Bowen Yang (He/Him/His)

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I am a master's student trained in bioinformatics and biology, with experience in molecular biology experiments, biomedical data analysis, and bioinformatics tools development. I am also familiar with multi-omics including genomics, transcriptomics, proteomics, and metabolomics, and able to work independently as well as collaboratively.

EDUCATION

Georgetown University Washington, DC
M.S. in Bioinformatics Aug. 2021 - Dec. 2022(exp.)
Ludong University Yantai, China
B.S. in Biological Science, Outstanding students of Shandong Province (Top 1%) Aug. 2017 - Jun. 2021

RESEARCH EXPERIENCE

National Institute of Standards and Technology May 2022 - present
LIME, A High-Throughput Metabolite Annotation Tool Supervisors: Dr. Tytus Mak, Dr. Evagelia Laiaki

- Constructed a database of 286,268 unique compounds with uniform identifiers by cleaning and integrating mainstream small molecule databases
- Developed a software LIME with a user-friendly GUI for high-throughput metabolite annotation and identification
- Served as the research assistant completing all coding independently

University of Washington Sep. 2022 - present
Deep Learning Model of Drug-Drug Interaction Mentor: Yingheng Wang

- Tested and compared the performance of existing drug-drug interaction baseline models Supervisor: Dr. Sheng Wang
- Helped to develop a novel multimodal deep learning model with multi-omics data

Yantai Institute of Coastal Zone Research, Chinese Academy of Sciences Jun. 2018 – Oct. 2020
C-type Lectins of Venerupis philippinarum[1,2] Supervisors: Dr. Dinglong Yang, Dr. Xiaoli Liu

- Cultivated clams for experiment and bacteria for infection
- Completed RNA extraction, cDNA synthesis, and gene cloning for 4 C-type lectins
- Conducted data curation and bioinformatics analysis, including nucleotide sequence analysis, protein domains prediction, and phylogenetic tree construction

Ludong University Aug. 2019 - Sep. 2020
New Production Process of Bone Glue[3] Supervisor: Dr. Xiaoli Liu

- Served as the team leader of an 8 undergraduate students team
- Designed a new type of crushing device that makes the bone-crushing particle size less than 5cm
- Designed a new production process that increases the transparency of bone glue by 8.2%

PUBLICATIONS

[1]. Xin, Z., Yu, D., **Yang, B.**, Chen, L., Hayouka, Z., Chen, X., Gong, Y., Dai, H., Wang, L., Zhao, Y., Liu, X., & Yang, D. (2020). Molecular characterization, expression and immune functions of two C-type lectin from Venerupis philippinarum. Fish & shellfish immunology, 107(Pt A), 260–268. https://doi.org/10.1016/j.fsi.2020.10.006 [paper]

[2]. Zhang, J., Zhang, Y., Chen, L., Yang, J., Wei, Q., **Yang, B.**, Liu, X., & Yang, D. (2019). Two c-type lectins from Venerupis philippinarum: Possible roles in immune recognition and opsonization. Fish & shellfish immunology, 94, 230–238. https://doi.org/10.1016/j.fsi.2019.09.009 [paper]

[3]. **Yang, B.** (2019). A Squeeze-Press Type of Crushing Equipment for Bone Glue Manufacturing. China National Intellectual Property Administration. ZL 2019 2 1899143.5 [patents]

SELECTED PROJECTS

DNA-Protein-Disease Database | MySQL, Python, CouchDB, HTML/CSS, JavaScript, Linux May 2022

- Preprocessed and integrated multiple CSV files by using MySQL and construct three related sub-databases by JSON
- Designed a web application by using Ajax (HTML/CSS, JavaScript) that can be used to access database information deployed in CouchDB, the app support data retrieval, sorting, and contextual-based jumping

RNAseq Differential Expression Analysis | NGS, R, Galaxy Apr. 2022

- Preprocessed RNA-Seq data from brain and liver samples by using Galaxy, including trimming, mapping, etc.
- Used R for differentially expressed gene analysis, enrichment analysis, and data visualization (heatmap, PCA, etc.)
- Constructed biological interaction networks by using Cytoscape to find the hub genes

MS/MS Viewer | Python, Matplotlib Dec. 2021

- Developed a mass spectrum visualization tool by using Python
- Parse MS/MS data files and user-entered peptides to label well-matched peaks, and visualize matching results can auto executed by this tool

WORK AND SERVICE EXPERIENCES

Volunteer Tengzhou Workers' Hospital Feb. 2020 – May 2020

- Assisted with taking temperatures, PCR tests, and sanitizing high-touch surfaces when most doctors and nurses were recruited to support Wuhan City during the pandemic

IT Intern Sinopharm Group Oct. 2019 – Nov. 2019

- Cleaning and analyzed the group's sales in 3 cities to support the construction of a supply-processing-distribution information system
- Assisted with designing the application of the system in Linyi People's Hospital, including a web app to realize real-time information sharing between different healthcare providers and suppliers

Director of Public Affairs Student Union, Ludong University Jun. 2018 – Jun. 2019

- Advertise academic and campus events through posters and display boards

SELECTED AWARDS

Outstanding students, Shandong Province (Top 1%) 2021
1st Prize (¥10,000), 7th Scientific and Innovation Challenge, Shandong Province 2020
Bronze Medal (¥2,000), 12th College Entrepreneurship Challenge, Shandong Province 2020
Merit Prize (¥2,000), 3rd Entrepreneurship Competition, Yantai City 2020
First-Class Scholarship (¥3,000), Ludong University 2020
Second-Class Scholarship (¥1,500), Ludong University 2019
1st Prize (¥10,000), 6th Scientific and Innovation Challenge, Shandong Province 2019

MEMBERSHIP

Maryland Tech Council 2021 - present
China Computer Federation 2020 – present

SKILLS

Programming: Python, R, HTML/CSS, JavaScript, SQL
Frames & Packages: PyTorch, Scikit-Learn, Pandas, NumPy, Matplotlib, Tkinter
Bioinformatics Tools：Galaxy, Cytoscape, bowtie, edgeR, DESeq2, clusterProfiler
Others: Linux/Unix, Git, AWS, NoSQL Database (CouchDB), RDKit, Latex