International Conference on the Bioscience of Lipids

Editor

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2015 NEWSLETTER

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Aberdeen, UK, June 23-27, 2014
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Arriving in Aberdeen for the 55th ICBL meeting was a first for me, as I had previously not been to Scotland. The huge number of large helicopters on the airfield clearly indicated that I had arrived to a service node for the North Sea oil business. Navigating to the hotel from the airport was straightforward, since local traffic in Aberdeen really was easy and efficient.
Arriving on the day of the start of the conference meant that I had to further navigate from the city center (where most of the reserved hotels were) to the Robert Gordon University. Luckily the weather was nice and rain showers came only after I made it to the conference center.
According to tradition, the first program item, after the short opening ceremony, was the Laurens van Deenen Lecture. It was presented by Professor Susan Pyne from the University of Strathclyde, Scotland. She was wonderfully introduced by the chair of the organizers of the 55th ICBL, professor Cherry Wainwright (Robert Gordon University). The van Deenen Lecture was attended by more than one hundred meeting delegates. After the lecture, the delegates and speakers were treated with snacks and welcome drinks which were all very much appreciated.
The following morning (Tuesday June 24), a full day of activities awaited the meeting participants, as two sessions (Lipids as Modulators of inflammation and Immunity, and Modified Fatty Acids and Lipids) provided for interesting talks and opportunities for questions and answers. In the afternoon the lunch break was combined with poster viewing and further discussions with old and new acquaintances.

Poster viewing during lunch break

The ICBL steering committee convened in the evening to discuss current affairs and plan for future conferences. The steering committee meeting was followed by a cozy dinner at the Howies Restaurant, where Scottish delicacies were served.
Wednesday morning started with a session about Endocannabinoids: Synthesis and Function, which was well attended. The afternoon was reserved for an excursion to the Crathes Castle. The Crathes Castle has been the home to the Burnett family for four centuries. This castle, with its fairytale turrets, wonderful interiors, mysterious "Green Lady" ghost and fascinating walled garden, had something of interest for everyone.
After the tour, the City Mayor invited meeting participants for a Civic reception at Aberdeen Town House in the evening. Drinks and snacks were served, and a traditional group photo was taken.

The Civic Reception

Thursday (4th meeting day) again provided for a full day of scientific program, as the two sessions filled the day's program (Phytolipids – A vision for the future, and Lipidomics – what's next). The social highlight of the meeting, the gala dinner, was arranged on Thursday evening at the Raemoir House outside Aberdeen. We arrived by bus, and were immediately impressed by the beautiful Country House Hotel, which opened in 1943. Our gala dinner was served in a huge garden tent, next to the Country House Hotel, with beautifully decorated tables and seats for everybody. All items of the succulent dinner were served to the tables, so socializing with your table companions was easy.

Delegates during the gala dinner

After a three course dinner, the President of ICBL briefly addressed the organizers and the meeting delegates, and proposed the traditional toast to the "Spirit of ICBL". The young investigators poster awards were also presented during this short ceremony (see the separate section of this Newsletter for names and topics of the awardees). Next, some tables were moved to the side to provide for a larger free area, were guests could join the céilidh. Local musicians provided the beat and the local organizers the lead for the evening of dance and enjoyment. The cash bar was open and frequently visited by the guests. All good things eventually end, and so did the gala dinner and céilidh. In the

twilight night, buses took us to our hotels for some rest, before we again convened at the conference center for the last day of scientific talks.

Evening dancing after the gala dinner

The Friday sessions (Lipids in Whole Body Systems, and Membrane Lipid trafficking) were well attended even though some participants already had started their homeward journey. The closing lecture was given by Professor Klaus Wahle, who honored the life achievements of the late Alan Garton, who was a founding member of the ICBL and President of ICBL (1982-1990). Young speaker awards were presented in a small ceremony during the last part of the Friday afternoon (see the separate section of this Newsletter for names and topics of the awardees), after which Professor Beatriz Caputto presented the venue and program of the next ICBL meeting, to be held in Iguaçu Falls, Argentina in September 2015.

J. Peter Slotte
President of the ICBL

55th International Conference on the Biosciences of Lipids (ICBL)
Aberdeen, UK, June 23-27, 2014
Scientific Report: "Lipids as Mediators of Health & Disease"

