



N°10, NOVEMBER 2018

# NEWSLETTER



# EUROCAROTEN

EUROPEAN NETWORK TO ADVANCE CAROTENOID RESEARCH AND APPLICATIONS IN AGRO-FOOD AND HEALTH

## WELCOME

We are pleased to welcome you to the 10<sup>th</sup> issue of the EUROCAROTEN newsletter.

In this issue, we present a summary of EUROCAROTEN's Workshop and 5<sup>th</sup> MC and 4<sup>th</sup> WG meetings organized in October 2018 in Valencia, Spain. Read about young researchers' involvement at the Workshop in 'Think Tank Information rubric'.

We are excited to invite you to EUROCAROTEN's Final meeting and International Conference on Carotenoid Research and Applications in Agro-food and Health, which will be held in November 2019 in Lemesos, Cyprus.

Have a look on the 'News from the Action' rubric to find finished STSMs during the last period and read "STSM experience report" by Karolina Chreptowicz. Also, get to know Nora O'Brien, leader of WG2 (Quality & Food Chain).

Read about our carotenoid of the month – *meso*-zeaxanthin and how model-based compartmental modelling can be applied to study whole-body carotenoid metabolism in 'Carotenoids in Daily Life' rubric.

You can find more information about EUROCAROTEN COST Action on its COST website [http://www.cost.eu/COST\\_Actions/ca/CA15136](http://www.cost.eu/COST_Actions/ca/CA15136) and on our website [www.eurocaroten.eu](http://www.eurocaroten.eu).

*Yours sincerely,  
Sanja Krstić  
Kristina Kljak*



Subscription to the newsletter e-mailing list will be made available soon, via the EUROCAROTEN website. For further information, please contact us via our e-mail [info@eurocaroten.eu](mailto:info@eurocaroten.eu). You can also send us your comments and proposals.

## NEWS FROM THE ACTION

### Past Events

[Page 2](#)

**Workshop on Carotenoids in Foods, Nutrition and Health and EUROCAROTEN 5th Management Committee and 4th Working Groups Meeting.**

23<sup>rd</sup>- 25<sup>th</sup> October, 2018, Valencia, Spain

### Contribution from the Network

[Page 3](#)

### Finished STSMs

[Page 4](#)

### Future Events

[Page 5](#)

**International Conference on Carotenoid Research and Applications in Agro-food and Health together with a final meeting of COST Action EUROCAROTEN**

26<sup>th</sup>- 28<sup>th</sup> November 2019, Lemesos, Cyprus

## FINISHED STSM EXPERIENCE REPORT

[Page 6](#)

### Karolina Chreptowicz

Biotechnological potential of newly isolated yeasts for carotenoids production

## EUROCAROTEN INTERVIEW

[Page 7](#)

### Talking with: Nora O'Brien

"In general, the carotenoids of most interest to me are those of greatest relevance with respect to human nutrition and health."

## CAROTENOIDS IN DAILY LIFE

[Page 8](#)

### Carotenoid of the Month: *Meso*-zeaxanthin

"...*Meso*-zeaxanthin was not known until recent years, since it usually stayed hidden under zeaxanthin's peak in HPLC analyses."

### Use of model-based compartmental modeling to study whole-body carotenoid metabolism

"...compartmental analysis has propelled research in nutrition toward a new era of conceptualizing complex biological systems..."

## THINK TANK INFORMATION

[Page 9](#)

Feedback report – ECIs participation in Valencia Workshop

## WORKING GROUP NEWS

[Page 10](#)

Working Group Meeting Reports – Part 1

# NEWS FROM THE ACTION

## SUMMARY FROM PAST EVENT

### Workshop on Carotenoids in Foods, Nutrition and Health

&

### EUROCAROTEN 5<sup>th</sup> Management Committee and 4th Working Groups Meeting

23<sup>rd</sup> – 25<sup>th</sup> October 2018  
Valencia | Spain



#### ORGANIZERS:

- COST Action EUROCAROTEN
- IATA-CSIC (Institute of Agrochemistry and Food Technology – Spanish National Research Council)

EUROCAROTEN Workshop on Carotenoids in Foods, Nutrition and Health was held on 23<sup>rd</sup> and 24<sup>th</sup> October 2018 and 108 researchers from EUROCAROTEN member countries and Brazil, Japan and USA participated. From total number of participants, 84 were invited by COST.

