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Enzyme-substrate interactions in the processive enzyme xylanase

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Citation

Saberi, M. (2024, November 14). *Enzyme-substrate interactions in the processive enzyme xylanase*. Retrieved from <https://hdl.handle.net/1887/4109013>

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Enzyme-substrate interactions in the processive enzyme xylanase

Proefschrift

ter verkrijging van

de graad van doctor aan de Universiteit Leiden,

op gezag van rector magnificus prof.dr.ir. H. Bijl,

volgens besluit van het college voor promoties

te verdedigen op donderdag 14 november 2024

klokke 11:30 uur

door

Mahin Saberi

geboren te Mashhad, Iran

in 1986

Thesis Cover

The original painting *Girl with a Pearl Earring* was created by Johannes Vermeer (1632–1675). The painting is part of the permanent collection of the Mauritshuis in The Hague, Netherlands. It was donated to the museum in 1902 by the collector Arnoldus Andries des Tombe. This painting is in the public domain; however, the use of the image requires proper acknowledgment. Image courtesy of Mauritshuis, The Hague.

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The research described in this thesis was conducted in the Macromolecular Biochemistry Department of the Leiden Institute of Chemistry at Leiden University in Leiden, the Netherlands.

درخت تو گربار دانش بگیرد

به زیر آوری چرخ نیلوفری را

Translation:

If your tree bears the fruit of knowledge
you can govern the universe yourself.

Nasir Khusraw (1004–1088 CE)

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List of abbreviations

BcX	<i>Bacillus circulans</i> xylanase
CAZymes	Carbohydrate-active enzymes
CBM	Carbohydrate-binding module
CLaNP	Caged lanthanide NMR probe
CSP	Chemical shift perturbation
DTT	Dithiothreitol
EDTA	Ethylenediaminetetraacetic acid
GH	Glycosyl hydrolases
HSQC	Heteronuclear single quantum correlation
IPAP	In-phase anti-phase
MC	Michaelis complex
NMR	Nuclear magnetic resonance
NOE	Nuclear Overhauser effect
PBS	Phosphate-buffered saline
PCS	Pseudocontact shifts
pNMR	Paramagnetic NMR
PRE	Paramagnetic relaxation enhancement
RDC	Residual dipolar coupling
SBS	Secondary binding site
TROSY	Transverse relaxation optimized spectroscopy
X2, X3,...	Xylobiose, Xylotriose, ...
XOS	Xylo-oligosaccharides