A world-class research laboratory on the Cambridge Biomedical Campus

Research carried out at the Medical Research Council Laboratory of Molecular Biology (LMB) is expanding our knowledge of biological processes at the molecular level.

This information helps us to understand the workings of complex biological systems, such as the immune system and the brain, and solve key problems in human health.

“Building on a great scientific heritage”

The LMB dates back to 1947, when the MRC set up a ‘Unit for Research on the Molecular Structure of Biological Systems’. It became the LMB in 1962.

The ground-breaking research at the LMB has attracted nine Nobel Prizes, over 40 Royal Society awards and numerous other scientific honours.

Discoveries and inventions from the LMB such as DNA sequencing, methods to determine the structure of proteins or the exploitation of monoclonal antibodies for therapeutic use, have revolutionised modern biology and medicine.

LMB scientists have converted their discoveries into patents, licensing and start-up businesses. To date the LMB has successfully generated over £350 million of commercial income, helping to support UK science.

In 2013 the LMB moved to a new, £212 million state-of-the-art building with space for up to 440 scientists. This will allow the LMB to respond flexibly to the pace of progress, the development of new research techniques, and to remain highly competitive with other world-leading laboratories.

“The LMB’s focus on difficult, long-term research problems has enabled the Laboratory to deliver profound contributions to medicine and huge benefits for the UK economy.

“The LMB has long been, and remains, a world-class laboratory. With continued investment, our new building and a wealth of talent that success is set to continue.”

Hugh Pelham Director
A number of emerging areas of pioneering LMB research are set to benefit human health...

NEW APPROACH TO TREAT ASTHMA

Work by Andrew McKenzie’s group identified a new immune cell type that controls the start of allergic asthma, providing a critical first step in developing new strategies to treat allergic diseases.

EGG MATURATION AND MISCARRIAGE

Melina Schuh’s laboratory is studying how abnormal numbers of chromosomes arise from errors in cell division during egg maturation. Such abnormalities are the leading genetic cause of miscarriage and congenital birth defects.

FIGHTING VIRUSES INSIDE CELLS

Research by Leo James’ group shows that antibodies can fight viruses from within infected cells. The discovery of this process is inspiring new types of antiviral drugs aimed at preventing or reducing infection.

ABERRANT PROTEINS AND ALZHEIMER’S DISEASE

Research led by Michel Goedert identified the major components in protein deposits within nerve cells that cause neurodegenerative diseases. Work by the Bertolotti and Goedert groups aims to discover how such harmful deposits accumulate and identify ways to prevent or reverse the process.

IMPROVED ANTIBIOTICS FROM RIBOSOME RESEARCH

Work by Venki Ramakrishnan’s group helped to solve the structure of the ribosome and is informing work to develop new antibiotics to combat infection and disease.
60 years of discoveries at the LMB

Francis Crick and Jim Watson helped unravel the structure of DNA – one of the scientific landmarks of the 20th century.

John Kendrew and Max Perutz were the first scientists to determine the structure of a protein - their pioneering technique of protein crystallography is still used worldwide.

Sydney Brenner and Francis Crick proposed the triplet nature of the genetic code. This discovery – that the order of the bases in a nucleic acid determines the order of amino acids in a protein – is one of the central biochemical mechanisms in biology.

Fred Sanger devised a technique to determine the sequence of the DNA bases - this method shaped research in genomics and biomedicine and was used to determine the human genome.

Aaron Klug developed 3D imaging of biological specimens - helping to solve the structure of viruses and chromatin.

César Milstein and Georges Köhler invented a technique to produce unlimited quantities of monoclonal antibodies. This was developed further by Greg Winter and Michael Neuberger - leading to a multi-billion pound biotechnology industry with new treatments for rheumatoid arthritis, multiple sclerosis, cancers, viral infections and other diseases.

Sydney Brenner, Bob Horvitz and John Sulston studied how genes regulate organ development and how cells are programmed to die – important in understanding how viruses and bacteria invade cells and cancer changes them.

“The LMB brings together a diverse range of scientists exploring nearly every cellular process in considerable depth. I spent a day visiting the LMB and the infectious enthusiasm hooked me immediately...”

Ramanujan Hegde, LMB scientist

“The LMB provides a wonderful environment for PhD students... although attached to a research group, the whole lab is, in essence, their playground meaning they can approach anyone in the building who can help them with their project...”

Julian Sale, LMB Director of Graduate Studies

“It’s the combination of stable long-term funding and technical expertise along with a collaborative spirit and a reputation for curiosity driven research that make the LMB a magnet for the world’s best talent“

Venki Ramakrishnan, LMB scientist, winner of 2009 Nobel Prize for Chemistry

The LMB and its scientists regularly participate in public events, such as the Cambridge Science Festival and the Royal Society Summer Exhibition

For more details of forthcoming activities see http://mrc.io/lmbevents