Select Committee on Science and Technology

Corrected oral evidence: Life Sciences and the Industrial Strategy

Tuesday 24 October 2017

11.05 am

Watch the meeting

Members present: Lord Patel (The Chairman); Lord Borwick; Lord Fox; Lord Griffiths of Fforestfach; Lord Hunt of Chesterton; Lord Kakkar; Lord Maxton; Baroness Neville-Jones; Lord Oxburgh; Lord Renfrew of Kaimsthorn; Lord Vallance of Tummel; Baroness Young of Old Scone.

Evidence Session No. 8 Heard in Public Questions 46 - 53

Witnesses

Mike Thompson, Chief Executive Officer, Association of the British Pharmaceutical Industry; Nisha Tailor, Head of Policy and Public Affairs, Association of Medical Research Charities; Steve Bates OBE, Chief Executive Officer, BioIndustry Association.

USE OF THE TRANSCRIPT

> This is a corrected transcript of evidence taken in public and webcast on www.parliamentlive.tv.

Examination of witnesses

Mike Thompson, Nisha Tailor, Steve Bates.

Q46 **The Chairman:** Welcome, lady and gentlemen. Thank you for coming to help us with our inquiry. I will say, first, that the session is being broadcast on the web, and if anybody has a private conversation it will be picked up. Can I ask you to introduce yourself, from my left, so we have you on record? If you want to make an opening statement, please feel free to do so; otherwise, we will move on to the questions.

Steve Bates: Good morning. I am the chief executive of the UK BioIndustry Association. We are the trade association for life science companies, with a particular focus on small and medium-sized enterprises.

Mike Thompson: I am chief executive officer for the Association of the British Pharmaceutical Industry. We supply 80% of all the branded medicines that are used by the NHS. We are an R&D-based organisation. Our members invest over £4 billion in the UK, which, as you know, is significantly more than any other sector.

Nisha Tailor: I am head of policy and public affairs at the Association of Medical Research Charities. We are the national membership body for 140 medical research and health charities that fund research across the UK. Our members have invested £11 billion in research in the UK since 2008. You have heard from some of our members already—Cancer Research UK and the Wellcome Trust. We have a diverse membership, so our charities vary in size and the amount they put into research but also in the plethora of disease areas that they support research in.

The Chairman: Thank you very much. Do any of you want to make any opening statement, or shall we get on with the questions?

Mike Thompson: I would start by saying that this strategy is an impressive document that is broadly welcomed by industry and the sector.

Q47 **The Chairman:** That was the question I was going to start off with. To all of you, first, can you comment on the strategy? What chance does it have of success? What will it require to make it successful? In particular, what do you think about the recommendation related to HARP, the health advanced research programme, and what is likely to be a success?

Mike Thompson: As you know, life sciences are an incredibly complex ecosystem. One of the challenges has always been to pull it together. I think John Bell is to be congratulated in herding everybody and getting alignment in what is required. You will have read it and seen that it is an impressive end-to-end document that is future-focused. That is important, because there is a lot of dramatic change going on in this sector, so to have something that is forward-looking is incredibly important. It is ambitious, which is fantastic for the UK, particularly as we face the context of Brexit. Putting out a signal that this country is ambitious in this sector is incredibly important. The core insight is that

the NHS is at the heart of everything we do. That, I think, is the fundamental challenge and opportunity that we need to work out how to make the most of. I will stop there and say that that is our initial response.

The Chairman: What about HARP?

Mike Thompson: As you know, this came out of an insight into DARPA in the US and where Governments have made significant investments in future moon shots—literally, starting with the investment they made to go to the moon—and the ability to do things that provide almost seed investment in interesting areas that generate significant business investment that follows on from that. It is one of the most interesting ideas in the strategy, and I think there are some very good areas that have been picked. The challenge will be to do all four of them, but if we manage to do a couple of them really well, quite frankly the UK will become a leading-edge centre and will attract business and investment as a result.

Steve Bates: We think it is a springboard to an early sector deal, and it is fantastic that life sciences is the first among the sectors to do that. The BIA has long argued that the UK has the opportunity to become the third global cluster for life sciences because of the strength of the ecosystem that we have here, and this is a fantastic document for pulling us together in that direction. We are of the view that having a strategy has always been important. I look back through the annals of the BIA's not extensive archives to the Spinks committee report in 1980; the biotechnology clusters report led by Lord Sainsbury in 1999; the biosciences 2015 report, published in 2003; Sir David Cook's review in 2006; the life sciences blueprint in 2009; and *Innovation, Health and Wealth* in the strategy for UK life sciences in 2011. We think that having a strategy has been an important part during that time of putting us in the direction to be a global cluster. The plan may not survive first contact with the enemy, but having a plan is very, very important.

