



HOUSE OF COMMONS

# Science, Innovation and Technology Committee

## Oral evidence: Commercialising Research, HC 791

Wednesday 22 May 2024

Ordered by the House of Commons to be published on 22 May 2024.

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Members present: Carol Monaghan (in the Chair); Dawn Butler; Chris Clarkson; Dame Tracey Crouch; Dr James Davies; Rebecca Long Bailey; Stephen Metcalfe; Graham Stringer.

In the absence of the Chair, Carol Monaghan was called to the Chair.

Questions 1 - 71

### Witnesses

**I:** Byron Dixon OBE, CEO, Micro-Fresh; Julian Hanak, CEO, Purespring Therapeutics.

**II:** Simon Andrews, Executive Director, Fraunhofer UK; Rosa Wilkinson, Director of Policy, High Value Manufacturing Catapult; Dr David Wilkes, Director of Innovation Ecosystem, Innovate UK (UK Research and Innovation).



## Examination of witnesses

Witnesses: Byron Dixon and Julian Hanak.

**Q1 Chair:** This morning's session is looking at the experience of starting up, spinning out and scaling up science and technology companies in the UK, and the work of research and technology organisations in commercialising research and innovation.

In our first panel this morning we are joined virtually by Byron Dixon, the CEO of Micro-Fresh, and in person by Julian Hanak, the CEO of Purespring Therapeutics. Good morning and welcome to you both. If I could start just by asking you both, from your own experience, what is your assessment of the opportunities available for a science and technology company in the UK, and are there improvements that could be made? Mr Hanak, we will start with you.

**Julian Hanak:** There are huge opportunities. The quality of innovation and science in the UK has always been strong and continues to be so. There are a number of routes to forming companies, spinning out that technology and generating value, and they are very diverse. But in answer to your question, yes, significant improvements should and need to be made.

**Q2 Chair:** Thank you. Do you have any examples of these?

**Julian Hanak:** Examples of the improvements that are needed? Access to early and second-phase funding is important. In my case, in pharmaceutical development and gene therapy, this would be before the technology has reached clinical trials and we have clinical data from patients. It is very easy to get venture capital money when you have a product which can be measured and the probability of success and risk can be assessed, but the gap between seed funding and that proof-of-concept data is a desert for funding, and it is challenging.

**Q3 Chair:** Thank you for that. Mr Dixon, could you tell us a little about your experiences and any improvements that you feel could be made?

**Byron Dixon:** Yes. As Julian said, there are lots of opportunities out there and lots of initiatives which are really helpful as well. In the past, we have used Innovate UK to develop various products and it has been really successful for us through grant funding. The universities are very helpful and skillful, and we have some of the best scientists in the world in our universities; living in Leicester, I can vouch for that. So there are lots of opportunities.

One major improvement that needs to be looked at is how people are able to access these opportunities and initiatives. Most entrepreneur-type businesses, like mine, are generally a person that has developed a product or a service and sold it, so does not know how to access these high-level funding and support opportunities, and the people who can take it to the next level are really quite tricky to find. While doing a



programme at Aston University, I found Innovate UK almost by accident; otherwise I would not have known about it.

Q4 **Chair:** As a start-up, did you feel confident enough to go for it without knowing where everything was and where all the support was available?

**Byron Dixon:** The short answer to that is no. Ten years on it is easy to say how I felt, but for most small businesses—when I say small, I am talking about less than £250,000, which would include a lot of the businesses in the UK—it is very daunting. You just look around and it actually looks like it is not for you, unless you are a business employing 50 or more people.

**Chair:** I am going to turn to my colleagues now, starting with scaling-up aspects and Dr James Davies.

Q5 **Dr Davies:** Mr Hanak, we have already referred to start-ups, but in terms of scaling up science and technology companies in this country, what are the opportunities, and again, what are the hurdles?

**Julian Hanak:** I can talk from our experiences at Purespring. It was spun out of Bristol University from the group of Professor Moin Saleem, so a high-quality science to look at treatment of renal diseases, kidney disease, using gene therapy. We were very fortunate, in that Syncona Partners, a UK-based venture capital arm, was able to put significant seed funding behind the company so that we could get to the stage where we could be operational and start developing programmes and demonstrating the efficacy of these products in the laboratory.

The scale-up part comes now. So our series B funding—which we are closing at the moment—has largely been by venture capital, but this time, most of the venture capital interest comes from groups outside the UK. It would be nice if there were more initiatives and more bridging to get to this series B funding. When you get your clinical proof of concept, it is then very easy to demonstrate value, reduce risk and show what the opportunity really is for your technology and your company.

Q6 **Dr Davies:** Understood. Mr Dixon, do you have any comments to add on the topic of expansion?

**Byron Dixon:** Yes, I echo what Julian said, but I was also on a committee not that long ago when we talked about scale-ups. At the time, the UK was the third in the world for start-ups, but 13th for scale-ups. Scaling-up is very hard. We are ready to scale; we used Innovate money to develop a product to stop mould growing on walls, but when it comes to scaling, interacting with VCs can be quite daunting and there is nobody to hold your hand. What we have seen, which is a bit of a bone of contention, again echoing what Julian said, is that overseas attitudes to investment are far more conducive than in the UK.

Q7 **Dr Davies:** Speaking of overseas, what comments would you have on international expansion of such businesses in terms of the support



available, in your experience?

**Byron Dixon:** We are a truly global business with 13 offices in nine countries, and I have just got back from the Caribbean where we are looking to expand into the Caribbean, Central and South America. The support from the DBT has been very good actually, and the service that it offers is fantastic. I am a big advocate of the Department of Business and Trade. The support that it gives you is superb; if I had to suggest an improvement for the DBT, it would be that not enough people know about it. I do a lot of advocacy work as an export champion, but I am amazed at how many other businesses—£5 million and below, or even £10 million and below—are not aware of the DBT and do not know that it delivers its quality of service free at the point of delivery.

Q8 **Dr Davies:** So there is potential to be exploited there, then. Mr Hanak, is that your understanding too in terms of companies wishing to expand internationally?

**Julian Hanak:** So the typical route for a biotech company to expand internationally is to do an IPO. The vast majority of those public placements occur on the NASDAQ in the US because of the valuations and the liquidity of the stock once you have done the IPO.

We floated one of the companies I worked for in the past on AIM—the Alternative Investments Market here in the UK—but it suffers from lower valuations and lower share turnover, so it is challenging. Anything that can be done to improve that basis here in the UK, and to get higher valuations and higher activity through UK stock exchanges, would be a huge benefit for companies looking to scale. Once you have IPO'd in the US on NASDAQ, it has been my experience that the focus and the value of the company tends to shift to the US.

