

Written evidence from Professor Gino Martini (ENB0002)

Introduction and reason for submitting evidence:

Precision Health Technologies Accelerator (PHTA) is a wholly-owned subsidiary of the University of Birmingham and is an anchor tenant at Birmingham Health Innovation Campus, which is being developed in collaboration between the University and Bruntwood Sci-Tech. PHTA will contribute to the nation's ambition to become an Innovation Nation and a Global Science Superpower. PHTA will provide innovators and small enterprises with access to the expertise, resources and infrastructure to enable translation of healthcare innovations – including phase I to III clinical trials and real-world evaluation. An example of one of the innovators PHTA houses is the Clinical Immunology Service, which provides a comprehensive range of accredited lab services to facilitate the diagnosis of autoimmune and neuro-immunological disease, blood cancers, primary and secondary immunodeficiency, infections and allergy.

Professor Gino Martini, CEO of PHTA, has submitted evidence with the intention of highlighting the essential infrastructure required to realise the engineering biology aspirations outlined by the government. Moreover, he aims to raise awareness about the challenges confronting infrastructure providers in this domain, thereby urging government bodies to acknowledge and address these hurdles within the UK's engineering biology landscape. With his extensive experience, including roles as Chief Scientist at the Royal Pharmaceutical Society and head of pharmaceutical development in emerging markets R&D at GSK, Professor Martini offers unparalleled insights into the field of engineering biology.

4. How can the UK maximise the economic potential of developments in engineering biology?

• Who is investing in engineering biology in the UK, and what is the scale of the investment activity right now? Where are the areas with significant economic and start-up activity?

○ Precision Health Technologies Accelerator (PHTA), led by Professor Gino Martini, is based at Birmingham Health Innovation Campus (BHIC) - which will be the only science park in the region dedicated to health and life sciences. PHTA is BHIC's 'anchor' tenant, bringing together a world-leading University and renowned NHS research and teaching hospitals of Birmingham Health Partners (BHP). In particular, PHTA's relationship with BHP opens huge opportunities to help deliver significant improvements for a wide range of communities often under-served across healthcare provision.

- More specifically PHTA provides much needed wet and dry laboratory space to the Golden Triangle, facilitating the groundbreaking work they engage in including engineering biology.
- The Midlands-Wales Advanced Therapy Treatment Centre which is jointly delivered by BHP founding members the University of Birmingham and University Hospitals Birmingham is situated at the heart of BHP's ecosystem and therefore closely connected to PHTA, enabling its residents and industry collaborators to access expertise in cell and gene therapy. This demonstrates the remit and connection PHTA has to engineering biology.
- The West Midlands is one of the most dynamic data-driven healthcare and med-tech economies in the UK, worth £10.3 billion and employing over 17,000 professionals. The region has a stable, non-transient, diverse population of 5 million people of whom over 1 million are children. BHIC and PHTA will add £400 million GVA to this region, accelerating Levelling-Up through creating ~10,000 jobs, attracting talent and boosting productivity.

• How should the Government best support engineering biology startups to scale-up in the UK? Are there specific facilities that it would be helpful to invest in? Are the financial support mechanisms for start-ups and scale-ups appropriate and sufficient, or could they be reformed?

- Without government support, there is a risk that the UK will simply become a research & development hub, with companies being acquired and translocated overseas. Government can best support start-ups to scale by de-risking technology investment and providing infrastructure investment in scale-up and pilot-scale facilities. There has to be a sharing of risks, as the government cannot ask the research sector to bear all the risks/costs.
- Precision Health Technologies Accelerator (PHTA) currently does not benefit from any business rates relief. Despite the location being named as a Life Science Opportunity Zone, PHTA is not inside the designated investment zone and all tenant firms must pay full business rates. PHTA is one of the handful of major incubator/science park locations in the UK that does not benefit from any form of rates relief. This fact disadvantages the PHTA hugely, impacting its ability to deliver high-quality science jobs and affects the viability of the accelerator.
- PHTA acts as both an innovation accelerator and ecosystem. We proudly provide early incubation, diagnostics, digital health and advanced healthcare technologies to accelerate the development and delivery of

new drugs, diagnostics and healthcare technologies into clinics. These state of the art facilities will act as a catalyst for not only designing the health technologies of the future but also allowing for easier access to diagnostics from home.

- Ecosystems such as PHTA will put the NHS in a position to become more sustainable and aid the delivering of comprehensive, timely and affordable healthcare.

- PHTA, as a wholly owned subsidiary of the University of Birmingham, operates outside of the Golden Triangle, and believes that the Government's ambitions to support engineering biology startups align with the Levelling-up ambitions. The West Midlands, and Birmingham in particular, has the right competencies and capabilities to provide research excellence outside of the Golden Triangle; with the University of Birmingham holding a 4-star rating by the Research Excellence Framework. The University has world class clinical trial capabilities, and leading expertise in rare diseases, cancer, infectious diseases, and vaccines. It is home to the largest cancer trials unit in Europe, with specialists in early drug development including non-cancers. Birmingham played a pivotal role in the development of vaccines and diagnostics during the pandemic.

- The region is also home to PIONEER, a longitudinal database providing the complete record of a patient's healthcare journey dating back more than 20 years, available for research and innovation.

- PHTA provides much needed wet and dry laboratory space to the Golden Triangle, facilitating the groundbreaking work they engage in including engineering biology. This is especially important due to the worrying lack of laboratory space in the UK which hinders innovation as well as the NHS' ability to quickly diagnose diseases and illness. It is therefore more important than ever to support organisations such as ourselves to grow and expand by securing investment and providing infrastructure in tandem with the government's levelling-up plans.

