



Annual Report 2022

NuGO Association

NuGO is an Association of universities, research institutes and SMEs focusing on the development of molecular nutrition, personalised nutrition, nutrigenomics and nutritional systems biology

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NuGO Association 2022

Dear NuGO members, colleagues, and friends,

It is my privilege to briefly introduce this annual report of the NuGO association and summarize some of our recent activities. After the challenging two pandemic years we were extremely happy to meet again in September 2022 in real life for the NuGO week 2022 in the beautiful old city of Tarragona.

We had wonderful days enjoying the good science and great Spanish foods and discussing with colleagues and friends exciting advances in the field of Nutrigenomics and Precision Nutrition. It was great to see many young PhDs and postdocs presenting very enthusiastically their research results.

From these stimulating discussions and the excellent work of ECN I am convinced that NuGO is a very healthy association with a lot of positive energy and potential. To even better use these opportunities the network board developed this year in several brainstorm sessions a new organisational strategy with 6 working groups. NuGO members are invited to join one of these working groups to directly contribute to NuGOs future activities. I am very excited about these new developments as it will allow to use much more the enormous innovative potential of the NuGO member organizations.

Finally, I would like to thank Dr. Meike Bünger and Dr. Lydia Afman from the NuGO office for their enthusiastic and tireless support and all members for their commitment to NuGO over the past year and the enthusiasm you bring to our association!

Prof. Michael Müller, CEO of NuGO

NuGO Management Board



Prof. Michael Müller
University of East Anglia (UK)
NuGO Director



Dr Lydia Afman
Wageningen University (NL)
NuGO Executive Secretary



Dr Guy Vergères
Agroscope (CH)
NuGO Management Board (Chair)

As of September 2022, the NuGO Management Board is composed of

Guy Vergères (Agroscope, CH) – Chair
Stine Marie Ulven (University of Oslo, NO) – Vice Chair
Chris Evelo (Maastricht University, NL)
Diana Ivanova (Medical University of Varna, BG)
Chiara Murgia (Monash University, AU)
Lynn Vanhaecke (Ghent University, BE)
Fiona Malcomson (Newcastle University, UK - ECN representative)
Lorraine Brennan (University College Dublin, IE)
Baukje de Roos (University of Aberdeen, UK)

NuGO General Members Meeting chair and vice-chair are Guy Vergères (Agroscope, CH) and Stine Marie Ulven (University of Oslo, NO) respectively.

New Management Board Member



Professor Stine Marie Ulven is the Head of the Department of Nutrition at the University of Oslo, Norway where she has been a professor in nutrition since 2015. She started her career as a post-doctoral fellow focusing on molecular nutrition and the role of lipids as ligands for nuclear receptors involved in the regulation of genes in lipid metabolism. She has since been working with dietary intervention studies in humans focusing on fat intake and health effects.

Since the last NuGO General Assembly in September 2022 in Tarragona, Professor Stine Marie Ulven has joined the NuGO Board.

She replaces Professor Marjukka Kolehmainen who was a fantastic NuGO Board member from 2014 to 2022 and very active within NuGO right from the start.

Professor Stine Marie Ulven took over the role as Vice Chair of the NuGO Board.

At the University of Oslo, she has her own independent research group "Personalized nutrition and prevention of cardiometabolic diseases". She is co-author on the text book *Nutrigenomics: How science works* (Springer by Carlberg, Ulven and Molnar).

General Members Meeting 2022

The NuGO General Members meeting represent the highest authority within NuGO and they meet at least once a year. Of the 30 Members, 29 Members attended the 15th General Members Meeting on the 29th of August 2022 which was the first live meeting since the beginning of COVID. It was held in the beautiful city of Tarragona.

The General Members Meeting accepted the Institute of Animal Reproduction and Food Research of the Polish Academy of Sciences, Poland, represented by Professor Carsten Carlberg, as a new member. Professor Carlberg was selected as an ERA Chair holder under the WELCOME grant, winning an international competition in which candidates were evaluated by renowned scientists from Poland, France, Germany, and Greece. In general, NuGO has continued to offer a reduced fee to new Members during their first year of membership (50%). During the General Members Meeting the members agreed to keep the Annual NuGO Membership fee to €1200, which is a 25% reduction.

