

Participatory Conference

Ethical, Legal and Social aspects of Farm Animal Cloning

October 5-6, 2006

Brussels

Summary



*The conference was organised by
The Danish Centre for Bioethics and Risk Assessment
in cooperation with the European Commission*

Content

1: Introduction.....	3
2: Main points from talks, comments and discussions.....	5
2.1: Session I: The landscape of farm animal cloning.....	5
2.2: Session II: Applications of farm animal cloning	7
2.3: Session III: Scenarios of regulation	9
2.4: Session IV: The values behind regulation (Part I) – Is cloning anything special?	9
2.5: Session V: The values behind regulation (Part II) – Principles of regulation	11
2.6: Session VI: Concluding discussion.....	13
3: Conclusions.....	14
Annex 1: Conference programme	16
Annex 2: List of participants.....	20
Annex 3: Powerpoint presentations	23
Annex 4: Evaluation of CiP process with High School teachers.....	24

1: Introduction

On 5–6 October 2006 the Danish Centre for Bioethics and Risk Assessment, in cooperation with the European Commission, hosted the conference *Ethical, Legal and Social Aspects of Farm Animal Cloning* in Brussels.

The conference was the concluding event of the project: *Cloning in Public – Farm Animal Cloning and the Public: A Project to Facilitate a European Public Debate and to Make Recommendations on Regulation and on Guidelines for Research and Applications of Farm Animal Cloning*, a Specific Support Action within the 6th Framework Programme, priority 5: Food quality and safety.

The aims of the conference were to

- Obtain feedback on, and input to, the recommendations of the project on possible European regulation and guidelines
- Create a discussion in which to explore key issues and identify the main hopes and concerns that farm animal cloning raises

Just over 50 participants discussed these issues, drawing both on earlier reports from the project and on a series of short talks and invited comments presented in six sessions. Session I gave an overview of the whole area of farm animal cloning from a legal, ethical and religious perspective. Session II focused on the different applications of farm animal cloning and the considerable diversity of opinion about their viability. Session III was an introduction to the draft of the recommendations report presenting three potential scenarios for the regulation of farm animal cloning. Session IV concentrated on the different values at play in the cloning debate when that debate is approached from different perspectives. Session V focused on the ethical values and principles that seem to underlie regulatory thinking and the framing of the public debate about the technology. Finally, Session VI at first sought to broaden the debate and ensure that all participants had had an opportunity to make their comments; thereafter it focused on the main conclusions in order to assist the authors of the recommendations report in preparing their final revision.

The participants were a diverse group of people all of whom, from their different perspectives, were urged to act in the capacity of informed citizens. Some participants were specialists of one kind or another in animal cloning, some were direct stakeholders, some worked within the European Commission or the European Parliament, some were high school teachers, and finally some had been involved in running the project.

To prepare the group of high school teachers for the conference, a workshop, *Farm Animal Cloning: The Technology, the Concerns and the Regulation*, was held on 23–24 September 2006 in Copenhagen. The aims of this workshop were to inform the teachers about the findings of the project and, in the ample time made available for questions and discussions about the many different aspects of farm animal

cloning, to provide them with background knowledge that would enable them to take part fully in discussions at the Brussels conference.

The Brussels conference programme is set out in Annex 1, and a list of participants is given in Annex 2. PowerPoint presentations given at the conference are reproduced in Annex 3, and reflections of the group of teachers are summarised in Annex 4. All of these materials are available at the project website: <http://www.sl.kvl.dk/cloninginpublic/>.

This summary has been prepared by a student of the history of ideas, Jakob Rasmussen, from the University of Aarhus and Dr. Mickey Gjerris of the Danish Centre for Bioethics and Risk Assessment. Named contributors have all had an opportunity to comment on the summaries of their contributions, and Dr. Christian Gamborg, Professor Peter Sandøe and Geir Tveit, all of the Danish Centre for Bioethics and Risk Assessment, have commented on an earlier version of the full summary.

2: Main points from talks, comments and discussions

This chapter contains a short summary of the conference sessions. It highlights the main points made, or arising from, the talks, comments and discussions.

2.1: Session I: *The landscape of farm animal cloning*

The main objective of Session I was to give the participants an overview of the different perspectives involved in discussions of farm animal cloning. Scientific, legal, ethical, and religious issues identified in the project were presented in talks and subsequently discussed. Below some of the key points in the talks and subsequent discussion are highlighted.

Perspectives of scientists (Gitte Meyer):

There is diversity and disagreement among scientists involved in animal cloning research about the aims, motives and purposes of the research and its possible applications. This diversity has been demonstrated in a report based on a series of interviews with scientists, conducted as part of the project and concluding that there is no such thing as *the* scientific project of animal cloning. There was general agreement on a few possible short-term uses, including the cloning of a few valuable breeding bulls and the production of (genetically modified) animal models and bio-reactors. There was also agreement that the cloning of animals could increase basic biological knowledge, but the diversity of opinions widened with the perspective. There was no agreement, for instance, with regard to the possible use of cloning techniques in human reproduction or about large-scale use of cloned animals in agriculture.

Legal perspectives (Jennifer Gunning):

At the moment there is no specific legislation on farm animal cloning at international or EU level. There does, however, exist a variety of indirect regulatory mechanisms at EU level covering, among other things, *food safety and consumer protection, animal welfare legislation, animal identification legislation, zoo-technical legislation and legislation on GMO's*. Only Norway and Denmark have a direct regulation on cloning at a national level.

