NHS
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Community news

Pears

In association with
royal free charity
UCL

Building

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Willmott Dixon, the construction company, is confident of handing over the building before the end of the year as the Royal Free Charity and UCL visit the site.

On pages 3 and 4 we describe the latest UCL Institute of Immunity and Transplantation (IIT) research to make the headlines, in type 1 diabetes and Covid-19. And another IIT team receive £100,000 to look for answers for children who suffer from arthritis.

Update on the Pears Building

A laboratory inside the Pears Building

Royal Free Charity and UCL staff have visited the Pears Building to carry out an early inspection as Willmott Dixon, the construction company, confidently predicts that the building will be ready for handover in December.

The planters on the west side of the building have now been filled and the external hard landscaping works are nearly complete. Most of the scaffolding has been removed, revealing the combination of brickwork, precast concrete and glazing on the outside.

Internally, work on the laboratories is making good progress and the commissioning process, including testing various systems, is underway. The patient accommodation is expected to be complete towards the end of October.

The glass balustrading to the atrium area of the building has been installed and work on surfacing and tiling of the floors will follow.

Funding for research into childhood arthritis

Dr Anne Pesenacker is to receive nearly £100,000 to investigate the role that certain T-cells – white blood cells that are an important part of the immune system – play in a type of arthritis that affects children.

Regulatory T-cells normally police the immune system to prevent the body's own immune cells attacking its tissues. When they are not effective, autoimmune diseases, such as juvenile idiopathic arthritis, can arise.

Dr Pesenacker, and her collaborators at the UCL Great Ormond Street Institute of Child Health, hope their work will help create new treatments and ensure more patients achieve remission of their symptoms.

Progress in developing treatments for type 1 diabetes

Scientists at the IIT have discovered new biomarkers which may allow a drug widely used in arthritis to be used to help people with type 1 diabetes.

Lucy Walker, professor of immune regulation at the IIT, who reports her team's work in the journal *Nature Immunology*, has found a new way to identify which patients are likely to benefit from this drug.

Early tests had suggested that the drug Abatacept, an immunotherapy that suppresses T-cells, was not suitable for use in people with type 1 diabetes because the response to it was very variable. Overall it delayed diabetes progression by around nine months in people with newly-diagnosed diabetes.

"At first glance this does not sound very impressive," said Professor Walker. "But a closer look at the data shows some people had no deterioration in the function of their pancreas function for the whole of the two-year trial period, while others deteriorated as quickly as those on placebo."

Part of the reason is likely to be that the immune system varies enormously from person to person. "This is evident in people's response to the current coronavirus – some clear the virus without so much as a sniffle; others mount a vigorous immune response that can cause damage.

"The same is true when it comes to drugs that target the immune system - one immunotherapy may work well in one person and not at all in another. Understanding which drug to use in which person is critical."

Professor Walker's team worked with researchers from King's College London and the pharmaceutical company AstraZeneca on blood samples from people who took part in the trial. They discovered that follicular helper T-cells, the cells that her group had previously found were involved in type 1 diabetes, were greatly affected by the drug.

To their surprise, they found that analysing follicular helper T-cells before treatment could provide information on how a person was likely to respond to the drug. This finding was confirmed by using machine learning to compare blood samples from people who showed a good response to Abatacept with those who showed a poor response.

The next step will be to perform a larger clinical trial. "We need test this approach in more people to see whether it's a useful way to predict who should be treated with this drug." If so, this may reignite interest in the use of this therapy in type 1 diabetes.

In the UK, there are around 400,000 people with type 1 diabetes, including 29,000 children. As those with the condition cannot produce insulin, glucose builds up in the bloodstream and can cause serious kidney, heart and eye damage.

You can read the team's paper at https://rdcu.be/b53pZ.

IIT helps lead major Covid-19 study

The IIT is one of 17 UK research centres given a total of £6.5 million to investigate key questions about the virus that causes Covid-19 (SARS-CoV-2). The researchers will investigate how long immunity lasts and why disease severity varies so much.

The new UK Coronavirus Immunology Consortium (UK-CIC), which is funded by UK Research and Innovation and the National Institute for Health Research, hopes that learning about immunity will help to fight the virus.

Prof Mala Maini, a viral immunologist at the IIT, who is leading one of the UK-CIC teams, said: "Our immune response to a virus is really what dictates how we respond when we get infected, how ill we get when we get an acute infection, how long we're protected after we've had the infection and how well we might respond to a vaccine.

"The immune system underlies everything that's key to the response to this virus."

Since the virus emerged, scientists all over the world have set aside their normal research programmes to help unravel the ways that the virus works, how different people respond to it and help find a vaccine.

Prof Maini says for mild-to-moderate cases of Covid-19 the immune response seems to be "textbook". She said: "All the right components of the complex immune system seem to be working together well." But the consortium will look at what happens in the immune system in the more severe cases.

The question of how long immunity lasts is also very important, especially now that the first case of re-infection.

Professor Maini added: "This consortium brings together immunologists from around the country to co-ordinate our studies in an unprecedented manner. By sharing samples, ideas and early findings, we will accelerate our progress in addressing vital questions about how the immune response dictates the outcome of SARS-CoV-2 infection and what level of immunity can be achieved."

Professor Hans Stauss, director of the IIT, and Benny Chain, professor of immunology at the IIT, will investigate in detail the genetic profile of immune cells that can selectively kill cells infected with the Sars-Cov-2 virus. They will identify the receptors that the immune cells use to specifically recognise and kill the infected cells. The researchers will also explore whether the identified receptors can be used for gene therapy of COVID-19 by re-programming a large number of immune cells to attack Sars-Cov-2 infected cells.

Better understanding of these immune responses, particularly the response by T-cells – a type of white blood cell - could provide targets for new therapies to treat COVID-19 and help in the development of a vaccine.