The 55th International Conference on the Bioscience of Lipids (ICBL) was held in Aberdeen, Scotland from the 23rd to 27th June 2014 with a main theme of "Lipids as Mediators of Health & Disease". Aberdeen, known as the "Granite City" and the "Oil Capital of Europe", is on the north-east coast of Scotland and in close proximity to some of the most beautiful scenery of the Scottish Highlands. Boasting two internationally renowned Universities, Robert Gordon University and the University of Aberdeen, (which includes the Rowett Research Institute for Nutrition and Health) with a breadth of lipid research expertise, Aberdeen was a natural choice for the ICBL conference. Indeed, the conference was dedicated to the memory of Professor Alan Garton, former head of the Department of Lipid Biochemistry at the Rowett and a founder member of ICBL, making the location an even more appropriate choice for this conference. The Local Organizing Committee was represented by various academic departments across Scotland and the rest of the UK: Cherry Wainwright (Co-Chair), Klaus Wahle (Co-Chair), Giovanna Bermano (RGU), Marie Goua (RGU), Alan Sneddon (Rowett), Dino Rotundo (Strathclyde), Jane MacKenzie (Queen Margaret University), Philip Whitfield (University of the Highlands & Islands), Anna Nicolau (University of Manchester) and Douglas Tocher (Edinburgh). The work of the LOC was supported by an International Scientific Advisory Board (Guenther Daun, Michel Lagarde, Peter Slotte, Rolf Berg, Stephen Cunnane, Sebastiano Banni, Michael Wakelam and Roger Pertwee) who assisted in the assessment of abstracts submitted to the conference. The conference was attended by ~ 130 scientists and accompanying persons from across the globe, including representation from 15 European Countries, Japan, Usa, Canada, Argentina, Brazil and South Africa.

Professor Alan Garton

The venue for the conference was the impressive new Riverside East Building at Robert Gordon University at its Garthdee Campus on the banks of the River Dee, famous for its salmon fishing. The venue provided excellent lecture facilities adjacent to impressive poster viewing areas and hospitality areas overlooking the river. The University grounds provided an opportunity to take a stroll along the riverbank during break times, with maps for guided walks available. Hotel accommodation was available at a variety of city centre hotels tailored to suit all budgets, and travel between the city and the conference venue was facilitated by the availability of bus travel passes. The timing of the conference around the summer solstice allowed participants to make the most of the long summer days (17-18 hours of daylight).

Professor Susan Pyne (middle) receiving the Laurence von Deenan Award from Dolors Alsina (right) and Professor Cherry Wainwright

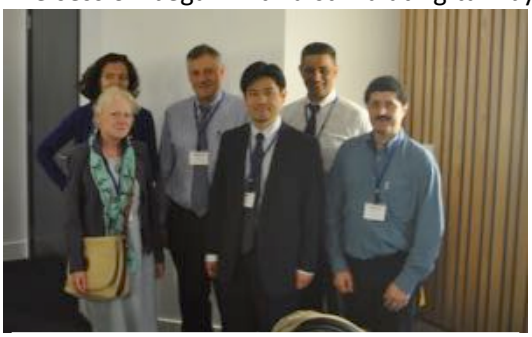
The conference opened on the evening of the 23rd June with the 18th Laurence van Deenen Lecture entitled "Spingosine-1-phosphate and Cancer", delivered by Professor Susan Pyne from the University of Strathclyde. In her excellent lecture, Professor Pyne described her research on the role of the S1P receptor in breast cancer, focusing on sphingosine kinase (SK) isoforms, SK1 splice variants and the subcellular localisation of SK1 and reviewed the

development of S1P inhibitors and their therapeutic potential in solid and haematological tumours. Professor Pyne was presented with a plaque by Dolors Alsina from Elsevier, who kindly sponsored the lecture. The lecture was followed by a welcome reception for all attendees.

The scientific programme continued with avengeance on the 24th June and consisted of 7 themed sessions, each of which contained a mix of plenary/keynote lectures and oral communications from selected abstracts. In total 23 invited talks were given by internationally renowned researchers across all 7 themes along with 24 short communications, of which 8 speakers were entrants for the Young Investigator Award. Over 40 posters were on continuous display throughout the conference, giving ample opportunity for presenters to discuss their data with as many attendees as possible. Generous support from our sponsors also allowed the award of three poster prizes, with times allocated for poster judges to visit the 14 posters entered into the competition and discuss the content with the presenters. The judges for both competitions were drawn from the International Scientific Advisory Board.

Session 1: *"Lipids as Modulators of Inflammation and Immunity"*. Chairs - Dino Rotondo (Strathclyde) & Anne Leaver (Edinburgh)

