SYMPOSIUM

Authenticity of Olive Oil and other Vegetable Oils

10 – 12 April 2016 · Nuremberg · Germany

www.dgfett.de/meetings/aktuell/nuremberg2016
In addition to the quality assessment of olive oil and other vegetable oils, the need for authentication is of major concern for consumers and the food industry. Not only expensive and valuable oils such as olive oil or argan oil, but also cheaper oils purchased in high quantities may be subjected to different kinds of food fraud. The aim of oil authentication is to protect the consumer from adulteration and the industry from unfair competition.

Today, olive oil is the only oil in commerce for which a legal framework exists with many official methods to characterize the oil quality. For all other oils only national or international standard definitions of the quality such as the Codex Alimentarius are available. Traditionally, the characterization of oils has been based on one or more constituents such as fatty acids, phytosterols, tocopherols, waxes, the triacylglycerol composition or markers such as sesamolin in sesame oil. This information is not enough to answer all the questions by comparing with known samples or legally established limits. In these times, not only the identity of oils is of interest due to its labeling as “organic”, “virgin”, “GMO-free”, but also the specific geographic regions they are from are important purchasing arguments. Therefore, questions regarding the geographical origin, genetic variety, quantification of blends of vegetable oils or detection of refining treatments have to also be answered, ideally by the use of fast and rapid methods that are easy to handle.

More and more general methods come into the focus of interest which can provide information on more than one parameter at the same time. Such methods are fingerprinting techniques like NIR, MIR and NMR spectroscopy, but also chromatographic methods like GC, GCxGC, LCxGC or LC with mass selective detectors are in use, which analyze the metabolic profile of oils. In combination with chemometric techniques such as Principle Component Analysis or Linear Discriminant Analysis these methods can be used to identify parameters of high discriminatory power to answer the above mentioned questions.

It is widely accepted that there is a strong need for the harmonization and validation of methods to face the problems concerning the authenticity confirmation of olive oils and other high price vegetable oils. A part of the Horizon 2020 program initiated by the European Commission (SFS14-2014/2015) is open to development, validation and harmonization of analytical methods and quality parameters for olive oil that specifically address technical authenticity issues:

These issues concern in particular

1) The blend of extra-virgin olive oil or virgin olive oil with soft deodorized olive oil,
2) The blend of extra-virgin olive oil or virgin olive oil with other vegetable oil. Beyond the case of olive oil, there is also a strong need for better coordination of research in the area of food authenticity, integrity and traceability across the food supply chain between Member States and Associated Countries.

The aim of the symposium is to give an overview on the different aspects of authenticity of olive oil and other vegetable oils, from the legal regulations and approaches to traceability via the statistical techniques to the general and specific analytical aspects. This symposium will present new and fast methods to proof the quality and authenticity of olive oil and other edible oils and the participants will have the chance to discuss with outstanding experts the different aspects in the field of authenticity. This symposium is aimed at all people working as legal key opinion leaders, in official and commercial laboratories or in official or commercial food control or food industry. At the end the participants have to also be answered, ideally by the use of fast and rapid methods that are easy to handle.

We look forward to welcoming you in Nuremberg in April 2016.
## Sunday, 10 April 2016

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>19:00</td>
<td>Welcome Reception</td>
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## Monday, 11 April 2016

### Welcome and Introduction

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>09:00 – 09:15</td>
<td>Welcome and Introduction</td>
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### Regulations

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<th>Time</th>
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<tr>
<td>09:15 – 10:00</td>
<td>Franz Ulberth, European Commission, Joint Research Center, Geel/BE</td>
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<tr>
<td></td>
<td>Authenticity of Fats and Oils - Review, Regulations and Analytical Chemistry</td>
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<tr>
<td>10:00 – 10:30</td>
<td>Lanfrancesco Conte, University of Udine, IT</td>
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<td></td>
<td>European Regulations on Olive Oil - Are the Testing Methods good enough to detect Olive Oil Adulteration?</td>
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<tr>
<td>10:30 – 11:00</td>
<td>Paul Miller, Australian Olive Oil Association, Coomandook/AUS</td>
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<td>How Virgin is Extra Virgin?</td>
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### Coffee Break

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<tr>
<td>11:00 – 11:30</td>
<td>Coffee Break</td>
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### Legal Regulations of Edible Fats and Oils

