

# Lessons from the Swiss biotechnology referendum

- *The Gene Protection Initiative*
- *Supporters and their arguments*
- *Opponents and their arguments*
- *The Campaign*

On June 7, 1998, Switzerland voted by a 2:1 majority not to ban genetic engineering. The popular initiative, called the "Gene Protection Initiative (GPI)", had as goals the prohibition of all transgenic animals, the banning of all field releases of transgenic crops and the prevention of patenting certain inventions of biotechnology. Before the popular vote took place, Parliament committed itself to enact a strict regulatory framework, but no bans.

This was one of the most intense campaigns the country had ever seen for a referendum. Over the last 2½ years the media's intense reporting on biotechnology resulted in a marked increase in public understanding. In a thorough survey, general opposition to genetic engineering decreased from 62% to 33% and acceptance increased from 25% to 39%. Depending on the type of application, the level of acceptance still varied widely at the end of the campaign, with 66% acceptance in favour of medical research and 82% opposition to increasing productivity of farm animals.

The Swiss experience shows that given time, money and ideas, complex societal issues raised by new technologies can be brought to the public's attention allowing informed democratic decisions to be reached. For biotechnology the following lessons can be learned:

- Scientists, government and industry need to collaborate closely and together with other major groups involved such as the medical profession, farmers, food retailers, teachers *etc*;
- The public is capable of differentiating issues, even if they do not understand the technical details;
- Scientists need to engage in dialogue with different groups of the public in their own language. This needs to be in clear, non-technical terms,

including about benefits and costs and also about the public's worries;

- The public has the right to know what the aims of publicly funded research are.

Following the referendum, it was suggested by members of the EFB Task Group that it would be useful to analyse this recent debate and draw conclusions from it for the broader European context. This text was authored by the Vice-Chairman of the Task Group, Professor Richard Braun. He was directly involved in the Swiss debate as President of the "Gen Suisse" Foundation, whose aim is to promote science-based public debate on biotechnology.

## Legal background

The Swiss constitution provides various possibilities for citizens to intervene directly in the political process. Proposals for constitutional amendments carrying the signatures of at least 100,000 citizens have to be voted on by the general public. The outcome of a referendum is legally binding and cannot be reversed by parliament or the government. The launching of a popular initiative inevitably leads to public debate on a controversial subject. In this way the GPI contributed to the public's knowledge of this complex subject and the debate clearly had an educational effect.

## The contents of the GPI

The collection of signatures for the GPI was started on May 12, 1992 and completed with about 111,000 names on October 25, 1993. Far more signatures came from Basel and Zürich than from Geneva and Lausanne. The central features of the proposal were three specific bans and a reversal of the burden of proof of usefulness and safety.

The bans included:

- 1 No transgenic animals should be allowed, not even for biomedical research.

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Briefing paper

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Popular Initiative “for the Protection of Life and the Environment from Genetic Manipulation (Gene Protection Initiative)”. On June 7, 1998, Swiss voters could say “yes” or “no” to the following text:

*The Federal Constitution will be amended as follows: Article 24 decies (new)*

*1 The Confederation issues regulations against abuses and dangers arising from genetic modification of animals, plants and other organisms. It thereby takes into account the dignity and integrity of living beings, the conservation and utilisation of genetic diversity as well as the safety of human beings, animals and the environment.*

*2 It is forbidden to*

*a Produce, purchase and transfer genetically modified animals;*

*b Release genetically modified organisms into the environment;*

*c Patent genetically modified animals and plants, as well as their constituents, the procedures employed thereby and the products obtained.*

*3 The legislation specifically regulates*

*a Production, purchase and transfer of genetically modified plants;*

*b The industrial production of compounds using genetically modified organisms;*

*c Research on genetically modified organisms which may constitute a risk to human health or the environment.*

*4 Legislation specifically requires from an applicant the proof of usefulness and safety, the lack of alternatives as well as an explanation of ethical responsibility.*

(Translated from the German text by Richard Braun, 28.7.1997)

- 2 The release of all transgenic organisms should be banned, including transgenic crops for farms.
- 3 The patenting of transgenic plants and animals should be forbidden, also products and processes derived from them. This would have included human therapeutic proteins produced in plants or animals.

Researchers or producers employing methods of genetic engineering would have been required to prove the safety and usefulness of their products or processes, and would have had to demonstrate that no alternative procedure, other than gene technology, could have been used to achieve a specific goal.