The session began with a stimulating talk by **Charles Serhan** (Harvard, USA) on novel mechanisms of resolvins in their control of resolution of inflammation. This presentation was beautifully complimented by a subsequent talk by **Adriano Rossi** (Edinburgh, UK) in which he discussed the evidence for the pro- and anti-inflammatory and pro-resolving effects of lipids and illustrated how manipulation of either the synthesis or effects of these lipids could be exploited for therapeutic benefit. These two invited talks were followed by short communications from **Gabor Tigyi** (Memphis, USA), in which he defined the role of the lysophosphatidic acid (LPA) receptors LPA5 and LPA1 in tumour invasion and metastasis, using a combined *in vitro* and *in vivo* approach, and **Ondrej Kuda** (Prague, Czech Republic), who demonstrated the role of oxylipins and endocannabinoids in the modulation of adipocyte metabolism by polarized macrophages. After the coffee break, **Catherine Godson** (Dublin, Ireland) delivered a highly informative lecture describing the protective effects of lipoxins in experimental models of human kidney disease through an effect on collagen deposition, alteration of the macrophage profile and attenuation of the responses of epithelia and fibroblasts to the pro-fibrotic cytokine TGF-b1. The final invited lecture in the session was given by **Makoto Arita** (Yokohama, Japan), who described a combined genetic and lipidomic approach, which identifies over 300 PUFA metabolites simultaneously, to determine the mechanisms of the anti-inflammatory properties of omega-3 fatty acids; using this techniques in fat-1 transgenic mice with an elevated omega-3:omega-6 ratio, several anti-inflammatory metabolites produced by the tissues were identified. In the last two oral communication of the session **Toshiro Okazaki** (Ishikawa, Japan), demonstrated that liposomal ceramide produced by acid sphingomyelinase mediates caspase-dependent apoptosis through regulation of cathepsin-B activation in a natural killer (NK) cell line, and **Liana Silva** (Lisboa, Portugal) provided evidence that ceramide generation activates endocytosis through the formation of highly ordered gel-like ceramide-enriched domains within cell membranes that are co-localised with proteins of the endosomal and lysosomal compartments.



Session 1 Speakers and Chairs

Session 2: "*Modified Fatty Acids and Lipids*". Chairs – Klaus Wahle (Aberdeen) & Michel Lagarde (Lyon)

Ron Heeren gives and enthusiastic talk!

James Ntambi (Wisconsin, USA) kicked off this session with an elegant description of the role of Δ9-desaturases in the regulation of metabolism, particularly in the setting of a high fat or high carbohydrate diet. **Paavo Kinnunen** (Aalto, Finland) followed this up with a review in which he presented evidence that oxidation of polyunsaturated lipids comprises a novel cell signalling system in cell death that involves altered biophysical properties of the cellular membrane. These invited talks were followed by a short communication by **Yusuke Ohno** (Sapporo, Japan), showing that mutations in one of the cytochrome P450 4F family, CYP4F22, leads to insufficient synthesis of ω-hydroxyceramides in the epidermis, which may contribute to the development of the skin disorder ichthyosis. After coffee, **David Ford** (St Louis, USA) gave a description of plasmalogens as chemical targets for HOCL, resulting in the production of chlorinated lipids that act as novel mediators in cardiovascular pathology. **Ron Heeren** (Amsterdam, Netherlands) then took the audience through a fascinating insight into the use of multi-modal imaging mass spectrometry to study the way in which local chemical or biological environments influence signalling pathways in disease. The session was rounded off by two further short oral communications by **Rolf Berg** (Bergen, Norway), on tryptophan catabolic pathways in TTP-induced fatty liver, and **Paola Corsetto** (Milan, Italy) who described the effects of DHA on cholesterol metabolism in cancer cells.

Session 3: "Endocannabinoids: Synthesis and Function". Chairs – Cherry Wainwright (RGU) and Roger Pertwee (Aberdeen).

Guillermo Velasco talks cannabinoids

Vincenzo di Marzo (CNR, Italy) get this session off to a great start with his detailed outline of the complexities of endocannabinoid signalling in the brain, paying particular attention to the differences in distribution, biosynthetic pathways and cellular targets between the two best-characterised EC's (AEA and 2-AG). **Pal Pacher** (Bethesda, USA) followed this with an encyclopaedic review of the role of the endocannabinoids in the development of diabetes and in diabetic complications, including cardiovascular disease. **Daniel Dempsey** (Florida, USA) then gave a short communication describing the biosynthetic pathways involved in the formation of long-chain N-acylserotonins and N-acyldopamines and the identification of a novel enzyme (alrylalkylamine N-acyltransferase). **Klaus Wahle** (Aberdeen UK) then presented recent data to show that the n-3 PUFA derivatives n-3 n-acyl ethanolamides are more effective than the parent N-3 PUFA's in reducing viability of breast cancer cells, an effect thought to be mediated via cannabinoid receptors. The third invited lecture of the session was given by **Guillermo Velasco** (Madrid, Spain) who gave an overview of the molecular mechanisms of cannabinoids as anti-tumour molecules. The final presentation of the morning was a short communication by **Kristen Jeffries** (Florida, USA), who described an elegant series of studies using *Drosophila melanogaster* as a model system for studying long-chain fatty acid amide metabolism.

Session 4: Phytolipids – A vision for the Future?". Chairs – Giovanna Bermano (RGU) and Marie Goua (RGU).