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<tr>
<td>11:30 – 12:00</td>
<td>Reiner Wittkowski, Federal Institute for Risk Assessment, Berlin/DE</td>
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<td>Scientific Approaches to Traceability in the Food Chain</td>
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<tr>
<td>12:30 – 13:00</td>
<td>Peiwu Li, Oil Crop Research Institute, Wuhan/PRC</td>
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<tr>
<td></td>
<td>Current Situation and Challenges of Plant Edible Oils Authenticity in China</td>
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### Lunch

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### Fundamentals of Chemometry

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<tr>
<td>14:00 – 14:30</td>
<td>Richard Brereton, University of Bristol, UK</td>
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<tr>
<td></td>
<td>Application of Multivariate Data Analysis in Analytical Chemistry - Practical Aspects</td>
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<tr>
<td>14:30 – 15:00</td>
<td>Hans-Otto Cullmann, Comicon GmbH, Hamburg/DE</td>
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<td>Genetic Algorithms to Calculate Adulterations in Fat and Oil Blends</td>
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### General Analytical Aspects

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<tr>
<td>16:00 – 16:30</td>
<td>Bertrand Matthäus, Max Rubner-Institute, Detmold/DE</td>
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<td>Minor Components to Determine Oil Authenticity</td>
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## Tuesday, 12 April 2016

### Special Analytical Aspects

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<tr>
<td>09:00 – 09:30</td>
<td>Bernd Diehl, Spectral Service, Cologne/DE</td>
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<td>NMR Spectroscopy for Quality and Authenticity Assessment of Edible Fats and Oils</td>
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<tr>
<td>09:30 – 10:00</td>
<td>Markus Link, Bruker BioSpin GmbH, Rheinstetten/DE</td>
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<td>HR-NMR based Analysis of Edible Oils with Focus on Olive Oil</td>
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<tr>
<td>10:00 – 10:30</td>
<td>Ole Winkelmann, Eurofins, Hamburg/DE</td>
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<td>NMR Spectroscopy as a Discriminating Method for the Geographical Origin of Olive Oils</td>
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<td>Hans-Otto Cullmann, Comicon GmbH, Hamburg/DE</td>
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<td>Determining the Formulation of Oil and Fat Blends based on SFC and Fatty Acid Composition</td>
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<td>Volatile Compounds as Mean for the Quality Assessment of Vegetable Oils</td>
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Markus Boner
Agroisolab GmbH, Jülich, Germany

Prof. Richard Brereton
Breereton Consultancy, Bristol, UK
Professor Richard Brereton was awarded his BA, MA and PhD at the University of Cambridge, where he also did his postdoc and then subsequently was appointed to the staff of the University of Bristol where he has remained. He is Director of Breereton Consultancy. He is Fellow of the Royal Society of Chemistry, Fellow of the Royal Statistical Society and Fellow of the Royal Society of Medicine.

He has over 367 publications to his name, of which 173 are academic journal articles, and 7 are books. His latest book is Chemometrics for Pattern Recognition (Wiley, 2009). He is currently Editor-in-Chief of Heritage Science, Columnist for Journal of Chemometrics and on the Editorial Board of Chemometrics and Intelligent Laboratory Systems among others. He has given 172 invited lectures worldwide. His main expertise is in Multivariate Pattern Recognition primarily for classification, including One Class Classifiers and Partial Least Squares Discriminant Analysis among other techniques, as applied to a wide variety of problems.

Prof. Lanfranco Conte
University of Udine, Italy
Academic curriculum:
Since 1994: Full Professor of Food Chemistry at University of Udine
1992-1994: Associate Professor of Chemical Analysis of Foods at at University of Udine
1982-1992: Chief Chemist at Inspectorate for food fraud detection (Laboratory of Bologna, Italian Ministry of Agriculture, Food and Forestry) Laboratory work of assessment of purity and quality of different foods: olive oil, seed oils, cheeses (extraneous milk detection), wine (diethylene glycol, methanol)
1973-1982: Laboratory technician at University of Bologna – Cooperation in researches in lipid chemistry

Research fields:
Chemistry of edible lipids, with peculiar attention to olive oils and stability problems, studies on oxidative rancidity, studies on volatile fraction of several foods (GC-MS), Development and validation of methods to assess purity and quality of foods as well as presence of contaminants (PAHs, MOSH, MOAH, Phtalates etc). Development of advanced analytical techniques: Co author of about 150 papers in journals with IF, of 7 book chapters, and 1 book devoted to sample preparation. In November 2015, Web of Science attributed an h-index of 31.

