FROM THE EDITOR

“Nascentes morimur”
“Our death starts at birth” wrote Marcus Manilius in succinct Latin two millennia ago. His words reverberate strongly in our current understanding of life processes. Our life requires controlled suicide of cells which are redundant, damaged or infected. This process, known as apoptosis, is a necessary component of normal development, tissue homeostasis and remodeling, response to irreparable cell injury and defense against cancer and degenerative diseases. Recent investigations, many of which were discussed during 13th Symposium of International Carotenoid Society in Hawaii, pointed toward a possible role of carotenoids in stimulating apoptosis in malignant tumors and their cell cultures. Great hopes are associated with finding phytochemicals which could prevent or even arrest the development of cancer, especially breast, prostate, and colon, those scourges of our fast aging society. The mechanism of apoptosis is in part regulated by mitochondria, which evolved from intracellular parasitic ancestors of purple bacteria entering a symbiotic life within eukaryotic cell about 2 billion years ago. While providing energy to the cell, mitochondria produce and contain dangerous molecules, sometimes triggering destruction of their host. However, the death of a wayward cell may be a life-saving event for the whole multicellular organism. The Symposium provided a perfect environment to ponder the great importance of carotenoids in the life of bacteria, plants and animals, on a scale of the biosphere, and in the areas of human health. The future of carotenoid research looks more “rosy” and promising than ever, if only it can attract more grant support and many bright, enthusiastic young scientists.

Maria S. Sapuntzakis (Chicago, IL)

News from CARIG Steering Committee

During EB 2001 the Steering Committee regretfully accepted resignation of Anne Sowell (CDC) from the Chair and elected Harold Furr (University of Connecticut), who was instrumental in organization of past CARIG conferences and in preparation of this newsletter, contributing numerous reports and the very popular review of carotenoid publications. Boon Chew (Washington State University) became the Treasurer in place of Susan Mayne (Yale University), who ended her term. The Committee includes also Steve Clinton (Ohio State University), Dale Cooper (Procter & Gamble Co.), Neal Craft (Craft Technologies), Maria Sapuntzakis (ex officio, as the editor of Carotenoid News). Two new members were elected: Cheryl Rock (University of California, San Diego) and Wendy White (Iowa State University). There will be no separate CARIG Pre EB conference at this year’s Experimental Biology, because of overlap with the International Carotenoid Society Symposium, which was held in January (see report elsewhere in the newsletter). The CARIG conference will return to its traditional format next year, at EB 2003. In its place, CARIG is co-sponsoring the Carotenoid Minisymposium on Monday, April 22, 2002 (see the highlights of Experimental Biology 2002 below).

UPCOMING EVENTS

April 20-24, 2002
Experimental Biology 2002. New Orleans, LA. Contact: EB’ 2002, c/o FASEB Office of Scientific Meetings, 9650 Rockville Pike, Bethesda, MD 20814-3998  tel: 301-530-7010, fax: 301-530-7014,  E-mail: eb@faseb.org,  website: www.faseb.org/meetings/eb2002[see program highlights below]

June 8-10, 2002
International Symposium on the Processing Tomato. Istanbul, Turkey. Organized by the Processing Vegetable Group of the International Society of Horticultural Science. Contact: Benard Bièche, AMITOM, Aviron, France, tel: 33-490861695, fax: 33-490270658, E-mail: tomato@tomate.org or Dr. Vural Huseyin, Ege University, Department of Horticulture, Izmir, Turkey, tel/fax: 90-232-388-1865, E-mail: tuncay@agr.ege.edu.tr

July 11-12, 2002

February or March, 2003

HIGHLIGHTS OF EXPERIMENTAL BIOLOGY 2002

EB 2002 Student Travel Award
As a continuing memorial to Prof. James Olson, CARIG is honored to continue the tradition of offering a $500 travel award to EB 2002. Each applicant should be first author on an abstract submitted to EB 2002. Awards are based on the merit of the abstract and on financial need; students, staff, and scientists beginning their careers are eligible to apply. Please send a copy of your abstract (on the EB 2002 form) and a letter briefly explaining the need for financial aid, by April 5 to: Dr. Harold Furr, Dept. Nutritional Sciences U-4017, University of Connecticut, Storrs, CT 06269-4017 (FAX 860-486-3674)

VARI / CARIG Social
The traditional VARI / CARIG Social (Vitamin A Research Interaction Group / Carotenoids Research Interaction Group) will take place on Saturday evening, April 20, 6:30 to 8 pm, in the Prince of Wales Room of the Hilton New Orleans Riverside. Cash bar.