John Harwood on the topic of "useful microalgae"

This morning session started with two plenary lectures delivered by **Kelley Fitzpatrick** (Flax Seed Council, Canada) and **William Brandenburg** (WA Plant Research International, The Netherlands). Kelley discussed an alternative source of omega-3 from plants and flaxseed in particular. On the other hand, William talked about the implementation and the need for seaweed farming to provide adequate nutrition to future generations. **Douglas Tocher** (Stirling, UK) then gave a short talk on supplementing salmon feed with oil from transgenic oilseed in order to increase the availability of n-3 PUFA in salmon produced for human consumption. The first half of this session was concluded by **Marie Goua** (Aberdeen, UK) who presented preliminary data on the effect of rapeseed pomace extract on DNA damage, in order to assess alternative ways to prevent diseases such as cancer. After coffee, two more invited speakers, **John Harwood** (Cardiff, UK) and **Eric Maréchal** (Grenoble, France) discussed the lipid biochemistry of "useful" microalgae and the biosynthesis of plant galactolipids in *Arabidopsis,* respectively. John highlighted that climate change affected fatty acid composition in microalgae and Eric gave an insight into the novel roles of galactolipids by using galvestine-1 as inhibitor. The session was concluded by a short talk by **Takao Shimizu** (Tokyo, Japan) on the regulation of membrane phospholipids in health and disease showing that aberrant cell membrane composition in fatty acids impact on health status. This talk was moved from Session 6, Lipids in the whole body system.

Session 5: *"Lipidomics – What's Next?".* Chairs – Philip Whitfield (Inverness, UK) and Anna Nicolau (Manchester, UK).

The aim of this session was to inform delegates of technological and methodological advances within lipid analysis and the applications of these approaches to problems of biological, biomedical and clinical relevance. The session was opened by **Xianlin Han** (Florida, USA) who gave a plenary lecture outlining method development in 'shotgun lipidomics'. The presentation covered the analysis of a range of lipid classes together with the bioinformatic processing of associated data sets. There were also two interesting talks on eicosanoid profiling in disease states in a short communication by **Alison Colquhoun** (São Paulo Brazil) and an invited lecture by **Anna Nicolaou** (Manchester, UK) and in a short communication **Evelyn Orso**, (Regensburg, Germany) outlined the characterisation of lipids in exosomes. Another of the invited speakers for the session, **Michael Wakelam** (Cambridge, UK) gave an outstanding overview of his research detailing the use of LC-MS-based lipidomic strategies to investigative metabolic dysfunction in cancer. The session finished with a case study in algae to integrate lipidomic and proteomic analyse, given by **Philip Whitfield** (Inverness, UK)

Session 6: *"Lipids in Whole Body Systems".* Chairs Jane McKenzie (Edinburgh, UK) and Alan Sneddon (Aberdeen, UK).

The session started with a main presentation from **Bruce Watkins** (Davis, USA) who discussed the emerging beneficial effects of the N-acyl ethanolamine metabolite of DHA, docosahexaenoyl ethanolamide, on glucose uptake in muscle and on the endocannabinoid system in bone. Next there were four short talks before the coffee break. **Linkang Zhou** (Beijing, China) gave an elegant presentation on the control of lipid droplet formation in brown and white adipose tissue by the cell death-inducing DNA fragmentation factor-like effector proteins, Cidea and Fsp27. **Kristina Bardova** (Prague, Czech Republic) talked about the use of indirect calorimetry as a tool to assess metabolic

flexibility. **Natalia Bottasso-Arias** (La Plata, Argentina) presented her work on new insights into the role of FABPs in celiac disease before **Garifallia Kapravelou** (Granada, Spain) discussed the effects of an exercise regime on lipid and hepatic antioxidant levels in a model of metabolic syndrome. After the break, there were two further plenary lectures. **Helen Roche** (Dublin, Ireland) presented recent work extending findings on the interaction of dietary saturated fat intake with inflammatory gene expression and development of insulin resistance to show some mechanistic work indicating that different fatty acids differentially activate the NLRP3 inflammasome within adipose cells thereby resulting in different levels of active IL-1β, which can mediate insulin resistance. **Michel Narce** (Burgundy, France) dissected the current evidence for the effects of the omega-6 and omega-3 polyunsaturated fatty acids on metabolic disease and on insulin sensitivity in particular. In the final short talk of this session, **Thorsten Hornemann** (Zurich, Switzerland) presented his work on improving neuropathy in a model of type-1 diabetes by suppression of deoxysphingolipid formation through the relatively simple treatment of supplementation with L-Serine.

Session 7: *"Membrane Lipid Trafficking"*. Chairs Peter Slotte (Finland) & Guenther Daum (Austria).