Q9 **Chair:** Can I just ask a follow-up on that? We have heard before that sometimes when that scale-up funding comes, or if companies apply for that scale-up funding, there are a lot of strings attached around profits and around IP, for example, which makes it very difficult to accept that scale-up funding. Have either of you experienced that? I say that because a similar situation does not appear to be the case in the US.

**Julian Hanak:** Our scale-up funding has come almost exclusively from venture capital. We have applied for grants from UKTI and Innovate UK quite successfully, and there are few strings attached to that, other than if you put a consortium of other partners together, you share value and emerging intellectual property. We have not experienced strings attached to funding, because most of our funding is venture capital.

**Chair:** That was venture capital funding.

**Julian Hanak:** That is the vast majority of the funding that comes into my industry for scale-up, because of the quantities needed to do it.

Q10 **Chair:** Thank you. Mr Dixon, any comments on that?



**Byron Dixon:** We do not have any funding at the minute; the company is actually privately owned by myself. But what we have seen in the UK is that the attitude to funding is almost like a “Dragons’ Den” scenario, where this poor little entrepreneur is looked at like, “How have you managed to get this far without this multimillionaire’s money that they do not know what to do with?” In the US, the attitude is very different; it is almost like they really appreciate the fact that you have taken something from zero to 65%, and they are quite happy to give you what you need to take it to 90%, with a much higher valuation. That is something that needs to be addressed. It is just the way of the world, and now that the world is a much smaller place, the competition does not just come from up the road; it comes from overseas.

**Julian Hanak:** Could I come in for a second? There is one other initiative that we find incredibly helpful, and that is the R&D tax credits, especially now that, for a small to medium enterprise, the return on that is more significant than if you were a large organisation. And there are no strings attached to that, so that is enormously helpful in supporting fundamental research in companies like Purespring Therapeutics.

Q11 **Dame Tracey Crouch:** Mr Hanak, I will start with you. Could you just talk to me about workforce, about talent? How can the attraction and retention of talent in the UK be supported?

**Julian Hanak:** The vast majority of our employees are UK-based—exclusively UK-based at the moment—but we have imported talent from the United States and Scandinavia and gone through the process to become a sponsor in order to do that. Not all the talent that we need is available in the UK, but most of it is.

Retention has been very good recently in the UK while the company continues to grow and offer opportunities for career development to staff. We are very lucky in our industry to have the Cell and Gene Therapy Catapult, which was formed more than 10 years ago now. A number of people go through that organisation and are trained and become useful at all levels of management, and lab scientists as well. We have a number of employees—as do most UK gene therapy companies—that have either come from the Cell and Gene Therapy Catapult, or are currently working with them.

Q12 **Dame Tracey Crouch:** Is that imported talent in a particular skill set?

**Julian Hanak:** Yes, it is. Because gene therapy is a pioneering area of science, a lot of traditional talent coming out of universities is more traditional molecular biology and biochemistry. A number of universities, like University College London, have specialised gene therapy modules and courses, and master’s courses as well. Cell and gene therapy courses are offered in universities like Leicester and Loughborough, for example, so the talent is there, but they get their experience by doing their first industrial placement in places like the Cell and Gene Therapy Catapult, or in our laboratories as junior scientists as they grow through.



Q13 **Dame Tracey Crouch:** Should we be doing more to try to encourage students to be taking these specialist gene therapy courses?

**Julian Hanak:** Yes. Some master's courses or modular courses are extremely valuable and turn out graduates with highly transferable skills; they have biological sciences education and they could do a number of different jobs. But the ones interested in gene editing, gene therapy, these advanced therapies, they need a bit more, and these additional courses and funding for those additional courses would help the talent pool in the UK.

Q14 **Dame Tracey Crouch:** Thank you. Mr Dixon, the same question to you.

**Byron Dixon:** We have just taken on a microbiology graduate, and we generally do not have a problem with attracting talent. I say that not in an arrogant way, but we are a bit of a unique-type business. One of the challenges is that everybody knows that there is practically full employment at the minute, so retention for us is good. But it means we have to pay higher wages and offer more benefits, which again is not a problem; it can just sometimes make it a little uncompetitive compared with our overseas competitors.

Q15 **Dame Tracey Crouch:** Do you both offer higher-level apprenticeships?

**Julian Hanak:** Not currently.

**Byron Dixon:** Yes.

**Dame Tracey Crouch:** You do, Mr Dixon; Mr Hanak, not yet?

**Julian Hanak:** Not currently, no. We do two-month placements for students in the summer to try and help share experience and get people interested in the community. I am also involved with ESACT-UK, the European Society for Animal Cell Technology UK, which focuses on developing young science in industries like mine.

**Byron Dixon:** Sorry, not high-level apprenticeships; we do gap year students with De Montfort University and the University of Leicester. Again, it is generally very good quality; the only shame is that they have to go back after the gap year.

Q16 **Dawn Butler:** Mr Hanak, I am just curious: if you had to do a 30-second pitch, what would it be?

**Julian Hanak:** For UK talent or UK value generation in businesses?

**Dawn Butler:** For what you are doing, because what you are doing with regard to gene therapy actually could be the future of treatment.

**Julian Hanak:** Purespring Therapeutics wants to transform the lives of people suffering from kidney disease. One in eight of us—840 million people worldwide—have kidney disease. Because of research done in the UK at Bristol University, and now through Purespring's early work, we



have been able to demonstrate that we can modify cells in the kidney to maintain kidney function and kidney health for much longer, and transform the lives of these patients. That had never been done before, and at the moment Purespring is the only company that can do it, which is a real opportunity for Purespring and for UK research coming into commercialisation in the UK. We have been very successful in attracting venture capital money to be able to take our programmes into patients, which we hope to do in the next year or two.

**Q17 Dawn Butler:** You have spoken about some of this before, but what are the challenges in securing private and public funding, and who gives you the most money?

**Julian Hanak:** Our founding venture capital company, Syncona, is the majority shareholder of the company, but now we are diversifying that base with European, and hopefully US, investors too, with a view to making the company ready for either a public offering on a stock exchange or selling. Often these companies get acquired when there is sufficient value, either because the value becomes so high that we get made an offer we cannot refuse, or because we need that capital to scale, to bring these programmes into the market, which is something that small companies do not have the resources to do.

**Q18 Dawn Butler:** Mr Dixon, I was fascinated to hear that you have developed something to combat mould in buildings in your industry.

**Byron Dixon:** That is right.

**Dawn Butler:** When you go for funding, do you go to specific industries, like building or health industries, or do you just go anywhere you think they might offer funding? What are the challenges around that?

**Byron Dixon:** Anywhere. The challenge is that our product is not just for buildings; it is for clothing and bedding. The Micro-Fresh name means you wash less—that is what it does—so we have a real generic spread. It can go into anything in the world, so we do not look at specific industries for funding; we look for generic funders and generally people who find it exciting. What we have seen in the US is that people say, “I want to be part of this story. I do not want to be the person at a dinner party in a few years’ time that says, ‘I could have been part of that,’ when this name is everywhere, on lift buttons and trains.”

