

UKRI Strategic Themes



UK Research
and Innovation

Objective 5: World-class impacts

Focusing the UK's world-class science and innovation to target global and national challenges, create and exploit tomorrow's technologies, and build the high-growth business sectors of the future.

- Address major national and global challenges
- Harness the opportunities of tomorrow's technologies
- Transform key sectors that are key to the future economy



Five strategic themes: 2022 to 2027



Strategic principles

Creating multi-disciplinary funding opportunities

Harnessing the full power of the UK's research and innovation system

Working right across UKRI capabilities and capacity

Leveraging new and existing UKRI investments and actions

Forging new partnerships; ensuring better synergies

Strategy

Transforming Tomorrow Together

Strategic Themes

Building a Green Future

Building a Secure and Resilient World

Creating Opportunities, Improving Outcomes

Securing Better Health, Ageing and Wellbeing

Tackling Infections

New investment areas *(examples)*

Strategic theme

Building a Green Future



Investing into...

Transforming Land Use for Net Zero, Nature and People

Accelerating the Green Economy

Global Centres of Excellence in Clean Energy and Climate Change

Building a secure and resilient world



A research and coordination hub

Quantum position, navigating and timing (PNT) technologies

UK Climate Resilience

Creating opportunities, improving outcomes



Local Policy Innovation Partnerships

UK Resilient Coastal Communities and Seas Network

Future of the Internet

Securing better health, ageing and wellbeing



Centre in Climate Change and Health

UKRI Ageing Network & Global Partnerships

Mental Health Platform Hubs

Tackling infections



Rapid response (avian influenza)

Proactive vaccinology

Evolution and ecology of infectious disease (NSF-led)



UK Research
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UKRI Strategic Themes

are both...



Mission-led challenges

Showing how UKRI can convene the whole of our research and innovation system to change lives and our planet, transforming tomorrow together.



Ideas-led investment

Innovating how we fund to bring researchers and innovators together to transform science and tackle our greatest challenges.



UK Research
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Building a Green Future



UKRI Strategic Themes

Our approach

Areas of focus:

Targeting national priorities

Working in partnership with government to co-create research and innovation programmes that address strategic priorities for green growth in the UK.

Achieving the last 20%

Research and innovation in currently immature technologies needed to achieve reduced emissions beyond 2030.

Accelerating the green economy

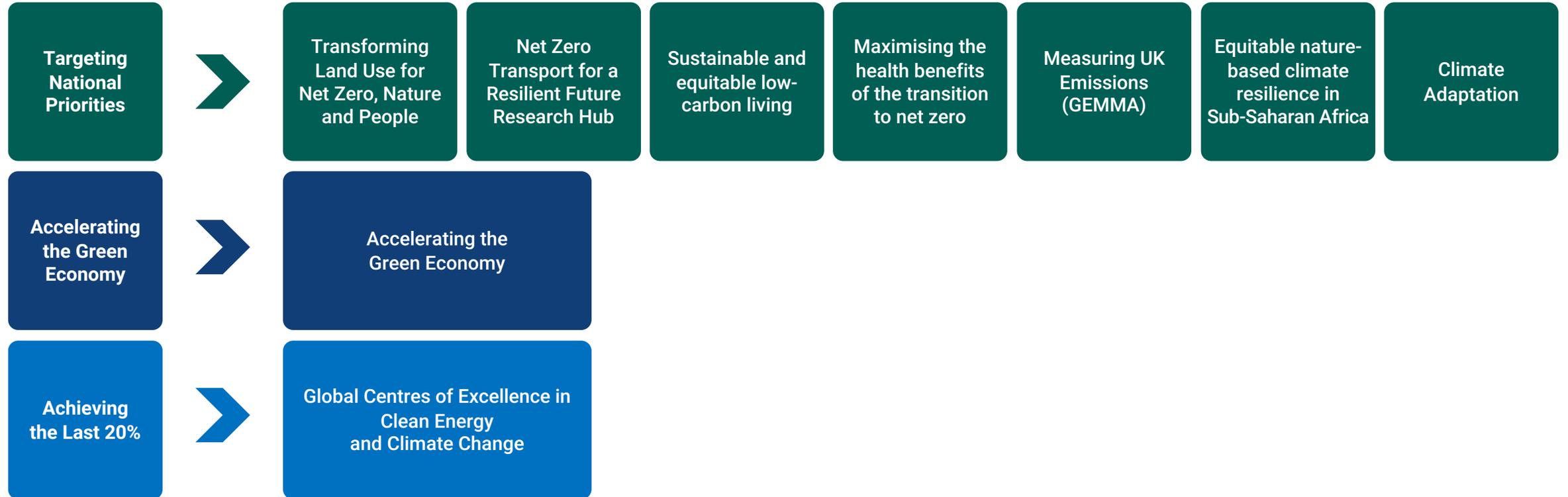
Addressing the near-term costs of transition to a low-carbon economy, by unlocking solutions and focusing private sector investment.



