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**Gel-Free Proteomic characterisation of the lignocellulosic capabilities of *Chrysonillia sitophila***

We are recruiting for a Masters student to undertake a 9-12 month work

Lignocellulosics, especially those derived from agricultural waste, such as rice straw, represent a rich source of carbohydrates for conversion into bio-fuels and chemical feed-stocks. Current bottle-necks in the bio-conversion of lignocellulosics into the necessary hydrolysates include a lack of efficient enzyme mixtures capable of by-passing the lignin barrier and the pre-requisite activities against crystalline cellulose, hemicellulose and pectins. However, detailed studies of fungi naturally capable of converting lignocellulosics into useful energy sources are scarce, and proteomic studies of the secretomes of these organisms are even rarer. study of the secretome of the Ascomycetes fungi, *Chrysonillia sitophila*.

The objective of the work proposed is the study of carbon source effects on the secretome of the Ascomycetes fungi *Chrysonillia sitophila*.

**Work plan**

- Culture of the fungi in defined liquid medium containing lignocellulosic or cellulosic substrates for 50-60 h.
- Semi-purification of the crude enzymes extract (culture medium)
- Preparation of secretome samples from different culture conditions
- Proteomics: gel-free proteomics will be used to characterise carbon source effects on the secretome, with emphasis on the identification of novel enzymes capable of hydrolysing crystalline cellulose and other principal substrates relevant to lignocellulosic degradation.

The student will receive training in aspects of gel-free ('shotgun') and 2D gel-based proteomics, the interpretation of MS data, statistical analysis and protein purification.

Criteria for selection:

Academic: 1<sup>o</sup> cycle in Biochemistry, Biology, Microbiology or related courses; enthusiasm for genomic aspects of biological studies, full-time commitment for a period of no less than 9 months, and good oral and written communication skills.

**Local- supervision**

ITQB-UNL / IBET

The Masters will be developed under the co-supervision of Dr. Maria Vitoria San Romão (Lab. of Physiology of Environmentally Conditioned Microbiota ) and Dr. Phil Jackson (Plant Cell Wall group @ ITQB).