

Xylanase Activities Associated with the *Clostridium thermocellum* Cellulosome

Kazuo Sakka^{1*}, Makiko Sakka¹, Yishiko Onishi¹, Tetsuya Kimura¹,
Shuichi Karita², and Kunio Ohmiya¹

¹Faculty of Bioresources and ²Center for Molecular Biology and Genetics, Mie University,
Tsu 514-8507, Japan

The cellulosome produced by *Clostridium thermocellum* is a multienzyme complex having strong activity against crystalline cellulose. The presence of xylanase activity has been often reported associated with the cellulosome of *C. thermocellum*, although this bacterium is unable to grow on xylan and xylose. In agreement with these observations, several xylanase genes have been cloned and characterized along with their translated products by our group and others, i.e., *xynA*, *xynB*, *xynC*, *xynX*, *xynY*, and *xynZ*. XynA and XynB contain a family 11 catalytic domain and the other xylanases, family 10. In addition, the endoglucanase CelJ encoded by *celJ* has an activity toward xylan as well as cellulosic materials. Among these enzymes XynC and CelJ were identified as major components of the *C. thermocellum* cellulosome. In this paper, we attempt to summarize xylanase species associated with the *C. thermocellum* cellulosome and their genes. -----