Dr. Hans Otto Cullmann
Comicon GmbH, Hamburg, Germany
Education:
• Study of chemical process engineering at the University of Applied Science in Juelich
• Study of chemistry at the University of Cologne
• Study of computer science at the University of Cologne

Employment:
• Lab manager, quality manager and application manager at the „Harburger Oelwerke“ in Hamburg – now Cargill
• Since 1995 managing director of the comicon GmbH Hamburg

Experience Chemistry of edible oils and fats
• Product development of oil and fat blends for various applications
• Development of software solutions for lab automation eg fully automated determination of Solid Fat Content, fully automated FatLab etc.
• Development of methods and software solutions for calculation and simulation of oil and fat blends, among others a method to calculate the Solid Fat Content of oil and fat blends on the PC.

Memberships:
GDCh – German Chemical Society
DGF – German Society of Fat Science
Euro Fed Lipid – European Federation for the Science and Technology of Lipids
AOCS – American Oil Chemist Society

Dr. Bernd W. K. Diehl
Spectral Service AG, Cologne, Germany
Education:
• Dr. rer. nat, Dipl. Chemist, Philipps University Marburg 1988
• Organic chemistry and NMR Spectroscopy

Employment:
• Bayer Research Center, 1988 until 1990,
• 1990 founder and CEO of Spectral Service AG
• Part time university lecturer at the Universities of Marburg and Bonn
• Actually at the University of Applied Science Bonn–Fließ–Sieg
• Habilitation in Pharmacy at University of Würzburg in progress

Associations / Memberships:
President of I.L.P.S. (International Lecithin and Phospholipid Society)
Chair of A0CS (American Oil Chemist Society) Phospholipid Division,
Member of ACS, GDCh, DGF, Euro Fed Lipid
AUTHENTICITY OF OLIVE OIL AND OTHER VEGETABLE OILS

LECTURERS

Dr. Peiwu Li
Oil Crops Research Institute
Chinese Academy of Agricultural Sciences, Wuhan, China
• Professor in Oil Crops Research Institute, Chinese Academy of Agricultural Sciences,
• Director of Quality & Safety Inspection and Test Center for oilseeds products, MOA P.R. China
• Director of Key Laboratory of Detection for Mycotoxins, MOA, China
• Director of Laboratory of Quality & Safety Risk Assessment for Oilseed Products, MOA, China

Research interests
• Authentication and traceability of edible oil and agricultural food
• HPLC/GC-MS-based analytical methods for agricultural food quality & safety
• Development of home-built monoclonal antibody against biotoxin and pesticides
• Immunoassay-based rapid assay for biotoxin and pesticide
• Miniaturized instrument and micro-instrument for determination of biotoxin
• Standards and arbitration inspection for agricultural food quality and safety
• Risk assessment of agricultural food, especially oilseed products
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Max Rubner-Institute, Detmold, Germany
Technische Universität München, Germany
Canadian Grain Commission (CGC), Canada
Royal Veterinary and Agricultural University, Denmark

Dr. Bertrand Matthäus
Food Chemist, Scientist at the Max Rubner-Institute, Federal Research Institute for Nutrition and Food, Detmold, Germany
In this position he is responsible for research dealing with the improvement of the quality of fats and oils, especially rapeseed oil, with the investigation of frying processes, with contaminants like acrylamide, phthalates or 4-hydroxy-2-trans-nonenal, 3-MCPD-esters and with the investigation of oxidation processes in edible fats and oils.
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Dr. Torben Küchler
Eurofins Analytik GmbH, Hamburg, Germany
Food chemist, degree and doctorate at the University of Hamburg (research group of Prof. Steinhart)
From 2007 Head of Research & Development at Eurofins Analytik GmbH in Hamburg
Since 2011 Head of the Department of General Food Analysis at Eurofins Analytik GmbH in Hamburg.

