

Table S1. Activity of the AC2a PUL endoglucanases on various glycans. Previously calculated specificities for example endoglucanases characterized from rumen bacteria (Cel9B from *Fibrobacter succinogenes* and CelA from *Butyrivibrio fibrisolvens*) are listed.

Substrate	^a Substrate specificity (U/mg) \pm ^b SD			
	GH5 (AC2a)	GH9 (AC2a)	^c Cel9B (GH9) (<i>F. succinogenes</i>)	^d CelA (GH5) (<i>B. fibrisolvens</i>)
CMC	216.8 \pm 8.9	55.14 \pm 4.21	25.0 \pm 5.13	0.2
Avicel	0.115 \pm 0.025	0.030 \pm 0.008	0.05 \pm 0.02	0.006
Filter paper	0.152 \pm 0.005	0.035 \pm 0.01	na	0.0006
Barley β -glucan	1471.4 \pm 97.3	296.11 \pm 7.24	47.78 \pm 1.96	1.4

^a one unit of enzyme activity is the amount that produces 1 μ mol of product per min.

^b assays performed in triplicate.

^c substrate specificity measurements: M. Qi, H-S. Jun, and C.W. Forsberg, Appl. Environ. Microbiol, **73**:6098-6105, 2007. Cel9B is a major cellulase secreted by the rumen bacterium *F. succinogenes* S85 accounting for approximately 32% of the total endoglucanase activity present in the nonsedimentable fraction (M. McGavin, and C.W. Forsberg, J. Bacteriol. **170**:2914–2922, 1988).

^d substrate specificity measurements: G.P. Hazlewood, K. Davidson, J.I. Laurie, M.P. Romaniec, and H.J. Gilbert, J Gen Microbiol, **136**:2089-2097, 1990.