatory Sequences Controlling Pollen-Specific Expression of Hydroxyproline-Rich Glycoprotein Genes in Arabidopsis thaliana. ***Plants (Basel, Switzerland)***
- **Li, Y.,** Shen, X. A., Ewing, R. L., & Li, J. (2018). Terahertz spectroscopic material identification using approximate entropy and deep neural network. ***Proceedings of the IEEE National Aerospace Electronics Conference, NAECON***.
- Mason, M. J., Schinke, C., Eng, C. L. P., Towfic, F., Gruber, F., Dervan, A., White, B. S., Pratapa, A., Guan, Y., Chen, H., Cui, Y., Li, B., Yu, T., Chaibub Neto, E., Mavrommatis, K., Ortiz, M., Lyzogubov, V., Bisht, K., Dai, H. Y., … **Multiple Myeloma DREAM Consortium**, M. M. D. (2020). Multiple Myeloma DREAM Challenge reveals epigenetic regulator PHF19 as marker of aggressive disease. ***Leukemia***
- Hill, S. M., Heiser, L. M., Cokelaer, T., Linger, M., Nesser, N. K., Carlin, D. E., Zhang, Y., Sokolov, A., Paull, E. O., Wong, C. K., Graim, K., Bivol, A., Wang, H., Zhu, F., Afsari, B., Danilova, L. V., Favorov, A. V., Lee, W. S., Taylor, D., … **The HPN-DREAM Consortium**, Zi, Z. (2016). Inferring causal molecular networks: Empirical assessment through a community-based effort. ***Nature Methods.***

Oral Presentation

Appalachian Region Cell Conference

- Oral presentation: Reverse Engineering of The Human Genome: Predicting Protein-DNA Interactions Across Multiple Cell Types, 2017

Post Presentations

Cold Spring Harbor conference on Systems Biology

- Discovering Gene Regulatory Elements Using Coverage-based Heuristics, 2016

ISCB Great Lakes Bioinformatics Conference

- Homology modeling of extensin peroxidase in *Solanum Lycopersicum*, 2014
- Epigenetic information improves genome wide motif discovery, 2015
- Motif Discovery in co-regulated DNA sequences, 2016

Statewide Users Group meeting at the Ohio Supercomputer Center

- Parallelization of an optimized DNA motif analysis pipeline, with applications in multiple species, 2018

Professional Services

Ad hoc Reviewer

- IEEE/ACM Transactions on Computational Biology and Bioinformatics, 2015 & 2020
- PLOS Computational Biology, 2016

- The Journal of Open Source Software, 2020

Teaching Experience

Ohio University   **2012-2017**
Teaching Assistant

- EE 3713, Applied Probability and Statistics for Electrical Engineers.
- CS 2400, Intro to Computer Science I.
- CS 5160, Bioinformatics Tools.
- CS 5170, Data Mining with Applications in the Life Sciences.

Leadership

Big Data Club at Ohio University   **2017-2018**
President

- Hosted Big Data in Finance Lecture Series, featuring default risk analysis. Promoted blockchain techniques by awarding members with CLH coins.
- Led student teams to learn from Kaggle competitions, including Zillow-2017, Mercari-2018, and YT8m-2018. Also provided data science tutorials and lectures.

Extracurricular Activity

Autonomous Car   **2018**

- Developed a TensorFlow model on NVDIA TX1, including traffic light, obstacle, grass, and edge detection. Optimized the speed for real-time system. Participated several autonomous car competitions and got a second place (2/10) in drag race at IARRC 2018.

Machine Learning Competition   **2018**

- Kaggle silver medal, ranked at 18 out of 394, The 2nd YouTube-8M Video Understanding Challenge, 2018.