HARP has organised our thinking across a complex ecosystem around some areas that are particularly exciting and future-focused. From our perspective, we are keen to make sure there are opportunities for SMEs to engage meaningfully in some of these opportunities, and the way that these opportunities may be constructed needs to have the opportunity for those companies to engage.

Lord Hunt of Chesterton: What is HARP?

The Chairman: HARP is the health advanced research programme. It is one of the key recommendations in the document on creating two or three high-level industries worth £10 billion over 10 years.

Nisha Tailor: Echoing much of what has been said already, our members have welcomed this ambitious and comprehensive strategy and think that the ambition to retain the UK as a world-leading place to do medical research in life sciences is testament to the strategy. It is, of course, an industrial strategy for the life sciences sector, and we value the recognition that the strategy gives to the breadth and diversity of the

organisations involved in the life sciences sector, particularly the medical research charities involved in so many different ways in the life sciences sector. As a reflection of that, many of our members have welcomed many of the recommendations in the report, particularly the recommendation on the charity research support fund, which I understand the Committee has heard about from Cancer Research UK. That is a vital fund that supports collaboration between our charities, universities and the Government.

There are a number of other recommendations in the report that our members have welcomed, HARP being one of them. There is a real opportunity to draw on the strengths of the charity sector in the life sciences. One of the strengths and assets that charities can bring to the life sciences is the patient voice and patient insight. Essentially, that ensures that the research and innovation that is taken forward through academia, industry and others meets what matters to patients. That is absolutely crucial for making sure that we are investing in the right technologies and advances. The sector has also been supportive of the broader underpinnings put forward in the report, around skills, research and mobility, and regulatory harmonisation.

The Chairman: We will come to that.

Q48 **Lord Borwick:** We have all welcomed this report. You all say it is tremendously important, but can you give me some examples of changes that your members will make as a result of this report, or does this report reinforce the direction they were going in anyway?

Mike Thompson: You heard from the last witnesses the importance of data in our world. Data has been transformative in many sectors and is about to be enormously transformative in this sector. When we looked through the lens of Brexit to understand the biggest opportunity that the UK had as it stands alone, we saw the NHS, with a patient cohort for which there is lifetime data, as an incredible advantage. If I am in the US and I move jobs, my data is essentially lost. The only other areas that have that sort of advantage are in Scandinavia, but they are smaller countries. The critical mass of the UK is a fantastic advantage. If you look at the investment the UK has made in genomics and the potential ability to link that to the data of the patient as it travels through the patient pathway, you can start to identify patients, move on prevention earlier and identify patients who you want to go into more specific clinical trials. The UK has a fantastic advantage. Talking long term, if there was one thing that would be truly transformative it would be the UK working through how it would make progress in using this fantastic asset that it has.

Steve Bates: The change I have seen is in companies seeking global investment when they are looking for venture capitalists. They would put a slide in their deck for the environment they are operating in. If you think about it, without this slide and the ability to articulate the UK opportunity, the slide in there would be a slide about Brexit, which may be less positive for some of the investment opportunity that we have.

Q49 **Lord Vallance of Tummel:** Can we move on to implementation? Past industrial strategies are not very encouraging when it comes to implementation. They have tended to run into the sand for one or two reasons, partly because Parliament and industrial strategies have different timescales, and partly because there is diffuseness in authority and responsibility, and so on. How would you suggest we tackle this this time round? How is this life sciences strategy going to be implemented, and who should be responsible for it?

Mike Thompson: You will have noticed that the strategy does not talk about implementation.

Lord Vallance of Tummel: They never do.

