



Immune cells
in bone marrow
transplants

Building work begins

Q&A with Phill Cracknell
from Willmott Dixon

Work begins on the construction of the Pears Building, new home for the UCL Institute for Immunity and Transplantation (IIT)

In February we had the landmark signing of the contract between the Royal Free Charity and construction firm, Willmott Dixon. The Greater London Authority gave us permission to permanently close the link road between Rowland Hill Street and Pond Street. Preparations were made for the start of construction.

Please read on for information about the next stages of the project and find out how IIT researchers are understanding more about the function of immune cells in patients who have bone marrow transplants.



Update on the building project

Building contract signed ✓

Upon signing the contract between the Royal Free Charity and Willmott Dixon in February, Chris Burghes, chief executive of the Royal Free Charity, said: "We have worked extremely hard to raise the funds for this vitally important research centre. Now we've reached this momentous point and construction work can begin."

"This project is about looking ahead to the future of healthcare and better ways of treating diseases and conditions that affect people in our local community, as well as others around the UK and the rest of the world."

Building works have begun

Building work for the new institute is now progressing apace. The link road to the Royal Free Hospital, which ran parallel to where the institute is being built, is permanently closed and temporary fences have been erected. Hoardings are being put in place all around the development area to safely enclose the site throughout the building period.

We are also preparing for the demolition of the former multi-storey car park in the summer.

We have already installed monitors around the site which will measure noise, vibration and air quality to make sure we stay within acceptable levels.



Keeping you informed

Like any building project, there will be times when there is more activity than usual. We will make sure that our neighbours and the wider local community are kept updated and know what to expect. A construction working group has been formed. Members include immediate neighbours, local civic organisations, the Royal Free Charity, the Royal Free London NHS Foundation Trust and Willmott Dixon. Its role is to support the project, keep people informed and help resolve any problems related to the building works and the impact on the community.

If you have any comments, concerns or complaints about the construction work please contact: Pearsbuilding.community@willmott Dixon.co.uk

For matters that need immediate attention, please call 07704 260779 (weekdays) or 0845 733 5533 (evenings and weekends).

The Institute in focus

In this issue we learn about graft-versus-host disease in bone marrow transplant patients

In a unique collaboration, Dr Clare Bennett, research scientist, and Professor Ronjon Chakraverty, consultant bone marrow transplant physician and clinician scientist, have been working together to develop new ways of treating graft-versus-host disease (GvHD) – a serious complication that can happen after patients with blood cancers receive bone marrow transplants.

Separating GvHD from the anti-cancer response

If a person has blood cancer, a bone marrow transplant can be carried out to replace the diseased blood system with a healthy one. Patients are given conditioning treatments such as radiotherapy or chemotherapy to remove their blood cells, and then receive healthy replacement cells from a donor. However, it is not possible to get rid of all the cancerous cells with treatment, so immune cells called T cells are also transplanted.

T cells are crucial because they recognise the blood cancer cells as being different and kill them off. This is known as the graft-versus-tumour (GvT) effect. Using T cells to kill tumours in this way was the original form of T cell immunotherapy, which is now being used to treat many different cancers. Bone marrow transplants can be highly successful at curing people of blood cancer.

But T cells don't only kill the tumour cells – they can also attack healthy tissues. They can attack the gut and the skin, leading to GvHD. This disease occurs in about half of the patients receiving a bone marrow transplant, making it a very real clinical problem. Unfortunately, it can sometimes be fatal, especially in those who have other illnesses or in older patients, so it restricts the number of people who can have transplants. Medication can suppress the immune system, but this also stops the T cells from working, so increasing the risk of patients getting infections or of the blood cancer returning.

Dr Bennett and Professor Chakraverty decided to use a new approach to prevent GvHD without stopping the T cells from working to fight infections or attack cancer cells. They have investigated what makes T cells kill healthy cells in organs like the skin and the gut. They have found that T cells entering those organs look very different from T cells that react against an infection or a cancerous cell. This finding, which is published in the journal *JCI Insight*, now paves the way for so-called 'precision' therapies that stop GvHD but still allow useful T cells to continue working.



Dr Clare Bennett and Professor Ronjon Chakraverty

How are T cells activated?

When T cells get to the skin they interact with other immune cells in the skin and it is this interaction that makes them destroy the cells around them and cause GvHD.

In ground-breaking research at the IIT, they have identified the actual proteins that allow these cells to 'speak' to each other and cause this change. This is exciting because harmless T cells in the blood can now be separated out and left alone. It is also significant because they have discovered that GvHD-causing T cells in the skin and gut are also very different from each other. So GvHD is not just one disease and GvHD in the skin and the gut could be treated differently and more effectively.

By working together at the IIT Dr Bennett and Prof Chakraverty can relate observations from the laboratory to day-to-day problems faced by patients in the clinics.



Q&A



with **Phill Cracknell**, from Willmott Dixon, our design and build partner

What is your role?

I'm the project leader for Willmott Dixon and have been involved with the Pears Building since September 2015. I will be responsible for the successful completion of the building, leading a highly motivated operational, commercial, design and support team. This includes Roy Conway, operations manager, and Matthew Adams, principle surveyor, who have been instrumental in getting the project ready.

How does the Pears Building compare to other Willmott Dixon projects?

This project has a lot of purpose. The building offers something to humanity, hopefully the development of cures for immune system related illnesses. Not a lot of projects can say that!

What particular issues have been taken into account?

We have put a great deal of attention and effort into the order and method of the basement construction. Many technical investigations have been done to make sure our plan is safe for nearby residents, workers and buildings and well thought out plans and designs have been put in place.

What special features will the building have?

The building will house state-of-the-art laboratories. There will be two floors of patient accommodation where people in clinical trials can rest and recover in a comfortable space, rather than face travelling to and from home during their treatment period.

Building materials will be a mixture of concrete, brick, glass and metal and will be very much in keeping with the style of the longstanding Rosslyn Hill properties.



Ron Conway



Matthew Adams

How has the building been designed to be sustainable?

The roof will be covered with photovoltaic cells (solar panels) to generate electricity that will contribute to the building's fuel supply. There will also be a 'brown' roof to provide future habitats for local wildlife and insect populations.

The building has been designed to prevent air leakage which means heating will not be lost.

The design has achieved a BREEAM Excellent standard, rating it very highly in building sustainability.

How will you keep the neighbourhood informed about what's going on?

Working collaboratively is key to our success. We are part of the construction working group, with interested local residents and societies. This will keep people up to date with the project and allow ideas and improvements on working methods to be put forward.

We will use electronic and paper newsletters, email, websites and social media to inform local people about upcoming works and any effects these may have on day-to-day living.

Noticeboards will be on our hoardings, with the latest newsletters, contact information, project data and any opportunities or vacancies related to the project.

We also hope to get involved with local events and support the community during our stay. We look forward to meeting some of you during this time!