Yongfa Dai

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Education

•Guangxi Medical University *Sept. 2018 - Jul. 2021*

Master of Cardiology (Supervisor: Pro. Jianling Li)

•Youjiang Medical University For Nationalities *Sept. 2012 - Jul. 2017*

Bachelor of Clinical Medicine (Counselor: Pro. Keming Li)

Technical Skills

•Bioinformatics data analysis:

- Laboratory Server Setup and User Management
- Bioinformatics data analysis for high throughput sequencing, single-cell RNA-seq, m6A-seq, and GWAS
- Transcriptome and Methylation Chip Data Analysis

•Programming and Platform

- Programming: R, Python, Perl, and Shell
- Platform: Linux, Windows, and Amazon Cloud Server

•Experimental Skills

- Cell culturing, High-Fat Diet-Induced Animal model construction, Adeno-Virus Transfection
- Quantitative real-time PCR (qRT-PCR), Western blotting (WB), immunohistochemistry (IHC), Immunofluorescence (IF)
- RNA immunoprecipitation (RIP), MeRIP-qPCR, siRNA for RNA silencing, and Flow cytometry assay

•Others

- Clinical Predictive Model Construction: Logistic regression, Cox, Lasso, Ridge, SVM, and Neural network
- Medical 3D Modeling and Computational Fluid Dynamics (CFD) assessment for aortic hemodynamics
- Software: PS, Illustrator, Image J, 3-matic Medical, Mimics Medical, fluent 19.2, CFD-post, and Tecplot

Research Experiences

•Project1 *Jan. 2017 - Dec. 2020*

Research on the shared genetic mechanisms of hypertension and type 2 diabetes based on molecular network data mining - National Natural Science Foundation of China (No. 81660075)

- Description: This research project investigates the shared genetic variants between primary hypertension and type 2 diabetes, employing molecular network construction and GWAS data analysis methodologies. Our findings reveal the association of polymorphisms of rs458710 on CSNK2A1 and rs2286674 on PRKCA with the phenotype of combined type 2 diabetes and hypertension, using an unconditional logistic regression model. Notably, both genes exhibit enrichment within the Wnt signaling pathway. Furthermore, we observe significant associations between variants in CSNK2A1, PRKCA, and RKCA and various clinical traits in patients affected by both hypertension and type 2 diabetes, including BMI and weight
- Contribution: Genetic association analysis, Construction of patient information database, Data quality control, statistical analysis, and data visualization (Manhattan plots, QQ plots, and protein-protein interaction network plots etc.)

•Project2 *Jan. 2020 - Dec. 2023*

Study on the regulatory mechanism of NHE in proximal tubule epithelial cells based on molecular network analysis of renal sympathetic nervous system and RAAS crosstalk - National Natural Science Foundation of China (No. 81960087)

- Description: This study explores the roles of the crosstalk between the renal sympathetic nervous system and the RAAS system on the regulatory mechanism of sodium-hydrogen exchangers (NHE) in proximal tubular cells. We have preliminarily confirmed the upregulation effect of the beta2-adrenergic receptor/GRK2/ARRB1 pathway on NHE3 activity
- Contribution: Experimental protocol design, Cell experiment, Molecular experiment, pHi recovery rate measurement (for the detection of NHE3 activity) etc.

Papers and Articles

•Published

1. Dai, Y., Li, J., Wen, H., Liu, J., Li, J. (2021). In Silico Analysis of the Gene Expression Patterns between Aldosterone-Producing Adenoma and Nonfunctional Adrenocortical Adenoma. Genet Res (Camb), 2021, 9553637. doi:10.1155/2021/9553637.
2. Qin, F., Li, J., Dai, Y. F., Zhong, X. G., Pan, Y. J. (2022). Renal denervation inhibits the renin-angiotensin-aldosterone system in spontaneously hypertensive rats. Clin Exp Hypertens, 44(1), 83-92. doi:10.1080/10641963.2021.1996587.
3. Qin, W., Gan, F., Liang, R., Li, J., Lai, X., Dai, Y., Liu, J. (2022). Identification of Monocyte-Associated Genes Related to the Instability of Atherosclerosis Plaque. Oxid Med Cell Longev, 2022, 3972272. doi:10.1155/2022/3972272. (As a corresponding author)
4. Dai, Y., Li, J., Qin, F., Li, S., Su, L., Cai, B., Wu, S., Pan, Y., Zhong, X. (2020). Effects of renal artery denervation on sympathoadrenal system in spontaneously hypertensive rats. Chin J Mod Med, 30(17), 1-6. (Published In Chinese)

•Submitted

1. GRK2/beta-arrestin1 signaling is involved in Na+/H+ exchanger activation induced by isoprenaline (Journal: Cell Calcium)
2. Ascending aorta dilation and the difference of hemodynamic parameters after TAVR treatment: assessment by computational fluid dynamic simulation (Journal: Cardiovascular Engineering and Technology)
3. No causal effects causality correlation between the risk of COVID-19 and albumin level: A mendelian randomization study (Journal: International Journal of Epidemiology)

•Reciepted

1. A case of Shockwave lithotripsy balloon assisted transfemoral passage for TAVR (Journal: Chinese Journal of Cardiology) (Published In Chinese)

Patent

China National Patent: A new type of hourglass-shaped measuring bottle. Patent number: **ZL 2020 2 0204512.0**

Certifications

Professional Skills Certificate of Professional Talents: Advanced Technical Engineer Certificate in Computational Fluid Dynamics (CFD) simulation