

Strain identifier

BacDive ID: 2760 **DOI:** 10.13145/bacdive2760.20190402.4
Type strain: yes **Designation:** H10
Culture col. no.: DSM 5812, ATCC 35319, JCM 6584

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Name and taxonomic classification

Ref.: 2323	Domain	Bacteria
Ref.: 2323	Phylum	Firmicutes
Ref.: 2323	Class	Clostridia
Ref.: 2323	Order	Clostridiales
Ref.: 2323	Family	Clostridiaceae
Ref.: 2323	Genus	Clostridium
Ref.: 2323	Species	Clostridium cellulolyticum
Ref.: 2323	Full Scientific Name	Clostridium cellulolyticum Petitdemange et al. 1984
Ref.: 2323	Designation:	H10
Ref.: 2323	Type strain:	yes

Prokaryotic Nomenclature Up-to-date (PNU)

Ref.: 20215	Literature reference	Int. J. Syst. Evol. Microbiol. 60:469
Ref.: 20215	Literature reference	Int. J. Syst. Bacteriol. 30:235
Ref.: 20215	Genus	Ruminiclostridium
Ref.: 20215	Taxonomical status	genus (AL)
Ref.: 20215	Literature reference	Int. J. Syst. Bacteriol. 30:225
Ref.: 20215	Species	Ruminiclostridium cellulolyticum
Ref.: 20215	Taxonomical status	comb. nov. (VP)



Ref.: 20215	Literature reference	Int. J. Syst. Evol. Microbiol. 68:3197*
Ref.: 20215	Full Scientific Name	Ruminiclostridium cellulolyticum (Petitdemange et al. 1984) Zhang et al. 2018
Ref.: 20215	Synonym	Clostridium cellulolyticum

Morphology and physiology

Ref.: 43363	Gram stain	positive
Ref.: 43363	Cell length	3-6 µm
Ref.: 43363	Cell width	0.6-1 µm
Ref.: 43363	Cell shape	rod-shaped
Ref.: 43363	Motility	yes
Ref.: 43363	Flagellum arrangement	peritrichous
Ref.: 43363	Cultivation medium used	Cellulose agar medium
Ref.: 43363	Colony size	0.5 mm
Ref.: 43363	Colony shape	circular
Ref.: 43363	Colony color	translucent and unpigmented
Ref.: 43363	Incubation period	5-6 days
Ref.: 2323	Name of produced compound	sugar

Enzymes	Enzyme	Enzyme activity	EC number
Ref.: 43363	catalase	-	1.11.1.6
Ref.: 43363	urease	-	3.5.1.5
Ref.: 43363	lipase	-	
Ref.: 43363	lecithinase	-	

Metabolite production	Chebi ID	Metabolite	Production
Ref.: 43363	15366	Acetic acid	yes
Ref.: 43363	16526	Carbon dioxide	yes
Ref.: 43363	18276	Dihydrogen	yes
Ref.: 43363	24996	DL-Lactate	yes
Ref.: 43363	16236	Ethanol	yes
Ref.: 43363	30751	Formic acid	yes
Ref.: 43363	35581	Indole	no
Ref.: 43363	16301	Nitrite	no



