



**NATIONAL
HORIZONS
CENTRE**



**Teesside
University**

**Discover.
Develop.
Deliver.**



**A UK CENTRE OF EXCELLENCE
FOR THE BIOSCIENCE INDUSTRY**



No one should be priced out of life.

I work at the National Horizons Centre to lower the cost of manufacturing medicines and bring them to you faster, safer and cheaper.

Dr Safwan Akram

Principal lecturer in enterprise and business engagement

#MyHorizon

#DrSafwanAkram

tees.ac.uk/nhc



WELCOME

Since opening its doors in 2019, Teesside University's National Horizons Centre (NHC) has quickly established itself as a vital linchpin helping drive forward the life sciences sector in the Tees Valley and beyond.

Aiming to address skills shortages locally we have created the Life Science Manufacturing Academy. Funded by the Tees Valley Combined Authority, and in partnerships with CPI and local colleges, the Academy encourages school leavers into the bioindustry. While the selection of the NHC as a National Training Centre for the Advanced Therapies Skills Training Network (ATSTN), further cements the NHC's growing reputation as a leader in training the bioindustry.

Our research continues to advance biosciences and healthcare to save lives and create more affordable treatments. Recent work into helping diagnose early stages of cancers has won the Association of Medical Sciences Springboard prize. While our collaborative research with CPI and University College London, and funded by the EPSRC Vax-Hub initiative, is working to improve the efficiency and quality of adenovirus-based vaccine products – an important component in COVID-19 vaccine research.

We're working to develop partnerships locally, nationally and internationally. Key developments include the Northern Bio-Accelerator Partnership with CPI and FUJIFILM Diosynth Biotechnologies, partnerships with an alliance of local NHS trusts, and with Discovery Park in Kent, and a Memorandum of Understanding with Shonan Health Innovation Park in Japan. These partnerships will create vibrant, collaborative ecosystems and bridge the gap between academic research and industry practice.

With the rush to develop and deliver a COVID-19 vaccine, the importance of the biomanufacturing and bioprocessing sectors has never been so apparent. As we go forward to build back better, the NHC will play a pivotal role in significantly growing the skills and capacity of the UK's bioscience industry by closing current and future skills gaps, pushing the boundaries of our research, and collaborating closely with industry to drive innovation. If you would like to work with us, please get in touch.



Professor Vikki Rand

DIRECTOR
NATIONAL HORIZONS CENTRE

ABOUT THE NATIONAL HORIZONS CENTRE

The NHC is Teesside University's £22m centre of excellence for the global biosciences and healthcare sector. With research, partnerships and training at our core, we bring together industry, academia, talent and world-class facilities to create real-world impact.

Together with our partners, we pride ourselves on discovering diseases earlier, developing novel treatments and delivering life-saving medicines quicker, safer and more affordably. With specialisms in disease-specific research, biomanufacturing and digital analytics and machine learning, we work in an agile way to advance biosciences and healthcare research.

We care about the future of the industry, which is why we train the workforce in cutting edge technologies, aligning closely with our partners to address the technical and digital skills needs of the sector.

With funding from the Tees Valley Combined Authority and the European Regional Development Fund, we are building on the region's rich heritage of research and development to accelerate innovation across the UK and internationally, boosting both the regional and national economy.

Located in Central Park in Darlington the NHC is at the heart of an ecosystem of life sciences excellence. Within easy access of national road and rail links the NHC has on-site car parking and is a five-minute walk from Darlington railway station and the East Coast Main Line.



WHY WORK WITH THE NATIONAL HORIZONS CENTRE?



Research excellence

A centre of excellence for multi-disciplinary biosciences research, we support the full research lifecycle, from early diagnosis of diseases to delivering treatments to patients faster. We are experts in biomanufacturing, disease-specific research and digital analytics and machine learning.



Together with business

Founded on the principle of industry partnerships, we work closely with business to accelerate innovation and productivity growth. We partner on collaborative research and the development of innovative services, products and processes.



Talent and skills

We are a leader in training for the bioindustry, with expertise in biopharma, advanced therapies and vaccine manufacturing. We create an industry-ready workforce by training the full pipeline of talent in cutting-edge technologies, from school leavers to upskilling the bioindustry. We also partner with businesses on both student placements and recruitment opportunities.



Biopharma

We work with partners including FUJIFILM Diosynth Biotechnologies and CPI, to position the North East as a centre of innovation, attracting investment, enhanced education and workforce development, and ultimately enabling more companies to bring life changing medicines to market faster.



Co-creation spaces

Our co-creation spaces have been designed to give SMEs room to collaborate, innovate and grow. Much more than business incubation, licensing one of our spaces gives businesses direct access to our specialist expertise and state-of-the-art facilities.



High-tech facilities all under one roof

We provide access to our state-of-the-art facilities, high-tech equipment and cutting-edge technologies for those working in the biosciences and healthcare sector. Our facilities are available to hire for use by trained individuals or can be used to train staff.

FIGHTING COVID-19



Image: Shutterstock



Vital vaccine training

The NHC is helping build the region's skills capacity to assist with the manufacture of COVID-19 vaccines.

