

WEDNESDAY 10 JUNE 2009

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Present

Arran, E  
Brooke of Alverthorpe, L  
Brookeborough, V  
Caithness, E  
Cameron of Dillington, L  
Dundee, E  
Jones of Whitchurch, B  
Livsey of Talgarth, L  
Palmer, L  
Sewel, L (Chairman)  
Sharp of Guildford, B  
Ullswater, V

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**Memorandum submitted by the Bioscience Sector**

**Examination of Witnesses**

Witnesses: **Professor Tim Hammond**, Vice-President, Safety Assessment UK, AstraZeneca, **Dr Paul Brooker**, Director, UK Operations, Huntingdon Life Sciences, and **Dr Colin Dunn**, Country Manager Charles River UK and Executive Director European Veterinary & Professional Services, representatives of the Association of the British Pharmaceutical Industry, examined.

**Q57 Chairman:** Good morning. Thank you very much indeed for helping us with this inquiry on the use of animals in research. This is a formal evidence-taking session of the Subcommittee of the House of Lords Select Committee on the European Union. A transcript will be taken; you will get a copy of that within a few days and be able to correct any minor slips and errors that have crept in. The session is webcast, so there is a possibility that someone somewhere may be listening, but I always have to say to everybody who gives evidence that we have never received any evidence that that is the case, so we will see. I would like to give you the opportunity, if you wish, to make any brief opening and then we will go on to

a question-and-answer session. Some of our questions are more like essays than questions, so my colleagues may slightly abbreviate the question when they ask it, but it will still cover the same ground as we have given you notice of. I do want to stress that we are focusing purely on the Commission's proposals and their acceptability, relevance and practicality, and we do not wish this inquiry to go into the wider areas of the debate. It has to be useful; it has to deal specifically with the impact of the Commission's proposals. Would you like to say anything to begin?

**Professor Hammond:** My Lord Chairman, first of all, may I thank you for giving us the opportunity to be here this morning. Perhaps by way of introduction I could introduce myself. My name is Professor Tim Hammond. I am Vice-President of Safety Assessment in AstraZeneca, which is one of the major pharmaceutical companies in the world, with research interests predominantly in Europe. I am here today representing the Association of the British Pharmaceutical Industry with my colleagues, but I should also declare that I am Chairman of what is described as a priority action team, which is convened by the European Federation of Pharmaceutical Industries, reporting directly to the Chief Executive Officers of all the pharmaceutical companies with research interests in Europe. This is an unusual grouping that is brought together simply because of the concerns that are present within the pharmaceutical industry about the potential impact of the Directive on the pharmaceutical industry and the research base within Europe. As I say, we very much appreciate the opportunity to be here today. We would clearly like to recognise the opinion of the Committee. It is very important in giving a steer to Council as the discussion moves into the Council phase. Perhaps I could ask my colleagues to introduce themselves as well.

**Dr Brooker:** Good morning. My name is Dr Paul Brooker. I am responsible for the UK operations of Huntingdon Life Sciences, which is the largest contract research organisation (CRO) in Europe, and we also have testing facilities in the US. Just a note on contract

research organisations in the UK: contract research organisations employ around about 4,000 specialist people in this arena of pre-clinical work and are responsible for exports of around £400 million per year.

**Dr Dunn:** My name is Dr Colin Dunn, my Lord Chairman. I work for Charles River, which is a company that breeds and supplies laboratory animals. I am Country Manager for the UK business. I am trained and I have practised as a veterinarian in the UK. I have a PhD in virology. Prior to my current appointment, I was head of the laboratory animal facilities at a large R&D site of a major pharmaceutical company. I am also here in the capacity of representing the Laboratory Animal Breeders' Association.

**Q58 Chairman:** From the evidence we have received, you seem to support the objectives of the Directive as they stand: to promote a level economic playing field in the EU; improve public confidence in animal research; promote the use of alternative test methods; ensure high standards of animal welfare; and promote high quality science. They are all very important objectives, clearly. Why do you think there is the need for this Directive?

**Professor Hammond:** Before I answer that question, perhaps I could just give you a little background. The existing legislation is over 20 years old, so clearly it is in need of updating in the light of developments over the last two decades. We are very supportive and very pleased to see a revision of the Directive. It is also important to say that during the process of the production of the text from the Commission and in the review of the text coming from the Commission, the bioscience sector – and that includes the pharmaceutical industries, the charities, the funding bodies – have come to a very high degree of agreement about the issues that the text raises, but it is important to note there are some good things in the Directive. The very positive thing that is coming out of it is the introduction of ethical review. For the first time we are seeing in formal legislation recognition of the principles of the 3Rs: refinement, reduction and replacement. In addition to that, there is also a mandatory requirement for

increasing training. So we believe there are some very good and very positive things, but there are also some areas which are really quite concerning for us. These focus on the use of non-human primates and on definitions, particularly around severity classifications and the impact that the severity classifications may have on things like re-use, which is not something that you have asked us particularly to address but to which we would like to draw your attention. With appropriate definitions – as is currently within the amendments from the Parliament debate – that seems to be OK, but if those definitions are not correct, that will have a severe impact on welfare and we would like an opportunity to explain that. We are also concerned about the levels of bureaucracy that we currently have within the legislation surrounding the use of animals. This text, we believe, will increase that level of bureaucracy and that clearly then has an impact on competitiveness. The final area of concern we will touch on is around data-sharing and the issues around intellectual property and the protection of intellectual property. We believe there are some very severe risks associated with competitiveness if this Directive is implemented and taken through in an inappropriate way. In the documents we have put to you, we have used the word “proportionality” and we would like to emphasise that proportionality is what we would like to achieve. That is really a balance about the benefits of the research against the harm to the animals, the degree of harm that is inflicted on the animals being proportional to the level of control and administration. It is important, also, just to emphasise that the confidence in animal research that is often questioned is something that is very important to address upfront. We believe that animals play a very small part in the discovery and development of new medicines but a very crucial part, and if you take that part away and make that either difficult or impossible to conduct, the whole process of discovering new medicines and new treatments will be very severely compromised. As I have said already, we greatly welcome the greater emphasis on the 3Rs, but we would also like to emphasise that most of the activity that goes towards developing

alternative methods comes from the scientific community. It does not come from bodies which sit outside, separate from what we do in basic research and in the discovery and development of new medicines. The 3Rs' principle is an agenda which we drive and most of the advancements come from the academic or industrial scientific community.

**Chairman:** Do either of your colleagues want to say anything? They are content, so let us move on to impact assessment.

**Q59 Earl of Caithness:** The Commission told us that they have consulted widely and over a long period. Do you think that the bioscience sector has been properly consulted? The same question relates to your evidence. You did not like the impact assessment. Why is it so flawed in your opinion?