Mike Thompson: I agree with Steve that strategies are important in setting the direction, but if you do not implement them they are not worth anything. This is key now and it is a challenge, particularly because all Governments face a challenging financial situation. If you are going to invest, you need to find money to invest. There is ultimately a challenge. The question is: will this have high-level political will? Jeremy Hunt and Greg Clark have been at the lead on this and have championed it; they were there at the launch of it. We believe, partly because of the need for political will to be shown here and partly because this is an ecosystem that needs to be held together, that this needs to be Cabinet Minister-led. We need to hold together the ecosystem that has done so well to produce a very good strategy and get it to implementation. This requires a well thought through structure to deliver it. It will then require investment. Ultimately, the key philosophical point is: do enough people believe that investment in innovation is a way to resolving some of the short-term challenges in the NHS? That will be critical to whether people get behind it. There are, of course, enormous short-term challenges, but if you believe that innovation will provide some of the productivity and health gains that will help the NHS to manage some very tough challenges, you will get behind it. If you do not, you will not. That is the battle that has to be won.

Nisha Tailor: On implementation, certainly the question that our members are asking us, particularly the smaller and medium-sized charities, is how they can get involved. It is not entirely clear at the moment what the next phase is in terms of implementation and taking the strategy forward. We need clarity on the governance and the accountability. I would certainly say that we need some kind of oversight group or mechanism funding and leadership to take the strategy from where it is into implementation.

Lord Vallance of Tummel: Has anybody picked up this thought that a secretary of state, or whoever, is responsible, or even, perhaps, a Cabinet committee? You would have a series of Secretaries of State to draw things together. Even if that were to happen, would you trust them to do it?

Steve Bates: If there was a formal government response to this document, perhaps in the format of a sector deal where there is agreed commitments on both sides, that would at least give something that the

Government will be accountable to in Parliament. There are some processes in which the sector comes together and works quite well. We are on the ministerial industry strategy group that brings the departments together in a way that perhaps works. Whether we need a formal Cabinet committee to do that I am not sure. The key thing that is needed for this to work well is NHS buy-in. We used the opportunity of our submission to your Committee's inquiry to publish data on how much the NHS has understood previous examples of these types of strategies, and we discovered that 82% of respondents in a survey of over 1,000 NHS staff were not aware of *Innovation, Health and Wealth* or the accelerated access review, which was disappointing and somewhat concerning. There is a job of work, and your previous panel will be important in making sure that these plans are well understood within that community.

Lord Kakkar: In terms of implementation, an awful lot of the discussion is about future public-sector investment in this strategy. What about substantial investment from industry in this strategy? Have the broader biotech industry and large pharma thought about how they are going to mobilise their own investment? Does this strategy, in the document that has been presented, provide sufficient motivation to industry to develop their own strategic approach to substantial increased investment in the life sciences sector in the UK?

Mike Thompson: That dialogue is going on at the moment, and John Bell is leading that. There are a number of companies, both large and small, that will be prepared to invest. I think that will be a win for the Government. This was very well timed as a strategy to engage people. This is undoubtedly a strategy that has caught the attention of global leaders. This is a really good document. By the way, it will have caught the attention of other countries as well; they will be reading it very carefully.

You will see some very significant investments being considered, and some of that, as Steve has said, will come down to real confidence that this is not just about a short-term capture of some investments but a real, long-term strategy to make the most of what the UK has to offer. Global leaders are looking around the world and saying, "Who are we going to partner with?", and, "Where do we partner?" The UK has a lot of things that are incredibly attractive. Our job is to sell the UK to global industry, and we have a lot to offer, but it requires partnership investment. If, as Steve said, we can see joint commitments on those things through a sector deal, we will see some significant investments made.

Lord Hunt of Chesterton: I was watching the television news last night about lifestyle problems in the health service. This is hardly discussed yet is an enormous part of the cost. Some of this seems like chemistry, big pharma and lots of money, but it is all this other side of lifestyle. Will lifestyle change over the next 10 to 20 years? I wonder whether you feel that that element has not been emphasised enough.

Steve Bates: I would look at things such as the opportunity in the genomics revolution to explain why, if you wear a Fitbit and somebody else wears a Fitbit and you eat the same food, you get a different outcome in terms of your future health state. You can use leading-edge science to innovate in areas that might be considered lifestyle issues. If some of that data can be put together in new and innovative ways, combined with the challenge of long-term conditions, we in the UK can, because we have leadership in certain types of AI and certain types of genomic data, build these new industries, which we can sell to the world. For our companies this is a global opportunity to be based in the UK. The investment needs to come here so that we can use this for global opportunity in those areas. They are encompassed in what we can do with the science. We do not ignore them, but we are not going to solve all public health issues only through a technological innovation focus.