Workshop was inaugurated with a welcome note from Chair of Organizing Committee, María Jesús Rodrigo, and the Chair of EUROCAROTEN Action, Antonio J. Meléndez-Martínez, while Nora O'Brien and Torsten Bohn, leaders of WG2 (Quality & Food chain) and WG3 (Nutrition & Health), respectively, and Chairs of Workshop Scientific Committee gave short insights on Workshop program. Workshop included 16 short-talks and 5 keynote speakers. Short talks were given by three senior and 12 ECI speakers and one speaker from industry; for more information about ECI involvement read the Think Tank Information rubric.

Keynote speakers were from industry and academia: Dr. Johannes Von Lintig (Case Western Reserve University, USA), Dr. Maria Tsimidou (Aristotle University of Thessaloniki, Greece), Dr. Manfred Eggersdorfer (University of Groningen, Netherlands), Dr. Maria Helena Damasio (ROHA Europe, S.L.U) and Dr. Silvia Peris (Novus International).

During afternoon on 24<sup>th</sup> October 2019, Working Group (WG) meetings were held. In WG4 plenary meeting, recent progress in dissemination has been presented and discussed. María Jesús Rodrigo (Spain) and Irina Milislav (Slovenia) presented dissemination activities regarding carotenoids for primary and secondary school students organized at their Institutions. It was announced and presented by George Manganaris that the final meeting of EUROCAROTEN together with International Conference on Carotenoid Research and Applications in Agro-food and Health will be held on 26<sup>th</sup> – 28<sup>th</sup> November 2019 in Lemesos (Cyprus).

In WG1, 2 and 3 parallel meetings, participants discussed and arranged planned deliverables. Please read more about progress in WGs in “WG news” rubric in this and next issue of the Newsletter. The Management Committee (MC) meeting was held on the last day of the event. The Chair of Action, Antonio J. Meléndez-Martínez, presented the report for the second grant period and third grant period approved budget. Furthermore, the training school “Carotenoid Analysis”, organized by Paul Fraser, was announced to take place in spring 2019 at Royal Holloway University in London (UK).

To see photos from the meeting please visit our Facebook page: [www.facebook.com/eurocaroten](https://www.facebook.com/eurocaroten).



# NEWS FROM THE ACTION

## CONTRIBUTION FROM THE NETWORK



# 6<sup>th</sup> INTERNATIONAL CONFERENCE ON FOOD DIGESTION GRANADA 2019

2<sup>nd</sup> - 4<sup>th</sup> of April

Granada Conference Centre



### THE 6<sup>TH</sup> INTERNATIONAL CONFERENCE ON FOOD DIGESTION

The 6th International Conference on Food Digestion, an international meeting in the field of Food, Nutrition and Health organized in the frame of the **INFOGEST** (Improving Health Properties of Food by Sharing our Knowledge on the Digestive Process) research network will be held in **Granada between 2<sup>nd</sup> and 4<sup>th</sup> of April 2019**. The first 5 editions of the conference gathered around 200 experts from academia and industry from more than 30 countries. The scientific programme will be organized around the following topics:

- Food structure and nutrient bioaccessibility/bioavailability
- Design and characterization of functional food
- Oral processing and sensory properties of food
- *In vitro*, *in vivo* and *in silico* models of digestion
- Unravelling the mechanisms of food digestion
- Effect of food on gut microbiota and, more broadly, on human health

Abstract submission deadline is **31<sup>st</sup> January 2019**, and you can find full details of the conference in the website: <http://www.infogestgranada2019.com>.