The conference closed with an excellent session in which **Anant Menton** (New York, USA) delivered the first invited lecture on the role of membrane contact sites in sterol transport between the endoplasmic reticulum and the plasma membrane, which was followed by an equally stimulating invited talk on phospholipid exchange between the endoplasmic reticulum and mitochondria given by **Will Prinz** (Bethesda, USA). The quality of the talks continued, with a presentation by **Giuseppe Paradies** (Bari, Italy) on the role of cardiolipin in mitochondrial bioenergetics in health and disease. The session was rounded off by two short communications by **Neale Ridgway** (Dalhousie, Nova Scotia), on the regulation of cellular and golgi phosphatidylinositol pools by Sac1 and oxysterol binding protein, and **Guenther Daum** (Graz, Austria) on the regulatory links between steryl ester synthesis and mobilization, using *Saccharomyces cerevisiae* as an experimental model.

The Closing Lecture for the conference was dedicated to the memory of Alan Garton given by **Klaus Wahle**, who gave a moving, yet entertaining insight into the scientific breakthroughs achieved by Alan, along with a personal insight into what made him a passionate "Lipid Man".

Prizes:
Oral Communication Prize Winners: Linkang Zhou (Tsinghua University, Beijing– 1st Prize) and Daniel Dempsey (University of South Florida - Runner-up).
Poster Prize Winners: Barbara Laurinyecz (University of Szeged – 1st Prize); Takashi Watanabe (Kyushu University – 2nd Prize); Myriam Visram (University of Graz – 3rd Prize).

Sponsors:
The organizers of the 55th ICBL would like to extend a huge thank you to our sponsors whose generous support ensured the success of the conference:
Gold Sponsors – Avanti Polar Lipids Inc; Thermo Scientific
Silver Sponsors – BBA – Molecular and Cell Biology of Lipids; British Pharmacological Society; Charles River; DSM
Bronze Sponsors – CellPath; Elsevier; Mylnfield; Wright Agri

Cherry L. Wainwright
On behalf of the Organizing Committee of the 55th ICBL

The Poster Awards of the 54th ICBL
Lipids as Mediators of Health & Disease

The winners of the traditional Poster Awards were announced at the conference dinner at Raemoir House Hotel on the evening of the penultimate day. Members of the 2014 Poster Award Jury were: Laszlo Vigh (Chairman; Hungary), Dino Rotondo (Scotland), Giovanna Bermano (Scotland), Philip Whitfield (Scotland), Christian Wolfrum (Zurich), Gabor Tigy (USA) and Peter Slotte (Finland). From the 40 posters submitted, 14 were eligible as finalists by the Poster Award Jury who closely inspected the posters during the Conference poster sessions. Criteria for selecting the top posters were the relevance of the topic, originality of the subject, the quality of the presentation, the visual appearance, and discussions with the presenter. The 55th ICBL three Poster Award prizes (one first prize and two runner-up prizes) were sponsored by ***Elsevier***. The abstracts of the three winning posters are shown below and prizes were presented by the conference Chair (Cherry Wainwright) as the ICBL Vice-President (Laszlo Vigh) was one of the co-authors of the winning poster! The ICBL community is proud of the high quality of the posters presented at the Aberdeen meeting and congratulates the winners.

Laszlo Vigh
Vice President of ICBL

The winners of the 2014 ICBL Poster Awards were: Barbara Laurinyecz (University of Szeged – 1st Prize); Takashi Watanabe (Kyushu University – 2nd Prize); Myriam Visram (University of Graz – 3rd Prize).

Poster award winners Barbara Laurinyecz (left) and Takashi Watanabe (center) and Myriam Visram (right)

The role of lipid metabolism during the *DROSOPHILA* spermatogenesis

Barbara Laurinyecz[1], Viktor Vedelek[1], Peter Maroy[1], Maria Peter[3], Gabor Balogh[3], Gabor Juhasz[2], Rita Sinka[1]
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The existence of similar male sterile phenotype in flies, mice and human strongly suggests that many of the genes required during spermatogenesis have been evolutionary conserved. Male sterile mutations of Drosophila exhibit a broad range of phenotypes and affect all stages of spermatogenesis. Spermatid individualization is an especially interesting step of the spermatogenesis because it requires an unusual amount of membrane remodelling using a well-defined actin structure. Drosophila spermatids increase150-fold in length and fivefold greater total surface area

following individualization. Increasing number of lipid metabolic enzymes show important role during all stages of spermatogenesis, for example in the biosynthesis of phosphatidylinositol (PI) and their phosphorylated forms. We have started the genetic characterization of mutant lines in which membrane transport related genes are affected. One of them is the CdsA gene which encodes for phosphatidate cytidyltransferase, CdsA enzyme, which catalyzes the synthesis of CDP-DAG from phosphatidic acid. CDP-DAG molecule is an important player of PI and cardiolipin (CL) biosynthesis. Phosphoinositides play important roles in lipid signalling and membrane trafficking, while cardiolipin is an important component of the inner mitochondrial membrane. We found that in the CdsA*ms* mutant spermatid cyst the individualization does not complete. Mutant cysts have unsynchronized actin cones and abnormal mitochondria, which can be responsible for the male sterile phenotype. We characterized the CdsA*ms* mutant with classical and molecular genetic methods and analysed its lipid composition using mass spectrometry.
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Integral roles of endoglycoceramidase-related protein 2 (EGCrP2) in pathogenic fungi Cryptococcus neoformans