**Q19 Dawn Butler:** Why do you think the funders in the UK are not excited?

**Byron Dixon:** They are, but it is just a very different conversation. I am going to just say it: it is more about them than about us. That is what it feels like. In the US it is more about them saying, “You have a great business. You have bootstrapped this business yourself. We want to be part of that journey.” But in the UK it is more of a “Dragons’ Den” style of conversation: “I am a multimillionaire. You have managed to get this far. You are a little lucky. If I give you a few pounds, you give me a big chunk of your business,” which is a lot less attractive.



Q20 **Dawn Butler:** This is my last question. I am fascinated with the mould aspect in buildings because, as you know, we have a huge issue with mould and the knock-on effects. We have taken evidence here when we talked about fungi and the development of lungs. What is your 30-second pitch?

**Byron Dixon:** Two 20-second pitches—I am going to take a little more. So Micro-Fresh in anything—clothing, footwear—means you wash less. We were sustainability before it was a thing. We want to be the Gore-Tex of freshness. Home-Fresh is where we have taken that with Innovate UK funding, and we have developed it for construction. Mould cannot grow in any walls that have been Home-Freshed; it is a preventative treatment.

**Dawn Butler:** Wow, that's phenomenal! Brilliant, thank you very much.

Q21 **Graham Stringer:** What benefits have your businesses had from working with research organisations?

**Julian Hanak:** Enormous benefits, because all the original ideas, the original intellectual property and patents filed, come from academia. A lot of that academic research is funded by both grant funding through the grant councils, but also from charities. Kidney Research UK and the Nephrotic Syndrome Trust, for example, have put money into the labs that had the idea which Syncona invested in to make Purespring.

Q22 **Graham Stringer:** Byron, the same question to you.

**Byron Dixon:** My mum was a single parent with five kids; I could do chemistry. and I made a product and thought I was really smart until I started to meet academics. There has been fantastic support, especially from universities—it is second to none. Prominent microbiologists from Aston University, the best in their field, helped to take us to a new level. De Montfort University in Leicester—the centre of excellence for textiles in the world—helped us to develop washing products that you can infuse in the washing process. So now we practically do not have any laboratories any more; we outsource all of it to universities because they are excellent.

Q23 **Graham Stringer:** How do you outsource it to universities?

**Byron Dixon:** We have just done research projects together; again, some with Innovate funding. Just to give you a couple of everyday examples, we do it where our product works on leather. That was what it was meant for: footwear, to stop shoes going mouldy. To develop it for construction, we just went straight to Aston and we did a joint project there with building people, engineers and microbiologists, again with Innovate funding. At the end of 18 months of trials, we had a product to put on to walls to stop mould growing.

Q24 **Graham Stringer:** The reason I am interested is I was in Oxford University last Thursday talking to an undergraduate who was doing biology and medical sciences. He was telling me that he loved his course





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because they had NMR machines that were a small box; when I went to university, the NMR machines were room-sized. But those resources, which would be very useful to many businesses, are locked up in universities. Do you find that you can use the kit that universities have?

**Byron Dixon:** Yes, that we have some fantastic universities is one of those best-kept secrets, like the DBT. We go to Aston and use their kit. We go to Leicester and even Saïd Business School in Oxford as well—I did a business growth programme there. So they give us access and, again, working in collaboration means that you can have access to their equipment. You pay for it, of course, but they are on the doorstep, so we do not need to have extensive laboratories any more; we just work straight with universities.

Q25 **Graham Stringer:** Is that your experience, Julian?

**Julian Hanak:** Yes, very much so. Without some of the resources at the universities that we collaborate with—the specialist equipment, testing new machinery—some of the work we do would not be possible. One of the struggles universities have is that they cannot just give us this equipment at cost; it is already assigned to the functions that the university is performing. So they have to charge overheads, and that overhead can be uncompetitive compared to us putting the research work out directly to a contract research organisation. So any funding that can help universities collaborate with companies to help carry that cost burden would be enormously appreciated.

Q26 **Graham Stringer:** Are they not interested in doing this on marginal costs? Certainly for undergraduate equipment, and I guess quite a lot of postgraduate equipment, a lot of it will be standing idle in the locations. So it is not just spreading the capital costs is it? There must be a benefit to them if they just use marginal costs.

**Julian Hanak:** Yes, but typically we are after the latest and the best equipment, which tends to be heavily utilised. And there is an overhead—the facilities, insurance, everything that covers that. We fully understand that there is an additional cost. Help with that cost would make this equipment more affordable and accessible.

Q27 **Graham Stringer:** You mentioned intellectual property and the work that goes on in universities. If we had been having this conversation 15, 20 years ago, I suspect many witnesses would have said, “Well, there is a real problem, because the culture in universities is to get research out there.” If you are the first person to discover the structure of DNA, or anything, you want that paper there before your competitors, whereas in the commercial world you want to hog that, develop it and make money out of it. Has that problem gone now? Has it been resolved, or is it still a problem?

**Julian Hanak:** It has largely been resolved, but not without some contention. What a company will do with an invention that they are collaborating on and commercialising together with universities is insist



on intellectual property being filed in the form of a patent. The UK Patent Office is very efficient. That embargoes the discovery and the invention for approximately a year—it can be a little longer—while you add data to that invention to make it secure, and then make a full PCT filing. And that is a frustrating time to a leading academic whose research status is based on publications: his grant of funding ability is based on publication, and the researchers in his team need to develop their careers with publication. But a delay is not an embargo; it is just a delay.

Q28 **Graham Stringer:** And your experience, Byron?

**Byron Dixon:** It depends on the university. We have seen some universities that are very commercially minded, others not so. But the landscape is definitely changing, and the ones that we generally deal with are more commercially minded now. Sometimes they are even happy to go with co-branding, because we are a brand that is seen around the country and around the world. So I would say we have seen a lot of flexibility, whereas 10, 20 years ago, it would have just been, “No, we are the university, and we own the IP.”

Q29 **Graham Stringer:** My last question to both of you is this: you are presenting a case that a relationship between businesses and research institutions, particularly universities, is good, so how could the Government help to improve that?

**Julian Hanak:** There have been a number of initiatives—Innovate UK is a great example of that—where funding is given to collaborative programmes to help ideas from universities become commercialised, but to have those led by industry so that the product does make it to commercialisation. It is not just adding more intellectual property that eventually expires because there is no way of exploiting it. That is great. There was a recent competition that we applied for but were unsuccessful, not because our application was not good, but just because so many people applied. Making more money available to those kinds of academia-industry collaborations to get inventions into commercialisation would be enormously welcome.

Q30 **Graham Stringer:** Thank you. Byron, the same question to you?

