

ISSFAL 2016

12<sup>TH</sup> CONGRESS OF  
THE INTERNATIONAL  
SOCIETY FOR THE STUDY OF  
FATTY ACIDS AND LIPIDS

Stellenbosch, South Africa  
5-9 September

at the "Konservatorie"—  
University of Stellenbosch



### SPECIAL EVENT HIGHLIGHTS

#### Monday 5 September

Welcome Reception  
at the Konservatorie  
University of Stellenbosch

#### Tuesday 6 September

Young Investigators Social  
at Bergkelder

#### Wednesday 7 September

Dinner Debate at Spier Wine Estate  
Sponsored by IEM

#### Friday 9 September

Gala Dinner  
at Allée Bleue Wine Estate



### FREE DAY TO EXPLORE THE WESTERN CAPE

#### Thursday 8 September

Delegates are free to explore the  
Western Cape of South Africa

# Congress Programme

*\*Please note that a separate registration is required to attend selected events.*

### SATELLITE SYMPOSIA AT THE KONSERVATORIE

#### Monday 5 September

Three, Half-Day  
Sponsored Programs





## DSM: Driving Science and Innovation in Nutritional Lipids.

DSM Nutritional Products, a leader in the development of polyunsaturated fatty acids, is a proud sponsor of the ISSFAL Congress.

[DSM.COM](http://DSM.COM)

HEALTH • NUTRITION • MATERIALS





# 12<sup>TH</sup> CONGRESS OF THE INTERNATIONAL SOCIETY FOR THE STUDY OF FATTY ACIDS AND LIPIDS



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China Medical University, Taiwan

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presentations and  
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**12TH CONGRESS OF THE INTERNATIONAL SOCIETY FOR THE STUDY OF FATTY ACIDS AND LIPIDS**

## SPONSORS & EXHIBITORS

### Thank You!

The support that the ISSFAL 2016 Congress has received from sponsors, exhibitors and other supporters is critically important in keeping the cost of registration at a reasonable level, and also to enable the award of 40 free registrations (worth over \$20,000 USD) to New Investigator Award winners, thus encouraging good investigators into, and to remain in, the field of fatty acid research. The meeting organisers and the Society appreciate this support, and urge delegates to take every opportunity to express this appreciation to the representatives of sponsors, exhibitors and other supporters that they come into contact with during the meeting and afterwards.

#### PLATINUM



#### SILVER

#### SPECIAL SPONSORSHIPS



Satellite Symposium 1



Satellite Symposium 2



Satellite Symposium 3



Dinner Debate



New Investigator Awards



Coffee Breaks



Coffee Breaks



Global Award for Omega-3 Research



Workshop



Workshop

#### EXHIBITORS



#### BAG INSERTS



Welcome to Stellenbosch, host city for the 12th ISSFAL Biennial Congress. For the first time in ISSFAL's history we gather in South Africa & the first time we have met on the African continent.



**WELKOM**

Our Congress will provide a unique occasion for the exchange of scientific results in the lipid area among seasoned and new members, and invited guests. The program covers three major topics: Biochemistry and Metabolism of Fatty Acids; Lipids in Health and Disease; and Lipids in Nutrition. These major themes and others encompass all aspects of lipids, from fatty acids, to cholesterol, to lipidomics and metabolomics, all important keys to understanding human physiology and pathophysiology.

Presentations from basic research to translational research to clinical studies will be of interest to a diverse audience of basic researchers, physicians, and nutritionists. Evidence about the impact of lipids in different clinical diseases is increasing rapidly as is our understanding of the role that dietary lipids can play at all ages in preventing diseases related to lifestyle.

As is typical of our biennial ISSFAL Congresses, we encourage you to take advantage of the many opportunities to strengthen cooperation among international researchers and clinicians. In addition to the plenary lectures and oral presentations chosen from over 300 abstract submissions, poster presentations and wonderful social occasions will offer opportunities for interaction among all participants.

Stellenbosch is located in one of the world's most beautiful regions, The Western Cape of South Africa. The Stellenbosch region is home to one of the great wine districts of the world, as well as the venerable University of Stellenbosch and to many beautiful, historic buildings. The scenery and proximity to Cape Town and environs, with its deep rooted history and rich cultural traditions, Stellenbosch offers a wide selection of world-class museums, natural wonders and other attractions.

Details of the Congress venues and transportation are in the following pages as well as a detailed schedule of events. Whether you are a long standing member or friend of ISSFAL and the conference, or this is your first time, we have worked to make your visit productive and pleasant. Please do not hesitate to contact any of the ISSFAL staff or leadership on any matter for which we might be of assistance.

Welkom! and enjoy the Congress.

Marius Smuts  
Congress Chair

Tom Brenna  
ISSFAL President

## CONGRESS SCIENTIFIC COMMITTEE

### **Marius Smuts, Chair**

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University of Ghana, Accra, Ghana

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ISSFAL 2016

## NEW INVESTIGATOR AWARDS

**12TH CONGRESS OF THE INTERNATIONAL SOCIETY FOR THE STUDY OF FATTY ACIDS AND LIPIDS**

Aristizabal Henao, Juan J.	University of Waterloo	Canada
Baker, Ella	University of Southampton	United Kingdom
Bradbury, Joanne	Southern Cross University, School of Health & Human Sciences	Australia
Brei, Christina	Else Kröner-Fresenius-Center for Nutritional Medicine, Klinikum rechts der Isar, TU München	Germany
Brouwers, Hilde	LUMC	Netherlands
Chen, Chuck	University of Toronto	Canada
Chimhashu, Tsitsi	North West University, Potchefstroom	South Africa
Delgado, Graciela	Medical Faculty Mannheim at Heidelberg University	Germany
Fisk, Helena	University of Southampton	United Kingdom
Gould, Jacqueline	SAHMRI	Australia
Hall, Nicolette	University of Pretoria	South Africa
Harris, Carla	Helmholtz Zentrum München—German Research Centre for Environmental Health	Germany
Hennebelle, Marie	University of California - Davis	United States
Hopiavuori, Blake	University of Oklahoma Health Sciences Center	United States
Hopperton, Kathryn	University of Toronto	Canada
Ibrahim, Ahamed	National Institute of Nutrition	India
Ibrahim, Fatma	London Metropolitan University and University of Khartoum	United Kingdom
Kasonga, Abe	University of Pretoria	South Africa
Kleber, Marcus	Medical Faculty Mannheim at Heidelberg University	Germany
Liu, Ruijie	School of Food Science	China
Liu, Lei	Hunan Agricultural University	China
López, Cristina	Hospital Clinic-University Barcelona	Spain
Lund, Jenny	School of Pharmacy, University of Oslo	Norway
Macartney, Michael	University of Wollongong	Australia
Mashtoub, Suzanne	Women's and Children's Hospital	Australia
Mocking, Roel	Academic Medical Center, University of Amsterdam	Netherlands
Rani, Alka	IRSHA, Bharati Vidyapeeth University	India
Rathnayake, Kumari Malkanthi	University of Reading	United Kingdom
Richard, Caroline	University of Alberta	Canada
Robertson, Ruairi	University College Cork	Ireland
Rosqvist, Fredrik	Uppsala University	Sweden
Seira-Oriach, Clara	University College Cork	Ireland
Souza, Camila	University of São Paulo	Brazil
Stoutjesdijk, Eline	UMCG	Netherlands
Trepanier, Marc-Olivier	University of Toronto	Canada
Van Der Wurff, Inge	Open Universiteit	Netherlands
Venø, Stine Krogh	Aalborg University Hospital	Denmark
Wang, Feng	Department of Nutrition and Food Hygiene, Southeast University	China
West, Annette	University of Southampton	United Kingdom
Wood, Katie	University of Adelaide	Australia
Xie, Kayin	University of Southampton	United Kingdom



## The venue for the 2016 Congress in Stellenbosch is the Konservatorie at the University of Stellenbosch.

Within the Konservatorie, we will be utilizing the lower and upper foyers for the Exhibits and the Poster Sessions as well as Coffee Breaks and Boxed Lunch. There are three auditoriums that will be used for the Congress sessions and they are:

- Endler Hall, which will also host all Plenary Sessions, Special Lectures and Awards
- Jannasch Hall
- Fisser Hall

One additional session on Wednesday afternoon will be in L1, which is located down the hallway that runs between Jannasch and Fisser.



## DELEGATE & SPEAKER INFORMATION

### ISSFAL REGISTRATION DESK/KONSERVATORIE– MAIN ENTRANCE FOYER

The ISSFAL Registration Desk is conveniently located just inside the main entrance of the Konservatorie (see floor plan on p. 8). Be sure to check-in at the Registration Desk to pick up your Congress materials, event tickets and name badge. Desk hours are as follows:

**Monday, 5 September 08:00–18:00**

**Tuesday, 6 September 08:00–18:00**

**Wednesday, 7 September 08:00–18:00**

**Friday, 9 September 08:00–16:00**

\*Note: On Thursday, 8 September, the ISSFAL Registration Desk will be closed.

### **Name Badge Policy**

Your badge grants you access to the ISSFAL 2016 Congress. Please handle it with care. Delegates are required to wear their name badge at all times and will not be granted access to the Congress sessions or social events without it. A reprint convenience fee of \$50.00 USD will be assessed for any lost or misplaced badge. This is to help ensure that access to the Congress is properly managed.

### **Certificate of Attendance**

A Certificate of Attendance will be distributed to each registered delegate following the ISSFAL 2016 Congress.

#### **Business Centre**

Staff will have limited ability to print documents on your behalf. There is a printer/business center in town.

#### **Smoking**

The Konservatorie is a non-smoking facility. Smoking is only permitted outside the Konservatorie. This is the same policy for most local restaurants, bars and public buildings.

#### **Internet Access**

ISSFAL attendees will have complimentary internet in all areas of The Konservatorie. Network name and passwords will be posted onsite.

#### **Lost Property**

Please report any lost or unattended items immediately to Congress staff. Should you lose anything while at the Congress, do enquire at the ISSFAL Registration Desk where any found property will be held.



## EXHIBIT & POSTER HALL

### EXHIBIT & POSTER HALL/KONSERVATORIE–MAIN FOYER

Poster presentations will occur in two groups as indicated on the Poster Information section of this program. This year, Posters will also be available in an electronic format in the Poster display hall. Formal presentation of posters will take place during the breaks and lunch on the day specified in the chart below. Please refer to the Poster section of this program for details on the posters displayed. Poster presenters are asked to refer to the guidelines that were previously distributed via email for details regarding format, size, content, set-up and tear-down times. Any material that remains after a designated session's tear-down time is subject to removal and disposal by Congress management.

#### Scheduled Events

	Morning Break	Lunch	Afternoon Break
Tuesday, 6 September	09:45–10:15	12:15–13:30	16:00–16:30
Wednesday, 7 September	09:15–09:45	12:00–13:30	16:00–16:30
Friday, 9 September	09:15–09:45	12:00–13:30	

### POSTERS

Posters will be presented in the foyer of the Konservatorie on the upper floor outside Endler Hall. Here you will also find the Exhibit Hall on the Foyer lower level, where Coffee Breaks and Lunch will also be available on Tuesday, Wednesday and Friday (breakfast is on your own).

We have created a schedule whereby you will be able to see poster presentations formally on one day and a half during the breaks and lunch with one group on Tuesday (all day) and half a day Wednesday (morning) and another group on Wednesday (afternoon) and Friday (all day). This will facilitate discussion with those interested and also make it possible for you to be able to meet other presenters of topical interest to you.

