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In the last few years, Italian research on Arabidopsis has widely spread over several new labs. As a consequence, new projects have been developed and new collaborations among different laboratories have been established.

Among the most relevant developing projects a study has been initiated on the effects of auxin in processes occurring late in stamen development, which contribute to a successful pollination at anthesis (Dr. M. Cardarelli- Institute of Molecular Biology and Pathology, National Research Council, Rome). Another project stems from Dr. Serino's previous research in Dr. Xing-Wang Deng's lab at Yale University and deals with the characterization of novel pathways regulated by CSN, an evolutionarily conserved multi-protein complex which has been shown to regulate specific proteasome-mediated protein degradation events. In particular, Dr. Serino and collaborators (University of Rome- La Sapienza) are interested in CSN-mediated regulation of AtPIC2, an F-box protein which is a putative component of an SCF (Skp1, Cullin, F-box)-type ubiquitin ligase complex.

Many ongoing projects have been carried out with the financial support of Italian and European fundings and benefit from the formation of new European networks and collaborations. A very important breakthrough came from one of these projects on shade avoidance response. Specifically, Dr. Ruberti and coworkers (Institute of Molecular Biology and Pathology, National Research Council, Rome) uncovered the existence of a previously unrecognized regulatory circuit underlying plant response to canopy shade, which involves both auxin and cytokinin. The rapid changes in auxin signalling induced by low R/FR which are crucial for the plant to enhance elongation growth are also essential to arrest leaf development. Strikingly, the role of auxin in leaf primordia is to induce cytokinin degradation through the action of AtCKX6, and therefore to inhibit leaf growth. The discovery of this novel regulatory circuit suggests the possibility that crop yield could be increased by reducing the expression of cytokinin oxidase genes in leaf organs. In fact, shade avoidance is second only to disease as a cause of crop-yield losses. (Carabelli M, Possenti M, Sessa G, Ciolfi A, Sassi M, Morelli G and Ruberti I (2007). Canopy shade causes a rapid and transient arrest in leaf development through auxin-induced cytokinin oxidase activity. Genes Dev 21 1863-1868).

Another relevant breakthrough came from Chiara Tonelli's lab (University of Milan) and concerns the functional analysis of *AtMYB60*, a transcriptional modulator of physiological responses in guard cells. This gene is specifically expressed in stomata, and its expression is negatively modulated during drought. A null mutation in *AtMYB60* results in the constitutive reduction of stomatal opening and in decreased wilting under water stress conditions. These data open new possibilities to improve crop survival and productivity during drought, and they have been patented by C.Tonelli and M.Galbiati ("Stomatal guard cell-specific* promoter;" patent n. MI 2004 A000363-PTC/EP2005/001883 (ID: n. 53)*; "Promoters for constituve expression of nucleic acids in stomata", patent n. MI 2007 A2418).

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