**Byron Dixon:** Similar to Julian: working with universities so they have a real commercial arm and a real commercial edge to what their research is all about. We have gone to some universities with projects, and the costs have just been prohibitive. Of course, in business we have to have a return on investment; and because we have to generate cash, sometimes that return on investment time can be quite short. So the Government could help with some work around commercialising those divisions or university departments to work with business.

Q31 **Dame Tracey Crouch:** I just have a follow-up question from Dawn Butler’s earlier question about funding, and I do appreciate that I am asking this to two chaps. One of the challenges that women face is that less than 2% of women secure venture capital funding. I just wondered if



you had any thoughts or comments on that. Byron, I see you nodding, so do you want to go first?

**Byron Dixon:** Yes. We are a black-owned business, and we always say we are a great business that is owned by a black guy, not the other way around. But the numbers on funding for black-owned business are horrendous—I think it is something like 0.4%. When it comes to black women, it is something like 0.01%. I do not know why that is. I generally do not see funders that look like me in the UK, but at the risk of being boring, when I go to the US I do see funders that look like me, so that probably has a lot to do with it. I have not seen many women funders either, so maybe that is a parallel argument.

Q32 **Dame Tracey Crouch:** Julian, do you have anything to add?

**Julian Hanak:** The CEO of the first Syncona company that I worked for was Melanie Lee, who was then with LifeArc and is retired now, I think. So in biotech it is much more diverse. Our CSO, Alice Brown, is a main proponent of our technology and instrumental in helping us get funding. And a lot of the venture capital people we speak to, the partners and the people who would join our board if we were successful with their investment, are female. So it is changing, but a lot more needs to be done.

Q33 **Stephen Metcalfe:** Both your companies have now reached a stage where they are in growth and are engaging with funders and universities, but it was not always like that. At some point back in the past, there was a light bulb moment when someone came up with an idea and thought, “Hmm, this could make an interesting product or service.”

To put everything you have said over the last half an hour into context, I wonder if you could both briefly describe how it went from the idea to something you could then take to someone and show them to ask for support or funding, and what the reception was—so, if you like, a brief history of the company in the context of your experiences of how you found someone to ask the right questions to.

Byron, you mentioned that you did not know about Innovate UK and that you stumbled across it at some point. Now you are engaged with it and it is fine, that door is open; it may not always work, but at least you know where the door is. I am interested in how we get that information out there, and what practical experiences you have had, so that we can hear how we might put a view on improving those things. Shall I start with Julian, and then give the final word to Byron?

**Julian Hanak:** For Purespring it was slightly different, because one of the roles of the associates that work at Syncona is to attend conferences and build networks with academics, worldwide actually, but a lot in the UK as well, and to keep their eye on inventions and possible business opportunities.

At the same time, Professor Moin Saleem at Bristol University had demonstrated that he could deliver genes to this crucial cell in the kidney.



So in a way it was a combination of a talent scout from Syncona meeting somebody who had a great idea and who was wondering what to do next that started the conversations with them that eventually formed Purespring.

Q34 **Stephen Metcalfe:** And Syncona had all that experience of knowing which doors to knock on?

**Julian Hanak:** Yes, it had formed a number of gene therapy companies before, and it had the funding to do so.

Q35 **Stephen Metcalfe:** Okay, thank you. Byron?

**Byron Dixon:** To cut this short, I stumbled into the leather industry, and as a chemist I made a product to stop shoes and leather going mouldy, and then we found out it stopped shoes smelling. So Next launched a range in 2011 with Micro-Fresh technology. Then in 2014, I did the Goldman Sachs business growth programme at Aston University, and it was there that I stumbled across Innovate UK.

When you are running a business, the last thing you think about is doing a course, but I thought, "I will try it and invest in my time," and that is where I met Innovate UK. So when I did the Goldman's programme, I actually realised, in talking to other CEOs, that I potentially had a global business. So that was a light bulb moment. And now of course, we are one of the feature businesses of the Help to Grow programme, which again is like a version of the Goldman's programme. So I am hoping that more people stumble on them.

Q36 **Stephen Metcalfe:** Was your first product the leather product? Were you working for someone else at that point? Or were you working on a kitchen table?

**Byron Dixon:** Yes, actually.

Q37 **Stephen Metcalfe:** So you have invented this product that you think is going to stop leather going mouldy. What did you do with it next? Who did you tell? Did you set up a website and start marketing it?

**Byron Dixon:** Absolutely, yes. And lots of noes, lots of "Who are you?" And then eventually I stumbled across the University of Leicester. They said it should stop bacteria, which means shoes will not smell. So in 2011 Next launched a range of non-smelling kids shoes, and it has grown ever since. As I say, the other pivotal moment was doing the programme at Aston, where I met with people who said, "Actually, you have a really cool, clever business that could really go places." Because up until that point, I was really playing with it.

Q38 **Stephen Metcalfe:** Did you have another job doing something else?

**Byron Dixon:** No, that was my only thing.

Q39 **Stephen Metcalfe:** So you did your website, and what happened in 2006?



**Byron Dixon:** Yes, that was when I made the product, because I had a company selling leather products like lacquers and polishes, and I thought this would be just another product in that range. And now it has taken over everything and we no longer have all the other leather products; it is just Micro-Fresh.

Q40 **Stephen Metcalfe:** And you have helped your local football team?

**Byron Dixon:** I have, which I still play for—and their socks do not smell.

**Stephen Metcalfe:** Excellent. Thank you very much.

**Byron Dixon:** It makes the other half very happy.

**Chair:** I am not sure whether Stephen is trying to get tips from you. Mr Dixon, there has been a suggestion from one of the Committee members that you could maybe try out your technology on the walls in Westminster.

Can I thank both witnesses in our first panel, Mr Hanak and Mr Dixon, for the evidence you have given this morning? At this point, we will ask our second panel to join us. Thank you very much.

## Examination of witnesses

Witnesses: Simon Andrews, Rosa Wilkinson and Dr David Wilkes.

**Chair:** At the start, I should declare that my son is currently studying at Fraunhofer UK. Stephen, do you have a declaration to make?

**Stephen Metcalfe:** Well, I suppose. I am the vice-chair of the all-party group on photonics, which Fraunhofer is particularly interested in. I do not know if that needs declaring or not.

Q41 **Chair:** Yes, and I am the chair. Okay, thank you. I will introduce our second panel. First, we have Simon Andrews who is the executive director of Fraunhofer UK. Secondly, we have Dr David Wilkes who is a director of the Innovation Ecosystem at Innovate UK. Thirdly, we have Rosa Wilkinson who is a director of policy at the High Value Manufacturing Catapult. Welcome to you all.

If I could start with Ms Wilkinson, can you give us a flavour of what support a catapult can provide to a science or technology company?