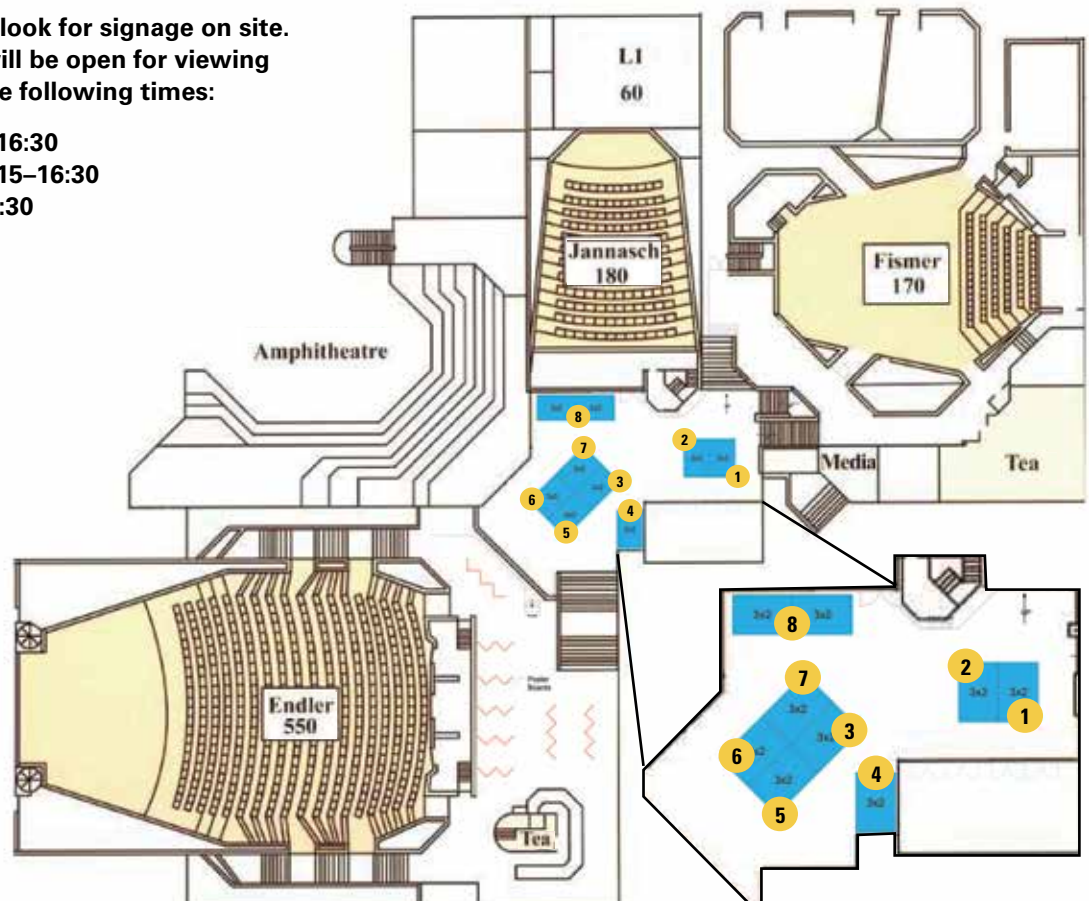
All posters will also be available for review during all three full days of the Congress via e-poster (details sent to poster presenters). Since we have a very full oral programme, it is important that all attendees have ample opportunity to see the Posters throughout the Congress.

See the floor plan below and look for signage on site. The Exhibit and Poster Hall will be open for viewing throughout the day during the following times:

**Tuesday, 6 September 09:45–16:30**  
**Wednesday, 7 September 09:15–16:30**  
**Friday, 9 September 09:15–13:30**

#### BOOTH #

AlaskOmega .....	6
BASF .....	1
DSM Nutritional Products .....	8
Flordis .....	5
Fresenius Kabi .....	4
Larodan .....	7
MeadJohnson Nutrition .....	3
Sancilio .....	2







### **SPEAKER READY ROOM**

Please identify yourself as a Congress presenter to the ISSFAL Registration Desk staff and you will be directed to the Speaker Ready Room. Speaker Ready Room hours are as follows:

**Monday, 5 September 08:00–16:30**

**Tuesday, 6 September 08:00–16:30**

**Wednesday, 7 September 08:00–16:30**

**Friday, 9 September 08:00–14:30**

Due to the large number of presentations in the program, speakers are urged to visit the Speaker Ready Room no later than four (4) hours prior to the scheduled session, and preferably on the day prior to the presentation. An audio-visual technician will be available to assist speakers with pre-flighting their presentation. Please bring a copy of your presentation to the Speaker Ready Room on a flash drive/stick.

### **SCHEDULED MEALS & SOCIAL PROGRAM**

#### **Breakfast**

As is customary in most international hotels, your room rate likely includes breakfast daily. As such, ISSFAL will not provide breakfast for delegates during Congress dates.

#### **Coffee Breaks & Lunches**

##### **Konservatorie–Endler Hall Foyer**

ISSFAL 2016 Congress registration includes morning and afternoon coffee breaks and lunch on Tuesday, Wednesday and Friday–6, 7 and 9 September.

##### **Welcome Reception at Konservatorie Courtyard**

###### **Monday, 5 September 18:00–20:00**

Hors d'oeuvres and beverages will be provided. ONLY those attendees who registered for the Congress may be allowed to attend this special event.

##### **Gala Dinner at Allée Bleue Wine Estate**

###### **Friday, 9 September 19:30** *(Buses depart designated locations)*

Say goodbye to your colleagues under South African skies at this famous wine estate.

### **SATELLITE SYMPOSIA**

#### **Monday, 5 September**

ISSFAL will host three Sponsored Satellite Symposia on Monday, 5 September. This programme will be held at The Konservatorie at the University of Stellenbosch. A separate registration is required to attend. The fee includes breaks, and admission to any of the symposia. If you have signed up for this event, please see your final confirmation email for any additional Satellite information. The ISSFAL Registration Desk will be located at the KONSERVATORIE FOYER and open in the morning prior to the start of the first Satellite.





## EXHIBITORS & SPONSORS

### Abitec Corporation

ABITEC Corporation is a global leader in the development and manufacture of high quality functional lipids and surfactants for the pharmaceutical, nutraceutical and specialty chemical markets. Through its offerings of world-class technical, scientific, regulatory, and manufacturing expertise, ABITEC delivers the highest quality product-based solutions in solubilisation, emulsification, and lubrication to its global customers. The lipid excipients that ABITEC produces are critical components across a multitude of drug formulations and are used for various dosage forms including, oral, transdermal, topical, and parenteral. As drug development technology advances, so must the complex delivery systems that enable the body to absorb and effectively utilize the active ingredients. ABITEC remains at the forefront of these new technologies and continually strives to provide the most effective solutions in the market.

### AlaskOmega ..... Booth 6

AlaskOmega® is produced from wild-caught Alaska Pollock oil sourced from the Bering Sea that is certified sustainable by the Marine Stewardship Council. AlaskOmega® is available in ultra-high purity ethyl ester and triglyceride concentrates up to 80% EPA and DHA content.

### BASF ..... Booth 1

BASF is a global market leader for omega-3 fatty acids offering a full range from low to medium to high-concentrate omega-3 fatty acids for pharmaceuticals, dietary supplements and clinical nutrition—derived from nature, enhanced by science.

### DSM—Bright Science.

### Brighter Living.™ ..... Booth 8

Royal DSM is a global science-based company active in health, nutrition and materials. By connecting its unique competences in Life Sciences and Materials Sciences DSM is driving economic prosperity, environmental progress and social advances to create sustainable value for all stakeholders simultaneously. DSM delivers

innovative solutions that nourish, protect and improve performance in global markets such as food and dietary supplements, personal care, feed, medical devices, automotive, paints, electrical and electronics, life protection, alternative energy and bio-based materials. DSM and its associated companies deliver annual net sales of about €10 billion with approximately 25,000 employees. The company is listed on Euronext Amsterdam. More information can be found at [www.dsm.com](http://www.dsm.com).

### Flordis ..... Booth 5

Flordis is an Australian brand of clinically proven medicines. Flordis natural medicines have been extensively researched in clinical trials, which is one of the reasons you can feel good about their effectiveness. Flordis is part of a growing international organisation Soho Flordis International (SFI) that is leading the way in applying world-class standards to the development of evidence-based natural medicines. SFI is headquartered in Sydney, Australia and has regional offices in Bioggio, Switzerland (Ginsana), in Wigan, UK (Potter's Herbals) and in Reno, USA (ProThera).

### Fresenius Kabi..... Booth 4

Fresenius Kabi is a global health care company specializing in lifesaving medicines and technologies for infusion, transfusion and clinical nutrition. The products and services help to care for critically and chronically ill. Product portfolio: I.V. generic drugs, infusion therapies, clinical nutrition and related medical devices, products for whole blood and blood components collection and processing and transfusion medicine.

### GOED

GOED is a proactive and accountable association of the finest manufacturers, marketers, and supporters of EPA and DHA omega-3s, working to educate consumers, government groups, and the healthcare community, while setting high ethical and quality standards for our business sector.

### IEM

The International Expert Movement is an initiative from the International Union of Nutritional Sciences with the objective to disseminate sound scientific information about food & nutrition, especially fat quality in the diet, amongst professionals and the general public in actionable ways, in order to promote and advance nutritional improvement focusing on the quality of diets. The Activities of the IEM are held under the auspices of the International Union of Nutritional Sciences and funded by an unrestricted educational grant from Unilever NV. Details of the partnership between IUNS and Unilever are available on the IUNS website (<http://www.iuns.org/>). [www.theiem.org](http://www.theiem.org)

### Larodan..... Booth 7

Larodan AB develops, manufactures and market high quality research grade Lipids for the international research community. Our products are used in a number of fields within research, product development and industrial processes. Our product range includes fatty acids, oxylipins, carnitines, phospholipids, sphingolipids, ceramides, customized acyl glycerides, labeled lipids and many other products.

### Mead Johnson Pediatric

### Nutrition Institute..... Booth 3

The Mead Johnson Pediatric Nutrition Institute is a global network dedicated to advancing and applying the latest breakthroughs in nutrition science to benefit infants and children worldwide. Our only purpose is to be at the forefront of pediatric nutrition research.

### More Love Foundation

More Love Charity Foundation's mission is innovation and public practice, leading the ecological public welfare, enhance self-development capacity of beneficiaries; Our vision is to foster public interest personality, building public culture, our core values is to promote love, advocate equality, the pursuit of harmony.

### The Nisshin OilliO Group, Ltd.

The Nisshin OilliO Group, Ltd., is a leader in the oils & fats and meals manufacturing industry in Japan. With its 109 years of experience, we are leveraging technologies we cultivated in our oils and fats businesses in a wide range of lifestyle-related fields, with a strong desire to enhance health and well-being of the global population. Our MCT oil/powder and other processed foods with MCTs, for example, were born from this desire honed by our lipid structuring technology. With trusted tradition and technologies, we are opening up a world of new potential.

### Nutrogenics/WHC

WHC supplies the most environmentally friendly and unique Omega supplements, selected on the basis of the highest possible quality, ecomanagement, purity and safety requirements, via Nutrogenics. We guarantee 'the best of the best' when it comes to Omega-3 supplements, as demonstrated by their pharmaceutical quality and highest Omega-3 concentration. WHC Omega supplements are available from pharmacies, therapists and via Nutrogenics online.

### OmegaQuant Analytics

OmegaQuant Analytics partners with academic and corporate researchers to provide a full range of fatty acid analytical services. We also consult in study design and assist in data interpretation.

### Sancilio & Company (SCI)..... Booth 2

Our main focus is on the development of novel therapies for application in the emerging field of lipidomics. Lipidomics is the science related to the structure, function, interaction and movements of cellular lipids and their relationship to diseases. Lipid dysfunction and lipid disorders are linked to a number of diseases and we believe that, based upon available studies, currently available treatments of lipid disorders and their related diseases result in inconsistent absorption of the drug's Active Pharmaceutical Ingredient (API) and thereby exhibit poor efficacy. We believe that the APIs of our product

candidates, formulated using ALT™, will be more bioavailable than current therapies and will have the potential to improve efficacy and lower effective doses. We believe our formulations will potentially improve patient compliance associated with existing therapies because they may result in less frequent dosing than required by those drugs to be effective, eliminate any food effects that may inhibit the absorption of the drug compound, and reduce certain side effects.

### SFEL (Societe Francaise pour l'Etude des Lipides)

The purpose of SFEL is to encourage remotely or contribute more directly to the dissemination of knowledge on lipids and the issues they address, through Chevreul Days (one or two events per year), the edition of the OCL magazine, and our website as well as through newsletters from the association.

Members of The SFEL also have the right to become members of the European Federation for study of Lipids (EFL) that gathers French, German, English, Dutch associations and with whom SFEL was the co-founder with of DGF in 2001. EFL is conference co-organizer in Europe and allows numerous contacts between European scientists.