**Dr Dunn:** My Lord Chairman, it is certainly true the Commission had a very significant consultation with the bioscience sector, but our concern is, as you have stated, how effective this has been. In some of the consultations, and in the expert consultation performed in 2006, some of the questions lacked clarity and I think this did not lend itself to further objectivity. In the introduction to the impact assessment that the Commission have written, it is in fact stated that they did not have the data to back the findings that they had expected to get. I think that that illustrates itself where there may be issues. Indeed, in 2003, there were a number of technical expert working groups reporting, and I would draw one example being on severity. There were some very important aspects analysed about severity and about the use of animals and it appears that some of those findings have not been given full regard in the draft Directive from the Commission. We were certainly involved and certainly provided a great deal of input, but our concern is about what degree of weight our views and expert opinions were given.

**Q60 Earl of Caithness:** Are the Commission listening to your complaints about the Directive now? Having met them, do you have a working group with them?

*Dr Dunn:* The Commission clearly have set up, and the way things are going with the Council of Ministers, mechanisms to investigate more. There are expert groups being brought together for example to thrash out some of the issues around severity.

*Professor Hammond:* We do have a regular dialogue with the Commission and with the people who are actively involved in the drafting of the text. We are in regular contact with them, so they are aware of our views. As my colleague said, I think it is important to recognise that not all of those views are being reflected in the text.

**Q61 Lord Palmer:** Are some of your European counterparts also in this consultation process with the Commission at the moment?

*Professor Hammond:* Indeed. The group that I referred to at the beginning was the European Federation of Pharmaceutical Industries, which is a body that represents all of the pharmaceutical industries. Within that structure, pharmaceutical industries have also liaised within their countries with the bioscience sectors. The views that we have been expressing are the views that are widely held across the entire bioscience sector, across the entire European sector.

**Q62 Earl of Caithness:** That must be helpful.

*Professor Hammond:* We believe it is quite powerful if it is listened to.

**Q63 Baroness Sharp of Guildford:** In the evidence that you have submitted to us, you have raised concerns about the impact of this Directive on the international competitiveness of the sector and particularly about competitiveness in relation to the USA, China and India. Other submissions that we have had have indicated that they do not think there is as much evidence

as there might be to support this view. How would you substantiate your argument? What sort of data would you use from your own research in-house and from academic research or contract house research? To what extent is such research already being diverted to other parts of the world and for what reasons?

**Professor Hammond:** Most major pharmaceutical companies have research capabilities in multiple countries. Most of them have European bases and most of them have bases in the US. In the UK there are only four major pharmaceutical companies left conducting pre-clinical research in the UK. If you contrast that position to 20 years ago, the number was considerably higher. I would not venture to suggest that the reason for that has been due to legislation around animals, but it is a contributing factor when companies make decisions about where they will invest. It would be wrong to suggest that that is the major driver, but it is certainly a factor. I think it is also true to say that most major pharmaceutical companies are now investing in Asia. This is partly driven by access to emerging markets. There is certainly a contributing factor there – but it is also influenced very strongly, particularly, by access to non-human primates and developing the Asian market with particular reference to China. In my own company I can tell you that we are building facilities in Shanghai. Those facilities will focus on cancer research, but in addition to that we have a collaboration with a Chinese institution which is dedicated to construct a specific primate facility. The reason for doing that is largely driven by concerns that we have about the long-term sustainability, given the legislative framework, about investing in that kind of work in Europe. The evidence is quite clear that it is happening. It is already happening now. Most companies are already in Asia, most companies are already in China. It is also important to recognise that one of the key features – and this will particularly influence the CRO industry which I will ask my colleague to comment about – is the level of bureaucracy. Where it does not carry a tangible animal welfare benefit – because companies are committed to furthering animal welfare

programmes – it just becomes uncompetitive, and it becomes uncompetitive because you cannot respond in a global market in the way we should be able to respond.

**Q64 Baroness Sharp of Guildford:** In so far as Big Pharma have pulled out of doing pre-clinical research, how far is this contracted out to organisations like Huntingdon Life Sciences?

**Professor Hammond:** Big Pharma have not pulled out. We still maintain a very strong research base and most Big Pharma companies still have their discovery activities located internally. That is where most of the animals are used. There are some elements which are increasingly outsourced. That is a trend that is increasing and I believe it will continue to increase. Perhaps I could ask Paul to add something.

**Dr Brooker:** Baroness Sharp, there are 3 major pre-clinical CROs in the UK including HLS. All have facilities in the US and they either have now or are planning imminently facilities in China. CROs will have common animal welfare standards across their organisation, so there is no suggestion at all that we are migrating to where welfare standards are lower. We take our own welfare standards with us, which tend to be to the highest common denominator. But investment decisions will be taken on the basis of ease of doing business with our internationally based clients. If due to bureaucracy in the EU we can start a study earlier in the United States or in China, that will drive business out of the EU and into these other areas.

**Q65 Chairman:** The concern is not so much with standards but with bureaucracy. Is that right?

**Dr Brooker:** To illustrate the issue it is best to show an extreme theoretical situation. If, for example, you have a study where you need to write an amendment to a project licence in the EU it takes six months before you can do that work, whereas it will take six weeks in the US. If your pharmaceutical customer who is anxious to proceed with their clinical programme has

the choice between waiting six months or six weeks, they will virtually always go with six weeks. The welfare standards are the same but the time to start the preclinical study, and hence the subsequent time to get into the clinic and to start to see benefits for patients, will be reduced in areas where it is not quite so bureaucracy heavy.

**Q66 Chairman:** Is there an argument that if the work migrates to other countries, say to the Far East, there will be pressure on the welfare standards to decline?

*Dr Brooker:* I do not think that is true.

**Q67 Chairman:** Not from CROs operating internationally but from, I suppose, small jobbing outfits – not to be disparaging.

*Dr Brooker:* I certainly would say that large CROs and large pharma companies will take their own welfare standards with them wherever they are, and institutions such as AAALAC will ensure that their welfare standards are maintained. AAALAC is the Association for the Assessment and Accreditation of Laboratory Animal Care, which tends to be the international gold standard of approval. It is a US-based system. But you may be correct in terms of smaller non-AAALAC accredited organisations in local conditions, such as China.

*Professor Hammond:* One of the key issues that we have had to deal with in the programme that we have had in developing our capability in Shanghai is to ensure that the facility will work to our standards. The legal framework that they work within is completely different and far, far less bureaucratic. Your concern is justified. The onus is on us, if we are working in those areas, to ensure the standards are maintained.

**Q68 Baroness Sharp of Guildford:** In terms of bureaucracy, you were talking about making an amendment to a protocol or something like that.

*Professor Hammond:* Yes.

**Q69 Baroness Sharp of Guildford:** The time required to turn this around in Europe is considerably greater than in the USA, let alone in China.

*Dr Brooker:* Absolutely.