Lord Griffiths of Fforestfach: One thing that strikes me, as someone who is new to the whole area of life sciences, is that when you are talking about a strategy, you really want simplicity above all. The one thing that has hit me in respect of all the members who have come to give evidence is the complexity of the present structure. You have teaching hospitals, research departments at universities, pharma companies, private equity companies and charities; there is the whole genomic issue, which you have mentioned; and there are all the problems of data. Most of all, you have a single provider, the NHS, which is enormously complex. A strategy can cover everything from something very simple in a very small business to something here that is almost a national plan. So the question is: when you talk about the viability of an industrial strategy in this area, what exactly do you mean?

Mike Thompson: I think we said that all roads lead to the NHS, because everything has to be delivered through the NHS. We only have one provider. That is key. There is no doubt that we all have a lot of sympathy for people working in the NHS, which is an incredibly complex organisation. We have seen, through the development of clusters, the ability to make progress in perhaps more manageable areas to provide proofs of concept. In previous lives I have been responsible for innovation where you run a pilot, you prove the point, and it is then about whether you can drive uptake in such a way that people do not reinvent the wheel. One of the challenges in clinical trials in this country is that companies will go through ethics approval and get something signed off, it will then be put out to individual trusts, and certain trusts will want to go through the process again. To be honest, that sort of thing loses a huge amount of time and does not add value. In the end, the UK loses some of the clinical trials that it would get.

The Chairman: I thought that was sorted out through a single portal from the ethics committee.

Mike Thompson: In the discussions throughout the process, that has not been fully resolved. Conceptually it has been, but in practice it has not. One of the things that has been made very clear through the process is that there is still work to do. We all know that delivering change is incredibly difficult. You may agree something and think you have done it,

but you have to follow it through. We are doing some work at the moment in Manchester. Manchester is a very interesting cluster because of the way it has been structured with its budgets. You can put your arms round some things, you can make some progress, and once you have shown real improvement the challenge is how you replicate that and do that at pace. That is the management challenge for the country.

Q50 **Lord Fox:** My question is about the attractiveness of the UK to business. It is tempered by the fact that we have lost more pharmaceutical companies of late than we have gained. Why might that be? Reflecting back slightly on the sector deal stuff and investment, in simpler sectors than this one, such as aerospace, you see 50% coming from government and 50% coming from the private sector, which, in the case of aerospace, is being administered by the Aerospace Growth Partnership. Is that the sort of thing that you envisage? The first point is about attractiveness. The second, assuming that you get that investment, is how it might be administered.

Steve Bates: There are two points here. I am not sure that I would entirely agree with you that global pharmaceutical players are not present in the UK. They are increasingly present in the UK rather than decreasingly present. Global pharmaceutical companies have divested themselves of a portion of their own internal R&D, and because much of that was put into the UK in the last period of time we had a disproportionate amount. When you have seen global R&D shut down within global players, some of that has been in the UK. Pfizer in Sandwich is the obvious example.

The point here is that often much of the work that is sourced essentially from a biotech ecosystem—so it is complex—and a series of small companies, is picked up by small companies in Cambridge, Oxford, Manchester, Dundee, Edinburgh, and around. We have done quite well, and we are competing globally in the new innovation ecosystem that is close to the universities. We are very lucky to have fantastic universities to be close to the science on. That is what is happening there. Are we attracting global investment? I would say that, yes, we are. We are clearly the leaders in Europe in venture finance, which is a surrogate for attractiveness. You see major partnerships from most of the major pharmaceutical players with our R&D ecosystem, whether that be SMEs or fantastic charity sectors. We are the envy of the world, having organisations such as Cancer Research and Wellcome. When you put those collaborations together—charities, fantastic science from our universities, innovative SMEs that can move fast and a global player that is interested in accessing that technology—that is how success and innovation will look in the 21st century. We are doing quite well at it at the moment. I would say that we are the third global cluster, and we can go further and faster if we get it right.

The Chairman: If all that is happening is good, what will the strategy add to it?

Steve Bates: In one sense, it explains that to a group of people who do not get it straight off because it is complex, because it puts it in lights.

Secondly, the bright people who have worked on the strategy with John Bell have highlighted a number of themes where they think we have particular excellence. The HARP initiatives are looking at areas where they think there is global opportunity and UK capability. If we can put the mix together we can go further faster. We have picked the sports at the Olympics that we think we will do well at next time round. If you think of it globally, the Chinese are very keen to invest in biotechnology. They have it as one of their significant strands for the Communist Party's five-year plan at the moment. America obviously does it through a market-based environment. The coming together of the technologies that we have recently developed—genomics, big data and AI—is where the opportunity is going to come from.