Ethical perspectives (Mickey Gjerris): Many values are challenged by farm animal cloning. These can be divided into two groups – anthropocentric values (concerning humans) and zoocentric values (concerning animals). The anthropocentric group includes such values as *health risks, environmental risks, socio-economic effects and existential effects* such as estrangement from nature and brutalisation of humans. The slippery slope concern also falls within this group. The zoocentric group is primarily concerned with animal welfare issues and questions of genetic and experienced integrity. Not everybody shares the same values, and it is not possible to integrate all values in a single regulatory framework. One of the main questions, therefore, is how to ensure that all participants in the discussion are respected, or taken seriously, even if their values do not simply dictate the shape of final decisions.

Religious perspectives (Harold Coward): An account of the five major religions (*Hinduism, Buddhism, Judaism, Islamism and Christianity*) and their attitude towards cloning was given. It is important

to note that religious views are constantly evolving and changing, so religious views towards cloning need to be seen in a modern context. Common to the different religions is a focus on motivation. If cloning is to be accepted, the motivation behind needs to be of a noble character. Since religion is a significant presence in society, it is important to take religious views into consideration.

Discussion

There was general agreement that any regulation of cloning at EU level will necessitate a broad discussion of the values that the regulation is meant to protect. Furthermore, a series of questions have to be answered: Does cloning raise any distinctive ethical questions? Does it involve any risks that do not fall under any existing regulation? Should the technology be regulated at the product or the process level? Finally it will be necessary to decide what kind of regulation would be best suited to achieve the intended goals.

One of the major discussion points of Session I (and indeed of the whole conference) was the question of public acceptance. Public acceptance should not be seen as a goal in itself, but a public debate should help to shape the science in an acceptable way. One of the objectives of the project Cloning in Public has been to start a public debate on cloning at European level, but it must be acknowledged that the project has to a large extent failed in this objective. Public interest in cloning was strong when Dolly was born, but it has since weakened considerably. Why is that? At least part of the reason can be found in the lack of public knowledge and awareness of cloning. That calls for education, and for the scientists to engage themselves in public dialogue at a level at which the lay public can understand them. A better informed public may or may not lead to greater public acceptance of cloning; but raised levels of public awareness will result in a broader and more nuanced public debate in this field.

Another social concern voiced at the conference was that the farmers were missing. The farmers are, of course, an important group of stakeholders in the debate of farm animal cloning; but if the debate is conducted only at a theoretical level, they may not consider themselves as such. It is undeniable that at least some farmers have an interest in cloning, but for them the possible applications may be of more interest than the ethical debate.

2.2: Session II: Applications of farm animal cloning

Session II aimed to give the participants an overview of the possible applications of farm animal cloning. The main focus here was on applications within research and medicine, agriculture, and in the field of sport animals. The literature on possible applications of cloning seems almost limitless, but the question is which of these applications are realistic in the foreseeable future, and, of these, which are ethically acceptable and economically sound.

Research and medical applications (Barbara Glenn):

The Eurobarometer surveys show that cloning for medical purposes is the most acceptable form of cloning in the eyes of the public. There are no medical applications of ‘just clones’, but the use of superior animal clones in a breeding programme can improve the naturally desirable traits in a breed, and as such be of use in the medical industry.

Other medical applications of cloning involve transgenic animals that can produce a given molecule or protein for use in human medicine (bioreactors) and disease models, but these are not the direct results of cloning. Here cloning is a useful tool to an independent end; this end can be reached only when cloning is combined with transgenesis.

Agricultural applications (Graham Plastow):

According to Graham Plastow the current status of science supports the use of cloning in agriculture. The main use would be in the multiplication of proven genetics – e.g. in the use of cloned bulls in beef production. Meat and milk would be produced from the progeny of clones. Should clones come to be used in agriculture, it is, however, unlikely that companies will put products of clones and their progeny on the market unless they believe that consumers will accept it. The question of public acceptability is a vital one. It is nevertheless not believed that the products of clones and their progeny pose any greater risks to the consumer than conventionally bred products, although knowledge in this field is still limited.

Cloning of sport animals and other applications (Thomas Nissen):

The cloning of outstanding sport horses has already begun. The technology is there, and it has put the horse breeding industry in urgent need of regulatory mechanisms. The purpose here is to clone for further breeding.

Cloning also has potential applications where endangered species are concerned, and in the US it is already possible to obtain a clone of your pet animal. The number of animals cloned with these applications in mind is very small, but nonetheless this is an important area, since these animals very easily capture the attention of the public. Pet cloning is, therefore, not only a challenge to a range of values rooted in the traditions of breeding, but could also be seen as a way to engage the public in broader discussion of cloning.

Discussion

Agricultural applications are not generally believed to be useful on a large-scale at present, although some participants felt that the possibilities here were underplayed both by the project and by representatives' of the breeding organisations present.

There was wide agreement that cloning and biotechnology will be of benefit to human, and perhaps also animal, health in the future. The benefits would come not only from the medical applications mentioned above, but also through developments in basic biological knowledge – knowledge, that is, in the areas of fertilisation, epigenetics, and so on. There was, however, significant disagreement about the potential of specific applications in this area, especially where xenotransplantation was concerned.

Animal welfare was another major focus of discussion at the conference. Some believed that cloning would, in the long run, help improve both human and animal health; others were of the opinion that the animal suffering created already was beyond justification. Several animal welfare concerns are raised by cloning. Among these are the suffering of pregnant surrogates, abnormal fetal development, large offspring syndrome and late pregnancy and postnatal mortality. The question is how much animal suffering is acceptable in order to further our knowledge and increase human health and wellbeing. Some argue that cloning could be the line we should not cross, and that we should turn focus instead towards the animals, and their health and welfare, and away from human interests. Others argue that science is improving the methods of animal cloning especially, and animal experimentation more generally, and that it is thereby helping to reduce animal suffering. These supporters suggest, then, that the possible benefits for humans outweigh the animal suffering.