**Q70 Baroness Sharp of Guildford:** So it is really the flexibility on the part of the bureaucracy.

*Professor Hammond:* It perhaps links a little bit into the comments about the level playing-field. The time in the UK is considerably longer and the process more complex than it is in other European Member State countries currently. It is more difficult to respond in those timescales that are applicable in the UK than it is in Europe, and Europe is considerably more difficult than the USA, and the USA is probably a little bit slower than Asia.

*Dr Brooker:* Indeed, industry and academia have been in discussion with the UK Government in terms of better regulation over the past several years to try to ensure the correct oversight and welfare whilst maintaining as much flexibility and rapidity in the system as possible.

**Q71 Baroness Jones of Whitchurch:** If that is the case, why is there so much research still done in the UK?

*Professor Hammond:* The major reason that we continue to invest in the UK is because we can get access to world-class skills and world-class science. Our academic base in the UK is as good as anywhere in the world. Our track record is good. But it is under threat. We are seeing migration of skills out of the UK. We can provide you with evidence of that, if you would like it. That is happening.

**Q72 Lord Brooke of Alverthorpe:** We had the Commission representative with us last week and she denied emphatically that there was any evidence of transfer. You are talking about new business, are you, as distinct from transfer of existing?

**Professor Hammond:** Yes. One of the difficulties we have with this is that the impact of this is not immediate. If we were already investing in the UK, we will not simply close that investment, but when the next round of decisions about where we should invest will come, it will influence then.

**Q73 Lord Brooke of Alverthorpe:** The Commission view that was advanced was that other factors are at work over which you have no control; for example, the construction of new facilities in these Asian locations was cheaper than it would be anywhere in the West; the infrastructure operations were cheaper than they would be here; they were pushing to maintain non-human primate research there themselves and were refusing to release non-human primates for research elsewhere – particularly the Chinese; this is international competition and you have no control over it and this would not affect it.

**Professor Hammond:** Some of those points are absolutely correct. The Chinese are applying a quota system for exports. They are exporting primates but they apply a quota system. They are trying very hard to encourage investment in China because they want access to our science. They are doing a lot to try to attract us into China. They are a growing and fast-emerging market – there is absolutely no doubt about that.

**Q74 Baroness Sharp of Guildford:** So it is an attractive market for you anyhow.

**Professor Hammond:** Yes, absolutely. As far as the investment in the UK is concerned, in terms of building and capital, yes, it is cheaper to do it in China but not by very much. It is very much overstated. If you look at the prices and the costs associated with developing in Shanghai, they are extremely high. It is not cheap. If I may refer you to some internal

experience I have with in my own company, I have invested \$130 million in the UK in new facilities over the last eight years. Every time I asked for money to do that, I was never challenged about the need to do it; I was always challenged about why I needed to do it in the UK. The reason I gave was because I wanted access to the skills that we have available to us in the UK. Without that skill base, there is no reason to be here.

**Lord Brooke of Alverthorpe:** We will come to the issue of administrative burden later.

**Q75 Chairman:** When you are developing a primate facility in the Far East, and, I suppose, in the US as well, are, for example, the housing standards for primates the same in the three jurisdictions?

*Dr Brooker:* In terms of the local regulation, no.

**Q76 Chairman:** In terms of the industry standard.

*Dr Brooker:* In terms of the industry standard, I think there is a move which is becoming a very rapid move towards going to the norm of the European standard. If I take my own company, we conduct primate research in the UK, where we use very large cages, the animals are housed together, they have little verandas they can sit on and look out and so on. Our facility in the US has, until recently, had the local standard of having animals in smaller cages, although for the past twelve years we have allowed them to intermingle. We are now considering replacing all of our caging in the US with European-style housing. One room is already done, we are now reviewing the rest of the facility. Some of our customers are increasingly saying they will only place work where it is in European-style facilities, be that in Europe or in the US or in China. In planning facilities in China, there is no question that we would build new to European standards, to the standards we use in Cambridgeshire.

**Q77 Chairman:** Would that be the same for you, Professor Hammond?

**Professor Hammond:** Yes. We will ensure that the operation of the facility for work that is conducted by us will be done to European standards. What we cannot do is control the standards to which they operate for their local market and their local research groups. We can influence it and we do that.

**Q78 Viscount Ullswater:** Perhaps I could ask one more question about the provision of the animals. Is that cheaper in China than it is in Europe?

**Professor Hammond:** Is that in terms of the cost per animal?

**Q79 Viscount Ullswater:** Yes.

**Professor Hammond:** The answer is no. We have additional transportation costs to bring the animals from Asia to Europe, but I have to say that the cost of the animal is not a factor at all.

**Q80 Baroness Sharp of Guildford:** But it is easier to obtain the animal in Asia because of the Chinese export ban.

**Professor Hammond:** No. It is completely possible to obtain animals from China or Vietnam or Cambodia or Mauritius into Europe or the United States.

**Chairman:** Let us move on to one of the areas you have already identified is causing you concern and that is data-sharing. Lord Brookeborough.

**Q81 Viscount Brookeborough:** It seems there is divergence between what you say you and your colleagues have provided as evidence for going abroad and what the Commission believes. Are they simply not listening to you?

**Professor Hammond:** We have made our views very clear to the Commission.

**Q82 Viscount Brookeborough:** What do you think of their reaction?

**Professor Hammond:** It is difficult to comment. I think they are not seeing the reality that we are seeing.

**Viscount Brookeborough:** Thank you.

**Q83 Viscount Brookeborough:** On data protection, which you have already mentioned, I do not fully understand where the division or separation is currently between any data that might be shared and confidential data. From the point of view of my limited knowledge of the pharmaceutical industry, we sometimes see headlines that So-and-so has a magic new drug for such and such a thing, and this adds tremendous share price, it is tremendous business, and therefore it is obviously confidential. Where is this division currently?

**Professor Hammond:** This whole area of data-sharing is very complex, so perhaps I could take a few moments to try to explain the issues and illustrate some of the complexity. We have a little difficulty understanding why the need for data-sharing is being driven from a premise that there is widespread duplication. Within the pharmaceutical industry we work on chemicals which are protected by patents, so there is no interest, commercial or otherwise, for somebody else in another company to be working on chemistry which we in my company are working on. There is no benefit for them to do that, so we do not do it. We do not duplicate studies. We do not work on the same molecules. It is, commercially, nonsense to do that. We have a difficulty understanding where the duplication comes from. There is a view that duplication could be targeted towards duplication of the pharmacology that you are interested in. Again, we would take issue with that, because there are many, many examples where a very small change in the structure of a chemical will give you a very different biological profile, either in terms of efficacy or in terms of toxicology, and there are lots and lots of examples of that which are very, very well documented. Again, we do not believe that widespread duplication, in the strict sense of the word, occurs in the pharmaceutical industry. There are some areas where we acknowledge that there are studies

which are repeated for, as we would see, no particularly good reason. The areas of major concern really come into some of the regulatory testing – and it really focuses on batch acceptance – where for movement of a batch of a vaccine, for instance, between Member States in the European Union or coming into the European Union, some of the Member States will insist that those batches are tested again. If the original test is robust, I think it is a legitimate claim to say, “That’s unnecessary.”