Membership is only open to organisations, but individuals are more than welcome to participate in events organised or supported by NuGO. At the end of 2022, 30 organisations were Members of NuGO including the Institute of Animal Reproduction and Food Research of the Polish Academy of Sciences. The General Assembly 2022 also accepted Stine Marie Ulven (University of Oslo, NO) as the new vice chair of the NuGO Management Board.

The NuGO Secretary is based at Wageningen University & Research (NL). Meike Bünger is the person behind the NuGO emails and the NuGO Newsletter as well as the LinkedIn posts where she reaches out to the NuGO members regularly.



NuGO representatives during the 15th General Members Meeting on the 29th of August 2022 in Tarragona.

NEW Membership 2022

A cordial welcome for our new NuGO member from Poland!

The General Assembly 2022 accepted the Institute of Animal Reproduction and Food Research of the Polish Academy of Sciences, Poland, represented by the new member Carsten Carlberg. Professor Carlberg is the ERA Chair of the Centre of Excellence in Nutrigenomic at the Olsztyn Science and Technology Park campus at the Polish Academy of Sciences.

Prof. Carlberg has been active within NuGO for many years and has attended several NuGO weeks where he was a presenter as well as an attendee. We are looking forward to a fruitful networking and knowledge exchange.



**Institute
of Animal Reproduction and Food Research
Polish Academy of Sciences
in Olsztyn**



Carsten Carlberg



Carsten Carlberg is presenting the Institute of Animal Reproduction and Food Research of the Polish Academy of Sciences, Poland on the first day of the NuGO week 2022.

NuGO Courses 2022

Hands-on 16S rRNA gene amplicon analysis seminar, 23rd -25th of May 2022, Technische Universität München, ZIEL - Institute for Food & Health

Supported by the NuGO association, three NuGO member affiliates, Dr. Aoife McNamara and Méabh Ní Chathail (University College Dublin, Ireland) and Syeda Anchel Zahra (DIfE, Potsdam-Rehbrücke, Germany) attended the in-person seminar on 16S rRNA gene amplicon analysis organized by the Ziel Akademie in Technical University of Munich from 23rd -25th of May 2022.

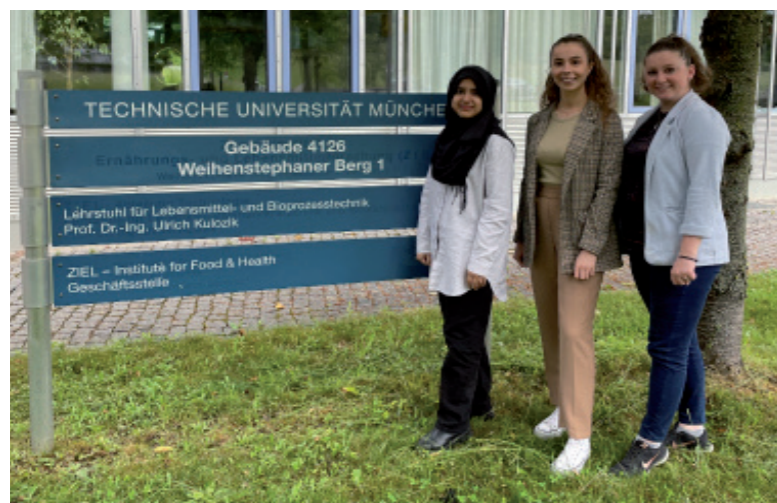
The workshop began with an introduction to genome sequencing with Illumina and familiarisation with how to process raw sequencing data (in the format of FASTQ files) and how to carry out a quality check. One of the main concepts explained was the importance of knowing how to interpret data, including measuring richness, α -diversity, β -diversity and the different indexes associated with these parameters. The IMNGS2 platform was introduced. Course participants were among the first to use the online platform to produce ASVs (amplicon sequencing variant) and OTUs (operational taxonomic unit) tables using SILVA (database for quality checked and aligned ribosomal RNA sequence data analysis).

Further dataset analysis was performed using Rhea tools, these are scripts suitable for normalization and rarefaction curve production, α -diversity and β -diversity analysis, taxonomic

binning, serial group comparisons and correlation analysis. We learned how multiple software systems can provide deeper insight into not only the data but also subclustering and distance matrix comparisons (DivCom) as well as predictive modelling of microbial communities over time (Chronos).