The SFEL is a 400-member strong association and has significant weight in Europe. The SFEL has about 400 members or contacts.

### Suntory

Suntory Group offers food services and alcoholic beverages to achieve our mission "In Harmony with People and Nature." As part of Suntory Group, Suntory Wellness is making an innovative business for health care. Institute for Health Care Science is the center for research based on science and tradition.

### Unilever

Unilever is one of the world's leading suppliers of Food, Home and Personal Care products with sales in over 190 countries and reaching 2 billion consumers a day. Unilever has more than 400 brands found in homes around the world, and over half (58%) of the company's footprint is in developing and emerging markets. Unilever was ranked number one in its sector in the 2015 Dow Jones Sustainability Index. In the FTSE4Good Index, it achieved the highest environmental score of 5. It led the list of Global Corporate Sustainability Leaders in the 2016 GlobeScan/SustainAbility annual survey for the sixth year running. Unilever was ranked the most sustainable food and beverage company in Oxfam's Behind the Brands Scorecard in 2016 for the second year. For more information about Unilever, please visit [www.unilever.com](http://www.unilever.com).

# BASF

IS PROUD TO SUPPORT

## THE 2016 ISSFAL NEW INVESTIGATORS

VISIT BASF IN BOOTH #1





# 12TH CONGRESS OF THE INTERNATIONAL SOCIETY FOR THE STUDY OF FATTY ACIDS AND LIPIDS

**5 SEPTEMBER MONDAY**

## SATELLITE SYMPOSIA

9:00–12:00 **SYMPOSIUM 1** | *Sponsored by DSM*  
 • ARA, An Essential Nutrient for Infant Development

14:00–17:00 **SYMPOSIA 2 & 3** (concurrent)  
 • Lipids and Brain: Antioxidants and Brain Health  
*Sponsored by Société Française pour l'Etude de s Lipides*  
 • Are EPA & DHA Essential?  
*Sponsored by GOED (Global Organisation for EPA & DHA)*

18:00–20:00 **ISSFAL 2016 WELCOME RECEPTION AT STELLENBOSCH UNIVERSITY**



**JOINT DAY WITH THE NUTRITION SOCIETY OF SOUTH AFRICA**

## ROOM ASSIGNMENTS:

**E** = Endler

**F** = Fisser

**J** = Jannasch

All plenaries and awards will take place in Endler Hall.

Time	6 SEPTEMBER TUESDAY	7 SEPTEMBER WEDNESDAY	8 SEPTEMBER THURSDAY	9 SEPTEMBER FRIDAY
8:00				7:30–8:30 <b>MEET THE PROFESSORS BREAKFAST</b> (by invitation)
9:00	<b>OPENING CEREMONY</b> PLENARY 1 – Nothing in fish oil (patho)physiology makes sense except in the light of homo sapiens' origin in the African land-water ecosystem / Dr. Frits A.J. Muskiet, University Medical Center Groningen	PLENARY 3 – Interactions of dietary amphiphiles with membranes: Implications for chronic disease prevention / Prof. Robert Chapkin, Texas A&M Univ.		PLENARY 5 – Omega-3 fatty acid metabolism in neurodevelopment and neuroprotection Dr. Hee-Yong Kim, NIAAA/NIH
10:00	<b>COFFEE BREAK / POSTERS &amp; EXHIBITS</b> 1: Dietary fatty acid intake (F) 2: Parenteral nutrition (J) 3: Maternal and infant health I (E)	<b>COFFEE BREAK / POSTERS &amp; EXHIBITS</b> 10: Immune function (F) 11: Merits of high fat intake, MCT and ketosis (Sponsored Workshop) (J) 12: Lipid regulation of gene expression (E)	Off-day for scheduled tours or sightseeing on your own	<b>COFFEE BREAK / POSTERS &amp; EXHIBITS</b> 20: Novel sources of LCPUFAs (F) 21: Brain development and function (J) 22: <b>The Global Award for Omega-3 Research</b> (Sponsored by the More Love Foundation) (E)
11:00		<b>ALEXANDER LEAF LECTURE</b> Prof. Michael Crawford, Imperial College of London		<b>EARLY CAREER AWARD LECTURE</b> – The devil is in the details: insights from clinical studies of omega-3 fatty acids in depression / Kuan-Pin Su, China Medical University
12:00	<b>SPECIAL PLENARY</b> – Knowing what to eat, refusing to swallow it / Dr. David L. Katz, Yale-Griffin Prevention Research Center	<b>LUNCH / POSTERS &amp; EXHIBITS</b> MEMBERSHIP MEETING (MEMBERS ONLY)		<b>LUNCH / POSTERS &amp; EXHIBITS</b>
13:00	<b>LUNCH / POSTERS &amp; EXHIBITS</b>			
14:00	PLENARY 2 – From Heart to Pancreas: Lipoproteins and non-communicable diseases Prof. Dirk Blom, Univ. of Cape Town	PLENARY 4 – Fatty acids and their metabolites in skin health and disease – Prof. Anna Nicolaou, The University of Manchester		PLENARY 6 – Current molecular biological mechanisms of saturated vs n-3 fatty acids: Translation to practice & policy Dr. Richard J. Deckelbaum, Columbia University Medical Center
15:00	4: Diabetes (F) 5: Cardiovascular disease I (J) 6: Maternal and infant health II (E)	13: Behaviour (F) 14: Lipidomics and metabolomics (J) 15: DSM Science & Technology Award (Sponsored Session) (E)		23: Aging & NCDs (F) 24: Brain II (J) 25: Perinatal (E)
16:00	<b>COFFEE BREAK / POSTERS &amp; EXHIBITS</b>	<b>COFFEE BREAK / POSTERS &amp; EXHIBITS</b>		26: Evolution
17:00	7: Eicosanoids, docosanoids and related bioactive lipids (F) 8: Cardiovascular disease II (J) 9: Breast milk composition (E)	16: Palmitoleic acid (16:1n-7): metabolism and mechanism (F) 17: Fatty acids and cancer (J) 18: Body composition and bone (E) 19: Novel methods in fatty acid research (L1)		<b>CLOSING CEREMONY</b>
18:00				
19:00				
20:00	<b>YOUNG INVESTIGATORS SOCIAL</b>	<b>CORPORATE MEMBERS DINNER</b> (By invitation)	<b>DINNER DEBATE</b> <i>For science-based dietary guidelines on fats, meta-analyses and systematic reviews are decisive.</i> Sponsored by IEM	<b>GALA DINNER</b>
21:00				



## SATELLITE SYMPOSIA

# SATELLITE 1: IS ARA AN ESSENTIAL NUTRIENT FOR INFANT DEVELOPMENT

**Monday, September 5, 2016 / 9:00am–12:00pm**

Sponsored by DSM

**Co-chairs:** Dr. Susan Carlson and Dr. Norman Salem, Jr.

In this symposia, several of the leaders in their respective areas will present their findings concerning the various functions of arachidonic acid (ARA) often in coordination with docosahexaenoic acid (DHA) in infant or mammalian development. Professor Moriguchi will start off the presentations with his very unique model using delta-6-desaturase knock out mice together with artificial rearing to completely control the EFA intakes during early development. He will present on both growth and behavioral measures of brain function as endpoints. Professor Thomas Brenna will then examine EFA metabolism using stable isotope and fatty acid compositional studies to arrive at an understanding of the balance and need for both ARA and DHA. Professor Susan Carlson will present her studies of infant development including her trial where DHA was varied with ARA held constant and a variety of cognitive and physiological parameters were the endpoints. Finally, Dr. Forsyth will present some very recent data on ARA and DHA intakes in young infants in both developed and developing countries to address the issue of the adequacy of the intake of these nutrients during complementary feeding. A panel discussion will follow where many of these questions concerning the infant requirement for ARA may be considered in a more holistic fashion. This will be in a question and answer format with audience participation.

### **Speakers:**

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**Introduction: Dr. Norman Salem, Jr.**

**Dr. Toru Moriguchi**—Essentiality of ARA and DHA for Mammalian Growth and Development: The Delta-6-Desaturase Knock Out Mouse Model Using Artificial Rearing

**Dr. J Thomas Brenna**—Competition of n-3 and n-6 fatty acids: In Vivo Metabolism and Compositional Studies

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### **Coffee Break**

**Dr. Susan Carlson**—Dose–Response Studies of DHA with Constant ARA in Infant Development and Longer term Outcomes

**Dr. Stewart Forsyth**—Dietary Intakes of Arachidonic Acid and Docosahexaenoic Acid in Infants and Young Children Living in Developing Countries

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### **Panel Discussion**

**Format: 20 min talks and 10 min questions for each talk, 30 min coffee break, 30 min panel discussion at the end**



# SATELLITE 2: LIPIDS AND BRAIN: ANTIOXIDANTS AND BRAIN HEALTH

**Monday, September 5, 2016 / 14:00–17:00**

Sponsored by Société Française pour l'Étude des Lipides

The French Society for the Study of lipids (SFEL) is a non-governmental, non-profit scientific society founded in 1943. Its main objective is to engage in all activities intended to promote scientific interactions and collaborations between national and international researchers from industry and academic in the field of lipids. Since 2007, the SFEL organizes every 4 years in Paris, an international conference entitled "Lipids & Brain Journées CHEVREUL" which examines the latest findings in both fundamental and applied research on the metabolism of FAs and PUFAs within the brain and the retina. It also is the occasion to honour scientists for their pioneering works by awarding them the French "CHEVREUL Medal" (Dr Stanley I. RAPOPORT, Pr. Nicolas G. BAZAN and Dr Michael A. Crawford (London, UK).

On Monday 5th, SFEL is much honoured to have been able to organize this satellite symposium in the "Lipids & Brain" series, focussed on "Antioxidants and Brain Health", that can be seen as an unmissable pre-opening session to the Stellenbosch (South Africa) ISSFAL 2016 congress. Over the very last years, significant progresses have been made in the fundamental knowledge on both brain lipids and antioxidants domains. This SFEL symposium gathered world leader researchers on antioxidants who will present you some of the very telling recent discoveries in the field, including intimate mechanisms (at a molecular and a cellular levels), which can bridge the gap between our two domains and improve our understanding of their common impact on brain health.

**Scientific Committee:** Pr Stephen CUNNANE (Université Sherbrooke, Canada), Dr Bernadette DELPLANQUE (Université Paris Sud, Orsay), Dr Thierry DURAND (CNRS, Montpellier), Dr Philippe GUESNET (PG Consulting, Versailles), Pr Joseph VERCAUTEREN (Université, Montpellier)

## Programme:

### Keynote Lecture, by Pr Joseph VERCAUTEREN (University of Montpellier, France) "Antioxidants : new insights in brain protection"

**Dr David Vauzour** (University of East Anglia, UK)—Flavonoids and brain health: physiological and molecular mechanisms underpinning their beneficial effects

**Pr Fulvio Mattivi** (FEM, S. Michele all'Adige, Italy)—Is the brain a target of polyphenol metabolites?

**Pr David Sinclair** (Harvard Medical School, Boston, USA)—Effects of resveratrol and sirtuin activation on brain health

**Dr Lionel Bretilon** (INRA, Dijon, France)—Carotenoids under the spotlight: from diet to the retina

### ROUND TABLE—Dr Lionel BRETILLON, Pr Fulvio MATTIVI, Pr David SINCLAIR, Dr David VAUZOUR, Pr Joseph VERCAUTEREN—Prospects in Human Nutrition/Supplementation

# SATELLITE 3: ARE EPA & DHA ESSENTIAL?

**Monday, September 5, 2016 / 14:00–17:00**

Sponsored by GOED (Global Organization for EPA & DHA)

**Co-Chairs:** Adam Ismail and Harry Rice

This symposium seeks to challenge the historical definition of essentiality and to explore whether eicosapentaenoic acid (EPA) and docosahexaenoic (DHA) should be classified as essential fatty acids. Historically, nutrients have been classified as essential if 1) the body cannot make them and 2) the addition of the nutrient in question reverses symptoms of deficiency (i.e. cures a disease). For fatty acids, this means that there are only two accepted essential fatty acids—linoleic acid (LA; omega-6) and alpha linolenic acid (ALA; omega-3). Neither are made by the body and both, when added back to a deficient diet, reverse symptoms of deficiency. Despite the well-substantiated benefits of EPA and DHA, neither is considered essential because both can be made, albeit in very limited quantities, from ALA. In addition, neither reverses true nutrient deficiencies. They are, however, associated with numerous benefits (e.g. cardiovascular disease risk reduction, brain development, etc. . .). Curiously, similar benefits are not always associated with ALA, suggesting perhaps that EPA and DHA should be considered essential under certain conditions.

