BREATHING MATTERS NEWSLETTER: ISSUE 27

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Breathing Matters
FIGHTING PULMONARY FIBROSIS AND INFECTION
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INSIDE THIS ISSUE:

Bronchiectasis Publications

Over the past few months, Professor Brown's Infection team have published two more papers on bronchiectasis.

The first is a description of patients from UCLH who have bronchiectasis as a result of diseases of the blood, such as leukaemia and myeloma. Blood diseases and the treatment required to combat them, such as chemotherapy and bone marrow transplantation, weaken the immune system and this makes lung infections a common problem for these patients. What has been less recognised is that many of these patients go on to develop bronchiectasis. Our paper describes 75 patients with bronchiectasis due to blood disease and their treatment and is the largest reported study of this particular group of patients. This is important as it will make other doctors more aware of how common bronchiectasis is in patients with blood diseases, and we also identify the specific causes of the bronchiectasis for many patients. In particular, many patients had low antibody levels due to their treatment and this can be treated by antibody infusions which will help prevent the bronchiectasis from becoming a serious medical problem. (José RJ, Hall J, Brown JS. ERJ Open Res. 2019 Nov 4;5(4)).

Our second paper describes how the severity and extent of bronchiectasis can be measured using complex computer software analysis of the CT scan. This is important as it now allows us to physically measure the extent, severity and distribution of bronchiectasis within the different parts of the lung and compare the results over time or between different causes of bronchiectasis. Eventually, we hope this will help identify what the cause of bronchiectasis might be in different patients, and to accurately assess whether the disease is worsening or not over time. (Quan K, Tanno R, Shipley RJ, Brown JS, Jacob J, Hurst JR, Hawkes DJ. J Med Imaging 2019 Jul;6(3)).

The team have also published several papers in the past year on the bacteria that is the main cause of pneumonia, *Streptococcus pneumoniae*. These papers investigate different aspects of how this bacteria causes disease, including showing how the outer layer of the bacteria (the capsule) unexpectedly increases inflammation during infection, thereby making pneumonia more severe. Other papers show how S. pneumoniae interacts with the cells lining the lung and throat, and how genetic variation between strains of the bacteria affect its ability to cause disease.

Could MUC5B be the Answer?

One of the most exciting projects that we are working on at the moment is to understand the mucin MUC5B and how it is involved in pulmonary fibrosis.

MUC5B is an important part of our sputum, which gives it its stringy consistency and allows it to carry bugs and particles out of the lung on a mucin conveyer belt! This keeps the deepest part of the lungs clear of infection. However, 10% of the population have a genetic difference that means that they make more MUC5B. This does not seem to be a problem in the vast majority, but just having this form of the gene makes you much more likely (20 times more likely) to develop IPF or rheumatoid arthritis associated ILD.

Why is that? We are finding that MUC5B can interact with white blood cells called neutrophils that come into the lung to fight infection, and activate them. We know that some neutrophil activation is essential to overcome infection, but too much may cause 'bystander damage' to the surrounding lung. Our most recent finding is that neutrophils are activated in IPF and this offers a new potential target for novel medications, but also may explain how MUC5B increases IPF.

Watch this space!

CORONAVIRUS QUIZ

1. Can a face mask protect you from the coronavirus?
2. What is the official name of this coronavirus?
3. How long should you wash your hands for?
4. What is the NHS Help-line number?
5. How do you protect yourself from the corona-virus?

Answers on our website
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Spotlight On ... Professor Jo Porter

What is your role and what does it involve? - I am a clinician looking after patients with interstitial lung disease (ILD) and I run a research group at UCL that is trying to find better treatments for ILD.

Tell us about a project you are working on now which is top of your To Do list? - For many years, we have thought that neutrophils, your important white blood cells that fight infection, play a role in lung fibrosis, but it has been hard to prove. We have been collaborating with a group in America on a project that finally not only implicates neutrophils, but also identifies a novel therapeutic target in IPF. We hope to publish this in 2020.

What working achievement or initiative are you most proud of? - Setting up the National NHS-England ILD Service at UCLH, in 2011. I was told that there would be no demand, but now we offer excellent care to 10% of the UK population. The service has grown and grown and got better and better.

Where do you see your field being in 10 years, in terms of scientific developments and advancements? - Precision treatment for ILD - each patient will have a personalised treatment depending on their own disease. No more 'one size fits all' - think 'tailor made' rather than 'off the shelf'.

Who inspires you? - (Professor Sir) David Weatherall (deceased), a superb clinical academic and a brilliant maverick with a wicked sense of humour. And Audrey Hepburn!

What would it surprise people to know about you? - As a Cambridge Undergraduate in the 1980s, I fasted for 5 days in a wooden cage outside Trinity College to raise awareness for Amnesty and Human Rights abuses. I, to this day, have never told my parents!

What is your favourite album, film and novel? - Album: Dido; No Angel. Film: The Railway Children, I challenge anyone to watch the 'Daddy my Daddy' scene and not cry! Novel: War and Peace.

What advice would you give to your younger self? - Be the best version of yourself and the rest will follow.

What is your favourite place? - I was so lucky to be brought up by the breathtaking scenery of the Dorset coast.

FUNdraising Events and Inspirations

- Organise a 24 hour non-stop danceathon—do it remotely with friends, family or work colleagues online.
- Have your own charity delivery cake bake.
- Ask a local school or club to support us (we can provide stickers).
- Join a sponsored walk, a scooter, a cycle, a hop—be as outrageous or as simple as you dare in the fresh outside air.
- Make us your Charity of the Year for 2020. Do you know any local businesses who could support us?

PRUDENTIAL RIDELONDON

Sunday 16th August 2020

Starting at the Olympic Velodrome in East London, cycling 100 miles of closed roads past London landmarks and through the stunning Surrey countryside (and hills!) and finishing in champion-style at the Mall outside Buckingham Palace! This is an event that every cyclist has to take part in! The ballot is now closed, but we have guaranteed places in this iconic cycle event.

Email us if interested at breathingmatters@ucl.ac.uk

CHALLENGE YOURSELF IN 2020

We work with two fabulous events partners—Run for Charity and Global Adventure Challenges who give our supporters access to an amazing range of fundraising events from Superhero in the City, Run Hackney and Yorkshire 3 Peaks to trekking the Inca Trail, Kilomanjaro or to see the Northern Lights.

More info: https://bit.ly/2zFd6fM