The final tool that was introduced was Namco, a user-friendly interface that can be used for microbial data analysis including everything from raw data processing to complex analysis, and correlation analysis as well as differential and pathway analysis. This tool could be used to determine if specific disease cohorts/treatment groups have a specific microbiome which differs from the non-diseased/control group.

Finally, we learned about the production and editing of high-quality graphs and figures in iTOL and Inkscape, which are suitable for publication. Overall, this workshop provided a brilliant overview of many useful tools for analysing microbiome data. The facilitators delivered the complex theory and the related software extremely well and at a level appropriate for those with a basic understanding of bioinformatics. This interactive hands-on course provided a wonderful learning opportunity to keep educating young researchers within the NuGO network. We would recommend it for any researcher using 16S RNA gene amplicon analysis in their research.



Left to right

Syeda Anchel Zahra

(DIfE, Potsdam-Rehbrücke, Germany),

Méabh Ní Chathail

(University College Dublin, Ireland),

Aoife McNamara

(University College Dublin, Ireland).

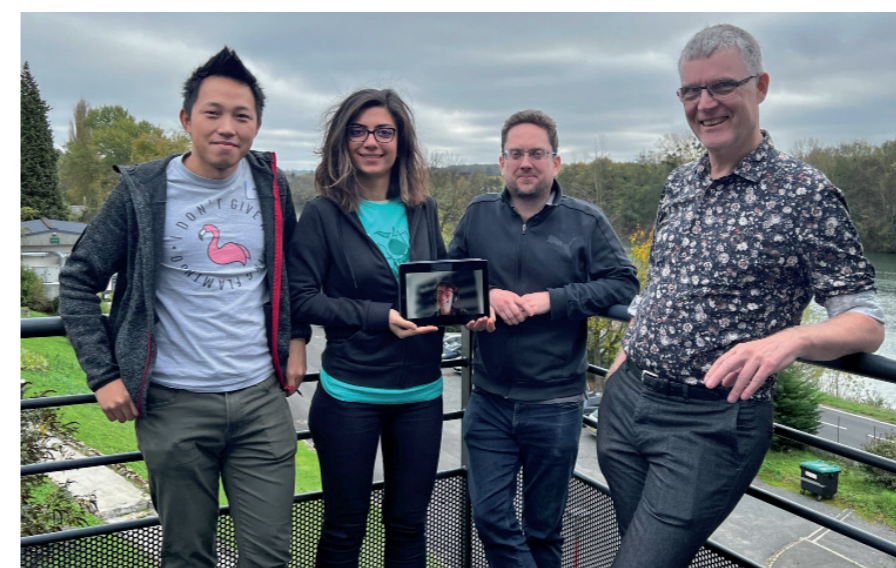
ELIXIR Biohackaton - 2022 in Paris from 7th to 11th of November 2022.

The Elixir Biohackathon Europe was held between the 7th and 11th of November in Châteaufort Les Berges de Seine in Greater Paris. Earlier in the year, Duygu Dede Şener, Jan Stanstrup, Giovanni Bacci and Duncan Ng submitted a project titled "Alignment of Food & Nutrition Study Data". In the proposal, they suggested a way to align studies found within the food and nutrition community. Out of the 66 projects submitted, theirs was accepted!

In summary, they were successful in building an application that assigns ontology to food diaries. To achieve this, they took entries from food diaries, scrubbed the input, used ZOOMA's API, and displayed the results to the user. By default, the application picks the most likely ontology. In a situation where the ontology is misassigned, the application will offer alternative ontology. Do you have any questions about this? Please let us know!



The NuGO travel grant made it possible for Jan Stanstrup (University of Copenhagen, Denmark) and Duncan Ng (Quadram Institute Bioscience, UK) to travel to Paris to be part of the Food & Nutrition team at the ELIXIR Biohackathon in November 2022.



