

CAZypedia

c a r b o h y d r a t e - a c t i v e
e n z y m e s

An introduction

On behalf of the "CAZypedia Consortium"

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 **Gordon Research Conferences**

Cellulases, Cellulosomes,
& other CMEs 30 July 2009

www.cazypedia.org

- ★ *CAZypedia* is an online, community-driven effort to assemble a comprehensive encyclopedia of the enzymes and binding proteins involved in the synthesis and degradation of complex carbohydrates.
 - An **evolving** encyclopedia of carbohydrate-active enzymes
 - *CAZypedia* is inspired by, and closely connected with, the **actively curated** CAZy Database.

- ★ *CAZypedia* is dedicated to the late Prof. Bruce Stone
 - whose enthusiasm to create a comprehensive encyclopedia of carbohydrate-active enzymes was essential in the genesis of this project.



July 2006
23rd ICS, Whistler



April 2007
CBM7, Braunschweig

...GH1: Online since 17 May 2007

- ★ Producing a (comprehensive) encyclopedia of CAZymes is a huge task!
 - An active community → incredibly dynamic knowledge base
 - e.g., 115 GH families – *and counting...*
 - Continuous generation of family-level information
 - ★ Sequences
 - ★ Functional properties
 - ★ Mechanisms
 - ★ Structures
 - ★ ...
- ★ Print = static, WWW = dynamic
 - Wiki wiki !
 - CAZypedia runs on MediaWiki, the same software as *Wikipedia*
 - *Allows continuous updating, editing, tweaking...*

CAZy Family GH1 - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.cazy.org/fam/GH1.html

ISI Web of Knowledge PubMed Webmail [KTH] Gmail CAZy CAZypedia Cash Monies LiveBookmarks Arabidopsis Book EnzTech

Main Page - CAZypedia CAZypedia:About - CAZypedia **CAZy Family GH1**

CAZY ~ CARBOHYDRATE-ACTIVE ENZYMES

Families Glycoside Hydrolases **GlycosylTransferases** Polysaccharide Lyases Carbohydrate Esterases Carbohydrate-Binding Modules

Home Genomes Links Citing Team Acknowledgments Search Help

Glycoside Hydrolase Family 1 GH1 Go

Known Activities β -glucosidase (EC 3.2.1.21); β -galactosidase (EC 3.2.1.23); β -mannosidase (EC 3.2.1.25); β -glucuronidase (EC 3.2.1.31); β -D-fucosidase (EC 3.2.1.38); phlorizin hydrolase (EC 3.2.1.62); 6-phospho- β -galactosidase (EC 3.2.1.85); 6-phospho- β -glucosidase (EC 3.2.1.86); strictosidine β -glucosidase (EC 3.2.1.105); lactase (EC 3.2.1.108); amygdalin β -glucosidase (EC 3.2.1.117); prunasin β -glucosidase (EC 3.2.1.118); raucassicine β -glucosidase (EC 3.2.1.125); thioglucosidase (EC 3.2.1.147); β -primeverosidase (EC 3.2.1.149); isoflavonoid 7-O- β -apiosyl- β -glucosidase (EC 3.2.1.161); hydroxysourate hydrolase (EC 3.2.1.161); β -glycosidase (EC 3.2.1.-)

Mechanism Retaining

Catalytic Nucleophile/Base Glu (experimental)

Catalytic Proton Donor Glu (experimental); absent in plant myrosinases

3D Structure Status Fold: (β/α)₈

Clan GH-A

External Resources [CAZypedia](#) [HOMSTRAD](#) [InterPro](#) [PFAM](#) [PRINTS](#) [PROSITE](#)

Commercial Enzyme Provider(s) [NZYTech](#) [PROZOMIX](#)

Statistics CAZy Entries (1751); GenBank/GenPept (2780); Uniprot (1268); 3D(25) : PDB(105); cryst(1);

Taxonomy Archaea(53) ↓; Bacteria(1281) ↓; Eukaryota(411) ↓; unclassified(6) ↓;

3D Display [GH1](#) [3D](#)

ARCHAEA ↑

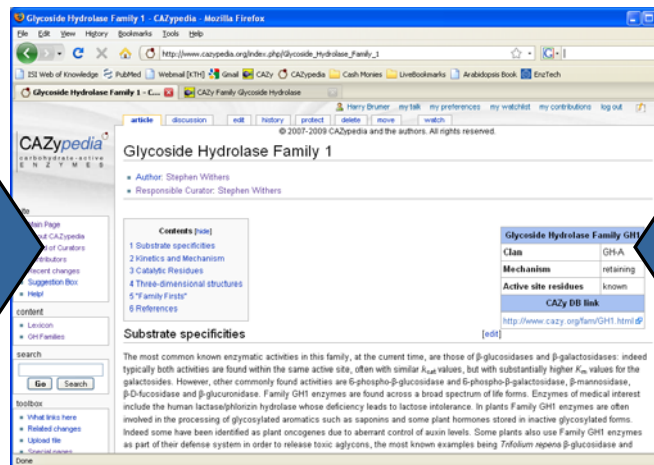
Protein	EC#	Organism	GenBank/GenPept	UniProt	PDB/3D
Cman_0852		<i>Caldivirga manuilinensis</i> IC-167	ABW01192.1	ARMC16	

Done

:CAZypedia (is not Wikipedia)

- ★ **CAZypedia** will strive to be a **dynamic, community-based** effort, while at the same time balancing a high level of **curation and editorial input** to produce **quality content**.
 - Publicly viewable, **not publicly editable**.(cf. *Citizendium*)
 - All contributors to **CAZypedia** are **selected experts** in the field.
 - Contributors' **real names and biographies** are visible in **CAZypedia**.
 - Page content is produced by designated **Authors**, overseen and edited by **Responsible Curators**

*Responsible
Curator*



Author(s)

- ★ GH1: Online since 17 May 2007
- ★ Linked from CAZy DB family headers ("External Resources")
- ★ *NAR*, October 2008:
 - "The CAZy database is available at www.cazy.org. Information about selected families is available through the website and at www.cazypedia.org."

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doi:10.1093/nar/gkn663*

The Carbohydrate-Active EnZymes database (CAZy): an expert resource for Glycogenomics

Brandi L. Cantarel, Pedro M. Coutinho, Corinne Rancurel, Thomas Bernard, Vincent Lombard and Bernard Henrissat*

Architecture et Fonction des Macromolécules Biologiques, UMR6098, CNRS, Universités Aix-Marseille I & II, 163 Avenue de Luminy, 13288 Marseille, France

★ June 2009:

– Carbohydrate GRC

- ★ Decision to "go-live"

– Responsible Curators invited, 73 GH families:

- ★ GH 1-20, 22, 23, 25-33, 36-39, 42, 43, 45-49, 51, 53-55, 57, 58, 62, 67, 72, 78, 82, 84, 85, 88, 89, 92-94, 97. 98. 101-105, 109, 110, 112, 113



★ Today:

- Responsible Curators accepted for 48 families
- Ca. 18 pages essentially complete
- 10 lexicon pages