

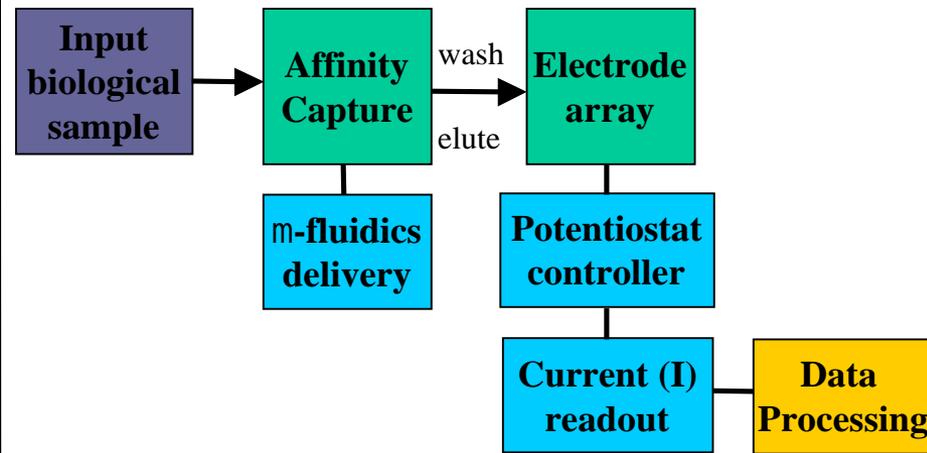
### Identification and Significance of Innovation

#### Measure levels of biomarkers from biological samples

- Combination affinity capture and electrochemical detection (ECD) increases accuracy and reduces sample processing.
- Expandable for parallel detection of multiple analytes

#### Designed with space applications in mind

- Self-contained microfluidic system
- Minimal human intervention
- Minimal power, reagent and size requirements



### Technical Objectives

- Build integrated instrument /w multiple channels
- Demonstrate for diverse classes of biomarkers
- Develop panel of affinity reagents for urine and plasma

### Work Plan

**Task 1:** Optimize microelectrodes and channels

**Task 2:** Develop novel affinity reagents

**Task 3:** Modify assay for protein analysis

**Task 4:** Incorporate affinity capture into  $\mu$ -fluidic system

**Task 5:** Automate sample & reagent delivery, data analysis

NON-PROPRIETARY DATA

### NASA Applications

- Measure metabolites, hormones, pharmaceuticals
- Track effectiveness of pharmaceuticals and antioxidants
- Track consequences of radiation and microgravity

### Non-NASA Applications

- Measure biomarkers for large epidemiological studies
- Measure biomarkers for clinical studies
- Monitor pharmacokinetics

### Firm Contacts

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