	Metabolite utilization	Chebi ID	Metabolite	Utilization activity	Kind of utilization tested
Ref.: 43363		15963	Adonitol	-	growth
Ref.: 43363		27613	Amygdalin	-	growth
Ref.: 43363		22599	Arabinose	+/-	growth
Ref.: 43363			Casein	-	degradation
Ref.: 43363		17057	Cellobiose	+/-	growth
Ref.: 43363		62968	Cellulose	+/-	growth
Ref.: 43363		24996	DL-Lactate	-	assimilation
Ref.: 43363		16813	Dulcitol	-	growth
Ref.: 43363		17113	Erythritol	-	growth
Ref.: 43363		4853	Esculin	+	hydrolysis
Ref.: 43363		28757	Fructose	+/-	growth
Ref.: 43363		28260	Galactose	+/-	growth
Ref.: 43363		5291	Gelatin	-	hydrolysis
Ref.: 43363		17234	Glucose	+/-	growth
Ref.: 43363		17754	Glycerol	-	growth
Ref.: 43363		28087	Glycogen	-	growth
Ref.: 43363		17268	Inositol	-	growth
Ref.: 43363		15443	Inulin	-	growth
Ref.: 43363		17716	Lactose	-	growth
Ref.: 43363		17306	Maltose	-	growth
Ref.: 43363		29864	Mannitol	-	growth
Ref.: 43363		37684	Mannose	+/-	growth
Ref.: 43363		6731	Melezitose	-	growth
Ref.: 43363			Milk	-	assimilation
Ref.: 43363		32816	Pyruvic acid	-	assimilation
Ref.: 43363		16634	Raffinose	-	growth
Ref.: 43363		26546	Rhamnose	-	growth
Ref.: 43363		33942	Ribose	+/-	growth
Ref.: 43363		17814	Salicin	-	growth
Ref.: 43363		30911	Sorbitol	-	growth
Ref.: 43363		27922	Sorbose	-	growth
Ref.: 43363		28017	Starch	-	hydrolysis
Ref.: 43363		17992	Sucrose	-	growth
Ref.: 43363		16094	Thiosulfate	-	reduction
Ref.: 43363		27082	Trehalose	-	growth



Ref.: 43363	18222	Xylose	+/-	growth
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Ref.: 2323 **Oxygen tolerance** anaerobe

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Ref.: 43363 **Spore description** produce swollen cells, present in cultures on cellulose media 3 or more days old

Ref.: 43363 **Type of spore** spore

Ref.: 43363 **Ability of spore formation** yes

Culture and growth conditions

Ref.: 2323 **Culture medium** CLOSTRIDIUM CELLULOLYTICUM (CM3) MEDIUM (DSMZ Medium 520), 35°C, anaerobic

Ref.: 2323 **Culture medium growth** yes

Ref.: 2323 **Culture medium link** https://www.dsmz.de/microorganisms/medium/pdf/DSMZ_Medium520.pdf

Ref.: 43363 **Culture medium** Cellulose agar medium

Ref.: 43363 **Culture medium growth** yes

Temperatures

Ref.: 2323

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Kind of temperature	Temperature
growth	35 °C
growth	50 °C
growth	20 °C
minimum	25 °C
optimum	32-35 °C
maximum	45 °C

Ref.: 2323 **Temperature range** mesophilic

Ref.: 43363 **Temperature range** psychrophilic

Ref.: 43363 **Temperature range** mesophilic

Isolation, sampling and environmental information

Ref.: 2323 **Sample type/isolated from** decayed grass compost

Ref.: 2323 **Country** France

Ref.: 2323 **Continent** Europe

Ref.: 43363 **Sample type/isolated from** isolated in autumn from decayed grass compost packed for 3 to 4 months

Isolation sources categories

Cat1	Cat2	Cat3
#Engineered	#Biodegradation	#Composting
#Host	#Plants	#Decomposing plant
#Host	#Plants	#Herbaceous plants (Grass,Crops)

Application and interaction

Ref.: 2323 **Biosafety level** 1 Risk group (German classification)

Molecular biology

Ref.: 2323 **GC-content** 41.0 mol%

Ref.: 43363 **GC-content** 41 mol% thermal denaturation, midpoint method (Tm)

