Cystic Fibrosis Trust

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UK Cystic Fibrosis Conference 2022

Wednesday 11 May

Programme

Uniting for a life unlimited

Welcome

I'm excited to welcome you to this year's UK CF Conference. The aim of the conference is to showcase how the CF research community is uniting for a life unlimited.

At Cystic Fibrosis Trust we enable and support the delivery of a broad and dynamic portfolio of world-class innovative research that helps ensure that every person with CF in the UK can lead a long and full life. Today we are showcasing how you are helping us achieve this.

You'll hear about the novel research we are supporting, learn about new partnerships and relationships formed to accelerate progress, and hear the perspective of the CF community on the difference research is making to them and what our research priorities should be for the future. We know that many of you are keen to once again interact and debate your latest results, and network to form those all-important new partnerships and future collaborations. I encourage you to make those new connections at the conference.

I'm looking forward to a stimulating day of updates from established researchers in CF, to those who are new to the field of CF research. I'm particularly delighted to welcome many early career researchers to their first UK CF Conference and hope to meet many more of you at future conferences.

Dr Lucy Allen
Director of Research, Cystic Fibrosis Trust

Programme

10.00am Welcome and introduction

Click here to read the speaker biographies for this session

- Katherine Cowan, Facilitator
- David Ramsden, CEO Cystic Fibrosis Trust
- Dr Lucy Allen, Director of Research, Cystic Fibrosis Trust

10.30am Session 1: Building the research landscape

Click here to read the speaker biographies for this session

This session spotlights the different initiatives the Trust is involved with to build the landscape and enable research, including the CF BioResource project within the NIHR Rare Diseases BioResource; an overview of the James Lind Alliance CF Research priority Refresh, known as 'QuestionCF'; our UK CF Innovation Hub programme at the University of Cambridge, and the CF AMR Syndicate partnership with Medicines Discovery Catapult.

- **More than a single gene - CF and the NIHR Bioresource** – Professor Alex Horsley, University of Manchester
- **James Lind Alliance Priority Setting Partnership for CF refreshed!** – Professor Alan Smyth, University of Nottingham
- **UK CF Innovation Hub** – Professor Andres Floto, University of Cambridge
- **Partnering for impact: The CF AMR Syndicate** – Dr Paula Sommer, Cystic Fibrosis Trust and Dr Bev Isherwood, Medicines Discovery Catapult

Followed by Q&A

11.45am Tea and coffee break

12.15pm Session 2: Research for today

Click here to read the speaker biographies for this session

We're investing in research to ensure that people stay as well as they can in the short-term. Hear updates on the latest advances in managing and treating symptoms and complications for people with CF from Trust-funded Strategic Research Centres (SRCs) and our Venture and Innovation Awards (VIAs).

- **CF Related diabetes** – Professor James Shaw, University of Newcastle
- **Update on RECOVER study – real world effects of Kaftrio** – Professor Paul McNally, RCSI University of Medicine and Health Sciences
- **The role of CFTR in macrophage function** – Dr Yu Zhang, University of Cambridge
- **PIPE-CF: An evidence-based preclinical framework for the development of antimicrobial therapeutics in CF** – Dr Daniel Neill, University of Liverpool

Followed by Q&A

1.15pm Lunch break

2.00pm Session 3: Accelerating research through collaboration

Designed as four parallel workshops (two in-person and two online), this session is an opportunity for discussion and debate on emerging topics in CF research.

Topics include a discussion of CF research to non-scientists, as well as the latest on tackling CF bacterial and fungal infections, early results from the James Lind Alliance CF Research priority Refresh project known as QuestionCF, and how researchers are improving the understanding of gut symptoms of CF.

All sessions will be recorded and made available after the conference on our website.

In-person choose between Breakouts 1 and 2

Online choose between Breakouts A and B

Breakout 1 Understanding and treating CF infections

Click here to read the speaker biographies for this session

Facilitator: Katherine Cowan

- **Update on TRIFIC SRC on *Aspergillus fumigatus* infections** – Dr Darius Armstrong-James, Imperial College London
- **Fungal Resistance Evolution and Acquisition in chronic lung disease** – Dr Anand Shah, Imperial College London
- **Update on the '*Pseudomonas*; gas, food and lodging' SRC** – Professor Martin Welch, University of Cambridge
- **Update on Personalised approach to *Pseudomonas aeruginosa* SRC** – Professor Jane Davies, Imperial College London
- **Understanding inter-bacterial competition in the CF lung** – Dr Laura Nolan, Imperial College London

Followed by discussion

Breakout 2 James Lind Alliance CF Research priority Refresh – emerging data

Nicola and Sherie are members of the James Lind Alliance CF Research priority Refresh Management team. The team are undertaking a global refresh of the top 10 CF research priorities identified in 2017, to identify research priorities in post-modulator times. With over 1,600 responses to the first survey, come and hear about what these responses have told us, the next steps in the process and how you can be involved.

