



LEEDS CITY REGION

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DIAGNOSTICS AND PERSONALISED MEDICINE

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THINK HERE

AN ECONOMIC POWERHOUSE WITH GLOBAL REACH,
LEEDS CITY REGION BRINGS TOGETHER ENERGY, AMBITION AND A
WEALTH OF TALENT TO FUEL A GROWING ECONOMY.

SET AGAINST THIS BACKDROP IS A UNIQUE AND INFLUENTIAL HEALTHCARE
ECOSYSTEM THAT MAKES OUR REGION UNLIKE ANY OTHER, PROVIDING AN
UNEQUALLED OPPORTUNITY FOR INVESTMENT AND GROWTH.

**THINK HEALTHCARE AND LIFE SCIENCES
THINK LEEDS CITY REGION**

LEEDS CITY REGION IS SHAPING THE FUTURE OF HEALTHCARE

LIFE SCIENCE CENTRES OF EXCELLENCE

Leeds City Region is home to six world-leading life sciences clusters of academic excellence and commercial innovation.



DIAGNOSTICS AND PERSONALISED MEDICINE

- Leeds Centre for Personalised Medicine and Health
- NIHR Diagnostic Evidence Cooperative (DEC)
- Leeds Academic Healthcare Partnership spans Primary, Secondary and Social Care Systems
- Centre for one of the UK's Precision Medicine Catapults



WOUND CARE AND REGENERATIVE MEDICINE

- Institute for Skin Integrity and Infection Prevention
- WoundTEC Health Technology Cooperative
- NIRI: technical textile design of many of world's wound dressings



HEALTH INFORMATICS AND DIGITAL HEALTH

- Leeds Institute for Data Analytics at the University of Leeds
- Home to NHS Digital, IT & Information leader for NHS
- Home to the Open Data Institute (ODI)
- Over 2,000 informaticians based in the Region



PATIENT SYSTEMS AND TELECARE

- Home to emisHealth and TPP
- Suppliers of patient record systems to more than 85% of GP's in UK
- Tunstall Healthcare telecare products bridge the gap between health and social care systems



MEDICAL DEVICES

- Home to Charnley, inventor of Hip Replacement System
- Base of the world research centre of DePuy, Johnson & Johnson
- Over 200 medical device companies based in Leeds
- Home to Steeper, Inventor of first robotic hand
- Home to the UK's only heart valve manufacturer, JenaValve Technology



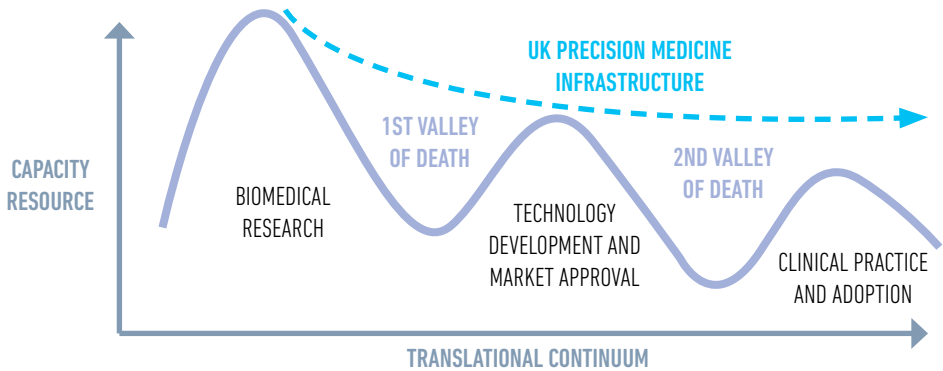
PHARMACEUTICALS

- Home to Covance UK, Teva, Thornton & Ross and Dr. Reddy's Laboratories

PERSONALISED MEDICINE DISCOVERY AND TREATMENT CAPABILITY

Personalised medicine – getting the right treatment, to the right patient at the right time - is one of the major drivers of how medicine will be practised in the future. Better understanding of the causes of disease has shown common illnesses such as lung cancer are in fact a collection of sub-types of cancer, all with different molecular characteristics.

The UK's research and clinical expertise, combined with Government investment of around £1 billion in precision medicine research infrastructure over the previous decade, has placed the country in a leading international position to traverse the traditional "valleys of death" and accelerate translation of new technologies into clinical practice.



Source: National Institute for Health Research (NIHR).