As of June 2021, 60 million doses of the Novavax vaccine are being manufactured in Stockton-on-Tees by FUJIFILM Diosynth Biotechnologies (FDB). The NHC is playing a major role in developing the skills capacity within the region, and UK, to meet the demand of the future vaccines manufacturing workforce.

We have already developed a bespoke two-week training course for FDB staff looking at the latest developments in biologics and imparting the necessary skills to carry out process development and manufacturing of vaccines, advanced therapies and other life changing medicines.

Working with industry we are also exploring more ways where we can use our state-of-the-art facilities and expertise to further support other advanced therapies, vaccine and biomanufacturers, with skills development as we continue to fight against COVID-19.



Scale-up testing

Tens of thousands of pounds of specialist kit and equipment has been loaned to North Tees and Hartlepool Hospitals NHS Foundation Trust to help them scale up testing for COVID-19. This includes a specialist QIAcube Connect Platform from QIAGEN and RNeasy extraction kits which rapidly speed up the testing process.

The equipment is used to automate extraction of COVID-19 viral RNA from several clinical specimens, which is instrumental in helping to scale up the demand for COVID-19 testing.



Optimising vaccine manufacturing

Using the NHC's state-of-the-art bioanalytical laboratory, and funded by the EPSRC Vax-Hub initiative, we are using mass spectrometry techniques to profile, monitor and localise host cell protein (HCP) products in adeno-associated virus (AAV) manufacture.

With collaborative support from University College London and CPI, the goal is to significantly improve the efficiency and quality of adenovirus-based vaccine products. Adenovirus-based vaccines have shown great promise in clinical trials for a number of diseases, such as Ebola, and form an important component of modern disease fighting strategies including COVID-19 vaccine research.

RESEARCH

OUR RESEARCH PUSHES BOUNDARIES AND SAVES LIVES



We are a world class research community, working with the latest cutting-edge technologies and our industry partners to create real-world impact.

Disease-specific research

Our disease-specific research team uses cutting-edge technologies to understand the underlying biology of human diseases and pathogens. Our work spans basic, translational and public health research to investigate a range of diseases including cancer, Alzheimer's, Parkinson's and asthma.

With this, we aim to discover diseases earlier and develop novel therapeutic treatments to improve patient outcomes.

Biomanufacturing

Our biomanufacturing research encompasses all aspects of biotechnology and analytics, across areas including bioprocessing, biopharmaceuticals and biosensor development.

Here, we aim to develop novel treatments, and optimise existing ones, delivering treatments to patients faster, safer and more affordably.

Digital analytics and machine learning

Our digital analytics and machine learning research team has expertise in data analysis and interpretation, digital healthcare, artificial intelligence, 3D imaging and virtual reality.

By harnessing data analysis and modelling, we support the discovery, development and delivery of lifechanging medicines.



CASE STUDY

Durham Tees Valley Research Alliance

We've partnered with the NHS, through the Durham Tees Valley Research Alliance (DTVRA) - which brings together the research departments from County Durham and Darlington, North Tees and Hartlepool, and South Tees Hospitals NHS Foundation Trusts - to explore new ways in which we can harness our world-leading research expertise to deliver real impact in healthcare.

The partnership provides the opportunity for clinicians and other healthcare professionals to collaborate with academics and researchers on a wide range of healthcare issues. By working alongside our partners in the NHS, collaborating to develop solutions to their problems, we can deliver a seamless transition between discovery to manufacturer and to the end-user.

'This opportunity gives NHS staff in the three DTVRA trusts the ability to pursue a range of research opportunities and build on the growing portfolio of research delivered across the Tees Valley.'

Jane Greenaway, Associate Director, DTVRA



The Great North Children's Hospital

'The enthusiasm of the team at NHC, combined with their research capacity and high-level facilities has allowed our group to drive forward a programme of work aimed at developing our understanding of the causes and prognostic features of childhood lymphoma.'

'We are looking forward to continuing to develop the collaboration, making the most of the skills and facilities available across our two institutions to build a leading UK research group focused on childhood lymphoma research.'

Dr Simon Bomken, Consultant Paediatric Oncologist



PARTNERSHIPS

WE PUT BUSINESSES AT THE FOREFRONT OF INNOVATION

Partnerships sit at the heart of the NHC, ensuring everything we do has a real-world impact. We provide partnership opportunities across our core strengths of disease-specific research, biomanufacturing and digital analytics and machine learning, helping to advance the biosciences and healthcare sectors.

Collaborative research

We partner on collaborative research and development of innovative services, products and processes through routes including Knowledge Transfer Partnerships, UK Research and Innovation (UKRI) funded projects and PhDs.

For specific projects we also undertake contract research. We work with organisations to agree the aims, expected outcomes and timescales of the project, tailoring everything to meet your requirements.

Consultancy

We provide access to our industry-leading expertise on a consultancy basis, offering new perspectives on business challenges, technical advice, problem solving and a greater understanding of advances in biosciences research.

