Dear students of the TUMCS, I need your active support for my DFG project:

New Production Method of Exopolysaccharides Using Engineered Living Materials

EPS by ELM

In the DFG project EPS by ELM, a novel Engineered Living Material (ELM) for use in dextran fermentation is presented. The so-called "ELM cell" consists of two components. The first constituent is a rheotactically anisotropic, hierarchically structured bacterial cellulose (BC) matrix. This BC matrix is converted into a pH indicator via chemical modification and reflects the pH conditions in the ELM cell.
The second component are the, dextran-producing lactic acid bacteria *Leuconostoc mesenteroides*, which are genetically modified to react in their immediate environment as a pH bioindicator. They are immobilized on the functionalized BC matrix and thereby permanently retained in the ELM cell.
By combining both pH sensors, pH changes during dextran production are better displayed. The novel test setup and the pH monitoring facilitates higher dextran yields than in stirred tank fermenters. The highly concentrated dextran solution from ELM Cell fermentation requires less solvents for purification than conventional processes, thus making it more sustainable.

The work involves mainly microbiological work in the R1 laboratory.

As my project is very extensive, I can offer bachelor and master theses as well as shorter project work and internships.

The content of the work will be determined together with the student and can begin immediately.

I look forward to your response.

Dr. Yvonne Gmach

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