LEEDS TEACHING HOSPITAL TRUST

- **15,000** Staff
- **£1 billion** annual budget
- **Level 1 trauma centre** for West and North Yorkshire
- **1,500,000** people treated every year
- **2,000** beds
- **120** wards and departments
- **12,000+** patients involved in cutting edge clinical trials

The Leeds Teaching Hospital Trust (LTHT) serves over 1.5 million patients each year. The Trust's strength in the clinical provision of cancer, cardiovascular and musculoskeletal disease are mirrored by their partner university's, the University of Leeds' research strengths.

PERSONALISED MEDICINE FOCUS

Personalised medicine uses diagnostic tests and data-based insights to understand a patient's disease more precisely and to select treatments with more predictable, safer, cost-effective outcomes for each patient.. The UK's research and clinical expertise, combined with the Government's major investment in research infrastructure, has strengthened out position as a world leader.

LEEDS CENTRE FOR PERSONALISED MEDICINE AND HEALTH ('LCPMH')

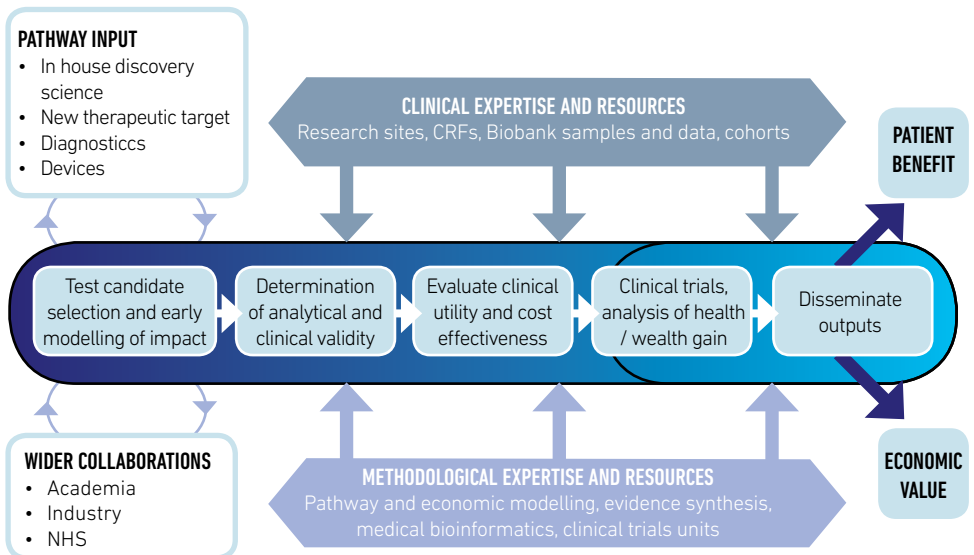
A collaboration between Leeds' universities, NHS trusts, commissioning groups and council which will enable the city's population and beyond to benefit from the latest innovations in personalised medicine and health, by accelerating research, evaluation and implementation of new treatments and technologies.

We see Personalised Medicine and Health as a process by which the decisions made about health and care by patients and the public, supported by clinicians, are enriched and improved by the availability of the best possible information, technology and evidence.

Personalised Medicine aims to:

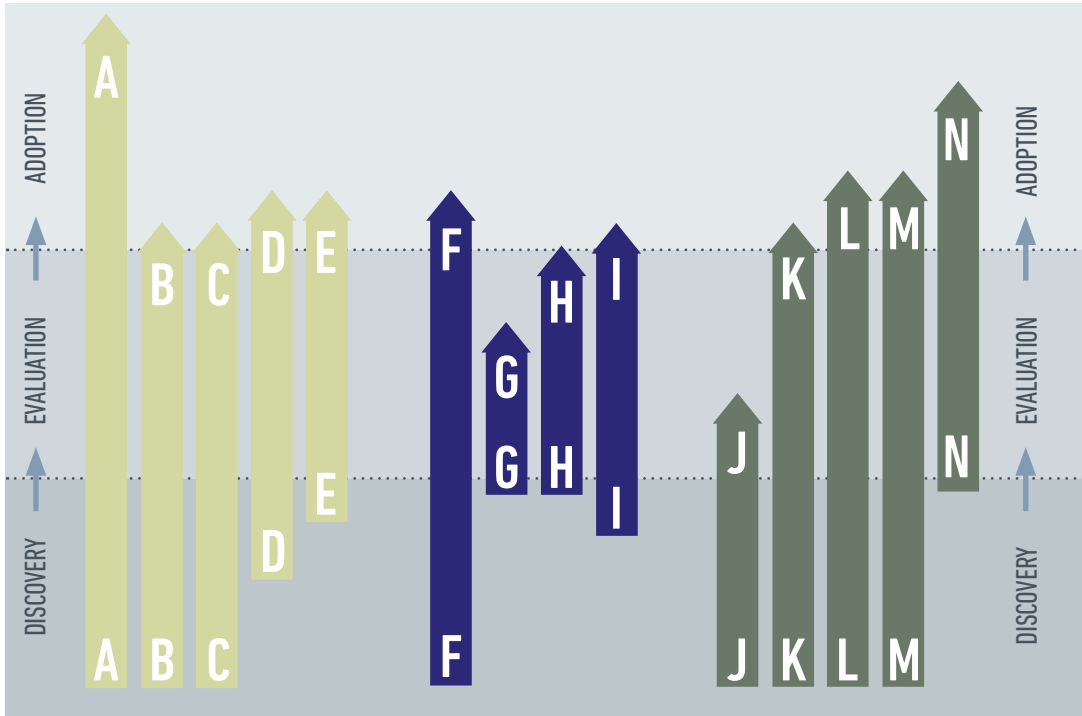
- Make more timely decisions that will allow:
 - Early and accurate diagnosis of conditions
 - Better informed prognosis of conditions
 - More accurate prediction of responses to treatment
 - More sophisticated monitoring of how diseases progress
- Encourage greater participation by populations in their health and well-being