2.3: Session III: Scenarios of regulation

In Session III Peter Sandøe presented the three scenarios introduced in the recommendations report from the project. The first scenario describes the challenges, problems and ethical concerns that will need to be taken into consideration if it is decided that cloning should be only indirectly regulated through existing EU regulation. The second scenario describes the possible consequences of introducing new regulation at EU level; and the third scenario deals with the option of letting the different member states regulate cloning at the national level, leaving EU involvement to indirect measures through existing legislation. In general, it was agreed that the scenarios succeed in describing the possibilities realistically, and in highlighting the problems, challenges and advantages arising from each of them.

2.4: Session IV: The values behind regulation (Part I) – Is cloning anything special?

Session IV asked the rather general question, Is cloning anything special? To help answer that question three presentations were given. These looked at clones in, respectively, a scientific, a legal and an ethical perspective.

What is a clone? A scientific perspective (Bruce Whitelaw):

Is a clone anything special in the eyes of science? The answer is both 'yes' and 'no'. Yes, because a clone is a technical tour de force, and no, because a clone is an animal like any other. It just happens to be produced by another form of reproduction. So the answer depends on what you look at – the process or the product. Cloning is an unnatural form of reproduction; a clone in itself is not unnatural. But the technology contains unnatural possibilities, understood as possibilities that are only reachable through the technology, especially within basic research and medicine.

Cloning from a legal perspective (Kai-Uwe Sprenger):

Is a clone anything special in the eyes of the legal system? Cloning has to be seen in the light of other assisted reproductive techniques. What is defined as being natural seems very much to be a question of time. The longer a technology is around, the more natural it seems and the more accepted it is. Cloned animals might thus be considered unnatural today, but that will probably change in time. Cloning has to be considered in the light of several legal areas. It should be noted that a close-meshed legal framework exists at EU level covering environmental risks, food safety, animal health, animal welfare and zootecnics. On the other hand, it should also be noted that the harmonisation of ethical values at EU level would certainly go beyond the limits set by the EC Treaty. However, ethical aspects are considered in the process of European legislation. According to the opinion of the Group of advisers to the European Commission on the ethical implications of biotechnology, the cloning of farm animals may prove to be of benefit and is acceptable when its aims and methods are ethically justified and when it is carried out under ethical conditions.

Cloning from an ethical perspective (Franck Meijboom):

Is a clone different from a naturally bred animal from an ethical perspective? To answer that question the concept of the moral status of animals has to be discussed. For several reasons – among others, that animals can suffer, that animals have interests of their own, that animals are living beings and as such have an inherent worth in themselves and that animals have the capacity of entering into relationships with humans – animals can be seen as having a moral status. This status does not appear to change when the animal is cloned. A cloned animal can still suffer, it can still have interests and it is still a living being with an inherent worth of its own. Only the kind of relationship with humans could change, depending on the reason behind cloning and thus the human reason for producing the animal. But this does not change the moral status of the animal, only the nature of its relationship with humans.

The conclusion is that cloning does not change the moral status of an animal, and in that light cloning cannot be considered ethically problematic in and of itself, as something that threatens the moral status of the animal. It is a fact that cloning carries certain risks and uncertainties for animal health and welfare, and it is very relevant to discuss these concerns. They are, however, not special to cloning but relate in general to human use of animals.

Cloning can also be viewed as problematic when it affects the individual status of the animal and its ability to flourish (when animals are used as just a biological resource). Again this is a very relevant point, but it is not unique to cloning. The fact that something is not unique to a field does not make it right, but in the end it seems that it is not concerns about the animals that make cloning special, but instead a human concern that animal cloning might be just one step of the way to human cloning – an example of the slippery slope concern.

Discussion

Cloning may not be anything special from a scientific, ethical and legal perspective, but as we keep discussing it, and as it seems to be connected with a variety of ethical and legal issues, it is at least something of its own. Cloning is not unique, but it is a very complex area that raises many questions and concerns. One should not underestimate what cloning has already achieved, but it remains a science we need to learn a lot more about. Only the future will tell if it is a science that is going to be used on a large or a small scale, and hence it is not only an ethical and a scientific matter whether we regulate, but also an economic one. New regulation is very expensive, and in the end it is a question of what weighs the most – ethical, scientific or economic concerns.

2.5: Session V: The values behind regulation (Part II) – Principles of regulation

The main questions discussed in Session V were these: Is it possible to regulate on an ethical basis in a globalized world? Are there some common human values that can be used as basis for global regulation? Do common European values exist on which regulation can be based?

Can we regulate on an ethical basis in a globalized world (Matthias Kaiser):

Here ‘can’ is to be understood as meaning ‘is it possible’, and ‘ethical basis’ is to be taken to indicate a platform of ethical values that goes beyond mere risks. Why is it relevant to ask this question? One factor is ethical pluralism. Different cultures and societies represent a variety of ethical viewpoints, and these viewpoints may even differ within societies. Another reason is the possibility of defection. If a scientist cannot use cloning in one particular place, then perhaps he or she can in another. Defection may be a disincentive to ethically based regulation, but it may also invite ethical hypocrisy. One country may choose to outlaw cloning but at the same time wish to obtain and enjoy the benefits of cloning from somewhere else.

It is considered very difficult to put ethics into new regulation, and such regulation is presumably never introduced unless the political world experiences pressure from the public. Regulation on an ethical basis is therefore best achieved when it results from pressure from below, and even then it may only be a smokescreen in the form of consultation with ethical committees.

Perhaps the best way of regulating novel science, in this case farm animal cloning, is by a combination of a framework of regulation and codes of good practice in the science community. This will allow both for national differences and for the science to develop. Cloning calls for a flexible form of regulation, as it covers multiple scientific, legal, social and ethical aspects. Some form of ‘soft law’ may be the answer.

