Welcome from the Chair

Welcome to the Autumn 2018 IBioIC Newsletter.

I am delighted to introduce the first Newsletter since I took over as Chair of IBioIC. The first months of Phase II have been busy and exciting, with lots to reflect on. We look back at our re-funding announcement in September and the launch of our new branding and Phase II business plan summary; a key document which will be a touchstone over the coming months.

Our Skills and Projects programmes continue to develop. The Skills team have just celebrated the first PhD graduations and begun the second years of both the CTP project and our HND course. We are delighted that five students have now progressed to Year 2 of the HND course, and we wish them well with their continued studies. The Projects and Business Development teams have also successfully delivered a new CPD training course at our FlexBio facility at Heriot Watt and we have welcomed several new, and not-so-new, colleagues to new roles in both the Skills and Projects teams.

We also look back at some of the key events we’ve hosted and attended, and celebrate a few key stories and highlights from our members’ recent activities to whet your appetite for our upcoming Annual Conference in January. Now established as the UK’s leading general IB conference, the theme for IBioIC19 is Industrial Biotechnology for a Sustainable Future, and it’s set to be our most ambitious and exciting conference to date.

I hope that you’ll enjoy reading all about our successes over the past few months as much as we’ve enjoyed delivering them, and that you’ll join me in looking forward to the challenges and opportunities still to come as we approach 2019.

Professor Dame Anne Glover
IBioIC Phase II

IBioIC Re-funded

In August, IBioIC received a refunding package of £11.1m over five years to advance Scotland’s industrial biotechnology sector.

We formally announced the news at a celebration event at Glasgow’s Corinthian Club on 13th September 2018, where around 150 of our valued members and friends joined us to reflect on what we’ve achieved already and look forward to what’s in store over the next five years. We heard a brief welcome from our CEO, Roger Kilburn, who introduced short talks from Professor Sir Jim McDonald, Principal, University of Strathclyde; Professor Dame Anne Glover, Chair of IBioIC Governing Board; Mike Cantlay, Chair, Scottish Funding Council; Dr David Robertson, Chair, 3f Bio; and Dr Dave Tudor, Head of GMS Strategy, GSK.

The funding was confirmed by Ivan McKee, Minister for Trade, Investment and Innovation and will help IBioIC support the Scottish Government’s National Plan for IB over the next five years.

We also unveiled our new five-year business plan for Phase II in the form of an infographic brochure which summarises the key points in an easily digestible format. The Phase II business plan will see IBioIC undertake a raft of new and extended activities which will fall into five key themes: providing strategic leadership, accelerating commercialisation, investing in IB-using value chains, developing new value chains, and skilling the workforce.

Our business plan summary is available on our website: www.ibioic.com/news_and_events/publications/d9/

New Chair Appointed

Professor Dame Anne Glover FRS PRSE joined IBioIC as Chair of its Governing Board in August 2018, succeeding Ian Schott in time for the start of the Centre’s Phase II.

Dame Anne is an esteemed biologist with a wealth of experience in science, technology and in championing the role of innovation in the UK economy and her appointment will help the Centre to stimulate the growth and success of industrial biotechnology in Scotland.

Dame Anne will lead the strategic direction and performance of the Centre, overseen by a twenty-strong Governing Board which comprises members from industry, academia and the funding agencies Scottish Enterprise, the Scottish Funding Council and Highlands and Islands Enterprise. Dame Anne will play a key part in IBioIC’s work in transforming how Scotland implements IB – delivering the National Plan for IB’s targets of £900m of economic value and over 2500 jobs supported by an IB-using community of over 200 companies.

Dame Anne’s illustrious career includes being the first ever Chief Scientific Adviser for Scotland, where her role was to further enhance Scotland’s reputation as a science nation. She was joint chair of the Scottish Science Advisory Committee and served on the Scottish Council of Economic Advisers until her 2012 appointment as the first Chief Scientific Adviser to the President of the European Commission. Dame Anne’s European role included provision of independent expert advice on science, technology and innovation and acting as an ambassador for European science, both promoting and communicating the benefits and values of science in Europe. Dame Anne is an elected Fellow of both the Royal Society and Royal Society of Edinburgh, of which she is also the current President.
IBioIC activity in Phase II is set to ramp up as we focus on delivering extended and additional key activities. To help us achieve our Phase II goals, we are in the process of expanding the team. Meet our new colleagues and catch up on the changes to the team over the last few months.