**Rosa Wilkinson:** Our support is incredibly extensive. We are the people who will help a company move a concept, an idea, through to its market-ready commercial status. We give companies access to the kit and expertise they may need. Crucially, we also give them the answer to the Ghostbusters' question: "Who are you going to call?" for that additional support they might need. We also connect them with other support organisations like the Department for International Trade or, indeed, the financial services and venture communities. We hold their hands. The catapults are a rather nurturing set of organisations that a company goes



through in what can be a difficult and challenging journey on the route to commercialisation.

Q42 **Chair:** Do you have a set programme for doing that? If I were a new start-up company that had come to you for support, would you say, "Here are the steps you have to take, here are the people you have to speak to, here are the courses you need to undertake"?

**Rosa Wilkinson:** Inevitably, it is going to look very different for every single company, but it begins with a conversation. We want to understand what concept a company is trying to move through that commercialisation journey, or what problem they are trying to solve, and then to draw on our own expertise or, alternatively, connect them with universities or research bases that may answer those problems. We help them to develop solutions.

**Chair:** Thank you. I am going to turn to my colleagues now, starting with Graham Stringer.

Q43 **Graham Stringer:** Simon, what role does Fraunhofer have in supporting start-ups and spin-outs? Can you tell us the obvious?

**Simon Andrews:** Our core business is providing scientific expertise and excellence and applying it usefully. We do that with a start-up or a spin-out in the same way that we would with a multinational. We have to charge a fair market rate and not displace existing economic activity, so we do it through R&D. With a larger company, it could be a £1 million project they are funding directly. With a smaller company, it could be £5,000 of look-see work to see if the mirror blows up in this laser.

There can be an element of handholding and support for the younger companies, but our core business is actually doing R&D projects. Where we would add value is by working through supply chains and helping the smaller, younger companies get into projects with larger companies.

There was some good PR recently: cold atom traps, the cutting edge of quantum tech on aeroplanes with BAE Systems and Kinetic. Two very young Scottish start-up companies were involved in that project as well, which perhaps would not have had that access on their own. So forming collaborations is very valuable, as well as providing the doctoral training for key employees at high-tech industries.

Q44 **Graham Stringer:** We heard from Byron Dixon in the last session that he did not know there were all these resources. There is difficulty from that side. Do you do anything to go out and find the Byron Dixons of this world?

**Simon Andrews:** Yes and no. We broadly market our services the way any company would. Given that our model is very much about deep technical expertise, we go to photonics and quantum events. There you will sometimes find people from a wide variety of sectors looking for sensing and imaging solutions, and we can meet them that way. We also



go to trade shows and events that are market-specific, whether that is renewable energy or pharmaceuticals, to see if we have technologies with photonics that can be applied there. However, we do not go knocking on the doors of all the universities to speak to the latest spin-out or that sort of thing. David's organisation, Innovate UK, has Business Connect, which is very active in that area.

**Q45 Graham Stringer:** You mentioned putting research facilities and businesses together. Some years ago, this Committee, or its predecessor Committee, investigated the valley of death: why so many businesses failed after initially promising starts. One excellent piece of evidence in that study, which we heard from Cambridge, was that the best researchers in the country, and in many cases in the world, were finding their way into businesses that were having problems in that area. They learned about business from doing that, and the businesses learned about cutting-edge research. Is there anything you can do to facilitate that? It has always struck me as the best possible way of encouraging growth, rather than institutional ways. What is your experience? How do you do that?

**Simon Andrews:** There are great and terrible examples of business and industry working directly together because of a cultural mismatch of expectations, timescales and priorities. That does happen. Previous guests have given great examples of how it can work well. We need to share best practice and, broadly, the RTO community is partly an answer to that question.

We are very much in partnership with the University of Strathclyde in Glasgow, but we are one step away from them. We are working with industrial contracts, deadlines, deliverables and specifications in a much more hard-nosed way than the average academic in the average university is accustomed to working, exploring things and writing papers: there is a time and place for the middle ground of an RTO to do that. TRL 3 to TRL 7, if we speak that language, takes something that is possible through to a field validation of a prototype, which then gives more confidence to the company and to the investors, and helps build up the supply chain of all the components to make it more market-ready and not just a theoretical bench proof of concept.

**Rosa Wilkinson:** Could I jump in on that point? The question of how we make sure those brilliant researchers are based inside companies that are developing great ideas is something that we struggled with. What we did was develop a programme, which has now grown significantly across the catapult, that we call Researchers in Residence. Some of those leading researchers were placed inside a company, to give the company direct access to that know-how, knowledge and expertise.

**Q46 Graham Stringer:** It works in the way that they learn commercial practices?



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**Rosa Wilkinson:** They get to understand what problems the business is next looking to solve. We have to think of this as a two-way street.

Q47 **Graham Stringer:** Dr Wilkes, do you have anything to add?

**Dr Wilkes:** Yes. Rosa is right, the two-way interaction is critical. Academic researchers understand what business needs, and the opportunities, and businesses understand what the cutting-edge opportunities are.

We have already heard this morning a few good examples of collaborative research and development programmes that Innovate UK runs. About a quarter of Innovate UK's funding goes to academics, but only when they are in those collaborative projects with businesses. Another thing we do is knowledge-transfer partnerships. Simon talked about the difficulty in businesses and academics understanding each other. What we do with knowledge-transfer partnerships is a three-way thing. You have the academics, the cutting-edge research, and you have businesses with a clear business need. We then fund an associate, who is a recent graduate, to go into that business and provide that conduit—a translation if you like. In 80% of cases, it takes that person into the business because they provide new skills and capabilities.

Q48 **Chair:** Thank you. Mr Andrews, for the benefit of those watching, you referred to TRLs: technology readiness levels. Is that correct?

**Simon Andrews:** Yes.

Q49 **Chair:** Thank you. Can I also ask a supplementary? You said you worked with large and small companies. We are particularly interested in how spin-outs are able to develop. What would be the proportions of the companies that Fraunhofer works with in terms of SMEs versus big business?

**Simon Andrews:** We are broad-minded and go across the spectrum, and that is a very deliberate thing. It can be as much effort to secure one large contract as it is a small contract. Across the 200 to 250 companies that we have worked with, I would describe 90% as SMEs, with 20% definitely "S", and maybe micro, companies. That is typical of the demographic of photonics companies in the UK, and it is fairly typical of the demographic of companies generally in the UK.

Q50 **Stephen Metcalfe:** As you may have heard from previous sessions, I am keen to hear practical examples of the challenges individual businesses and scientists face. If you are thinking about bridging that gap between research or an idea, and then bringing it to industry, in each of your experiences can you tell me what the main practical obstacles are that people have brought to you? What, in practical terms, are they looking for some assistance with to bridge that gap? Can we go along, starting with you, Simon?





