Peptide-based Receptor Development for Potential Integration into Wearable Bio-sensors

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Objectives

Developing Biosensors for the Future Warfighter

Advantages of Protein Catalyzed Capture Agents (PCCs) based Receptors

- High Affinities and Selectivity
- Full Antigen and Epitope Targeting
- Extreme Thermo, Bio, and Chemical Stability
- Multifunctional Embodiments for Advanced Applications
- 1/40th the Size of IgG Monoclonal Antibodies
- Limited Batch-to-Batch Performance Variability
- Capable of Paired Reagent Discovery
- Straightforward Incorporation of Non-natural Amino Acids
- On Demand Scale-up Through Robotic Methods

Targets: Toxins, biothreats, performance and health biomarkers

- IL-17: an inflammation-associated interleukin
- IL-6: inflammation and infection responses
- IL-10: an immunosuppressive cytokine
- IL-11: a signaling molecule improving platelet recovery after chemotherapy
- UCHL-1: a human biomarker signaling traumatic brain injury (TBI)
- CHIKV E2: virus for high fever
- TNFα: Tumour Necrosis Factor alpha
- IFNγ: Interferon gamma, inhibit viral replication

Conclusions

- Peptide-based receptors fulfill the need for alternative antibodies by addressing critical gaps in adaptability, manufacturability, and stability.
- PCCs can be integrated into multiple platforms for real-time monitoring of biothreats and soldier health/performance
- Universal, wearable, disposable, and low cost

References

Coppock et al. Methods, 2019, 158, 12-16.

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