Department of Chemistry

Our researches mainly focus on the use of engineered microorganisms in the detection of heavy metals and small molecules including L-DOPA, dopamine, tyrosine, phenylalanine, etc. Using synthetic biology technique, we developed dual signal sensors for simultaneous quantification of multiple analyates in one single platform.

Techniques used in study

Molecular biology Protein purification Western blot analysis Immunofluorescent staining HPLC analysis; HRMS; Spectroscopy Material science; characterization

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Background:

PhD in Department of Chemistry, Stanford University, CA

Funding: Ministry of Science and Technology; National Taiwan Normal University



Study the whole-cell based biosensors



Our research achievements in the aspects of development of biosensors based on various components

Publications (corresponding author)

- Lin YK and Yeh YC* (2017). Dual-Signal Microbial Biosensor for the Detection of Dopamine without Inference from Other Catecholamine Neurotransmitters. Analytical Chemistry, 89(21):11178-82.
- Kuo KH, Lu KH, and Yeh YC* (2018). Cell-Based Biosensor with Dual Signal Outputs for Simultaneous Quantification of Phenylacetic Acid and Phenylethylamine. ACS synthetic biology, 7, 12, 2790-95.
- Kuo KH, Chen PH, Lin C, Chen CF, Lee IR, and Yeh YC* (2018). Determination of Gold Ions in Human Urine Using Genetically Engineered Microorganisms on a Paper Device. ACS Sensors, 3, 4, 744-48.
- Chou YC, Shih CI, Chiang CC, Hsu CH, and Yeh YC* (2019). Reagent-free DOPA-dioxygenase Colorimetric Biosensor for Selective Detection of L-DOPA. Sensors and Actuators B: Chemical, 297, 12617-20.