Regulation and the role of stakeholders (Sarah Hartley):

Insights from a research project, currently being undertaken in Canada, on the factors that account for expert and non-expert positions on ethical issues in animal biotechnology were shared. Here ‘animal biotechnology’ refers to both genetic modification and cloning. Public opinion studies show that animal biotechnology triggers more ethical concern than other areas of biotechnology. In fact the public considers ethical issues to be as significant as scientific risks in that area.

The project aims to analyse the ethical concerns of a range of stakeholders on specific applications of animal biotechnology in Canada in relation to the ethical issues defined by scholarly experts in the field. Scholars are to investigate ethical issues from six different perspectives (animal justice, agricultural justice, agricultural industry, religion, healthcare and the health industry) by the method of stakeholder focus groups. The focus on stakeholders is important as the Canadian government draws heavily on the functional democracy model, relying on stakeholders to advise on regulatory development.

Why are the politicians failing? (Gitte Meyer):

One of the main ideas behind this conference was originally to invite as many as twelve politicians to meet and discuss cloning with representatives of the public and stakeholders. Only one politician attended, however. Hence the question – why are the politicians failing? Three possible background factors were pointed to. Firstly, politicians did not show up because the conference did not provide them with any links to the public. No journalists were present. The democratic practice of discussing public affairs in public is still perceived to be linked to the nation state. The presentation of the issue of farm animal cloning as a European public affair did not conform to this perception. Secondly, there is a widespread assumption of a radical separation of the spheres of science and politics. Discussions are expected to be either scientific or political, but at the conference and during the project the scientific and the political aspects have been integrated. Thirdly, ethical issues are widely regarded as national issues, to be managed within the framework of the assumed moral homogeneity of nation states.

Invited comment from Kathy Sinnott (MEP from Ireland)

Why the politicians are failing is, of course, not an easy question to answer, but as the one politician who did attend pointed out, politicians use science when it suits them and ignore it when it does not. They are busy building up the international institutions, and so they allow market forces to determine the everyday business. If farm animal cloning is not to be bypassed, pressure must be put on the politicians from below. The public needs to shake up the politicians.

Discussion

Pro-cloning participants argued that cloning will be beneficial to both humans and animals. Only the best animals are to be cloned, and this will improve the quality of the animal and provide better products for consumers. It is also expected that the US Food and Drug Administration (FDA) will give a green light to the commercialisation of cloned animal products.

Sceptics argue that cloning has added little, if any, value to the breeding of farm animals. Cloning of farm animals is considered among the least acceptable applications. Hence, it could present a hurdle to cloning which aims at other, more publicly acceptable, applications, such as those in basic biology and human medicine.

Regarding regulation, there was general agreement that imports of the products of cloned animals and their progeny will be a problem if the EU chooses not to regulate, and if the FDA, as expected, allows the commercialisation of cloned products. Finally it was discussed whether or not common values can be found in the EU. Are they given in the treaties, or do we need a systematic analysis to locate them? If we do have common values, what are they?

2.6: Session VI: Concluding discussion

The objective of Session VI was to sum up what had been discussed in the previous five sessions and to give the participants a final chance to comment on the ethical, legal and social aspects of farm animal cloning as these have been described in the project Cloning in Public. The aim was to ensure that all participants had an opportunity to comment on matters that they felt were overlooked, or overstated, or in some other way misrepresented.

The session was opened by Peter Sandøe, who presented what he thought were the main findings and points made in the discussions to date. His final suggestion was that the EU does not need specific regulation as long as cloning is not used in the production of farm animal products. The assumption is that this will not happen in a foreseeable future. Cloning within the field of basic and biomedical research will be sufficiently covered by existing regulation of the use of farm animals for research purposes. That suggestion did not attract total agreement, but that was not the goal of the conference.

In the concluding discussion there was continued focus on ‘soft law’. Labelling was mentioned several times during the conference as a possible way of protecting consumer interests, but the question how to label is not simple. Self-regulation and voluntary certification schemes were mentioned as alternative ways of regulating. It was also suggested that it is not more regulation that we need, but more transparency. It was mentioned that as long as we do not bring clones or their progeny into the food chain there will be no urgent need for regulation. New regulation is very expensive, but the question is, How long will it be before products of clones and their progeny are introduced to the market? Another concern was that cloning as a science is still evolving and that, as a result, we seem to be in the middle of a very confused debate – are we even ready to regulate, or would it be premature to do so now? Our knowledge in the field of epigenetics is still limited, and before we jump to regulation we need a deeper understanding in that and other fields.

Environmental concerns were addressed (e.g. loss of local breeds, fear of epidemics because of lack of gene diversity), and finally the big question was put, namely: Where is the ethics in regulation, when the regulation is, in the end, based on scientific risk assessment?

3: Conclusions

The conclusions of the conference were not gathered in a summary document. Rather the researchers involved in the project listened closely to the presentations, invited comments and discussions, trying to identify valuable input to the revised version of the recommendations report and to the project's findings in general. A range of important points and remarks were made throughout the conference, just as a range of questions needing answers were formulated. Below we have gathered the most salient of these points and suggestions into two groups relating to the aims of the conference.

A: Main hopes and concerns related to farm animal cloning

- Hopes about the technology seem mainly to be connected with basic biological research and biomedicine
- Agricultural applications seem at best of limited importance
- There is no shared perception of the usefulness and timeframe of applications
- Concerns about farm animal cloning:
 - Human health
 - Animal welfare
 - Consumer choice
- Differing emphases on the importance of the different concerns

At the end of the conference there seemed to be general agreement that four main positions on the regulation of farm animal cloning could be identified:

- *Focus on the potential benefits of cloning*
Emphasises the possibilities within basic research and biomedicine
- *Focus on the potential negative effects on animals*
Will not accept negative effects on animals (welfare/integrity) unless cloning is strictly necessary
- *Focus on the rights of consumers and citizens*
Insists on the need for labelling and, more generally, transparency
- *Focus on liberty, or human freedom to engage in economic activities*
Insists on minimal, risk-based regulation

B: How should farm animal cloning be regulated?