**Q84 Viscount Brookeborough:** That is revalidation.

**Professor Hammond:** It is not really revalidation. It is just acceptance into a different market. We would say that that is inappropriate and we would argue against that. There are some areas where data-sharing is something that we are already doing a great deal of within the pharmaceutical industry. Most drugs, when they are administered to patients, are administered in a formulation and there are excipients within that formulation. We spend a lot of time trying to make sure that the data that we generate to look at the safety of those excipients is shared across the industry, so that there is not repetitive testing for excipients that are widely used across the sector, but the active ingredient will be unique to an individual company and, therefore, it will not be subject to duplication.

**Q85 Viscount Brookeborough:** The data that is used in the initial research by your company is not shared openly with other companies until you have something ---

**Professor Hammond:** No, absolutely not. That is our intellectual property. That is our value. If we are forced to put that into the public domain, we cease to become a competitive industry. If we are forced to put that into the public domain in Europe, it will simply mean that everyone else outside of Europe will have access to all our intellectual property and we will not have access to theirs. It would be absolutely untenable.

**Q86 Chairman:** “Freeloading” is a term that comes to mind.

**Professor Hammond:** Yes. It is untenable. No company will tolerate that. No company will do that.

**Q87 Viscount Brookeborough:** What sort of data do you think can usefully be shared? Can there be any increase in data beyond that which is currently shared?

**Professor Hammond:** We are already doing a lot. In the written submission that we have given, there are at least four examples we have quoted where there is a great deal of cross-collaboration, both in the pharmaceutical industry and also in the academic sector, to ensure that data that is generated which is non-competitive is put into the public domain and is shared. Part of that is to advance science, but also a very big significant part of it is to ensure there is no duplication of animal testing.

**Q88 Viscount Brookeborough:** How detrimental do you think these new proposals will be to you?

**Professor Hammond:** The proposals, we believe, are a significant threat and I would invite you to take some advice and some views from the academic sector as well. The academic groups live by publication and if they are forced to put things into the public domain at an inappropriate time, they will lose their competitive edge. I think the greatest difficulty that we all face is the publication of negative data – because journals do not like to take negative data. That is very difficult and so far has been quite an intractable problem. It is something that the sector is constantly talking about and trying to find ways to do it in a better way, but journals just are not interested in negative data, so it becomes quite a difficult thing to deal with.

**Dr Brooker:** “Negative data” meaning studies in which nothing interesting happens, rather than something negative happening.

**Q89 Chairman:** That sounds like what most of my research was like!

*Dr Brooker:* I sympathise with that.

**Q90 Baroness Jones of Whitchurch:** That is where the duplication happens. The evidence we received last week was that, because it does not get published and not a lot happens, people do not know that that research has already been done and so they repeat it and repeat it.

*Professor Hammond:* The provisions that were in place from the Commission text, and in particular the amendments from the European Parliament, will not stop that. It is predicated on you knowing that the data exists, and there is no way of knowing that that data exists, so people have talked about the establishment of databases to allow this to happen. If you look at the complexity of the data that is being generated, that is exceedingly difficult to do. In fact, we would suggest it is impossible to do. Attempts to construct these databases, even when the data is disciplined and very similar, have been extremely difficult. I would draw your attention to the genomic data and databases, where there is a great deal of stringency in the data and they have still been very difficult databases to construct. If you put that into a much more diverse biological system and try then to put formats out where that data needs to be shared, it becomes technically very, very complex. We recognise it is a problem but the legislation as it is now will not solve that.

**Q91 Baroness Sharp of Guildford:** The big problem arises from the revisions that came from the European Parliament.

*Professor Hammond:* The big threats to the industry certainly come from the revisions that came from the European Parliament, that is correct. I believe it is also true to say that what is being attempted in those revisions really has been lifted from legislation in other sectors – what you might call vertical legislation rather than horizontal legislation. Within particular

sectors it may be appropriate to do that. The legislation around pesticides and chemicals has been put in place because most people were looking at either chemicals that would go into common usage or pesticides that had been reformulated and were already out of patent and people were reformulating, and that is entirely legitimate. We are not dealing with that in the pharmaceutical industry. We are dealing with proprietary intellectual property. The approach that has been applied there is just inappropriate.

**Q92 Lord Livsey of Talgarth:** Do you think the motivation for doing this is that some people in Europe, and possibly in the European Parliament, think that because of duplication, with cross-sharing not occurring, the cost of the end product is too high?

*Professor Hammond:* I do not know what the truth is. I do not know whether they are influenced by the cost of pharmaceuticals or not – and, actually, I am not best qualified to comment. I think it is true to say that the European Parliament and the people proposing the amendments were made aware of our concerns and we were not given any feedback that this was influenced by cost. It was influenced much more about a belief that duplication exists and we would challenge the concept that duplication exists. We would prefer to see a much more targeted approach. Where duplication is demonstrated and is clear, the legislation deals with that. It does not try to do a broad-brush approach, which is not appropriate.

**Q93 Lord Brooke of Alverthorpe:** Presumably the logic is that if you reduce the amount of research you reduce the amount of animals involved.

*Professor Hammond:* Yes.

**Q94 Viscount Brookeborough:** Their term “duplication” is really taken to be research into a particular ailment or disease rather than duplication of what is going on in the science.

**Professor Hammond:** My Lord, you make a very good point. One of the issues that we also need to be very clear about with duplication is the distinction between duplication and replication or validation. It is good scientific practice to be able to replicate your results, so it is standard practice that people will repeat work in order to ensure that it is robust and it is true – and it is true in multiple hands, it is not just true in one lab. There are many examples where data that has been published from one lab has not been able to be produced in another lab. It is a robust part of the scientific discipline to be able to replicate results. That is different from duplication.

**Q95 Chairman:** Could I just ask about the data-sharing of negative results. It is clearly the case that journals are not interested in publishing papers which lead nowhere, but surely there must be another factor as well. Particularly if you are a large pharmaceutical company and you have a trial or something going, and very expensively, and you come to the end of it and it has not done anything, are you going to be happy about using that information, knowing that your competitor most likely has to go through the same sort of series of experiments and if you release it they are just let off the hook in terms of funding a large study?

