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The golden triangle

- Consists of Cambridge, London and Oxford within the greater south east of England
- Strongest biosciences cluster in Europe
- Close proximity to strong academic base and a world-leading financial centre
- The region is often seen as the gateway to Europe by large businesses



Developing new talent

- > 185,000 life sciences students and 55,000 graduates (2015/16 - GSE)

Students at London universities studying subjects aligned to life sciences (HESA categorise this as “subjects aligned to medicine”) in 2015/16

- Students: 96,352
- Graduates: 29,003
- Postgraduate research students: 9,692
- Postgraduate taught students: 21,251

Whichever way you look at it, built on academic excellence

4 universities in the top fifteen global ranking for life sciences & medicine (in the greater south east of England)

3 London Universities in the top twenty for life sciences & medicine

- - University of Cambridge is ranked number two
- - University of Oxford is ranked number three
- - University College London is ranked number eleven
- - Imperial College London is ranked number twelve
- - King's College London is ranked number eighteen
- - Queen Mary University of London is ranked number ninety-six **QS World University**

Times Higher Education World ranking – 2 London HEIs in top 15 for biological sciences; **US News** ranking: 2 in top 20 for Neuroscience and behaviour; 3 GSE HEIs in top 20 for genetics; **Centre for World University** rankings: 3 GSE HEIs in top 10 for genetics; 2 London HEIs in the top 10 for immunology

Areas of strength

- Rare diseases - Zayed Centre for research into rare diseases in children
- Oncology - cancer proton beam therapy at UCLH
- Immunology
- Advanced therapies (cell, gene, regenerative medicine) > 80% of all UK gene therapy phase 1/2 trials emanate from London
- Specialist paediatrics
- Biomedical engineering/bio materials and dentistry
- Digital health
- Neuroscience and neurodegeneration
- Mental Health

A developing landscape

- Centre for Population Genomic Medicine/East London Genes and Health
- £250m dementia research institute
- Imperial White City
- London Cancer Hub
- Whitechapel
- British library lands project

UK genomics industry

- Value - nearly **£1 billion**
- Expected rate of growth – **20%** (compared to the global rate of 12-15%)
- Employees – over **10,000**
- **40%** of UK genomics companies are in Cambridge, London and Oxford

Investment into Genomics

- Over **£370 million** of investment into genomics companies in the greater south east of England (2013-2017)
- (GSE) **87%** of the total genomic investment into the UK
- Genomics companies focused on sequencing generated revenues of over **£500 million** (2016)

Research Projects in Genomics

- The 100,000 Genomes Project:

- launched by the UK government in 2012 and received over £200 million in investment
- the largest national sequencing project of its kind in the world
- aimed at transforming the way people are cared for
- focused on rare diseases and cancer

- East London Genes & Health:

- long-term study of 100,000 people of Bangladeshi and Pakistani origin
- these ethnic minority groups have five times the rates of diabetes than the rest of the UK
- aimed at understanding more about the nature of disease and improving the health of the community

Key Companies in the Region

- The greater south east of England is home to hundreds of genomics companies, including:
- **Oxford Nanopore Technologies:** University of Oxford spinout developed the world's first and only nanopore DNA sequencer
- **DNA Electronics:** Imperial College London spinout developed breakthrough DNA analysis technology that brings patients the benefits of fast and insightful diagnostics.
- **Congenica:** Wellcome Trust Sanger Institute spinout developed a genome analysis tool that provides molecular diagnoses of genetic diseases, thus enabling physicians to better tailor treatments



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