

Research activity

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[ICECAP capability measures \(/research/activity/mds/projects/HaPS/HE/ICECAP/index.aspx\)](/research/activity/mds/projects/HaPS/HE/ICECAP/index.aspx)

Measures of wellbeing for use in economic evaluation...The measures are conceptually linked to Amartya Sen's capability approach which defines wellbeing in terms of an individual's ability to 'do' and 'be' the things that are important in life. The four measures are:- ICECAP-O: a measure of capability for older people- ICECAP-A: a measure of capability for the adult population (under development)- CES: (Carer Experience Scale): a measure of care-related wellbeing- ICECAP-SCM: a measure of capability for use in the end of life care (under development).



[IIH:WT Trial \(/research/activity/mds/trials/bctu/trials/pd/IIHWT/index.aspx\)](/research/activity/mds/trials/bctu/trials/pd/IIHWT/index.aspx)

IIH:WT is a randomised controlled trial of bariatric surgery versus a community weight loss programme for the sustained treatment of Idiopathic Intracranial Hypertension (IIH). It is coordinated by the Birmingham Clinical Trials Unit and led by Chief Investigator Dr Alex Sinclair.



[Imaging sciences - Collaborative Research Network in Imaging and Visualisation \(/research/activity/crni/projects/imaging-sciences/index.aspx\)](/research/activity/crni/projects/imaging-sciences/index.aspx)



[Immune Mediated and Inflammatory Liver Disease \(/research/activity/mds/domains/immunity-infection/immunology/immune-mediated-and-inflammatory-liver-disease/index.aspx\)](/research/activity/mds/domains/immunity-infection/immunology/immune-mediated-and-inflammatory-liver-disease/index.aspx)

The 7 PIs based in the Centre for Liver Research are closely integrated with the internationally renowned Liver Transplant Unit at University Hospitals Birmingham NHS Foundation Trust. The close integration with the Hepatitis C virology group brings together expertise in the molecular biology of HCV infection and liver immunology to address the immunopathogenesis of HCV infection. The award of an NIHR Biomedical Research Unit for Cell and Immunotherapy of liver disease is allowing the Centre to translate its basic research programmes in immune mechanisms in liver disease and the molecular pathogenesis of hepatitis C infection into novel therapies. Current translational programmes include: the use of tissue-specific regulatory T cells to suppress inflammation; novel strategies to modulate effector cell recruitment; stem cell therapy to promote liver repair; adoptive immunotherapy with dendritic cells to stimulate protective immune responses against hepatitis C infection and liver cancer; the use of novel inhibitors of viral receptors to prevent recurrent HCV infection after liver transplantation.



[Immunity and Ageing \(Immunesenescence\) \(/research/activity/mds/domains/immunity-infection/inflammation-biology/immunity-and-ageing-\(Immunesenescence\)/index.aspx\)](/research/activity/mds/domains/immunity-infection/inflammation-biology/immunity-and-ageing-(Immunesenescence)/index.aspx)

As we age our immune systems are less able to deal with new infections or to control infections to which we had immunity when younger (e.g. shingles, the adult form of chicken pox). In addition older adults are less efficient in responding to vaccinations, reducing the efficacy of preventive medicine. This group is investigating both the mechanisms underlying loss of immunity with age (immunesenescence) and developing approaches to improve immunity in older adults. There are 7 main research topics within this grouping: Loss of neutrophil function with age and consequences for susceptibility to bacterial infections, with a focus on respiratory infections; The basic mechanisms underlying atrophy of the thymus; the role of altered germinal centre formation in reduced vaccination responses and novel approaches to improving vaccination efficiency in older subjects; The role of CMV infections in immunesenescence; Peripheral glucocorticoid metabolism and systemic inflammatory disease (rheumatoid arthritis); Lifestyle interventions (diet and exercise) to improve immunity in old age; Periodontitis, systemic inflammation and age-related chronic inflammatory disease; The effect of stress (including sleep disruption, trauma and bereavement) in immunity in old age.



[Immunity and Inflammation in the Visual System \(/research/activity/mds/domains/immunity-infection/inflammation-biology/immunity-and-inflammation-in-the-visual-system/index.aspx\)](/research/activity/mds/domains/immunity-infection/inflammation-biology/immunity-and-inflammation-in-the-visual-system/index.aspx)

Our research theme encompasses inflammatory mechanisms in the ocular environment including the orbit and visual pathways. We are particularly interested in translational research investigating immune and inflammatory processes in multi-systemic disease such as immune-mediated ocular surface disease, uveitis, scleritis, Sjögren's syndrome, Behçet's disease, thyroid associated ophthalmopathy and multiple sclerosis. Our laboratory work focuses on the cellular, molecular and metabolic basis for the maintenance of immune privilege particularly in the eye and the brain; the cellular and genetic basis for the onset, progression and outcome of inflammation in these sites. Major interests of the group include the balance between inflammatory and regulatory cells, hormone and steroid control of inflammation, and genetic polymorphisms in inflammatory genes.



[Immunity, Inflammation and Infection \(/research/activity/mds/domains/immunity-infection/index.aspx\)](/research/activity/mds/domains/immunity-infection/index.aspx)

Immunity and infection research at University of Birmingham is investigating immune regulation in health and disease together with mechanisms of infection and antibiotic resistance to help design better therapies for the future. We employ a large and successful cohort of internationally recognised scientists looking at fundamental mechanisms involved in immune regulation, infection and immune mediated inflammation. Key research areas are Rheumatoid Arthritis, inflammatory liver and kidney disease, lupus, ocular inflammation, type 1 diabetes, hepatitis C, bacterial pathogenesis and antibiotic resistance.



[Immunology \(/research/activity/mds/domains/immunity-infection/immunology/index.aspx\)](/research/activity/mds/domains/immunity-infection/immunology/index.aspx)

Research involves a series of internationally recognised research groups investigating different aspects of immune system control. These groups study basic mechanisms and apply this knowledge to selected diseases with the aim of identifying improved methods of treatment. Strengths in these areas are recognised through the establishment by the Medical Research Council of the Birmingham Centre for Immune Regulation. The Centre was established in 1999 to provide a focus for existing immunology programmes in Birmingham and to add value by promotion collaboration and providing key technologies fundamental to state of the art immunological research. By gaining insights into the microenvironmental control of immune responses, the global aim of our research is to gain a better understanding of the cellular and molecular mechanisms controlling autoimmunity, immune-mediated inflammatory disease and infectious disease. Efforts are focussed on common diseases involving autoimmune or dysregulated responses which are associated with a major health burden and socio-economic impact. These include responses to chronic viral infection, selected bacterial infections, inflammatory disease in joints, kidney and liver, autoimmune systemic vasculitis and autoimmune islet destruction in diabetes. Defining the molecular basis of chronic inflammation is a major focus of research that is already identifying convergent pathways and providing novel therapeutic targets. Birmingham has been at the forefront of research into chronic inflammation for more than 10 years and we are exploiting this strong base in biomedical research to develop translational studies in patients and implement new therapies for chronic inflammatory disease.



[Impact of DMF on engine performance and emissions as a new generation of sustainable biofuel \(/research/activity/mechanical-engineering/vehicle-technology/future-power/DMF-engine-performance/index.aspx\)](/research/activity/mechanical-engineering/vehicle-technology/future-power/DMF-engine-performance/index.aspx)



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