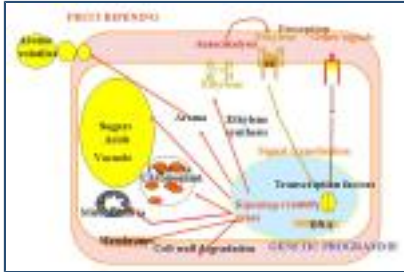


# Proteomics of the chloroplast to chromoplast transition

*Alain Latché, Jean-Claude Pech*



In many fruit, one of the most important and more visible changes corresponds to the loss of chlorophyll and the synthesis of coloured compounds such as carotenoids. This happens through the transformation of chloroplasts into chromoplasts. The intimate mechanisms occurring in chromoplasts are not well understood despite their crucial role in the generation of major metabolites that are essential for the sensory and nutritional quality of fruit.

A large majority of the proteins present in the chromoplast are encoded by the nucleus and therefore imported into the organelle. The chromoplast genome encodes for only few proteins participating in the build-up of the chromoplast structure and in house-keeping activities. The “tomato chromoplast proteomics project” will bring complementary information to the running “tomato genomics and sequencing projects” by improving genome annotation through the insertion of post-translational modifications and sub-cellular localisation of the gene products.

Besides bringing information on the changes of the proteome during the transition chloroplast/chromoplast, the project is putting special focus on the role of the chromoplast and chromoplast sub-compartments in the biogenesis of aromas in tomato.

## **The main objectives of the project are the following:**

- \* cataloguing changes in the proteome during the transition chloroplast/chromoplast;
- \* identifying which isoform of the enzyme families are present in the chromoplasts, determination of their sub-plastidic localisation;
- \* creating a data base on chromoplastic proteome;
- \* improving genome annotation and include information on post-translational protein modifications and sub-cellular localisation;
- \* providing new putative candidate genes involved in the biosynthesis of aromas for functional identification of recombinant proteins by expression in yeast or *E.coli*;
- \* opening the way to the study of other metabolic processes important for fruit quality such as biosynthesis of carotenoids or vitamins;
- \* providing new information on how the transition from chloroplast to chromoplast could be important for the hormonal regulation of fruit ripening. The biosynthesis of several plant hormones (ABA, GA, JA) is related to the plastids.