Manchester: the home of beautiful biotechnology

The Manchester Institute of Biotechnology was set up in 2006 and quickly became one of the world's leading institutions within biotechnological research. **Professor Nigel Scrutton**, the director at the helm, recently spoke to *Research Features* about the ground-breaking research carried out during their first ten years and the future strategic direction for their work.

Biotechnology is a field of science which applies the complexity of biological processes to technology for the construction of products. At the heart of this process, the Manchester Institute of Biotechnology (MIB) have become one of the front-runners of this field, with their work consistently featured in well-known scientific journals like *Nature*, *Cell*, *Science*, *Nature Chemistry*, *Nature Biotechnology*, *Journal of American Chemical Society* – the list goes on.

Their research teams have not only uncovered perfect drug combinations to combat severe diseases, but they have also determined bacterial protein structures that could provide effective drug targets for certain inherited cancers.

First established only ten years ago, MIB has already attracted more than £100 million of investment and has developed a unique collaboration with the young researchers at the University of Manchester. They first opened their Garside building back in 2006, which quickly became one of the leading features of the Manchester skyline – it really is something to behold.

With its spectacular aesthetic and high-tech interior, it also comprises a huge number of research staff, up to 47 research groups and a large atrium that encourages spontaneous discussion between researchers.

Of those researchers, Professor Nigel Scrutton is the man in charge of it all. From his personal research into enzyme catalysis to his award-winning dedication to biotechnology, he is responsible for the strategic leadership and operational management of the institute.

He recently sat down with us at *Research Features* to discuss his role further, while highlighting the current successes and downfalls within the biotechnological world of scientific research.

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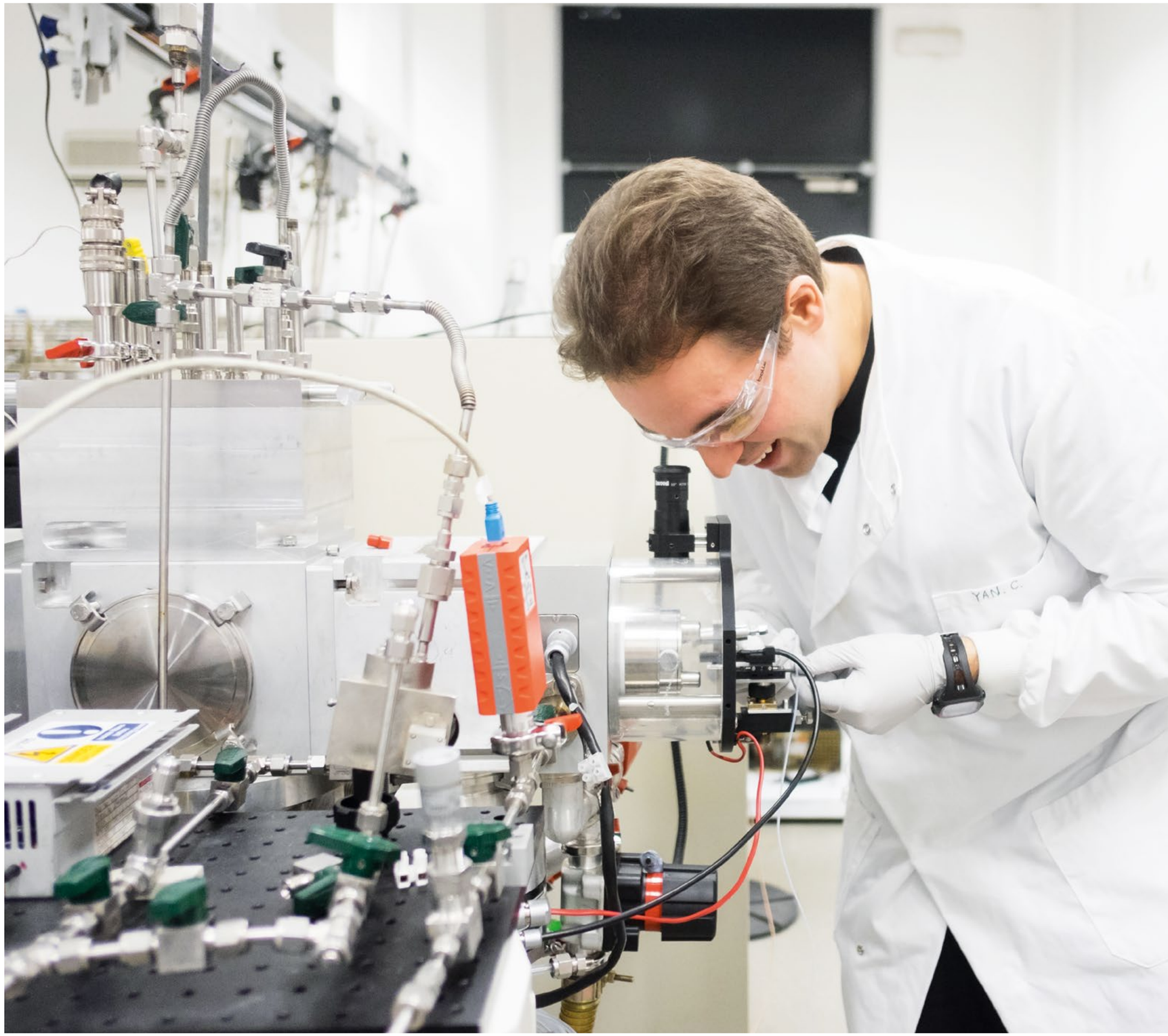

