into other cell types, such as neurons or heart cells (K. Takahashi *et al. Cell* doi:10.1016/j.cell.2007.11.019; 2007 and J. Yu *et al. Science* doi:10.1126/science.1151526; 2007).

Around the world, opponents of human embryonic stem-cell research such as Schavan have leapt on these results to justify their support of tight controls on the work. But this is exactly the wrong time to constrain research on human embryonic stem cells, which for one thing will be required to help scientists work out how best to coax adult cells into becoming new tissues. Both labs say that they could not have made their breakthrough without the work that has been done on embryonic stem cells.

Stem-cell scientists have acclaimed the latest results, while acknowledging that they represent only a first step, and that many issues need to be resolved before there is any chance of applications in the clinic. James Thomson of the University of Wisconsin-Madison, one of the scientists who first isolated human embryonic stem cells and co-author on one of the recent studies, chose this moment to expand publicly on his qualms about using human embryonic stem cells. And Ian Wilmut of the University of Edinburgh, UK, whose team created Dolly the sheep, the first cloned mammal, says that he is abandoning plans to work on human embryonic stem cells.

Many stem-cell scientists share this general unease, both because of the dilemma of working with embryos and because women must donate eggs for the process, in a highly invasive procedure. But they have nonetheless gone ahead with such work because they see it as scientifically necessary if clinical benefits are to be derived any time soon from our growing understanding of cellular differentiation.

These scientists are not oblivious to the ethical issues and they are not merely indulging personal fascination. They have not denied the importance of doing research on adult stem-cells and reprogramming in parallel. It would be a relief for them if all the scientific problems had been solved in the papers published last week — abandoning work on human embryonic stem cells would allow them to operate with a clear conscience and without having to defend their work all the time.

"This is exactly the wrong time to constrain research on human embryonic stem cells."

From the researchers' viewpoint, the debate surrounding human embryonic stem-cell research has some parallels with that on animal research. Many would be delighted to abandon the bureaucracy, cost and general inconvenience of doing contentious work. Where genuine alternatives are available, researchers will grasp them. Just as soon as there is no scientific need to work on embryonic stem cells, researchers will design their experiments to use much easier material. But that moment has not yet arrived. ■

The big picture

Europe needs to find a way to prioritize and build large scientific facilities.

European nations remain unable to agree on a general mechanism for the prioritization and construction of scientific facilities that are large enough to require continent-wide collaboration. One such case is the current stalemate over a proposed neutron-science facility, the European Spallation Source (ESS).

Although X-rays from synchrotrons can be used to probe structures, neutrons are particularly sensitive to light atoms and so can provide a fuller picture of important crystals and molecules. According to some estimates, Europe is home to roughly two-thirds of the world's 6,000 neutron scientists. But they lack a state-of-the art neutron source on a par with the Spallation Neutron Source currently being commissioned at the Oak Ridge National Laboratory in Tennessee.

Germany decided back in 2002 that it would not provide the funds necessary to host the facility. Now Sweden says that it would like to host it, and a joint bid by Spain and Hungary would use European Union (EU) infrastructure funding to finance a site in one of the two countries. But in the absence of an effective framework to share the construction and operating costs for such a facility between the nations that would use it, construction is unlikely to begin any time soon.

The larger European nations have effective systems of their own for selecting and building research facilities. In Britain, for example, the scientific research councils cooperate to create a facilities road map. But since the European Commission developed its own research policy, supplanting the patchwork of discipline-specific research collaborations that had developed between European nations, there has been no effective mechanism for the construction of larger facilities to serve the whole continent.

The seventh Framework Programme for funding research, for example, which runs until 2013, makes no provision for the construction of facilities. The European Strategy Forum on Research Infrastructures, an ad hoc group of senior research administrators from constituent countries, has already agreed on a list of European facilities, including the ESS, that scientists want to see built. But there is currently scant prospect of this list being converted into an actual construction schedule. That's mainly because EU member states — especially major ones such as Britain and Germany — are reluctant to release any of their existing national resources into a Europe-wide facilities pot.

The research ministers of the larger member states (backed by their own senior research administrators — and by many senior researchers in their own countries) are loathe to endorse a wishlist whose very existence might result in money that is currently spent on national grants and facilities being siphoned off to pay for major facilities in far-off lands.

This reluctance is perfectly understandable — but it has to be overcome if Europe is going to build large, general-purpose research facilities, such as the ESS. Another committee — the European Research Area Board — is currently being established, and should be well-positioned to prioritize the construction of such facilities and then to promote these priorities. But perhaps what is needed most is a more constructive attitude towards such collaborations from the larger EU member states. ■