Nicola is a Post-doctoral clinical academic at the University of Nottingham and a Paediatric Registrar in the East Midlands. Sherie is a Cochrane Systematic Reviewer with the CF & Genetic Disorders group at the University of Nottingham.

Presentation from Dr Nicola Rowbotham and Sherie Smith

Followed by discussion

Dr Nicola Rowbotham

Sherie Smith

Breakout A Digesting the gut symptoms of CF

Click here to read the speaker biographies for this session

Facilitator: Professor Daniel Peckham

- **The impact of restoring luminal fluidity on gut microbiota and gut health in CF** – Dr Jennifer Kelly, University of Liverpool
- **What about my tummy** – Laura Caley, University of Leeds
- **The organisation and function of the gut microbiota in cystic fibrosis** – Ryan Marsh, Manchester Metropolitan University
- **Update on clinical GIFT studies** – Dr Alex Yule, University of Nottingham

Followed by discussion

Breakout B Cutting edge CF research explained

Click here to read the speaker biographies for this session

Facilitator: Candice King

The aim of this Breakout is to provide a non-technical update on two 'hot topics' of CF research to an audience of people with CF and their loved ones.

- **Antibiotic development within the UK CF Innovation Hub** – Professor Andres Floto, University of Cambridge
- **Update on progress in genetic therapies for treating CF** – Dr Patrick Harrison, University College Cork, Ireland

Followed by discussion

2.45–3.00pm Tea and coffee break

3.00pm Session 4: Research for tomorrow

Click here to read the speaker biographies for this session

A chance to hear different perspectives from the CF community, including updates from leading experts in the fields of genetic therapies and the physiology and pharmacology of developing ion channel treatments for CF.

- **Voices from the CF community** – we hear from Abi and Lizzy
- **The CFTR folding and function Strategic Research Centre** – Professor David Sheppard, University of Bristol
- **Restoring Airway Function in Cystic Fibrosis by Stimulation of Alternative Chloride Channels** – Violeta Railean, University of Lisbon
- **A personalised approach to mucociliary clearance** – Professor Pietro Cicuta, University of Cambridge
- **CRISPR Gene Editing as a Novel Genetic Therapy for Cystic Fibrosis** – Professor Stephen Hart, UCL Great Ormond Street Institute of Child Health

Followed by Q&A

4.15pm Closing comments

- Dr Lucy Allen, Director of Research, Cystic Fibrosis Trust

4.20pm Close

Speakers

Listed by session

Welcome and introduction

Katherine Cowan

Conference facilitator

Katherine is an independent facilitator with experience of designing and delivering health research consultation and strategy development programmes internationally. Her professional background is in social research and she has a particular interest in public involvement in decision-making processes. She is Senior Adviser to the James Lind Alliance and has been a key contributor to the development of its priority setting method since 2008. Other recent clients include Social Care Wales, the Food Standards Agency, the Royal College of Obstetricians and Gynaecologists, the Health Foundation, Wellcome Trust, the University of Saskatchewan Respiratory Research Centre, and a range of charities, including Action for Pulmonary Fibrosis, Family Carers Ireland, Marie Curie and the Ontario Brain Institute. For more information and publications please visit www.katherinecowan.net.

David Ramsden

Chief Executive,
Cystic Fibrosis Trust

David has been Chief Executive of Cystic Fibrosis Trust since 2016. He has worked in the charity sector for over 20 years –initially with the British Red Cross and he then spent 10 years as Chief Executive of BBC Children in Need. Prior to that he worked for Ernst & Young and is a Fellow of the Institute of Chartered Accountants of England and Wales.

Dr Lucy Allen

Director of Research,
Cystic Fibrosis Trust

Lucy joined Cystic Fibrosis Trust in late 2019. Lucy's previous experience includes building and leading research collaborations with industry, other research charities and clinical academics across a wide range of disease areas such as respiratory, mental health, and cancer and nutrition for the National Institute of Health Research (NIHR). She has also lead Research and Development projects for GE Healthcare, developing radiopharmaceuticals for cancer and Alzheimer's disease. Lucy also has a PhD in lung inflammation and infection.

