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Understanding functional dynamics and conformational stability of beta-glycosidases

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List of Publications

PhD-related publications:

Ben Bdira, F., Jiang, J., Kallemeijn, W., de Haan, A., Florea, B. I., Bleijlevens, B., Boot, R., Overkleef, H. S., Aerts, J. M., and Ubbink, M. (2016) Hydrophobic Interactions Contribute to Conformational Stabilization of Endoglycoceramidase II by Mechanism-Based Probes, *Biochemistry* 55, 4823-4835.

Ben Bdira, F., Kallemeijn, W., Oussoren, S., Scheij, S., Bleijlevens, B., Florea, B. I., van Roomen, C., Ottenhoff, R., van Kooten, M., Walvoort, M., Witte M.D, Boot, R., Ubbink M., Overkleef, H. S., and Aerts, J. M. (2017) Stabilization of Glucocerebrosidase by Active-site Occupancy, *ACS Chemical Biology* 12, 1830-1841.

Ben Bdira F., Volkov N. A., Eiso AB., Schroder, S., Codee, J., Overkleef, H. S., Aerts, J. M., van Ingen, H., Ubbink, M. Exploring the Conformational Landscape and the Dynamics of GH11 xylanases During Catalysis. *To be submitted*

Ben Bdira, F., Artola M., Overkleef, H. S., Ubbink, M., Aerts, J. M., Retaining β -glycocylceramidases: Fold, Dynamics, Modulation and Applications. Review *to be submitted*

Ben Bdira, F., Marneth, K., Codee, J., Overkleef, H. S., Aerts, J. M., Ubbink, M., Modulation by Single Point Mutation of the GH11 xylanases Transglycosylation Reaction. *In preparation.*

Publication from previous research work:

Ben Bdira, F., Gonzalez, E., Pluta, P., Lain, A., Sanz-Parra, A., Falcon-Perez, J. M., and Millet, O. (2014) Tuning Intracellular Homeostasis of Human Uroporphyrinogen III Synthase by Enzyme Engineering at a Single Hotspot of Congenital Erythropoietic Porphyria, *Hum. Mol. Genet.* 23, 5805-5813.

Curriculum Vitae

Fredj Ben Bdira was born on March 31st 1982 in Sousse, Tunisia. After high school graduation he first studied medicine at the University of Sousse, Tunisia in order to become a physician. During that time, he became more interested in understanding the physiopathology of a disease rather than its diagnosis, therefore he changed his study discipline to Medicinal Biotechnology and obtained a master degree from the University of Monastir, Tunisia. To deepen his knowledge about the chemistry of life he also obtained a master degree in Biochemistry at the University of Science ElManar Tunis, Tunisia. He moved to Spain in 2011 as research visitor to work at CICBiogune research center where he investigated the molecular basis of Porphyrria with the aim to develop innovative therapeutic approaches.



To pursue his goal in becoming a scientist, he joined the research group of Professor Marcellus Ubbink at the Leiden Institute of Chemistry in December 2013, to work on a multidisciplinary project in collaboration with Professor Hans Aerts and Professor Hermen Overkleeft as a PhD. candidate. His research project was aimed at comprehending the functional dynamics and conformational stability of the ubiquitous enzyme family of β -glycosidases, including the human glucocereamidase GBA, deficient in patients suffering from Gaucher disease.