

# Small Angle X-ray Scattering Analysis of *Clostridium thermocellum* Cellulosome N-terminal Complexes Reveals a Highly Dynamic Structure

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**Background:** The cellulosome N terminus contains the sole substrate-binding module of the cellulosome scaffoldin.

**Results:** Two N-terminal cellulosomal fragments are devoid of intermodular interactions, are highly dynamic, and inhabit compact and elongated conformations equally.

**Conclusion:** The characteristics of the cellulosome N terminus may facilitate its role in substrate binding.

**Significance:** Information on cellulosome structure and dynamics aids in engineering designer cellulosomes.