Docket #: S17-396

Fluorescent saccharide sensors for early detection of gastrointestinal diseases

Researchers at Stanford have developed new fluorescent sensors to detect and monitor gastrointestinal (GI) permeability. GI permeability can be correlated with the prognosis of GI disease, thus earlier detection may lead to better patient outcomes. Current methods for permeability testing are expensive and time consuming. Thus, there is a great need to develop simple, inexpensive, and rapid methods to analyze GI permeability. To help meet this need the inventors generated boronic acid-based fluorescent saccharide sensors. The sensors can be used in fluorescence assays to detect the saccharide concentration in urine, which can then be correlated with GI permeability. These fluorescence-based sensors will allow clinicians to measure GI permeability on a routine basis, facilitating early detection and treatment of GI disease and improving patient outcomes.

Stage of research
Proof-of-concept analysis has been performed and shows great promise. Additional validation testing is ongoing.

Applications

- Diagnostic tool for early detection of GI disease

Advantages

- New fluorescence-based sensors
- Low cost
- Non-invasive

- Rapid
- Easy-to-use
- Less toxic than existing methods- sensors detect sugar markers
- Can be used in high throughput settings to analyze large volumes of samples
- Can be used for routine monitoring:
    - For early diagnosis of GI disease
    - In patients that have undergone GI procedures
    - In people that have been exposed to environmental enteropathy (such as bacterial infection after a flood)

Patents

- Published Application: WO2019160854
- Published Application: 20210364437
- Issued: 11,892,401 (USA)

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