Hung-Ching (Rick) Chang

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Personal Web   in Hung-Ching (Rick) Chang

Education

University of Pittsburgh (UPitt)   *PA, US*
Ph.D. in Biostatistics   *Aug 2021 - present*
Advisor: George C. Tseng & Kayhan Batmanghelich
Qualifying exam passed

National Taiwan University (NTU)   *Taipei, Taiwan*
M.S. in Biostatistics   *Sep 2017 - Jun 2019*
Thesis: Development of a knowledge-based and data-driven network
construction method for gene sets.
Advisor: Chuhsing Kate Hsiao

National Cheng Kung University (NCKU)   *Tainan, Taiwan*
B.S. in Mathematics / B.B.A. in Statistics   *Sep 2013 - Jun 2017*
Graduate courses: Numerical Analysis, Stochastic Processes, Molecular Biology

Publications

1. Lee, K., Hsieh, T., Lee, Y., Chang, Y., **Chang, H.**, et al. An end-to-end web server for human genome association analysis and polygenic risk score predictions. Under review in Genome Medicine
2. **Chang, H.**, Hsiao, C. Development of a knowledge-based and data-driven network construction method for gene sets. Under review in Bioinformatics.
3. Wang, H., Chen, S., **Chang, H.**, et al. Genome-wide Analyses Identify Novel Risk Loci for Cluster Headache in Han Chinese Residing in Taiwan. Under review in Neurology
4. Wang, H., Hsieh, T., Chung, C., **Chang, H.**, et al. Efficiently Predicting Vancomycin Resistance of Enterococcus Faecium From MALDI-TOF MS Spectra Using a Deep Learning-Based Approach. *Front. Microbiol.* 13:821233 (2022).
5. **Chang, H.**, Chu, C., Lin, S. et al. Network hub-node prioritization of gene regulation with intra-network association. *BMC Bioinformatics 21, 101 (2020).*
6. Chang, Y., Tung, Y., Lee, K., Chen, T., Hsiao, Y., **Chang, H.** et al. Potential Therapeutic Agents for COVID-19 Based on the Analysis of Protease and RNA Polymerase Docking. *Preprints (2020).*

Research Experience

Research Assistant   *Upitt*
- Causal mediation analysis on imaging-genomics data   *Sep 2021 - now*
- Identify urinary markers from UTI children

Statistician / Data Scientist   *Taiwan AI Labs*
- Consult with customers/colleagues to explain and implement statistical models   *Jan 2020 – Jun2021*
- Design tools for predicting genetic networks with survival analysis
- Build model for antibiotic resistance prediction using deep learning and machine learning techniques, such as Bayesian neural network
- Integrate 3rd party tools into our platform, ***Taigenomics***
- Build automated genome-wide association study (GWAS) pipeline including pre-impute QC, phasing, imputation and analysis, ***TW23***
- Establish the ***virus transmission tool*** for COVID-19

Research Assistant   *NTU*
Advisor: Prof. Chuhsing Kate Hsiao   *Sep 2017 - Jun 2019*
- Developed topology-based and network-based methods for pathway/gene set analysis and applied them to breast and ovarian cancer studies
- Focused on gene expression profile and pathway databases, such as KEGG database

- Presented at Research Poster Exhibition 2019, NTU

Guest Scientist   *Freie Universität Berlin*
Advisor: Prof. Alexander Bockmayr   *Jul 2018 - Aug 2018*
- Research project: Gene regulation in regulatory flux balance analysis (rFBA)
- Recovered the Boolean rules that regulate metabolism from the metabolic network

Dry Lab Member   *NCKU*
International Genetically Engineered Machine Competition (iGEM)   *Jul 2016 - Sep 2017*
[Official team page](#)
Advisor: Prof. I-Son Ng
- Simulated the diffusion of urine via finite differencing explicit method
- Build a statistical model to classify normal and pre-diabetes parameters
- Completed the project in collaboration with students from six different colleges
- Acquired knowledge in Molecular Biology and Synthetic Biology

Conference

11ᵗʰ International Conference on Multiple Comparison Procedures	*Taipei, Taiwan*
— *Oral Presentation (invited)*	*Dec 2019*
4ᵗʰ iGEM Asia-Pacific Conference	*Tainan, Taiwan*
— *Organizer & Poster Presentation*	*Aug 2016*

Honor & Awards

Research Poster Exhibition 2019   *Taipei, Taiwan*
                                                                  May 2019
- Outstanding Poster Presentation Award
- 2 recipients/year in Biostatistics

Germany – Taiwan Academic Exchange Scholarship   *Germany & Taiwan*
                                                                Jul 2018
- Offered by the German Academic Exchange Service (DAAD)
- 10 recipients/year in Taiwan

International Genetically Engineered Machine Competition (iGEM)   *MA, USA*
                                                                  Oct 2016
- Gold Medal & the Best Presentation
- Nominated for the Best Diagnostics Project

Achievement of Excellence Study Grant   *Tainan, Taiwan*
                                                                   2016
- Offered by Prof. Kwok-Kun Kwong of NCKU

Leadership

Student Association of the Mathematics Department	*NCKU*
— *President*	*Jul 2014 - Jun 2015*
United Student Associations	*NCKU*
— *Executive Director in college of science*	*Jul 2014 - Jun 2015*

Teaching Experience

CLRES 2020 Statistical Approaches in Clinical Research	*Upitt*
— *Teaching assistant*	*Summer 2022*

Statistical Skill

Programming **Proficient** R, Python, Linux, shell, git
Data analysis Causal inference, Multi-omics data analysis, Machine learning, Bioinformatics tools