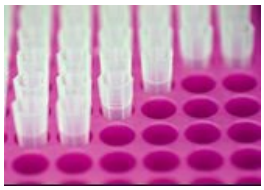
Health and medicine

The College of Medical and Dental Sciences has a mission to improve human health by developing and nurturing excellence in basic and clinical science, taking this knowledge from bench to bedside. It is a highly specialised environment where scientists and clinicians work together on the UK's key biomedical research priorities. They focus on five areas: Cancer, Cardiovascular, Metabolism & Genetics, Immunity & Infection and Community Sciences.

In the medical sector, it is often a challenge to translate biomedical research into work of real clinical and patient benefit. Two vital components in making this happen are access to bio-materials and effective clinical trials.



Fortunately, the college is in an excellent position to draw out real-life applications from its research. It has strong NHS partnerships, as well as access to an ethnically and socio-economically diverse population of more than 5.5m people in the West Midlands.

The college will soon have a dedicated new building for a human-tissue biorepository and gene-therapy pharmacy. The biorepository will enhance the collection and storage of high-quality human-tissue samples for both the university and the NHS, supporting a wide range of research and pre-clinical studies. 'Hatchery' facilities will nurture the development of early stage companies. A new, unique mobile health research bus has also been built, which will enable research to be taken out into the community and enhance access to patient groups which are normally difficult to reach, for example young children, the elderly and ethnic groups. The unit will enable health research to be undertaken across a wide spectrum of clinical areas including obesity, asthma and arthritis.

Cancer Sciences

The School of Cancer Sciences is an internationally-renowned centre for translational cancer research and cancer education and encompasses most of the academic and clinical cancer research within the University including the prestigious Cancer Research UK Birmingham Cancer Centre (CRUK).

Industry support

We currently work with a range of commercial sponsors and collaborators including many of the major pharmaceutical companies, such as: Pfizer, GlaxoSmithKline, Astra Zeneca, Aventis Pharma, Bristol Myers Squibb, Novartis, Pharmacia, Eli Lilly, Roche.

In addition to collaborating with large multinational companies, researchers also work with smaller biotechnology, medical device and drug discovery companies.

Case studies

Open all sections

Researchers use genetically modified cold virus to kill cancer cells

Particular strengths at Birmingham include cancer cell signalling, the DNA damage response, gene and immunotherapy and cancer viruses. One example is the use of a genetically modified cold virus to target and kill tumour cells. Rather than delivering a drug, the virus acts as a method of delivering proteins that cause cancer cells to die.

The technique targets a molecule called CD40, which normally plays a key role in activating the immune system. Research has shown that CD40 is present in many common tumours including breast, liver and skin cancers.

The modified virus contains a protein CD40L that will bind to the CD40 on the surface of cancer cells. This binding process results in the death of the cancer cell.

Learn more about the cold virus being used to kill cancer cells (http://www.newscentre.bham.ac.uk/press/2007/10/Cancer_Cold_Virus_03_10_07.shtml)

Scientists call for re-think over AIDS policy

Scientists at the University of Birmingham have revealed significant discrepancies in guidelines set out by the World Health Organisation for treating children with HIV/AIDS in developing countries.

Children infected with the HIV virus in the developing world are having their health assessed according to World Health Organisation global guidelines that are founded on laboratory data from populations in the developed world. This is giving a false indication of the extent to which the immune system is suppressed by HIV in these peoples.

The CD4 T cell found in the blood is a key monitor of health in HIV patients and also indicates how sufferers are responding to treatment. In areas such as Sub Saharan Africa, antiretroviral therapy (ART) is increasingly used to manage HIV-infected individuals. In these African regions, where health care resources are limited, the number of CD4 cells in the blood is being used, when available, to make decisions about who is eligible for ART treatment.

In research recently published today in the Journal of Allergy and Clinical Immunology, Dr Calman MacLennan advises that caution should be exercised when assessing the level of immune suppression in HIV-infected African children using current WHO guidelines for the treatment of HIV/AIDS patients in the developing world.

Learn more about the AIDS research at the University (http://www.newscentre.bham.ac.uk/press/2010/01/12Jan10AidsPolicy.shtml)

Ill health may not be an inevitable part of getting older

A new study has uncovered changes to our immune systems which may explain why we become more vulnerable to common infections as we get older.

Research from the University of Birmingham has shown that as we age greater numbers of helper T-Cells, which play a key role in directing the immune system, become sidelined in responding to the CMV virus, which is normally harmless. The study, which was funded by the Medical Research Council is published in the Journal of Virology.

Cytomegalovirus, or CMV, is a Herpes virus, which infects around 7 in 10 people in the UK. In most healthy individuals the virus remains dormant, without causing any symptoms, although it is a serious health problem amongst patients with compromised immune systems.

Learn more about research into ageing (http://www.newscentre.bham.ac.uk/press/2007/07/age_immunity_30__07_07.shtml)