

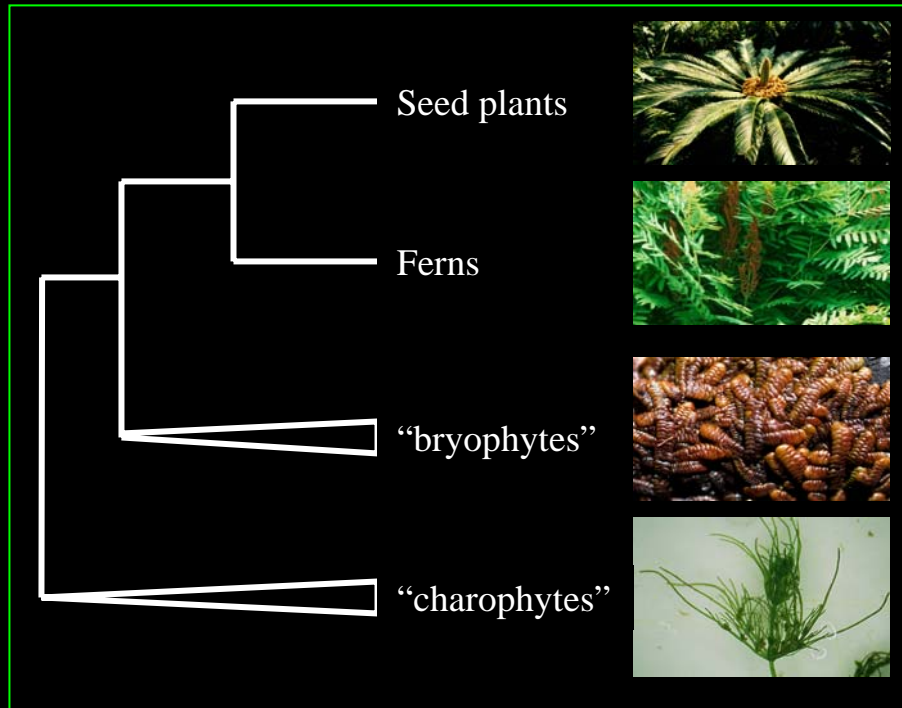
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Molecular Phylogeny & Molecular Evolution of Plants

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The research in my lab centers around the goal of understanding evolution of land plants, following three main lines:

- 1) reconstructing plant phylogeny using molecular approaches,
- 2) investigating evolution of mitochondrial and nuclear genomes in land plants,
- 3) understanding evolution of land plants by examining changes of their abiotic and biotic environment as well as interaction of plants with the environment since their origin in the mid-Ordovician.



Group II Introns in Mitochondrial Genes

	cox2i373	cox2i691	nad1i1728	nad7i140	nad7i209	nad2i1282	nad5i1477
tracheophytes	+	+	+	+	+	+	+
hornwort	+	+	+	+	+	+	+
mosses	+	+	+	+	+	-	-
liverwort	-	-	-	-	-	-	-
“charophytes”	-	-	-	-	-	-	-

Over the last several years, we have been analyzing both gene sequences and genomic structural features to understand diversification patterns of early land plants and early angiosperms. Meanwhile, we have also worked extensively on evolution of introns and gene content in the mitochondrial genome. At present, we are continuing our work in these two areas, and are also developing a project to compare rRNA structural evolution in mitochondrial, plastid, and nuclear genomes throughout land plants.

Qiu et al., 1998; Malek & Knoop, 1998; Pruchner et al., 2001, 2002; Turmel et al., 2002; Dombrowska & Qiu, 2004; N. Sato, pers. comm.

In the near future, we will begin working on evolution of the nuclear genome, focusing on evolution of gene content and gene order and roles of transposons in genome evolution and generating organismal diversity. We will also be developing projects to investigate the roles of environment in shaping up the evolutionary course of land plants.