Investment portfolio

Areas of focus:

Investing into...





Legacy Examples: We're building on...

Impacts from the
Energy Programme



EPSRC has invested £1.1bn supporting extensive collaboration with project partners. By 2018 they had **generated c.£500bn in UK revenues** and **employed over 2 million people**. In 2019 alone spin-out companies generated known UK revenues of **£28.9m** and **employed 180 people**.

Cleaning up our air



£4.3m NERC funding established cutting-edge 'supersites' to gather more high-quality data on **urban air pollution** than ever before. Through NERC science, governments, businesses and communities have taken **evidence-based action to tackle air pollution, yielding benefits worth an estimated £1.2b p.a.**

Climate Change in
North West England



Using carbon budgeting tools developed by the Tyndall Centre for Climate Change, Greater Manchester Combined Authority slashed its goal of **80% carbon reduction by 2050 to zero emissions by 2038**. Greater Manchester public buildings now produce 7,000+ tonnes less CO2 per year, **saving over £2m annually**.

Offshore Renewable Energy
Catapult Academy



The Offshore Renewable Energy Catapult's national Launch Academy has taken 20 companies through its nine-month programme since 2019, focusing on accelerating technology within the industry. **Over £9m has been raised in investment with 50 new staff** taken on by participating companies.



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Building a Secure and Resilient World



UKRI Strategic Themes

Our approach:

Helping strengthen the UK's role in shaping an international order that is secure, resilient and just

Mitigating the impact of natural and anthropogenic hazards and risks on wider societal processes and operations being responsive to particular requirements of place.



Advancing the capacity of defence and security, economy and society to respond to/recover from shocks through innovation and technological advancement.

Reducing the impact of shocks on individuals and communities through adaptation and embracing change, deployment of resources for personal resilience that is fair and just.

Increasing the resilience of supply chains (food, critical materials, manufacturing, complex systems) to a wide variety to potentially interacting shocks.

Investment portfolio

Areas of focus:

Global order in a time of change



Polarities and Regions Network Plus

Technologies for resilience, security and defence



Digital Twins

Quantum position, navigating and timing (PNT) technologies

Data and analytics facility for national infrastructure (DAFNI)

National centre for space situational awareness (NCSSA)

Resilient and secure supply chains



Strengthening resilience across UK food system

Supply chains as complex systems

Behavioural and cultural resilience



Building behavioural science capability for defence and security research

Mobilising community assets to tackle health inequalities

Cultural Heritage and Climate Change

Strengthening resilience in natural and built environments



Nature-based solutions for equitable resilience

UK Climate Resilience

De-risking the risk of solid earth hazards (in partnership with India)

Cross-cutting

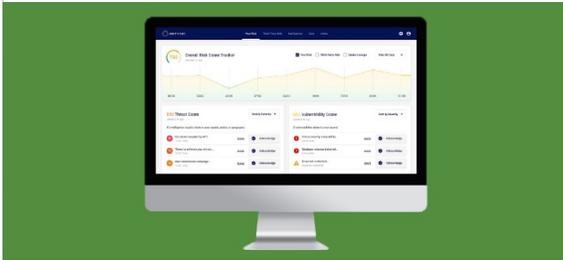


A research and coordination hub

BSRW Flexible Fund

Legacy Examples: We're building on...

Stopping cyber-attacks before they happen



Cyber-attacks are on the rise with many organisations affected. Support from UKRI allowed Orpheus Cyber to develop their existing capabilities into a full-spectrum cyber risk management platform. By turning data into actionable insights their platform enables organisations to proactively stop cyber-attacks before they happen.

Building a UK supply chain



The UK does not currently have a domestic supply of the rare earth magnets (REM) used in electric vehicles and wind turbines. HyProMag used UKRI funding to create the world's shortest loop recycling process for end-of-life audio equipment. The project created a UK REM recycling supply chain that also reduces landfill and environmental damage.

Creating new approaches to emergency planning



Covid-19 transformed everyone's lives when people were suddenly confined to their homes. The Performance as City Pandemic Response, investigated how arts, culture, and performance can open new perspectives on city emergency and resilience strategy and practice. Their toolkit has changed the future of emergency planning and is used across the UK and overseas.

