

Multihormonal regulation of fruit ripening

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The advent and progress of fruit ripening are controlled by a complex interplay of hormonal signalling. However, outside of the role of ethylene that is rather well established, the dialogue between the different hormones remains largely unknown. The basic assumption is that until a certain stage of development, the pathway of ethylene is hampered by other hormones, like auxin, that prevents the inception of the ripening processes.

The project aims to explore this hypothesis by combining a unique physiological approach to modern methodological tools and resources available in the laboratory. The ultimate goal of this study is to determine the hormonal bases of the acquisition of competence to mature.

Our experimental plan was developed with whole fruit, at mature green stage, which were infiltrated with solutions of various hormones or their inhibitors. Initial results have shown the effectiveness and relevance of this experimental device (qPCR and RNAseq). A first series of analyses is focusing on the changes induced by injections of ethylene precursor, auxin, or both, in the expression of a large set of transcription factors of both ethylene and auxin signalling pathway.

Furthermore, in order to take advantage of biological resources generated by other sub-projects of the laboratory, the most interesting hormonal combinations will also be tested on transgenic mutants altered in the expression of some ERF, ARF and Aux / IAA.