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Solanaceae a model for linking genomics with biodiversity

Sandra Knapp, Lynn Bohs, Michael Nee, David M. Spooner

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Abstract

Recent progress in understanding the phylogeny of the economically important plant family Solanaceae makes this an ideal time to develop models for linking the new data on plant genomics with the huge diversity of naturally occurring species in the family. Phylogenetics provides the framework with which to investigate these linkages but, critically, good species-level descriptive resources for the Solanaceae community are currently missing. Phylogeny in the family as a whole is briefly reviewed, and the new NSF Planetary Biodiversity Inventories project 'PBI: Solanum-a worldwide treatment' is described. The aims of this project are to provide species-level information across the global scope of the genus Solanum and to make this available over the Internet. The project is in its infancy, but will make available nomenclatural information, descriptions, keys and illustrative material for all of the approximately 1500 species of Solanum. With this project, the opportunity of linking valid, up-to-date taxonomic information about wild species of Solanum with the genomic information being generated about the economically important species of the genus (potato, tomato and eggplant) can be realized. The phylogenetic framework in which the PBI project is set is also of enormous potential benefit to other workers on Solanum. The community of biologists working with Solanaceae has a unique opportunity to effectively link genomics and taxonomy for better understanding of this important family, taking plant biology to a new level for the next century.

Keywords: Solanaceae, Solanum, phylogeny, plant genomics, biodiversity, species description, nomenclature, ide

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