- Farm animal cloning is complex – scientifically, legally and ethically. In order to assess and choose a suitable regulatory approach, we need a common understanding of what, precisely, the regulation intended to achieve, and of the values that lie behind the intended goals.
- Applications in basic research and biomedicine are already subject to extensive legislation (e.g. covering use of laboratory animals), but how can overselling and lack of genuine cost-benefit assessment be avoided?

- Products from cloned animals and their progeny are not likely to differ from non-cloned products, so should regulation be based on product or process?
- There are many possible goals of regulation and many foreseeable benefits of non-regulation, but it is in all likelihood not possible to promote them all at the same time (e.g. consider free trade vs. consumer choice). How should that kind of conflict be handled?
- The choice of regulatory levels, models and tools rests on underlying values, but how should we handle pluralism of values at international, supra-national and national levels?
- Introducing EU legislation in this area could be like taking a hammer to a nut if the applications of farm animal cloning are as limited as most of the gathered experts seemed to think. Could there be other, less costly, ways to achieve the goals of regulation, or is regulation justified by its symbolic value?
- Animal integrity is not a scientific concept; it is generally considered an ethical notion, but are concerns about animal welfare and risks to human health not ethical in nature as well?

C: Suggestion

As the conference closed, Peter Sandøe, drawing on research undertaken in the project and workshop discussions, suggested tentatively that the many opinions that had been voiced might be summarised as follows:

- As long as cloning is not used within European breeding of animals for use in animal production, the EU does not need special regulation.
- Existing regulation of the use of animals for research purposes will cover use of cloning within basic and biomedical research.

Not everyone agreed with this suggestion, but only a few spoke against it, voicing concerns about animal welfare and the continuation, through cloning, of the reification of animals.

Annex 1: Conference programme

Thursday, October 5

09.00–09.15: Opening of conference – Peter Sandøe

Session I: The landscape of farm animal cloning

The main point of Session I was to draw out central findings of the reports written as part of the project – and thereby to present the landscape of farm animal cloning as it is seen within the project and to create a common background for the participants of the conference.

09.15–09.25: Introduction and Chair – Christian Gamborg

09.25–09.45: Perspectives of scientists – Gitte Meyer

09.45–10.05: Legal perspectives – Jennifer Gunning

10.05–10.25: Ethical perspectives – Mickey Gjerris

10.25–10.45: Religious perspectives – Harold Coward

10.45–11.05: Coffee

11.05–11.45: Invited comments (10 minutes each)

Heiner Niemann

Michael Hauskeller

Emily Marden

Maciek Wesierski & Ewa Rutkowska

11.45–12.30: Discussion

12.30–13.30: Lunch

Session II: Applications of farm animal cloning

There were two main themes in Session II. The first aim was to address the question, In what areas and under which circumstances will farm animal cloning be a useful biotechnological application? There is considerable disagreement about this in the literature, just as there is disagreement about the correct way to interpret the term ‘useful’. Secondly, the scenario-based report with the project recommendations was presented.

13.30–13.40: Introduction and Chair: Geir Tveit

13.40–13.55: Overview of applications – Mickey Gjerris
13.55–14.10: Medical applications – Barbara Glenn
14.10–14.25: Agricultural applications – Graham Plastow
14.25–14.40: Other applications – Thomas Nissen

14.40–15.20: Invited comments (10 min each)
Jean-Paul Renard
Jan Merks
Anita Idel
Joyce D´Silva

15.20–15.40: Discussion

15.40–16.00: Coffee

Session III: Scenarios of regulation

Session III was a presentation of the final report from the project, a report containing a trio of scenarios based on three different ways of regulating animal cloning in the EU.

16.00–16.30: Three scenarios of regulation – Peter Sandøe

16.30–16.45: Discussion

Session IV: The values behind regulation (Part I) – Is cloning anything special?

Session IV asked the question, Is cloning anything special? This question was posed to facilitate a discussion about if, how, and in what areas, cloning can be said to demand special attention from a regulative point of view.

16.45–16.55: Introduction and chair: Mickey Gjerris

16.55–17.10: What is a clone? A Scientific Perspective – Bruce Whitelaw

17.10–17.25: Clones from a legislative perspective – Kai-Uwe Sprenger

17.25–17.40: Clones as ethical subjects – Franck Meijboom

17.40–18.10: Invited comments

John Claxton

Margaretha Håård

Manuel Suárez Alvite, Maria João Leite Castro & Rosa Bento Soares

18.10–18.20: Break

18.20–19.00: Discussion

20.00–22.00: Dinner

Friday, October 6

Session V: The values behind regulation (Part II) – Principles of regulation

Session V sought to highlight a series of very fundamental questions about ethics and regulation that the technology of cloning brings to the fore. These included the question of how ethics can be understood in a world of both globalised trade and local ethical communities, the question of what the point of regulating technology should actually be, and finally, the question of how ethics is best integrated into the political decision process.

