KING'S HEALTH PARTNERS

An Academic Health Sciences Centre for London

Pioneering better health for all

King's College London and King's Health Partners – working together to innovate better healthcare

King's College London

NHS
Guy's and St Thomas'
NHS Foundation Trust

NHS
King's College Hospital
NHS Foundation Trust

NHS
South London and Maudsley
NHS Foundation Trust

Introduction

The mission of King's College London (King's) is deeply rooted in the belief that learning and research should serve society and make the world a better place. And for almost two centuries, we have made a defining contribution to both knowledge and society, including through 14 Nobel Prize winners.

At the heart of our work is health research and innovation. By far our largest area of focus, it accounts for 70–80% of our research income each year, across wide-ranging strengths.

Our successes reflect our strategy of coordination and integration that combine to accelerate innovation. We have been particularly successful in four key areas; advanced therapies, precision medicine, medical engineering and imaging and health data.

A leading university for health

Clinical medicine

We are among the UK's top universities for clinical medicine despite being only the seventh largest university in the UK.

12th

Our worldwide ranking (Times Higher 2022)

Our focus on health

We are one of two UK universities to host two National Institute for Health Research (NIHR) Biomedical Research Centres (BRCs).

£64m

Investment each

Our four key areas of health innovation

Advanced therapies

King's has a depth of expertise in discovering and driving a range of treatment types from bench to bedside. Combined with our expertise in clinical trial design, product safety and regulation, manufacturing and commercialisation, this has led to the support of a series of successful spin out companies specialising in cutting-edge new treatments.

Precision medicine

King's has world leading programmes in areas including cancer, cardiovascular, psychosis and autism. These programmes harness both existing and new technologies and provide the best evidence to inform treatment decisions, utilising everything from genetics to imaging and artificial intelligence (AI).

Medical engineering and imaging

Ranked among the UK's and world's top universities for biomedical engineering and imaging, King's approach is to bring engineers and data scientists together with clinical researchers. This ensures we can rapidly bring our own technologies, and those from commercial R&D, into simulation and real-world settings, transforming the application of these technologies.

Health data

We have developed secure and best in class platforms that can: extract information from medical records and reports; link data across health organisations; and deploy and evaluate multiple artificial intelligence (AI) systems in hospital settings to integrate and transform patient care.

Our industry partners

Innovation cannot happen in a vacuum. Connections and collaborations are vital. We forge lasting partnerships with industry to enhance our research and to accelerate the translation of discoveries into changing lives. In addition to working with large companies to create environments that support business clusters and innovation, we work with individual small and medium-sized enterprises (SMEs) to accelerate their growth.

Our key partnerships include:

AVIDEA TECHNOLOGIES

Boehringer Ingelheim

Medtronic

GAMMADELTA THERAPEUTICS

gsk

Unilever

Celgene

CATAPULT Cell and Gene Therapy

UK Research and Innovation

Orchard therapeutics

Leucid

SIEMENS Healthineers

ucb

Nikon

NVIDIA

innersight

COVID Symptom Tracker

Our hospital partners

King's is part of a leading health collaboration – King's Health Partners. This world leading clinical academic partnership aims to deliver better health for all through high impact innovation. The partnership unites us with three leading hospitals – Guy's and St Thomas' (GSTT), King's College Hospital (KCH) and South London and Maudsley (SLaM).

Three hubs of excellence

The partnership is organised around three 'hubs', where academic expertise, clinical activity and industry are co-located to create vibrant clusters of knowledge, capability and innovation, all with the view of driving benefits for patients, globally.