### Supporters of the GPI and their arguments

The main supporters of the GPI were diverse environmental groups ranging from Pro Natura to Greenpeace to WWF and to a group called Medical Doctors for Environmental Protection. Further supporters were animal welfare organisations, organic farmers, one consumer group and some NGOs for developing countries. Religious organisations officially had little impact, although two church-affiliated women's groups were active. In the political arena the Green Party and the Social Democrats supported the GPI, although a faction of the Social Democrats were active in the opposing camp. In all, the supporters of the GPI were thought to have had 70 organisations with around 800,000 people on their side from a total Swiss population of 7.2 million (1995).

The arguments for the GPI were based primarily on perceived risks and on ethical

grounds. The risks mentioned concerned both human health and the environment. Food produced from transgenic plants was claimed to be a new risk, with the possibility of new toxins or allergens arising through genetic engineering. It was suggested that the environment could be damaged by the release of transgenic plants, which could become weeds, or because of horizontal gene transfer to non-transgenic plants. On the ethical level, it was claimed that intrusions into an animal's genome violated its intrinsic dignity and that patenting of plants and animals was unethical, because they were products of nature. It was claimed that medical research would hardly be affected by the GPI and that the import of gene food such as transgenic maize and soya would be blocked. For some people, who are highly critical of the power of large multinational companies, the GPI was a welcome opportunity to vent their fears. Much of the imagery was based on romantic pictures of farming and the countryside.

### Opponents of the initiative and their arguments

Early on, opposition to the initiative came from those using genetic engineering as their daily tools, namely researchers in the life sciences. This led to an alliance of university researchers with the pharmaceutical industry and opened the path for such organisations as the “Gen Suisse” foundation, which started its operation in 1991. Later on, the lobby organisation for the promotion of Swiss industry (Wirtschaftsförderung) led the campaign. All major political parties of the right joined, including the Christian Democrats. Other important partners were the academies, professional associations of scientists and medical doctors, the

universities and the National Farmers' Association.

The argument cited most often against the GPI was that its ban on transgenic animals would stop a great deal of medical research. A survey had shown that some 400 projects in Swiss universities involving 2000 scientists were using transgenic mice. The ban was therefore expected to lead to a loss of jobs and a situation where no new jobs would be created by discouraging start-ups and spin-offs, which had become so important in other industrialised countries. It was claimed that pharmaceutical companies would move not only experiments using transgenic animals, but entire research programmes out of the country. The third argument revolved around the quality of university teaching, claiming that Swiss universities would be less able to attract highly qualified researchers who could then not use the everyday tools available to their competitors in other countries. Finally, a further intellectual isolation of Switzerland was feared. The imagery of the opponents of the GPI focused heavily on illnesses and sick people, implying a blow to medical research if the initiative were to be accepted.