09.00–09.10: Introduction and Chair – Christian Gamborg

09.10–09.25: Can we regulate on an ethical basis in a globalised world – Matthias Kaiser

09.25–09.40: Regulation and the role of stakeholders – Sarah Hartley

09.40–09.55: Why are the politicians failing? – Gitte Meyer

09.55–10.15: Coffee

10.15–10.55: Invited Comments

Kathy Sinnott

Barbara Glenn

Päivi Männerkorpi

Linda Court, Julia Houghton & Kathy Tattersall

10.55–12.00: Discussion

12.00–13.00: Lunch

Session VI: Concluding discussion

The point of Session VI was to discuss the main points arising during the conference. It was hoped that this would allow for more detailed discussion of some of the points and clarify the ‘lessons’ the project group should take home with them. The session was also an opportunity to make comments that had participants had been unable to make previously.

13.00–13.15: Opening remarks and chair – Peter Sandøe

13.15–14.00: Discussion

14.00–14.10: Coffee

14.10–14.50: Discussion

14.50–15.00: Concluding remarks and Closing of conference – Peter Sandøe

Annex 2: List of participants

Name	Institution	E-mail	Country
André, Aurélie	DG Environment, EU	Aurelie.ANDRE@cec.eu.int	
Atkinson, Chris	The European School in Luxembourg	christopher.atkinson@education.lu	Great Britain
Augustane, Inta	Secondary school No3, Riga	intaaugustane@inbox.lv	Latvia
Bramow, Ditte	Frederiksborg Gymnasium	stedit@tiscali.dk	Denmark
Castro, Maria João Leite	Escola Secundaria Garcia de Orta	mjcastro@portugalmail.pt	Portugal
Claxton, John	DG Research, EU	John.Claxton@cec.eu.int	UK
Court, Linda	Kingswood School, Bath	LJC@kingswood.bath.sch.uk	UK
Coward, Harold	University of Victoria	csrs@uvvm.uvic.ca	Canada
De Briyne, Nancy	European Association of Veterinarians	nancy@fve.org	
Dechamp, Jean-Francois	DG Research, Directorate of Science and Society	Jean-Francois.DECHAMP@cec.eu.int	France
D'Silva, Joyce	Compassion in World Farming	joyce@ciwf.co.uk	UK
Ehret, Viera	The European Parliament	miro-slav.mikolasik@europarl.europa.eu	
Gamborg, Christian	Danish Centre for Bioethics and Risk Assessment	chg@kvl.dk	Denmark
Gjerris, Mickey	Danish Centre for Bioethics and Risk Assessment	mgj@kvl.dk	Denmark
Glenn, Barbara	BIO, Animal Biotechnology	bglenn@bio.org	USA
Gourbin, Gilles	The European School in Luxembourg	gilles.gourbin@lu.coditel.net	France
Gunning, Jennifer	Cardiff Law School, Cardiff University	Gunning@cardiff.ac.uk	UK
Håård, Margareta	Svensk Avel	margareta.haard@svenskavel.com	Sweden
Hartley, Sarah	University of British Columbia	shartley@genomebc.ca	Canada

Hauskeller, Michael	University of Exeter	michael@hauskeller.de	Germany
Houghton, Julia	Kingswood School, Bath	julia.houghton@hotmail.co.uk	UK
Idel, Anita	European Association of Veterinarians	Anita.Idel@t-online.de	Germany
Kaiser, Matthias	National Committee for Research Ethics in Science and Technology	matthias.kaiser@etikkom.no	Norway
Krcova, Renatka	Assistant to MEP	miro-slav.mikolasik@europarl.europa.eu	
Kurina, Evi	Secondary school No3, Riga	ev52@navigator.lv	Latvia
Lassen, Jesper	Danish Centre for Bioethics and Risk Assessment	jlas@kvl.dk	Denmark
Laybourn, Anna Munck	Danish Centre for Bioethics and Risk Assessment	annaml@dsr.kvl.dk	Denmark
Manea, Teodora	Universitatea "Alexandru Ioan Cuza", Iasi	teo.manea@gmx.de	Rumania
Männerkorpi, Päivi	DG SANCO, EU	paivi.mannerkorpi@cec.eu.int	Finland
Marden, Emily	Sidley Austin Brown and Wood LLP	emily.marden@gmail.com	USA
Meijboom, Franck	Ethics Institute, Utrecht University	F.L.B.Meijboom@ethics.uu.nl	The Netherlands
Merks, Jan	IPG, Institute for Pig Genetics BV	Jan.Merks@ipg.nl	The Netherlands
Meyer, Gitte	Danish Centre for Bioethics and Risk Assessment	gitte@gitemeyer.eu	Denmark
Millar, Kate	Centre for Applied Bioethics, Uni.of Nottingham	kate.millar@nottingham.ac.uk	UK
Motlik, Jan	Institute of Animal Physiology and Genetics	motlik@iapg.cas.cz	Czech Republic
Niemann, Heiner	Institut für Tierzucht und Tierverhalten	niemann@tzv.fal.de	Germany
Nissen, Thomas	World Breeding Federation for Sport Horses	nissen@lkv-sh.de	Germany
Olsson, Anna	Instituto de biologia molecular et celular	olsson@ibmc.up.pt	Sweden/Portugal
Plastow, Graham	Genesis Faraday	graham.plastow@virgin.net	UK
Rasmussen, Jakob	University of Aarhus	acfillerup@hotmail.com	Denmark