### EUROCAROTEN AT THE INTERNATIONAL SOCIETY FOR NUTRACEUTICALS AND FUNCTIONAL FOODS 2018 CONFERENCE

14<sup>th</sup> – 17<sup>th</sup> October 2018

Vancouver, Canada

The Chair of the EUROCAROTEN, **Dr. Meléndez-Martínez** has presented the **Action** at the last edition of the ISNFF conference. He also chaired a session about carotenoids "Bioactives Carotenoids/Xanthophylls".

At the same session, the IPC member **Dr. Rachel Kopec** (Ohio State University, US) gave a presentation „Do novel food processing technologies offer health benefits? Bioaccessibility and bioavailability of carotenoids post-treatment”.

**Announcement for STSM applications within EUROCAROTEN during 3<sup>rd</sup> grant period:**

**Final date for application of STSMs which will be finished during 3<sup>rd</sup> grant period is 31<sup>st</sup> January 2019.**

# NEWS FROM THE ACTION

## FINISHED STSMs

Save the date

## Training school “Carotenoid Analysis”

8<sup>th</sup> – 10<sup>th</sup> April 2019

Royal Holloway University  
London | UK



### MASS SPECTROMETRY IMAGING OF CAROTENOIDS IN TOMATO FRUIT SECTIONS

**Grant Holder**

Dr. Manuel Rodríguez Concepción  
Centre for Research in Agricultural Genomics (CRAG),  
Spain

**Period**

17<sup>th</sup> – 30<sup>th</sup> July 2018

**Host Institution**

Weizmann Institute of Science, Israel

### CROCINS TRANSPORT DURING THE LIFE CYCLE OF SAFFRON

**Grant Holder**

Dr. Lourdes Gómez Gómez  
Universidad de Castilla – La Mancha, Spain

**Period**

17<sup>th</sup> – 27<sup>th</sup> July 2018

**Host Institution**

Italian National Agency for New Technologies, Energy  
and Sustainable Development (ENEA), Italy

### BIOTECHNOLOGICAL POTENTIAL OF NEWLY ISOLATED YEASTS FOR CAROTENOIDS PRODUCTION

**Grant Holder**

Dr. Karolina Chreptowicz  
Warsaw University of Technology, Poland

**Period**

3<sup>rd</sup> – 29<sup>th</sup> September 2018

**Host Institution**

Slovak University of Technology, Slovak Republic

### A POSSIBLE ROLE FOR THE TRANSCRIPTION FACTOR PIF1A ON THE REGULATION OF METABOLIC PATHWAYS BESIDES CAROTENOID BIOSYNTHESIS DURING TOMATO FRUIT RIPENING

**Grant Holder**

Miguel Simón Moya  
Autonomous University of Barcelona (UAB), Spain

**Period**

1<sup>st</sup> – 31<sup>st</sup> August 2018

**Host Institution**

Weizmann Institute of Science, Israel

### CAROTENOIDS ENCAPSULATION FROM BY-PRODUCTS

**Grant Holder**

Dr. Alyssa Hidalgo Vidal  
Department of Food, Environmental and Nutritional  
Sciences, University of Milan, Italy

**Period**

16<sup>th</sup> – 21<sup>st</sup> September 2018

**Host Institution**

Faculty of Technology, University of Novi Sad, Serbia



# NEWS FROM THE ACTION

## FUTURE EVENTS

### Save the date

26 -28 November 2019

The Royal Apollonia Hotel  
Lemesos

## International Conference on Carotenoid Research and Applications in Agro-food and Health

### ORGANIZERS:

- Cyprus University of Technology, Department of Agricultural Sciences, Biotechnology & Food Science
- Agricultural University of Athens, Greece
- EUROCAROTEN consortium

**VENUE:** Royal Apollonia Hotel, Lemesos, Cyprus

International Conference on Carotenoid Research and Applications in Agro-food and Health together with a **final meeting of COST Action EUROCAROTEN** will be held in Royal Apollonia Hotel, located in Lemesos, Cyprus. Larnaca airport, connected with major European cities, is located 60 km from Lemesos; complimentary transportation from/to Larnaca will be offered based on the most convenient arrival hours of delegates. Organizers negotiated **special rates of accommodation** in Royal Apollonia Hotel, ranging from 95 to 134 €.

