

PhD project – Localization and Quantification of proteins of the xanthan producing machinery in different compartments of the *Xanthomonas campestris* pv. *campestris* B100 cells under different growth conditions

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Background

The γ -proteobacterium *Xanthomonas campestris* pv. *campestris* (Xcc) B100 synthesises the exopolysaccharide (EPS) xanthan. Xanthan is produced in huge amounts for the food and cosmetic industry as well as for technical applications. Since xanthan cannot be re-metabolized by *Xanthomonas*, the cells have to make a principal decision to invest energy and metabolites in cell growth and division or in the production of xanthan. In our previous work, we established the genome sequence of Xcc B100 (Vorhölter et al. 2008, Alkhateeb et al. 2017), a model strain for xanthan production. In addition, extensive research was carried out on the transcriptome, proteome and metabolome level (Alkhateeb et al., 2016,2017; Schatschneider et al., 2014, 2011; Frese et al., 2014; Musa et al, 2013). Based on RNAseq experiments the transcription start sites for sense and antisense promotors were determined for Xcc B100 in the growth phase (Alkhateeb et al., 2016).

Aims of the project:

The goal of the PhD project is the translational analysis of the *gum* region of *Xanthomonas campestris* pv. *campestris* B100 and the effect on xanthan production under different growth conditions. During this PhD project methods for proteome analyses based on mass spectrometry for elucidation of cytosolic, membrane and extracellular fractions of *Xanthomonas campestris* pv. *campestris* proteins should be established. Moreover, the proteomics landscape of Xcc B100 should be analysed regarding the xanthan biosynthesis under different growth conditions. It is expected to get information on the protein composition of the xanthan producing machinery depending on the growth phase of the culture.

Requirements:

Applicants must have excellent academic results and a Master`s degree with a background in molecular biological sciences. Experience in molecular biology and preferably in genetics or 'omics'-technologies of microorganisms as well as experience in bioinformatics is required. Besides creativity, a strong ability for problem solving through analytical thinking combined

with an enthusiasm for scientific research is highly desirable. The successful applicant will join an enthusiastic and collaborative group where a multidisciplinary approach is pursued.

What we offer

The Centre for Biotechnology (CeBiTec) at Bielefeld University offers an infrastructure, which comprises **state-of-the-art instrumentation**, **bioinformatics** plus long standing experience in **wet lab** techniques and **mathematical modelling**.

Closing Date for Applications: 15th of January 2019

Expected Date for interviews: February 2019

Are you interested? Then send us your application including cover letter, CV and certificates preferably by email (PDF) at stipendium-biotech@ceBiTec.Uni-Bielefeld.de.

1. Write a Letter of Application. Include further information about your qualification and your motivation to participate in this program. Give a brief outline of your scientific interests.
2. Include a CV.
3. Include a resume and any relevant certificates.
4. Include certified English or German translations of all of official documents that are not in English or German.
5. Include copies of your publications and theses (optional).

References:

Frese et al. Archives of Biochemistry and Biophysics 2014, **546**: 53–63

Musa et al. J. of Biotechnology 2013, **167(2)**: 111–122.

Schatschneider et al. *Molecular BioSystems* 2014, **10(10)**: 2663–2676

Schatschneider et al. J of Biotechnology 2013, **167(2)**: 123–134

Schatschneider et al. Mol Genet Genomics. 2011, **286(3-4)**:247-59

Sidhu et al. BMC 2008, Microbiol. **8**:87-91

Vorhölter et al. J. of Biotechnol. 2008, **134(1-2)**:33-45

Alkhateeb et al. J. of Biotechnol. 2016, **232**: 89-98.

Alkhateeb et al. J. of Biotechnol. 2017, **253**: 55-61.

Alkhateeb et al. J. of Biotechnol. 2018, **253**: 55-61