Work areas are amongst others:
• Analysis of physical-chemical parameters in food and feed for manufacturers, retail and trade, focusing fats & oils, nutrition facts and marketability / authenticity of foods.
• Method development and method optimization for testing of identity, authenticity and quality in fats and oils

Participation in national and international bodies:
• Joint committee of DIN and DGF for the analysis of fats, oils and products thereof, related and primary products (GA Fett)
• ISO/TC 34/SC 11 – Animal and vegetable fats and oils
• ISO/TC 34/SC 2 – Oleaginous seeds and fruits and oilseed meals
• CEN/TC 307 – Oilseeds, vegetable and animal fats and oils and their by-products - Methods of sampling and analysis

Dr. Christian Gertz
Hagen/Westphalia, Germany
Dr. Gertz was director of the Official Institute of Chemical and Food Analysis in Hagen. His experience in fats and oils extends over 35 years.
Since 1997 he has co-chaired the Analysis and Standard Methods division of German Society for Fat Science (DGF) and has been responsible for the editing of the DGF Standard Methods for many years.

He is member of the „Joint Committee for the Analysis of Fats, Oils, and Fatty Products“ of DIN, Federal Health Office and DGF. He is also involved with various international working groups in Europe and the German Sensory Panel of Olive Oil. He has published more than 70 scientific papers including 3 book chapters and edited 2 books. His area of research includes all aspects of frying processing (analytics, HACCP, thermooxidative degradation, heat stabilizing agents, fat quality) and analysis of fats and oils (Olive oil and the development of chemometric methods to identify fats and oils).

His awards include: in 1982, the Josef Schormüller Foundation by the German Food Chemical Society and in November 2004 he received the Normann Medal by the German Society for Fat Research (DGF).

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Hagen/Westphalia, Germany

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Oil Crops Research Institute
Chinese Academy of Agricultural Sciences, Wuhan, China

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Food Chemist, Scientist at the Max Rubner-Institute, Federal Research Institute for Nutrition and Food, Detmold, Germany

In this position he is responsible for research dealing with the improvement of the quality of fats and oils, especially rapeseed oil, with the investigation of frying processes, with contaminants like acrylamide, phthalates or 4-hydroxy-2-trans-nonenal, 3-MCPD-esters and with the investigation of oxidation processes in edible fats and oils.
Since more than 20 years he has worked for the Max Rubner-Institute. He has published more than 200 articles, scientific papers and chapters of books. In several projects he worked together with the industry to evaluate and improve the quality of frying oils but also virgin rapeseed oil. He has presented lectures during the last four International Symposiums on Deep-Fat Frying held in Germany and USA and is co-organizer of several symposiums on Fats and Oils given for the industry. Matthäus is a member of the Euro Fed Lipid association and the German Society for Fat Science.
Dr. Paul Miller
Coonalpyn, Australia
Paul Miller is an agricultural scientist with over 35 years working as a researcher, industry leader and farmer.
His research background is in plant physiology, chemistry and the climatic responses of fruit trees and grape vines. His commercial interests are in the olive oil and wine industries where he has overseen the development and management of large scale farms in Australia. He consults to businesses in the olive industry in several countries and is a regular invited speaker about olive oil quality and authenticity around the world.
Paul has led the development of the Australian olive industry as President of the Australian Olive Association from 2001 to 2015. His focus has been olive oil quality, authenticity and overcoming fraud in the marketplace. Paul spearheaded the development of the Australian Standard for Olive Oil (ASS263-2011) introducing effective science to better define olive oil quality for the trade and to help prevent fraud. Paul is a founding member of the American Oil Chemists Society (AOCS) Expert Committee on Olive Oil and an invited founding member of the Division of Olive Oil, Euro Fed Lipids society. He is an invited member of the United States Pharmacopeia expert committee on olive oil standards of identity. In January 2012 Paul co-founded the Extra Virgin Alliance (EVA) based in California – an alliance of olive oil producers, experts and trade associates from 13 countries.

Dieter Oberg
Wessling, Germany
Study at the „Akademie for Graphic Arts” in Munich, 1971 founder of the Public Relation Agency „Syntax” in Munich / Germany.
Since 1988 supervisor of the Information Office Olive Oil (IGO), today President of the “Association for care and support of the value of extra virgin Olive Oils e.V.” in Wessling/Germany. 17 years in charge for carrying out the Olive Oil promotion programmes for the European Commission. Generic promotion and Public Relations in Germany, Denmark and Austria. Research and diffusing of scientific findings about the nutrition value of Olive Oil for medical doctors and nutritionists. Numerous lectures, workshops and seminars partly incl. degustations for the European Commission, IOC, AOCS, DGF, DGE, VKD among other institutions. Since 2002 lecturer at the University of applied sciences in Wädenswil/Zürich (Switzerland) for Olive oil sensory items.
In addition member and AOCS, DGF, DGE, VKD among other institutions. Since 2002 lecturer at the University of applied sciences in Wädenswil/Zürich (Switzerland) for Olive oil sensory items. In addition member and AOCS, DGF, DGE, VKD among other institutions. Since 2002 lecturer at the University of applied sciences in Wädenswil/Zürich (Switzerland) for Olive oil sensory items. In addition member and AOCS, DGF, DGE, VKD among other institutions. Since 2002 lecturer at the University of applied sciences in Wädenswil/Zürich (Switzerland) for Olive oil sensory items.