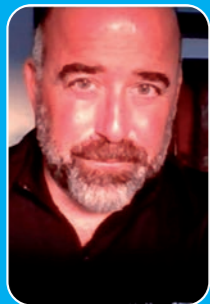
The Food & Nutrition Biohackathon team. From the left to right, we have **Duncan Ng** (Quadram Institute Bioscience, UK), **Duygu Dede Şener** (Maastricht University, NL), **Blanca Lacruz-Pleguezuelos** (IMDEA Food Institute, SP), **Jan Stanstrup** (University of Copenhagen, DK), and **Finn Sandø** (University of Copenhagen, DK).

NuGO Webinars

NuGO webinars address a range of topics, such as metabolism, precision nutrition, new developments, microbiota, data sharing in Nutrition research. The webinars are open to NuGO members and are intended to strengthen networking and collaboration. Several webinars were set open to the whole nutrition community. NuGO webinars were well received during 2022 and will be part of the 2023 programme.

Wearable Sensors for Research and Practice in Systems Nutrition - 14th of February 2022

The state-of-the-science in biomedical engineering, biomimetic materials and mobile communications has opened promising venues for development and extensive deployment of wearable, mobile, non-invasive, self-powered sensors for continuous streaming of quantitative response biomarkers to food and nutrient intake within point-of-care and real-world environments. Such technologies are essential for obtaining accurate, precise and physiologically meaningful measures of response and prognostic values that reflect the depth and breadth of variation and complexity in exposures, physiological processes and products of the exposure-process relationship within individuals. In this NuGO webinar, speakers discussed their work on wearable, mobile, electrochemical, mechanical and photonic molecular sensors for applications in 1) research and practice of systems and personalized nutrition or 2) intelligent digital therapeutics with engagement and biometrics, including rapid diagnostics.



Dr John Paul SanGiovanni
BIO5 Institute,
University of
Arizona, USA



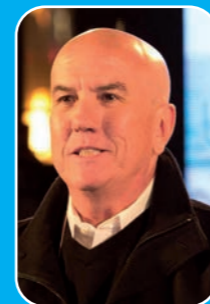
Dr Joseph Wang
Center for Wearable
Sensors, UCSD,
USA



Dr John A. Rogers
Institute for
Bioelectronics,
Northwestern
University, USA



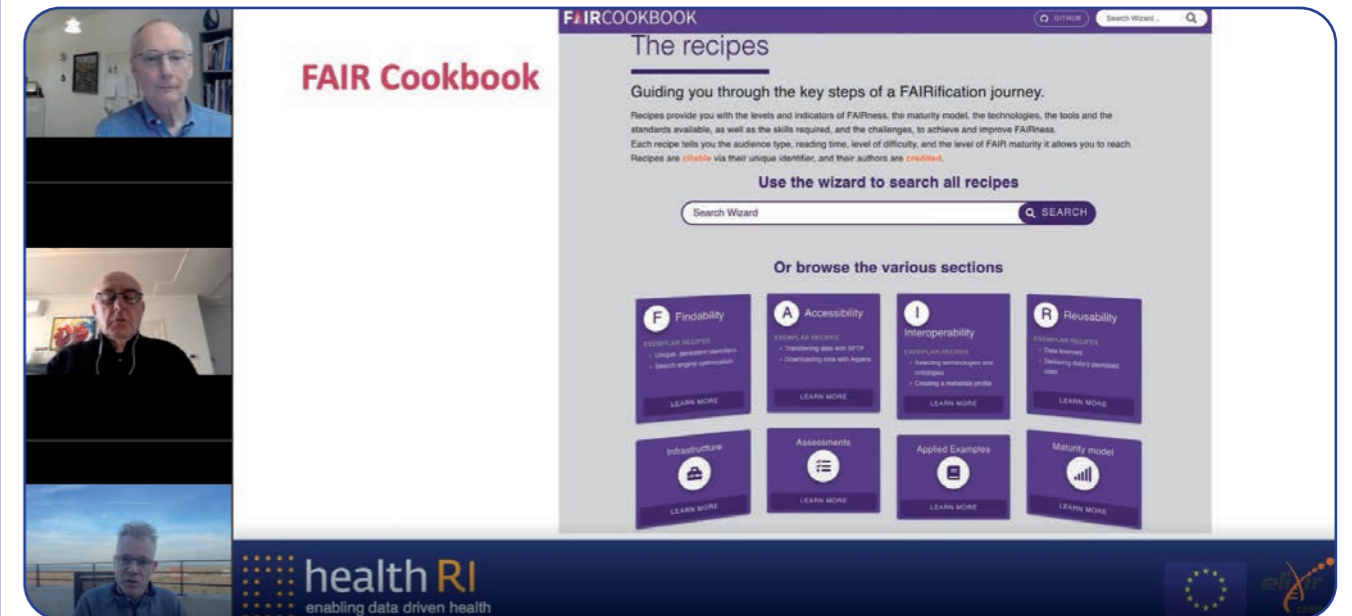
Dr Wei Gao
California Institute
of Technology,
USA



