Aptamer-based selection for multiple cell surface markers in a single step

Currently, scientists and physicians utilize glycoprotein antibodies for the isolation of cells for research, diagnostics, and therapeutic applications. This technique, however, typically requires numerous cell sorting cycles and multiple antibodies. This technology instead utilizes aptamers, high affinity oligonucleotides, to isolate cells and subcellular bodies with high selection affinity. Additionally, this technology is capable of screening for multiple surface markers in a single step, eliminating the need for multiple selection cycles and surface tags. With these features, this system is able to improve cell sorting efficiency, and could serve as a powerful tool for disease research, diagnostics, and treatment.

Efficient, single-step isolation of cells and subcellular bodies saves time and resources

This technology is capable of reducing the amount of sample, time, and resources required for cell isolation. By combining the selection of multiple surface markers into a single step, this reduces the number of tags necessary to isolate target cells and minimizes the loss of cells associated with multiple selection cycles. Further, the aptamers utilized by this technology can be optimized during synthesis, to improve selection affinity for the target cell type or subcellular component. Following binding to targets, it is also possible for this technology to provide cell-targeted pharmacological. By combining these features, this system may serve as a valuable tool for cell- and organelle-based diagnostics and therapeutics.

This technology has been tested for the isolation of activated T-cells for autoimmune disease detection and monitoring, as well as for the selection of exosomes, possible subcellular markers for disease.

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Applications:

- Diagnostic tool for identifying and quantifying cellular phenotypes related to disease
- Tool for fluorescence-based cell sorting and isolation
• Assay for disease detection and monitoring
• Organelle-based diagnostics and therapeutics
• Targeted pharmacological therapy for presenting a drug or other therapeutic agent to a target cell type

**Advantages:**

• Facilitates cell selection in a single step
• Increased selection affinity and selectivity compared to traditional antibodies
• Can be applied to subcellular bodies
• Can be utilized for delivery of pharmacological therapies following cell isolation/selection

**Patent Information:**

Patents Pending

Tech Ventures Reference: IR CU12229, IR CU15021, IR CU15072

**Related Publications:**


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