Rachel Clark, Skills Programme Manager

Rachel joined IBioIC in September 2018 as Skills Programme Manager, responsible for developing and administering the educational programmes run by IBioIC and its partner institutions.

Rachel has a PhD in Medicinal Chemistry, which involved designing and synthesising new compounds to treat tropical diseases, Leishmaniasis and Sleeping Sickness. Rachel completed a number of postdoctoral roles and followed her interest in promoting the capabilities of her research group by taking on a hybrid research/business development role which involved looking after the promotion of, and day-to-day running of, the SULSA-funded Drug Discovery Portal.

Rachel joined the European Regional Development-funded Knowledge Exchange Hub in the Strathclyde Institute of Pharmacy and Biomedical Sciences as Project Coordinator in 2010. She rallied a team of over 45 late-stage PhDs and early career researchers to manage a portfolio of industry-academia projects to help to deliver the goals of the Hub, and at the end of the funding term, she continued this coordination role based in Research and Knowledge Exchange Services, with a pan-University remit, rather than just life sciences.
IBioIC Phase II Continued

Rachel has been closely involved with “Engage with Strathclyde”, a week-long series of events to initiate new, and escalate existing, opportunities or university staff to work with external organisations (business, industry, government, third sector and public). Latterly, Rachel has focused on developing the supporting structure needed for researchers at Strathclyde to embark on engaging the public with their research, via Explorathon. The events taking place in Glasgow see 4,000 members of the public interacting with research taking place in partner venues such as The Riverside Museum, Glasgow Science Centre and The Forge Shopping Centre.

Rachel’s team have been so successful that they are awaiting feedback from the National Coordinating Centre for Public Engagement (NCCPE) about a watermark for support of engagement (November 2018).

Rachel has a career history and passion for ensuring students and early career staff complete their teaching/research contracts with as many skills as possible, and with a clear direction of travel towards their next appointment, which makes for a great fit into the role of Skills Programme Manager.

Steven Asiala, Senior Business Development Coordinator

Steven joined IBioIC in November 2018 as Senior Business Development Coordinator. He is keen to support IBioIC’s continued work in raising awareness of industrial biotechnology by introducing companies to the benefits IB can bring to their core business, and by adding value to by-products or waste streams. Steven comes most recently from the University of Strathclyde Department of Pure and Applied Chemistry, where he investigated the use of nanoparticles in biological applications, specifically as diagnostic tools and biomolecular imaging contrast agents. He is trained as an analytical chemist, completing a PhD at the University of Notre Dame, USA (2014) and a BSc at Grand Valley State University, USA (2009). During his doctoral studies, he developed novel substrate fabrication, measurement, and data processing techniques related to Raman spectroscopy.

When away from the office, Steven enjoys a good run, a good podcast, a good run while listening to a good podcast, playing music, and staying up far too late to watch American football.

Heather Michie, Business Development Coordinator

Heather joined the IBioIC team in November 2018 as our Business Development Coordinator. With a background in Business Management and Human Resources, Heather is looking forward to providing the Business Development team with range of support so we can engage successfully with our members. After completing a Graduate Scheme at the University of Strathclyde within professional services, Heather was attracted to the challenge of being part of a team that is responsible for the growth of the IB sector in Scotland.

In her spare time, Heather enjoys socialising with her family and friends, travelling, cooking new recipes and can be found trying out new classes at the gym.

Alannah Simpson, Modern Apprentice

Alannah joined the IBioIC team in October 2018 as our Admin Modern Apprentice. Just starting out on her career in work, Alannah has already gained an understanding of administration in college and is further developing her skills and knowledge through the Modern Apprenticeship programme. Alannah is responsible for vital administration which keeps the Centre running smoothly, dealing with everything from travel expenses, through stocktaking of collaterals and office supplies, to keeping track of where everyone is, and is already developing a detailed understanding of the various business areas within the Centre.

