

In vitro selection of human cerebrospinal fluid-specific aptamers using clinical samples

Clinical need



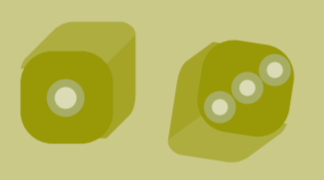
No current point-of-care (POC) device that can rapidly detect cerebrospinal fluid (CSF) leaks

Method

Systematic Evolution of Ligands by EXponential enrichment (SELEX) 14 cycles



DNA library



Randomized 63-nucleotide stretch
2 primer-binding sites

Quantitative polymerase chain reaction (qPCR)

Fluorescence anisotropy (FA)

Assessed



Aptamer binding affinity

Kinetics

2 dominant, functionally viable 98-nt ssDNA sequences found

Sequence	Higher affinity for CSF vs serum	Binding affinity to CSF (K _{1/2})
C2	~586x	5.0%
C3	~82x	14.1%

POC application

CSF-specific biomarker

Sensor integration

Portable diagnostic device