The conference will be held on 26<sup>th</sup> and 27<sup>th</sup> of November, 2019. It will be comprised of several plenary and ordinary sessions, workshops and poster display sessions. Important dates are:

- Announcement of Keynote speakers: 1st March 2019
- Abstract submission: 1st March – 30th April 2019
- Notification of abstract acceptance: 10th May 2019
- E-COST invitations starting from 15th May
- Release of tentative scientific program: 1st July 2019

Meetings within CA EUROCAROTEN will be held on each day of Conference and on 28<sup>th</sup> November 2019. Organizers prepared several networking opportunities in the form of social events – **gala dinner, visit to Cyprus University of Technology and excursion to Paphos with traditional dinner.**

Registration fee of 260 € will cover official conference program and participant's package, lunches and mid-session coffee/refreshments breaks during conference, gala dinner in Lemesos and excursion with traditional dinner. Accompanying persons can attend gala dinner and excursion with traditional dinner for a registration fee of 100 €.

More information will be available at <https://www.eurocaroten.eu/>, official page of the event <http://web.cut.ac.cy/fruitsciencesgroup/eurocaroten2019> and in future issues of the newsletter.

# FINISHED STSM'S EXPERIENCE REPORT

Karolina CHREPTOWICZ

## BIOTECHNOLOGICAL POTENTIAL OF NEWLY ISOLATED YEASTS FOR CAROTENOIDS PRODUCTION

**Affiliation** Warsaw University of Technology, Faculty of Chemistry, Chair of Drug and Cosmetics Biotechnology, Warsaw, Poland

**Position** PhD Student

**Host Institution** Institute of Biotechnology, Faculty of Chemical and Food Technology  
Slovak University of Technology

**E-mail** Karolina.chreptowicz@gmail.com



As part of my STSM, I have spent one month at the Institute of Biotechnology, Faculty of Chemical and Food Technology, Slovak University of Technology in Bratislava in Prof. Milan Čertik group. The aim of my STSM was the characterization of carotenoid profile in yeast strains newly isolated from environmental samples. It covered two main topics of interests, which are: 1) New sources and/or technologies for the sustainable obtaining of carotenoids, and 2) Identification and obtaining of scarcely studied carotenoids of interest. This exchange visit was possible through the EUROCAROTEN network. Results obtained during STSM are valuable data that will be a basis for further study. Therefore, future cooperation with Prof. Milan Čertik is planned towards deeper characterization of the pigments produced by selected yeast strains.

When I come back to the time I have spent in Bratislava, I am very happy that I dared and made an attempt to contact and applied for the STSM grant. While working in the lab, I have unquestionably acquired new skills and widen my scientific horizons. I had the opportunity to test myself at work in a new environment and broaden my knowledge. I was lucky enough to work with specialists that have a huge experience and are known worldwide. Scientists at the Institute with whom I did not work directly also made my stay pleasant and not so stressful. I had the chance not only to gain theoretical and practical knowledge about isolating and analyzing carotenoid pigments produced by yeast but also to explore Bratislava.

Finally, I would like to thank Prof. Milan Čertik and PhD Jana Tkáčová for their warm welcome, openness, support at every step, guidance and valuable advices. With no doubt I highly recommend this abroad experience with an STSM not only for the professional but also personal development. I would like to thank the EUROCAROTEN committee for financial support and I am also very thankful to Prof. Lourdes Gomez for her assistance.



