

Report of the discussions between researchers and members of the BIOTETHED consortium, 6 – 8 June 2007, Sheffield Department of Law, UK

Early stage researchers (PhDs and Post-docs)

The young scientists present were primarily PhD students working in molecular biology and biomedical sciences (e.g. *Drosophila* model of Parkinson's disease; Zebrafish development). The BIOTEHTED group included contributions from the areas of ethics and law (GM technologies, legal issues, biometrics, social exclusion, co-existence of GM and natural crops, liability issues).

The experiences of training in ethics

Students said there had been no access to ethics courses at pre-masters level. After masters level at the university of Helsinki there *is* a course, but it is restricted to what can and can't be done in relation to national legislation. One student thought it was important to create one's own opinion on what one is doing, and **modify one's approach according to one's research, rather than let decision makers make that decision for one.**

Where ethics originate was thought to be an interesting question.

Students described a symposium during which they had come up with a list of what *they* thought were ethics issues in their research: e.g. provoking tumours in Zebrafish: the question regarding at which developmental stage ones stops doing invasive techniques.

Undergraduate students in the UK had only had 2.5 hrs of ethics lectures in their entire course.

Postdocs reported very little ethics training when working practically as a scientist. What you are and are not allowed to do, and the rules for how to treat mice well, were about the limits of such exposure to ethics. There was no discussion on the ethical principles and the formation of different viewpoints.

This is surprising given the comment by a scientist present at the forum: We're not far away from calling every cell in our body the potential for new life. Practical ethics (the simple what can/can't be done) is very far away from what science is currently doing.

Anna Olson commented that Scandinavia and Southern European countries are very different in their ethical stances (because the former are mainly protestant and the latter catholic). Medical doctors and Jesuit priests started the ethics in the South of Europe. However, scientific researchers in Porto appear to be much more utilitarian

than Northern European Researchers. Why teach Christian ethics if we do not also teach Muslim or Hindu ethics, for example?

Anna Pego commented that in Portugal religion and politics are not discussed, hence ethics is taught as received (not discussed) wisdom. One always has to be politically correct and diplomatic, and can't speak one's thoughts freely.

A UK biology faculty member noted that he was teaching ethics because he had been told to do so by the funders of science. However, he did not think that that made an ethical researcher.

A student commented that speaking to other people makes you think about justifications for doing your research. Communication with the public is important, but it is very hard to explain to the public why certain things are OK and others not.

David Townend wondered why biometrics was perceived as a special case compared with banking or the car industry. Did people know any more about how banks worked, what they did with customers' money (and personal information), and the ethical principles that they applied? Probably not.

How ethical considerations might affect the scientific career

A question was posed: Could you conceive that an ethical consideration could stop you developing your career in a certain way? – even if you know that someone else would do this research anyway, even if you didn't?

Two young researchers said “yes”, they would change their career direction. However, a serious consideration was the time of life in which the researcher found him/herself. If they had children and financial responsibilities, they were not so sure. “I would feel sick not to pursue something that would lead to an important success” said one. Another student was of the view: It's not for me to say whether it's right, but whether *I* would do it.

As to the way in which scientist today deal with hard questions surrounding their research, another provocative question was launched into the discussion: “Do you want to be having this same discussion in 50 years' time with your children?”

A student commented: I often have to defend myself to non-scientists peers – to justify what I do.

Another noted that responses from non-scientific peers to his research were not “Oh God, how could you work with animals”, but rather, “OK, so you're going into science and going to do something good for people”.

At the stage of young researcher, it was felt, one just needed to justify one's research to friends and family. Later on, however, one might need to justify it to the media or public.

Different students expressed their feelings on this matter in the following ways:

- If you can resolve it in yourself, explaining things to others will come across well.
- People would appreciate your research much more if they thought you appreciate and take ethics into account.
- You shouldn't just express your own opinion, but you need to find out about others' ethics and take them into your argument and address/acknowledge them. That's just clever marketing.

Who communicates on ethical matters, and why?

Who in the past has done the communication? Politicians, industry and the clergy. One scientist thought that things have to change, and that scientists should be involved in communication about the applications of science and their societal consequences.

Ethics in relationship to the Large Hadron Collider, for example, do not exist. There is something special about biotechnology – the way society views biologists.

It's a phenomenon of the era in which we live. Biotechnology is a hot subject. In Galileo's time it was the structure of the solar system! i.e. what is important to people in different eras is also very different. Can we predict what will be important for people in the future? Clearly, as the Eurobarometer study shows, taking all age groups together, medical research rates as the most "interesting" area of science and technology. However, in the lowest age group questioned (17 – 25 yrs), it was the Internet.