Takashi Watanabe[1], Tomoharu Ito[1], Yohei Ishibashi[1], Hatsumi Goda[1], Tomofumi Miyamoto[3], Kazutaka Ikeda[4], Nozomu Okino[1], Ryo Taguchi[5], Makoto Ito[1,2]
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Cryptococcosis is an infectious disease caused by pathogenic fungi such as *Cryptococcus neoformans* and *C. gattii*. Over the past 20 years, the prevalence of cryptococcosis has been increasing because of the increase in AIDS patients and expanded use of immunosuppressive drugs. More seriously, highly virulent *C. gattii*, a primary pathogen of healthy people, was recently found in the US and Canada. Thus, the development of new drugs against cryptococcosis is an urgent issue. The ceramide of fungal glucosylceramide (GlcCer) is characteristic (methyl-d18:2/h18:0), and it is essential for pathogenicity. Recently, we identified endoglycoceramidaserelated protein 1 (EGCrP1) as a GlcCer-degrading enzyme (GCase), and demonstrated that EGCrP1 is Involved in the quality control of GlcCer by eliminating an immature GlcCer (Ishibashi et al, J. Biol. Chem., 2012). We identified EGCrP2, a paralogue of EGCrP1. In contrast to EGCrP1 specific to GlcCer, EGCrP2 hydrolyzed a variety of β-glucosides including GlcCer but not α-glucosides under an acidic pH. Disruption of the EGCrP2 gene (*egcrp2*) resulted in the accumulation of EG in the vacuole. Furthermore, EGCrP2 was shown to localize in the vacuole, and, thus, the enzyme is likely to be Involved in the catabolism of EG in the vacuole. This is the first report describing an enzyme Involved in EG catabolism. The *egcrp2*-disrupted mutants showed distinct growth arrest, dysfunction of cell budding, and an abnormal vacuole morphology, suggesting that EGCrP2 is a promising target for anti-cryptococcal drugs. It is worth noting that an *egcrp2* homologue was identified in the genome database of *C. gattii*.

Molecular Mechanisms of S-Adenosyl-L-Homocysteine Toxicity

Myriam Visram, Gerald Rechberger, Sepp D. Kohlwein, Oksana Tehlivets
Institute of Molecular Biosciences, University of Graz, Graz, Austria

Hyperhomocysteinaemia, a pathological condition characterized by high levels of homocysteine (Hcy) in the blood, is a causal and independent risk factor for cardiovascular disease. The mechanisms explaining the pathological effects of elevated Hcy are still unclear, however it has been shown that S-adenosyl-Lhomocysteine (AdoHcy), a molecule related to Hcy, is a more sensitive marker for cardiovascular afflictions than Hcy. AdoHcy is a strong product-inhibitor of S-adenosyl-L-methionine (AdoMet) dependent methyltransferases. De novo synthesis of phosphatidylcholine is one such transmethylation reaction and is the main consumer of AdoMet in yeast and in mice. Sah1p, S-adenosyl-L-homocysteine hydrolase, is the sole enzyme that can reversibly hydrolyze AdoHcy to Hcy and adenosine and, therefore, relieve AdoMet-dependent methyltransferases of AdoHcy caused inhibition. Using the yeast Saccharomyces cerevisiae as a model system, our group has shown that AdoHcy accumulation, through downregulation or deletion of SAH1, leads to an increased sensitivity towards Tunicamycin, suggesting ER dysfunction and UPR induction, to cold sensitivity and to accumulation of triacylglycerol in the cells. We also show that the main membrane phospholipid and neutral lipid species exhibit a shift in fatty acyl composition toward shorter and more unsaturated species when Sah1p is deficient. Additionally we illustrate that the irreversible E. coli pathway of AdoHcy catabolism functionally complements SAH1 in yeast and use this system to
further analyze the impact of AdoHcy hydrolysis on lipid metabolism.
Projects P18094 and P24216 supported by FWF.

The 55th ICBL Young Investigator Awards

The final session of the ICBL meeting was capped off with the presentations of the ***Young Investigator Awards***, which were judged by Klaus Wahle (Chair; Scotland), Gunther Daum (Austria), Alan Sneddon (Scotland) and Beatriz Caputo (Argentina). There were 7 entrants into the prize competition and the First Prize, sponsored by Wright Agri, was awarded to Linkang Zhou (Tsinghua University, Beijing) for his presentation during the session on "Lipids in Whole Body Systems". Second Prize, sponsored by the British Pharmacological Society, was awarded to Daniel Dempsey (University of South Florida) for his presentation during the Endocannabinoids Session.