Read more @ [www.facebook.com/eurocaroten](https://www.facebook.com/eurocaroten)  
<https://profjohnolan.com/>



# EUROCAROTEN INTERVIEW

## TALKING WITH:

### Nora O'Brien

<b>Affiliation</b>	School of Food and Nutritional Sciences, University College Cork
<b>Position</b>	Professor in Nutrition
<b>Country</b>	Ireland
<b>Area of Interest</b>	Phytochemicals, Bioaccessibility, Bioavailability, Human Nutrition in the Developing World



#### Please tell us a bit about your lab and what you work on?

I have worked as a **faculty member in Nutritional Sciences in University College Cork** for the last 30 years following on from research degrees in the US (MS at the University of Minnesota, PhD at Cornell) and a postdoctoral position in Belgium (University of Leuven). During the last 30 years my lab has worked on very diverse areas but we have focused in particular on the **benefits of plant foods and phytochemicals in human nutrition**. Part of that work has focused on the **bioactivity and bioavailability of carotenoids from food sources**. My lab has employed primarily *in vitro* research techniques; however, we have also conducted human studies including recent work on human nutrition in Africa.

#### In general terms, which area of the carotenoids do you find most interesting?

In general, the carotenoids of most interest to me are those of **greatest relevance with respect to human**

**nutrition and health**. In this regard, some carotenoids have pro-Vitamin A characteristics and other have been related to a variety of human disease risks. The analysis of carotenoids in biological samples (blood, etc.) as **biomarkers of plant food intakes** is also of interest to me.

#### As an STSM hosting lab, what type of collaborative projects would you envision?

As an STSM hosting lab, the type of collaboration of greatest interest to me relates to **investigation of bioavailability of carotenoids from food sources**.

#### In your eyes, how can the EUROCAROTEN Action contribute to carotenoid research?

EUROCAROTEN COST Action **brings together a very diverse group** of individuals from many disciplinary backgrounds. The COST Action provides an **excellent forum to facilitate cross-disciplinary interactions**. These kind of interactions can lead to novel ideas that can move the field of carotenoid research ahead.

Read more @ [www.facebook.com/eurocaroten](https://www.facebook.com/eurocaroten)

# CAROTENOIDS IN OUR DAILY LIFE

## CAROTENOID OF THE MONTH

Name: *Meso*-zeaxanthin

Chemical Formula:  $C_{40}H_{56}O_2$

Molecular Weight: 568.87 g/mol

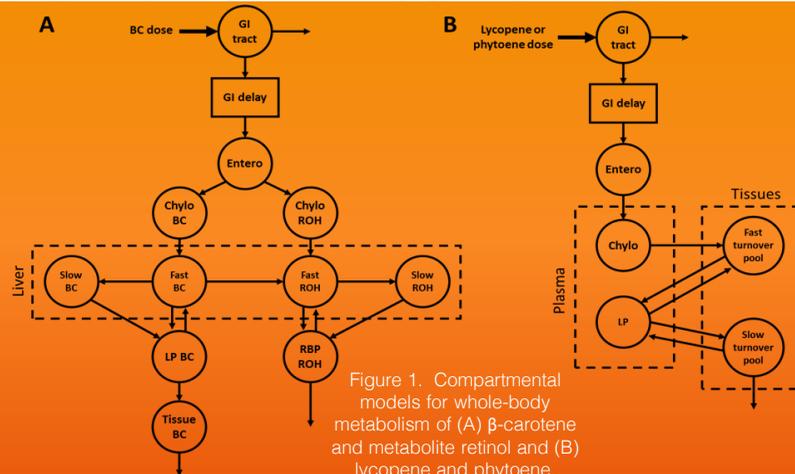
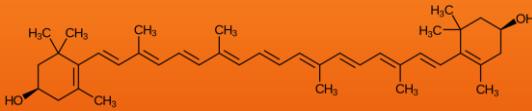


Figure 1. Compartmental models for whole-body metabolism of (A)  $\beta$ -carotene and metabolite retinol and (B) lycopene and phytoene.