**Professor Hammond:** I think most people would accept that the true competitive advantage in the pharmaceutical industry comes from your clinical data, but you have to recognise it is a race. It is a competitive environment. Consequently, we do put quite a lot of our pre-clinical data into the public domain when we get to market, but we do not put the data into the public domain beforehand unless we want to control that release for particular reasons around supporting the clinical development of a drug. It would be wrong to say we do not put this data into the public domain. Any result from a clinical trial including those that are negative already goes into the public domain. That is already covered. The difficulty we have with the pre-clinical data is that a clinical trial may show a negative outcome in a particular indication but we may want to use that drug and take it into a different indication based on the pre-

clinical data. We are very reluctant to put that into the public domain because somebody else will pick it up.

**Chairman:** Yes, I see that. Let us go on to another area of some controversy: non-human primates.

**Q96 Lord Cameron of Dillington:** You seem to have concerns about the limits being proposed on non-human primates: that is, to life-threatening conditions. Perhaps you could expand on your concerns here, bearing in mind that we have had written evidence from other parties suggesting that the use of non-human primates in experiments is not error free and the trials of TGN1412 and the various trials done on AIDS/HIV vaccines have not proven very successful. Perhaps you could expand on how you might refute those arguments.

**Dr Brooker:** The restriction to life-threatening and debilitating conditions causes much concern because it is not clear. It is not clear what is included and what is not. Perhaps we should make the point that restrictions on the use of NHPs should be considered in the light of the diseases that are under research. There are many areas of fundamental research that cannot be directly linked to a specific disease, and in many instances the benefit is only realised sometime after the original discovery. To attempt to legislate against use in this way will severely compromise the ability of science to identify and develop new treatments further down the line. We should emphasise the mobility of such research. If restrictions are put in place in the EU, again we are back to the situation where the research will simply relocate. We cite some evidence in our written evidence, in the footnote on page 16, that shows a progressive move of skills in neuroscience to the USA and anxiety about the research environment, including the potential for future restriction, as a contributing factor. In terms of specific disease areas that we would be concerned about, they would include reproductive health and the ability to develop protein therapeutics, and, most commonly, monoclonal antibodies, which would include therapies, including cancer research, rheumatoid arthritis and

respiratory diseases. They would be the sectors that we would be concerned about. Moving on to your question about the validity of the model, non-human primates are never used where an alternative is available. It is prevented under the current ethical review and approval process in the UK and they are only ever used where a strong scientific reason confirms that the use of an alternative species is not appropriate. In the case of monoclonals, we confirm the pharmacology is not present in any other species by means of in-vitro screening before we go on to use the primate. On occasion, not even the primate for these monoclonals is appropriate, and so you have to go to a less precise model involving mouse homologues or transgenic animals, because there is no point in using the primate because the pharmacology is not demonstrated: they do not have the same receptors as humans would have. We only ever use a primate where we have good reason to believe that it is the best model for studies which inform decisions about clinical trials and there are no alternatives. As with all models, there are rare cases where the use of primates has not identified a cause for concern. My Lords, you have correctly pointed to the example with the TeGenero compound, TGN1412, where the primate research failed to predict the response. But it is also true that there were a number of in-vitro alternatives carried out on that compound as well as the primate research which also failed to predict. I think this was a rare example. To keep this in context, animal research is critical in supporting first dose into man, and the record in ensuring safety for patient volunteers or healthy volunteers in phase one trials is very good. No models are 100 per cent and it is unreasonable to expect all models to be 100 per cent accurate.

**Q97 Lord Cameron of Dillington:** To move on to your concerns about the setting of dates for second generation in-captivity animals and why this particularly concerns you, if you have sufficient warning of it, it seems to me that you could build up the relevant stock and it therefore should not be a worry.

**Dr Brooker:** I think this is all a matter of timing. We are not opposed to the principle at all of the use of F2 generation primates – indeed, we use them whenever they are available. The issue is how to move to self-sustaining F2 colonies without causing major welfare and supply problems, bearing in mind that the suppliers are outside the EU, almost totally in Asia, and that the EU only takes five per cent of their supply. It is not as though this is something under our total control; we have to work with the suppliers to move them towards this position. There are concerns. It is not clear what will happen to the F1 males during this process and you may see a large culling of F1 males, which I do not think we would like to see. It is also not clear whether large closed colonies will compromise the quality of the animals and put undue pressure on the breeding female stock. We support the European Parliament position here in calling for a full feasibility study rather than the seven-year prescriptive time limit which the Commission’s original proposals put in place.

**Q98 Lord Cameron of Dillington:** What about the techniques that were recently developed to create genetically modified non-human primates? How significant are these?

**Dr Brooker:** If you are referring to the development reported in *Nature* and the general press last week about a transgenic marmoset being produced in Japan, it is an interesting scientific development but it is really too early to assess its impact. I would just make the point that transgenic technology, usually using mice, has increased the number of animals being used, and, of course, if we can have transgenic NHP models it will be necessary to demonstrate that the objectives of any experiment cannot be achieved by using a non-NHP model. I think there is potential in the technology but it is far too early to assess the implications.

**Q99 Earl of Arran:** Can you ever foresee a time when the use of animals for scientific research will not be needed?

**Professor Hammond:** No. If your question is directed toward medical advancement for humans, then I think there is a prospect that that will happen but it is a very long way away, but we have to remember also that a lot of research is done on animals for the benefit of the animals. In that context, I think that will continue.

**Q100 Lord Cameron of Dillington:** Has their use diminished over the last ten years?

**Professor Hammond:** The numbers of animals that are used in research over the last 20 years has decreased, but over the last couple of years it has either plateau'd or risen, and it will probably rise again. That will be driven partly by the transgenic technology revolution and partly by the increase in productivity coming from the industry.

**Q101 Chairman:** In paragraph 81 of your evidence you have listed a series of areas of fundamental research that might be curtailed by the current draft in relation to primates. When we had the representative of the Commission here last week, she said, amongst other things, "In addition to life-threatening, we also talk about debilitating conditions in humans and Recital 16 further clarifies and says that it has to be a condition that has an effect on the day-to-day functioning of the person. We feel that, for example, infertility could be considered in this category. We have references to it being considered as a debilitating condition and we know that infertility can result in depression and it can result in psychosomatic disorders, therefore we feel that link can be made." She was then asked: "Under debilitating, I take it we would include diabetes and Parkinson's?" and, although the transcript is blank, she nodded and indicated assent. Do you take any comfort from those words?

**Professor Hammond:** I would take comfort from those words but I do believe we still have a problem that it is around definition. The terms "life-threatening" and "debilitating" to our knowledge are not present in any legislation, other than legislation that is associated with

orphan drug status, and orphan drug status is really a very small niche area with particularly life-threatening outcomes. It comes back to the issue of terminology and definition. Our fundamental premise here is that we want to protect basic research that generates knowledge, because from that knowledge will come advancements in the future. To assume that any project that is done is justified purely on the basis that it will affect a specific disease fails to understand the way in which research operates.

