Zheng-Chen Yao

+1 832-991-0966 | s87610281@gmail.com

EDUCATION

National Yang Ming Chiao Tung University
Bachelor of Science in Life Science, June 2014

EXPERIENCE

Research Assistant | Taipei Veterans General Hospital: Sep 2017 – Sep 2018

- Ketamine-induced cell apoptosis of human primary urothelial cells and human primary endothelial cells and reversion with rapamycin treatment.
- Immunohistochemistry of rat bladder with ketamine and rapamycin treatment.
- Collecting bladder tissue samples of interstitial cystitis patients.

Research Technician | Baylor College of Medicine: Nov 2018 – Present

- Use optical coherence tomography to acquire real-time images of tissues and cells in mouse model.
- Implement an ensemble machine learning model to solve the uncertain biological classification problem and apply it to identify the spermatozoa state *in vivo*.
- Acquire the structures of female mice reproductive tract by micro-computed tomography and provide a unique and qualitative perspective to support the hypothesis.

PROJECTS

Quantitative analysis of hyperactivation state of sperm in female reproductive tract (Python)

- Reduce the dimensionalities of data by principal component analysis for better data visualization.
- Take advantage of bootstrapping, multiple weak classifiers were created by k-mean clustering.
- Majority voting was applied to the aggregation procedure for the classification problem.
- Propose a quantitative method to identify the state of spermatozoa in vivo and render strong in-vivo evidence for the requirement of reproductive events.

Personal Front-End Project - My Portfolio (HTML, CSS, JavaScript)

- Use JavaScript to build up an interactive personal portfolio website.
- Style and organize the website by CSS.
- Connect the contact form with Google Sheets to provide an opportunity for further data analysis.
- Host my personal portfolio website on GitHub Page.

COURSEWORKS

- **Computational Thinking for Problem Solving (Coursera - UPenn)**
  Credential ID: P3TKHH37K3BP Grade: 98.64/100
- **Programming Foundations with JavaScript, HTML and CSS (Coursera - Duke University)**
  Credential ID: TFBY54WRCSSD Grade: 100/100

PUBLICATIONS

- **Myometrial progesterone receptor determines a transcription program for uterine remodeling and contractions during pregnancy**
  SP Wu, T Wang, **ZC Yao**, MC Peavey, X Li, L Zhou, IV Larina, FJ DeMayo ***2022***
  PNAS nexus 1 (4), pgac155
- **Quantitative analysis of motility of hyperactivated spermatozoa with optical coherence tomography in mouse female reproductive tract**
  ZHENG-CHEN YAO, KOHEI UMEZU, SHANG WANG, AND IRINA V. LARINA ***2022***
  (Under Preparation for Submission)

CONFERENCES

Oral Presentations

- **Quantitative OCT analysis of sperm hyperactivation state in mouse fallopian tube**
  ZC Yao, S Wang, I Larina ***SPIE 2022***
  Dynamics and Fluctuations in Biomedical Photonics XIX, PC119590I
- **Imaging the transporting function of mouse oviduct in vivo using OCT**
  S Wang, R Syed, **ZC Yao**, I Larina ***SPIE 2020***
  Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXIV 11228

Poster Sessions

- **Quantitative Optical Coherence Tomography analysis of Spermatozoa Hyperactivation State in Mouse Oviduct**
  ZC Yao, S Wang, I Larina ***TFRS 2022***
- **New in vivo functional imaging approach for analysis of sperm hyperactivation in the mouse oviduct**
  ZC Yao, S Wang, I Larina ***TFRS 2021***

PROGRAMMING LANGUAGES AND SOFTWARES

- HTML
- CSS
- Tailwind CSS
- JavaScript
- Python
- Git