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News and Views about Carotenoids: Red-hot and True.

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Carotenoids have been the focus of research in the fields of chemistry, plant biology, biochemistry, physiology, nutrition, and medicine for over a century (**Figure 1**). The International Carotenoid Society fosters all aspects of this research and organizes with a local host team a triannual scientific meeting. The 18th International Symposium on Carotenoids was held in Switzerland in the beautiful town of Lucerne (http://www.icslucerne2017.org/). More than 300 researchers from all over the world celebrated carotenoid science, shared the latest scientific results, and witnessed the recent renaissance of the research field (**Figure 2**). The twenty articles in this *Special Issue on Carotenoids* highlight some of the exciting novel developments in the field. The editorial will introduce different topics and briefly discuss them in light of the recent progress in the research field.

Carotenoids are a group of chemically related isoprenoids which are synthesized by plants, fungi, and bacteria. These lipids are the parent precursors of a large number of apocarotenoids which include plant hormones, aroma compounds, volatiles, as well as retinoids (vitamin A and its metabolites). The initial steps in carotenoid biosynthesis involve the condensation of eight isoprene (C5) units to form the tetraterpenoid (C40) phytoene. The conversion of colorless phytoene to red-colored lycopene occurs through four desaturation steps. In plants, this pathway involves several *cis*-carotene intermediates (1). Recently, many molecular details of this path have been elucidated. The article by Dr. Cazzonelli and colleagues provides an overview of this rapidly growing research field and discusses the various physiological roles of *cis*-carotenes in plants (this issue (2)). This discussion includes recent progress in the hunt for a novel *cis*-carotene signaling molecule that regulates nuclear gene expression during plastid biogenesis. Also, Dr. Cazzonelli's group contributes original work that describes how carotenoid synthesis in young leaves is elevated in response to increasing atmospheric carbon dioxide levels (this issue (3)). This observation provides evidence for crosstalk between carbon assimilation, photosynthesis, and carotenoid synthesis during leaf development.