Dr Kent E. Dicks
Life365, USA

“What does FAIR mean to you?”

This webinar was organized by Professor Chris Evelo, Head of the department of Bioinformatics BiGCaT at Maastricht, NL and Professor Lars Ove Dragsted, Head of Preventive and Clinical Nutrition, University of Copenhagen, DK. As chairs, they invited Dr. Rob W.W. Hooft, Programme Manager Data Stewardship @ Dutch Techcentre for Life Sciences (DTL), who told NuGO members about FAIR data, DS Wizard and the philosophy behind it, and that making data FAIR is not only what the funders ask of us, but also really helps in doing research, often preventing data management problems instead of incurring them.



FAIR data are data which meet principles of findability, accessibility, interoperability, and reusability (FAIR). The acronym and principles were defined in a March 2016 paper in the journal Scientific Data by a consortium of scientists and organizations. The FAIR principles are often seen as an obligation that funding organisations place on research to satisfy their wish that the data collected with the help of their money provides the greatest societal value. This webinar aimed to show researchers how to turn this burden into a benefit by using FAIR to guide data management decisions from the start of a project. Supporters argued that this can save a lot more time than it costs, and greatly reduces time needed to publish the data at the end of a project. This webinar outlined the first steps any project can take towards more FAIR data, and introduced the Data Stewardship Wizard as a tool to explore more options. There was also ample time for questions and discussions.

ECN Webinars

The NuGO ECN Webinar series launched on 30th March with a presentation on “Precision Nutrition – Fact or Fiction: Using multi-omics to unravel the multiple inter-related determinants of our individual responses to food” by Dr. Sarah Berry and Dr. Kate Bermingham from King's College London.

30th of March 2022 – “Precision Nutrition – Fact or Fiction: Using multi-omics to unravel the multiple inter-related determinants of our individual responses to food”

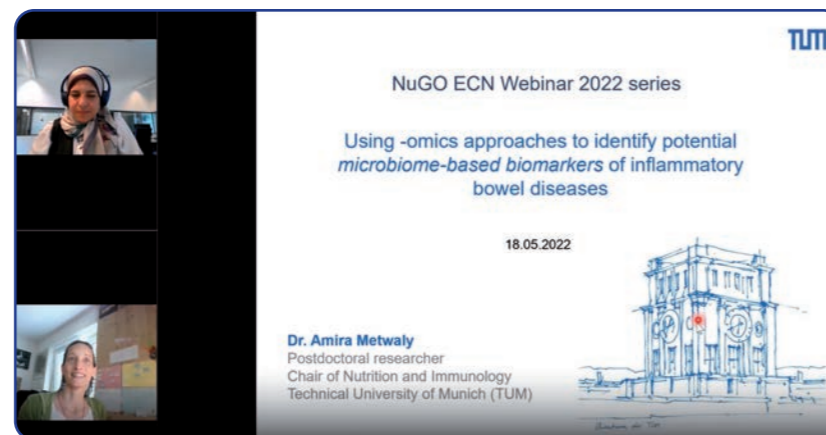
Drs. Berry and Bermingham discussed the latest research behind using personalized approaches. Drs. Berry and Bermingham discussed the latest research behind using personalized approaches for nutritional advice, including findings from the ZOE PREDICT Programme. This webinar was very successful and attracted almost 200 researchers from all over the world.



The second NuGO ECN webinar ECN invited Dr. Amira Metwaly from Technical University of Munich, Germany who presented her recent research to the NuGO community.

