

SCIENCE HUB

London has a long and unique status as a scientific and medical centre, and is a major centre of teaching and research in medicine, science and technology.



A twisted drop of molten metal as it cools and solidifies in water

“A science park with a stock exchange in the middle.”

This neat description of London from Dr Tony Jones, Director of Biotechnology and Healthcare at London First (set up to promote London businesses) sums up the close and fertile relationship between science and finance in the UK capital.

In the early 21st century, London has risen dramatically to the fore as a global financial centre, competing on equal terms with New York and Tokyo, making it the largest in Europe. Yet less well known is London’s pre-eminence in the scientific world.

Some of the greatest and most pioneering scientists in history lived and worked in the city, including Newton, Boyle, Faraday, Davy and Darwin, followed more recently by Rosalind Franklin and Maurice Wilkins who played a crucial role in cracking the code of DNA.

Franklin and Wilkins were working at King’s College, London, part of the University of London, and were recognised with a Nobel Prize for their efforts in 1962. This award is just one of eight Nobel prizes that King’s has received, while London as a whole has picked up more Nobel Prizes in physiology and medicine than any city in the world outside New York and Boston.

The city plays host to more than 50 universities and centres of higher education, the greatest concentration of academic institutions in Europe. There are an estimated 10,000 post-doctoral workers, making up one-fifth of the UK's full-time research staff.

Recent growth in London's scientific research base has been phenomenal. In biotechnology and medical technology, for example, the number of companies operating in the capital has doubled to more than 200 in the past seven years. The life science industry by itself contributed around £6 billion to the annual GDP of the city, with multinationals such as AstraZeneca and GlaxoSmithKline having global headquarters here, and the large US pharmaceutical and biotechnology companies such as BMS, Amgen and Gilead Sciences electing to have their European headquarters in London. The pharmaceutical industry employs in excess of 6,000 people in London with the wider healthcare sector employing 135,000.

London's governing bodies have nurtured and encouraged the world's foremost scientific companies and academics to make the city their home. For example, the London Development Agency and London First set up the London Biotechnology Network in 2000 to develop the sector. In the field of biotechnology alone, London has 1,300 researchers and five medical schools on 15 hospital sites. The Biotechnology Network, now one of the largest such networks in Europe, enables collaboration between more than 800 organisations across London, UK and

overseas, providing a forum for networking, aiding investment, career support for scientists and showcasing of UK and London biotech around the world.

This 'global nature', such a distinct feature of London, with its multi-ethnic, multi-cultural make-up and openness to new ideas, has proved highly attractive to undergraduates and post-graduates from around the world, particularly in scientific studies. At King's College London, for example, around 4,000 students are from overseas, which is 20 per cent of the total student population, and they come from more than 130 different countries. Links developed between international students and London employers will be a key factor in the global success both of the individuals and the companies that employ them. This is particularly true for the emerging life science sectors of Asia.

Facilities at the college are already among the best in the UK, with a further £500 million currently being invested in new laboratories, college and student accommodation. "We are undergoing a huge refurbishment of the campus," says Chris Coe at King's. "We have the largest centre for healthcare education in Europe and have a truly international student body."

Besides the college's role in understanding DNA, researchers at King's contributed to the development of telegraphy, radar, mobile phone technology and even radio. "We have played a major role in many of the scientific advances that shape modern life," says Coe. In total, King's owns five campuses in central London and is home to five Medical Research

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Council centres: "That is more than any other university," he notes. Today's cutting-edge work focuses on areas such as stem cell research, issues in allergies, autism, nutrition and cancer, each of them pressing concerns in global healthcare.

Many of the London universities have 'technology transfer' offices, where developments in (for example) stem cell technology can be presented to potential financial backers including venture capital investors, allowing them to give early-stage funding to scientific developments which may prove to be highly influential and lucrative. Companies such as Ark Therapeutics grew out of the University College London Business (UCLB) unit. It is now listed on the London Stock Exchange. According to the London Development Agency, there are more biotechnology venture capital groups in London than in the next 10 largest European cities put together.