### Position of the Government and Parliament

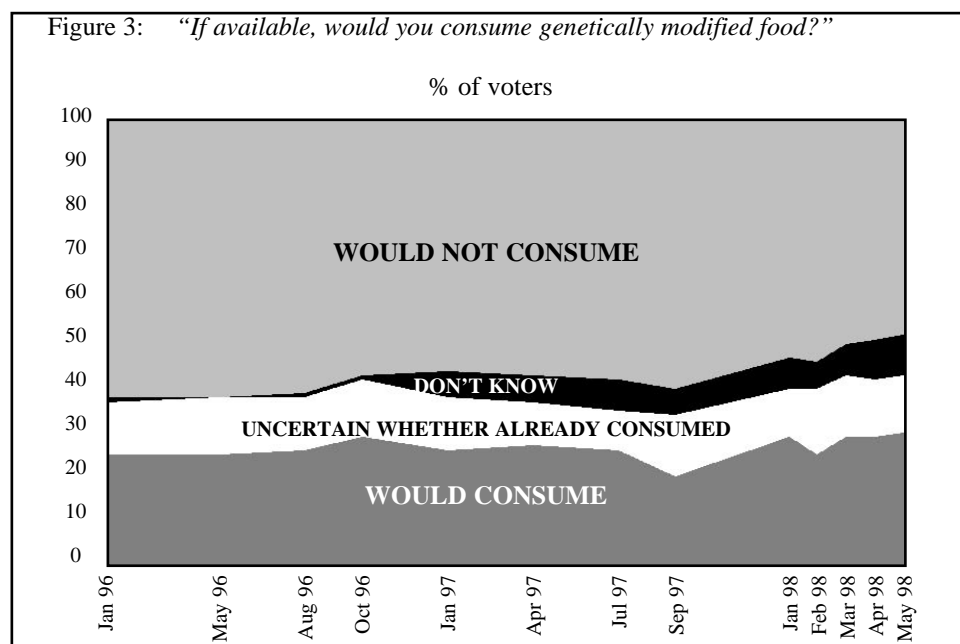
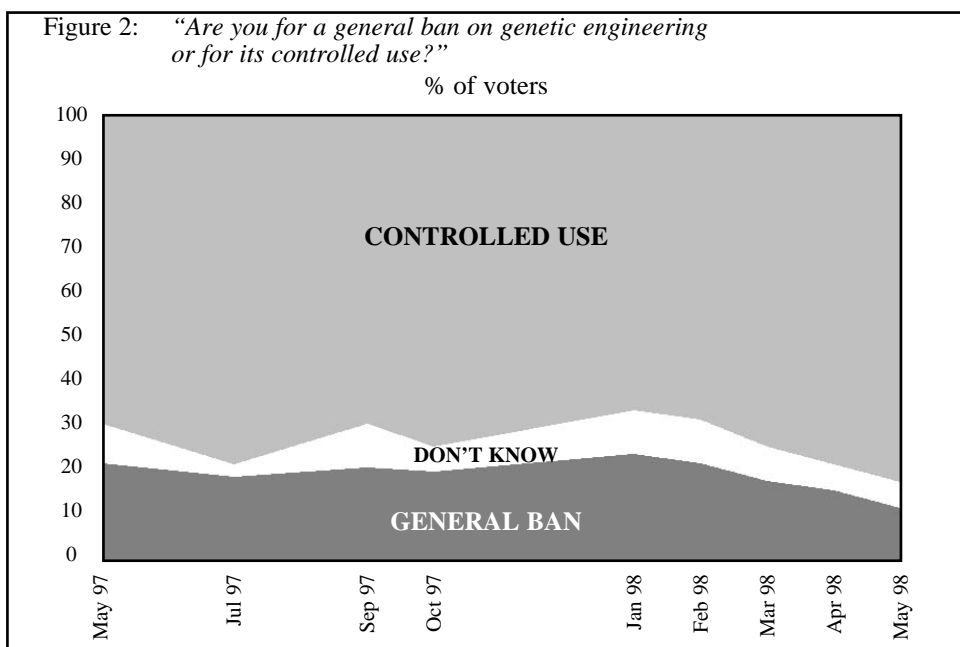
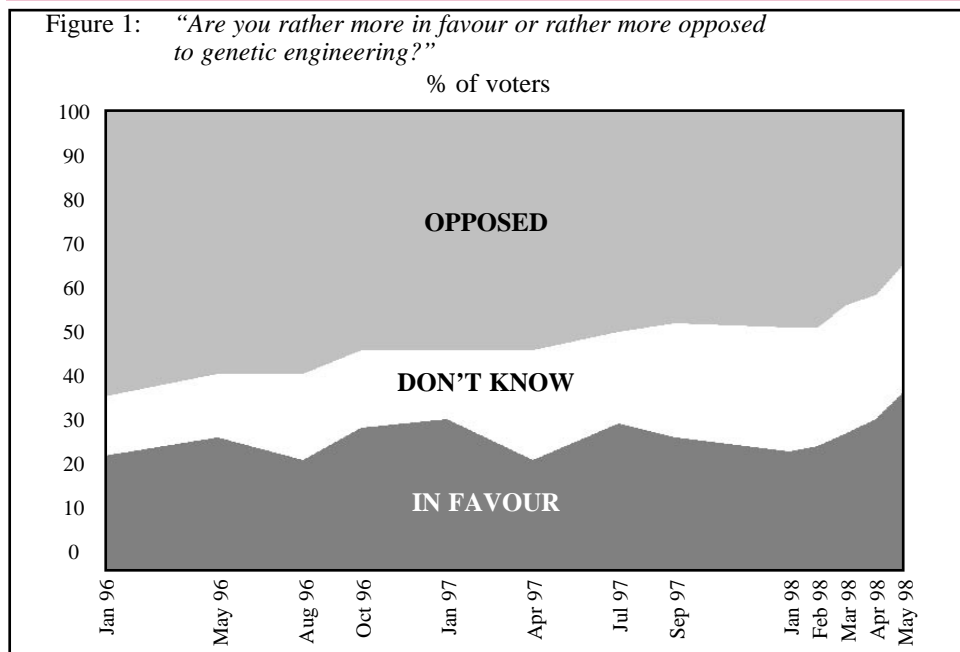
Every popular initiative is debated by government and parliament before it is voted on by the public. Both bodies express an opinion and have the right to elaborate a counter-proposal, but they cannot prevent the initiative from being voted on by the public in its original form. The government came out clearly against the GPI without putting forward a counterproposal. In the parliamentary debate, which took place in 1996 and 1997, the left formulated a counterproposal with less severe bans, but still with a clause preventing the patenting of inventions of biotechnology. It wanted to maintain a ban on the release of transgenic bacteria. In the parliamentary debate the counterproposal was turned down, the majority expressing its opposition to the GPI. Parliament therefore recommended the voters to reject the initiative.

