

One PhD position at the Institute of Biotechnology and Biochemical Engineering, Graz University of Technology, Austria

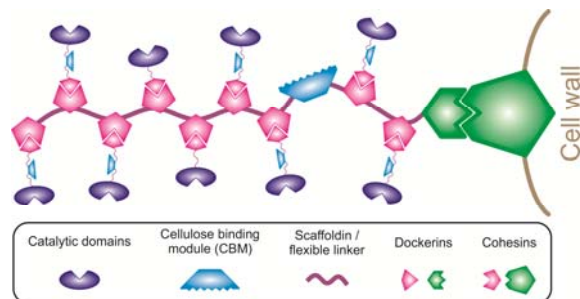
■ Position

The PhD position is available for 3 years at the Institute of Biotechnology and Biochemical Engineering at Graz University of Technology. The Institute is a leading Austrian university institution for basic and applied research at the interface of biological sciences and process engineering.

The PhD position is offered in the “Single-molecule study of cellulose degradation by the cellulosome” project. Salary is according to the FWF personnel costs scheme (Doctoral candidates / 30 hours).

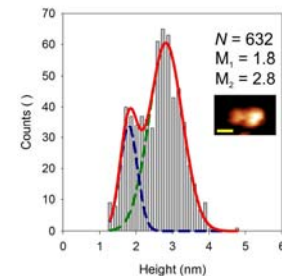
Single-molecule study of the cellulosome: visualizing cellulose degradation by an enzymatic nanomachine

Deconstruction of lignocellulosic biomass, a major reservoir of fixed carbon of earth, is a key challenge for the realization of advanced biorefinery applications. The cellulosome represents a unique concept for the deconstruction of a recalcitrant solid biomaterial by an enzymatic nanomachine. It stands in contrast to the alternative concept of cellulosic substrate degradation by enzyme systems that do not assemble into protein complexes and act as an ensemble of free enzymes.



The project's main aim is to advance the understanding of the cellulosome paradigm of enzymatic cellulose deconstruction. The native cellulosome obtained from *Clostridium thermocellum* and artificial/designer-cellulosomes will be studied using a combined approach of classical biochemical methods and single-molecule microscopy (e.g. atomic force microscopy). The applicant will be mainly responsible for performing and **analyzing single molecule experiments accompanied by ongoing method development (e.g. modification of AFM tips)**. Additionally, the applicant will be involved into the biochemical characterization of the native cellulosome and artificial variants thereof.

The research will be performed as a collaborative effort with strong links to major research initiatives in Graz and Israel.



Taken from Ref. 1

■ Requirements

A Master's degree in **biotechnology, biophysics or a related field is required**. A solid background in basic and applied aspects of biophysical methods to study single molecules is preferred. Experience in the characterization of enzyme/surface interaction using atomic force microscopy or a related technique is of advantage. Candidates must have excellent skills in spoken and written English, and interpersonal skills conducive to team work and group research efforts.

■ Start of contract:

January 2019

■ How to apply:

Please send your application including a motivation statement, a CV and names and addresses of 2-3 references (including telephone number and e-mail address) or letters of recommendation by e-mail to: Univ.-Prof. Dipl.-Ing. Dr.techn. Bernd Nidetzky, bernd.nidetzky@tugraz.at

1. M. Eibinger, J. Sattelkow, T. Ganner, H. Plank, B. Nidetzky, Single-molecule study of oxidative enzymatic deconstruction of cellulose. Nat. Commun. 8, 894 (2017).