THE LEEDS PERSONALISED MEDICINE LABORATORY – THE PUSH-PULL FOR RAPID INNOVATION



Source: The University of Leeds.

THE A-Z OF LEEDS CITY REGION PERSONALISED MEDICINE PARTNER ORGANISATIONS



RESEARCH CENTRES

- A** **MRC* MEDICAL BIOINFORMATICS INFORMATICS CENTRE**
Develops new insights into the factors that drive disease
- B** **MRC SINGLE CELL GENOMICS CENTRE**
Applies high-throughput approaches to individual cells
- C** **MRC HYPER-POLARISED MRI CENTRE**
Transforming diagnostics and treatment of patients suffering from cancer, heart disease and musculoskeletal disease.
- D** **WELMEC**
A Wellcome Trust and EPSRC funded Centre of Excellence in Medical Engineering, researches and develops new types of intervention for musculoskeletal and cardiovascular systems
- E** **EPSRC INNOVATION AND KNOWLEDGE CENTRE**
Accelerates the development of regenerative therapies and devices

*MEDICAL RESEARCH COUNCIL

CHARITABLE

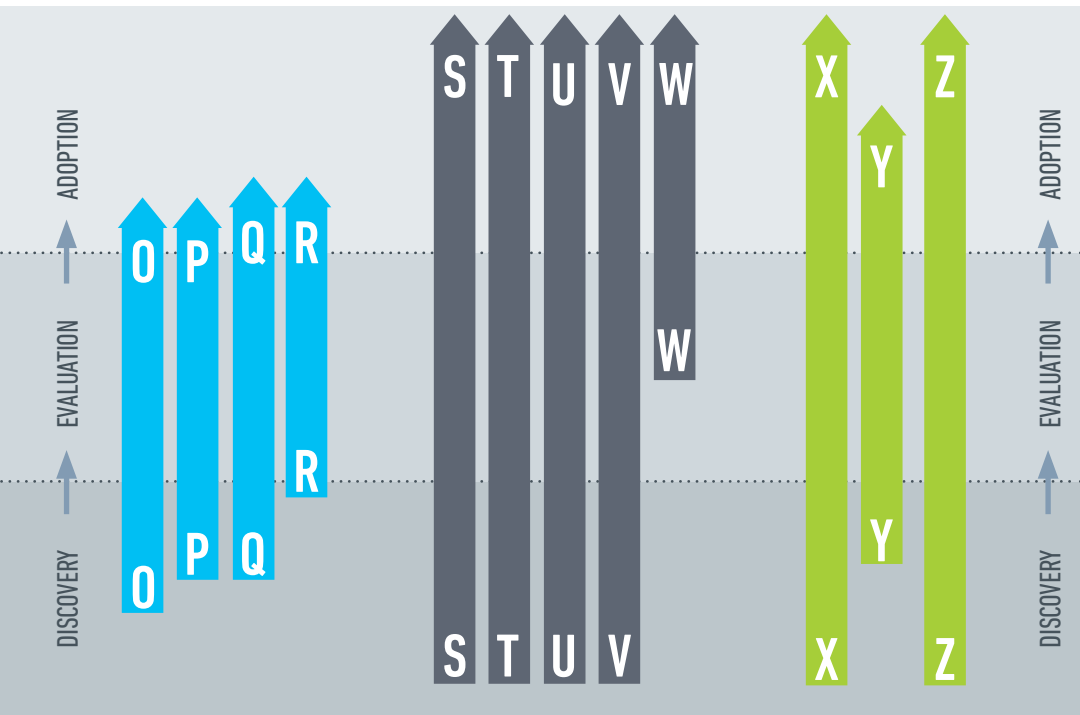
- F** **CANCER RESEARCH UK CENTRE LEEDS**
Delivering improvements in cancer care at the local, national and international level with specialties in melanoma, colorectal, haemato-oncology and neuro-oncology
- G** **YCR* CENTRE FOR EARLY PHASE CLINICAL TRIALS**
Accelerates the transition of novel therapies through early phase trials
- H** **MYELOMA UK TEST BED**
Implements clinically relevant patient-centric clinical trials
- I** **EXPERIMENTAL CANCER MEDICINE CENTRE**
Infrastructure to support early stage clinical trials of new anti-cancer treatments

