



## VABILO NA PREGLOV KOLOKVIJ / INVITATION TO THE PREGL COLLOQUIUM

Prof. Dr. Jure Piškur

Lund University, Cell and Organism Biology, Sölvegatan 35,  
SE-22362 Lund, Sweden

**Parallel evolution of the make–accumulate–consume  
strategy in *Saccharomyces* and *Dekkera* yeasts**

***Vzporedna evolucija pri kvasovkah***

**Četrtek / Thursday, 5. 1. 2012, ob / at 13:00**

Velika predavalnica Kemijskega inštituta / Lecture Hall at the  
National Institute of Chemistry; Hajdrihova 19, Ljubljana

Elżbieta Rozpędowska,<sup>1</sup> Linda Hellborg,<sup>1</sup> Olena P. Ishchuk,<sup>1</sup> Furkan Orhan,<sup>1</sup> Silvia Galafassi,<sup>2</sup>  
Annamaria Merico,<sup>2</sup> Megan Woolfit,<sup>3,4</sup> Concetta Compagno,<sup>2</sup> and Jure Piškur<sup>a1</sup>

<sup>1</sup>Department of Biology, Lund University, Sölvegatan 35, 223 62 Lund, Sweden.

<sup>2</sup>Dipartimento di Scienze Biomolecolari e Biotecnologie, Università degli Studi di Milano, via Celoria 26,  
20133 Milan, Italy.

<sup>3</sup>Department of Genetics, Smurfit Institute, Trinity College Dublin, Dublin 2, Ireland.

<sup>4</sup>School of Biological Sciences, University of Queensland, Brisbane, Queensland 4072, Australia.

**Abstract:**

*Saccharomyces* yeasts degrade sugars to two-carbon components, in particular ethanol, even in the presence of excess oxygen. This characteristic is called the Crabtree effect and is the background for the 'make–accumulate–consume' life strategy, which in natural habitats helps *Saccharomyces* yeasts to out-compete other microorganisms. A global promoter rewiring in the *Saccharomyces cerevisiae* lineage, which occurred around 100 mya, was one of the main molecular events providing the background for evolution of this strategy. Here we show that the *Dekkera bruxellensis* lineage, which separated from the *Saccharomyces* yeasts more than 200 mya, also efficiently makes, accumulates and consumes ethanol and acetic acid. Analysis of promoter sequences indicates that both lineages independently underwent a massive loss of a specific *cis*-regulatory element from dozens of genes associated with respiration, and we show that also in *D. bruxellensis* this promoter rewiring contributes to the observed Crabtree effect.

*Predavanje bo v slovenščini / The Lecture will be given in Slovenian language.*

Vljudno vabljeni! / Kindly invited!

info: prof. dr. Matic Legiša; [matic.legisa@ki.si](mailto:matic.legisa@ki.si)