Dechao Tian

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Current Employment

Associate Professor   2020 - Present
School of Public Health (Shenzhen), Sun Yat-sen University, China

- Method development for 3D chromatin organization
- Machine learning applications in precision public health

Past Employment

Mathematical Statistician   2019 - 2020
Centers for Disease Control and Prevention, US

- Surveillance, Information Management, and Statistics Office: research on anomaly cluster detection using heterogeneous and high dimensional time-to-event data

Postdoctoral Research Associate   2015 - 2019
Carnegie Mellon University, US

- Computational Biology Department: research on regulatory network and 3D chromatin organization by developing advanced statistical and machine learning algorithms

Education

Ph.D. in Statistics and Applied Probability   2010 - 2015
National University of Singapore, Singapore

   Thesis title: Biological Network Analysis and Comparison
   Thesis advisor: Dr. Kwok Pui Choi

M.S. in Probability and Mathematical Statistics   2009 - 2011
Northeast Normal University, China

   Thesis title: Random Network Models' Discrimination
   Thesis advisor: Dr. Zhidong Bai

B.S. in Mathematics and Applied Mathematics   2005 - 2009
Northeast Normal University, China

Publications

12. Zhu X*, Zhang Y*, Wang Y, **Tian D**, Belmont A, Swedlow J, Jian M, Nucleome Browser: An integrative and multimodal data navigation platform for 4D Nucleome, *Nature Methods* , (2022).

11. Hua D⋆, Hua D⋆, Hua D⋆, Qi L, Du X, Bai ZD, Zhu X, **Tian D**, Diffdomains: Discovery of statistically significantly reshaped chromatin domains using random matrix theory, *RECOMB 2022, LNBI* **13278**, (2022).

10. **Tian D⋆**, Zhang R⋆, Zhang Y, and Ma J, MOCHI enables discovery of heterogeneous interactome modules in 3D nucleome, *Genome Research* **30**, 2 (2020).

9. **Tian D**, Gu Q and Ma J, Identifying gene regulatory network rewiring using latent differential graphical models, *Nucleic Acids Research* **44**, 17 (2016).

8. Koh V, Cheung C, Li X, **Tian D**, Wang J.J, Mitchell P, Cheng C.Y, and Wong T.T, Retinal vein occlusion in a multi-ethnic asian population: the singapore epidemiology of eye disease study, *Ophthalmic Epidemiology* **23**, 1 (2016).

7. Chen L, Cheng C.Y, Choi H, Ikram M.K, Sabanayagam C, Tan G.S, **Tian D**, Zhang L, Venkatesan G, Tai E.S, Wang J.J, Mitchell P, Cheung C.M.G, Beuerman R.W, Zhou L, Chan E.C.Y, Wong T.T, Plasma metabonomic profiling of diabetic retinopathy, *Diabetes* **65**, 4 (2016).

6. Yam G.H.F, Yusoff N.Z.B.M, Kadaba A, **Tian D**, Myint H.H, Beuerman R.W, Zhou L, Mehta J.S, Ex vivo propagation of human corneal stromal "activated keratocytes" for tissue engineering, *Cell Transplantation* **24**, 9 (2015).

5. Chen L, Li J, Guo T, Ghosh S, Koh S.K, **Tian D**, Zhang L, Jia D, Beuerman R.W, Aebersold R, Chan E.C.Y, Zhou L, Global metabonomic and proteomic analysis of human conjunctival epithelial cells (IOBA-NHC) in response to hyperosmotic stress, *Journal of Proteome Research* **14**, 9 (2015).

4. Tong L, Zhou X, Jylha A, Aapola U, Liu D.N, Koh S.W, **Tian D**, Quah J, Uusitalo H, Beuerman R.W, Zhou L, Quantitation of 47 human tear proteins using high resolution multiple reaction monitoring (HR-MRM) based-mass spectrometry, *Journal of Proteomics* **115**, (2015).

3. Zhang S⋆, **Tian D⋆**, Tran N.H, Choi K.P, and Zhang L.X, Profiling human cell-type specific transcription factor regulatory networks, *Nucleic Acids Research* **42**, 20 (2014).

2. Barathi V.A, Chaurasia S.S, Poidinger M, Koh S.K, **Tian D**, Ho C, Iuvone P.M, Beuerman R.W, Zhou L, Involvement of GABA transporters in atropine-treated myopic retina as revealed by iTRAQ quantitative proteomics, *Journal of Proteome Research* **13**, 11 (2014).

1. **Tian D** and Choi K.P, Sharp bounds and normalization of wiener-type indices, *PLOS ONE* **8**, 11 (2013).

Note: ⋆ represents co-first authors.

Research Experience

3. **National University of Singapore, Singapore**　　　　　　　　　　2014 - 2015
   Research Assistant. Advisor: Kwok Pui Choi, Ph.D.
   - Develop model to identify essential genes by network motifs in regulatory networks

2. **Singapore Eye Research Institute (SERI), Singapore** 2011 - 2015

Research Collaborator with Lei Zhou, Ph.D.

- Provide statistical analysis and consultation for Proteomics & Microanalysis Laboratory
- Collaborate with other members from SERI

1. **Center for Quantitative Medicine, Duke-NUS, Singapore** 2012 - 2015

Associate Member

Teaching Assistant

Introduction to R
ST1131 Introduction to Statistics
ST1232 Statistics for Life Science
ST2131 Probability

Skills

Programming (Most used first)
  R, Python, Unix/Linux bash script command, SAS programming language (Certified Base Programmer for SAS 9)
Bioinformatics tools & databases
  Cytoscape, MEME Suite, BEDTools, JUCIER, UCSC Genome Browser, ENCODE, TCGA

Posters

1. Advanced Molecular Detection day, CDC, 2019

0. Systems Biology, Global Regulation & Gene Expression, CSHL, 2018

0. 4DN Annual Meeting, NIH, 2017