Business managers work closely with students and researchers in order to assist in commercialising research. "This is very useful if a graduate wants to go into industry," said Anne Lane, Executive Director at UCLB. Another UCLB project was successfully integrated





into the UK's National Health Service (NHS) IT programme. The NHS concentrates a large proportion of its resources in the capital, conducting 70 per cent of its research here. The city is the undisputed centre of European medical research, hosting an estimated 60 per cent of the continent's clinical trials.

UCLB collaborates with a wide range of research organisations in London, including the institutes of child health, neurology and ophthalmology. "We exploit any IP that comes out of these institutions," says Lane. "We also have very good relations with our counterpart in the public sector, NHS Innovations."

As a result, science students in London are not only at the centre of a world-renowned city of academic excellence, but close to the heart of commercial innovation and progress, opening up the possibility of contact and collaboration with many of the largest and most forward-thinking scientific-based companies in the world. Start-up companies have been spun out of the technology transfer units such as Imperial Innovations, King's College Business Ltd,

Queen Mary Innovation and Enterprise and UCLB among others. Most recently, Imperial College launched a £7 million BioIncubator facility, with 12 wet laboratories, 16 private offices and a suite of meeting rooms. The facility can host up to 15 start-up companies, who receive commercial advice and mentoring.

London's geographical and economic position in the world has proved to be a massive asset: it is clearly viewed as a pivotal point between the US and Europe, with the advantages of the English language, a shared (if slightly different) culture, and long-standing and robust trade links with America, along with membership of the European Union. Scientifically, many of the biggest advances made in the States have had contributions from UK scientists. Links with eminent scientific establishments in Asia, Australia and elsewhere are equally strong.

There are a vast number of specialised teaching and research institutions within London. The London School of Hygiene and Tropical Medicine has a long history of pioneering research, the Institute for Cancer Research

"Transport links mean that when you are in London you are no more than 1.5 hours away from 80% of the UK biotechnology sector"

Golden DNA double helix unwinding



OLIVER BURSTON/WELLCOME IMAGES

has made several significant breakthroughs, and The School of Pharmacy collaborates closely with the many multinational pharmaceutical companies present in the city and internationally.

Having such a concentration of academic research and industry in London has acted as a magnet for smaller scientific-based companies from around the world. As one Finnish research company business development director puts it: “Most of the big pharmaceutical companies are close by and clients want to see you in person. It is easier for us and them to meet in London for a couple of hours than have them come to Finland.”

Transport links by road, rail and (most importantly) air are better in London than almost anywhere else on earth, meaning that meetings are easier to set up and travel times are shorter and simpler between destinations than most other cities can boast. And while Oxford and Cambridge both have major scientific research clusters, these cities are each little more than an hour away from London. Such transport links mean that when you are in London, you are no more than 1.5 hours away from 80 per cent of the UK biotechnology sector in the so-called Golden Triangle. The international air and rail links also mean that you are less than three hours away from the majority of the European biotechnology sector.

The resources available to support scientific research in London are phenomenal. The Wellcome Trust, for example, is the world’s second-largest medical research charity, making millions of pounds available each

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year. The government-funded Medical Research Council also has a huge annual budget to fund scientific research.

As if these formal sources of support were not enough, Londoners – whether science students, researchers or simply curious members of the public – have access to an unequalled array of scientific meetings, lectures and conferences throughout the year, held by the 30 museums dedicated to science and medicine, by organisations such as the Royal Institution, the Wellcome Trust, the British Library, Science Museum or The Royal Society. There are typically more than 100 scientific events taking place in London each month, usually advertised through Nature Network London, a leading science publishing group. Nature Network London is the only other location-based network in the world after Boston.

And then, even if you ignore the wealth of scientific research, the vast resources of the financial sector and the concentration of cutting-edge industrial giants, “London is simply one of the best cities in the world,” as UCLB Executive Director Anne Lane puts it.

Figuring out reasons to study in London? It’s not rocket science.

FACTS AND FIGURES

London has the largest concentration of IT software and services companies anywhere in Europe.

About half of the world’s internet routes can be accessed through The London Internet Exchange (LINX), the largest and most significant internet exchange point outside the US.

The latest edition of the European Cities Monitor lists London as the top location in terms of IT infrastructure.

19 of the top 25 software and services suppliers have their headquarters in London.

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London has 30 museums dedicated to science and medicine. One of the largest is the Science Museum, its library contains over 600,000 items of international importance.

Science Museum