Co-creation spaces

Our co-creation spaces have been designed to give SMEs room to collaborate, innovate and grow. Much more than business incubation, licensing one of our spaces gives businesses direct access to our specialist expertise and state-of-the-art facilities.



CASE STUDY

Northern Bio-Accelerator Partnership (NBioP)

The NBioP is a strategic partnership between the NHC, CPI and FUJIFILM Diosynth Biotechnologies, joining together to accelerate the development of a globally significant biosciences hub in the North East of England.

The partnership has expertise in the full life cycle of biopharmaceuticals, from basic and

applied bioprocessing research, through to biopharmaceutical scale-up and ultimately, the commercial manufacture of life changing medicines.

The NHC will provide the academic and skills aspect, offering industry-specific scientific expertise, driving research and providing workforce training and development.

'The North East has a thriving biosciences sector that is globally competitive, vibrant, and viable. This collaboration will enable us to draw on the best of research, workforce development, innovation and manufacturing to enable companies to develop, improve, scale-up and manufacture new products that will improve the quality of life of people around the world.'

Frank Millar, CEO, CPI



'Collaboration is the key to the success for the UK bioindustry and we see opportunities to work in partnership with the NHC to support the economic and green recovery by providing a highly-skilled workforce to the UK's bioindustry.'

Mark Bustard,
CEO, IBIOC

'We were given a unique opportunity to locate our company at the NHC, through their co-creation spaces, to conduct research in biomedical science and to provide the translational applications for our projects. From the very beginning we have found the Centre's infrastructure and its modern facilities truly excellent, ranging from purpose-built life science laboratories to world-class analytical equipment and bioinformatics. The unique opportunity to be co-located with world class academics has led to several successful collaborative research projects.'

Ewa Markiewicz,
Head of Research in Molecular Dermatology, Hexis Labs

TRAINING

WE UPSKILL THE BIOINDUSTRY

We offer a range of courses for continuing professional development (CPD) in biosciences, informed by the latest research and delivered by academic experts in a world-class research environment. Our courses are delivered from our state-of-the-art facilities and combine theoretical knowledge and hands-on experience with cutting-edge technologies.



National Training Centre for Advanced Therapies

We are a National Training Centre for Advanced Therapies as part of the ATSTN nationwide skills development programme. Driven by industry and coordinated by the Cell and Gene Therapy Catapult, it is part of the Government's commitment to expand the UK's expertise in advanced therapies and vaccine manufacturing.

Our courses provide essential on-site training and hands-on expertise in advanced therapies and vaccine manufacturing. Developed in conjunction with industry, and with guest speakers from leading biomanufacturing organisations, we ensure participants learn about the most up-to-date advances in the sector.

'The involvement of the National Horizons Centre will enable the ATSTN to provide users with a wide variety of exciting training resources which are at the forefront of innovation. I look forward to witnessing the impact which the NHC will make as part of this valued collaboration over the years to come.'

Matthew Durdy,
Chief Executive Officer,
Cell and Gene Therapy Catapult.



Bespoke learning packages

From short courses that hit a specific skill requirement and minimise time away from the lab, to accredited in-house training that counts towards a nationally recognised qualification, we can tailor our bespoke learning packages to suit your needs.

'The NHC team collaborated with our subject matter experts to create a course with a blend of knowledge transfer and hands-on experiential learning at lab scale. The result is a two-week intensive Skills for Biologics Manufacturing course designed to develop new and existing staff, ensuring that they are all up-skilled to the same high standards required by our business. The key success factor, was working with the NHC to enable the upskilling of our staff far faster than could be achieved internally.'

Kevin Thrower, Learning & Development Manager, FUJIFILM Diosynth Biotechnologies UK

WE BROADEN HORIZONS TO DEVELOP THE TALENT OF TOMORROW

Committed to developing the next generation of scientists, we are creating a pipeline of industry relevant trained employees for our region's organisations, which will help cement the reputation of the North East as the leading destination for life science manufacturing in the UK.

We offer a diverse range of routes to a career in the bioindustries, through our Life Science Manufacturing Academy for school leavers, Teesside University apprenticeships, undergraduate and postgraduate courses as well as our continuing professional development courses.



The Life Sciences Manufacturing Academy

Life Sciences Manufacturing Academy

The Life Sciences Manufacturing Academy is a partnership between the NHC and CPI to promote life science manufacturing to school leavers as a potential career.

Students gain hands-on experience working with the state-of-the-art equipment alongside leading bio-scientists, gain work experience in industry and are assigned a mentor who they will meet with once a month for six months. This collaboration between educators and employers is designed to provide a pipeline of skilled young people to fill current and future skills gaps.

We are working with Darlington College to recruit school leavers, and FUJIFILM Diosynth Biotechnologies to provide the industry placement. The Life Sciences Manufacturing Academy will be expanding out to other colleges in the region and other industry partners, so if you would like to get involved please talk to us.



Success comes from perseverance.

I work at the National Horizons Centre researching the causes of Parkinson's disease. This knowledge can be taken forward into treatment and development of therapeutics.

Maria O'Hanlon

PhD researcher

#MyHorizon
#MariaOHanlon
#ABioBlog

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Talk to us

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