GFAP NOVAptamer Characterization Data Sheet

FIB1C-T3

NOVAptamer to Glial Fibrillary Acidic Protein (GFAP)

Target Information

Glial Fibrillary Acidic Protein

Glial Fibrillary Acidic Protein (GFAP) is a protein found primarily in glial cells, including astrocytes, in the central nervous system. It is a member of the intermediate filament proteins group and plays a crucial role in maintaining cell structure and the stability of the glial cell cytoskeleton. GFAP is also used as a marker of astrocyte activation, particularly in the context of brain injury or neurodegenerative diseases. It is involved in tissue repair processes and the inflammatory response of the nervous system. For aptamer selection, a recombinant His-tagged protein was used.

NOVAptamer FIB1C-T3

Chemistry: DNA
Size: 20 nt
Molecular weight: 6761.7 g/mol
Molar extinction coefficient: 179500 $Lmol^{-1}cm^{-1}$
Binding buffer: PBS pH 7.4, 3 mM $(CH3COO)_2Mg$, 0.1% w/v BSA

The full-length version of this aptamer, 80 nt long, is available (see FIB1C).

Folding an aptamer into its tertiary structure is essential for optimal target binding. To achieve this, resuspend the aptamer in assay buffer, heat to 95°C (~2 minutes), then allow to cool to room temperature (~5 minutes) before use.

Affinity Determination

Affinity Determination Method: Surface Plasmon Resonance (SPR)
K_D in the binding buffer: low nanomolar against recombinant human GFAP protein

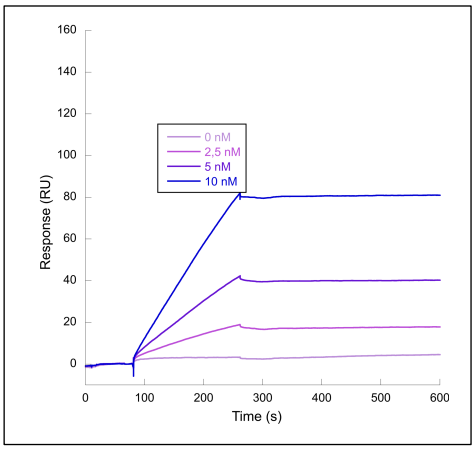

Figure 1. *SPR sensorgram showing the binding of GFAP (0-10 nM) to immobilized aptamer in the binding buffer at 24°C.*

Key advantages offered by aptamers over other affinity reagents, notably antibodies

✓	High affinity and selectivity
✓	Thermostable, long shelf life
✓	Animal- and cell-free discovery
✓	Chemical synthesis
✓	Batch to batch reproducibility

Custom synthesis

- **Available at different scales** – upon request, up to 100 nanomoles
- **Various purification modes** – adapted to specific experimental uses
- **Extensive conjugation options for diverse applications**:
  - Grafting: NH_2, SH, biotin, etc.
  - Sensing: fluorescent dyes, redox groups
  - Cross-linking: other functional groups for click chemistry
- **Molecular beacons** - possible hybridization with a complementary oligonucleotide to form a bimolecular beacon, enabling quantitative detection

Applications (For Research Use Only)

- Biosensing
- Versatile probe: The GFAP-specific probe can be modified with various fluorophores and functional groups, making it suitable for multiple assay types
- Validated in human samples: successfully assayed in human plasma/serum diluted 1:20 in binding buffer (PBS, 3 mM $(CH_3COO)_2Mg$, pH 7.4).

More information

For more information or inquiries, please contact:

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