- **Are there opportunities for engineering biology to be used to improve public services, or opportunities for public procurement to support engineering biology, which the Government should consider?**

- Following the most recent pandemic, one of the vital lessons that has emerged is the importance of resources such as Precision Health

Technologies Accelerator (PHTA) in adequately supporting the NHS, given their ability to adapt and react to new challenges in an incredibly efficient and innovative nature. This is especially prevalent with the increase in

challenges facing the NHS with Whooping Cough and Measles being on the rise.

- PHTA serves as a dynamic hub for healthcare innovation, accelerating the development and accessibility of cutting-edge technologies. Through housing partners like the Clinical Immunology Service (CIS), we swiftly respond to health crises, facilitate rapid diagnosis, and advance medical research, contributing to the sustainability and effectiveness of the NHS while fostering a more accessible and inclusive healthcare landscape in the UK.

- The CIS, which we house, provides a comprehensive range of accredited lab services to facilitate the diagnosis of autoimmune and neuro-immunological disease, blood cancers, primary and secondary immunodeficiency, infections and allergy. The CIS team offers the only service of its kind to be embedded within an academic environment, providing an ideal interface between translational and clinical research groups, the NHS and the pharmaceutical and bio-diagnostic industries.

- **Does the UK need large companies in the field to help form the ecosystem in which spinouts and start-ups can thrive? If so, does it have the right ingredients for a healthy engineering biology ecosystem? Are major industrial players investing in engineering biology?**

- In short, there is a strong need for large companies in the UK to help form an ecosystem to encourage spinouts and start-ups to thrive.

- Precision Health Technologies Accelerator (PHTA) acts as both an innovation accelerator and ecosystem. We proudly provide early incubation, diagnostics, digital health and advanced healthcare technologies to accelerate the development and delivery of new drugs, diagnostics and healthcare technologies into clinics. These state of the art facilities act as a catalyst for not only designing the health technologies of the future but also allowing for easier access to diagnostics from home.

- We house a number of invaluable resources with one example being The Clinical Immunology Service (CIS). Before moving to PHTA, CIS rapidly mobilised its labs during the pandemic to undertake high throughput

processing for the NHS and other major national studies. A long-standing partnership with University of Birmingham spin-out - The Binding Site - enabled CIS to work quickly together to deliver a SARS-CoV-2 antibody ELISA in record time. Responding to the need to expand COVID-19 testing capacity across the UK, the laboratory supported the University to set up a vital COVID-19 testing laboratory as part of the NHS Test and Trace network.

- One of the most vital lessons that emerged from the Covid-19 pandemic, for our sector at least, is the importance of resources such as PHTA, and the need for adequate Government funding and support, given their ability to adapt and react to new challenges in an incredibly efficient and innovative nature.

- **How does the UK's approach to engineering biology, commercialisation and translation compare to other nations, such as Germany, China and the US? Are there specific areas the UK should look to focus on in order to gain or maintain a competitive advantage?**

- The UK should look to invest in the infrastructure needed to support the sector, and this links directly to the Government's stated Levelling Up ambitions. The UK is one of the most centralised countries in Europe, and infrastructure is sorely needed not only in the Golden Triangle but also in the regions.

- The West Midlands is one of the most dynamic data-driven healthcare and med-tech economies in the UK, worth £10.3 billion and employing over 17,000 professionals. The region has a stable, non-transient, diverse population of 5 million people, of whom over 1 million are children.

- Precision Health Technologies Accelerator (PHTA), and the Birmingham Health Innovation Campus development where it is anchor tenant, will add £400 million GVA to this region, accelerating Levelling-Up through creating ~10,000 jobs, attracting talent and boosting productivity, but need Government investment in infrastructure including transport and housing.

7. What are the possible barriers and limitations to good and effective use of engineering biology?

- **What barriers are there to incumbent manufacturers making use of engineering biology techniques? Is there anything the Government can do to address these?**

- The UK has a strong manufacturing base when it comes to products such as biological drugs and pharmaceuticals. Engineering biology will be transformational because the ability to control the process within the UK will make these new applications safer for patients. However, government support both financially and in terms of infrastructure funding is needed to support this research to identify the benefits and limitations of this technology.

- It is vital that we build on the UK's ability to manufacture these pharmaceuticals by providing much needed wet and dry laboratory space, as Precision Health Technologies Accelerator (PHTA) does for the Golden Triangle. This is especially important due to the worrying lack of laboratory space in the UK which hinders innovation as well as the NHS' ability to quickly diagnose diseases and illness. It is therefore more important than ever that the Government supports organisations such as PHTA through providing infrastructure and funding.

- **Does lack of land (e.g. for biofuels or growing GM crops) or dedicated lab space inhibit the growth of engineering biology? If so, what should the Government do to address this?**

- The lack of land and dedicated lab space is undoubtedly inhibiting the sector in the UK. Precision Health Technologies Accelerator (PHTA)'s mission is to serve as a dynamic hub for healthcare innovation, accelerating the

development and accessibility of cutting-edge technologies. Through housing partners like the Clinical Immunology Service (CIS), we swiftly respond to health crises, facilitate rapid diagnosis, and advance medical research, contributing to the sustainability and effectiveness of the NHS while fostering a more accessible and inclusive healthcare landscape in the UK.

- We proudly provide early incubation, diagnostics, digital health and advanced healthcare technologies to accelerate the development and delivery of new drugs, diagnostics and healthcare technologies into clinics. These state of the art facilities act as a catalyst for not only designing the health technologies of the future but also allowing for easier access to diagnostics from home.

- However, government support is needed to secure investment in new land around existing infrastructure and educational facilities.

07 May 2024