Nisha Tailor: The strategy also comes in the context of leaving the European Union. It gives a platform and an opportunity for the sector to retain its position as a world leader and that competitive edge.

Q51 **Lord Oxburgh:** In every answer that we have had the NHS has come up. Can you tell us a little about your relationship with the NHS? Is this formal or incidental in your dealings with particular trusts? Would each of you like to say how this works?

Mike Thompson: The first thing to say is that we have a common goal, which is improving health for the citizens of the UK. That is a very good start. A lot of what we do is trying to align behind the collaborations that will help the NHS to deliver its five-year forward view. We are in the process of signing a diabetes framework, which my trade association has facilitated, where we will get all the companies who are working in the space of diabetes—

Lord Oxburgh: That is with the NHS?

Mike Thompson: That is with the NHS—to work with the clinical lead in diabetes, essentially to say, "What can we do to get behind what you are trying to achieve through diabetes care in the UK?" Those sorts of things are enormously productive, and all of that works well.

Lord Oxburgh: Is that unique? To set this in a broader context, has this happened before or is this a new kind of initiative?

Mike Thompson: Remember, NHS England only came into being in 2013, so it is also evolving as an organisation. These are all journeys that organisations are on, but these are the sorts of opportunities that we are taking.

The Chairman: The example that you give is improving diabetic care and making it consistent across the whole of the health service. That is not related to new innovations.

Mike Thompson: It will be about how a patient pathway could be changed on the basis of new innovations that are coming through.

The Chairman: I am not going to market that to the world, am I?

Mike Thompson: Every new innovation needs to find its place in the patient pathway. You talked with your previous panel about how some

things need to be taken out. The best way to do that is to look at a patient pathway and say, "If you put this innovation in, how do you reshape that pathway to get the best out of the innovation?" It probably means stopping some of the things that you are doing at the moment. Companies will do that sort of detailed work, for instance, when they are introducing new processes. In a sense, the technique is the same. That sort of work is enormously valuable, and you sometimes need to work at that granular level to be able to deliver things in a way that show the improvements and the system efficiencies as well as patient outcome improvements.

Lord Oxburgh: How about the BioIndustry Association?

Steve Bates: We would think of the NHS as 3% of the global market. Many companies will be working prior to having a licence available for patient use, so they would be in a research phase. They may not even be touching humans yet. Sometimes if they are engaged with their product being used by people it will be at a research phase. There is significant engagement with the NHS as a home for clinical trials.

Lord Oxburgh: That is at a local level, however, rather than a national level.

Steve Bates: There are some enabling parts of the NHS. The NHS, again, is another complex ecosystem. The National Institute for Health Research is a significant funder and supporter of research. The capacities that enable people to do commercial trial work within the NHS system are equally valid for other types of research work. There is close symbiosis, which is very important. Here, I suppose, the key thing for us is the linkage of that system into a regulatory system that is probably going to be changed significantly by the results of Brexit. We are focusing on how that environment will shift and move, and ensuring that we can get good-quality data. There is innovation in how you do clinical trials, which the UK is quite good at. Making sure that we can do the most modern type of trial in the most efficient way is the focus of our work.

Lord Oxburgh: Do you feel that you have the access that you need and that your concerns or suggestions are heard?

Steve Bates: I am very conscious of the pressure that everybody in the NHS is under to deliver patient care. Sometimes our engagement tends to be at the tertiary, hospital level; the people who are most able to do this. When people are under extreme financial pressure and can only work to a year-end budget, it is sometimes hard for them to engage with this agenda. There are many excellent clinicians and management teams who want to do more of this and see the value in doing it, but they are doing that in a difficult context at the moment.

Lord Oxburgh: The charities are in a somewhat different position. How would you comment on your interactions with the NHS and others?

Nisha Tailor: For medical research charities the NHS is hugely important. It is a place where clinical research takes place. A lot of our members fund clinical research. Last year, 170,000 people were recruited to clinical trials that were funded by medical research charities. The NHS

is hugely important in enabling research to take place. In addition, data from the NHS is incredibly important for our members. A lot of the research that our members undertake is underpinned by NHS data. As has come up before, the NHS has this incredible resource with our health and social care data.