Session 1: Building the research landscape

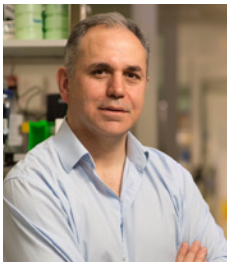
Professor Alex Horsley
University of Manchester

Alex is a professor of respiratory medicine and a consultant in adult CF. He will describe the NIHR Bioresource and why it is important in CF. Although CF itself is caused by faults in the CFTR gene, we also recognise huge variation in how CF affects different people. NIHR BioResource is a national initiative, made available to those with selected rare conditions. We want to use this to help understand the role of genetic variation in how CF presents and progresses.

Professor Alan Smyth
University of Nottingham

Alan is a clinical academic with a focus on CF and a huge enthusiasm for engaging with the patient community to agree research priorities. Five years ago, our James Lind Top 10 list of research questions for CF was published. This has already led to commissioned funding calls from NIHR and substantial support from other funders. Some questions will be answered by this funded work and priorities may have changed due to the arrival of CFTR modulators. Hence it is time to refresh our James Lind top 10 to produce an updated list which will attract further funding over the next five years.

Professor Andres Floto
University of Cambridge



Andres is Professor of Respiratory Biology at the University of Cambridge, Director of the UK Cystic Fibrosis Innovation Hub, and co-Director of the Cambridge Centre for AI in Medicine. His research is focused on understanding how machine learning can be combined with structural biology and genetics to develop novel antibiotics, and how AI can improve the health of people with cystic fibrosis.

The UK Cystic Fibrosis Innovation Hub based at Cambridge University is a ground-breaking strategic partnership between Cystic Fibrosis Trust and the University of Cambridge. Its aim is to harness multidisciplinary world-class research to accelerate progress towards preventing lung damage in CF and subsequent loss of lung function. Researchers at the Innovation Hub are focusing on three key research workstreams to improve lung health in CF and prevent long-term irreversible lung damage. The aims of these workstreams are: 1) to develop new approaches to treat infection and chronic lung inflammation; 2) to obtain accurate diagnosis and earlier intervention for lung exacerbations; 3) to work towards a long term aim of developing alternatives to lung transplant –required as a consequence of infections and exacerbations of lung function.

Dr Paula Sommer
Cystic Fibrosis Trust

Dr Bev Isherwood
Medicines Discovery Catapult

Paula is Head of Research at Cystic Fibrosis Trust and Bev is Partnership Lead at Medicines Discovery Catapult. Both are on the Management Committee of CF AMR Syndicate. The CF AMR Syndicate (cfamr.org.uk), is a collaborative effort aimed at accelerating the development of antimicrobials and microbial diagnostic tests for people with CF, managed by Cystic Fibrosis Trust and Medicines Discovery Catapult.

They will describe the Syndicate's approach, including sharing details on the creation of a toolkit of resources aimed at overcoming key challenges faced by people developing new diagnostics and therapeutics. They will discuss current work and future plans. Finally, they will share with you the creation of a CF AMR Network aimed at bringing together a critical mass of experts to exchange knowledge, enable the development of collaborative projects and facilitate the involvement of people with CF.

Session 2: Research for today

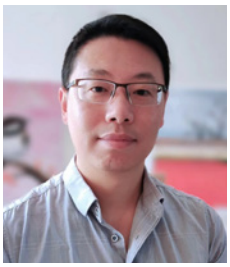
Professor James Shaw
University of Newcastle

James is a clinician scientist focused on the underlying causes of, and therapeutic approaches for, insulin-deficient diabetes. He chairs the Quality in Organ Donation Steering Committee and the UK Islet Transplant Consortium Research Steering Group. He will provide an update on progress within Cystic Fibrosis Trust funded multi-national collaborative CFRD Strategic Research Centre.

Professor Paul McNally
RCSI University of Medicine and Health Sciences

Paul is a consultant in paediatric respiratory medicine and Director of Research and Innovation at Children's Health Ireland. He is an associate Professor of Paediatrics at RCSI University of Medicine and Health Sciences in Dublin. Paul's main research interest is early CF lung disease and response to CF modulator therapies. Paul is lead investigator for the RECOVER study.

Dr Yu Zhang
University of Cambridge



Yu is a research associate at Department of Medicine University of Cambridge. He will describe how CFTR plays a critical role in the biology of macrophages and how, in CF, these functions are impaired and can be restored by Kaftrio.

Dr Daniel Neill
University of Liverpool

Daniel is a Senior Lecturer at the University of Liverpool. He will describe the aims of our recently funded PIPE-CF Strategic Research Centre. The aim of the SRC is to make it easier for researchers to develop new antibiotics specifically designed to treat CF lung infections. They will do this by creating and checking new methods to test the effectiveness of new medicines. These could be used by university and industry-based researchers around the world.

