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# Purification of GST-FAM134C

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**Protocol status:** Working
**We use this protocol and it's working**

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## Abstract

This protocol details the purification of GST-FAM134C and its analysis.

## Materials

**Lysis Buffer:**

| | A | B |
|---|---|---|
| | Tris-HCl pH 7.4 | 50 mM |
| | NaCl | 300 mM |
| | Triton X-100 | 1% |
| | Glycerol | 5% |
| | MgCl2 | 2 mM |
| | DTT | 1 mM |
| | β-mercaptoethanol | 2 mM |
| | cOmplete EDTA-free protease inhibitors (Roche) | |
| | CIP protease inhibitor (Sigma) | |
| | DNase (Sigma) | |

**Wash Buffer:**

| | A | B |
|---|---|---|
| | Tris-HCl pH 7.4 | 50 mM |
| | NaCl | 300 mM |
| | DTT | 1 mM |

**Salt wash Buffer:**

| | A | B |
|---|---|---|
| | Tris-HCl pH 7.4 | 50 mM |
| | NaCl | 700 mM |
| | DTT | 1 mM |

**SEC Buffer:**

| | A | B |
|---|---|---|
| | Tris-HCl pH 7.4 | 25 mM |
| | NaCl | 150 mM |
| | DTT | 1 mM |

- Rosetta™(DE3)pLysS Competent Cells - Novagen **Merck Catalog #**70956-4
- Plasmid is available from Addgene

## Troubleshooting

## Purification procedure

1d 2h 45m 30s

1 To purify GST-FAM134C, fuse the cytosol-exposed domain of FAM134C (250-466aa) to a N-terminal synthesize the gene GST-tag by Genscript and clone into a pGEX-4T1 vector. Plasmid is also available from Addgene.

2 After the transformation of the pGEX-4T1 vector encoding GST-FAM134C in *E. coli* Rosetta pLysS cells (Novagen Cat# 70956-4), grow cells in 2x Tryptone Yeast extract (TY) medium at 37 °C until an $OD_{600}$ of 0.4 and then continue at 18 °C .

3 Once the cells reach an $OD_{600}$ of 0.8, induce the protein expression with 100 micromolar (µM) isopropyl β-D-1-thiogalactopyranoside (IPTG) for 16:00:00 at 18 °C . 16h

4 Collect the cells by centrifugation and resuspend in lysis buffer.

**Lysis Buffer:**

| | A | B |
|---|---|---|
| | Tris-HCl pH 7.4 | 50 mM |
| | NaCl | 300 mM |
| | Triton X-100 | 1% |
| | Glycerol | 5% |
| | MgCl2 | 2 mM |
| | DTT | 1 mM |
| | β-mercaptoethanol | 2 mM |
| | cOmplete EDTA-free protease inhibitors (Roche) | |
| | CIP protease inhibitor (Sigma) | |
| | DNase (Sigma) | |

5 Sonicate the cell lysates twice for 00:00:30 and clear by centrifugation at 18000 rpm, 4°C, 00:45:00 in a SORVAL RC6+ centrifuge with an F21S-8×50Y rotor (Thermo Scientific). 45m 30s

6 Collect the supernatant and incubate with pre-equilibrated Glutathione Sepharose 4B beads (GE Healthcare) for 02:00:00 at 4 °C with gentle shaking to bind GST-FAM134C. 2h

7 Centrifuge samples to pellet the beads and remove the unbound lysate. Then wash the beads twice with wash buffer, once with high salt wash buffer, and two more times with wash buffer.

**Wash buffer:**

| | A | B |
|---|---|---|
| | Tris-HCl pH 7.4 | 50 mM |
| | NaCl | 300 mM |
| | DTT | 1 mM |

**Salt wash Buffer:**

| | A | B |
|---|---|---|
| | Tris-HCl pH 7.4 | 50 mM |
| | NaCl | 700 mM |
| | DTT | 1 mM |

8 Incubate the beads Overnight with 4 mL of [M] 50 millimolar (mM) reduced glutathione dissolved in wash buffer at 4 °C, to elute GST-FAM134C from the beads. 8h

**Wash Buffer:**

| | A | B |
|---|---|---|
| | Tris-HCl pH 7.4 | 50 mM |
| | NaCl | 300 mM |
| | DTT | 1 mM |

9 To collect the supernatant, collect the beads by centrifugation. Wash the beads twice with 4 mL of wash buffer, and collect the supernatant.

10 Pool the supernatant fractions, filter through a 0.45 µm syringe filter, concentrate with 30 kDa cut-off Amicon filter (Merck Millipore), and load onto a pre-equilibrated Superdex 200 Increase 10/300 GL column (Cytiva).

11 Elute the proteins with SEC buffer.

**SEC Buffer:**

| | A | B |
|---|---|---|
| | Tris-HCl pH 7.4 | 25 mM |
| | NaCl | 150 mM |
| | DTT | 1 mM |

12 Analyze the fractions by SDS-PAGE and Coomassie staining. Pool the fractions containing purified GST-FAM134C.

13 After concentrating the purified protein, aliquot the protein and snap-frozen in liquid nitrogen.

14 Store proteins at -80 °C .