18th of May 2022 – “Using -omics approaches to identify potential biomarkers of inflammatory bowel diseases”

Dr. Metwaly provided a practical example of the application of integrative multi-omics analyses combined with mechanistic validation in gnotobiotic mouse models to generate data. With this data, researchers can compile microbiome risk profiles to determine potential biomarkers of inflammatory bowel disease. Dr. Metwaly is a postdoctoral researcher and the Chair of Nutrition and Immunology, School of Life Sciences, at the Technical University of Munich (TUM). With a background in microbiology and bioinformatics as well as an interest in the role of the gut microbiota in health and disease, Dr. Metwaly's research focuses on the effects of diet on the gut microbiota. She analyses and integrates -omics data to better understand the underlying mechanisms of inflammatory bowel disease.

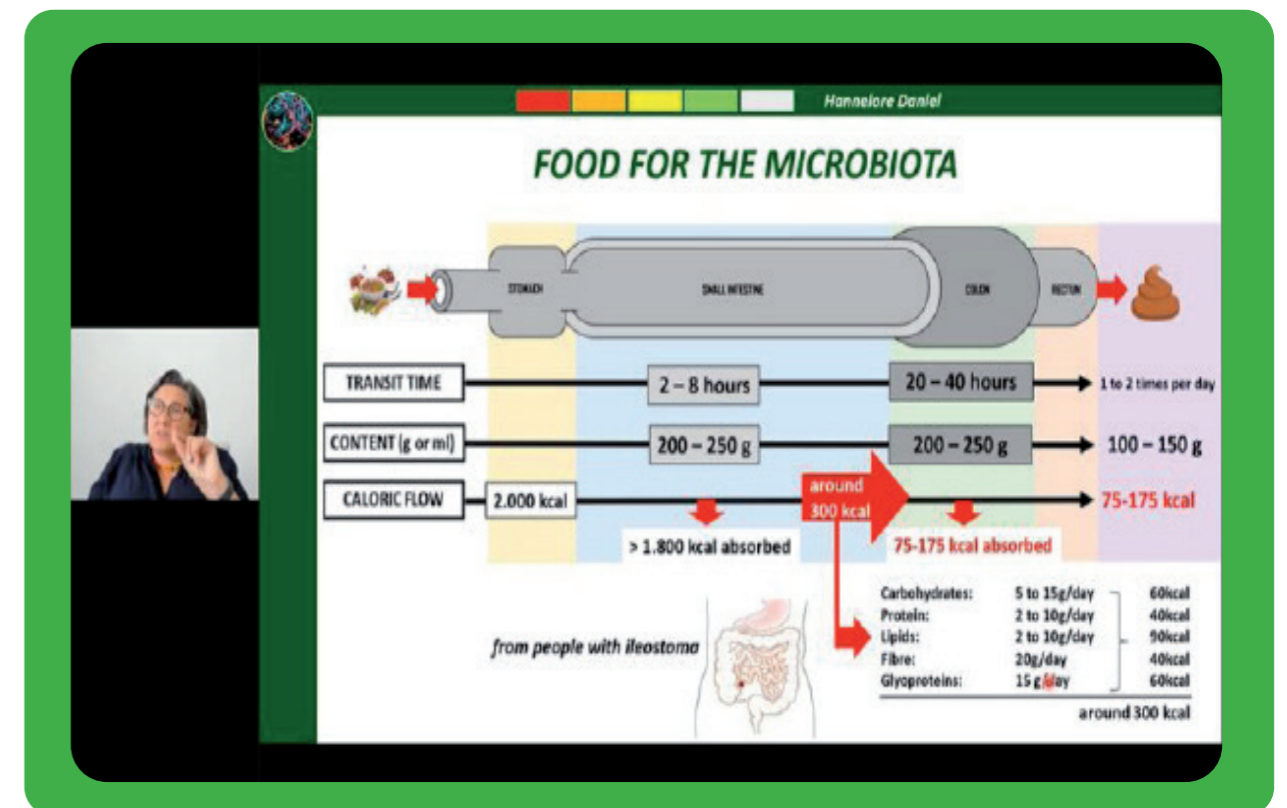


The third NuGO ECN Webinar of the 2022 series was given by Professor Hannelore Daniel, the former Chair of the Physiology of Human Nutrition department at the Technical University of Munich (TUM), Germany.