*YORKSHIRE CANCER CENTRE

UNIVERSITY OF LEEDS

- J** **ASTBURY CENTRE FOR STRUCTURAL BIOLOGY**
Expertise and infrastructure in chemical biology, structural biology and biophysics to understand molecular interactions in detail
- K** **MULTIDISCIPLINARY CARDIOVASCULAR RESEARCH CENTRE**
Basic and traditional researchers delivering significant discoveries and innovations and developing them to improve the lives of patients
- L** **INSTITUTE OF MEDICAL AND BIOLOGICAL ENGINEERING**
"50 active years after 50" - improving quality of life for the elderly
- M** **LEEDS MULTI-DISCIPLINARY RESEARCH TISSUE BANK**
Licensed ethical storage of multiple types of diseased tissue samples
- N** **LEEDS CLINICAL TRIALS RESEARCH UNIT**
Innovative design, delivery and knowledge transfer in clinical trails

THE A-Z OF LEEDS CITY REGION PERSONALISED MEDICINE PARTNER ORGANISATIONS



NIHR*

- O** **NIHR LEEDS MUSCULOSKELETAL BIOMEDICAL RESEARCH UNIT**
Enables translational research in musculoskeletal disease areas
- P** **NIHR CLINICAL RESEARCH FACILITY**
Provides high quality early stage and experimental clinical trials
- Q** **NIHR COLORECTAL THERAPIES HEALTH TECHNOLOGY COOPERATIVE**
Develops novel solutions to therapies in colorectal disease
- R** **NIHR DIAGNOSTIC EVIDENCE COOPERATIVE**
Generates high quality evidence on in-vitro medical devices

*NATIONAL INSTITUTE FOR HEALTH RESEARCH

NHS*

- S** **LEEDS INTEGRATED CARE RECORD**
A seamless combined primary, secondary and social care record system for patients
- T** **HEALTH & SOCIAL CARE INFORMATION CENTRE**
UK national centre for information, data and IT systems for the NHS
- U** **LEEDS TEACHING HOSPITAL TRUST**
One of the largest NHS hospitals in Europe with 15,000 staff
- V** **YORKSHIRE AND HUMBER ACADEMIC HEALTH SCIENCE NETWORK**
Adopting excellence and creating opportunity for healthcare
- W** **NIHR CLAHRC YORKSHIRE AND HUMBER**
Improving patient outcomes through applied research and evidential care

*NATIONAL HEALTH SERVICE

COMMERCIAL

- X** **RESEARCHONE**
At 28 million records one of the largest healthcare research databases
- Y** **PRECISION MEDICINE CATAPULT CENTRE OF EXCELLENCE IN LEEDS**
A world-leading centre for precision medicine research & delivery
- Z** **LEEDS CENTRE FOR PERSONALISED MEDICINE AND HEALTH**
Enables the population of Leeds to benefit from information through accelerated regional evaluation and implementation

LEEDS CENTRE FOR PERSONALISED MEDICINE AND HEALTH (LCPMH)



KEY CURRENT PROJECTS INCLUDE:

IDENTIFYING THE 'PINCH POINTS' IN CARE PATHWAYS FOR KEY DISEASES

LCPMH is working with health commissioners to model the care pathways for key diseases, to see where patient outcomes could be improved or costs reduced.

By identifying 'pinch points' within care pathways, LCPMH will work with clinicians and academics to develop personalised medicine and health interventions. The implementation of new interventions can be simulated within the models to identify patient benefits and potential savings, and to inform how and where they are trialled. The models for each disease can be regularly revised with new data, to enable new areas for interventions to be identified for further improvements as the care pathways develop.

REDUCING OVERTREATMENT FOR PROSTATE CANCER

LCPMH is helping to progress the adoption within the NHS of a tool to accurately identify low and high risk prostate cancer patients, to reduce overtreatment of the disease.