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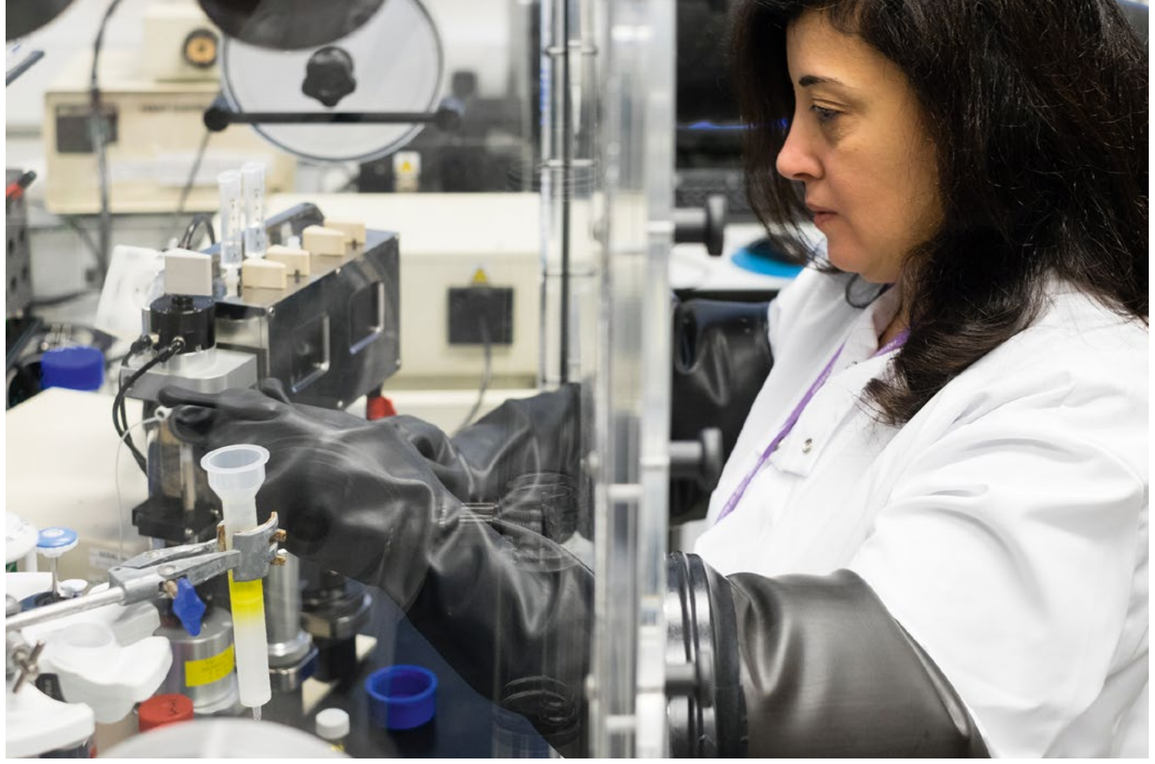

Hello Nigel! How would you describe your role as Director of MIB?
My role is to provide leadership related to the strategic and operational oversight of interdisciplinary research programmes at MIB. This extends from anticipation of, and planning for, future research trajectories to recruitment of research leaders. I'm also responsible for the planning and procurement of major equipment purchases, development of international partnerships, and interactions with all key stakeholders, including funding bodies and industrial partners. MIB champions team-based approaches to challenge-led bioscience and my role is to create the environment and support for MIB researchers that enables these activities to flourish.

Back when MIB first opened in 2006, it became the first of its kind to represent a university-based, purpose-built interdisciplinary research institute. Why is having this interdisciplinary approach so important to biotechnology research?
Challenge-led bioscience requires seamless working across disciplines. As such, it was important to bring under one roof interdisciplinary scientists committed to working in this way to create unique teams that tackle major societal challenges. MIB is particularly noted for its capabilities in industrial biotechnology – a University of Manchester research beacon. MIB has assembled teams of chemists, chemical engineers, computational and materials scientists, as well as biologists, to drive major programmes in the industrial biotechnology space, and has also worked with industry to translate basic discovery science to commercial success.

