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Flexible Filamentous Plant Virus Structures by Fiber Diffraction and Crystallography. Amy Kendall, Joseph Francica, Justin Junn, Laura Montague, Lauren Parker, Gerald Stubbs, Dept. of Biological Sciences and Center for Structural Biology, Vanderbilt Univ., Nashville, TN 37235.

Filamentous plant viruses are of enormous importance to agriculture, but they do not crystallize. Fiber diffraction has been used very effectively with the rigid tobamoviruses and the flexible filamentous bacteriophages, but the information content of fiber diffraction patterns from the flexible filamentous plant viruses has generally been limited. The most effective strategy appears to be to crystallize the viral coat protein and then to use the coat protein structure to interpret either the fiber diffraction pattern or electron micrographs of the intact virions. Crystallization of filamentous virus coat proteins is difficult, since the proteins form filaments more easily than crystals; the difficulties may be overcome biochemically or genetically, and often require transgenic expression of the proteins. We are pursuing these approaches with the potexviruses, the potyviruses, and the closteroviruses.

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