Dr. Reiner Wittkowski
Federal Institute for Risk Assessment, Berlin, Germany
Dr. Reiner Wittkowski is an Assistant Professor in Food Chemistry at the Federal Institute for Risk Assessment (BfR) in Berlin. His research focuses on the development and application of high-throughput analytical methods for the detection and quantification of food contaminants and additives. He has published extensively in the field of food chemistry and is an active member of various scientific societies.

Dr. Franz Ulberth
European Commission, Joint Research Center, Geel, Belgium
Franz Ulberth is Head of the Standards for Food Bioscience Unit at the European Commission’s Joint Research Centre – Institute for Reference Materials and Measurements (JRC-IRMM). Franz graduated (PhD) in “Food Science and Biotechnology” from the University of Natural Resources and Applied Life Sciences (BOKU) in Vienna, Austria. In 1994 he was appointed professor of food chemistry at the same university. Franz joined JRC-IRMM in 2002 as a programme co-ordinator for food and environmental reference materials at the IRMM.
In 2007 Franz was nominated Head of the Standards for Food Bioscience Unit at the JRC-IRMM. He represents the Joint Research Centre in relevant food related technical committees of standards developing organisations such as the European Committee for Standardization, International Organization for Standardization, AOAC International and the Codex Alimentarius. Franz served for a long time on the editorial board of Food Chemistry, European Journal of Lipid Science and Technology, and currently is editorial board member of Food Additives and Contaminants.

Dr. Ole Winkelmann
Eurofins Analytik GmbH, Hamburg
Chemist, obtained Diploma and PhD in Organic Chemistry at the University of Kiel, Germany
2009 Post-doctoral position at the University of Hawaii at Manoa, USA
Since 2010 Post-doctoral position at Eurofins WEJ Contaminants GmbH, Hamburg, Germany
Since 2012 Project Manager NMR at Eurofins Analytik GmbH, Hamburg, Germany
Field of activity:
- Method development for analysis of foodstuff by 1H-NMR
- Quantitative 1H-NMR analysis of food constituents
- Chemometric analysis of 1H-NMR-data for classification and authentication of foodstuff
- Main focus: Classification of olive oil according to geographical origin

Dr. Franz Ulberth
European Commission, Joint Research Center, Geel, Belgium
Franz Ulberth is Head of the Standards for Food Bioscience Unit at the European Commission’s Joint Research Centre – Institute for Reference Materials and Measurements (JRC-IRMM). Franz graduated (PhD) in “Food Science and Biotechnology” from the University of Natural Resources and Applied Life Sciences (BOKU) in Vienna, Austria. In 1994 he was appointed professor of food chemistry at the same university. Franz joined JRC-IRMM in 2002 as a programme co-ordinator for food and environmental reference materials at the IRMM.
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**FEES**

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<th>Status</th>
<th>until 18 March 2016</th>
<th>after 18 March 2016</th>
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<tr>
<td>Member**</td>
<td>740 Euro</td>
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<td>840 Euro</td>
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</tbody>
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* Registration fees are not subject to value added tax (tax exemption according §4 Nr. 22a UStG).

** DGF or Euro Fed Lipid

The registration fee includes:

- Entry to the scientific programme
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- Book of abstracts
- Welcome Reception
- Coffee Break beverages

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Cancellations received on or before 18 March 2016 will be refunded (paid registrations) minus a 50 Euro Processing fee (unpaid registrations will also be subject to a 50 Euro Processing fee). After that date until 1 April 2016, 50% of the registration fee will be refunded. There will be no refund for cancellations after 1 April 2016 or No-Shows. Substitute participants can be named anytime without costs. If the congress is cancelled for whatever reason, paid fees will be refunded. Further recourse is excluded.

**ORGANISER**

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