When she’s not at work, Alannah’s enjoys travelling, keeping fit and spending time with family and friends.
IBioIC Phase II Continued

Welcome to our new colleagues and congratulations to some not-so new continued

The Equipment Centre Team

The IBioIC Equipment Centre Team have generated significantly-increased industrial interest and activity in both RapidBio and FlexBio over the past year by working in collaboration with the University of Strathclyde and Heriot Watt University. The result has been a record annual income and a healthy project pipeline. In order to strengthen the Team further and grow the capability of the Facilities, with the support of the host HEI partners, IBioIC has recently recruited two new research scientists, Maria Kowal and Laura Rana, who both come with a wealth of biotech industrial experience.

Laura Rana, FlexBio Scientist

Laura is a graduate of Heriot Watt University and joined IBioIC in October. Laura previously worked at IBioIC member company Celtic Renewables, where she was involved in the development of new renewable feedstocks as well as assisting with the scale up of fermentation technology from lab scale to industrial scale. She also carried out lab maintenance, analytical analysis and loved visiting schools to teach the next generation about industrial biotech.

Within IBioIC Laura will be assisting with the set up and execution of industry-focused research projects at the Flexible Downstream Bioprocessing Centre located at Heriot Watt University.

Maria Kowal, Research Associate, RapidBio

Maria joined the IBioIC team in September 2018 as a Research Associate. Primarily based in the RapidBio lab at the University of Strathclyde, Maria is responsible for running and reporting on client-driven fermentation experiments, as well as bringing the operation of RapidBio in line with current industry CRO standards.

Maria has a diverse biotechnological background, with expertise in both upstream and downstream processes, and key analytical techniques. After graduating from her PhD in Microbiology she spent three years in the biopharmaceutical and medical devices industry. Before joining IBioIC Maria worked at Merck Millipore in Livingston, developing purification processes for blood-typing reagents. She considers her technical strengths to AKTA chromatography, HPLC analysis, and anaerobic fermentation, but she also enjoys working with clients and cooperating with others to develop and optimise processes.
IBioIC Phase II Continued

Congratulations to..

Johann Partridge, Operations Director

We are delighted to announce that IBioIC’s very own Project Engagement Manager, Johann Partridge, has taken on the new position of Operations Director.

The Operations Director role will lead on the delivery of two of the key themes in the Centre’s Phase II Business Plan – investing in biotechnology through our industry driven projects programme, and enabling the acceleration of commercialisation for companies by providing access to existing and new open access scale-up facilities. The operations team will work closely with the Centre’s technical team headed up by Ian Archer, Technical Director, who will focus on the Centre’s strategic direction.

Carol Badger, Projects Co-ordinator

Our new Project Co-ordinator is none other than erstwhile Business Development Co-ordinator, Carol Badger. Carol originally joined the business development team in January 2017, but switched roles in October 2018 to become our new Project Coordinator. Her new role is a pivotal one within the Projects Programme, providing co-ordination and administrative support across the entire IBioIC Project Programme.

Our new Post Doctoral Research Associates

Over the past few months, we’ve welcomed a number of new PDRAs to work on IBioIC projects in our equipment centres. Meet the new team on our PDRA Profiles webpage: http://www.ibioic.com/what_we_do/project_funding/pdra_profiles/d1134/
IBioIC hosted an “Exploring Opportunities in Blue Biotech and Aquaculture” workshop in Oban on 13th November 2018 in collaboration with colleagues from Highlands and Islands Enterprise (HIE), Zero Waste Scotland (ZWS), the Scottish Aquaculture Innovation Centre (SAIC) and our academic partners from the Scottish Association for Marine Science (SAMS-UHI).

The event provided a taster of the current research and world class expertise of Scotland’s academics as well as giving an overview of the business and funding support available to companies either operating in the space or seeking partners from these sectors. Companies had the opportunity to present short pitches giving a snapshot of their businesses and areas where they may be seeking innovation support. The workshop featured networking sessions to promote academic-to-business and business-to-business collaborations, as well as identifying opportunities for funding, consortia building and value chain development.

IBioIC look forward to holding further quarterly workshops in collaboration with partners at Highlands and Islands Enterprise.

The IBioIC Equipment Centre Team organised and hosted an 'Introduction to Fermentation' course at FlexBio, IBioIC’s pilot-scale facility at Heriot-Watt University in September 2018. The course was well attended by representatives from the Centre’s member companies AMT and GSK, as well as a number of PhD students from the University of Strathclyde.