Prostate cancer is the most common cancer in men in the UK, and in around two-thirds of patients, the cancer is slow-growing and low risk.

Current tests do not accurately differentiate between these patients, and many men are operated on unnecessarily, with potential side effects including impotency and incontinence.

The Prolaris test, developed by US company, Myriad Genetics Laboratories Inc, can provide a measure of how aggressively a prostate cancer tumour is growing, enabling patients and clinicians to together make an informed decision about the most suitable treatment for them.

PERSONALISED MEDICINE INDUSTRY

LEEDS CITY REGION PERSONALISED MEDICINE COMPANIES INCLUDE:

ABINGDON HEALTH

Focused on providing rapid and near-patient medical diagnostic testing solutions, Abingdon Health develop, manufacture and sell products and systems that support the migration of testing from the laboratory closer to the patient with the intention of improving both clinical and economic healthcare outcomes, particularly for haematology and oncology.

APTAMER GROUP

Focused on the development of nucleic acid aptamers for use in research and development, biomarker discovery, diagnostics or therapeutic developments.

AVACTA

Avacta are dedicated to providing high quality, powerful, unique tools to enable them to work faster and smarter in accelerating understanding of biology and disease, and to help apply these advances to diagnosis and treatment. Avacta pioneered "Affimer" technology, a revolutionary alternative to antibodies.

BADRILLA

An established life science company providing high quality products for the molecular cardiovascular researcher located within major pharmaceutical, biotech, and academic establishments worldwide.

CELL ANALYTICS

Digital image analysis services to automate biological research. Cell Analytics develop tools in close collaboration with our clients to provide customized algorithms to facilitate biological studies.

COVANCE

At their UK base in Harrogate Covance specialise in Companion Diagnostics and in vitro services using biomarker expertise to target personalised therapies. They employ nearly 1,800 staff in this region.

EMIS HEALTH

Provides clinical management systems and health analytic tools to GPs in primary care and hospitals to integrate care amongst the health sector through Ascribe, Indigo 4 and RX System products.

TPP

TPP manages 44 million patient records for over 6,000 NHS organisations including 2,600 GP practices. Their main EHR patient system is known as SystmOne.

X-LABS

Provides customised web-based healthcare applications.



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THERE WERE MANY REASONS FOR INCLUDING LEEDS CITY REGION IN OUR GLOBAL R&D NETWORK. THESE INCLUDE THE HISTORICAL ASSOCIATION OF INNOVATION IN MEDICAL TECHNOLOGY AND LINKS WITH THE REGION'S UNIVERSITIES AND THE AVAILABILITY OF SKILLS.

*Mike Barker, Global Vice-President of R&D at DePuy Synthes,
Johnson and Johnson Group*

LEEDS CITY REGION STRENGTHS: HEALTHCARE - THE OPPORTUNITY

TAP INTO WORLD-LEADING RESEARCH FROM LEEDS CITY REGION'S UNIVERSITIES ACCELERATING R&D ACROSS THE WOUND CARE AND REGENERATIVE MEDICINE SECTORS.

THINK SCALE



Largest UK city region economy outside London and the South East



196,000 health and life sciences jobs



Largest concentration of medical device companies in the UK with a cluster of over 160 different businesses



4 out of 5 NHS headquarters, **13** clinical commissioning groups and **12** NHS trusts located in Leeds City Region

THINK SKILLED



38,900 graduates annually from 9 universities

ANNUAL STEM GRADUATES

LEEDS CITY REGION

15,100

GREATER MANCHESTER

14,300

GREATER BIRMINGHAM AND SOLIHULL

10,200

SHEFFIELD CITY REGION

10,000

HESA Students in Higher Education 2014/15

THINK INNOVATION



138 Centres of Excellence in healthcare across Leeds City Region



36% of Leeds City Region combined university research is world-leading and a further **10%** world-class



Diverse collaborative health ecosystem supports **'living lab'** concept

HOW CAN WE HELP?



Invest Leeds City Region offers a comprehensive service to investors from the initial point of enquiry right through to soft-landing and aftercare. We can help you identify, secure and fund the perfect solution for your business to grow.

Our services include:

- Property search, match, advice and negotiation
- Support with access to finance and grants
- Soft-landing packages and facilities
- Support with recruitment of core and specialist staff
- Aftercare and ongoing business support
- Provide detailed intelligence and data
- Orientation visits for relocating staff

GET IN TOUCH TO START ENJOYING THE BENEFITS OF LEEDS CITY REGION

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