Switzerland already has legislation covering genetic engineering, with a framework similar to the directives 90/219 and 90/220 of the European Union. Labelling of food from transgenic crops is mandatory. In the parliamentary debate on the GPI it was decided to look for possible gaps in the existing legislation and fill these in the next two years with a package called “Gen Lex”.

In February 1998 the government decided that the vote would take place on June 7, 1998. The time span of the whole process from the collection of signatures to the final vote was six years, a remarkably long period.

### The Campaign

The first five months of 1998 may be considered the period of the actual



campaign. From January to March the five major German language newspapers each carried on average 1 article per day on the subject and this figure gradually went up to two articles per day by the end of May<sup>(1)</sup>. In these newspapers there was a shift of the topics away from plants and animals to the impact on medicine and education. Many observers felt during the first half of the campaign that the GPI was going to be accepted. The initiative lost ground mainly in the last two months.

There were many reasons for this change. The proponents of the GPI claim their financial resources became scarce. On the other side, three events initiated by the proponents of modern biotechnology received considerable media coverage, particularly on television. First was a press conference of all Swiss Nobel prize laureates, even those not working in biology. They decried the loss of research potential, pointing to a probable lowering of standards in the universities. Then came a televised interview with three of the seven federal councillors, explaining why the government unanimously opposed the GPI. Two of these three Federal Councillors actually belong to the Social Democratic Party, which as a party supported the GPI, against their own representatives in the government. Even in the peculiar Swiss political system this kind of split within a party is quite rare. Finally scientists organised their own demonstrations in the streets of Zürich and Geneva: in both cities around 2,000 researchers took to the streets, mostly young people. In all three events industry was not at all in the foreground, although in the final televised debate shortly before the vote the two lead opponents were a parliamentarian of the Green Party and a top executive from Novartis.

**The Results and their Analysis**

With 41% of registered voters taking part in the decision-making process, 67% were

**Table 1: Percentage of those in favour of using genetic engineering for specified purposes in animals and plants (May 1998):**

**Animals**

Increase knowledge in the medical field	66%
Test pharmaceuticals and vaccines	64%
Improve the health of animals	45%
Increase yields	11%

**Plants**

Reduce world hunger	64%
Use less fertiliser	61%
Reduce post-harvest losses	47%
Improve quality	41%
Reduce prices	39%
Improve ability to store a food item	37%
Increase the choice of foods	25%

opposed to the GPI and 33% for it. The level of acceptance of the GPI was very low in the French speaking areas of the country, with only 16% to 28% "yes" votes. The highest levels of acceptance were in the mountainous, German speaking cantons with a maximum at 44% "yes". There was not a single canton where the initiative secured a majority of votes<sup>(2)</sup>. However, it is still worth bearing in mind that 1 in 3 Swiss is heavily opposed to genetic engineering.