The course was tailored to delegates’ fermentation knowledge and included topics such as fermentation fundamentals, host strain selection, media development and process optimisation in an informal round table set-up, led by IBioIC Technical Director, Ian Archer. Practical training, covering a range of fermentation techniques from aseptic handling through to steam-in-place at 30L scale, was delivered by IBioIC Lead Scientist, Loris Fossier. Finally, Neil Renault, FlexBio Facility Manager and Kelly Stewart, Heriot-Watt PDRA, presented downstream processing techniques, including disc stack separation with bowl disassembly, followed by a walk-through of filtration, chromatography, drying and product filling and packing.

“The course was an excellent refresher of my knowledge of fermentation from university. I think it’s delivered at a perfect level for people in industry looking for an overview of fermentation; and would be an amazing course for biotech students.”

Danny Graham, Advanced Microwave Technologies Ltd.

The Equipment Centre Team are currently developing a number of masterclass courses which will build on fermentation practical skills and focus on either upstream or downstream processing. Please contact a member of the team at flexbio@ibioic.com if you or your company are interested in attending a tailored taught and/or practical training around these themes.
Skills

IBioIC’s Skills programme continues to grow and develop. The last couple of months have seen our first PhD students graduating, and new cohorts of PhD, MSc and HND students joining us.

PhD

Our Collaborative Training Partnership had a highly successful first year and planning and preparation for CTP 2 is now complete with seven industrial and seven academic partners who will be working with us to deliver training.

CTP 2 Partners

**Academic**
- University of Strathclyde
- University of Edinburgh
- Robert Gordon University
- Heriot Watt University
- University of St Andrews
- Two members of the N8 group; Universities of York and Sheffield

**Industrial**
- Ingenza
- Unilever
- Algaia
- uFraction8
- Xanthella
- The Antibody Company and Absolute Antibody

IBioIC PhD Graduations

Congratulations to Ellis Robb and Magdalena Buschhaus, the first IBioIC PhD students to complete and receive their doctorates. Both have gone on to employment within the industry.

Following closely behind, the next set of IBioIC PhD students will be having their vivas in the next few months, and we look forward to sharing more good news in future editions.

PhD 2018 Induction

China Exchange

Marcus Price and Annemette Kjeldsen are in final stages of a 12 week placement at Tianjin Institute of Biotechnology in China, courtesy of the Newton Fund. They have been working on developing the CRISPR-Cas9 toolbox for Bacillus subtilis. This opportunity was developed following a visit to the Institute last year by then-Skills Programme Manager, Rachel Moir. The Newton Fund aims to develop science and innovation partnerships which promote the economic development and welfare of the collaborating countries.

Find out more about the Newton Fund at www.newtonfund.ac.uk.
A significant number of the 2017-18 cohort are already employed within the IB industry with companies including Bioreliance, Q2 Solutions, Antibody Analytics, ScotBio, Pennosan, Biocatalysts Ltd, Bakkavor, LumiraDX Technologies, Pharma Discovery Services, South Lanarkshire Council public health department, and Glasgow University. We are pleased to report that a number of industrial partners who were involved in the Industrial Placement programme this year have already indicated their willingness to be involved again in the 2018-19 placements programme.

If you are interested in taking part in the MSc Industrial Placement programme in 2018-19 and would like further information about offering a 10 week student placement from mid May – end July 2019, please contact: skills@ibioic.com

Over the summer, IBioIC welcomed five interns on to the team under the Scottish Life Sciences Internship Programme run by ScotGrad. Our interns joined the FlexBio lab, Projects, Skills, Marcomms and Business Development departments. All five successfully completed their internships in August and have since been offered extended contracts into the autumn to continue their work.

As part of their internship with IBioIC, our interns were required to give presentations about their time with us and as we expected, all of them gave exceptional presentations which fully demonstrated their understanding of IBioIC’s work and culture. The team selected both Cristian and Naomi as joint first place winners to go on to give presentations at the ScotGrad graduation event in September.

Internships are a valuable experience for students and an ideal opportunity for companies to develop projects which support business growth. More information about ScotGrad internships can be found at www.ScotGrad.co.uk
Keit Spectrometers

Keit Spectrometers presented the results of a comparative study, undertaken in collaboration with IBioIC and CPACT, Centre for Process Analytics and Control Technology, at the latest Scottish Fermentation Network meeting on 19th October.