Is ethics engagement stifling research or broadening researchers?

It was felt that there are plenty of other things stifling research, e.g. the EU clinical trials directive and over-concentration on safety requirements; political discussions on the applications of research, leading to public consultations where public groups are very divided. Greenpeace say GM is very bad etc. Scientists say we have no evidence of ill effects. This becomes a highly political argument, which stifles research.

Instead of asking a constructive question such as "Is it good – in principle – to have GM technology?" the question is phrased as "Are you *for* or *against* GM?". GM technology often obscures the real question that responsible people should be asking, namely "Are you for or against the purely for-profit practices of multinational conglomerates and the western capitalist system?"

Are considerations of ethics an imposition for scientists? Yes, it was felt, a bit: "I had a blot running, and had to take 2.5 hours off for a seminar on ethics" noted one student.

Clearly, ethics training is a way to influence researchers' opinions (and perhaps practices), and it depends on who the trainer is as to the outcome. If training were voluntary, probably very few researchers would take part in it.

Ethics training allows PhD students to get an insight into, and broader view of, what it means to day to be a scientist: i.e. not just a technician of science. Being a good scientist is more than just running a good gel and getting interesting results.

Another view was that compulsory ethics training is a bit like forcing students to go to a journal club. It puts what you're doing in context and might allow you to see new things that even advance your research.

How do ethical considerations affect research funding?

"Our money masters say we have to do this" was a comment from a more senior researcher. How is consideration of bioethical research aspects weighed with other requirements of getting money for research? Across funders, criteria weightings probably differ. An actual case was that of research using human tissue material: one funder said "OK, you can use human material"; another responded "We don't care if you use human material, but just don't use animals".

Senior researchers (professors, group leaders, dept. heads)

Three main areas were initially addressed:

1. the place of ethics in modern biotech research
2. how to develop ethics (bolt-on or dialogue and integration)
3. the role of ethics in funding of science

The influence of ethics on funding and the control of research

In the UK, there are home office inspectors for different regions, and there is variation in the application of law in these different regions.

Applications to the European Commission for European funding need ethical information in order to pass scrutiny. It was felt that there are serious problems with "blanket" box-ticking by applicants claiming full ethical compliance, but not really giving proper thought to the practice of ethics in their research.

The UK is striving to develop a testing mechanism that avoids the use of animals in research. The government is not particularly well equipped to regulate. What are the systems that exist for ethically monitoring research that is seemingly benign, but can be tweaked to make something destructive? It was reported that there is currently no mechanism in place to do this.

There is an extant dichotomy between self-regulation by scientists and regulation by law. The former is manifested in “soft” regulations such as codes of conduct, which need support via training and dissemination of knowledge.

To enact pro-active measures, scientists need information that is often not forthcoming, it was felt.

In light of the Russian defector who went to the USA and told them how to make tons of smallpox in bioreactors, questions arise such as: How to control internationality of science – who observes, informs and reports on such matters?

In the UK there is a charter for the conduct and protection of “whistle-blowers” (people who bring malpractice to the attention of others), but in many cases a junior whistle-blower is not taken seriously enough. Ultimately, early nurturing to become a “good” scientist is far better than retrospective whistle-blowing. Grant review processes, for instance, can raise objections/suspicions to certain research in full confidentiality.

What is a responsible scientist?

One that doesn't insist on autonomy? It could be seen as the responsibility of all scientists in a particular field to go and check data, for instance, when deposited in a public database. But where is the line between desirable and merely permissible research? In the USA this question is approached in a very individualistic way. Europe, on the other hand, has had 2000 years of making mistakes, conflicts with neighbours and learning from the outcomes. This probably makes it easier in Europe to be conscious of societal impacts.

Ethics training should concentrate on making scientist aware of the point at which they are not going in the right direction anymore, or *risk* going on the wrong direction.

We can communicate in simple enough terms that the public can understand and make an ethical decision; otherwise burdening scientists alone with ethical questions leads to an abrogation of the responsibility that society has to discuss and decide on ethical matters itself (i.e. using freedom of speech and the democratic process).

Our students find it a “pain in the neck” to do the communication of science unit, said one senior researcher. Responsibility for communication of scientific issues to the public is a problematic area: if scientists don't communicate well, it is left to others less well qualified, and yet responsibility towards the voting public should not be taken away from politicians and given instead to scientists. Tony Blair's statement to the effect that we “would do whatever the scientists tell us to do” was not well taken

by scientists. The decision on what to do about BSE was given to scientists when instead it arguably had much more to do with politics. The same thing was done with foot-and-mouth disease, the scientists felt.