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Grape Berry: A model for study trafficking and sequestration of anthocyanins

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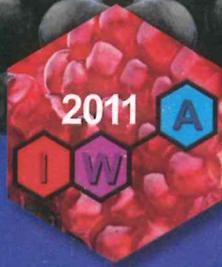


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NC STATE UNIVERSITY

Plants for
Human Health
INSTITUTE



ABSTRACTS AND PROGRAM BOOKLET

6th International Workshop on Anthocyanins

SEPTEMBER 11 – 14, 2011
GREAT WOLF LODGE
CHARLOTTE/CONCORD, NORTH CAROLINA

Celebrating the Vivacity of Color

plantsforhumanhealth.ncsu.edu



Program

ANTHOCYANINS TRAFFICKING AND VACUOLAR FUNCTIONS

4:40 – 5:35 pm Symposium David H. Murdock Core
Laboratory Event Room

Convener: Richard Espley, New Zealand Institute for Plant & Food, NZ

4:40 Introduction (R. Espley)

4:45 S-13 **KEYNOTE:** Grape Berry: A Model for Study Trafficking and
Sequestration of Anthocyanins
Agnes Ageorges, INRA, France

5:15 S-14 Acyltransferases Involved in Anthocyanin Biosynthesis: A
Functional and Evolutionary Perspective
Kallam Kalyani, John Innes Centre, UK

5:40 pm Board Buses for Pity's Sake Lodge, Home of David H.
Murdock

6:00 – 8:00 pm BBQ & Bluegrass Pity's Sake Lodge

8:00 pm Board Buses to Return to Great Wolf Lodge

Tuesday, September 13

ANTHOCYANINS AND HUMAN HEALTH – II

8:30 – 10:05 am Symposium White Pine 3

Convener: Mary Ann Lila, NCSU's Plants for Human Health Institute,
USA

8:30 Introduction (M. Lila)

8:35 S-15 **KEYNOTE:** Factors Affecting Anthocyanin Detection in Animal
Samples
Wilhelmina Kalt, Agriculture and Agri-Food Canada, Canada

9:05 S-16 Anti-diabetic Effects of Anthocyanins from Maqui Berry
(*Aristotelia chilensis*)
Leonel Rojo, SEBS, Rutgers University, USA

9:25 S-17 Ingestion of Blackcurrant Anthocyanins Facilitates Exercise-
induced Natural Immunity
*Suzanne Hurst, New Zealand Institute for Plant & Food
Research, NZ*

IWA : 6th International Workshop on Anthocyanins:

September 11 – 14, 2011 Charlotte/Concord, North Carolina

Key Note - Invitée

1-AGEORGES AGNES

2-Trafficking, anthocyanin, grapevine

3-Category : Anthocyanins Trafficking and Vacuolar Functions

4-Oral Presentation

5- Ageorges Agnes

Gomez Camila

Conejero Geneviève

Terrier Nancy

Cheyrier Véronique

6- Grape Berry : A Model for Study Trafficking and Sequestration of Anthocyanins.

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Anthocyanins are polyphenolic pigments responsible for most of the color diversity found in plants, and represent a huge proportion of soluble flavonoids present in grapevine (*Vitis vinifera* L.). Although the biosynthesis of these compounds has been described in details in many plants, the mechanisms responsible for their transport and accumulation within plant cells remain unclear. We will review the known proposed mechanisms of flavonoid uptake and accumulation in grapevine, with reference to the transport models and membrane carrier proteins.

We used MybA1 transformed hairy roots⁽¹⁾ as a grapevine model tissue producing anthocyanins to study their cellular trafficking and vacuolar sequestration. In these tissues, anthocyanin accumulate in different sub-vacuolar structures. We will discuss about the possible origin of these colored structures and the consequences for pigmentation will be presented. Moreover different molecular actors putatively involved in vacuolar sequestration of anthocyanins were recently identified: a Glutathion S-transferase (GST)⁽²⁾ and two MATE-type transporters, which specifically mediate acylated anthocyanin transport *in vitro*⁽³⁾. We will describe the different grapevine molecular actors participating to the anthocyanin transport, and discuss possible transport mechanisms in grapevine tissues and show how these results provide a new perspective on the transport and sequestration of flavonoids in plants.

(1) Cutanda-Perez et al. Plant Mol Biol 69, 633-648 (2009)

(2) Conn et al. J Exp Bot 59, 3621-3634 (2008)

(3) Gomez et al. Plant Physiol 150, 402-415 (2009)