Cherry L. Wainwright (left) and Linkang Zhou (right)

Klaus Wahle
Chair, Young Investigator Awards evaluation committee

Cidea and Fsp27 control lipid droplet fusion and lipid storage in brown and white adipose tissue

Linkang Zhou, Lizhen Wu, Peng Li
Tsinghua University, Beijing, China

Excess lipid storage in adipose tissue results in the development of obesity and other metabolic disorders including diabetes, fatty liver and cardiovascular diseases. The lipid droplet (LD) is an important subcellular organelle responsible for lipid storage. The cell death-inducing DNA fragmentation factor (DFF)-like effector (CIDE) proteins (Cidea, Cideb, and Cidec [or Fsp27, the homolog of Cidec in the mouse]) are LDassociated proteins that have emerged as important regulators of lipid storage and the formation of large LDs in adipocytes and hepatocytes. Fsp27 is mainly expressed in the white adipose tissue (WAT) and brown adipose tissue (BAT). Cidea is expressed at high levels in BAT. Here, we generated Cidea-/-, Fsp27-/- and Cidea-/-/Fsp27-/- mice and systematically analysis the metabolic parameter and adipose tissue morphology. We found that *Fsp27-/-* and *Cidea-/-/Fsp27-/-* mice had improved insulin sensitivity and reduced adipose tissue compared to wild-type or *Cidea-/-* mice. Furthermore, we observed that the BAT and WAT of *Cidea/Fsp27* double-deficient mice had significantly reduced lipid storage and contained smaller
LDs compared to Cidea or *Fsp27* single deficient mice. Finally, we found that Fsp27 and Cidea could localize to LD-LD contact sites and promotes atypical LD fusion and growth. Overall,

these data reveal an important role of Cidea and Fsp27 in controlling lipid droplet fusion, lipid storage in BAT and WAT and the development of obesity.

Identification of an Arylalkylamine N-acyltransferase Enzyme that Catalyzes the Formation of Long-chain N-acylserotonins and N-acyldopamines

Daniel Dempsey, Kristen Jeffries, Anne-Marie Carpenter, Santiago Rodriguez Ospina, David Merkler
University of South Florida, Tampa, FL, USA

Fatty acid amides are an emerging class of cell signaling lipids that consist of N-acylarylalkylamides, N-acylethanolamines, N-acyl amino acids, N-acylmonopolyamines, and primary fatty acid amides. The N-acylarylalkylamides consist of the long-chain N-acyldopamines and N-acylserotonins, where the general physiological function(s) of these amides have not been completely defined. It is known that N-arachidonyldopamine is an endogenous ligand for the CB1 and TRPV1 receptors and has a role in pain perception, locomotion, and regulation of body temperature.1-2 A biosynthetic pathway for the N-acylarylalkylamides remains elusive; however, there are data suggesting that these metabolites are formed by the conjugation of a fatty acid to the arylalkylamine. The arylalkylamine N-acetyltransferases catalyze a similar reaction: the formation of an N-acylarylalkylamide from an acyl-CoA and arylalkylamine. We have employed a pooling substrate screening strategy for different N-acyltransferases found in Drosophila melanogaster and have identified an enzyme, arylalkylamine
N-acyltransferase like 2 (AANATL2), that catalyzes the formation of long-chain N-acyldopamines and N-acylserotonins. Subsequently, we characterized the specificity of this enzyme with respect to the acyl-CoA and arylalkylamine substrates.3 Furthermore, we quantified the endogenous levels of these metabolites in D. melanogaster and localized the AANATL2 transcript to the same anatomical region
containing the long chain N-acylserotonins. Lastly, we have delineated the kinetic mechanism for AANATL2 and have data pointing towards a chemical mechanism to account for the AANATL2 catalyzed formation of the N-acylarylalkylamides.

1. Huang, *et al. Proc. Natl. Acad. Sci. U.S.A.* **2002**, 8400-8405.
2. Bisogno, *et al. Biochem. J.* **2000**, 817-824.
3. Dempsey, *et al. FEBS Lett.* **2014**, (in press).

News from the Steering Committee

At the ICBL in 2014, which took place in Aberdeen, Scotland, the ICBL Steering Committee for the upcoming year (2015) a new ordinary member was elected.
Professor **Ewa Świeżewska** from the Institute of Biochemistry and Biophysics of the Polish Academy of Sciences, who organized the 2011 ICBL meeting in Warsaw, will step down and is replaced by professor **Cherry L. Wainwrigth** (Robert Gordon University). Cherry organized the 55th ICBL in Aberdeen, Scotland. We thank Ewa for many important contributions to the ICBL over the years, and thank her sincerely. We welcome Cherry to the Steering Committee and look forward to fruitful collaboration.

