MULTISEQUENCE CAPTURE BEAD CONSTRUCTION

TECHNOLOGY TYPE
Microfluidics
Drop Sequencing

STAGE OF DEVELOPMENT
- Capture bead synthesized with limited testing performed.
- Ongoing research to increase efficacy of the capture bead.

IP PROTECTION
U.S. Utility Patent Pending
Multi-sequence Capture System
US20180057874A1

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Reference Number: U-6119

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TECHNOLOGY SUMMARY
Existing high-throughput, fluidics-based RNA sequencing systems are incompatible with short read length platforms and can only capture a single sequence. Additionally, variable regions of T-cell receptor pairs are separated during purification, and existing technology only allows capture of a single sequence making it difficult to accurately determine the existence and relative concentrations of receptor chains.

Bi-functional mRNA capture beads, synthesized using reversible oligonucleotide chain-blocking, isolate and amplify two different mRNA sequences while maintaining the pairing information for these sequences. The bead has a proprietary base that blocks chain elongation in order to capture and read the complete variable region of each chain. The multiple reads per bead will provide statistical confirmation that the sequence is correct. Initial tests have demonstrated that two different capture sequences can be built onto a single bead, enabling specific capture and amplification of multiple different mRNA species.

FEATURES AND BENEFITS
- Allows simultaneous drop sequencing of T-cell receptor variable chains, using multiple capture sequences on a single bead.
- Enables rapid identification of immune cells.
- Demonstrates potential for use to produce capture reagents and biological probes when linked to sequences that include visualization agents.

RECENT PUBLICATIONS
doi: 10.1021/jacs.6b04465

INVENTOR PROFILE
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