Docket #: S18-121

Methods for detecting biomarkers secreted from specific cells

Researchers at Stanford have developed a method to tag and identify disease associated proteins for the development of prognostic or diagnostic biomarkers. Biomarker discovery is foundational to the effective treatment and management of numerous diseases. Proteins secreted from pathological cells and tissues likely differ substantially from those of normal host cells. Thus, identification of proteins secreted specifically from pathological cells and tissues would increase disease diagnosis sensitivity and specificity. Unfortunately, current technologies are unable to discriminate between host- and pathology-secreted proteins. To overcome this limitation the inventors have developed new tools for mammalian, residue- specific, bioorthogonal chemistry which allow the specific tagging of proteins secreted from pathological cells into the blood. The tagged proteins can then be selectively enriched and identified. This technology enables the identification of new clinically useful predictive biomarkers for earlier diagnosis of diseases such as neurodegenerative diseases and cancer.

Stage of Research
The inventors have used this technology to label the melanoma tumor proteome and plasma secretome in an immunocompetent mouse melanoma model.

Applications

- Biomarker discovery for:
    - Development of new diagnostics
    - Drug development decisions
    - Stratification of patients for clinical trials

Advantages

- Solves an unmet need- provides methods to identify the secreted proteins from a specific cell amidst endogenous background
- Enables identification of new clinically relevant biomarkers
- Can be used to develop diagnostic biomarkers in blood, allowing for easier disease testing and identification in patients
- Potential to aid earlier cancer diagnosis
- Minimize proteome perturbations
- Provides new tools for mammalian bioorthogonal labeling
- Bioorthogonal moieties do not interact or interfere with endogenous biology

Publications

- A.C. Yang, H.duBois., N.Olsson. D.Gate, B. Lehallier, D. Berdnik,K.D. Brewer, C.R. Bertozzi, J.E. Elias and T. Wyss-Coray. Multiple Click-Selective tRNA Synthetases Expand Mammalian Cell-Specific Proteomics *J. Am. Chem. Soc.,* 2018, 140 (23), pp 7046–7051.

Innovators

- Andrew Yang
- Anton Wyss-Coray
- Kyle Brewer

Licensing Contact

Mona Wan

Senior Licensing Manager for Special Projects

Email