6th of July - Professor Hannelore Daniel Precision Nutrition – 'Gut physiology meets microbiome science'

With 40 years of experience, Professor Daniel used her knowledge of physiology to help us understand how our diet effects our microbiome. In her own professional yet entertaining way, she explained the challenges and limits facing modern-day microbiome research. Professor Daniel inspired us with her insight into microbiome research and cautioned us to be careful in making scientific claims at this stage. She addressed the question whether the microbiome serves as a reporter for alterations in gut physiology

observed in a variety of diseases (Alzheimer, Parkinson, Diabetes) or whether it is indeed involved in disease initiation and progression. Dr. Fiona Malcomson and Professor Daniel then fielded questions from the audience, doing their best to answer all of them! It was a real pleasure to host this third NuGO ECN webinar 2022.



NuGO week 2022



From the 29th of August to the 1st of September 2022, 130 researchers from all around Europe, Australia and beyond enjoyed not only the Spanish sun and the great city of Tarragona, but also a diverse scientific NuGOweek programme.

Four sessions covered diverse topics including new insights into the activity of bioactive compounds, the potential of precision nutrition in health management, the use of omics data in nutrition research and the impact of chrononutrition in metabolism and physiology. Again, the NuGO week brought together young talented researchers and senior scientists to discuss the latest findings in food and nutrition sciences.



In total, 70 abstracts were submitted this year's NuGO week, of which 12 were selected by the scientific committee for oral presentations. Six members of an independent jury scored these presentations on

- 1) visual appeal of presentation materials,
- 2) communication of objective and significance,
- 3) explanation of project design and methodology,
- 4) explanation of results and conclusions and an
- 5) overall impression of the given presentation.

There were two presentations which all jury members scored as **BEST NuGO ORAL**: [Vera Plekhova](#) (Ghent University, BE) and [Anouk Gijbels](#) (Wageningen University and Research, NL) presented their research results in an extraordinary way! Well done ladies.

[Vera and Anouk shared the BEST NuGO ORAL 2022 Prize which was worth 250 Euro! CONGRATULATIONS again to Vera and Anouk!](#)

Many thanks to the jury, who really did a fantastic job!

In total, 70 posters were presented during the two poster sessions. The jury scored the poster from [Antonio Jesús Cortés Espinar](#) (Universitat Rovira I Virgili, SP) as **BEST POSTER** and [Angie Kapellou's](#) (St Mary's University, UK) poster as **SECOND BEST POSTER**! Poster prizes were worth 200 Euro and 100 Euro, respectively!

[CONGRATULATIONS Antonio and Angie. Again, many thanks to all the judges!](#)



Researchers discussing their latest research ideas during the two poster sessions.



Photo f.l.t.r. Lydia Afman, Vera Plekhova, Anouk Gijbels, Cristina Torres Fuentes and Manuel Suarez Recio



Photo f.l.t.r. Lydia Afman, Cristina Torres Fuentes, Angie Kapellou, Antonio Jesús Cortés Espinar and Manuel Suarez Recio



ECN Networking activity during NuGO week 2022. Volleyball at the beach in Terragona, Spain.



Aimee Dordevic presenting the ECN committee and ECN activities NuGO during NuGO week 2022.



Fiona Malcomson presenting the Frontiers for Young Minds 'Nutrigenomics' Collection.

NuGO Early Career Network

After many years of deep commitment to the ECN committee, Dr Kathryn Pimentel (Agroscope, CH) stepped down from her role as a chair in March. We would like to say a huge 'thank you!' to Kathryn for the time and energy that she has given to the ECN committee. As a chair, Kathryn has played a big role in leading the ECN Committee and facilitating the development of the ECN, as well as NuGO, over the years and will be greatly missed.

Along with Dr Fiona Malcomson (University of Newcastle, UK) and Dr Aimee Dordevic (Monash University, AU), two additional researchers became members of the ECN Committee in 2022: Dr Eva Rath (Technische Universität München, DE) and Dr Laura Bordonì (University of Camerino, IT). Together with NuGO, ECN launched their new 2022 webinar series with renewed energy

Webinars were divided into the following three themes:

1. Research presentations

Given by ECN members and experts in the field.

2. Journal Club

An opportunity for NuGO ECN members to critically-appraise, present and discuss a nutrigenomics-related paper.