### CAROTENOID OF THE MONTH: *Meso*-ZEAXANTHIN

*Meso*-zeaxanthin (MZ) is a diastereomer to zeaxanthin (Z) and differ only in the spatial orientation of the hydroxyl group on the C3' chiral position. This is why MZ was not known until recent years, since it usually stayed hidden under Z's peak in high performance liquid chromatography (HPLC) analyses.

Similar to other carotenoids, MZ has antioxidant and anti-inflammatory properties. However, one of its most interesting properties is that of its anatomical, biochemical and optical properties MZ exhibits over the macula, at the back of the eye. It is hence considered one of the three macular carotenoids, the other two being lutein and zeaxanthin. However, its relevance falls in its central location and high concentrations in the macula. MZ is currently used in nutritional supplements to treat a retinal pathology known as age-related macular degeneration, the most common cause of blindness in the developed world.

Interestingly, MZ dietary intake is scarce being its main source marine species (i.e., skin of trout, sardine and salmon, among others). However, it is primarily obtained by the bioconversion of other carotenoids, specifically from lutein in the retina, or asthaxanthin in other tissues.

MZ has other promising health claims, and in the future, we might be seeing new recommendations regarding MZ consumption for our health and wellbeing. Among these, it has been proven it portrays protection against hepatotoxic substances for liver injury, and current research is being conducted regarding its role in the brain and cognition.

Text by Marina Green, PhD Candidate at Waterford Institute of Technology, Ireland

E-mail: [MGreen@wit.ie](mailto:MGreen@wit.ie)

Read more @ [www.facebook.com/eurocaroten](https://www.facebook.com/eurocaroten)

### USE OF THE MODEL-BASED COMPARTMENTAL MODELING TO STUDY WHOLE-BODY CAROTENOID METABOLISM

Over the years, compartmental analysis has propelled research in nutrition toward a new era of conceptualizing complex biological systems in terms of their quantifiable processes, ranging from specific metabolic pathways to whole-body nutrient metabolism. Understanding the underlying kinetic and dynamic behavior of nutrients can provide critical information to aid in developing recommendations related to nutrient requirements. Moreover, compartmental modeling has the unique power to make predictions about processes that may be difficult to study in humans.

In the carotenoid field, initial models for  $\beta$ -carotene, lycopene and phytoene metabolism in humans have been developed (Figure 1). Among their contributions, these models indicate high inter-individual variation in bioavailability; one quantifies  $\beta$ -carotene conversion to retinol, showing that conversion occurs not only in the intestine but also in tissues such as the liver; and another predicts isomerization of trans- to cis-lycopene. Comparison of these studies has shed light on similarities and differences in metabolic pathways used by the various carotenoids. In other work, parallel compartmental models have been developed to describe tracer kinetics of retinol derived from  $\beta$ -carotene and preformed vitamin A, providing an independent estimate of  $\beta$ -carotene bioefficacy. A subsequent analysis used compartmental analysis and model simulation to theoretically validate a single-sample plasma retinol isotope ratio method for estimating provitamin A carotenoid bioefficacy.

Text by Jennifer Lynn Ford, PhD Candidate at The Pennsylvania State University, USA.

E-mail: [jlf5271@psu.edu](mailto:jlf5271@psu.edu)



