Biotech remains unloved by the more informed

The media may be providing the message — but is anyone heeding the call?

Sir — Public hostility towards biotechnologies is frequently attributed to lack of information, due to poor and insufficient media coverage. For this reason, scientific researchers and policy-makers often call for journalists to give more attention to scientific issues, for better information campaigns and for more communication of science, to improve general understanding and thereby lead to greater public support for biotechnologies and other innovations. But is this approach correct?

In 2000 and 2001, with partial support from the Giannino Bassetti Foundation, we carried out two surveys of Italian public opinion. These were specifically to analyse the relationships between exposure to science in the media, information on biotechnologies, trust in science, and attitudes to biotechnologies. A representative sample of 1,022 Italian citizens aged over 18 were interviewed by phone in September 2000; another representative sample of 1,017 citizens were interviewed in November 2001. Some questions were identical for the two groups, others were year-specific. (A copy of the full list of questions used in the survey and the percentage response rates is available from M.B.)

Respondents were asked about their level of exposure to science in specified daily newspapers, television and radio science programmes, popular science books and magazines. We used questions similar to those of 1999 Eurobarometer (see http://europa.eu.int/comm/research/pdf/eurobarometer-en.pdf), but also asked additional ones about trust in science and scientists, and the use, risks and moral acceptability of biotechnologies.

Our results confirm previous suspicions that exposure to information does not always lead to greater trust in biotechnologies. We also find that greater exposure to science in the media does not necessarily mean a higher level of understanding. The proportion of subjects who think “only genetically modified tomatoes contain genes while ordinary tomatoes don’t”; for example, is almost identical among those with high (29%) and low (31%) exposure to science in the media. More than a quarter of the ‘regular’ consumers of science in the media (28%) cannot give more than one correct answer to five questions about biotechnologies, and more than half (57%) cannot give more than two correct answers.

High exposure to science in the media does not significantly reduce opposition to applications such as “taking genes from plant species and transferring them into crop plants, to make them more resistant to insect pests” or “introducing human genes into animals to produce organs for human transplants, such as into pigs for human heart transplants”. But it does result in greater criticism for some applications: 64% of the most exposed subjects consider embryo research to be ethically unacceptable compared with 59% of the less exposed, and 80% of regular consumers of science in the media consider reproductive cloning useless compared with 76% of low consumers.

Of course, media exposure to science does not guarantee accurate information; indeed, there are frequent complaints about the quality of science coverage by the mass media. People who are exposed to at least one high-quality source of public communication of science (for example, the Italian edition of Scientific American) are more likely to have a positive attitude to biotechnologies. Yet this result merely highlights a well-known paradox in the communication of science: the greatest impact is on a small minority, who are most likely to have the information already.

A high level of information does not guarantee a positive attitude: 49% of the better-informed respondents think that transferring genes into fruit or vegetables is useless, and 54% think it is risky. Embryo research fares poorly (60% in both groups consider it unacceptable), whereas cloning for reproductive purposes is even more severely judged by the better informed than by the less well informed.

A higher level of information is associated with the desire for stricter state regulation of biotechnologies, as well as with the belief that regulation should not be left either to companies or to scientists alone. The better informed are also more likely to trust consumers’ organisations and scientific institutions more than potential beneficiaries (such as patients’ groups) and, sometimes, government institutions.

If media exposure to science does not account for different attitudes to biotechnologies, what does? Attitudes appear to be rooted at a deeper, cultural level where values (such as trust and perception of risk) are heavily involved and media information does not reach. Public awareness of biotechnologies is increasing and the level of education seems to be more important than other factors in explaining attitudes in this area. So it may be wise to recommend that at least as much attention is devoted to science education — both in terms of research and of programmes and investments — as to the mass-media communication of science.

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Nothing automatic about ion-channel structures

Sir — My colleagues and I were shocked to read your News report “Protein chemists favour automatic answers” (ref. 1) in which the chloride ion channel was featured prominently as an example of an important protein structure determined with the help of high-throughput techniques. In the report, Neil Isaacs of Glasgow University is quoted as saying that the chloride ion-channel structure “could not have been done without automation”. In fact, we used no automation or high-throughput methods to solve the chloride-channel structure2. Indeed, high-throughput methods have played no part in any of the difficult ion-channel structure determinations completed in my laboratory—3. Our success has rested solely on the intense focus, hard work and thoughtful approach of a small group of scientists intent on solving an important problem in biological chemistry.

I do not wish to join the debate over the wisdom of funding robotic structural biology in the United Kingdom. I do, however, wish to set the record straight concerning a misrepresentation of the science carried out in my own laboratory. The explanation for why we have made