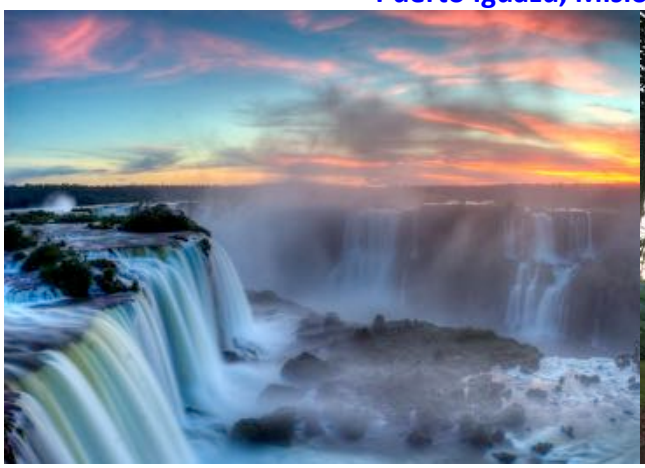
Ewa Świeżewska

Cherry L. Wainwrigth

No other changes to the Steering Committee was made during the Aberdeen meeting. The members of the Steering Committee can be found here.

J. Peter Slotte
President of the ICBL

The 56th International Conference on the Bioscience of Lipids
September 22-26, 2015
Puerto Iguazú, Misiones, Argentina



View of Iguazú Falls

The Conference venue

Early bird registration deadline: To be announced

Preliminary program of the 56th ICBL

Tuesday, September 22, 2015

18th Laurens Van Deenen Lecture: Robin Irvine

Wednesday, September 23, 2015

Session 1: Intracellular Lipid Trafficking – Lipid Droplets
Session 2: Lipidomics - Lipid Imaging
Plenary Lecture: Yusuf Hannun

Thursday, September 24, 2015

Session 3: Edgar Kooijman and Dov Lichtenberg, Editors of Chemistry & Physics of Lipids
Social program: Visit of Iguazú Falls

Friday, September 25, 2015

Session 4: Regulation of Lipid Metabolism
Session 5: Lipids in Health and Disease
Plenary Lecture: Nicolas Bazan

Saturday, September 26, 2015

Session 6: Biophysics of Lipids
Closing Lecture: Kai Simons (EMBO Lecture)
Presentation of 2016 ICBL Chamonix, France: Michel Lagarde
Farewell Argentine Barbecue and Award Ceremony

Last update: January 22, 2015

Venue

Puerto Iguazú, Misiones, Argentina

The conference will be hosted at the Amerian Portal del Iguazu Hotel, with a stunning view of the joint of the Iguazú and Paraná rivers. The amazing Iguazú waterfalls, one of the most surprising world wonders, are just 15 km away from our hotel.

Chair: Beatriz Caputto, CIQUIBIC (UNC-CONICET), Department of Biological Chemistry, School of Chemical Sciences, National University of Córdoba, 5000 Córdoba, ARGENTINA

Local Organizers

Norma Sterin Speziale (Ar)	Mario Guido (Ar)
José L. Daniotti (Ar)	Hugo J. Maccioni (Ar)
Gerardo Fidelio (Ar)	Diego de Mendoza (Ar)

Address for correspondence

For any information about the 56th ICBL please contact ICBL Conference Secretariat.
e-mail: Beatriz Caputto (bcaputto@fcq.unc.edu.ar or blcaputto@gmail.com), ph: 0054 351 5353855 ext. 3440
Conference web site: http://icbl2015.fcq.unc.edu.ar.

FUTURE CONFERENCE
57th International Conference on the Bioscience of Lipids
"Lipidomics: from Structures to Functions"
6th-10th September 2016
Chamonix - Mont Blanc, France

View of Chamonix

Venue: Chamonix - Mont Blanc, France

Organizing Committee
Chair: Michel Lagarde (Lyon) **co-chairs:** Nathalie Bernoud-Hubac & Marie-Caroline Michalski (Lyon)
Catherine Calzada (Lyon), Frédéric Carrière (Marseille), Thierry Durand (Montpellier),
Agnès Girard-Egrot (Lyon), Toshihide Kobayashi (Lyon/Tokyo)

Preliminary Scientific Program
19th Laurens Van Deenen Lecture: Charles N. Serhan, Boston USA
Membrane lipids
Lipid imaging
Plasma lipoproteins
Non-enzymatic lipid oxidation
Lipolytic enzymes
Lipid structures of nutritional interest
Oxygenated metabolism of PUFA

Maurizio Crestani
Secretary of ICBL Steering Committee