Renard, Jean-Paul	INRA, Unité de Biologie du Développement	renard@jouy.inra.fr	France
Rutkowska, Ewa	High School No 32, Warsaw	ewarutkowska@wp.pl	Poland
Sandøe, Peter	Danish Centre for Bioethics and Risk Assessment	pes@kvl.dk	Denmark
Sinnott, Kathy	Member of The European Parliament	ksinnott@europarl.eu.int	Ireland
Soares, Rosa Bento	Escola Secundaria Garcia de Orta	rosa.b.soares@sapo.pt	Portugal
Sprenger, Kai-Uwe	DG SANCO, EU	kai-uwe.sprenger@cec.eu.int	Germany
Suárez Alvite, Manuel	Secondary School Ciudad de los Poetas, Madrid	msuarezalvite@telefonica.net	Spain
Tattersall, Cathy	Sutton Park School, Sutton, Dublin	cathytattersall@hotmail.com	Ireland
Tveit, Geir	Danish Centre for Bioethics and Risk Assessment	get@kvl.dk	Denmark
Weiland, Sigrid	DG Joint Research Centre, EU	sigrid.weiland@ec.europa.eu	
Wesierski, Maciek	Secondary School No 20, High School, No 1 Warsaw	maciekwes@tlen.pl	Poland
Whitelaw, Bruce	Roslin Institute	bruce.whitelaw@bbsrc.ac.uk	UK
Zuscinova, Jana	Assistant to MEP	miroslav.mikolasik-assistant3@europarl.europa.eu	

Annex 3: Powerpoint presentations

These have been attached to the paper version of this report. If you are reading an electronic version of the report please find all the slides as PDF files at

www.sl.kvl.dk/cloninginpublic

Annex 4: Evaluation of CiP process by High School teachers

Question 1: *Did the workshop in Copenhagen affect your views on farm animal cloning?*

Yes. We became more acquainted with the problem. Especially, we were provided with more detailed knowledge which helped us to pose specific questions.

The workshop in Copenhagen changed my point of view about farm animal cloning in three respects. First, I understood the basis of cloning, and in that process the opinions of the scientists were very important. Regarding this, the fact that cloned animals are often very different than expected was quite surprising for me. Secondly, I gained an approximate idea of the expectations of the scientists about the future of cloning – for instance, that applications in agriculture are seen in the long run. Thirdly, it forced me to have an opinion about the ethical concerns in farm animal cloning.

Yes. The workshop in Copenhagen affected my views of farm animal cloning. Before the workshops my preoccupation, in thinking about the application of cloning, was more in a human perspective. The contact with all the material, in the website of the project, and the discussions in the workshop, and afterwards with my friend, allowed me to look at this problem in a new perspective – to think not only about human beings but all beings. Animal welfare (pain, suffering, and health), integrity and so on do affect my views.

Yes, the workshop in Copenhagen affected my views on farm animal cloning. It was very important, because it allowed me to obtain more information about the issue, mainly in its scientific and technological dimensions. This knowledge helped me to conceptualise, in a deeper way, the animal pain, the uncertainty of the process and its uselessness. On the other hand, I thought that animal cloning could be the leit motiv for a re-evaluation of scientific methods, scientific purposes, its uncertainty, and of the distinction between basic research and its possible applications, and so on.

Yes, I have become more sceptical, because of the low success rate, animal welfare problems (the physical malfunctions of the newborn) and the limited potential applications

Yes it did. First of all, I learned that the technique appears to have high failure rates (except that Heiner Niemann, in Brussels, seemed to contradict this with his 9/10 success rate in pigs). Secondly, it made me think deeply about the biological process. Also, in Copenhagen, it stimulated me to investigate more carefully intensive animal farming and its effects on animals (especially chickens) and the meat produced as its end-product.

Yes. Before the seminar in Copenhagen I was strongly against cloning. I believed that scientists break religious and ethical norms, and that cloning has too many negative consequences which will be left for future generations. At the moment I am not against cloning.

Yes, certainly. Although I am a biologist and used to be a scientist (chemotherapy for cancer), I had not known about the techniques used for cloning, nor that clones are not identical, before I heard this in Copenhagen. Cloning was for me something mythical, but on the other hand exciting – what people are able to do. The third feeling was – scaredness! – how far scientists will go and what kind of monsters will be created. Now my perception is more sensible, and scientifically based. The perspectives of cloning are exciting and still a bit frightening.

Yes. We had supposed that a clone is an exact copy. This is apparently far from being the case and introduces an almost arbitrary element into the process. Improvement of livestock is not the high priority we thought it was. It is relatively low on the list of ‘realistic applications’.

Question 2: *Has the participatory conference affected your views on farm animal cloning?*

Less than the workshop in Copenhagen! During the workshop we received perhaps basic information, but it was clearer. In Brussels the discussions were very specific and the speakers sometimes reached a too academic level. On the other hand, the conference was more diverse, considering the topics and presenters.

In general, the participatory conference, did not change my views on farm animal cloning, because the main impact was made by the workshop in Copenhagen which, for me, was more important in this point. Moreover, I did not have a very clear opinion about this field, so I would say that the workshop and the conference made me create an opinion, more than change my views. What the conference cleared up for me was that there are several points of view among experts about how to deal with the applications of cloning. And, insofar as there are some doubts and more scientific research is needed, this made me take a position on farm animal cloning.

Yes. After the participatory conference I feel that cloning should be a public affair. It is very important to discuss and regulate the application of this technology. It is time to stop and look at what are you doing to things like biodiversity and other things with this new technology.

The debate between different perspectives reinforced my opinion that animal cloning should be a public – and not a private – affair. It also showed me that not even the most beautiful intentions justified all the ways. I mean, there is a big and important difference between product and process, and it is very important to think about both.

Yes, I became even more aware of the animal welfare problems after Joyce D’Silver’s presentation. I found out that it is very difficult to make the EU politicians listen, and to affect the legislation and regulation (partly because of the WTO agreements and because of the restricted number of studies of animal welfare problems).

