number of plant virus groups being elevated to formal genus or family status as more detailed molecular information becomes available. The latest virus taxonomy ***(3)*** lists 9 families and 33 genera of plant viruses.

Except for strictly phloem-limited viruses, other plant viruses must be capable of moving infectious genomes through plasmodesmata. This is probably what constrains the genome size and architecture of plant viruses, compared to their animal virus counterparts. Rigid, flexuous, or filamentous rod-shaped particles and small icosahedral particles are common among plant viruses (rare in animal viruses), but lipid envelopes are rare (though common in animal viruses). Envelopes are evident only in members of the Rhabdoviridae and Bunyaviridae, which replicate in their invertebrate vectors as well as in their plant hosts. Among positive-sense ssRNA plant viruses, segmented genomes packaged in separate particles are much more common in plant viruses than in animal viruses. For these plant viruses, more than one particle constitutes an infectious unit. Members of the *Reoviridae*, which contain 10–12 segment double-stranded (ds) RNA genomes packaged together in single particles, are fairly common in plants, particularly grasses. The tenuiviruses, which appear to have evolved by loss of envelope from bunyaviruses, illustrate the apparent lack of selective advantage provided by a lipid envelope in viruses during infection of plants, as well as the permissiveness of plants to infection by multipartite viruses.

Because it is easy and inexpensive to purify large quantities of many plant viruses, they have been central to our understanding of icosahedral and helical virus architecture. The first two viruses of those architectural types that were crystallized were tobacco mosaic virus (TMV), a rigid rod-shaped virus, and tomato bushy stunt virus (TBSV), an icosahedral virus. The story of the TMV crystallization ***(6)***, for which Stanley won the Nobel Prize, illustrates why plant viruses were so useful in these studies. To ensure success with this project, Stanley's group began with 4000 kg of infected tobacco tissue, from which they finally isolated 11 kg of purified virus to initiate crystallization experiments.

4. Plant Virus Genome Organization and Expression Strategies

Plant virus genome organizations and strategies for gene expression display the same wide range of variation as their animal virus counterparts. Details of these vary considerably, and can be found in several of the references mentioned in the introductory section. Generally, positive-sense RNA plant viruses with monopartite genomes contain their RNA-dependent RNA polymerase (RDRP) genes at their 5' ends and coat protein (CP) genes at or near their 3' ends. Other genes may include cell-to-cell movement protein genes, genes for proteins specifically involved in plant-to-plant transmission by vectors, and genes for proteins involved in regulation of transcription or replication.