	Sequence database	Sequence accession description	Sequence accession number	Sequence length(bp)	Associated NCBI tax ID	
Ref.: 20218	Marker Gene (GenBank Direct submission)	Clostridium cellulolyticum cohesin-containing protein gene, complete cds	AF081458	690	394503	*
Ref.: 20218	Marker Gene (EMBL Direct submission)	Clostridium cellulolyticum rub gene for rubredoxin	AJ238458	401	394503	*
Ref.: 20218	Marker Gene (EMBL Direct submission)	Clostridium cellulolyticum ORF1 (partial), glgC gene and glgD gene (partial)	AJ277601	2040	394503	*
Ref.: 20218	Marker Gene (EMBL Direct submission)	Clostridium cellulolyticum partial spoIVB gene and spo0A gene, strain ATCC 35319	AJ288948	1293	394503	*
Ref.: 20218	Marker Gene (GenBank Direct submission)	Clostridium cellulolyticum H10 strain ATCC 35319 60 kDa chaperonin (cpn60) gene, partial cds	AY691311	552	394503	*
Ref.: 20218	Marker Gene (DDBJ Direct submission)	Clostridium cellulolyticum celCCD gene for endo-1,4-glucanase (EC 3.2.1.4), complete cds	D90341	2160	394503	*
Ref.: 20218	Marker Gene (GenBank Direct submission)	Clostridium cellulolyticum H10 GH10 xylanase (xyn10A) gene, complete cds	DQ778331	2286	394503	*

Ref.: 20218	Marker Gene (GenBank Direct submission)	Clostridium cellulolyticum H10 GH9 cellulase (cel9Q) gene, complete cds	DQ778332	3012	394503	*
Ref.: 20218	Marker Gene (GenBank Direct submission)	Clostridium cellulolyticum H10 CBM22- and dockerin-containing enzyme, GH27 galactosidase (gal27A), and GH59 galactosidase (gal59A) genes, complete cds	DQ778333	8777	394503	*
Ref.: 20218	Marker Gene (GenBank Direct submission)	Clostridium cellulolyticum H10 GH26 mannanase (man26A) and GH9 cellulase (cel9P) genes, complete cds	DQ778334	5411	394503	*
Ref.: 20218	Marker Gene (GenBank Direct submission)	Clostridium cellulolyticum strain DSM5812 FeFe-hydrogenase group A1 (hyd) gene, partial cds	JF720842	593	1521	*
Ref.: 20218	Marker Gene (GenBank Direct submission)	Clostridium cellulolyticum strain DSM5812 FeFe-hydrogenase group A8 (hyd) gene, partial cds	JF720843	820	1521	*
Ref.: 20218	Marker Gene (GenBank Direct submission)	Clostridium cellulolyticum scaffolding protein precursor (cipC) gene, complete cds; and unknown genes	U40345	7572	394503	*
Ref.: 20218	Marker Gene (EMBL Direct submission)	C.cellulolyticum gene for 16S ribosomal RNA	X71847	1642	394503	*
Ref.: 2323	GenBank Genome project data	[Clostridium] cellulolyticum H10 chromosome, complete genome	CP001348	4068724	394503	

Strain availability

Ref.: 2323 **Culture collection no.** DSM 5812, ATCC 35319, JCM 6584

Ref.: 2323 **Strain history** <- ATCC <- E. Petitdemange, H₁₀

Associated Passport(s) in StrainInfo

Ref.: 20218 159461 - <http://www.straininfo.net/strains/159461>

Ref.: 20218 110514 - <http://www.straininfo.net/strains/110514>

Ref.: 20218 110516 - <http://www.straininfo.net/strains/110516>

References



- Ref.: 2323 Leibniz Institut DSMZ-Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH; Curators of the DSMZ; DSM 5812
- Ref.: 20215 D.Gleim, M.Kracht, N.Weiss et. al.: Prokaryotic Nomenclature Up-to-date - compilation of all names of Bacteria and Archaea, validly published according to the Bacteriological Code since 1. Jan. 1980, and validly published nomenclatural changes since.
- Ref.: 20218 Verslyppe, B., De Smet, W., De Baets, B., De Vos, P., Dawyndt P. StrainInfo introduces electronic passports for microorganisms.. Syst Appl Microbiol. 37: 42-50 2014 (10.1016/j.syapm.2013.11.002, 24321274)
- Ref.: 43363 E. Petitdemange, F. Caillet, J. Giallo, C. Gaudin Clostridium cellulolyticum sp. nov., a Cellulolytic, Mesophilic: Species from Decayed Grass. IJSEM 34: 155-159 1984 (10.1099/00207713-34-2-155, None)

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