Session 3: Accelerating research through collaboration

Breakout 1 Understanding and treating CF infections

Dr Darius Armstrong-James
Imperial College London

Darius is Professor of Infectious Diseases and Medical Mycology in the Department of Microbiology, Imperial College London. He is honorary consultant physician in infectious diseases and medical mycology to the Royal Brompton and Harefield NHS Trust and Imperial College Healthcare. He is principal investigator of the "Targeting Immunotherapy for Fungal Infections in CF" (TRIFIC) SRC. The mould *Aspergillus fumigatus* colonises the airways of 50% of adult CF patients, with 30% developing Aspergillus bronchitis (AB) and 15% allergic broncho-pulmonary aspergillosis (ABPA). This leads to severe airway inflammation, accelerated lung function decline, and invasive infection risk. Currently available anti-fungal drugs are poorly effective, and drug resistance is rapidly emerging, therefore new treatments are urgently required. The aim of their SRC is to understand which immunotherapy will most effectively treat Aspergillus complications, and to develop a tailored treatment plan for each person with CF infected.

Dr Anand Shah
Imperial College London

Anand is a Consultant Respiratory Physician at the Royal Brompton Hospital, Guy's and St. Thomas' NHS Foundation Trust and MRC CARP fellow at the MRC Centre of Global Infectious Disease Analysis, School of Public Health, Imperial College London. His research focuses principally on pulmonary fungal infection. Within fungal infection, unless there is a determined approach to understanding the evolution and improving detection of antifungal resistance, there is a very real risk in the near future of a global collapse in our ability to control fungal infection. In his presentation Anand will provide an update on an ongoing MRC grant co-funded by the Trust through a Venture and Innovation Award. In the grant he aims to use a whole genome sequencing approach to better understand evolution and acquisition of resistance in chronic lung disease including people with cystic fibrosis. The project is running in parallel with the Targeting Immunotherapy for Fungal Infections in Cystic Fibrosis SRC, aiming to enable a comprehensive dovetailed approach to improving outcome in CF fungal disease.

Professor Martin Welch
University of Cambridge

Martin is a Professor of Microbial Physiology and Metabolism at the University of Cambridge. He is principal investigator of an SRC focusing on what it is about the airway environment that makes *Pseudomonas aeruginosa* thrive, and consider what we can do about making the bug less comfortable there.

Professor Jane Davies
Imperial College London

Jane is a clinical professor leading a group of scientists and medical researchers all focusing on the common CF infection, *Pseudomonas aeruginosa*. The overall aim of the SRC programme is to develop a personalised approach to treating *Pseudomonas aeruginosa (P. aeruginosa)* infection. There are three areas in which researchers are seeking to improve: early detection, understanding virulence and persistence mechanisms, and new treatments. She will present examples of how our PhD projects have progressed and what we hope for the future of the SRC.

Dr Laura Nolan
Imperial College London

Laura is a research fellow at the National Heart and Lung Institute, Imperial College London. Her research is focused on understanding how *Pseudomonas aeruginosa* is so successful in persisting in the lung and in out competing other bacteria that try to invade its niche.

Breakout A Digesting the gut symptoms of CF

Dr Jennifer Kelly
University of Liverpool

Jennifer is a post-doctoral fellow at the University of Liverpool with a focused interest in host-associated microbial communities, specifically those residing in the gastrointestinal tract. In this presentation she will cover work that has been done so far in the Gut fluidity SRC and how the results may impact people with CF in the future.

Laura Caley
University of Leeds

Laura is a dietitian currently in the third year of her PhD project at the University of Leeds. Led by Professor Daniel Peckham, in their Gut dysbiosis SRC they are investigating dietary intake, bowel symptoms, the gut microbiota and the complex relationships between them in adults with CF. She will present on the impact of CF-related diabetes on gut symptoms and a preliminary overview of the impact of CFTR modulators on gut symptoms and dietary intake.

Ryan Marsh
Manchester Metropolitan University

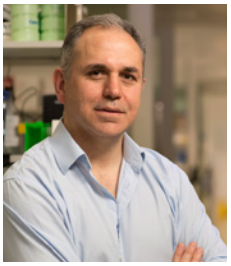
Ryan is a PhD Student at Manchester Metropolitan University. He will detail our current work investigating the relationships of CF gut microbiota dysbiosis with clinical factors and measures of intestinal function. The integration of metabolomic techniques will be discussed, to better understand any functional consequences or elements of redundancy across the community. Ongoing and future work explores the effects of CFTR modulator treatment towards the gut microbiome, utilising the approaches mentioned previously.