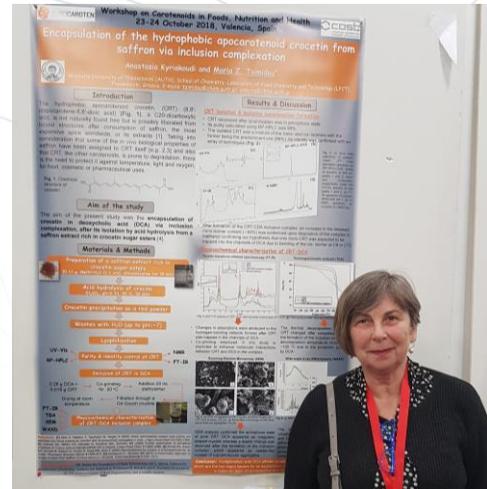
# THINK TANK INFORMATION

## PARTICIPATION OF YOUNG RESEARCHERS AT EUROCAROTEN WORKSHOP ON 'CAROTENOIDS IN FOOD, NUTRITION AND HEALTH'

The Workshop in Valencia (Spain) was an opportunity and encouragement for young researchers (PhD students and Early Career Investigators – ECIs) to present their work giving an oral presentation of their EUROCAROTEN STSMs and work from their research area.

The oral presentations were arranged in different sessions related to **Health beneficial effects** (A. Serrano from University of Illes Balears, Spain; Dr. R. Moran from Waterford Institute of Technology, Ireland; Dr. S. Krstić (Vlaisavljević) from University of Novi Sad, Serbia); **Bioavailability** (P. Mapelli-Brahm from University of Sevilla, Spain; M. Iddir from Luxembourg Institute of Health, Luxembourg; Dr. D. Weber from German Institute of Human Nutrition, Germany) and **Occurrence, extraction and production of carotenoids in foods** (Dr. E. Sarrou from Institute of Plant Breeding and Genetic Resources, HAO-DEMETER, Greece; F. Bantis from Aristotle University of Thessaloniki, Greece; R. Abdelkebir from Arid Lands Institute, Tunisia; Dr. J. Žlabur from University of Zagreb, Croatia). Moreover, Ms P. Mapelli-Brahm, Mr M. Iddir, Dr. J. Corte-Real, Dr. K. Kljak, Dr. L. Van Meulebroek and Ms. R. Abdelkebir were chairs or co-chairs in the sessions.

Within this event, young researchers also had an opportunity to exhibit their work through poster presentations. There were 19 poster presenters, three of them were related to carotenoids in health and nutrition, and 16 related to carotenoids in foods. Posters were displayed during the 2-days of the Workshop and all of



them showed high quality content and presentation. Two posters were awarded by the Poster Award Committee based on their scientific quality and excellent presentation:

1. Encapsulation of the hydrophobic apocarotenoid crocetin from saffron via inclusion complexation  
Anastasia Kyriakoudi, M. Tsimidou
2. Carotenoid producing *Thermus* bacteria as factor for pink discoloration in cheese  
Bhagya R.Y. Jonnala, S. Zhong, P.L.H. McSweeney, P.D. Cotter, J.J. Sheehan, R.E. Kopec,

First authors of both works are PhD students – Anastasia Kyriakoudi at Aristotle University of Thessaloniki, Greece; and Bhagya R.Y. Jonnala at Teagasc Food Research Centre, Moorepark, Ireland. Congratulations!



OF EARLY CAREER INVESTIGATORS AND OTHER YOUNG RESEARCHERS

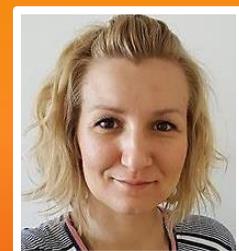
### Representatives for 3<sup>rd</sup> grant period:



Sanja Krstić  
[sanja.vlaisavljevic@dh.uns.ac.rs](mailto:sanja.vlaisavljevic@dh.uns.ac.rs)



Marina Green  
[mgreen@wit.ie](mailto:mgreen@wit.ie)



Kristina Kljak  
[kkkljak@agr.hr](mailto:kkkljak@agr.hr)



# WORKING GROUP NEWS

Leaders of WG1, Paul Fraser, and WG2, Nora O'Brien, gave us insight in progress done so far, as discussed during WGs meetings in Valencia.

