Press release: New investment in European Bioinformatics Institute to tackle life threatening diseases

- Life scientists around the world to access more genomics and molecular biology data that will improve diagnosis of disease and inform new life-saving treatments
- new funding to EMBL's European Bioinformatics Institute in Cambridge will analyse large and complex data sets and turn into digestible knowledge for scientists
- investment illustrates the government's Industrial Strategy in action to ensure the UK remains globally competitive in the life sciences, with UK science and innovation supported by the largest increase in public research and development investment on record

Drug discovery, research into cancer genetics, regenerative medicine and crop disease prevention will be strengthened following £45 million government investment to extend the largest biological open data facility hosted in the UK.

Life scientists around the world use EMBL European Bioinformatics Institute's (EMBL-EBI) infrastructure in Cambridge to store, share, access and analyse data to drive cutting-edge research in genomics and molecular biology. This £45 million investment from government will increase the centre's computing, storage and building capacity as it works to improve the world's understanding of genetics and molecular biology.

Through collaborations, the Institute is integral to fighting human diseases, and has supported initiatives including:

- the Human Cell Atlas which is the world's first data platform that maps every single cell in the human body. By doing so, it allows scientists to identify which genes associated with disease are active in our bodies and where
- UK Biobank which is a collection of health data from over 500,000 volunteers in the country, set to offer new insights to disease prevention and treatment

Making the announcement, Science Minister Chris Skidmore said:

> People around the world are affected by food security, diseases that could be prevented and access to effective medication. Through the vital datasets made available by EMBL-EBI many of these issues can – and are – being prevented.
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> That is why the government has invested £45 million to boost the work being undertaken at the Institute, and why boosting the UK's

> genomics sector is a key commitment in our Life Sciences Sector Deal, to avoid premature deaths and to ensure food security for years to come.

The new funding is delivered through UK Research and Innovation's (UKRI) Strategic Priorities Fund which supports high quality research and development priorities. UK science and innovation is supported by the largest increase in public research and development investment on record by committing to raising R&D funding to 2.4% of GDP by 2027.

UKRI Chief Executive, Professor Sir Mark Walport, said:

> Our ability to process, access and interrogate large volumes of data is absolutely crucial to scientific discovery in the 21st Century, none more so than in health and life sciences where the fields of genomics and molecular biology are fuelling major advances.
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> This funding enables EMBL-EBI to continue to grow its global leadership in large biological datasets and bioinformatics, which are used by researchers all over the world, every day of the week.

This investment will expand EMBL-EBI's technical IT and building infrastructure which will support the growing demand for scientists to access biological data sets more quickly and simply than has previously been the case. It will also support the emerging use of machine learning across the life sciences, which requires quality-controlled datasets that EMBL-EBI.

Dr Ewan Birney, Director of EMBL-EBI, said:

> EMBL-EBI websites receive over 38 million requests for data or analysis every day. The demand for our data resources has risen dramatically in the last decade and we expect this trend to continue, so we need to be ready for when it happens. Building a robust and accessible data infrastructure is crucial for the life science discoveries of the next decades.

Bioinformatics – the science of analysing, storing and sharing large biological datasets – is essential to discovering how genes affect the health of humans, plants and animals.

The UK is a founding member of EMBL, a not-for-profit intergovernmental organisation established in 1974 and now funded by 26 member states, including much of Europe and Israel, and two associate members, Argentina and Australia. EMBL-EBI is one of the 6 sites of EMBL.

EMBL-EBI, based on the Wellcome Genome Campus in Cambridgeshire, is a global leader in bioinformatics. Researchers today depend on access to large data

sets of many different types, spanning genes, proteins and the behaviour of small molecules. Bioinformatics makes it possible to collect, store and add value to these data so that life science researchers can retrieve and analyse them efficiently. EMBL-EBI is one of very few places in the world that has the capacity and expertise to fulfil this important task. They develop databases, tools and software that make it possible to align, verify and visualise the diverse data produced in publicly funded research, and make that information freely available to all.

EMBL-EBI supports large-scale science programmes, for example:

- UK Biobank's genomic and health data collected from 500,000 volunteers
- the Human Cell Atlas, a global endeavour to map every single cell type in the human body
- the Earth BioGenome, which aims to characterise the genomes of all of Earth's eukaryotic biodiversity

In the last 5 years, approximately 20 petabytes of new biological data has been deposited to EMBL-EBI resources. This is equivalent to the capacity of 20,000 laptops with one terabyte of storage each. This data growth is likely to intensify due to the diverse use of genomic data in biotechnology, medicine and agriculture.

But the amount of data produced is doubling twice as quickly as computer storage and processing power, and this rate is increasing. This is partly due to the rise of new technologies, such as single-cell sequencing, and cryo-electron microscopy.

The Strategic Priorities Fund is being delivered by UKRI to drive an increase in high quality multi- and interdisciplinary research and innovation; ensure that UKRI's investment links up effectively with government research priorities and opportunities; and ensure the system responds to strategic priorities and opportunities.