## Introduction: Adam Ismail and/or Harry Rice

**J. Thomas Brenna, Ph.D.**, Professor of Human Nutrition and Chemistry, Cornell University—Historical Perspective on Essential Fatty Acids, Including ALA's Limited Conversion to EPA and DHA

**Michael A. Crawford, Ph.D.**, Visiting Professor of Surgery and Cancer, Imperial College London—DHA Deficiency and Brain Development

## Coffee Break

**CAPT Joseph R. Hibbeln, M.D.**, Acting Chief, Section on Nutritional Neurosciences, LMDB, NIAAA, NIH—Essential Differences comparing EPA and DHA in Major Depression

**William S. Harris, Ph.D.**, Research Professor, University of South Dakota—EPA/DHA Deficiency and Cardiovascular Disease

## Panel Discussion





## FINAL PROGRAM

## 6 SEPTEMBER (TUESDAY)

### Time:

8:30–9:00

Opening Ceremony

9:00–9:45

**PLENARY 1: Nothing In Fish Oil (Patho) Physiology Makes Sense Except In The Light Of Homo Sapiens' Origin In The African Land-Water Ecosystem**

**Prof. Frits A.J. Muskiet / University of Groningen, The Netherlands**

This title is inspired by "Nothing in Biology Makes Sense Except in the Light of Evolution" of Theodosius Dobzhansky, who is the founder of "evolutionary medicine". What I propose to do is to show what traditionally living people (by definition residing in developing countries) have taught us regarding nutrition and especially dietary fatty acids. That is in part a fish oil story, but also one of low linoleic acid intake and little (rapid) carbohydrates. The latter might, in the context of the widespread insulin resistance in Western people, give rise to de novo fatty acid synthesis (DNL), e.g. palmitic acid, and thereby inflammation via TLR4. The CHO source of SFA might be more important than the demonized dietary SFA, that get less burned in the insulin resistant state but not in healthy subjects with low CHO isocaloric diets. What I notably want to show is that homo sapiens derives from the African land-water ecosystem, which is a rich source of the so called brain specific nutrients, i.e. iodine, selenium, iron, vitamins B12, A and D, and fish oil fatty acids. These are the nutrients that currently give rise to the most prevalent deficiencies worldwide. Some data on the reconstruction of our Paleodiet fatty acid composition will be shown but I also would like to point at the interaction between the above nutrients. Well known is the interaction between iodine and selenium in thyroid hormone synthesis, but less known are the interactions between B-vitamins and fish oil fatty acids in phospholipid biosynthesis and brain atrophy, and between vitamin D and fish oil fatty acids in the synthesis of serotonin in brain. Finally I will show that it is not only important to appreciate nutrient interaction, but that there is also interaction between the major lifestyle factors, i.e. nutrition, physical activity, gut bacterial flora, chronic stress, insufficient sleep and environmental (air) pollution. In other words: what do we expect from randomized controlled trials with single nutrients such as fish oil fatty acids, even when perfectly executed? It will always be the weakest connection that defines chain strength and no Evidence Based Medicine paradigm will change this. The only reasonable approach for healthy aging is to mimic the environment and lifestyle on which our genome has become adapted to what we currently are. Thus an African story par excellence.

9:45–10:15

COFFEE BREAK / POSTERS & EXHIBITS

### 01

#### Dietary Fatty Acid Intake

**Chair:** Petro Wolmarans, South African Medical Research Council, South Africa  
**Co-chair:** Marilize Richter, Univ Massey, New-Zealand

### 02

#### Parenteral Nutrition

**Chair:** Philip Calder, University of Southampton Hospital, United Kingdom

### 03

#### Maternal and Infant Health I

**Chair:** Susan Carlson, ISSFAL Imm'd Past President, Kansas University Medical Center, USA  
**Co-chair:** Inge van der Wurff, Open Universiteit, The Netherlands

10:15–10:30

01.01 012

**A Global Map of Blood Levels of EPA + DHA in Healthy Adults**

Stark, Ken  
(Canada)

02.01 341

**Lipid emulsions for use in intravenous support of adult patients—a multiple choice question**

Calder, Philip  
(United Kingdom)

03.01 Carlson

**Introduction**

10:30–10:45

01.02 045

**N-3 and n-6 PUFA intakes in European countries in light of the current recommendations—focus on vulnerable population groups**

Eilander, Ans  
(The Netherlands)

02.02.

**Parenteral lipid emulsions and the pediatric patient**

Koletzko, Bert  
(Germany)

03.02 021

**Cognitive and Executive Outcomes after 12-Months of Dietary DHA&ARA Supply to Toddlers: The Sprinkles Trial**

Hoffman, Dennis  
(USA)

10:45–11:00

01.03 065

**Impact of fatty acid-modified dairy product consumption on plasma phospholipid fatty acid profiles: Findings from the RESET study**

Markey, Oonagh  
(United Kingdom)

02.03 339

**Lipids in Parenteral Nutrition: The South African perspective**

Blaauw, Renée  
(South Africa)

03.03 048

**Maternal DHA Supplementation and Childhood Blood Pressure**

Carlson, Susan  
(USA)

<p><b>11:00–11:15</b></p>	<p><b>01.04 140</b>  <b>Very long-chain saturated fatty acids (SFA) in plasma phospholipids are differentially regulated by dietary polyunsaturated and saturated fatty acids in humans</b>            Rosqvist, Fredrik (Sweden)</p>	<p><b>Panel discussion</b></p>	<p><b>03.04 149</b>  <b>Potential programming of selected cardiometabolic risk factors at childhood by maternal polyunsaturated fatty acid availability in the MEFAB cohort</b>            De Groot, Renate (The Netherlands)</p>
<p><b>11:15–11:30</b></p>	<p><b>01.05 010</b>  <b>Dietary intake of essential fatty acids among Indonesian children</b>            Eilander, Ans (The Netherlands)</p>		<p><b>03.05 176</b>  <b>Effect of long-chain polyunsaturated fatty acids during pregnancy and lactation on children's body composition: Follow-up results of the INFAT study</b>            Brei, Christina (Germany)</p>
<p><b>11:30–11:45</b></p>	<p><b>01.06.329</b>  <b>Cross sectional study on fatty acid dietary intake and status of South African children from three communities with distinct dietary patterns.</b>            Ford, Rosalyn (South Africa)</p>		<p><b>03.06 288</b>  <b>The Effect of Maternal DHA supplementation on Body Fat Mass in Children at 7 Years Assessed by Air displacement Plethysmography and Bioelectrical Impedance Spectroscopy: Follow up of the DOMInO Randomized Controlled Trial</b>            Wood, Katie (Australia)</p>
<p><b>11:45–12:15</b></p>	<p><b>SPECIAL PLENARY: Knowing what to eat, refusing to swallow it.</b>  <b>Dr. David L. Katz / Yale-Griffin Prevention Research Center, United States</b>            This talk will look closely at the body of evidence relating dietary pattern to human health—and make the case that we are NOT clueless about the basic care and feeding of our species. Endless debate about the details of optimal diets, and an insatiable pop culture fascination with scapegoats and silver bullets- distract us from the well-known fundamentals of healthful eating, and forestall the stunning advances in public health that would ensue were we to turn what we know into what we do. The discussion will cover some of the most salient controversies about diet and health, and will demonstrate that past the din and discord, there is an evidence-based, consensus-based set of reliable principles we know full well- but can't get people to swallow. Solutions to this problem will be proposed.</p>		
<p><b>12:15–13:30</b></p>	<p><b>LUNCH / POSTERS &amp; EXHIBITS</b></p>		
<p><b>13:30–14:45</b></p>	<p><b>PLENARY 2: From Heart to Pancreas: Lipoproteins and Non-Communicable Diseases</b>  <b>Professor Dirk Blom / University of Cape Town, South Africa</b>            The two most important non-communicable diseases associated with disordered lipoprotein metabolism are atherosclerotic cardiovascular disease and acute pancreatitis. Although many factors contribute to the risk of atherosclerotic cardiovascular disease dyslipidaemia, most commonly an increase in atherogenic apolipoproteinB-containing lipoproteins and/or low levels of or dysfunctional apoA1-containing lipoproteins, accounts for approximately half of the population attributable risk of myocardial infarction. High levels of triglyceride-rich lipoproteins can trigger acute hypertriglyceridaemic pancreatitis. This session will briefly review the association between lipoproteins and clinical disorders followed by a more detailed discussion of novel therapeutic developments in lipidology. New LDL-lowering therapies including lomitapide, mipomersen and monoclonal antibodies directed against proprotein subtilisin kexin type 9 (PCSK9) will be reviewed. The session will also review novel HDL therapeutics including cholesterol ester transport protein inhibitors, apoA1 mimetic peptides and apabetalone (RVX-208). The final topic that will be addressed is that of novel developments in the management of patients with hypertriglyceridaemia including omega-3- carboxylic acids, volanesorsen (formerly ISIS-APOCIIIrx) and diglyceride acyltransferase inhibitors.</p>		
	<p><b>04</b>  <b>Diabetes</b>  <i>Chair:</i> Dirk Blom, University of Cape Town, South Africa  <i>Co-chair:</i> Jan Glatz, Maastricht University, The Netherlands</p>	<p><b>05</b>  <b>Cardiovascular Disease I</b>  <i>Chair:</i> Clemens Von Schacky Ludwig-Maximilians-University of Munich, Germany  <i>Co-chair:</i> Aleix Sala-Vila, Hospital Clinic of Barcelona, Spain</p>	<p><b>06</b>  <b>Maternal and Infant Health II</b>  <i>Chair:</i> Berthold Koletzko, Ludwig-Maximilians-University of Munich, Germany  <i>Co-chair:</i> Seth Adu-Afarwuah, University of Ghana, Ghana</p>
<p><b>14:15–14:30</b></p>	<p><b>04.01 158</b>  <b>Metabolic effects of omega-3 fatty acids in mice fed obesogenic diets with different fatty acid composition</b>            Rossmeisl, Martin (Czech Republic)</p>	<p><b>05.01 331</b>  <b>Re-evaluation of the traditional diet-heart hypothesis: analysis of recovered data from Minnesota Coronary Experiment (1968–73)(published in BMJ 2016)</b>            Ramsden, Chris (USA)</p>	<p><b>06.01</b>  <b>Geographic differences in genetically determined LC-PUFA synthesis</b>            Koletzko, Bert (Germany)</p>