The Biomedical Hub: Guy's Campus

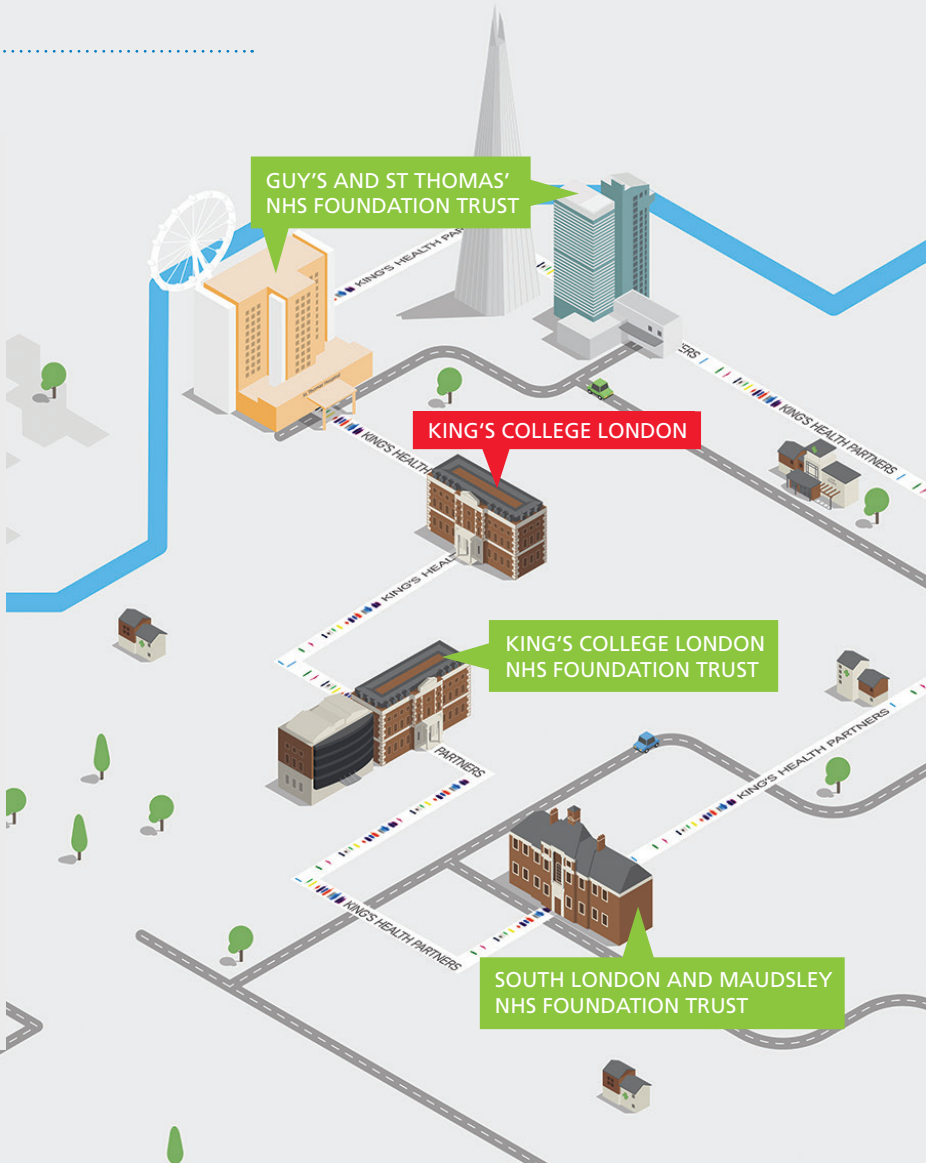
This Hub hosts rich innovation in advanced therapies and experimental medicine, spanning fundamental biological processes through to early-phase clinical trials, in diverse areas such as cancer and oral disease.

The MedTech Hub: St Thomas' Campus

Our MedTech Hub hosts strengths in medical imaging, biomedical engineering, and AI applied to healthcare data, alongside basic and applied research in cardiovascular disease, surgery, women's and children's health.

The Neuroscience & Mental Health Hub: Denmark Hill Campus

A world-leading centre for mental health research with expertise in neuroscience and psychology. The site also houses Europe's only dedicated palliative care research centre.