Carotenoids Minisymposium
Monday, April 22, 2002; 8 am
New Orleans Convention Center, Room R04
As part of the Carotenoids Minisymposium, a special lecture “The James Olson Memorial Perspectives on Carotenoids” (sponsored by CARIG) will be presented by Dr. Noel Solomons


Lancraran, I., Diehl, H. A., Socaciu, C., Engelke, M. & Zorn-


MEETING REPORT

The 13th International Carotenoid Society Symposium

The 13th International Carotenoid Society Symposium held in Renaissance Ilikai Hotel in Honolulu, Hawaii, on January 6-11, was hosted by the Cancer Research Center of Hawaii, University of Hawaii at Manoa. It was a huge success with 220 participants from 26 countries and 186 presentations. This provided an excellent opportunity to highlight the groundbreaking research in carotenoids.

The conference was focused on the biological properties of carotenoids, especially regarding human health. These included bioconversion, absorption & kinetics, cancer, eye, health benefits, lycopene, commercial production of carotenoids, carotenoids as antioxidants, gene regulation by carotenoids, phytochemistry and photosynthesis. The scientific content of the sessions was outstanding and all presentations certainly contributed to the hot issues of carotenoid research, pure and applied. Dr. Clinton and Dr. Giovannucci’s talks on the role of tomatoes and lycopene in preventing prostate cancer gave me extensive background of the people who work in the field of carotenoids, sharing ideas and research results in a friendly atmosphere.

On the last evening a Banquet was held in the conference center. The hosts had arranged a traditional Polynesian culture revue and we were able to enjoy the authentic ambiance provided by professional Hawaiian Polynesian culture revue and we were able to enjoy the
dancers. A special menu was served to round off this evening in true Japanese, Italian, and American style. Free afternoons gave us the opportunity to learn about the history of Hawaii and discover the historic places such as Pearl Harbor. We are all very grateful to the Committee of the International Carotenoid Society for the Symposium, with Dr. John Bertram as Chair and Symposium organizer. Next symposium will be held in Edinburgh, Scotland, on July 17-22, 2005, with Dr. Andrew Young as Program Chair.

Eun-Sun Hwang (Chicago, IL)
Postdoctoral Fellow

TECHNICAL NOTE
Molecular Weights of Carotenoids
Elemental Compositions and Exact Masses of Common Carotenoids

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<tr>
<th>Carotenoid</th>
<th>Composition</th>
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Exact mass is defined as the monoisotopic molecular weight of a molecule and is calculated using the mass of the most abundant isotope of each element.


NEWS AND VIEWS
Native Bananas Rich in Provitamin A Carotenoids

A University of Queensland researcher, who is working to arrest a serious Vitamin A deficiency in the Federated States of Micronesia (FSM), believes she may have uncovered an under-utilised weapon against chronic disease in Australia: bananas. PhD student Lois Englberger, who has worked and studied in FSM since 1997, began testing native bananas on the advice of Micronesian locals who had long used the fruits as traditional weaning foods. As imported foods - such as rice and fatty products - have increasingly replaced the islands’ native foods in recent years, negative health consequences have followed, including the emergence of Vitamin A deficiency characterised by night blindness.

Ms Englberger said her search for local foods with possibly high amounts of provitamin A carotenoids – the precursors to Vitamin A – led her to discover a number of banana varieties and giant swamp taro that contained very high amounts of the carotenoids.

“Excitingly, these are actually the first varieties of bananas and giant swamp taro in the world that have been identified as being Vitamin A-rich,” she explained. While the news was promising for FSM, Ms Englberger said her current research also held possible implications for Australian nutrition, particularly in terms of meeting the health challenges posed by chronic diseases. “Recent research has indicated that a diet rich in carotenoids may work against the onset of chronic disease. It follows that bananas rich in carotenoids may have special value for both children and adults,” she said. “To date, the banana industry has focused worldwide on marketing and producing only the Cavendish variety, with low carotenoid content. Perhaps it is time we looked at alternative varieties, as well as native Australian foods that could be untapped sources of Vitamin A.”

The University of Queensland Media Release, July 2001

Tomato Sauce May Reduce DNA Damage in Prostate Cancer Patients

A component of tomato sauce may help reduce DNA damage in white blood cells and in the prostate, a new study suggests. This may have implications for the prevention or treatment of prostate cancer. The active ingredient could be lycopene, an antioxidant found in large amounts in tomatoes.