14:30–14:45	<b>04.02 080</b> Identification of vacuolar-type H <sup>+</sup> -ATPase as key player in lipid oversupply-induced cardiac insulin resistance and contractile dysfunction Glatz, Jan (The Netherlands)	<b>05.02 110</b> Nutritional preconditioning by marine omega-3 fatty acids in patients with ST-Segment Elevation Myocardial Infarction. Sala-Vila, Aleix (Spain)	<b>06.02 226</b> Mendelian randomization shows sex-specific associations between LCPUFA-related genotypes and cognitive performance in Danish schoolchildren. Lauritzen, Lotte (Denmark)
14:45–15:00	<b>04.03 105</b> Myotubes from athletic subjects have increased fatty acid metabolism compared to untrained individuals Lund, Jenny (Norway)	<b>05.03 114</b> Red blood cell arachidonic acid, but not omega-3 fatty acids, relates to an increased risk of abdominal aortic aneurysm in a population with a high background intake of omega-3. Sala-Vila, Aleix (Spain)	<b>06.03 278</b> Associations of dietary fatty acids with serum lipids from childhood to adolescence: results from the GINIplus and LISAPLUS studies Harris, Carla (Germany)
15:00–15:15	<b>04.04 272</b> Effects of n-3 fatty acid supplements on glycemic traits in Chinese type 2 diabetic Patients Li, Duo (China)	<b>05.04 205</b> Findings from The Ludwigshafen Risk and Cardiovascular Health Study Saturated and Monounsaturated Fatty Acids and Mortality Omega-6 Fatty Acids and Survival with Cardiovascular Risk: a complex picture Marcus Kleber & Graciela Delgado, Presented by Clemens von Schacky (Germany)	<b>06.04 324</b> The Fatty Acid Composition of Whole Blood of Young Children from Burkina Faso, Cambodia, Denmark, Kenya, and Uganda Stark, Ken (Canada)
15:15–15:30	<b>04.05 112</b> Dietary intake of marine omega-3 fatty acids and incident retinopathy in older individuals with type 2 diabetes. Prospective investigation from the PREDIMED study Sala-Vila, Aleix		<b>06.05 284</b> Red blood cell total phospholipid fatty acid status of lactating mothers and breastfed infants from a semi-urban township in South Africa Chimhashu, Tsitsi (South Africa)
15:30–15:45		<b>05.05 259</b> Red Blood Cell Polyunsaturated Fatty Acids and Mortality in the Women's Health Initiative Memory Study Harris, William S. (USA)	<b>06.06 217</b> Effect of maternal omega 3 fatty acid supplementation on placental fatty acid transport and synthesis in a rat model of pregnancy induced hypertension Rani, Alka (India)
15:45–16:00		<b>05.06 177</b> Whole Blood Omega-3 Fatty Acid Content Predicts Recurrent Venous Thromboembolism and Death in Elderly Patients With Acute Venous Thromboembolism Reiner, Martin (Switzerland)	<b>06.07.264</b> Combined DHA/EPA and iron supplementation improve respiratory morbidity and increase inflammation-resolving lipid signaling in iron deficient South African school children in a two-by-two randomised controlled trial Malan, Linda (South Africa)
16:00–16:30	COFFEE BREAK / POSTERS & EXHIBITS		
	<b>07</b> <b>Eicosanoids, Docosanoids and Related Bioactive Lipids</b> <b>Chair:</b> Ed Dennis, University of California—Davis, USA <b>Co-chair:</b> Marie Hennebelle, University of California—Davis, USA	<b>08</b> <b>Cardiovascular Disease II</b> <b>Chair:</b> Marius Smuts, North-West University, South Africa <b>Co-chair:</b> Camilla Damsgaard, Univ Copenhagen, Denmark	<b>09</b> <b>Breast Milk Composition</b> <b>Chair:</b> Kebreab Ghebremeskel, London Metropolitan University, United Kingdom <b>Co-chair:</b> Simon Dyllal, Bournemouth University, United Kingdom
16:30–16:45	<b>07.01 338</b> Lipidomics of Oxidized Polyunsaturated Fatty Acids Dennis, Ed (USA)	<b>08.01 179</b> Consumption of saturated fatty acids (SAFA) and the risk of coronary heart disease (CHD): a scientific update Brouwer, Ingeborg A. (The Netherlands)	<b>09.01 106</b> Fish oil supplemental dose needed to reach 1 g% EPA+DHA in mature milk—preliminary data Stoutjesdijk, Eline (The Netherlands)
16:45–17:00	<b>07.02 101</b> Specialised Pro-Resolving Mediators Of Inflammation In Patients With Inflammatory Arthritis Mori, Trevor (Australia)	<b>08.02 283</b> Plasma long-chain fatty acids, blood pressure and arterial stiffness: 5-years longitudinal study in black South Africans Zec, Manja (South Africa)	<b>09.02 208</b> Influence of the Country of Origin on the Fatty Acid Composition of Human Milk—Four Countries Study Linderborg, Kaisa (Finland)



## 6 SEPTEMBER (TUESDAY)

<b>17:00–17:15</b>	<b>07.03 102</b> The effect of alcohol on specialised pro-resolving mediators of inflammation in healthy men Barden, Anne (Australia)	<b>08.03 277</b> Effects of dietary fat content on cardiometabolic response in healthy Chinese: A randomized controlled trial Wan, Yi (China)	<b>09.03 019</b> Examining methods to determine the fatty acid and lipid composition of human breast milk Aristizabal Henao, Juan J. (Canada)
<b>17:15–17:30</b>	<b>07.04 142</b> Bioactive omega-3-derived lipid mediators regulate endoplasmic reticulum stress and autophagy in insulin sensitive tissues Lopez-Vicario, Cristina (Spain)	<b>08.04 237</b> Meal fat composition has a significant impact on postprandial blood pressure in postmenopausal women: Findings from the DIVAS-2 study. Rathnayake, Kumari Malkanthi (United Kingdom)	<b>09.04 332</b> Human Milk and Serum fatty acids from diverse urban populations: The global exploration of human milk (GEHM) study Dingess, Kelly (USA)
<b>17:30–17:45</b>	<b>07.05 287</b> Brain Oxidized Linoleic Acid Metabolites (OxLAMs) are increased in a region-specific manner following hypoxia Hennebelle, Marie (USA)	<b>08.05 91</b> The predictive value of a genetic risk score to explain variance in LDL-c levels van Zyl, Tertia (South Africa)	<b>09.05 260</b> Does providing lactating women with their individual breast milk DHA level promote an increase in DHA intake? Harris, William S. (USA)
<b>17:45–18:00</b>	<b>07.06 222</b> Effects of anticoagulants and storage conditions on levels of hydroxylated and free fatty acids in human plasma Jonasdottir, Hulda Soffia (The Netherlands)	<b>08.06 215</b> A DHA-rich low-dose fish oil supplement can raise the Omega-3 Index to improve cycling efficiency and heart rate recovery Macartney, Michael (Australia)	<b>09.06 223</b> Extremely preterm infants receiving standard neonatal intensive care receive very low levels of AA and DHA Dyall, Simon (United Kingdom)
<b>18:00–18:15</b>	<b>07.07 062</b> Role of Eicosanoids, Proangiogenic Factors and Inflammation in Breast Cancer Basu, Samar (Sweden)		
<b>19:30–22:00</b>	<b>Young Investigator Social</b> at the Bergkelder Winery Transportation will be provided and details available onsite.	<b>Corporate Members Dinner</b> (By Invitation) Transportation will be provided. Details available separately on site.	

## 7 SEPTEMBER (WEDNESDAY)

### Time:

<b>8:30–9:15</b>	<b>PLENARY 3: Interactions of Dietary Amphiphiles with Membranes: Implications for Chronic Disease Prevention</b> <b>Prof. Robert Chapkin / Texas A&amp;M University, United States</b> “Dietary Bioactives” are constituents in foods or dietary supplements, other than those needed to meet basic human nutritional needs, which are responsible for changes in health status. One of the criticisms facing the chemoprevention field is the fact that dietary bioactives, including n-3 polyunsaturated fatty acids (PUFA) and curcumin / curcuminoids, appear to be pleiotropic and affect diverse physiological processes including cell membrane structure/function, eicosanoid signaling, nuclear receptor activation, and inflammatory responses. Investigators are challenged to explain and unify these apparently disconnected signaling nodes. Highly relevant to chronic disease prevention, it is now recognized that the geometry of biological membranes is tightly intertwined with signal processing capability. According to this emerging picture, protein and lipid nanoclusters can be organized to form domains that are capable of facilitating signaling events. The formation of nanoclusters is believed to be mediated in part by cortical actin and/or proximal transmembrane proteins. This is noteworthy because protein-protein, lipid-lipid and protein-lipid nanoclusters are considered a predominant feature of the plasma membrane and appear to mediate critical signaling processes, including signal integration and cross talk of the transduction of oncogenes. We propose a unifying mechanistic hypothesis to generally explain the function of a class of membrane-targeted dietary bioactives (MTDB’s) which, because of their unique amphiphilic properties, are capable of modulating plasma membrane hierarchical organization. Establishing a causal role of MTDB’s in chronic disease prevention would have a major translational impact because these dietary bioactives are safe, well tolerated, relatively inexpensive, and provide additional health benefits, such as reduction in mortality.
<b>9:15–9:45</b>	<b>COFFEE BREAK / POSTERS &amp; EXHIBITS</b>

## 10

### Immune Function

**Chair:** Catherine Field, University of Alberta, Canada

**Co-chair:** Linda Malan, North-West Univ, South Africa,

## 11

### Merits of High Fat Intake, MCT and Ketosis (Sponsored Workshop)

**Chair:** Stephen Cunnane, Sherbrooke University, Canada

**Co-chair:** Lize Havemann-Nel, North-West University, South Africa

## 12

### Lipid Regulation of Gene Expression

**Chair:** Bev Muhlhausler, FoodPlus Research Center, University of Adelaide, Australia

**Co-chair:** Kalpana Joshi, Sinhgad College of Engineering, India

9:45–10:00

#### 10.01 073

A dietary supply of docosahexaenoic acid early in life is essential for immune development and the establishment of oral tolerance  
Richard, Caroline (Canada)

#### 11.01 271

Sense and nonsense in the war on saturated fat  
Diamond, David (USA)

#### 12.01 292

Effects of DHA- rich n-3 fatty acid supplementation on DNA methylation in blood leukocytes. The OmegAD study.  
Palmbiad, Jan (Sweden)

10:00–10:15

#### 10.02 188

The type of dietary lipids, rather than total calories, alters outcomes of enteric infection in mice  
Quin, Candice (Canada)

#### 11.02 274

Can ketones rescue brain energy metabolism during aging? Implications for the treatment of Alzheimer's disease  
Cunnane, Stephen (Canada)

#### 12.02 333

Assessing the impact of prenatal DHA supplementation on the infant epigenome in a randomized controlled trial  
Muhlhausler, Bev (Australia)

10:15–10:30

#### 10.03 042

Anti-Inflammatory Activity and Mechanisms of a Lipid Extract from Hard-Shell Mussel (*Mytilus Coruscus*) in Mice with Dextran Sulfate Sodium-Induced Ulcerative Colitis  
Wang, Fenglei (China)

#### 11.03

The application of high-fat diets for sports performance: An update  
Havemann-Nel, Lize (South Africa)

#### 12.03 249

Positive selection on a regulatory FADS2 indel influences apparent endogenous synthesis of arachidonic acid  
Kothapalli, Kumar (USA)

10:30–10:45

#### 10.04 031

Polyunsaturated fatty acid biosynthesis in leukocytes  
Sibbons, Charlene (United Kingdom)

#### Round table discussion

#### 12.04.136

Dietary pattern regulates FADS1 gene expression in Indian pregnant women sparing the birth weight of the neonate- Nutrigenetics Study  
Joshi, Kalpana (India)

10:45–11:00

#### 10.05 055

Polyunsaturated fatty acids attenuate the receptor interaction between TLR4 and CD14  
Schoeniger, Axel (Germany)

11:00–11:15

#### 10.06 181

The omega-6 fatty acid Adrenic acid acts as a pro-resolving mediator  
Brouwers, Hilde (The Netherlands)

11:15–12:00

**ALEXANDER LEAF LECTURE: Professor Michael Crawford, Imperial College of London**

12:00–13:30

LUNCH / POSTERS & EXHIBITS (Second Group of Poster Presentations Commence)

13:00–13:30

MEMBERSHIP MEETING (MEMBERS ONLY)

13:30–14:15

#### PLENARY 4: Fatty Acids and their Metabolites in Skin Health and Disease

**Prof. Anna Nicolaou / The University of Manchester, United Kingdom**

The skin is the body's barrier against the environment and employs a unique profile of lipids to prevent water loss and protect against external insults. Fatty acids are of particular importance to skin biology supporting the integrity of the epidermal barrier, and facilitating cellular development and communications through the production of bioactive lipid species. Using a targeted lipidomics platform we have investigated the prevalence of cutaneous lipid species, and reported an array of eicosanoids, octadecanoids, docosanoids, endocannabinoids and N-acyl ethanolamines produced by human skin. The profiles of these lipid mediators reflect the distribution of dermal and epidermal precursor fatty acids, demonstrate the diversity of bioactive lipids involved in maintaining tissue homeostasis, and suggest their active contribution to signalling, cross-support and functions of different skin compartments. These studies have also revealed the differential contribution of lipid families to cutaneous inflammation with respect to stimulus, and reveal temporal changes in their profiles. Systemic supplementation with n-3PUFA shows that their cutaneous activities are mediated through perturbation of existing species as well as formation of novel lipids indicating that nutritional interventions may be beneficial in creating an anti-inflammatory and protective environment that could strengthen cutaneous defences. Elucidation of cutaneous lipid networks can provide additional mechanistic insight to skin health, and help identify biomarkers and therapeutic targets for skin disease.