The GFS Research Institute<sup>(3)</sup> followed the campaign with its own surveys. Some of the highlights have been published in July 1998 and show that public opinion on gene technology changed very considerably over the last 2½ years. *Figure 1* shows that whereas initially 62% opposed genetic engineering, only 33% opponents remained, while those with a basically positive attitude towards the technology rose from 25% to 39%. (Note that the time scales in *Figures 1* and *3* are broken.) Those in favour of general bans decreased from 22% to 12% (*Figure 2*). The attitude towards the genetic modification of plants and animals varied considerably depending on what the aim was (*Table 1*). The number of those who say they would not eat genetically modified food has gone down from 62% to 48% (*Figure 3*). This is remarkable since the proponents of modern biotechnology did not bring food pro-actively into the debate, in contrast to the GPI proponents. It is worth recalling that in this same period the first few food items made from transgenic crops appeared in the supermarkets, pointing to the actual existence of these materials. The GFS analysis found a positive correlation between optimism for biotechnology and both educational and economic status. To give an example, only 22% of the highest income group voted for the GPI, whilst 49% of the lowest income bracket favoured it. Finally, the credibility of medical doctors, scientists, the government and industry went up in the course of the campaign and that of environmentalists and animal protectionists went down correspondingly.

### What are the lessons?

Whilst the preceding paragraphs attempt to give an objective picture of the events, an interpretation is necessarily biased. It may be noted that the author was involved on the side opposing the GPI.

One may wonder whether the experience gained in one country debating the pros and cons of a new technology will help understand or predict the process in another. Although every country in Europe has its own social and political traditions, secular changes like individualism, the spread of democracy and liberalism took place everywhere. In addition, in the case of Switzerland with its mixed cultures, both Latin and Germanic elements of tradition come into the debate. So some

generalisations, applicable to other countries, would therefore appear justified.

Knowledge of modern biology is an important basis for accepting modern biotechnology. Many studies have shown that optimism towards biotechnology increases with factual knowledge<sup>(4)</sup>. The more different sources spread the same reliable information, the more credible it becomes. In this campaign quite similar factual information was transmitted by the academies, universities, lobby groups, industry *etc.*, always from a different source. Claims of dangers by those opposing biotechnology were immediately followed up by scientists and their findings published as "shoot-backs". It was found important to have a network with quick information exchange: to this end a closed e-mail circle was found efficient. One good example is the debate on allergies. The opponents of biotechnology (*ie* the proponents of the GPI) initially claimed that transgenic crops raised specific risks of new allergies: by following the scientific literature it became clear that this claim was ambiguous and misleading, and that some allergens were even removed from plants by genetic engineering. After this, the proponents of the GPI no longer brought up allergenicity as an argument against genetic modification of crops. In fact they moved more and more from concrete, scientific arguments to fuzzy, quasi ethical arguments, for example that it was against the nature of an animal to have its DNA interfered with (although this is done all the time with traditional breeding).

Coalitions are essential for bringing about political changes. The same holds for making people change their mind about costs and benefits of new technologies. It helped the opponents of the GPI to have a majority of medical, patient and farming organisations on their side, in addition to virtually all laboratory scientists as well as the government and its agencies. Other public organisations were divided in their views, such as consumer groups, environmental and women's organisations. A strong leadership in the coalition proved important. The opponents of the initiative

appeared to be more of a coherent group with well orchestrated, complementary messages and they had considerable financial backing. The opponents of the GPI managed to shift the emphasis of public perception from protection of Man and his environment to prohibition of research and medical progress.

Decisions on complex issues are made at different levels by people. Scientists tend to feel that rational thinking is the main or even decisive factor. As both sides realised during the campaign, emotional factors are important too. For this reason proponents and opponents both used emotional images, a beautiful picture-book countryside or a sick child sitting on a hospital bed. Scientists may be reluctant to use advertising techniques, but in order to be successful this is essential. The problem in using emotional strategies is how far to go: an excess of emotionality may be damaging to credibility.

Finally, acceptance and understanding need time to develop along with familiarity of products and services. The small increase in acceptance of food from transgenic crops, as described above, may come in part from the fact that last year the National Health Service authorised the sale of soya and maize from transgenic crops. This and the appearance of GMO-products on the shelves of supermarkets will presumably lead consumers to consider these products "normal". It must also be said that this state of "normality" will be reached more quickly if producers bring products onto the market that have obvious added value to the consumer.

In conclusion, understanding and acceptance of modern biotechnology can be promoted by a well orchestrated public campaign, using very different carriers to convey the message. Scientists need to acknowledge their obligation to the general public and be willing to debate the broader issues of science and society. The dialogue has to be based on solid science and must not shy away from discussing both costs and benefits as well as pointing out what would happen if the new technology were not used.

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