**Simon Andrews:** As an RTO, Byron gave some great examples. He got rid of his labs altogether. The value we bring is being an external applied R&D resource that they can turn on and off. We have seen multinationals disinvest from corporate labs. You may see a young start-up or spin-out that will probably have the absolute core, deep technology of their product, but the periphery around it may not necessarily be there. We are primarily about expertise, and that can be in signal and image processing, in electronic and mechanical design, and in helping create a system if they had a nub of an idea. They may already have a laser source, but we turn it into a whole detection system. It is horses for courses as to what they need. If they want us to do TRL 3, we will do it. If they want us to do a field trial, we will do it because we are there to help. It varies a lot.

Q51 **Stephen Metcalfe:** If you met them at one of these photonics showcases you are attending, they might come to you and say, "The obstacle for me expanding is that I have part of an idea, but I don't know what to do with it. Can you help me find someone to expand that idea?" That is the role you would see yourself fulfilling. Would that be an obstacle they were facing, at that point, that they would bring to you?

**Simon Andrews:** Most of the value that we add would be in maturing the technology, developing it, de-risking it, and taking it out of the lab, helping them with packaging but also proofing applications.

We are very broadly connected. It is difficult to find the right people sometimes, so we do not stick with our laser community. We work with biologists, chemists and so on. We have great contacts there as well as further up the value chain. I would like to reflect that introducing an SME to multinationals is a good thing, but also that the multinationals need to know where all the future technology is coming from. It works both ways.

Q52 **Stephen Metcalfe:** Thank you. Rosa, I am interested in the obstacles that people are facing to bridge that gap.

**Rosa Wilkinson:** We deal with probably 5,500 businesses every year. Thinking across what they most struggle with, first and foremost, it is the expertise point that Simon was just making. I will not repeat that. Second, a lot of the kit they require to test out their idea costs quite a lot of money. That is before you know whether something is actually going to work or will be able to work at a cost that will prove viable for the company in the longer term. We give them access to the kit and caboodle as well as the know-how they need. There is a third practical problem, and that is about knowing what the hell is out there, knowing where they can find support, and knowing how to connect with a VC community. That is not a given for many small and growing companies.

In a past life, I was managing director of what was then the small business service. That higher-level financial literacy is a real challenge for businesses, so having some sort of intermediary that will help them to



articulate and connect with an investor community is a really important thing when you are looking to develop and grow.

The fourth thing, and I am not entirely sure this classes as practical but it is a very real problem, is confidence. You are taking a gamble, as an entrepreneur, that something is going to deliver for your business. You need to feel that you are in the best hands to help you guarantee that and to de-risk it. That is very much what we do within the catapults. We take away some risk so that they can be confident in moving forward and begin to make investments of time and money themselves.

Q53 **Stephen Metcalfe:** Finally, David.

**Dr Wilkes:** There are two things I would point to. The first is market opportunity. We see so many examples of great research looking for an opportunity—that technology push concept. We run a programme called ICURe, which is Innovation Commercialisation of University Research. It is focused on helping the researchers understand market opportunities. We pay their salary for six months to go out and actually speak to customers. In nearly all cases, the thing they thought their research was going to do does not work, but they find three or four other opportunities. That business market pull opportunity is critical.

The other thing, which we have already talked a lot about this morning, is access to finance and helping researchers understand where they can go. Again, this is another two-way street. We do a lot of work with the investor community. You need to de-risk it from both sides. They need to have the confidence to take the personal risk, and Byron talked about his own personal risk here. You also need to help the investors understand the opportunity. If this business is being supported by a catapult, it already reduces the risk for their investment.

Q54 **Stephen Metcalfe:** Thank you very much. That is very helpful. I have a brief follow-up for you, David, if I may, which is about the role that Innovate UK plays in assisting, specifically universities, to commercialise their ideas. Can you expand on what you do to help them, or do they even need your help?

**Dr Wilkes:** Innovate UK is part of UK Research and Innovation, a much broader ecosystem. Research councils fund this world-leading research. Research England, and counterparts in Scotland, Wales, and Northern Ireland, support the capabilities of universities, so technology transfer offices and the like, with Innovate UK supporting organisations like catapults with grant funding that can take those great ideas.

However, it is not enough to sit there waiting for them. We need to be in with the universities to understand what the opportunities are. The programme I talked about, ICURe, and knowledge-transfer partnerships are all about getting into the universities at the earliest stage so we can see what those opportunities are, then making sure there is a clear



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market opportunity because, otherwise, you spin out a business and it will fail very quickly. That is obviously something that none of us want.

- Q55 **Stephen Metcalfe:** In that example, you are in the university and looking at what is going on. Do you say, "That could be a really good commercial idea. Have you thought of doing this, this and this with it because I, as Innovate UK, have seen this work elsewhere. You could do something with this"? It is not just waiting for them to say, "We think this could be commercialised." Do you insert yourself into that process?

**Dr Wilkes:** Yes. Simon talked about Business Connect, part of Innovate UK's system. It has 250 innovation experts who, apart from everything else, run 400 events and have 400,000 innovators in their network. They are always looking for those next opportunities: sometimes putting industry together with academia, sometimes putting academic colleagues in collaboration with other academics to take the idea forward.

- Q56 **Stephen Metcalfe:** Are there areas where that process could be improved, or do you think it is working well?

**Dr Wilkes:** It is working well. We talked earlier about the fact that people stumble across Innovate UK. That is something we are very aware of, and we are doing more to make sure that the opportunities are visible. We have just launched something called an Innovation Hub, which I would recommend you look at if you want to understand the different opportunities that are available across the system.

**Stephen Metcalfe:** Thank you very much.

- Q57 **Dame Tracey Crouch:** The Committee often hears about challenges in trying to spread the expertise around the country. How do RTOs contribute to spreading opportunity more equally across the UK as part of the levelling-up agenda? Dr Wilkes, can I come to you first?

**Dr Wilkes:** Yes. The wonderful thing about the Innovate UK Catapult Network is that the nine organisations are spread across 50 centres of excellence, literally in every corner of the UK. The map is very dispersed and crowded. A lot of the catapults work very closely with them.

We should acknowledge that the catapults are where they are because they are in clusters of excellence in the UK: industrial excellence and/or building on research excellence. They are there for a reason. They can build on that local ecosystem, but we have very strong evidence of strong local spin overs.

- Q58 **Dame Tracey Crouch:** Can we see that map? It would be really useful.

**Dr Wilkes:** Yes, it is on the Catapult Network website. You can see every one of those centres of excellence.

**Rosa Wilkinson:** David has just nicked some of my lines! The High Value Manufacturing Catapult is the biggest of all the catapults. We are in 23 or 24 sites around the UK. Frankly, we get everywhere. We get into



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every region and every devolved Administration area. The impact that we have is often connected to those local plans to improve the local economy.