MIB's Garside building really is something to behold. How important has the design of this building been in the sharing of ideas and research between scientists?
Crucial – the open laboratory environment and breakout spaces enable scientists and lead investigators from different discipline backgrounds to work shoulder-to-shoulder. This ensures easy exchange of information and ideas at all levels, which is crucial to building successful interdisciplinary teams.

What impact do you think MIB has had on biotechnology research since it was first established and are there any personal achievements you are particularly proud of?
MIB has had a major impact in its first ten years. It has secured more than £160 million of competitive grant funding, filed numerous patents and established eight spin-out companies, one of which was floated on the London stock exchange (and valued at £33 million). Industrial partners have exploited a number of MIB basic discoveries in several commercial processes. The MIB brand is recognised internationally as a globally leading institute in biotechnology and is often the partner of choice for industry in developing strategic programmes that address industry need.

When MIB first opened it was known as the Manchester Interdisciplinary Centre. What were the reasons behind changing its name to the Manchester Institute of Biotechnology?
MIB was the first interdisciplinary research institute of its kind at the time of opening and it was right at the time to reflect this in the title of the institute. With time, however, we felt that the name of the institute should communicate more clearly the strategic direction of the institute's research programmes. The acronym MIB was instantly recognisable but the words Manchester Interdisciplinary Centre were less so to non-specialists. We felt that the new name was a more effective way of informing non-specialists about the research direction and purpose of our research programmes.

MIB is unique in having such a strong collaboration with Manchester University. Why is this relationship so important?
MIB is a flagship institute of the University of Manchester. The institute also draws on the research excellence found elsewhere in the university and many of the institute's programmes involve specialists located outside the MIB. Also, the MIB community is not fixed, as research hotel investigators from other parts of the university can benefit as institute members from the unique research environment in the institute. Maintaining this flexibility in MIB membership is important as new research challenges emerge, and the right combination of staff can be brought together to form new cooperating research teams.

Welcoming overseas staff to MIB is essential if the institute is to remain a prominent player in the biotechnology space”

MIB is renowned for its international collaborations with researchers. Why is having these worldwide collaborations so significant? Will Brexit have any effect?
Having strong partnerships overseas is crucially important. That way, MIB staff can work with some of the best scientists globally to form unique programmes at the cutting edge. The ability to welcome overseas staff to MIB and for MIB staff to work in the laboratories of overseas partners is essential if the institute is to remain as a prominent player in the biotechnology space.

Rightly, there are major concerns about the potential effects of Brexit on our ability to work effectively with international colleagues.

From a more personal perspective, your work into enzyme catalysis and long-term commitment to MIB has seen you win numerous awards over the years. Does winning these awards make all of your work feel worthwhile or are they just a bonus?
Of course it is nice to see the work of my team recognised through these awards but this is not the motivation. For me, this comes from seeing the science progress from fundamental discovery through to application. Most scientists are driven primarily by their science and the contribution it makes to understanding and knowledge transfer.

What are MIB's next steps in terms of future research and business direction?
The burgeoning bio economy is based on our ability to manufacture everyday chemicals, materials and medicines, and to find innovative technologies for energy supply. Synthetic biology is a key enabler in all these areas and will underpin the industrial biotechnology agenda in years to come. We are well positioned in MIB to capitalise on these developments and I look forward to MIB driving this forward with innovative solutions to many of the manufacturing challenges faced by society.

• Professor Nigel Scrutton is the Director of the Manchester Institute of Biotechnology and an award-winning scientific researcher. After receiving a first class honours degree in Biochemistry at King's College London, Professor Scrutton went on to gain an ScD and PhD (as a Benefactor's Scholar) at the University of Cambridge. During his research career, he has published approximately 370 papers and is widely regarded as an expert in the fields of enzyme catalysis, biophysics and biomolecular engineering. He manages a group of around 40 researchers and has amassed numerous awards for his work, including the Biochemical Society Colworth Medal and the RSC Charmian Medal, to name a few.

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Contact

Manchester Institute of Biotechnology
University of Manchester
3.020 Garside Building, 131 Princess Street, Manchester, M1 7DN

T: +44 (0)161 306 8917
E: Nigel.Scrutton@manchester.ac.uk
W: www.mib.ac.uk

/MIB2006/
@UoMMIB
/UoMMIB

MANCHESTER 1824
The University of Manchester
Manchester Institute of Biotechnology