**Q102 Chairman:** If you are not careful, you are asking for a blank cheque, are you not? Are you not in danger of saying, “We want to be able to conduct any research on primates if it advances knowledge”?

**Professor Hammond:** We are saying that if the ethical review can see the justification, and the harm to the animal is outweighed by the potential benefits that will come from that research, either direct or indirect, then it should be supported. If it does not, it should not be. That is the current situation.

**Q103 Chairman:** I would have thought that on fundamental research it is very difficult to know what the potential benefits are.

**Professor Hammond:** Usually we know enough now to be able to have some idea of what the benefits will be. I am not aware of any research in primates which is purely speculative.

**Dr Brooker:** I think you also run the risk, if you have unclear definitions, of differing interpretations in different Member States as to what that may be.

**Q104 Chairman:** You would hang it all on the ethical review approach.

**Professor Hammond:** The ethical review and authorisation approach, yes.

**Q105 Chairman:** Are you confident that that is robust enough throughout the Member States?

**Professor Hammond:** I believe the ethical review is not applied across all Member States. The Directive as it is currently written will introduce that, and if that is done properly, then yes.

**Q106 Baroness Jones of Whitchurch:** Is that not something that will create some of the bureaucracy that you were complaining about earlier on?

**Professor Hammond:** We certainly do not complain about any bureaucracy where there is a welfare benefit. All we complain about is the bureaucracy that is associated with procedures for which there is no welfare benefit: it is simply control and bureaucracy. We are not against bureaucracy where it is linked to very clearly tangible and evident benefits to animal welfare.

**Q107 Baroness Jones of Whitchurch:** An experiment could start in six weeks in China but it takes six months in this country, but surely part of that delay is doing the ethical review.

**Professor Hammond:** The ethical review can be done very quickly in most instances. There are some complex things where it would take longer and we would expect it to take longer, and that is fine.

**Q108 Earl of Dundee:** We learn that the Directive's provisions include immature forms of invertebrates and of certain live invertebrate animals. Those provisions, if unamended, how would they affect the research community?

**Dr Brooker:** We would invite you to take further evidence on this from our colleagues in the academic community, because it will have a much greater effect on them than it will on the pharmaceutical industry. One basic premise that I think the whole bioscience community would like the Directive to be placed on is that of sentience, and to prove that creatures are sentient before applying this legislation to them.

**Professor Hammond:** The evidence quoted by the Commission we believe is weak.

**Q109 Earl of Dundee:** Which amendments to those provisions do you think the European Parliament may bring forward?

**Professor Hammond:** We would like to see invertebrates where sentience has not been clearly demonstrated – and it is a very small number where it has – not to be covered by the Directive until there is scientific evidence that sentience is demonstrated.

**Q110 Earl of Dundee:** Would you like to see any other formal amendment brought forward by the European Parliament?

**Dr Brooker:** I think we are broadly in favour of amendments 30 and 31 brought forward by the Parliament. We have some minor issues with the wording, which are present in our written evidence, but in general we were in favour of those amendments put forward by the Parliament.

**Professor Hammond:** They could go further.

**Q111 Chairman:** When we are talking about experiments on invertebrates, which invertebrates are being experimented upon?

**Professor Hammond:** I think you would get a more authoritative view by addressing that question to our academic colleagues. The industry's major area of concern in relation to where this scope extends is that we have to conduct environmental fate studies for our pharmaceuticals, so we will, by necessity, need to assess the impact of our drugs when they get into the environment and, as a consequence of that, we will do fate studies and we will do toxicity studies on fish and on invertebrates. It is quite limited, but we do some.

**Q112 Chairman:** That is for the environmental impact.

**Professor Hammond:** Yes. As far as academic research, I think that is much more widespread and I would defer to the academics to answer on that.

**Q113 Lord Livsey of Talgarth:** We come to severity classifications and you have already mentioned this on a number of occasions. The proposal (Article 15) contains a system of “severity classifications” for procedures (up to mild; moderate; severe; or non-recovery) which will determine important aspects of the application of the Directive. However, the criteria for these classifications are only to be finalised after adoption of the Directive. Would you like to see these agreed within the text of the Directive, as proposed by the European Parliament? What is your view of the definitions proposed by the European Parliament (amendment 161)?

**Professor Hammond:** The first thing I would say is that it is absolutely crucial to have full and accurate definitions in order to be able to interpret the impact of many of the articles within the Directive. We are very, very supportive of the parliamentary amendments which brought that clarity. We would like to see perhaps some very minor modification to the amendments proposed by the European Parliament, particularly in that the system that was proposed was largely based on the Swiss system and the Swiss system does not separate non-recovery. For clarity around how many parts of the text are written, it would be helpful to have that as a separate category rather than to re-write large parts of the text. But the principles behind it are something that we very strongly support. One particular area where it is absolutely crucial for us – and we believe this is a very big welfare issue – is around the subject of re-use. Re-use is quite complex. Perhaps I could take a couple of seconds just to explain. The reason we are concerned about re-use is that the Commission text limits re-use to one re-use only, and only if animals have been subjected to what is defined as a “mild procedure”. If we were to adopt that, some of the advanced technologies that we have developed would become very difficult to apply. One example is telemetry. One of the

things that we do now is to implant telemetric devices into a dog or into a primate. This is particularly important because it affects the higher-up species. Then we will collect data from that individual animal after repeated dosing of different compounds. We can look at heart rates, blood pressure: it is very sophisticated and you get very high quality data. The most traumatic part of that procedure is the surgery to implant the devices. If the text as proposed by the Commission is taken forward, we would have to do that on separate individual animals before we collected the data for each compound. The most difficult part of the procedure would be the surgery. It would increase the number of animals that we would use probably by ten-fold or more and it would cause major welfare issues for us – probably to an extent that we would not do it, we would move it, because we would find it very difficult to justify that. Severity classifications as they have been defined by the European Parliament, and allowing re-use up to moderate, would allow us to continue to do what we are doing now, which is seen as ethically acceptable, so we would very strongly support a continuation and support the amendments that have been put forward by Parliament in this area. There is a working party that will define severity classifications. We are concerned that if they come up with a set of definitions which are completely different from the ones which are currently proposed by Parliament it will again make interpretation of the rest of the text very difficult, and I think we will need to go back to square one.

**Q114 Lord Livsey of Talgarth:** Would it be correct to assume that you have made these points very clearly in the way that you just have?

**Professor Hammond:** Indeed. In terms of the severity classification that was proposed by the European Parliament, obviously, we were closely involved in that. We work very closely with our Swiss colleagues; we helped the Parliament to do that.

**Dr Dunn:** And, if I may add, my Lord Chairman, the Technical Expert Working Group report from 2003 is unambiguous in this area.

**Q115 Baroness Jones of Whitchurch:** Do you have a view on the fact that the criteria are not going to be established until after the directive has gone through?