Developing sponge cities



Problems like flooding, air pollution and wildfires are becoming more frequent. Researchers from the UK and China created nature-based solutions (NBS) to reduce the impact of climate change in urban settings. These sponge cities, use NBS to:

- absorb and capture rainwater to reduce flooding
- reduce water and air pollution.



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Creating Opportunities, Improving Outcomes



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Our approach

Areas of focus:

Community Connectedness

Strengthening civic engagements, relationships, trust and local pride to reduce the social and economic marginalisation of groups and areas.

Health Inequalities

Understanding the causes and effects of disparities in population health across the UK and identifying sustainable and cost-effective solutions to these.



Cross-cutting

The activity is focused on coordinating, connecting, convening and generating robust evidence on cost-effective solutions to reduce spatial disparities and promote prosperity.

Economic Growth And Innovation

Addressing long-standing regional economic disparities and delivering solutions that focus on sustainable, inclusive growth and innovation.

Investment portfolio

Areas of focus:

Cross-cutting



Economic Growth And Innovation



Health Inequalities



Community Connectedness



Investing into...

Local Policy Innovation Partnerships Strategic Coordination Hub

Creating Opportunities Trial Accelerator Fund

Creating Opportunities Evaluation Development Fund

Creating Opportunities Strategic Fund

Local Policy Innovation Partnerships

OECD Transforming Places

UK Resilient Coastal Communities and Seas Programme

UK Resilient Coastal Communities and Seas Network

UK Resilient Coastal Communities and Seas Programme

UK Resilient Coastal Communities and Seas Network

Health inequalities in the food system

Mobilising community assets to tackle health inequalities

Trans-Atlantic Collaboration on Trust, Governance, and Democracy

Centre for Community Participation and Connectedness

Future of the Internet

Future of the Internet



Legacy Examples: We're building on...

What Works Network



The [Wales Centre for Public Policy](#), part of the wider UK's [What Works Network](#), identifies evidence and expertise to help inform and improve policy to address key societal and economic challenges with a focus on place, such as the Loneliness and Connected Communities programme. They led a review highlighting key societal factors that lead to [loneliness inequalities](#).

Place-Based Impact Acceleration



[Place-Based Impact Acceleration Accounts](#) enhance the capabilities of research and innovation clusters, driving regional growth across the UK.

Awards support research organisations to co-create impact activities with civic actors, businesses and publics that are tailored to the needs of each place.

EPSRC will invest up to £50m across two rounds.

Innovation Accelerators



The £100m [Innovation Accelerators programme](#) helps accelerate the growth of three high-potential innovation clusters in Glasgow, Greater Manchester and the West Midlands.

26 research and development projects across these areas will attract private R&D investment, create new jobs, boost regional economic growth, and develop tomorrow's technologies.

The Productivity Institute



The £30m [Productivity Institute](#), brings together over 40 world-leading experts across many disciplines, from economics and management science to engineering and environmental science, who work directly with national, regional and local stakeholders to pinpoint the causes of productivity stagnation across many parts of the UK.



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Securing Better Health, Ageing and Wellbeing



UKRI Strategic Themes



Our approach

Areas of focus:

Population health improvement

Progress interventions that benefit the health of populations, prevent illness and close the gap between the richest and the poorest.

Digital Health

We will amplify council activities in advanced data science and digital health to bolster UK strengths and promote new healthcare innovations.



Ageing throughout life

Probe the biological mechanisms of ageing, including environmental, social and cultural influences, with the aim of developing interventions that will keep us healthier for longer.

Mental Health

Harness and share a wide range of data and key capabilities to advance the detection, prevention and tailored treatment of mental illness.

Investment portfolio

Areas of focus:

Population health improvement



Population health improvement: network of clusters

Centre in Climate Change and Health

Ageing throughout life



Ageing Research Development Awards

UKRI Ageing Network & Global Partnerships

Ageing mouse models & non-animal technologies

Mental Health



Mental Health Platform Hubs

Digital Health



Human Functional Genomics Initiative

Digital Health Innovation Hubs

HDR UK Driver project: societal and environmental determinants of health

Legacy Examples: We're building on...

Preventing spina bifida



In 2021, the UK Government announced the introduction of mandatory fortification of non-wholemeal wheat flour with folic acid, in the wake of work by the MRC Vitamin Study Research Group.

The group had found that folic acid supplementation for women around the time of conception reduced the risk of spina bifida and other serious neural tube defects. The ground-breaking study has led to the addition of folic acid to staples in more than 80 countries.