Men with prostate cancer, who consumed one tomato sauce-based entree a day for three weeks, had a statistically significant decrease in the amount of DNA damage in their white blood cells and prostate tissues. The pasta treatments also led to a reduction in their blood levels of prostate-specific antigen (PSA), a protein used to assess prostate cancer risk, report Longwen Chen M.D., Ph.D, Phyllis Bowen, Ph.D., R.D., and their colleagues at the University of Illinois at Chicago. The findings appear in the Dec. 19 issue of the Journal of the National Cancer Institute.

Human prostate tissue may be particularly vulnerable to oxidative DNA damage caused by free radicals, and an accumulation of this damage may play a role in the development of prostate cancer. Antioxidants such as lycopene can help remove free radicals. Tomatoes are especially rich in lycopene. In past epidemiologic studies, men who reported eating more tomato-based foods had a lower risk for prostate cancer—the second leading cause of cancer-related deaths among U.S. men.

In the new study, investigators measured blood leukocyte and prostate lycopene concentration, blood PSA levels, and blood leukocyte DNA damage in 32 men with localized prostate cancer. The subjects then ate one tomato-based pasta dish a day for three weeks before their scheduled prostate cancer surgery. Entrees consisted of a three-fourth cup of spaghetti sauce incorporated into four different dishes: sausage lasagna, baked rigatoni, penne pasta, and stuffed shells.

After the three-week regimen, and after surgery, there was an accumulation of lycopene in the prostate tissues and a statistically significant 21.3% decrease in oxidative DNA damage in leukocytes compared with pre-intervention levels.
Their prostate DNA damage was 28.3% lower than a control group’s. PSA levels decreased 17.5% after the intervention, but the authors note that it is unclear whether lycopene was the cause of the reduction. The answer may come from the results of an ongoing clinical trial involving lycopene and a placebo.

*University of Illinois at Chicago Press Release, December 13, 2001*

**Tomato Sauce Cuts Cancer Risk**

Men who consume tomato products two or more times a week can significantly reduce their chances of contracting prostate cancer, a study found.

The finding is based on data from the Health Professional Follow-Up Study, a project that followed the health history and dietary habits of 47,000 men, aged 40 to 75, from 1986 to 1998. During that period, 2,481 of the men developed prostate cancer.

Dietary questionnaires in the study included such food items as tomatoes, tomato sauce, tomato juice, pizza, watermelon and pink grapefruit, along with salsa, ketchup and other tomato-based condiments. When the data was adjusted for the effects of other lifestyle factors, the researchers found that tomatoes, especially if they had been cooked, were beneficial against prostate cancer. Those who ate at least two meals a week containing tomato products lowered their risk of prostate cancer by 24 percent to 36 percent.

Dr. Edward Giovannucci of Brigham and Women’s Hospital and the Harvard School of Public Health, the first author of the study, said it supported earlier research involving foods such as tomatoes that were high in lycopene, a powerful antioxidant. Lycopene is thought to protect against cancer by absorbing oxygen free-radicals, which are chemicals created during metabolism that can damage the genetic structure of cells. Spaghetti sauce was the most popular and also seemed to initiate metabolism that can damage the genetic structure of cells. Spaghetti sauce was the most popular and also seemed to give the most protection. Cooking raw tomatoes, as is done to make spaghetti sauce, may break down cell walls of the fruit and allow the body to absorb more lycopene. “These most recent findings add support to the notion that a diet rich in tomatoes and lycopene-containing foods, as well as other fruits and vegetables, may reduce the risk of prostate cancer.” Giovannucci said. A report on the study appears today in the Journal of the National Cancer Institute.

Jo Ann Carson, a clinical nutritionist at the University of Texas, Southwest Medical Center in Dallas, said the study “is an example that what we eat can affect our risk of cancer.” The study also supports the idea that foods rich in antioxidants, rather than vitamin pills, provide the most cancer protection, she said. “Eating the whole foods seems to give a beneficial combination that would be lacking in supplements.” Carson said.

