

**15<sup>th</sup> January 2013 - 01:00 pm**  
**CFEL – Building 99, seminar room IV (O1.111)**

## Lars-Oliver Essen

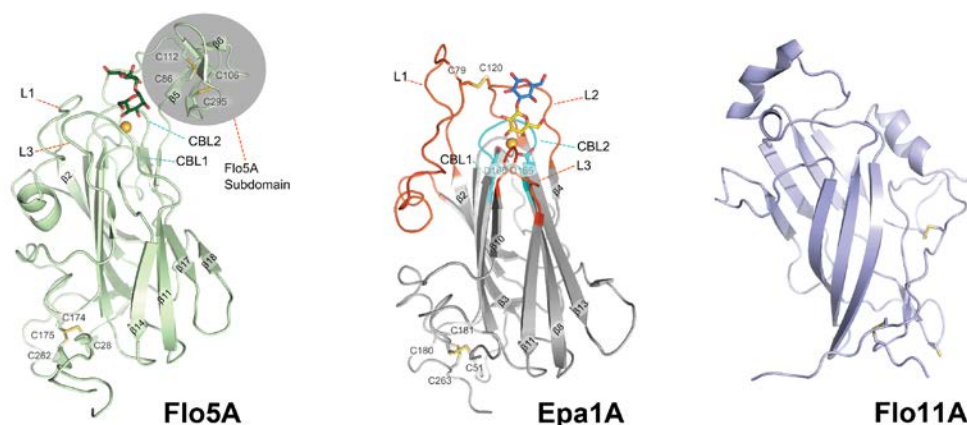
Philipps University of Marburg, Biomedical Research Centre

### Green beards, bear & Candidiasis: Fungal adhesion & its molecular base

Fungi are present in almost all ecological niches with several of them playing important roles as human and plant pathogens or as tools in biotechnology and food industry. One hallmark of fungi is their unusual cell wall that provides not only a formidable physical barrier against host defense systems, but also the basis for fungal cell-to-cell communication. Most fungal cell walls have a tripartite structure consisting of an inner layer of chitin followed by a variably thick layer made of  $\beta$ 1,3- and  $\beta$ 1,6-glucans and covered by heavily glycosylated mannoproteins.

In this lecture I will present our current structural and biochemical understanding how fungal cell walls mediate interactions, which cause e.g. flocculation of brewer's yeast or adherence to human epithelia by *Candida* species.

Finally, I like to discuss potential applications of XFELs in understanding some phenomena in fungal biology, which depend on nanocrystalline bodies formed in vivo.



Several structures of fungal cell wall proteins solved by the Essen group

- [1] Veelders, M., Brückner, S., Ott, D., Unverzagt, C., Mösch, H.-U., Essen, L.-O. (2010). Structural basis of the social function of flocculins. *PNAS* **107**: 22511-22516.
- [2] Maestre-Reyna, M., Diderrich, R., Veelders, M., Eulenburg, G., Kalugin, V., Brückner, S., Keller, P., Rupp, S., Mösch, H.-U., Essen, L.-O. (2012). Structural code for adhesin-mediated invasion of host epithelia by *Candida glabrata*. *PNAS* **109**: 16864-16869.