Some of you will have picked up on my Yorkshire accent: I am a Doncaster lass. A little way from me sits a site called Orgreave. Some of you may remember it from the industrial strife back in the day. Today, it is a site where there is incredible high-value inward investment. Thousands of jobs have been created, often paying above the national average in terms of wages, and that is all filtering out into the local community. Why? Because companies have clustered around our Advanced Manufacturing Research Centre and Nuclear Advanced Manufacturing Research Centre. We are offering something that has exerted a real magnetic force on investment and that is really driving improvements in local economies. That is what we do.

**Dame Tracey Crouch:** You are clearly very passionate about it.

**Rosa Wilkinson:** It is ace.

Q59 **Dame Tracey Crouch:** Are there any cold spots you would like to target?

**Rosa Wilkinson:** There is a real challenge for us, coming back to the points made earlier, in making sure that, wherever you are, you can find your way to our support. It is certainly the case that, if there is not a local centre, it may be that catapult services are not talked about as much. That is something that we are trying to address by connecting with the people who are already there, and that is a good way forward.

One thing I would be a little concerned about is if we end up creating lots of new centres covering similar things and, therefore, diluting the value of the expenditure that is made. There is a balance to be made there: let us make sure we get the internal wiring right.

Q60 **Dame Tracey Crouch:** Thank you. Mr Andrews, have you anything to add?

**Simon Andrews:** I agree with all that. There is a time and place for local delivery, depending on whether the organisation has the scale and can get out there. If it can, that is terrific. The United Kingdom is a very small group of islands, and there are places for national centres of excellence as well. There is something of a photonics and quantum cluster where we are. That is partly why we are there but partly it is growing because we are there. These things can be incredibly effective economic drivers.

We were discussing the role of RTOs in commercialisation. Across the UK, the diversity of organisations is absolutely enormous. Some are expertise-based, and some have huge infrastructure and capital equipment that young companies could not afford.



In terms of the signposting, where it is and things like that, we have examples. We have national labs and PSREs, public sector research establishments. Places like the Met Office, the National Nuclear Laboratory, and the National Physical Laboratory. Fera is just outside York, and the Scotch Whisky Research Institute does what it says on the tin. Some specialise in seeds, some specialise in automotives, some write market reports, some do a lot of convening, and some do a huge amount of training, like TWI, the Welding Institute.

I am a director of AIRTO, the Association for Innovation, Research and Technology Organisations in the UK. We have an incredible range of assets that some people may not have heard of because there is no one coherent system. The establishment of catapults did a great job in ensuring they all had the same name. That was very wise in terms of the branding and the communication, but there are so many others out there that can all really help.

**Q61 Rebecca Long Bailey:** Dr Wilkes, the Government have provided funding to catapults since 2011. In 2023, they agreed to allocate £1.6 billion core funding to catapults over the next five years. Is that enough and what impact will it have?

**Dr Wilkes:** Is it enough? It is a huge investment. It is a massive public investment—real confidence in the catapults as an organisation. We could obviously do more. We have a system in place where the catapults are driving real impact. Rosa said we need to be careful that we are not diluting the amount. Coming into the next Government and the next spending review, we would be very keen to discuss opportunities to increase the network.

The catapults work best in a balanced system. The collaborative R&D funding from Innovate UK is a key part of how the catapults work with industry and with academia. Without that, if you try to expand the organisation hugely, it needs to grow with that balance.

If you make comparisons with organisations like Fraunhofer in Germany, which has billions of pounds a year over multiple decades, you will know that we have some work to do to catch up. At the moment, I am incredibly impressed by the Government's commitment to and confidence in the catapults coming into this most recent spending review.

**Q62 Chair:** Ms Wilkinson?

**Rosa Wilkinson:** How should I answer that question? Is it enough? Of course, we could always spend more but, actually, one of the things we take very seriously is our duty to the taxpayer. We have to deliver a return for UK plc, and that is incredibly important.

One thing that I see as I look around the world at the moment, is that there are many other nations upping their investment in this space. They are doing it to capture some of the value that is emerging from research right around the globe. We have seen it in the Inflation Reduction Act, we



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have seen it in the European green deal, in Singapore and elsewhere. That is a real issue for us because there is a danger that, if some key research projects and commercialisation programmes go to other countries, then, ultimately, that is where the value will settle and matter for us in the long term.

What we need is certainty of funding. It would be good to have that in the longer term. A five-year cycle is great, because it is better than other bits of Government, but it is not giving us the certainty that we may need for commercialisation programmes which may take decades. If I think of work that is going on within our nuclear industries, for example—long-term commercialisation endeavours, and ditto in the healthcare and pharmacological areas—then that is what we need.

**Dr Wilkes:** You asked specifically about the impact: when going into negotiations with Treasury over the £1.6 billion, it rightly held us to account for what has happened with investment over the last 10 years. How is it going to deliver impact over the next five years? The very detailed and robust academic evidence shows that SMEs that have worked with a catapult grow 50% faster than businesses that have not worked with a catapult. When you add that up over the 25,000 SMEs that catapults will work with over the next five years, it delivers a five-times return on investment.

Q63 **Rebecca Long Bailey:** Ms Wilkinson, you have spoken very enthusiastically about UK manufacturing, and that enthusiasm is infectious. With your extensive expertise in this area, do you think the Government are doing enough to support UK manufacturing, especially considering, when you look at the figures, we are lagging behind other industrial nations in terms of our capacity here in the UK despite having some of the most brilliant innovators and entrepreneurs? What more should the Government be doing to support manufacturing?

**Rosa Wilkinson:** I have been extremely pleased, in recent years, to see manufacturing move up the league table of big policy issues. Thank God, because we need a robust and thriving manufacturing community if we are to be a resilient nation, not just in terms of our economy but in terms of 101 other things as well.

I am pleased that manufacturing is now talked about. The M word can be used without embarrassment. I want it to be used more. I would like to see Government really developing their industrial policy, dare I say industrial strategy, so that businesses within that community can say, "The UK is the place really to do business. I want to come here. I want to grow my business here." There is further to go.

Q64 **Rebecca Long Bailey:** Mr Andrews, with regard to the thirds funding model, what sector is it most difficult to attract funding from?

**Simon Andrews:** I struggle to think of one. Do you mean all three sectors, all three sources of income?



**Rebecca Long Bailey:** Yes.

**Simon Andrews:** The thirds model is a reference to a headline that is often quoted in terms of the Fraunhofer-Gesellschaft model as operated in Germany. It receives core funding of approximately one third of its total annual expenditure from a mixture of 90% federal and 10% regional government. That is assured.

I have to echo the point about long term. In Germany, long term is 15 years; a pact for innovation lasts 15 years. That gives confidence, not just to the employees and the start-up companies but to the investors and foreign investors that Germany has committed to innovation. That helps drive foreign investment and build trust.

