Zheng-Chen Yao

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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

- Cell culture of human primary urothelial cell and human primary endothelial cell with ketamine and rapamycin treatment.
- Immunohistochemistry of rat bladder with ketamine and rapamycin treatment.
- Collecting bladder tissue sample 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.
- Imaging female reproductive tract of mice by micro-computed tomography and contributing the qualitative perspectives to support 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 on the aggregation procedure for 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 interactive personal portfolio.
- Style and organize website by CSS.
- Hosting my personal portfolio 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** ***2022***
  SP Wu, T Wang, ZC Yao, MC Peavey, X Li, L Zhou, IV Larina, FJ DeMayo
  PNAS nexus 1 (4), pgac155

- **Quantitative analysis of motility of hyperactivated spermatozoa with optical coherence tomography in mouse female reproductive tract** ***2022***
  ZHENG-CHEN YAO, KOHEI UMEZU, SHANG WANG, AND IRINA V. LARINA
  (Under peer review)

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** ***TFRS 2022***
    ZC Yao, S Wang, I Larina
  - **New in vivo functional imaging approach for analysis of sperm hyperactivation in the mouse oviduct** ***TFRS 2021***
    ZC Yao, S Wang, I Larina

TECHNOLOGIES AND LANGUAGES

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