The study was designed to test the relative sensitivity of Keit’s IRmadillo mid-infrared spectrometer against other types of spectrometer and involved the online monitoring of sucrose fermentation with four different types of spectrometer which constantly monitored the process while offline HPLC was used to gauge capability. As a result of the study, the company was able to draw comparisons between their IRmadillo spectrometer and other types of spectrometer, proving the benefits of the infrared (IR) model and identifying shortcomings which can now be further investigated.

Keit Spectrometers is a spin-out from the UK government space research centre near Oxford. Their technology was originally designed for a Mars research project and has since been improved for use in industry.

Synpromics

In October, IBioIC member Synpromics unveiled a novel drug-regulatable promoter platform at the European Society of Cell and Gene Therapy (ESGCT) in Lausanne, Switzerland.

Synpromics showcased data generated from its innovative liver selective inducible and repressible synthetic promoter systems that are tightly controlled by FDA-approved small molecule drugs. The inducer system works through increased concentrations of the inducer drug resulting in higher levels of gene expression, while the repressible system uses a particular drug which can silence the promoter.

The system works without the use of a trans-activator, which is usually required to mediate the desired effect. The company has used its PromPT® platform to identify endogenous tissue specific transcription machinery that can tightly control gene expression when used in combination with an inducer or repressor. The simple mechanisms identified have several advantages over the currently-used two component system, including decreased size and ease of use.

IBioIC has supported the work of Synpromics through two Accelerator projects which tie in with their core business and their work for clients.

Dr Michael Roberts, Founder & CSO said

“We are grateful to IBioIC for their continued support and grant funding enabling us to progress projects in biomanufacturing and in helping to further develop our PromPT platform in the field of cell and gene medicine”
Celtic Renewables is developing new strains of bacteria which can convert carbon sources into green chemicals including Acetone, Butanol and Ethanol (ABE). The success of the ABE industry relies on a sustainable feedstock and strains capable of efficient feedstock utilisation and high product formation. Novel proprietary strains could potentially add further competitiveness and value to the ABE industry in the UK, through improved substrate use, increased product formation and process robustness.

This project aims to isolate new strains with better industrial performance from novel sources.

Celtic Renewables have been working with Edinburgh Napier University on this project and previous IBioIC PDRA, Dr Annie Cheung, who is a specialist in fermentation processes and biofuel production, has also joined the team. Annie has just successfully completed a Business Interaction Voucher from Food Waste Net, collaborating with Celtic Renewables and hosted by Edinburgh Napier University/ BFRC.

Oxford Biotrans has won the Royal Society of Chemistry’s Emerging Technology Competition 2018. Oxford Biotrans has developed an enzyme-based process to convert natural valencene, a citrus extract readily obtained from oranges, into natural-grade nootkatone. As we reported a year ago, when Oxford Biotrans joined IBioIC as our 100th member, Nootkatone is a sesquiterpene, which is the flavour and scent of grapefruit and is used in food, beverage and cosmetic applications (including enhancing in non-citrus flavours). Natural-grade nootkatone is traditionally an expensive ingredient and large quantities of grapefruit are needed to extract commercial amounts of nootkatone – 400,000kg of grapefruit is needed to produce just 1kg of nootkatone. A synthetic nootkatone can be produced through chemical processes, but this requires high temperatures, heavy metals and peroxides, and cannot be classed as natural in the EU.

The company is now producing nootkatone at commercial scale, offering an attractive, secure and environmentally-friendly supply of this in-demand product. The RSC Emerging Technology award recognises the innovation behind this process, and highlights how the platform technology can now be rolled-out to produce a wide variety of compounds, both in the flavour and fragrance markets and broader chemical sectors.

Professor Martin Tangney OBE, Director of the Biofuel Research Centre at Edinburgh Napier University and the Founder of Celtic Renewables said, “Celtic Renewables is at the very forefront of the international redevelopment of the ABE fermentation. It is an exciting time for the industry and innovation will be key to staying at the cutting edge. IBioIC has a huge role to play in supporting innovation in biotechnology and a crucial aspect of this is helping to grow the skills base. Having Annie on board is great for us and a testament to how supporting collaboration is of such benefit to the biotechnology sector in Scotland”.
IBioIC was amongst the great and the good of the Industrial Biotechnology community who descended on Philadelphia in July for the 2018 World Congress on Industrial Biotechnology.