## 13

### Behaviour

**Chair:** Captain Joe Hibbeln, National Institute on Alcohol Abuse and Alcoholism, USA

**Co-chair:** Chuck Chen, NIH, USA

## 14

### Lipidomics and Metabolomics

**Chair:** Samar Basu, Clermont University (France), Sweden

**Co-chair:** Marc Trepanier, University of Toronto, Canada

## 15

### DSM Science and Technology Award (Sponsored Session)

**Chair:** Dr Marcel Wubbolts, Chief Technology Officer, DSM Inc.

**Co-chair:** Dr. Norman Salem, Jr., DSM Inc.

14:15–14:30	<p><b>13.01 196</b> Erythrocyte polyunsaturated fatty acid levels in children with attention deficit hyperactivity disorder, autistic spectrum disorder and typically developing controls Parletta, Natalie (Australia)</p>	<p><b>14.01 316</b> High-resolution lipidomics coupled with rapid fixation reveals novel ischemia-induced signaling in the rat neurolipidome Trepanier, Marc (Canada)</p>	<p><b>15.01</b> Introduction to DSM Science &amp; Technology Awards (5 min) Dr. Marcel Wubbolts</p>
14:30–14:45	<p><b>13.02 064</b> Neurodevelopmental consequences of dietary n-6/n-3 polyunsaturated fatty acid ratios in a mouse model for Autism Spectrum Disorders van Elst, Kim (The Netherlands)</p>	<p><b>14.02 118</b> Lipidomic profiling of dried blood spots requires a tailored extraction procedure to maximize yields of highly polar lipids Aristizabal-Henao, Juan J. (Canada)</p>	<p><b>15.02</b> Utilizing fatty acids and their relation with other pathophysiological mechanisms to improve understanding and treatment of psychiatric disorders. Roel J. T. Mocking—University of Amsterdam</p>
14:45–15:00	<p><b>13.03 084</b> The effect of n-3 and n-6 HUFAs on alcohol consumption Chen, Chuck (USA)</p>	<p><b>14.03 119</b> Lipidomic profiling of human whole blood after intakes of 250mg/d, 500mg/d and 1000mg/d of EPA+DHA from fish oil Aristizabal-Henao, J. (Canada)</p>	<p><b>15.03</b> PUFA metabolism disturbances in apolipoprotein E epsilon 4 carriers: evidence from human and animal studies. Raphael Chouinard-Watkins, Ph.D.—University of Sherbrooke</p>
15:00–15:15	<p><b>13.04 299</b> Effects of Omega-3 and Omega-6 LC-PUFA on working memory and reading in children with DCD: New insights from the 'Oxford-Durham Study' —A Randomised Controlled Trial Richardson, Alex (United Kingdom)</p>	<p><b>14.04 246</b> Deciphering the interplay between peripheral and central oxysterols by supercritical separation with mass spectrometric detection de Kock, Neil (Sweden)</p>	<p><b>15.04</b> DHA/EPA supplementation prevents iron-induced infectious morbidity and reduces inflammatory signaling in children: a randomized controlled trial. Linda Malan, Ph.D.—North West University South Africa</p>
15:15–15:30	<p><b>13.06 343</b> Dietary excesses of Omega-6 and deficiencies of Omega-3 fats in addictions: Risk of smoking in pregnancy Captain Joe Hibbeln (USA)</p>	<p><b>14.05 244</b> Biomarkers in early Alzheimer's disease: Identification using high throughput lipidomics Bergquist, Jonas (Sweden)</p>	<p><b>15.05</b> Omega-3 supplementation as a therapy for diabetic neuropathy: Results from a clinical pilot trial. Evan J. H. Lewis, Ph.D.—University of Toronto</p>
15:30–15:45	<p><b>13.06 014</b> Neuroimaging, omega-3 and reward in adults with ADHD Gow, Rachel (USA)</p>	<p>14.06 342 Fish oil versus krill oil—post prandial study Ghasemini Fard, Sameneh (Australia) ***2014 IRES AWARD WINNER***</p>	
15:45–16:30	COFFEE BREAK / POSTERS & EXHIBITS		



## 16

### Palmitoleic Acid (16:1n-7) Metabolism and Mechanism

**Chair:** Nancy Morse, Independent Scientific Consultant, Canada  
**Co-chair:** Camila Souza, University of Sao Paulo, Brazil

## 17

### Fatty Acids and Cancer

**Chair:** Duo Li, Zhejiang University, China  
**Co-chair:** Wentzel Gelderblom, Cape Peninsula University of Technology, South Africa

## 18

### Body Composition and Bone

**Chair:** Marius Smuts, North-West University, South Africa  
**Co-chair:** Hope Weiler, McGill University, Canada

## 19

### Novel Methods in Fatty Acid Research

**Chair:** Tom Brenna, ISSFAL President, Cornell University, USA

16:30–16:45

**16.01 295**

Palmitoleic Acid: An Investigative Review  
 Vannice, Gretchen (USA)

**17.01 180**

Docosahexaenoic acid amplifies the effect of Doxorubicin in MDA-MB-231 breast cancer cells reducing both in vitro and in vivo growth through effects on cell cycle gene products  
 Newell, Marnie (Canada)

**18.01 032**

The effect of obesity on plasma phosphatidylcholine and red blood cell EPA and DHA enrichment following marine omega-3 fatty acid supplementation  
 West, Annette (United Kingdom)

**19.01 262**

Continuous Gradient Temperature Raman Spectroscopy of N-6 Docosapentaenoic (DPA, 22:5n-6) and Docosahexaenoic (DHA; 22:6n-3) Acids from -100 to 20° C and Oleic Acid From -100 to 50° C  
 Broadhurst, Catherine Leigh (USA)

16:45–17:00

**16.02 081**

Effects palmitic, oleic and palmitoleic acids on the inflammation triggered by TNF $\alpha$  in EAHy926 cells  
 Souza, Camila (Brazil)

**17.02 161**

Modulation of Lipid Metabolism as a Key Target for Prevention of Cancer Promotion in the Liver  
 Gelderblom, Wentzel (South Africa)

**18.02 086**

In vitro effects of arachidonic acid and docosahexaenoic acid on osteoclastogenesis and bone resorption in human CD14+ monocytes  
 Kasonga, Abe (South Africa)

**19.02 115**

Recent Advances in the Analysis of Long Chain Omega-3 PUFA in Marine Oil Dietary Supplements  
 Strigley, Cynthia (USA)

17:00–17:15

**16.03 143**

Palmitoleic acid reduced the inflammation in LPS stimulated macrophages by inhibition of NF $\kappa$ B independent of PPAR $\alpha$ .  
 Souza, Camila (Brazil)

**17.03 285**

The red blood cell membrane eicosapentaenoic acid (EPA) level predicts tumour EPA content in a randomised, double-blind, placebo-controlled trial of EPA treatment in patients with colorectal cancer liver metastases  
 Hull, Mark (United Kingdom)

**18.03 095**

Improved bone health by intake of dietary vitamin D and K from tailor-made Atlantic salmon: A randomized controlled intervention study  
 Graff, Ingvild Eide (Norway)

**19.03 191**

Advanced Lipid Technologies<sup>®</sup> (ALT<sup>®</sup>) with DHA enhancing Post-Operative Growth and Intestinal Adaptation in Porcine Short Bowel Syndrome (SBS) Model.  
 Thorsteinnsson, Thorsteinn (USA)

17:15–17:30

**16.04 224**

Palmitoleic acid supplementation alters lipid and glucose metabolism  
 Duckett, Susan (USA)

**17.04.296**

Induction of a metabolic switch in neuroblastoma and in other human cancer types upon targeting MYC  
 Arsenian Henriksson, Marie (Sweden)

**18.04 132**

Lean body mass is enhanced by dietary docosahexaenoic acid in female Sprague Dawley rats: results from a dose-response study  
 Weiler, Hope (Canada)

**19.04 311**

The effect of n-3 polyunsaturated fatty acids and their bioactive mediators on the resolution of neuroinflammation  
 Trepanier, Marc-Olivier (Canada)

17:30–17:45

**16.05 069**

Are some health benefits of palmitoleic acid supplementation due to 5' adenosine monophosphate-activated protein kinase (AMPK) activation?  
 Morse, Nancy (Canada)

**18.05.109**

Effects of long-term walnut consumption on blood lipids, adiposity and body fat distribution among older individuals: Findings from the Walnuts and Healthy Aging (WAHA) study  
 Ros, Emilio (Spain)

**19.05 121**

Harmonizing Fatty Acid Composition Results from Different Blood Fractions  
 Stark, Ken (Canada)

17:45–18:00

**19.06 189**

Enhancing bioavailability and reducing the food effect of Omega 3 fatty acids ethyl esters.  
 Thorsteinnsson, Thorsteinn (USA)

19:30–22:30

### Dinner Debate at the Spier Wine Estate:

For science-based dietary guidelines on fats, meta-analyses and systematic reviews are decisive.

Sponsored by IEM (Pre-registration required. Sold Out Event.) Transportation will be provided. Details will be available on-site.

## 8 SEPTEMBER (THURSDAY)

\*\*NO SCHEDULED EVENTS\*\*

## 9 SEPTEMBER (FRIDAY)

Time:

7:30–8:30 Meet the Professors Breakfast (By invitation)

8:30–9:15 **PLENARY 5: G-protein coupled receptor signaling in DHA-derived neurodevelopment and neuroprotection**

**Hee-Yong Kim / National Institutes of Alcohol Abuse and Alcoholism, National Institutes of Health**

Docosahexaenoic acid (DHA, 22:6n-3) is highly enriched in neural tissues mainly as membrane phospholipids. Maintenance of a high DHA concentration in brain is essential for proper neurodevelopment and function, suggesting an important neurotrophic role played by this fatty acid. DHA promotes neuronal survival primarily due to its unique ability to alter neuronal membrane properties, thereby facilitating activation of key kinases required for neuronal survival. DHA is also metabolized to synaptamide (N-docosahexaenylethanoamide), potently inducing neuronal differentiation of neural stem cells and promoting neurite growth, synaptogenesis and glutamatergic synaptic function in developing neurons. Its bioactivity is mediated through cAMP signaling triggered by specific binding of synaptamide to orphan G-protein coupled receptor 110 (GPR110, ADGRF1). GPR110 knockout mice show significant deficits in synapse number and object recognition and spatial memory. The synaptamide level is directly linked to the DHA status in the brain which has significant impact on the development of neurons as well as recovery outcome after brain injury. GPR110 orphanized as a functional synaptamide receptor provides a novel target for neurodevelopmental and neuroprotective control. Molecular and signaling mechanisms underlying DHA-mediated neurotrophic and neuroprotective effects will be discussed along with potential preventive/therapeutic strategies.

