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Comparative Genomic Study of Plant Putative Glutamate Receptors YOSHIHISA ISHIZUKA, The George Washington University, Department of Physics, MIMMIE HUANG, The George Washington University, Department of Computer Science, SHERI CHURCH, The George Washington University, Department of Biological Sciences, FRANK TURANO, The George Washington University, Department of Biological Sciences, WEIQUN PENG, The George Washington University, Department of Physics — Glutamate receptors are ion channels that were first discovered in vertebrates and found to play a vital role in the mediation of signal transmission in the central nervous system. Recently, sequence homologs of these receptors were found in Arabidopsis, which was a surprise, as plants do not have a true nervous system. These putative glutamate receptors (GLRs) have been shown to play a critical physiological role in the regulation of carbon and nitrogen metabolism in Arabidopsis. However, their functions at the molecular and biochemical levels are not known. The newly completed genome of a second plant, rice, presents an opportunity to investigate the functions of the GLRs via a comparative genomic approach. Using phylogenetic and bioinformatics analysis, we identify the important residues, functional specificity, and potentially interacting sites and domains.

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