

**Title** Molecular Biology and Biotechnology for Fresh Fruit Quality  
**Author** J.C. Pech  
**Citation** Book of Abstracts, Asia-Pacific Symposium on Assuring Quality and Safety of Agri-Foods, August 4-6, 2008, Radisson Hotel, Bangkok, Thailand.  
**Keywords** tomato; quality; ripening

### **Abstract**

The mechanisms of development of fresh fruit quality have received great attention since many years for both scientific reasons. There is nowadays growing emphasis not only on sensory properties but also on nutritive value and safety for human health. Since the majority of the quality attributes are elaborated during the ripening process it has always been considered as essential to better understand the mechanisms underlying fruit ripening. Some of the most important changes occurring during fruit ripening such as the synthesis of coloured compounds (carotenoids), vitamins and aroma volatiles take place in the chromoplast. We will report on the research programme undertaken in our group on the role of chromoplasts in tomato fruit ripening using proteomic methods. Great progress has been made in the last decade in the elucidation of the molecular mechanisms controlling the fruit ripening programme. In particular, the role of ethylene perception and transduction signal has been extensively studied. Research has now been extended at understanding (i) how the ethylene signal is amplified and diversified and (iii) how hormones are interacting for the development of the ripening programme and fruit quality. We will present some of the recent findings of our laboratory in this field. Biotechnology and genetics have the potential to participate in the improvement of the sensory or nutritional quality of horticultural crops and of post-harvest shelf-life. Breeding for quality and storage life has long been a secondary goal as compared to yield and disease resistance. Progress in post-harvest biotechnology strongly depends on the knowledge of basic mechanisms of fruit ripening as well as of the metabolic pathways involved in the synthesis of compounds important for the flavour and nutritional value