Regarding the other two thirds, there is the Government one, there are then direct contracts, which are mostly industrial, and then what they call collaborative. In Germany, some would look like research councils to me, and some a little like Innovate UK. The industrial one is definitely the hardest of those three sources of income, and it certainly is for us running Fraunhofer for the benefit of the UK from Glasgow. Asking a company to put its hand in its pocket and pay cash, like Byron does, is tough. If there are other mechanisms of support, they will welcome them.

I would have to echo the point about quantum of funding and add in the balance of funding. Aside from the catapult funding that is controlled by Innovate, Innovate UK's budget is way behind where it should be.

There are large numbers of collaborative R&D competitions that are hugely oversubscribed, with really high-quality proposals from very ambitious companies trying to grow, trying to scale, and hoping to get that sort of mechanism to show the investor it works. It works in this market, and it works in this application.

We are hugely underfunding that. The UK spends, very approximately, 80% on R and 20% on D. South Korea is the other way around. We are jealous of the way other countries do these things. I am not suggesting we would, in any way, reduce spending on R, and even blue-sky is incredibly important for the long term, and I do not think we should not reduce funding for universities. But if we are seeking to place more bets and have more R&D and innovation in the UK, it has to be on the D side.

There was a paper produced a few years ago by AIRTO on development, design, de-risk and deployment. There are all sorts of things in there that are very expensive, very difficult for little companies to do on their own, and that is where we can have the greatest impact for the UK.

**Rosa Wilkinson:** Could I come in on the back of that? That distinction between the R and the D, in terms of funding volumes, is an important one. Here is the thing: once an announcement has been made that public funding is going to go in a particular direction, it can have an incredible impact in terms of bringing in additional private sector funding, but there



is an “if”, and that is about pace of delivery. At times, we have seen some significant announcements which have then taken an awfully long time to come to fruition, by which time their magnetic effect, in terms of tempting in the private sector investment, may have dissipated.

**Dr Wilkes:** We must remember that there are big constraints on the public purse. In any case, we are looking for at least double the amount of private sector investment alongside the public sector investment. That is the really big prize here. I support Simon’s case that Innovate UK could spend more money very usefully, but we really have to crack the private sector investment.

Q65 **Chair:** Ms Wilkinson, can I come to back to something you said? You talked about the industrial strategy. The Government produce multiple strategies in science and technology areas. Do you think there is a disconnect between the strategies and delivery plans?

**Rosa Wilkinson:** There can be. It is interesting that we have a number of sector-facing teams across Government. They sit in different Government Departments, and we have a science and technology framework that sits within DSIT, the Department that you watch over.

Since we saw the machinery of government changes that brought out the creation of DSIT, DBT and DESNZ, it has taken a little while for some connections to be reformed. There is often a challenge in making sure that the policies join up with each other in a more holistic, more systemic way, because that is what businesses need.

Q66 **Chris Clarkson:** Ms Wilkinson, let me, as a Lancastrian, that you just uttered a phrase I thought I would never hear from a Yorkshire woman: “We could always spend more money.” Dr Wilkes made the point that the real prize is to try to get that 2:1 ratio of private to public funding. How successful has the High Value Manufacturing Catapult been in achieving that?

**Rosa Wilkinson:** We have been very successful. I do not remember the exact figures but, for every £1 of public funding we deliver about £4.50. It is around four and a half times. That is pretty good.

Q67 **Chris Clarkson:** It is excellent. What is the secret?

**Rosa Wilkinson:** The secret is about connecting great ideas with the talents to deliver on them. That is precisely what we do. We are very much the champions of facilitating the commercialisation of good ideas or brilliant research.

Q68 **Chris Clarkson:** How would you say UK science and tech companies compare to their international comparisons? We have heard about Germany; I grew up in Germany. There it is something that is very much baked into the culture of development. We are playing catch-up, in a sense, but how successful are UK start-ups and spin-offs in terms of attracting that extra financial investment from the private sector relative





to their international comparators?

**Rosa Wilkinson:** They struggle, to be honest. There is something around the level of financial literacy, which I mentioned earlier. There is also something about the visibility of the financial communities around the UK. If you are in the golden triangle between Oxford, Cambridge, and London, you may well be able to find your way to an investor fairly easily. If you are outside, it remains a bit of a challenge.

Often companies will look to traditional sources of debt finance in the first instance, but they will not be as confident or necessarily know anybody who has been through the process of getting VC investment, equity investment. We have to grow their understanding of how finance works as much as we have to grow their ability to manage innovation projects.

Q69 **Chris Clarkson:** Do you think that is something that needs to be developed in the existing catapult model?

**Rosa Wilkinson:** It is certainly something that we, within the High Value Manufacturing Catapult, have been looking at very closely. In fact, we have grown our own capability to engage with the investor community, which is important. There is also a role for lots of different organisations to play. It may be that some banks can take more of a role in this. It may be that in some communication, done either by national-level Governments or, indeed, regional governments, they can do more to make visible venture communities.

**Chris Clarkson:** It is about a suite of catapults doing different bits of the—

**Rosa Wilkinson:** All together.

**Dr Wilkes:** We just talked about this thirds model, which is very direct evidence of industry investing in catapults. That is excellent and easy to track. What we are seeing more, and getting strong evidence on, is that investors coming into those businesses, once they have worked with catapult, provide an order of magnitude greater than the direct investment: something like £3 billion of follow-on investment into catapult-supported businesses. A lot of that is about risk and confidence. If a business has worked with a catapult, or is continuing to work with a catapult, they have confidence.

Q70 **Chris Clarkson:** Is that where that 50% of extra growth comes from that you are talking about? You said that companies that have been through a catapult have 50% faster growth.

**Dr Wilkes:** Yes. One way is by building the confidence for their investment.

**Chris Clarkson:** Yes, a happy symptom of it.

**Dr Wilkes:** Yes.



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**Rosa Wilkinson:** I am dying to come in on the back of that. One of the brilliant things that catapults offer, and not just mine, is that, if you are an investor, you can pour money into a company to buy the kit that it might need to develop brilliant idea x. That might cost you £10 million because it is an expensive kit, or you can pour in £2 million, which will deliver on their operating costs. So it is the CapEx/OpEx issue. Actually, what we allow is more of the money to be transferred on to the OpEx side, because we are giving them access to the kit that they need to test out brilliant ideas until they are absolutely sure that the concept works, and they can take it to market. It means, for the investor, that they have the potential to invest in more companies, maybe a little less in each of them, but the money goes further as a result and increases possibilities of return for them.

Q71 **Chris Clarkson:** Is this what Mr Andrews was talking about in terms of smoothing that balance between the R and the D portions: being a bit smarter with the R part, putting it in more pots?

**Rosa Wilkinson:** Yes.

**Chris Clarkson:** Thank you very much.

**Chair:** Thank you, Chris. Thank you to all three witnesses in this panel. It has been really interesting. That concludes today's session.