3. Skills & Training sessions

Training and skill development webinars given by experts.

Read more about the webinars in the webinar section.

Another huge success in 2022 was the launch of the NuGO 'New ways to understand how foods affect me and my health' special collection (<https://kids.frontiersin.org/collections/19437/new-ways-to-understand-how-foods-affect-me-and-my-health>), a collaboration between the NuGO ECN and Frontiers for Young Minds and includes 16 articles written by NuGO members. As of December 2022, the collection had almost 200,000 views.



Fiona Malcomson



Aimee Dordevic



Eva Rath



Laura Bordonì

NuGO Members 2022

Australia

Monash University

Department of Nutrition & Dietetics

Aimee Dordevic

aimee.dordevic@monash.edu

University of Melbourne

Division Veterinary & Agricultural Sciences

Chiara Murgia

chiara.murgia@unimelb.edu.au

Belgium

University of Ghent

Faculty of Veterinary Medicine

Lynn Vanhaecke

lynn.vanhaecke@ugent.be

Bulgaria

Medical University Varna

Diana Ivanova

dg_ivanova@yahoo.com

China

By-Health Co. Ltd

Felix Zhang

zhangxg2@by-health.com

Denmark

University of Copenhagen

Lars Dragsted

ldra@nexs.ku.dk

Finland

Folkhälsan Research Center

Heli Viljakainen

heli.viljakainen@helsinki.fi

France

INRAE

Institut national de la recherche
agronomique Clermont-Ferrand

Sergio Polakof

sergio.polakof@inrae.fr

Germany

Dife

Deutsches Institut für Ernährungsforschung
Potsdam-Rebrücke

Tilman Grüne

scientific.director@dife.de

MRI

Max Rubner-Institute

Sabine E. Kulling

sabine.kulling@mri.bund.de

TUM

Technical University of Munich

Dirk Haller

dirk.haller@tum.de

Ireland

University College Dublin

Lorraine Brennan

lorraine.brennan@ucd.ie

Italy

University di Camerino

Rosita Gabbianelli

rosita.gabbianelli@unicam.it

Netherlands

Maastricht University

Chris Evelo

chris.evelo@maastrichtuniversity.nl

TNO Innovation for Life

Suzan Wopereis

suzan.wopereis@tno.nl

Wageningen University

Lydia Afman

lydia.afman@wur.nl

Norway

University of Oslo

Stine Marie Ulven

smulven@medisin.uio.no

Oslomet

Oslo Metropolitan University

Vibeke Telle-Hansen

vtelle@oslomet.no

Poland

Institute of Animal Reproduction and Food Research, Polish Academy of Sciences

Carsten Carlberg

c.carlberg@pan.olsztyn.pl

Spain

Universitat de les Illes Balears

Andreu Palou

andreu.palou@uib.es

Universitat Rovira i Virgili

Manuel Suárez Recio

manuel.suarez@urv.cat

Sweden

National Research School LiFT

(Chalmers University of Technology)

Malin Barman

malin.barman@chalmers.se

Switzerland

Agroscope

Guy Vergères

guy.vergeres@agroscope.admin.ch

United Kingdom

Quadram Institute Bioscience

Maria Traka

maria.traka@quadram.ac.uk

Queen's University Belfast

Institute of Clinical Science

Jayne Woodside

j.woodside@qub.ac.uk

Imre Lengyel

i.lengyel@qub.ac.uk

St Mary's University, Twickenham

Yiannis Mavrommatis

yiannis.mavrommatis@stmarys.ac.uk

University of Aberdeen

Rowett Institute of Nutrition and Health

Baukje de Roos

b.deroos@abdn.ac.uk

University of Newcastle

Human Nutrition Research Centre

John Mathers

john.mathers@ncl.ac.uk

United State of America

University of Arizona

John Paul SanGiovanni

jpsangio@arizona.edu

jpsangio@post.harvard.edu

Vereniging European Nutrigenomics Organisation (NuGO)
Stippeneng 4, 6708 WE Wageningen, The Netherlands



nugo@wur.nl



www.nugo.org



+ 31 317 485 604
+ 31 618 868739

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Registered at the Chamber of Commerce at Arnhem (Gelderland, The Netherlands)