Yes, it has. Firstly, it made me think about the consequences of large-scale farm animal cloning, and its genetic and environmental consequences. Cloning is a process of asexual reproduction which goes against the laws of nature. Higher animals (vertebrates) have evolved a system of sexual reproduction which increases genetic variation in the offspring. Large-scale cloning of farm animals will severely

limit variation. Thus the ‘survival of the fittest’ will not work, e.g. when there is an environmental crisis such as disease. So I believe now that farm animal cloning is wrong and takes human intervention in assisted reproduction across a natural and important boundary. The other conclusion I have reached is, in short: yes – we need regulation. If there was just one regulation – which is to say, if there is labelling on cloned products – this might be all that is needed to regulate the process.

The conference in Brussels extended my knowledge of the topic. The points of view of scientists and citizens are very interesting. Now I can say that I personally understand different ethical points of view as well as the necessity to regulate cloning. To my mind the main point is that if humans have gone so far and developed cloning, they have to be responsible for the consequences.

Again, yes. More facts, more points of view, more doubt. If, now, I really understand the process of cloning and the possibilities of its use, then legislation looks extremely complicated – especially if I think about EU legislation, which I am sure should occur. If the EU joins European countries, legislation cannot be different in separate countries. The problem of cloning is extremely important (even if, at present, people do not understand it completely), because it will be used a lot in different areas, and finally almost everyone will be connected with cloning in one or another way, directly or indirectly. When I was a scientist I worked on new medicine, and in experiments I used a lot of mice. At the beginning I perceived them as objects, but after some time I started seeing live creatures which I had killed. Of course, my target justified my experiments. Nevertheless, I felt relieved when I was offered the chance to start experiments with cancer tissue. A ten-year long scientist’s cancer finished with the collapse of the Soviet Union. I do not regret what I did before I became a teacher, but I really cannot forget how many animals I killed. However, I am sure we can justify cloning if it can be used for treatment. The conference has changed my attitude to cloning.

Question 3: *Do you feel that the workshop in Copenhagen, and the material available to you at the project website, was adequate to prepare you for the discussions that were held at the Participatory Conference?*

Yes, definitely all the materials were helpful and very well prepared.

The material available has been adequate.

Yes, of course, and I take the chance to congratulate all the team, especially Mickey. I learned, so much, with his perspective on this problem.

Yes, of course. I take the chance to congratulate all the team, especially Mickey (the main interlocutor in this process).

Partly, yes. There were enough articles to read – almost too many. I missed some advise about which articles were the most important (Mickey wrote about this a few days before the conference). I found out that many sentences were the same in different articles, and felt I wasted some time reading them all. I also missed more personal opinions from the authors in the articles.

Yes, except for the success rates of cloning animals reported in Copenhagen. We were told these rates were low, with many problems; but in Brussels Heiner Niemann's report of success contradicted this.

Yes, the material was prepared perfectly.

The material was very well prepared, and the workshop was really useful. First of all, it was an opportunity to get to know facts about cloning and to become acquainted with colleagues from different countries. The atmosphere at the workshop in Copenhagen was friendly, encouraging and supportive.

Question 4: *Do you feel that the process will enable you to take the discussion about farm animal cloning into your daily work as a teacher?*

Yes.

One of the positive things about my participation in the discussion, and about being in touch with scientific experts in this field, as well as other people that gave their expert opinion about the ethical and social aspects, is that it made me feel how interesting it would be to set out this issue in my school. It also made me realise that this is really possible, although our students and teachers are not expert in this field. So the answer is 'yes', the process will enable me to bring the discussions back to my daily teaching context.

Yes, indeed. I have already promoted this discussion in my classes. Now I have some students doing a project on cloning, and I hope to send you, at the end of the year, his project. I intend to develop this reflection in other classes, in collaboration with my philosophy colleague.

Yes, indeed. As a matter of fact, I have already promoted this discussion in my classes and I intend to develop this reflection in other classes, in collaboration with my biology colleague.

Yes, indeed. My discussions with the students have become more varied and are closer to the real problems with cloning. I found out that the student textbook is not up to date, which I did not know before. I have also asked the students questions from the Eurobarometer studies, but I have not analysed their answers yet.

Yes – I have already had discussions about cloning with my students, and I felt I was better informed to answer their questions.

Yes. Now I feel competent in the area of cloning, and I am ready to discuss this topic with my students. Today's students are the generation who will have to solve the problems caused by cloning. Therefore, it is extremely important to discuss it now. Cloning is one of the greatest developments of science and, at the same time, one of the most important ethical problems.

I have already had debates about cloning in the classroom. As I realise now, they were not very deep. With the knowledge I gained in Copenhagen and Brussels I will be able to initiate discussion at a higher level, not just for fun, but in a serious debate on ethics, and I shall help students to work out their own points of view on the topic. Now I feel ready to supervise students' scientific papers on the

topics they are interested in. This year I am going to offer the topic ‘cloning’. How deep we will be able to go depends on the students. I hope this idea will be successful.

Yes. It was felt that this is an ideal ‘warm-up’ classroom topic for even more controversial issues such as human cloning. We did this in philosophy with xenotransplantation (using animal organs for humans) in the days of Volvox’s predecessor, EIBE.

Additional Comments

There was only one thing missing: there should have been a floor for teachers only, maybe in a separate session, to explore the social aspect of teaching students about farm animal cloning and educational problems. Everything else was excellent.

Although none of the scientists actually alluded to this aspect, we had the feeling that farm animal cloning was seen by some as a necessary ‘stepping stone’ to human cloning. This was not in the remit of either conference.

We felt that insufficient attention was paid to the public relations aspect of cloning. Given the disastrous public image of genetically modified crops, it was feared that animal cloning might well attract the same public hostility. The principle of transparency dictates that information and pictures of mistakes *as well as* Dolly-style cloning successes should be in the public domain. However, some of us strongly feel that some experiments will do much harm to the image of research if, and when, it becomes a real public issue. By way of example, one scientist showed us a slide of pigs which had been ‘modified’ to glow in the dark.