Understanding functional dynamics and conformational stability of beta-glycosidases

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STELLINGEN

behorend bij het proefschrift **Understanding functional dynamics and conformational stability of β-glycosidases**

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1. The consideration of the secondary structure arrangement has led to a more accurate method of classification of β-glycosidases.

   This thesis, chapter 1

2. Amphipathic active site binders with aliphatic moieties act as a "hydrophobic zipper" on the flexible EGCII protein structure.

   This thesis, chapter 2

3. GBA active site binders show a superior stabilization effect if they occupy simultaneously the glycon and aglycon sites.

   This thesis, chapter 3

4. The formation of the Michaelis complex of GH11 xylanases involves an "induced fit" binding mechanism.

   This thesis, chapter 4

5. It is insufficient to simply describe a protein as "being dynamic", like it is insufficient to simply describe a protein as "having a structure".

   Kleckner *et al.*, *Biochim. Biophys. Acta.*, **2011**, 1814(8): 942-968.

6. The development of rigid paramagnetic NMR tags and their application in studying protein dynamics will pave the way for simultaneously determining the structures of the lowly populated state conformers of a protein and the kinetic and thermodynamic characteristics of their dynamic processes.

   Mathias A.S Hass et al., *J. Am. Chem. Soc.*, **2010**, *132* (29), pp 9952–9953.

7. Improving the refinement protocols for carbohydrate configurations in protein crystal structures is a pressing issue, as 64% of the N-glycan configurations, deposited in the protein data bank, are incorrect.

   Jon Agirre *et al.*, *Nat. Chem. Biol.*, **2015**,11, 303.

8. Covalent inactivators have revolutionized the research field of function-structure relationships of β-glycosidases and deepened the understanding of their differential expression levels in response to external stimuli, something that needs to be further explored.

   Brian P Rempel *et al.*, *Glycobiology*, **2008**, 18 (8), 8570–586.

9. Scientific integrity is strongly depending on the scientist security.
10. Science is stingy, you need to give it all to make it give you a little.