*Professor Hammond:* I believe it is unacceptable. The parliamentary amendments are already tabled and I hope Council will adopt those or will adopt a minor revision of those that will come from the working party, but I think it would be wholly unacceptable to have the directive issued without having that clarity. It affects so many parts of the directive and the interpretation of the directive. It would be very unwise indeed in our view.

**Chairman:** I think the Commission also recognise that they have got a problem there on the basis of the evidence to us. Let us go on to authorisation.

**Q116 Lord Brooke of Alverthorpe:** Thank you, by the way, for your paper which I thought was very comprehensive indeed and also very helpful in the area of authorisation of decisions. The diagrammatical description of what life would look like if the directive goes through as at present defined though is not easy to follow. It would have been easier possibly if we could have had a diagram of what happens at the moment and what your alternative is by comparison with what happens now because I think there is a distinction between the two, is there not?

*Dr Brooker:* I think we can provide that subsequently for you if that would be helpful.

**Q117 Chairman:** That would be very helpful.

*Professor Hammond:* It is also worth commenting that we can provide that for you as to how it operates in the UK. It is important to recognise that across Europe it is widely divergent.

**Q118 Lord Brooke of Alverthorpe:** We are aware of that. How would you say the current procedures that we have in the UK will have to change?

**Dr Brooker:** This is hugely complex and we do not think that either the Commission or the Parliament has dealt with this topic adequately. This is why we suggest an alternative. However, to answer your question specifically, the following points would demand change of the current UK system. First is the separation of ethical review from authorisation, even though both could be done within one body. Our concern there is that the directive sets no time-limits on ethical review, which pertains to the previous point, that there are time-limits on authorisation but no time-limits on ethical review, so that would be a change from the current system. Project licences currently run for five years and the directive would change this to four. Currently they have two reviews, one in mid-life and one at the end. Annual review is proposed. A retrospective review is proposed. Currently this is not required unless a licence renewal is applied for. Severity is not reported retrospectively. Those are the specific changes that the current Animals (Scientific Procedures) Act would need to have made to it.

**Q119 Lord Brooke of Alverthorpe:** We chased the Commission representative quite a bit on this last week and I ended up with a question, “Would you argue then that the British Government’s claim that this is a substantial additional bureaucratic charge which is going on to operations is quite invalid?”, to which she replied, “No, I wouldn’t go that far. I would like to discuss the details with the British Government. I think that would be the best way to say it”, so it sounded at the end of the exchange we had that there was still an area for negotiation and discussion. Is that how you perceive it?

**Dr Brooker:** We feel that the current UK system is overly bureaucratic, which is why there have been discussions under the Better Regulation banner over the last several years, and I think the Home Office agrees with that. The fact that what is proposed here goes over and above the current UK system fills us with concern on the point about bureaucracy with no welfare implications that we were talking about.

**Professor Hammond:** The Commission so far have shown in our discussions with them no inclination to want to discuss this. They believe that they have already got sufficient flexibility, particularly through the designation of “competent authority” and allowing subsidiarity to give that flexibility so that Member States could implement this in a way which suited those Member States. Our difficulty is that, although that is true, there is a high degree of prescriptive requirement that comes from the directive which, if it is transposed into law, is then an obligation to fulfil. It is difficult for us to see how you would have that flexibility and that obligation.

**Q120 Lord Brooke of Alverthorpe:** The point about flexibility was made very strongly to us, that there is a degree of freedom for Member States to apply this as they see appropriate.

**Professor Hammond:** I can only comment that within the UK we are particularly anxious about it and we already have a very bureaucratic and difficult system to work with. Other scientific communities in other Member States see this as a major change to what they are currently doing.

**Q121 Lord Brooke of Alverthorpe:** Have you put your alternative to the Commission?

**Professor Hammond:** We have discussed it with the Commission, yes.

**Q122 Lord Brooke of Alverthorpe:** What kind of a response have you had from them?

**Professor Hammond:** So far we have no indication that they believe that this is something they would like to take forward.

**Q123 Lord Brooke of Alverthorpe:** And to the British Government too?

**Professor Hammond:** We have put this to the British Government as well.

**Q124 Lord Brooke of Alverthorpe:** And the kind of response?

**Professor Hammond:** The Home Office, I think, are probably still in need of convincing that there is a legitimate way to separate notification and authorisation and we are continuing to discuss that. The opportunities for proportionality, I think, are recognised by the Home Office. I believe they see that the level of control and of approval to conduct a non-human primate study and the processes that go towards supporting that should not necessarily be the same as if you were to apply for a licence to do a study on an invertebrate. Under the current directive there would be no distinction, so there is no proportionality between them.

**Q125 Lord Brooke of Alverthorpe:** Given that there is a wide variation in existing practices throughout Europe at the moment, particularly in regard to ethics, could you see a case to be advanced that there should be a programme developed whereby those at the bottom should be required to raise their standards, for example, introducing ethical reviews before further changes should be introduced across Europe?

**Professor Hammond:** That is an interesting question. I think the current legislation, Directive 86/609, already provides a framework and I think we have seen that there has been a big difference in implementation across Europe so I am not sure how legislation is going to deal with that. I think the issue that we need to deal with is implementation and it is unclear to me how that would happen.

**Q126 Lord Brooke of Alverthorpe:** The case has been put that there is a wide variation in practices on the 1986 legislation and that it could conceivably become wider with the new legislation. We put that to the Commission. One of the ways that could be advanced to try to overcome the paucity of attention to animal welfare in some countries would be to insist at least that the 1986 Directive was introduced to narrow the gap.

**Professor Hammond:** I cannot disagree with that but I will just refer back. It is already there. It is about implementation. What appears to us is that the implementation across

Europe has not been uniform. There are some countries which have implemented it fully and others which have not.

**Q127 Lord Brooke of Alverthorpe:** And would you wish to have seen those standards applied across Europe?

*Professor Hammond:* I think the standards, yes. The bureaucracy, no.

**Chairman:** A nicely nuanced answer, if I may say so!

**Q128 Viscount Brookeborough:** Are your colleagues in Europe fighting this as hard as you are or do you think they would just be quite happy if they were not implemented?

*Professor Hammond:* They are fighting this as hard as we are. As I said in my introductory comments, the views that are being expressed to you today are the views of the pharmaceutical industry; that is why we are here, but we are very consistent with the entire bioscience sector across Europe. It is not just in the UK and it is not just industry across Europe. It is the entire bioscience sector across Europe.

**Chairman:** We now come to care and accommodation standards.

**Q129 Baroness Jones of Whitchurch:** This follows neatly on because you say in your evidence that you think these standards should be guidelines rather than mandatory, but surely if we continued with it being based on guidelines we would get exactly what we were discussing just now, which is the gold standard in the UK and variable standards across Europe with some countries virtually ignoring the new legislation as they have the previous legislation. How can you justify that you only want it to be a guideline and not mandatory?