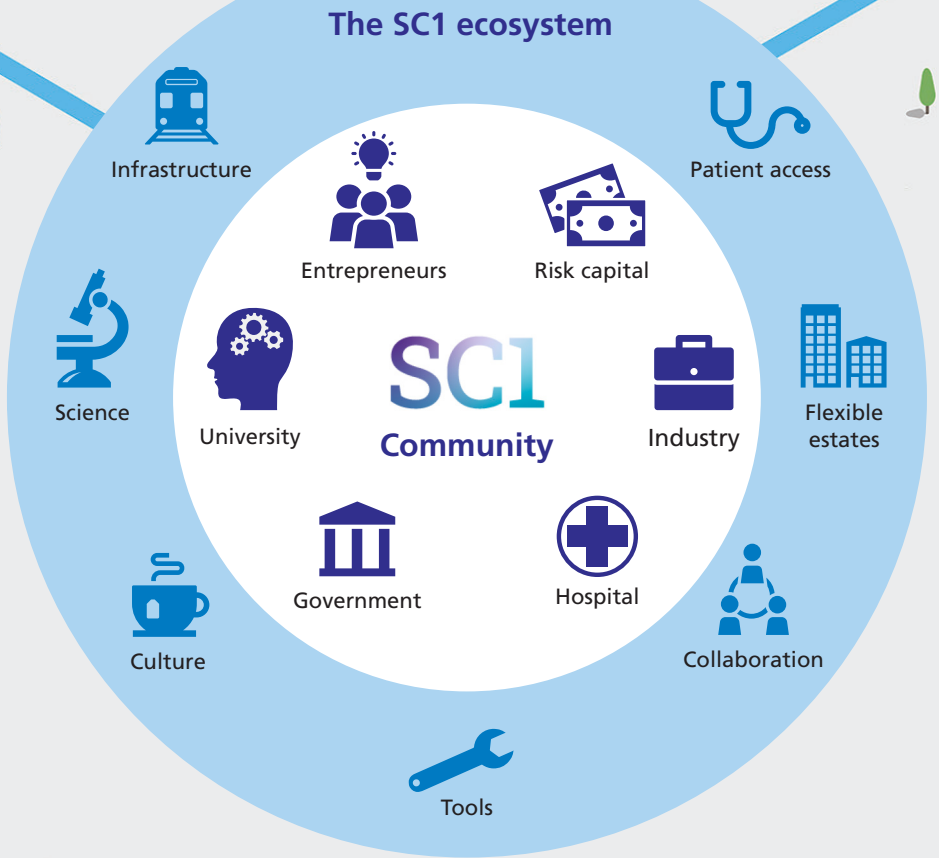


Our new Innovation District – a thriving life sciences hub

Our latest collaborative vision is to partner with investors and build outwards from our three hubs to create a life sciences Innovation District – 'SC1'. This will be a place dedicated to scientific and medical innovation and improving health and wealth locally and globally.

This growth will attract larger scale investment and allow us to offer shared scientific facilities and training at lower cost. It will ensure we can develop a pool of technological and commercial expertise that can move across companies and will also contribute to urban regeneration.

Crucially, our hospital partners are fully committed to this development. Their involvement is key. They are home to some of the most important discoveries, are partners in clinical trials and crucial in the evaluation and early adoption of successes.



Our highlights

We have pioneered world-class research to benefit our diverse communities, locally and globally. We have become a powerhouse of research that attracts globally renowned talent, celebrates a culture of innovation and powerfully demonstrates the added value of collaboration, partnership and commercialisation.

Advanced therapies

Our capabilities include:

- **Basic biomedical and technological research** – e.g., a major Centre for Stem Cells and Regenerative Medicine; research for faster RNA vaccine and therapy development (funded by global science foundation the Wellcome Trust).
- **Connecting academic and commercial R&D** through our London Advanced Therapies Network (which brings together the London scientific community working in cell and gene-based therapies).
- **Research and analysis platforms** – including stem cells, tumour models, genomics and immune profiling.
- **Clinical evaluation** – including clinical trials through our Experimental Cancer Medicine Centre.

The UK Dementia Research Institute Centre

This centre at King's shows how our environment supports bench-to-bench bedside research. The centre's core research is on basic biology in motor neurone disease, Frontotemporal Dementia (FTD) and Alzheimer's disease. Its work has already led to new treatment targets, new advanced therapies, clinical trials and a spin-out – AviadoBio (seed funded with $97m) funding and investment for gene therapies in ALS and FTD.

