

# Chemical genomics approaches in plant biology.

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Chemical genomics (i.e., genomics-scale chemical genetics) approaches are based on the ability of low-molecular-mass molecules to modify biological processes. Such molecules are used to affect the activity of a protein or a pathway in a manner that is tunable and reversible. A major advantage of this approach compared to classical plant genetics is the fact that chemical genomics can address loss-of-function lethality and redundancy. Bioactive chemicals resulting from forward or reverse chemical screens can be useful in understanding and dissecting complex biological processes due to the essentially limitless variation in structure and activities inherent in chemical space. An important aspect of utilizing small molecules effectively is to characterize bioactive chemicals in detail including an understanding of structure activity relationships (SARs) and the identification of active and inactive analogs. Bioactive chemicals can be useful as reagents to probe biological pathways directly