

Antibody Binding Protein Nanofibrils

A sustainable produced nanomaterial for antibody purification



Our Antibody binding nanofibrils can be used for antibody purification and to increase the sensitivity of immunoassays. Since the material is DNA encoded, the material can be engineered for other applications as well.

NEED

The demand for monoclonal antibodies rises annually, and so does the demand for purification media. Current Sepharose based materials used for this purpose have a limited antibody binding capacity and require harsh cross-linking chemicals for their production.

APPROACH

As a complement to chemically produced matrices, we suggest to use β -sheet rich protein nanofibrils, that have mechanical properties similar to spider silk. The nanofibrils self assemble from small peptides (< 100 amino acid residues), which can be functionalized by genetic modifications.

BENEFIT

- A versatile nanomaterial that can be produced sustainably using only microorganisms.
- An extremely high antibody binding capacity

IP situation

- Patent granted in Sweden (SE 1650661-0)
- Patent application in the USA, China, the EU and Japan

Status and Results

We have produced the nanofibrils on a laboratory scale (mg amounts) and could show that it possesses an antibody binding capacity of up to 20-fold more compared to protein A Sepharose (GE Healthcare). Furthermore, we have shown that our fibrils can be used to detect small amounts of pathological amyloid in human heart tissue (unpublished data). A positive market analysis was performed. Recently, a company was formed, BTM Nanodesign, where SLU Holding AB is a shareholder.

Next step and partnering objectives

- We are looking for an industrial partner that supports the further development of the protein nanofibrils.
- An important aspect is to implement a large-scale production method using microorganisms as the production system.
- We need a Letter of Intent from a potential industrial partner to acquire additional funding from Vinnova, Swelife or the Biolnnovation Institute.

Project team and competences

Our team is mainly located at the Swedish University of Agricultural Sciences (Uppsala, Ultuna) and unites competences within structural biology, protein chemistry, molecular biology, biotechnology, and business.

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