Dr Alex Yule
University of Nottingham

Alex is a clinical research fellow at the University of Nottingham and paediatric registrar. The "Gut Imaging for Function and Transit in Cystic Fibrosis" (GIFT-CF) studies aim to use MRI to identify and explain differences in the gastrointestinal (GI) tract of people with CF and measure the effects of CFTR modulators on the GI tract. He will summarise the methodology and findings from earlier GIFT-CF1 and 2 studies and present initial results of their GIFT-CF3 study.

Breakout B Cutting edge CF research explained

Professor Andres Floto
University of Cambridge



Andres is Professor of Respiratory Biology at the University of Cambridge, Director of the UK Cystic Fibrosis Innovation Hub, and co-Director of the Cambridge Centre for AI in Medicine. His research is focused on understanding how machine learning can be combined with structural biology and genetics to develop novel antibiotics, and how AI can improve the health of people with cystic fibrosis.

In this session he will be sharing some of the exciting and cutting-edge research underway within the UK CF Innovation Hub on antibiotic development. He is working with researchers at the University and researchers around the world to see if they can make it easier to develop new antibiotics that will tackle the problem of antibiotic resistant bacteria.

Dr Patrick Harrison
University College Cork in Ireland

Patrick leads a CFTR gene editing group at University College Cork in Ireland. He is a co-investigator on the Trust's Genetic therapies for CF SRC and is Chair of the Trust's Research Grants Review Committee. He is also the European Editor of the journal Gene Therapy. He is researching whether CFTR mutations that cause CF can be fixed using genetic editing approaches, learning from and applying approaches that have been successful for other conditions. Hopefully in the future we'll be able to effectively treat CF lung disease for everyone with CF using these approaches.

Session 4: Research for tomorrow

Voices from the CF community

Lizzy Molyneux is a mother of three children. Her 17 year old son, Isaac has cystic fibrosis and her two daughters who were born following preimplantation genetic diagnosis testing don't have CF. Isaac has two rare mutations, one of which is a stop or nonsense mutation which means he is not eligible for CFTR modulators.

Abi Halstead is 31 years old and she has CF. As she has IF507 and DF508 CF mutations she is eligible for Kaftrio, but not earlier CFTR modulators. Being on Kaftrio has had benefits for her chest, but the side effects have been too difficult for her to manage. Abi is a working mother with three children, a 6 year old and two five year olds.

Professor David Sheppard
University of Bristol

David is a basic scientist investigating the root cause of cystic fibrosis and new treatments for the disease. This presentation will introduce the CFTR Folding and Function SRC, including the researchers involved and the aims and objectives of their work. To assist the development of better targeted therapies they aim to understand better CFTR folding, assembly and function to design completely new ways to rescue faulty CFTR.

Violeta Railean
University of Lisbon

Violeta is a PhD Student at University of Lisbon. The aim of their SRC is to find modulators that activate alternative chloride channels, such as TMEM16A, in order to compensate for the absence of functional CFTR. This approach applies to all individuals with cystic fibrosis, independently of their CFTR genotype.

Professor Pietro Cicuta
University of Cambridge

Pietro is a physicist working on fluids such as mucus, and motile cilia such as those lining the cells in the airways. He obtained his PhD in Cambridge in 2003 and has set up an interdisciplinary research team since then. He is the coordinator of a SRC which brings together three labs in Cambridge with two in the USA, aiming to improve the tests and our understanding of mucociliary clearance. It is quite a complex process which depends on both biological and physical factors and is often compromised in CF. The presentation at the conference will provide an update of the progress within the SRC, particularly new results coming from stem cell culture, and new imaging and micro-mechanics measurements that can better characterise mucus and cilia motility on live cells.

Professor Stephen Hart
UCL Great Ormond Street Institute of Child Health

Stephen is the lead PI on a Cystic Fibrosis Trust SRC award and he will present an overview of the SRC at the conference. CRISPR/Cas9 is a relatively new approach to restore correct CFTR function in the lung. CRISPR offers many different approaches to correcting the CFTR gene and part of the project will be to identify the most effective approaches to rapidly progress to clinical use. They will investigate efficient delivery of genetic therapies with some new ideas and approaches for nanoparticle delivery methods. They are also exploring *ex vivo* gene therapy methods using lung cell grafts. The many challenges of both therapeutic approaches will be explored in the SRC. Finally, they will be developing methods to evaluate the effectiveness of the therapies in human cell culture models. It is important to have an idea of how many cells need to be corrected and which ones as there are many cell types in the lung.