ON THE COVER

The oomycete pathogen Phytophthora infestans has a cell wall composed mainly of cellulose, by contrast with most fungal pathogens, which have chitin-based cell walls. During infection, P. infestans breaks down host cell walls but synthesizes a new cell wall of its own to make infection-associated structures and grow and proliferate within the host. Grenville-Briggs et al. (pages 720–738) present a functional characterization of a family of four P. infestans cellulose synthase (CesA) genes, which form a distinct phylogenetic group that is most closely related to cyanobacterial CesA genes. The authors show that expression of all four genes is up-regulated during early infection stages of potato, and chemical inhibition of cellulose synthesis leads to defects in the infection process and a complete loss of pathogenicity. These results show that cellulose synthesis is required for infection of potato by P. infestans.

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