Precision medicine

Developing the first autism biomarker

Working with Roche, we led an EU Innovative Medicines Initiative in autism, discovering new markers to help match patients with the treatments most likely to work for them – which was described by the EU as the 'most impactful Innovative Medicines Initiative' and was awarded the world's largest autism grant for personalised treatment trials (€113m). Our biomarker became the first autism biomarker accepted by the US Food and Drug Administration (2019) and the European Medicines Agency (2020).

Personalised cancer care

King's and GlaxoSmithKline (GSK) have formed a new partnership – The Translational Oncology Research Hub. This partnership will help create a personalised care strategy for a range of cancer patients, monitoring for dynamic disease markers to predict treatment resistance or recurrence and enabling doctors to make more informed decisions about care.

Genetics and future health risks

We are involved in coordinating national collaborative programs in research in polygenic risk scores, which determine how a person's risk compares to others with a different genetic makeup. This includes contributing to 'Our Future Health'; the UK's largest ever health research programme.

Medical imaging and engineering

Our Department of Surgical & Interventional Engineering is co-located in a major hospital to encourage the collaborative development of new technologies. It incorporates a mock operating theatre to develop new surgical technology, and the only UK 'clean room' for medical device manufacture.

We have actively created and developed strategic industry partnerships, including a new theme of low-field MRI in our collaboration with Siemens Healthineers that could bring scanning technology closer to patients in their local areas.

One of our most impactful successes included our biomedical imaging researchers developing a safe and efficient MRI alternative for imaging the coronary arteries non-invasively (no radiation, no needles), involving a reduced scan time with an almost zero percent failure rate.

We are constructing the London Institute for Healthcare Engineering to specifically harness ingenuity and collaboration between industry, university and the NHS.

In cancer management, King's researchers engineered a simple and quick-to-produce kit called Galliprost, which accelerates and improves the synthesis of prostate cancer 'radiotracers' needed to carry out PET imaging – a vital tool.

Health data

The London Medical Imaging & AI Centre for Value Based Healthcare has a mission to create a research environment that facilitates the accelerated adoption of AI in imaging and spearheads innovations in AI-driven healthcare that will drive both health improvements and cost savings.

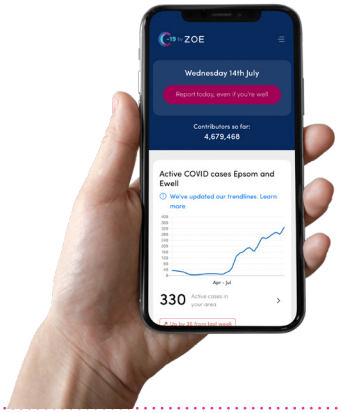
AI CENTRE for Value Based Healthcare

We do this through:

- working with four other universities and 11 NHS Trusts.
- supporting both business and non-profit research.
- using anonymous pooled data and machine learning to guarantee privacy.
- developing multi-site experimental deployment and evaluation capabilities.

Current business partners

AINostics, Biotronics 3D, BrainMiner, CydarMedical, GE Healthcare, GSK, IBM, innersight, IXICO, Mirada, Kheiron, NetApp, NVIDIA, Perspectum, Siemens Healthineers, Thames Mammography.



With over 4 million global contributors, our Covid-19 Symptom Study app collects transmission and symptom data for health researchers, governments and the public.

The ZOE COVID Study is a collaboration between King's and a King's health data start-up, ZOE Ltd.

40 More than 40 **scientific discoveries** were generated by the study.

35 The study **linked 35 symptoms with COVID-19**, including anosmia which was subsequently added to the UK Government's testable symptom list.

Thank you

If you would like to find out more or discuss anything with us in any more detail, we would be delighted to hear from you:

Professor Richard Trembath – Senior Vice President (Health & Life Sciences) and Executive Director of King's Health Partners – richard.trembath@kcl.ac.uk

Dr Tom Foulkes – Director of Research Strategy and Development – thomas.foulkes@kcl.ac.uk

Jill Lockett – Managing Director of King's Health Partners – jill.lockett@kcl.ac.uk

Find out more about us at: kcl.ac.uk and kingshealthpartners.org

King's College London

NHS
Guy's and St Thomas'
NHS Foundation Trust

NHS
King's College Hospital
NHS Foundation Trust

NHS
South London and Maudsley
NHS Foundation Trust