

By common consent

Engaging with the public helped US scientists build the consensus that finally overturned federal restrictions on human embryonic stem-cell research. That public outreach should not stop now.

President Barack Obama's new policy on stem-cell research and his strong statement on restoring integrity to science (see page 130) are victories for science that hold key lessons for future science-policy debates. But the battle over stem-cell research will not end here, and scientists must continue to engage the public to maintain the support that eventually convinced politicians to back this work.

President George W. Bush satisfied no one when he declared that US federal funding could be used to study only human embryonic stem-cell lines created before 9 August 2001. Scientists thought the cells held enormous potential to unravel the mechanisms of disease, and were frustrated at the arbitrary restriction, because it limited funding to 21 lines made with old techniques. The policy also forced scientists to waste money building facilities to separate research funded by the National Institutes of Health (NIH) from that funded privately. And although induced pluripotent stem cells (iPS cells) were created from adult cells in 2006, in part to sidestep the restrictions, they have yet to show all the same abilities as embryonic stem cells.

Those opposed to embryonic stem-cell research because it involves destruction of embryos were not satisfied with Bush's approach either — it still allowed scientists to use federal money to study cell lines whose derivation had involved harm to embryos.

Scientists correctly realized that they would not be able to overturn the policy without public support. Research advocacy groups linked with patient advocacy groups to form organizations such as the Coalition for the Advancement of Medical Research in Washington DC, which brought people suffering from diseases to Capitol Hill to argue in favour of the research. Testimony from people such as the late actor Christopher Reeve, and the advocacy of others, such as Nancy Reagan, whose husband, former President Ronald Reagan, suffered from Alzheimer's disease, were compelling to lawmakers. Realizing that most Americans hold moderate views in the abortion debate, scientists appealed to their practical nature, arguing that the NIH would fund research only on lines made from embryos that were going to be discarded from fertility clinics anyway.

These strategic moves gradually earned public support for the work, culminating in Congress twice passing legislation that would allow the NIH to fund the research. Although Bush vetoed these laws, it became almost inevitable that his arbitrary policy would one day be overturned.

Both sides in the debate were charged with hype throughout this process. Scientists were accused of falsely promising cures they could not guarantee would materialize. Those opposed to embryonic stem-cell research were attacked for exaggerating and misinterpreting reports about the power of adult stem cells. No one knows whether embryonic stem cells will yield cures. But the financial weight of the NIH and the support of Obama's administration will dispel a cloud that discouraged investors from backing the expensive development process necessary to find out.

There are still formidable challenges ahead. Congress needs to be convinced to pass legislation cementing Obama's policy so that future presidents cannot restrict scientific research with the stroke of a pen.

Then there are issues with the work itself. For instance, regulation governing the research in different countries is still inconsistent, limiting scientific collaboration. Major questions remain about the feasibility of using the cells as therapies — many scientists now believe embryonic stem cells will be most useful in drug screening and disease modelling in the lab. But working out how to replicate disease processes that take place over a lifetime will require years of study. And although iPS cells seem highly promising, there is much work to be done to remove traces of the reprogramming factors used to create them, and to test how similar they are to embryonic stem cells.

The good news is that NIH-funded research on these questions is no longer limited by an arbitrary policy. And if scientists continue the winning strategy of listening to public concerns on research — and responding appropriately — they will maintain the public trust that will let them pursue these questions unfettered. ■

“Scientists must continue listening to public concerns on research.”

Smart thinking

The US electricity grid needs to evolve and requires fresh standards of communication.

This week, the US Senate began to craft a massive energy bill that would establish a cap-and-trade system for carbon emissions and would pour billions of dollars into renewable-energy projects and upgrades to the nation's electricity grid.

Those investments, which will come on top of the billions of

dollars already provided in the recent stimulus bill, are long overdue. Lawmakers working on the new bill should pay close attention to countries such as Denmark and Germany, where the transition to energy systems based on renewable sources and small-scale generation is already far advanced.

Among the most important lessons from these countries is that the transition demands a substantial decentralization of the electric power grid. Instead of being organized around a comparatively small number of very big power plants, as it currently is in the United States and many other countries, the new grid will have to accommodate a much larger number of local sources. These include not just