The other reason why the NHS is so important to medical research charities is that it is ultimately the place where the fruits of the research that our charities fund, and which the public fund through charities, is the place where that research and those innovations should be accessible to the patients whose health they are seeking to improve and save the lives of. In that sense, the relationship is very important.

On the uptake of innovation, as you have heard in the discussion so far, that is also an area that many charities would like to see improved so that patients can get faster access to new innovations.

Lord Oxburgh: Just for information, do your charities support medical research exclusively in the UK or is it more international?

Nisha Tailor: The majority of it is UK-based, but there are charities that support research across the world. Clinical trials are an interesting example of that. Cancer Research UK funded something like 200 clinical trials last year, a quarter of which involved other centres in other countries in the European Union. That leads to an important point about clinical trials regulation and continuing the harmonisation and the regulatory alignment that we have with the European clinical trial regulation, as we leave the European Union we need to ensure that patients in the UK can take part in clinical trials that are multicentre and so happen across the European Union.

Lord Oxburgh: Thank you.

Lord Fox: We were all distracted by the potential for private sector money going in, the hint that that needs to be matched at a government level, and the question of how that might be administered, managed, focused or targeted by a sector deal. Your thoughts on those things, please.

Steve Bates: From our perspective we are looking closely at another related piece of government work, the Treasury's patient capital review, which looks at how we ensure investment in innovative sectors, particularly targeting private investment in innovative sectors, which is touched on in the report but is not the focus of the life science strategy. I believe that is due to be commented on around the time of the Budget. I think we have done well at attracting venture capital and private sector investment into UK life sciences compared with our international peers. We can do more. It is a source of regret to me that sometimes we do not have all the links of the investment chain together. If you think about the long-term nature of investment in new therapies, you need early investors, angels, or friends or family; you need people who can do start-up and scale up if you can follow their money, and you need a functioning public market.

Lord Fox: Which links are largely missing?

Steve Bates: The UK public market is a challenge. AIM is a challenge compared to the NASDAQ market, and we think there are significant challenges in the scale-up area. There is good work from the UK Government in support for small businesses through Innovate UK. There are some significant schemes, such as the biomedical catalyst, which have worked well, and the tax environment is very positive and creditable compared to other countries, particularly in R&D tax credits, which are very important for companies. If you can come here and combine that very positive environment with the expertise from universities, charities and other players, it adds to the rich mix of reasons why a company is sited here.

Mike Thompson: Building on Steve's point and your previous panel, there is the emergence of some evergreen investors, which is important. Growing into a reasonable-sized pharmaceutical company is expected to take up to 20 years. Most venture capitalists want to cash out in six to eight years. There has been a gap in the funding available to have that long-term investment. That is starting to change. One of the benefits of this strategy is that John Bell has put his finger on that, and as Steve says we await the patient capital report with interest to see how that may help.

Q52 **Lord Hunt of Chesterton:** I have asked you a question about Brexit. Scientists are very interested in this. I wonder how the R&D plans in the UK will be adapted for the future when the UK is leaving or transiting Brexit. One is hearing that scientists will still be involved in Horizon 2020 projects, but it still seems unclear whether the UK Government will participate in 2020. What is your perception?

Mike Thompson: Steve and I worked really hard from the day of the referendum result. We had six work streams, 200 global experts from the industry and 50 hours of workshops coming up with the key issues, which we presented to the Government last September. Since then we have had great support from the UK Government. We have had deep-dive work streams on regulation and on trade. All the key announcements made by the UK Government have been very in line with the ask that we have had. Again, we particularly Jeremy Hunt's and Greg Clark's letter to the *Financial Times*, which talks about co-operation being the outcome the UK Government is looking for. I can tell you that that had an enormous impact on continental Europe.

Lord Hunt of Chesterton: When was that letter?

Mike Thompson: In July. We have worked across the industry. Across Europe we have a single position on what outcome from Brexit the industry is looking for. That enabled us to write a letter to Barnier and Davis saying, "This is what we are looking for". We are the only sector that has been able to do that. We have a very clear view. We are very appreciative of the UK Government's support for that.

On your specific question, I think the Government have made it very clear that they want to continue to invest in Horizon 2020 and will make money available. To be honest, we see countries outside the EU, such as

Norway, participating in that, so although we are in the fog of negotiations at the moment you can see that that is a very reasonable outcome to go for. It will be incredibly important, because if we are going to be a global R&D base we cannot just be an island; we have to collaborate. Therefore, participation is going to be really important, and I think we have alignment that that is what we are looking to achieve.