*Dr Dunn:* My Lord Chairman, the challenge with regard to the animal care and accommodation standards is that the ones that have been adopted as mandatory were in fact originally conceived as guidelines to be used in an informative as opposed to a mandatory

way, so if they were adopted as currently indicated in the draft we would be losing a very considerable amount of capacity for rodent and rabbit stock, and that is even in comparison to the current well-enforced standards in the UK code of practice. It is certainly the case that it would encourage harmonisation but we would be harmonising to what is a very high standard. I draw your attention back to the impact assessment that was carried out where the costs of this have been very significantly underestimated and the welfare impact for these animals – and we are talking here, I would remind you, about rodents and rabbits – as stock animals is really not supported by the scientific evidence.

**Q130 Baroness Jones of Whitchurch:** I think you have probably answered the second bit of my question. Which is the bit of the new mandation that you particularly object to in relation to the care and accommodation for rodents?

**Dr Dunn:** It is very much around – and again I would like to be very specific – the cage space allowances. There are many aspects of the performance standards which are being adopted through ETS 123 Appendix A which are well supported, things like environmental controls, group housing, environmental enrichment, but the actual amount of physical space in centimetres squared for stock rodents and rabbits is posing quite a challenge.

**Professor Hammond:** If I could add one comment, it is important to recognise that these standards are engineering standards, so they are basically specifying space and humidity. In the original work that was done to try and look at this, there was a high degree of controversy around the evidence to support whether or not a particular cage size was better or worse than another particular cage size, so it is not a simple scientific argument to make.

**Q131 Lord Cameron of Dillington:** Your whole industry is obviously surrounded by controversy. It seems to me that objecting to these simple things, by saying that this is not

proven by science, is not a particularly effective argument in this particular industry because it is more of a philosophical and moral argument, or the perception of it is.

*Dr Dunn:* My Lord Chairman, an important point to make is that we have tremendously positive experience for these species with the current provisions and that is an important factor, I believe, to be taken into account before making the argument and the case where we are being asked to elevate what we currently have.

**Q132 Chairman:** So you are not arguing against the concept of mandatory standards? You are saying the present mandatory standards are OK but the ones that coming through from the directive are the Council of Europe aspirational ones and you see no scientific justification for moving from one set of mandatory standards to a higher set of mandatory standards? Is that fair?

*Dr Dunn:* That is fair comment.

**Q133 Earl of Caithness:** But the current standards are not mandatory, are they? They are advisory.

*Dr Dunn:* If I may confirm, I am making the comparison between the UK code of practice which has the status of a code of practice, and the mandatory standard that would come through an A(SP) order.

**Q134 Chairman:** But you would not get a licence if you did not. Would you be able to function if you did not house using the code of practice standards at the moment? The present system is a code of practice.

*Dr Dunn:* Yes.

**Q135 Chairman:** If you did not operate at that code of practice would you be able to get the certification to carry out procedures?

**Dr Dunn:** I believe that it is the case that the Home Office inspectorate would enforce the standards that are in the code of practice, and my understanding is that the status of the code of practice would be that if you deviated from it you would need substantial reasoning why you did that, and it is very much related to the status of the code of practice as a statutory instrument.

**Chairman:** Thank you very much. We come finally to the 3Rs.

**Q136 Viscount Ullswater:** The 3Rs principle lies at the heart of the Commission's proposals and I think Professor Hammond, in a reply to my colleague, Lord Arran, said that total replacement was unfeasible, and I think you also asserted in your opening comments that the scientific community was the driver of the 3Rs principle rather than it being forced on them. How do you see these proposals? Are they helpful or do they hinder the adoption of the 3Rs principle?

**Dr Brooker:** We are completely supportive of the focus on the 3Rs that is within the directive. We think it is excellent and we think it appropriate. It is the means to achieving that that perhaps we take issue with, and their proposal to set up a series of national centres is one that we do not see as being particularly effective. We believe it is those directly engaged in the scientific practice that drive forward 3Rs and there are some examples we would like to leave with you of developments in the 3Rs that we presented to the European Parliament earlier this year. It is a booklet. We do not have time to do it today but we would encourage you to look at these examples, and we would perhaps point to the model in the UK where we have the National Centre for the 3Rs, which is funded mainly by government but with support from industry, and which, rather than being a separate, isolated laboratory working on its own, instead provides a forum for all practitioners to meet together under the guidance of the National Centre for the 3Rs which has a very clear drive towards reduction, refinement and replacement. It set up fora for sharing best practice, it set up particular work streams, and

perhaps I could point you in particular to one that has produced some excellent work in the last two years on the use of primates in the testing of biologically derived molecules, and also funded research in a variety of different academic and individual laboratories which are centres of excellence for the work that they do. We do not think that setting up 15, 20 independent centres would work particularly well and nor would it be a good use of funds. The general principle we are completely supportive of. In terms of our incentives, which I think was another part of your question, the incentives are completely clear. It is ethically right and it is commercially sensible. It is actually much cheaper to run alternatives than it is to set up animal testing laboratories, so there is both a commercial and an ethical drive wherever we can either to use fewer animals, less complex procedures on animals, or indeed, where possible, to replace animals.

**Q137 Chairman:** Can I just raise one issue which is the interests of breeders? Are there any particular concerns that we have not touched upon that are specific to breeders?

**Dr Dunn:** My Lord Chairman, I think that you have given us a fair hearing with regard to the issues around the care and condition standards. That is the major challenge for the Laboratory Animal Breeders Association, and again I would stress that in the UK this relates very much to our capacity to hold stock of rodents and rabbits.

**Q138 Earl of Caithness:** What is the variance between our code of conduct and the European or American?

**Dr Dunn:** For the new standards that would be mandatory through Annex IV -----

**Q139 Earl of Caithness:** Sorry, our existing code rather than the proposed one.

**Dr Dunn:** We would be talking about a gap of about 25-30 per cent capacity to hold stock.

**Q140 Chairman:** Are there any other points that you think should be brought to our attention that you have not had the opportunity to bring to our attention?

**Professor Hammond:** No. My Lord Chairman, I think you have given us a very thorough opportunity to explain the issues as we see them. I could recap very quickly if you like. It really focuses on the critical issues around the use of non-human primates, around severity definitions and re-use, around bureaucracy and around protection of intellectual property. They are the key areas that we are concerned about and they are the areas that could potentially have the biggest impact upon decisions to invest in the EU as well as in the UK.

**Q141 Chairman:** Thank you very much indeed. Can I say that I was particularly attracted to and interested in the somewhat metaphysical discussion in your evidence on whether death was a lasting harm.

**Professor Hammond:** It is actually quite an important point.

**Chairman:** Certainly for me it is! Thank you again.