**REPORT FOR WG1:** The EUROCAROTEN WG1 has made **significant progress** over the duration of the project and are particular please to see **the impact of the workshop held last year in Croatia**. From this workshop it was clear that there are a **number of topics emerging in the field that need addressing**, such as apocarotenoids and their biological functions, sequestration in coordination with biosynthesis and the impact of new gene editing technologies. In 2019 the focus of working group one will be the **training school to be held in London** and will address functional complementation and analysis. The **lack of opportunities to apply for consortium based funding and improved interaction** with the other working groups are still **areas that working group one would like to see improved**".

WG leader: Paul Fraser ([paul.fraser@rhul.ac.uk](mailto:paul.fraser@rhul.ac.uk))  
WG vice-leader: Pauline Snoeijs-Leijonmalm ([Pauline.snoeijs-leijonmalm@su.se](mailto:Pauline.snoeijs-leijonmalm@su.se))

**REPORT FOR WG2:** During the WG2 meeting ongoing activities were discussed and future plans elaborated. Maria Graça Dias updated the group on the **European food carotenoid database**. Data collection will finish by the end of 2018. Data checking, quality evaluation and finalization of the database is planned for Spring 2019. An update on the **E-questionnaire for high school children** was presented by Anamarija Mandić, the aim of which is to assess the knowledge of carotenoids in this cohort. Progress on the 2 reviews was discussed. While **the first review on carotenoids in foods and feeds will be finalised shortly**, the second review, on possible applications of carotenoids in functional foods and nutraceuticals and safety aspects, requires some restructuring.

WG leader: Nora O'Brien ([nob@ucc.ie](mailto:nob@ucc.ie))  
WG vice-leader: Anamarija Mandić ([anamarija.mandic@fins.uns.ac.rs](mailto:anamarija.mandic@fins.uns.ac.rs))

## ACKNOWLEDGEMENTS

We would like to thank everyone who has so kindly contributed with the content present in this newsletter:

**Antonio J. Meléndez Martínez and Cristina L.M. Silva** for their guidance and supervision during the making of the EUROCAROTEN Newsletter.

**Karolina Chreptowicz** who has kindly given her testimony.

**Prof. Nora O'Brien** for his contribution to our EUROCAROTEN Interview.

**Jennifer Lynn Ford and Marina Green** for contribution to our "Carotenoids In Our Daily Life" rubric.

This newsletter is part of dissemination strategy of COST Action EUROCAROTEN, supported by COST (European Cooperation in Science and Technology).

*COST (European Cooperation in Science and Technology) is a pan-European intergovernmental framework. Its mission is to enable break-through scientific and technological developments leading to new concepts and products and thereby contribute to strengthening Europe's research and innovation capacities.*

## DISCLAIMER

"The EUROCAROTEN COST Action support for the production of this newsletter does not constitute endorsement of the contents which reflects the views only of the authors, and the COST Action cannot be held responsible for any use which may be made of the information contained therein."

## NEWSLETTER CONTRIBUTORS

### Editors:

Antonio J. Meléndez-Martínez ([ajmelendez@us.es](mailto:ajmelendez@us.es))  
Kristina Kljak ([kklijak@agr.hr](mailto:kklijak@agr.hr))  
Marina Green ([mgreen@wit.ie](mailto:mgreen@wit.ie))  
Sanja Krstić ([sanja.vlaisavljevic@dh.uns.ac.rs](mailto:sanja.vlaisavljevic@dh.uns.ac.rs))

### Dissemination:

Anneli Ritala ([anneli.ritala@vtt.fi](mailto:anneli.ritala@vtt.fi))  
George Manganaris ([george.manganaris@cut.ac.cy](mailto:george.manganaris@cut.ac.cy))  
Cristina Luisa Silva ([clsilva@porto.ucp.pt](mailto:clsilva@porto.ucp.pt))  
Mladen Brncic ([mbrncic@pbf.hr](mailto:mbrncic@pbf.hr))

### Design and Layout:

Miguel Braga ([miguel.braga@brag.pt](mailto:miguel.braga@brag.pt))