

Course announcement Spring 2005

PBI293 Student participatory seminar in Postharvest Biology

“Development and metabolism of plastids”

CRN# 65127; 1 unit (S/U grading only)

Thursdays 12:10-1pm Parson 111 (next to Hunt Hall)

Course website: <http://trc.ucdavis.edu/kinoue/pbi293.htm>

The first meeting (orientation) is at 12:10pm on March 31st, 2005

Instructor: Kentaro Inoue (Pomology/Plant Sciences, kinoue@ucdavis.edu)

In the past PBI293, we have covered various topics related to postharvest biology, including both basic and practical problems such as metabolism, quality, and postharvest handling of fruits, vegetables, and ornamentals. In this quarter, **we are focusing on development and metabolism of plastids**. This topic is relevant to any aspects of plant biology.

The plastid plays important roles during various stages of plant development, in addition to converting light to chemical energy via photosynthesis. For example, the color change of mature fruits such as tomato and orange from green to red/orange is mainly because of metabolic and developmental changes in plastids – degradation of chlorophylls and accumulation of carotenoids along with conversion of chloroplasts to chromoplasts. One of important phytohormones, abscisic acid, and some flavor compounds in fruits, vegetables, and ornamentals, such as beta-ionone, are derived from carotenoids. Furthermore, other phytohormones, gibberellins, are derived from isoprenoids that are produced in plastids. Amino acids and lipids are also synthesized in plastids. An interesting and very important point is that most proteins responsible for these metabolic reactions are encoded in the nucleus and are targeted to the plastid posttranslationally. Thus, protein import is a prerequisite for the biogenesis of the organelle.

Topics covered in the course include: metabolism of isoprenoid compounds such as carotenoids and chlorophylls; manipulation of plastid metabolism (other than photosynthesis); protein import.

Emphasis will be put not only on the current status of knowledge in certain topics, but also on strategies and techniques that have been used to study various problems.

Prerequisite: consent of instructor; open to advanced undergraduates. May be repeated for credit.