The Chairman: To make it clear, did I understand you to say that the industry has been in touch with industry in other European countries?

Mike Thompson: Absolutely.

The Chairman: This was a joint presentation to both EU negotiators and our negotiators?

Mike Thompson: Absolutely. Steve and I have a joint document that has been signed off by our European associations across Europe saying that this is collectively what we want, because if we do not have co-operation the impact on patients and public health will be the same across Europe. There is a health security issue here. You have to put patients first. An example at the moment is pharmacovigilance, for which we have one database. It makes no sense for the UK to have its own database; it clearly makes sense for us to continue to have one database. Patients in Europe will benefit from us picking up anything that comes in through Heathrow that then goes on to the continent of Europe. We are all in this together.

The Chairman: Is this a publicly available document or a private document?

Mike Thompson: It is an industry document. We would be careful about sharing that, but we would be able to share the substantive points. They are well known. We have talked about them very publicly and there is a single alignment.

The Chairman: If you could send us a summary, that would help.

Mike Thompson: I will be able to send you a summary.

The Chairman: Thank you very much.

Steve Bates: Can I pick up on the points about Horizon 2020? Horizon 2020 is a very important funding mechanism for UK academics. It is far less important for UK SMEs in a sense, because other funding vehicles are available. All money comes with strings. The strings on Horizon 2020 for SMEs are not as attractive as some other forms of funding that are available. I would share the concerns that the science community is very worried about its ability to continue to lead and dictate the terms and areas in which Horizon 2020 or European funding can go.

With regard to Brexit, a range of impacts are being felt that are very differential in different parts of my ecosystem. If you have fantastic science and you need money to fund some experiments to take it further down the translation pipeline, that is fairly straightforward and unaffected by Brexit. If you are involved in anything that is regulated by a single European system, which we have grown up with for the last 40 years,

there is significant risk and uncertainty. As Mike said, we are working very hard to get to a position of certainty, but at the moment we are in a position of significant uncertainty.

Fundamentally, the rules of the game are all up in the air and we do not know where they are going to go. We know where we want them to go, but there are significant risks. Businesses are making decisions on this as we speak. This is quite fundamental to quite a large chunk of service businesses that support the research infrastructure—people who operate the clinical trials environment and the clinical research environment. It is significant for people who are making investment decisions now for the long term. We are a long-cycle business and it has had an impact on investment decisions in the last three months. We would echo the position of the CBI and others about concerns about that.

Some sectors are not affected at all, and the cheap pound makes things go very well. In other areas, there is significant uncertainty. We can be confident in the UK's life science excellence. We are based around fantastic science and the fantastic ecosystem that we have. If that was to degrade as a result of academics—

Lord Hunt of Chesterton: One area of drugs is concerned with radiation and so on. Are you also dealing with that?

Steve Bates: I think that is being dealt with by other people. We have not taken a lead on it. It is a small subsector, but they seem to have it covered.

Lord Hunt of Chesterton: It is pretty important.

Steve Bates: Yes.

Mike Thompson: Are we talking about Euratom?

Lord Hunt of Chesterton: Yes.

Mike Thompson: There are issues to do with medical isotopes, et cetera, which are well understood by the Government.

Nisha Tailor: A number of our member charities are participants and co-ordinators of various Horizon 2020 programmes. The message from the charity sector is certainly that the funding is important, but as important are the collaborative opportunities that come out of the Horizon 2020 programme. We would certainly welcome continued access to those programmes, including the innovative medicines initiative that is part of that.

On leaving the European Union and R&D in the UK, the other element that is crucial is ensuring that the UK remains an attractive place for global talent and expertise. We need urgent clarification on the status of EU nationals, particularly for those working in health and research. Of course, in future we will need an immigration system that recognises the collaborative and international nature of science and takes into account the breadth of the individuals involved in the life sciences, from researchers at different stages in their careers to entrepreneurs, innovators and technicians.

Lord Griffiths of Fforestfach: Given what you have said on Europe and so on, do you have a view on the European clinical trials directive? Would you like to see that carry on as it is, or not?

Mike Thompson: I think you heard from the previous panel that the original incarnation of it had some significant flaws, from our perspective. We have worked hard, and the UK has been incredibly influential in changing that. As you know, it is about to be relaunched, in 2019 I think, and that will be a significant improvement. The UK can feel very good about the influence that it has had on that.