9:15–9:45 COFFEE BREAK / POSTERS & EXHIBITS

**20**

**Novel Sources of LCPUFAs**

**Chair:** Peter Clough, ISSFAL Secretary  
Cobden Research  
United Kingdom

**Co-chair:** James Dick, University of  
Stirling, United Kingdom

**21**

**Brain Development  
and Function**

**Chair:** Renate De Groot, Welten Institute  
The Netherlands

**Co-chair:** Jeannine Baumgartner,  
North-West University, South Africa

**22**

**The Global Award for  
Omega-3 Research**

(Sponsored by the More Love Foundation)

9:45–10:00

**20.01 025**

New formulation of omega-3 ethyl ester concentrate improves absorption of EPA and DHA up to eight times  
Hustvedt, Svein Olaf  
(Norway)

**21.01 182**

The association between prenatal maternal essential fatty acids and offspring behavior at age 7 years: The MEFAB Cohort  
De Groot, Renate  
(The Netherlands)

**22.01**

Omega-3 in China  
Luo, Zhengnian  
(China)

10:00–10:15

**20.02 172**

Similar Eicosapentaenoic acid and Docosahexaenoic acid Plasma Levels Achieved with Fish Oil or Krill Oil in a Randomized Double-blind Four-week Bioavailability Study  
Yurko-Mauro, Karin  
(USA)

**21.02 167**

The effect of Atlantic salmon consumption on children's cognitive performance—a randomized, non-blinded intervention study  
Pickert, Tina (presented by Bert Koletzko)  
(Germany)

**22.02**

Application of omega-3 fatty acids on cancer patients in China  
Yuan, Zhengping  
(China)

10:15–10:30

**20.03 314**

Randomized control trial on the effects of lipid-based nutrient supplements on linear growth and psychomotor development of 6 month-old infants in South Africa  
Smuts, Marius  
(South Africa)

**21.03 219**

Fatty fish intake has a positive influence on cognitive performance: A randomized controlled intervention study  
Øyvind, Lie  
(Norway)

**22.03**

Global Award for Omega-3 Research  
Hu, Jinxing  
(China)

10:30–10:45

**20.04 066**

Changing long chain-PUFA composition of farmed Atlantic salmon (*Salmo salar* L.)  
Sissener, Nini  
(Norway)

**21.04 202**

Association between Omega-3 Index and cognition in typically developing adolescents: Preliminary results from Food2Learn.  
van der Wurff, Inge  
(The Netherlands)

**22.04**

A Tale of Omega-3: From Fat to Fat-1  
Kang, Jing X.  
(China)

10:45–11:00	<b>20.05 139</b> Safety of orally-administered Emu Oil for Intestinal Applications using Dark Agouti rats Mashtoub, Suzanne (Australia)	<b>21.05 111</b> Behavioural effects of n3 and micronutrient supplementation in typically developing adolescents Tammam, Jonathan (United Kingdom)
11:00–11:15	<b>20.06 247</b> The effect of production system on the fatty acid profile of South African beef: Grain vs. Grass-fed beef Hall, Nicolette (South Africa)	<b>21.06 266</b> The effect of eicosapentaenoic (EPA) and docosahexaenoic (DHA) acids on seizure frequency in patients with drug-resistant epilepsy—Randomised, double-blind, placebo-controlled, trial Ibrahim, Fatma (United Kingdom)

**11:15–12:00** **EARLY CAREER AWARD LECTURE: The devil is in the details: insights from clinical studies of omega-3 fatty acids in depression**  
**Professor Kuan-pin Su, China Medical University**

Depression is one of the leading causes of morbidity and mortality in medicine. Current available treatments do not meet clinical needs, while clinicians and researchers are facing the huge challenge of developing new effective treatments despite the advance of neurosciences. As detailed in our Consensus Statements in the Lancet Psychiatry and World Psychiatry, nutritional medicine is a promising strategy for the crisis of under-effectiveness in depression treatment. Based on numerous supportive evidence of epidemiological, case-controlled, and pre-clinical studies, omega-3 (n-3) polyunsaturated fatty acids (PUFAs) are the most studied nutritional interventions in depression. The clinical trials and meta-analyses, however, revealed inconsistent results. The patient heterogeneity and etiological complexity of clinical depression are the main reasons that every antidepressant treatment, including omega-3 PUFAs, only has limited effect sizes. Indeed, it is very easy to miss the small signals in clinical trials and meta-analyses without standardized diagnoses, reliable clinical ratings and outcome measurements, or proper compositions of omega-3 PUFA and placebo preparation. In this review, I will discuss the common pitfalls of conducting meta-analyses and clinical trials of omega-3 PUFAs in depression. The aim is to improve clinical study designs to successfully detect the modest therapeutic effects from the nutritional interventions in psychiatric disorders. The insights from the clinical findings of omega-3 fatty acids in depression are not only important for clinicians to practice nutritional medicine, but also for basic researchers to translate animal and cellular works into clinical reality.

**12:00–13:30** LUNCH / POSTERS & EXHIBITS

**13:30–14:15** **PLENARY 6: Current molecular biological mechanisms of saturated vs n-3 fatty acids: translation to practice and policy**  
**Richard J. Deckelbaum MD, CM, FRCPC / Columbia University Medical Center, United States**

Fatty acids are now recognized as major biologic regulators impacting upon health and disease. Laboratory studies in animal models have generally shown “adverse” effects of long chain saturated fats on pathways important to cardiovascular as well as diseases; these include stimulation adverse of pro-inflammatory, metabolic, and apoptotic mechanisms. In contrast, long chain n-3 fatty acids, EPA and DHA, demonstrate “beneficial” responses in animal models on these same pathways. Our laboratory has reported the contrasting effects of saturated vs n-3 fatty in acids in mouse models of NAFLD and cardiovascular diseases, and as well, in cultured macrophage cell lines. Interestingly, in the arterial wall we have learned that many of the effects of fatty acids on atherogenesis are mediated by their effects on regulating arterial lipoprotein lipase, as well as macrophage number and function. In questioning the potential impact of chronic supplementation compared to acute administration of n-3 fatty acids, we have found that acute injections of n-3 glyceride after cardiovascular events markedly decrease tissue death and preserve organ function after ischemic injury. After myocardial infarction and ischemic stroke in rodent models, acute administration of n-3 glycerides upregulates anti-inflammatory and anti-apoptotic pathways, decrease mitochondrial and tissue production of free radicals, and preserve mitochondrial functions. These effects of n-3 fatty acids are in part related to their neuroprotection and resolvin derivatives. While laboratory studies on fatty acids imply that similar effects should relate to human diseases, recent papers, systematic reviews, and meta-analyses suggest otherwise. Controversies are emerging as to whether all saturated fatty acids increase cardiovascular disease risk, and on the health benefits of n-3 fatty acids. Nevertheless, as will be presented, sufficient data is available to provide evidence-based recommendations on intake of different dietary fatty to individuals and to populations.

## 23

### Aging And NCDs

**Chair:** Kuan-Pin Su, China Medical University, Taiwan  
**Co-chair:** Kathryn Hopperton, University of Toronto, Canada

## 24

### Brain II

**Chair:** Richard Bazinet, ISSFAL President Elect, University of Toronto, Canada  
**Co-chair:** Lionel Bretillon, INRA-CNRS-Univ., France

## 25

### Perinatal

**Chair:** Barbara Meyer, University of Wollongong, Australia  
**Co-chair:** Lotte Lauritzen, University of Copenhagen, Denmark

14:15–14:30	<b>23.01 038</b> Omega-3 Fatty acid status enhances the prevention of cognitive decline by B vitamins in Mild cognitive impairment de Jager, Celeste (South Africa)	<b>24.01 280</b> Dietary fatty acids in the retina: beyond DHA, is EPA the underestimate intermediate? Bretillon, Lionel (France)	<b>25.01 024</b> Maternal plasma DHA levels increase prior to 29 days post-LH surge in women undergoing frozen embryo transfer: a prospective, observational study of human pregnancy Meyer, Barbara (Australia)
14:30–14:45	<b>23.02 204</b> Cognitive impairment is associated with low Omega-3 Index in the elderly. Results from the KORA-Age study von Schacky, Clemens (Germany)	<b>24.02 184</b> A Novel Role for Very Long Chain Fatty Acids in Brain Function Hopiavuori, Blake (USA)	<b>25.02 018</b> Does omega-3 LCPUFA supplementation during pregnancy increase the Intelligence Quotient of children at school age? Gould, Jacqueline (Australia)



# 9 SEPTEMBER (FRIDAY)

14:45–15:00	<b>23.03 321</b> Brain omega-3 polyunsaturated fatty acids and the neuroinflammatory response to amyloid- $\beta$ in a mouse model of Alzheimer's Disease Hopperton, Kathryn (Canada)	<b>24.03 234</b> Characterization of palmitic acid methyl ester in cerebral circulation Lin, Hung Wen (Kevin) (USA)	<b>25.03 166</b> Reduction of dietary LA/ALA ratio in early life protects against reduced neurogenesis and cognitive impairments caused by early-life stress Yam, Kit-Yi (The Netherlands)
15:00–15:15	<b>23.04.156</b> Substitution of linoleic acid for saturated fat or carbohydrate and the risk of ischemic stroke Venoe, Stine Krogh (Denmark)	<b>24.04 327</b> Role of linoleic acid in brain signaling Hennebelle, Marie (USA)	<b>25.04 077</b> Pre-conception maternal erythrocyte saturated to unsaturated fatty acid ratio predicts ongoing pregnancy Freeman, Dilys (United Kingdom)
15:15–15:30	<b>23.05.145</b> Substitution of dietary linoleic acid with $\alpha$ -linolenic acid or long chain n-3 PUFA attenuate experimental nonalcoholic steatohepatitis by down regulating stearyl CoA desaturase—1 and proinflammatory cytokines Shahul, Ahamed Ibrahim (India)	<b>24.05 187</b> Essentiality and optimal ratios of arachidonic acid (ARA) and docosahexaenoic acid (DHA) for primary hippocampal neurons and primary cortical microglia in vitro. Butt, Christopher (USA)	<b>25.04 312</b> Maternal docosahexaenoic acid (DHA) synthesis is sufficient to maintain maternal whole-body DHA during pregnancy in rats Metherel, Adam (Canada)
15:30–15:45	<b>23.06.133</b> Associations of plasma phospholipid fatty acid status and dietary fatty acid intake with PAI-1 and clot lysis time in healthy South African men and women from the PURE study Richter, Marilize (New Zealand)	<b>24.06 337</b> How fatty acids enter the brain: Reconciling the controversies Bazinet, Richard (Canada)	<b>25.06 040</b> In utero and early life omega-3 status alters composition and function of developing gut microbiota Robertson, Ruairi (Ireland)
15:45–16:00	<b>23.07 294</b> Effects of n-3 polyunsaturated fatty acid supplementation on cognitive function in patients with late-life depression: a 48-week randomized double-blind placebo-controlled study Chiu, Chih-Chiang (Taiwan)		

## Special Session: 26

### Evolution

*Chair: Michael Crawford, Imperial College of London, United Kingdom*

16:00–16:15	<b>26.01</b> What would a modern brain look like in the archaeological record? Prof. John Parkington (South Africa)		
16:15–16:30	<b>26.02</b> The irreplaceable role of docosahexaenoic acid in neural signaling and the evolution of the human brain. Crawford, Michael (United Kingdom)		
16:30–16:45	<b>26.03</b> How specialized Lipids helped overcome not only the structural but also the energetic constraints on human brain evolution. Cunnane, Stephen (Canada)		
16:45–17:00	<b>26.04</b> A brain-specific nutrition and epigenetic model for the origin of modern homo-sapiens in marine and lacustrine environments. Broadhurst, Catherine Leigh (USA)		
17:00–17:30	CLOSING CEREMONY OF ISSFAL 2016		
19:30–22:00	GALA DINNER AT ALLEE BLEU WINE ESTATE Pre-registration required. Transportation will be provided. Details available on site.		



## PLENARY SPEAKER BIOGRAPHIES

### SPECIAL PLENARY

**Dr. David Katz**  
Yale University Prevention Research Center,  
Griffin Hospital  
United States of America

#### KNOWING WHAT TO EAT, REFUSING TO SWALLOW IT.



As founder of the True Health Initiative, Dr. Katz also serves as founding director of Yale University's Prevention Research Center at Griffin Hospital and as president of the American College of Lifestyle Medicine. He received his BA from Dartmouth College (1984; Magna Cum Laude); his MD from the Albert Einstein College of Medicine (1988); and his MPH from the Yale University School of Public Health (1993). Katz is Director and founder of the Integrative Medicine Center at Griffin Hospital (2000) in Derby, CT, and founder and president of the non-profit Turn the Tide Foundation.

Known internationally for expertise in nutrition, weight management, and chronic disease prevention, as well as integrative care and patient-centered care models, Katz is active in patient care, research, teaching, and public health practice. He established and formerly directed one of the nation's first combined residency programs in Internal Medicine and Preventive Medicine, and served as Director of Medical Studies in Public Health at the Yale School of Medicine for eight years.

Dr. Katz is a prominent voice in health & medicine in the media. He has published scientific articles, textbook chapters, newspaper columns and 12 books to date. He has consulted on obesity control and chronic disease prevention and is a peer reviewer for numerous leading medical journals.