*March 6, 2002 The New York Times*

**ANNOUNCEMENTS**

**International Carotenoid Society Website News**

The web site of the International Carotenoid Society has been migrated to a new server. You should now access the web site using your browser to connect to http://carotenoidsociety.org

I am hopeful that in its new home, the site will be more responsive, stable and secure. We have also added a new feature under the Members link. When you login with your id and password, you will find a new button labeled “Message Board”. When you click on this button, you will be brought to the “Carotenoid Society Forum”, where you can post messages pertaining to your work on carotenoids. The topics include General Announcements, Positions Available and Wanted, General Ads, and General Question and Answers. If you post a message and someone responds to it, you will get an e-mail notification that someone has done so, if you check the “Notify of Reply” option. This module will accept posting of requests for information, procedures, sources of carotenoids, advertisements for postdoctoral and other professional positions, and provide a forum in which a nested discussion of Society business, e.g. venues for symposia, program proposals, endorsements of candidates for election as officers or councilors in the Society, etc. may be carried out.

However, to use the Message Board, you must first register with the “Carotenoid Society Forum”. Registration to the Forum is necessary because it uses a separate database from the Member login. Once you have clicked on the “Message Board” button and are at the Carotenoid Society Forum page, do the following:

1. Click “Register”. Fill in the information, and you will be sent another password automatically by e-mail.
2. Obtain your new password from your e-mail.
3. Revisit the “Carotenoid Society Forum” page, and login to the forum using the provided password. You can then change the provided password if you wish, or you can elect to stay logged in to the Forum, so when you close your browser and come back, you will still be connected to it. Just remember that logging into the Members area and participation in the Carotenoid Society Forum are independent tasks.
4. You may now post messages on the Forum.

The Welcome message posted on the Carotenoid Society Forum is also stated here:

“Welcome to the new discussion forum for the International Carotenoid Society. This electronic forum is provided as a service for the members of the International Carotenoid Society and is intended to foster discussion and to communicate information. Although the forum is largely unmoderated, which means the site managers will not usually initiate, control, or censor the discussion, anything considered inappropriate will be removed. No messages should be regarded as official statements of Society policy, regardless of who posted the message. Also, the products described or opinions expressed in this forum are not necessarily endorsed by any of the officers of the Society nor by the Society itself. Thank you, and please do not hesitate to contact me with any questions or comments.”

Harry A. Frank, ICS President
E-mail: harry.frank@uconn.edu

**Plant Phenolics and Human Health Research Interest Group 5th Annual Scientific Symposium Saturday, April 20, 2002 12:30 p.m. - 6:00 p.m. New Orleans Convention Center Experimental Biology 2002 (No registration fee for PhenHRIG)**

Chairpersons : Myron Gross (University of Minnesota)
Gary R. Beecher (USDA)

12:30 p.m. PhenHRIG Mixer
1:00 p.m. Welcome to PhenHRIG & Introduction to Phenolics and Health (Myron D. Gross)
KEYNOTE ADDRESS
1:15 p.m. Activity Guided Isolation of Biologically Active Phenolic Substances (John M. Pezzuto)
FLAVONOID METABOLISM
1:55 p.m. Bioavailability, Metabolism, and Clinical Relevance of Soy Isoflavones (Kenneth D.R. Setchell)
2:30 p.m. Metabolism of Flavonoids (Peter C.H. Hollman)
3:05 p.m. New Investigators Introductions*
3:15 p.m. Panel Discussion: Uptake, Metabolism, and Activity of Flavonoids
3:30 p.m. Break
BIOLOGICAL ACTIVITY OF PHENOLICS

3:45 p.m. Influence of Tea on Carcinogenesis (C.S. Yang)
4:20 p.m. Dietary Flavonoids and Endothelial Function
           (Joseph A. Vita)
4:55 p.m. New Investigators Introductions*
5:05 p.m. Panel Discussion: In Vivo Functions of Flavonoids
5:30 p.m. Business Meeting

*PhenHRIG encourages young investigators to introduce themselves and share their research interests. For more information about participation in the New Investigators Introduction, contact Dr. Myron Gross at gross@epi.umn.edu or call 612-624-5417.

Internet Addresses for Carotenoid Researchers

1. This list is intended to be an open forum for carotenoid researchers from around the world to discuss recent developments in this field: CARIG.Forum@lists.unh.edu. To subscribe, send e-mail to: listproc@lists.unh.edu. In the body of the message write: subscribe CARIG Forum, your name.

2. International Carotenoid Society Web Page: www.carotenoidsociety.org. Anyone wishing to join the society and be listed in the web directory, please contact Harry A. Frank at harry.frank@uconn.edu.


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