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Sommario/riassunto	In response to environmental stresses, or during development, plant cells will produce lipids that will act as intracellular or intercellular mediators. Glycerophospholipid and/or sphingolipid second messengers resulting from the action of lipid metabolizing enzymes (e. g. lipid-kinases or lipases) are commonly found within cells. The importance of such mediating lipids in plants has become increasingly apparent. Responses to biotic and abiotic stresses, and to plant hormones, all appear to involve and require lipid signals. Likewise, developmental processes, in particular polarized growth, seem also to involve signalling lipids. Amongst these lipids, phosphatidic acid (PA) has received the most attention. It can be produced by phospholipases D, but also by diacylglycerol kinases coupled to phospholipases C. Proteins that bind phosphatidic acid, and for which the activity is altered upon binding, have been identified. Furthermore, other lipids are also important in signalling processes. PA can be phosphorylated into diacylglycerol-pyrophosphate, and plants are one of the first biological models where the production of this lipid has been reported, and its implication in signal transduction have been demonstrated. PA can also be deacylated into lyso- phosphatidic acid. The phosphorylated phosphatidylinositols, i.e. the phosphoinositides, can act as substrate of phospholipases C, but are also mediating lipids per se, since proteins that bind them have been identified. Other important lipid mediators belong to the sphingolipid family such the

phosphorylated phytosphingosine, or long-chain bases. Many questions remain unanswered concerning lipid signalling in plants. Understanding and discussing current knowledge on these mechanisms will provide insights into plant mechanisms in response to constraints, either developmental or environmental.