The team were joined by Scottish SMEs Xanthella, Horizon Proteins and 3fBio and IBioIC formed part of the UK pavilion which also included Biome Bioplastics, BioVale, Centre for Process Innovation and BIOCATNET. IBioIC members were well represented and it was great to see colleagues from Unilever, Lucite, EuropaBio, Oxford BioTrans and BioBase Europe also in attendance. The UK pavilion was a popular hub for delegates, with numerous and varied enquiries to the IBioIC stand, not least, of course, when we hosted our traditional Scotch Whisky Tasting, which alone attracted over 70 guests to our stand.

The Congress is a three day event which includes plenary and track sessions, which this year focused on the latest technical developments in areas such as synthetic biology, advanced biofuels and renewable chemicals, but also included some new areas such as algal production technologies and speciality food ingredients, flavours and fragrances as well as supply chain and end market development.

As regulars at the World Congress, it was evident that there is a focus towards using IB to develop products with higher-value applications, and less concern about the volume of productions. This shift change towards low volume, high value products is partly driven by the years of low oil prices making some of the more commodity applications economically challenging but also a recognition that IB is gaining a lot of traction in manufacturing products with niche applications. This trend fits well with goals of the National Plan for IB in Scotland and plays to the strengths of Scotland’s core capabilities as well as of the capabilities of many of the Scottish SMEs who are already working on developing these niche products.

IBioIC chaired a well attended session on extracting value from distillery co-products, entitled “Whisky Galore and more”, which showcased three of the Scottish companies who are involved in developing these technologies. The session triggered a lively Q&A afterwards with a representative of the USDA declaring it the best session of the Congress.
IBioIC held its ever-popular annual members’ networking event again in October. Creating New Value Chains was the theme of this first official networking event of Phase II, and 40 of our members joined us to watch and take part in two sessions of flash presentations followed by a networking session over drinks and canapes. The short, sharp nature of the flash presentation format makes for a lively event and there was a real buzz about the University of Strathclyde’s Senate Rooms both during and after the presentations, and lots of useful discussions which carried on well after the formal part of the day was over.
Plans and preparations for our 2019 Annual Conference are well underway, and the whole IBioIC team is looking forward to seeing everyone in Glasgow in January for what promises to be our biggest and most ambitious conference yet!

Joining our plenary sessions this year will be some key figures in the IB sector and government, including UKRI’s Chief Business Officer, Simon Edmonds; Ivan McKee, Minister for Trade, Investment and Innovation; Julia Brown, Head of High Value Manufacturing and Health for Scottish Enterprise and all six recently funded BBSRC NIBB Phase II leads alongside Professor Sir Jim McDonald, Principal of University of Strathclyde, Professor Dame Anne Glover, Chair, IBioIC, Kathryn Sheridan, CEO of Sustainability Consult, and many more. We will be running track sessions on the themes of established and emerging supply chains, as well as stalwart favourites including our Members Showcase and PhD session. As always, we will be running 1-2-1 partnering sessions throughout both days to ensure there’s always plenty going on! See our full programme at: http://bit.ly/2EEEvSW

We’ve also managed to re-work the layout of our exhibition space to accommodate a total of 33 exhibition stands this year and incorporate our poster exhibits within the main exhibition and catering areas on both floors of the Technology and Innovation Centre. We’re confident the exhibition area is going to have a real buzz about it, with more than 30 industry and academic organisations already signed up to showcase their products and services to all of our delegates!

We’ve also revised some of our sponsorship packages and we’re delighted to report that these, too, have been getting a lot of interest. Sponsorship is a whole other way for organisations to demonstrate their support and with free passes coming with most packages, and visibility across all conference literature and physical and online real estate, we’re confident that this year’s sponsorship options offer excellent return on investment.

We can’t leave a discussion of our plans for IBioIC19 without mentioning this year’s conference dinner. Taking place in the unique and much-revered Kelvingrove Museum and Art Galleries, this would be a unique experience in itself, but anyone who’s been keeping an eye on what the museum has in store for visitors in the New Year will have an idea about the very special guest who will be joining us to make this a truly once-in-a-lifetime opportunity.

Prepared by:

IBioIC 2019 Annual Conference
‘Industrial Biotechnology for a Sustainable Future’

Find out more and register to attend IBioIC19: www.ibioic.com/news_and_events/annual_conference/d1137/