

## Molecular Microbiology and Microbial Physiology

### P-308 - EXPLORING A NOVEL EFFECT OF LACTOFERRIN ON THE PLASMA MEMBRANE TOWARDS THE ELUCIDATION OF THE MECHANISMS OF ACTION: FROM YEAST TO HUMAN CELLS

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#### Background

Lactoferrin (Lf) is an iron-binding glycoprotein normally present in several biological fluids. It exhibits a broad range of interesting biological activities, from which its anticancer and antifungal activities stand out. Our group has been studying the mechanisms and targets underlying Lf anticancer/antifungal activities in order to improve its therapeutic efficacy and rational application. Indeed, we previously demonstrated that Lf triggers a mitochondrial and caspase-dependent regulated cell death in *Saccharomyces cerevisiae* (1). Moreover, we found that Lf selectively induces apoptosis in highly metastatic cell lines displaying the proton pump V-ATPase at the plasma membrane (2).

#### Results & Conclusions

Here, we show how studies with yeast unveiled a novel effect of Lf on the interplay between proton pump ATPases and the plasma membrane, which were then validated in human cell lines. Results will be discussed in an integrated manner regarding their contribution towards understanding the molecular basis of Lf anticancer activity and impact on a potential expanded clinical application.

#### References & Acknowledgments

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2. Pereira CS, Guedes JP, Gonçalves M, Loureiro L, Castro L, Gerós H, Rodrigues LR, Côrte-Real M. (2016) Lactoferrin selectively triggers apoptosis in highly metastatic breast cancer cells through inhibition of plasmalemmal V-H<sup>+</sup>-ATPase. *Oncotarget*. 7(38):62144-62158. doi: 10.18632/oncotarget.11394.

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