The issue, certainly for my members, is that the majority of trials that we do are multicentre trials. The UK will have a number of sites, but those sites will be all over Europe. Essentially, if a company is faced with different mechanisms it may choose to go through a European process to get the sites that it needs to do the clinical trial rather than going through the bureaucracy of two systems. Our preferred outcome will be to remain harmonised with that so that essentially we can simply participate. We need to recognise that in the case of rare diseases, for example, there are not enough people in this country with those diseases to do the trials, so those trials need to be pan-European. We need to do it in a simple way. That would be our preference.

The Chairman: Would your trade associations in other countries in Europe feel the same way: that it would be a disadvantage if the United Kingdom did not have the ability to participate in trials?

Mike Thompson: Yes. Going back to what Steve said at the beginning, the UK is the biggest science biopharmaceutical centre outside the US. We are a huge asset to Europe. For people who think about this thoughtfully, the UK still being integrated into the European system also has a lot of advantages for Europe. There is an awful lot of intellectual capital that they can access, too. I know that we are in a phase of negotiations where a lot of black and white negotiation tactics are being used, but if you take a step back from that we have huge advantages by continuing to work together. Most people would want that. I believe that is the outcome that we have agreed as an industry across Europe, and that is what we will be lobbying for.

Steve Bates: You pick up on a very interesting point about the clinical trial regulation. This is a complex piece of work that has been developed and will be implemented over a period of years. In the middle of that implementation period we now have a potential Brexit date or a transition period that adds to complexity for us. Having worked hard to change the rules—in a sense, the problem with the last set of rules was the UK's implementation of the European regulation rather than the regulation itself; it was a gold-plating issue—we now face the prospect of the rules of our game being fundamentally changed in a direction that we believe will be better, but the challenge that we face is whether we will be allowed to play in that game. There are some quite difficult issues relating to the date of Brexit. Whether we are allowed access to a centralised database when the EMA puts that together and how we might integrate with that medicines agency, or not, is why we are asking for the

closest possible alignment. This is a series of complexities that, until we had Brexit, none of us had thought through. There is a degree of complexity that we have been working through in this area.

Mike Thompson: That is not the only legislation. There is also the falsified medicines directive coming down, which the UK has played a very big part in. As you know, this is where we will put a barcode on every medicine, and as it is scanned by the pharmacist at the point of dispensing it will verify that it is an original medicine and not counterfeit. That will provide enormous benefits to all patients to ensure that they get the medicine they are looking for. It will also ultimately provide enormously helpful data in the supply chain in doing all sorts of other beneficial things. That is about to come, and, again, the industry has invested tens of millions of pounds on every packing line to ensure that we can put it on. It would be unfortunate if UK patients were the only ones not protected from counterfeit medicines when the rest of Europe will have pretty much a failsafe system put in. These are things that we have all fought and worked for to deliver, and we would want to make sure that UK patients benefit from them in being able to co-operate as we move forward.

Lord Oxburgh: Is a barcode very easy to counterfeit?

Mike Thompson: The barcode sends a message. It is a bit like when you go to a bank and you put in your card; it goes back to a computer that says, "This is your card and we can give you money". It is essentially the same technology, but it is an individual barcode for every medicine. It is unique.

Q53 **The Chairman:** The last question is: what is not in the document that you would like to see as a possible recommendation coming from this Committee that would help implement the strategy?

Steve Bates: I have a simple one. Given the focus in HARP on genomics and the opportunity and the experience of genomics that we have had in the UK, we would be very keen to see an SME voice on the national genomics board. That will be the driving force for Generation Genome—Sally Davies' piece of work—and we are very keen to make sure that not only do we build a capability in genomics for the benefit of patients in the UK but we can ensure that we build some companies in what we believe is an industry of the future.

Mike Thompson: In developing this we have not worked out how we can support the NHS to get the most out of it. Therefore, that is left to implementation. That is challenging. The implementation phase will be key, and getting the NHS to get the most out of this is the biggest challenge. We still have to address that.

Nisha Tailor: I agree on the NHS point about clarity on the governance and accountability, including bringing the NHS in. The other part, which is being dealt with by the Buffini review, is how we bring new investment and new innovative ways to invest and research into the life sciences.

The Chairman: Thank you all very much for coming. It has been very

interesting. Thank you for helping us.