Statins cut risk of strokes and heart attacks



The world's largest Heart Protection Study trial into statins, funded by UKRI, showed that routine use of these cholesterol-lowering drugs in patients at high risk of heart disease reduced the incidence of heart attacks and strokes by a third, even in people with normal cholesterol levels.

Treating people with statins leads to savings of 22% in hospitalisation costs for all vascular events among a wide range of high-risk individuals.

Smart meter use in healthcare influences government policy



EPSRC-funded data and analytics research at Liverpool John Moores University showed how smart meter readings could help monitor dementia patients, sending alerts to carers and family members of any unusual activity.

In 2016 Mersey Care NHS Trust ran the world's first clinical trials of the technology. Subsequently, UK government policy recognised how such additional digital healthcare services could help patients stay in their own homes for longer.

Adults with lifetime history of mental illness at increased risk of frailty



UK Biobank, established by MRC, DHSC and UK health funders is a national health resource that aims to improve the prevention, diagnosis and treatment of a wide range of illnesses.

Recent BBSRC- and MRC-funded research showed how depression and bipolar disorder are associated with reduced life expectancy and increased frailty, suggesting that screening for frailty could identify individuals with mental disorders who are at risk of premature mortality.



UK Research
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Tackling Infections



UKRI Strategic Themes



Our approach

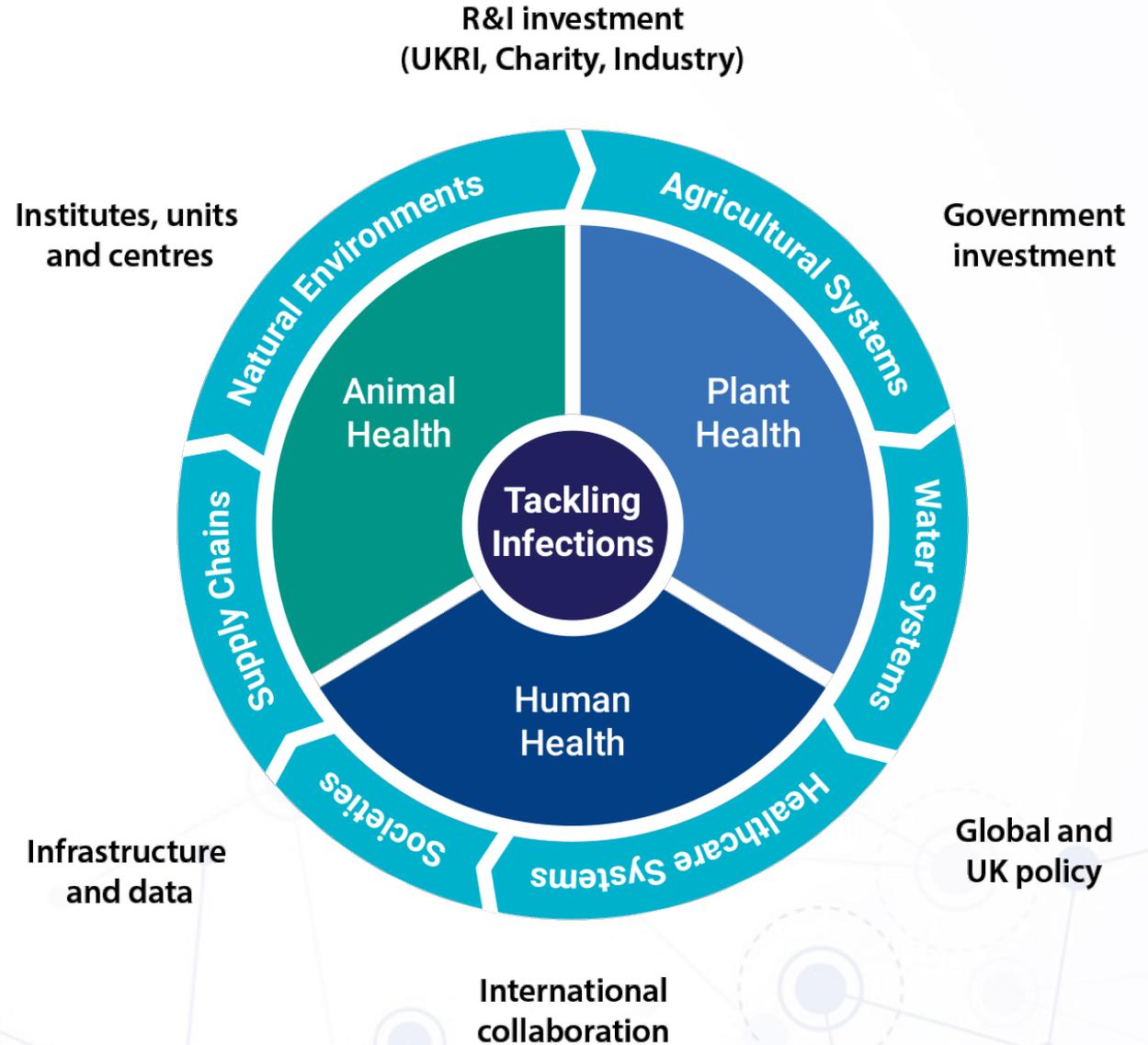
Flagships:

Epidemic preparedness

An interdisciplinary approach to better understand, predict and prevent re-emergence of diseases of epidemic potential. Seeding interdisciplinary teams and research ideas to establish a networked, interdisciplinary research community better prepared to address future threats.

Antimicrobial Resistance (AMR)

An interdisciplinary approach to deliver innovative and effective AMR solutions. Supporting transdisciplinary networks to connect and expand the UK AMR communities, transforming our understanding of AMR and delivering innovative and effective solutions that meet the needs of policymakers, practitioners, industry, civil and broader society.



Tackling infections: current and planned investment portfolio

**Flagship
investments**

**Interdisciplinary
programme in epidemic
preparedness**

**Interdisciplinary approach
to
antimicrobial resistance**

**Work to
amplify research**

**Rapid response
(avian influenza and mpox)**

**One health approach
to vector-borne disease
(with DEFRA)**

**Environmental solutions
to zoonosis centre for
doctoral training**

**Research consortia to drive
proactive vaccinology**

**Ecology and Evolution of
Infectious Disease
(International, US-Led)**

**Genomics for Animal and
Plant Disease Centre
(GAP-DC2) (Defra-led)**

**Digital Health
Hubs contribution –
to co-support AMR hub**



Legacy Examples: We're building on...

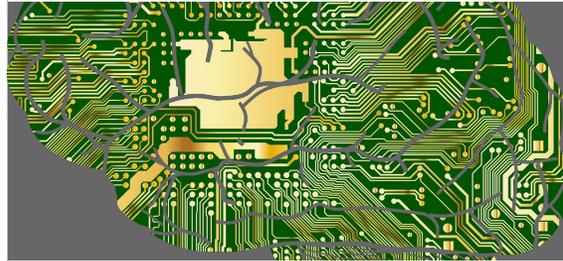
10 years of research underpins
the Coronavirus Vaccine



More than **two billion doses of the COVID-19** vaccine developed by the University of Oxford and AstraZeneca have been released worldwide.

Over a decade of investment through UKRI has been vital to developing the viral vector vaccine platform and allowing a novel coronavirus vaccine to be developed at speed.

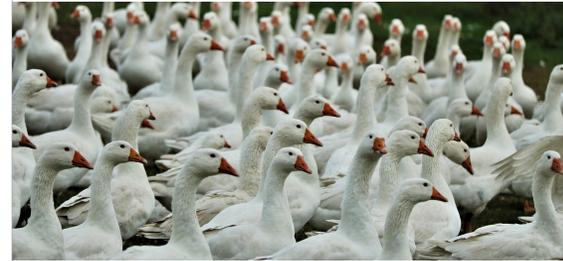
Improving diagnosis for
brain infections



Research at the University of Liverpool into **brain infections, such as meningitis**, has improved surveillance, diagnosis and management leading to new UK guidelines and global impact.

The average time to UK antiviral treatment for encephalitis fell from 48 hours to 13 hours, with better outcomes, and saving over £1.1bn since 2013.

Understanding Avian
Flu strains



Researchers led by the MRC-University of Glasgow Centre for Virus Research (CVR) conducted a series of extensive tests **as part of an international study into the pandemic potential of avian flu**.

They showed that understanding the genetic make-up of current avian flu strains may offer one of the best lines of defence against widespread human transmission.

MARPLE:
the cereal-killer detective.



Rust in wheat can affect 70% of the crop. Spores move long distances and mutate quickly. The John Innes Centre, MARPLE (Mobile and Real-time PLant disEase) detects which fungus is infecting wheat in Ethiopia, so farmers can protect harvests. **Compared to sending samples to specialist labs, which takes months, the kit is used in the field, doesn't need additional equipment and produces results in just 2 days.**



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