## 1 PROFESSOR FRITS A.J. MUSKIET University Medical Center Groningen, The Netherlands

Nothing in Fish Oil (Patho)Physiology Makes Sense Except in The Light of Homo Sapiens' Origin in The African Land-Water Ecosystem



Prof. Frits A.J. Muskiet (1950) studied Chemistry at the University of Groningen. He graduated in 1974 in Biochemistry and gained his PhD in 1979 with a thesis

entitled 'Determinations of catecholamines and catecholamine (precursor) metabolites in biological fluids and their clinical applications'. He was then working as a clinical chemist at the University Medical Center Groningen. He has been professor of Pathophysiology and Clinical Chemical Analysis since 2000.

## 2 PROFESSOR DIRK BLOM University of Cape Town, South Africa

From Heart to Pancreas: Lipoproteins and Non-Communicable Diseases



Associate Professor Dirk Blom is the Head of Division of Lipidology at the University of Cape Town and also heads the Lipid Clinic at Groote Schuur Hospital. The lipid clinic serves as a referral centre for patients with severe, unusual or difficult-to-manage

dyslipidaemia, and also participates in numerous clinical trials exploring novel lipid-modifying or anti-atherosclerotic therapies.

A-Professor Blom's personal research interests include genetic disorders of lipoprotein metabolism with a particular emphasis on dysbetalipoproteinaemia and familial hypercholesterolaemia which is particularly common in South Africa. His unit has participated or is participating in trials with microsomal transfer protein (MTP)-inhibitors, antisense oligonucleotides and PCSK9 inhibitors for the management of familial Hypercholesterolaemia.

A-Professor Blom is a member of multiple international societies and currently serves on the executive committee of the Lipid and Atherosclerosis Society of Southern Africa. He has published in multiple peer-reviewed journals including Lancet, the New England Journal of Medicine, Circulation, Clinical Lipidology, Current Opinion in Lipidology and the Journal of Lipid Research. He has also contributed to the development of the South African Dyslipidaemia and SEMDSA Diabetes treatment guidelines.

## 3 PROFESSOR ROBERT CHAPKIN Texas A&M University, United States of America

Interactions of Dietary Amphiphiles With Membranes: Implications for Chronic Disease Prevention



Dr. Chapkin is an expert in dietary/microbial modulators related to prevention of colon cancer and chronic inflammatory diseases. He has been continuously funded

by NIH for the past 28 years and has made highly significant contributions in cancer chemoprevention and inflammation biology with specific emphasis in: (i) elucidation of signal transduction processes in intestinal stem cells, (ii) membrane biology and nutritional modulation of organ membrane structure and function, (iii) investigation of the role of inflammation as a critical factor in cancer development, and its modulation by environmental/botanical agents, (iv) establishment of models for chronic inflammation and cancer prevention studies, and (v) development of novel noninvasive Systems Biology-based methodologies to assess crosstalk between the gut microbiome and the host transcriptome and its application to translational research. These activities,

together with a history of basic and translational (biomarkers) research using cutting-edge genomics and computational biology methodologies, demonstrate that Dr. Chapkin has the scientific credentials necessary to generate seminal discoveries linking microbiota and host responses to neonatal diseases.

## 4 PROFESSOR ANNA NICOLAOU The University of Manchester, United Kingdom

Fatty Acids and Their Metabolites in Skin Health and Disease



Anna Nicolaou is Professor of Biological Chemistry at the Faculty of Medical and Human Sciences, The University of Manchester. Prof Nicolaou received her PhD

in bioorganic chemistry from the University of Athens and trained as postdoctoral fellow at the University of London. She then joined the University of Bradford in 1997 and moved to the University of Manchester in 2013. Her research focuses on bioactive lipids and mass spectrometry-based lipidomics, with emphasis on the molecular mechanisms that mediate the role of eicosanoids and related mediators in inflammation, immunity, cellular communications and tissue responses. Prof Nicolaou has a long standing interest in skin inflammation and the role of lipids in acute and chronic cutaneous disorders. The involvement of fatty acids and their metabolites in cancer, reproductive tissues and the cardiovascular system are also of interest, and this work has been supported by research councils, charities and industry. Currently, she is a member of the ISSFAL board and executive editor of BBA Molecular and Cell Biology of Lipids.

## 5 DR. HEE-YONG KIM NIAAA/National Institutes of Health, United States of America

Omega-3 Fatty Acid Metabolism In Neurodevelopment and Neuroprotection



Hee-Yong Kim is the Chief of the Laboratory of Molecular Signaling at the Intramural Research Program of National Institute of Alcohol Abuse and Alcoholism. She graduated

from Seoul National University in South Korea and received her Ph.D. in Chemistry from





University of Houston with specialization in Mass Spectrometry. She served as a Senior Investigator and Section Chief at NIAAA IRP from 1992-2005 and became a Laboratory Chief in 2006. Her laboratory discovered fundamental mechanisms underlying neurodevelopment promoted by omega-3 fatty acids. Her laboratory's multidisciplinary team developed mass spectrometry-based novel approaches for lipidomics, metabolomics and quantitative proteomics and protein conformation studies. Her current investigation has been extended to the translation of these molecular mechanisms to in vivo neuroprotective and therapeutic potential using rodent axonal injury and traumatic brain injury models.

## 6 DR. RICHARD DECKELBAUM Columbia University Medical Center, United States of America

Current Molecular Biological Mechanisms  
of Saturated vs n-3 Fatty Acids:  
Translation to Practice & Policy



Richard J. Deckelbaum, MD, CM, FRCP(C), received his education at McGill University in Montreal, Canada. He now directs the Institute of Human Nutrition at Columbia

University where he holds professorships in nutrition, pediatrics, and epidemiology. In addition to his ongoing basic research in cell biology of lipids, cardiovascular diseases, and issues of human nutrition, he has been active in translating basic science findings to practical application in different populations. His laboratory group is currently focusing on molecular mechanisms whereby different fatty acids, especially omega-3 fatty acids, modulate disease processes in liver, heart, and brain. Dr. Deckelbaum has published over 350 research and other publications, as well as being co-editor of a number of books, such as *Preventive Nutrition*, recently released in its 5<sup>th</sup> edition. He served on the Food and Nutrition Board of the National Academies of Science, and is a Senior Fellow of the Synergos Institute. He has chaired task forces for the American Heart Association, the European Atherosclerosis Society, the WHO, the Institute of Medicine, the March of Dimes, and has led and/or served on advisory committees of the National Institutes of Health, the FDA, RAND Corporation, and of the U.S.A. National Academies of Science, as well as the US Dietary Guidelines Committee. Dr. Deckelbaum has directed novel "econutrition" task forces and activities integrating health, nutrition, ecology and agriculture.



## EARLY CAREER AWARD

PROFESSOR KUAN-PIN SU, MD., PHD.

Chairman & Professor of Graduate Institute  
of Neural and Cognitive Sciences  
China Medical University (CMU), Taichung, Taiwan  
Director of Mind-Body Interface Laboratory (MBI-Lab),  
CMU Hospital

## THE DEVIL IS IN THE DETAILS: INSIGHTS FROM CLINICAL STUDIES OF OMEGA-3 FATTY ACIDS IN DEPRESSION



Dr. Kuan-Pin Su is a Professor of Psychiatry in School of Medicine and Institute of Neural and Cognitive Sciences of China Medical University (CMU) and the Chief of Department of General Psychiatry and the Mind-Body Interface Laboratory (MBI-Lab) of China Medical University Hospital (CMUH), Taichung, Taiwan. After graduation from Kaohsiung Medical College in 1995, he received his residency training at Taipei City Psychiatric Centre. During 1999 and 2002, he had worked as a clinical consultant at the Department of Psychiatry of Taipei Medical University. In 2008, he received his PhD and became the Honorary Faculty at the Institute of Psychiatry-King's College London, where he continues to work with Professor Carmine M. Pariante on research about omega-3 polyunsaturated fatty acids (PUFAs) and psychoneuroimmunology of depression.

Dr. Su's major contribution is to integrate clinical significance with the investigation of basic science, which is namely the translational medicine, connecting the bench and bedside with novel interdisciplinary approaches to promote medical research. His research has been successfully attracting grants from the National Science Council and National Health Research Institute in Taiwan, Royal Society in UK, and the NARSAD from the USA, and led to important findings published in high-impact journals and numerous international presentations. He has been awarded the Taiwan Ministry of Education Elite Scholarships (2005 and 2006), Professor Janssen's Schizophrenia Research Award (2006), Professor Wen-Ho Chang Award (2008), CMUH Elite Physician of the Year (2004, 2009 & 2010), Professor Robert Kerwin International Award (British Association of Psychopharmacology, BAP, UK, 2008), NARSAD Young Investigator Award (USA, 2008-2010), Taiwan National Science Council Ta-You Wu Memorial Award (2010), GlaxoSmithKline Depression and Anxiety Research Award (2011), Thomson Reuters Research Front Awards (2011), CMUH Scientific Physician Scheme (2011-2015), Pacific Rim College of Psychiatrists Young Psychiatrists Award (2012), International Society for the Study of Fatty Acids and Lipids New Investigator Award (2010 & 2012) and BAP Psychopharmacology Award (UK, 2013).

Dr. Su's research on roles of omega-3 PUFAs and inflammation in depressive disorders has provided major insights into the biological mechanisms of depression, and is now opening the excitement and innovation of therapeutic strategies. In the future, Dr. Su and his colleagues at the MBI-Lab will keep looking for the novel remedy for depression and the understanding to interface for mind and body.





## ALEXANDER LEAF AWARD

### PROFESSOR MICHAEL ANGUS CRAWFORD, PhD, FSB, FRCPath Imperial College of London, United Kingdom



A graduate of Edinburgh he gained his PhD at the Royal Post Graduate Medical School, Hammersmith Hospital then part of London University. During his work there with Maclolm Milne

he uncovered the genetic cause of Hartnup Disease. Michael and his family moved in 1960 to Makerere Medical School, Uganda to establish chemical pathology and teach biochemistry. He set up a research group with funding from the MRC and Cancer Research UK on the role of nutrition in tropical heart disease and cancer in East Africa. He described the background aetiology to endomyocardial fibrosis, and the volvulus which was the commonest surgical emergency in Uganda. He reported the connection between aflatoxin and primary carcinoma of the liver. In 1963, he participated in the establishment of the Muhumbili Medical School in Dar-es-Salaam. In 1965 he returned to the UK as head of Biochemistry at the Nuffield Institute of

Comparative Medicine, while continuing the research in East Africa until 1972. He was a Wellcome Trust Visiting Research Fellow, to Professor Ernst Baranay, Department of Pharmacology, University of Uppsala, Sweden and held a Special Chair in Biochemistry at the University of Nottingham. In 1972 his research with Andrew Sinclair led to the identification of omega 3 docosahexaenoic acid (DHA) as a major determinant of brain growth and a plausible role in evolution of the human brain. He recently put forward a quantum mechanical theory for the exclusive conservation of DHA in neural signalling membranes over the 600 m.y. of animal evolution.

As Director of the Institute of Brain Chemistry and Human Nutrition at the Queen Elizabeth Hospital for Children he established the Hackney project with Wendy Doyle which described the role of maternal nutrition during pregnancy as an independent determinant of being born small for gestational age. He has been a consultant to WHO, FAO and the three joint FAO/WHO consultations on

dietary lipids 1978, 1994 and 2010. Michael has been awarded several international prizes and medals for his work, which included election to the Hall of Fame at the Royal Society of Medicine in London in 2010, an award from the University of Louisiana—for Neuroscience and Medicine in the same year—and was elected Brain of the Year in 2013 by the Brain Trust, UK. He serves as a trustee for four medical research charities and is an advisor to the Research Council of the Government of Oman. He is presently at the Division of Reproductive Biology, Obstetrics and Gynaecology, Chelsea and Westminster Hospital at Imperial College, London, UK. Working with colleagues in Africa, China and the USA his present research is on neurogenesis and neurodevelopmental disorder. He has published over 300 peer reviewed papers and three books. A fourth is on the way.

Michael recently received Order of the Rising Sun, 2015, Tokyo, Japan and the Chevreul Medal, 2015, Paris, France.









— 13<sup>TH</sup> —  
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