THIS WEEK

EDITORIALS

FUTURE-PROOF Short-term solutions to long-term issues **p.164**

WORLD VIEW Business must pull up its sustainable socks **p.165**

SEA ME? Cuttlefish switch off to evade marine predators **p.166**

Fetal tissue research under threat

The US Senate has just voted to defund one of the providers of aborted fetal tissue for research. Such research is too valuable to become embroiled in the bitter abortion debate.

When a journalist invites scientists to discuss their work in the pages of *Nature*, it is rare to encounter a resounding silence. But that was the case when our reporter reached out to biologists in the United States this autumn to ask about the value and applications of their research with human fetal tissue. Just two of the 18 scientists we contacted were willing to go on the record with details of their work.

The reticence is understandable. A hostile political climate surrounds this research in the United States, where the release in July of covertly filmed videos ignited a firestorm of controversy.

Made by anti-abortion campaigners, posing as executives of a fictional biological-supply company, the videos showed senior physicians from the Planned Parenthood Federation of America frankly discussing their supply of legally aborted human fetal tissue for research.

The videos insinuated that the non-profit health-care provider was breaking the law by supplying the fetal tissue to biological-products companies for financial gain. But despite the numerous leading questions, the videos show no law-breaking. In exchange for the fetal tissue, the organization received only legally allowable costs: less than US$100 for each specimen, at 1% of its 700 clinics. If Planned Parenthood, which mainly provides contraception, cancer screening and other important health care, was seeking to get rich, it chose a strange way to do so.

That has not stopped Republican politicians from seizing on the videos to make repeated, inaccurate and inflammatory accusations. Presidential hopeful Marco Rubio, a US senator from Florida, charged, with utterly no evidence, that the collection of fetal tissue has "created an incentive for people to be pushed into abortions so that those tissues can be harvested and sold for a profit". Ted Cruz, a US senator from Texas who is also contending for the Republican presidential nomination, declared that Planned Parenthood is "an ongoing criminal enterprise".

It is not surprising then that, since July, even the small number of Planned Parenthood clinics supplying fetal tissue has dwindled. Or that when an unhinged gunman launched a murderous rampage last month, he chose a Planned Parenthood clinic in Colorado as a target.

Nor is it surprising that US scientists who use fetal tissue are choosing to stay silent about the value of their work rather than to defend it publicly and face the real possibility of physical attack. (One scientist told *The New York Times* that in response to threats against him his institution had posted a guard outside his lab.) The two US-based biologists who did speak to *Nature* should be applauded for their courage.

As the News Feature on page 178 shows, research that uses fetal tissue is worth defending. And there are ways in which the scientific community can rally round without putting individuals at risk. Admirably, the Association of American Medical Colleges (AAMC) is showing the way. The AAMC released a statement last week signed by 58 academic medical centres, scientific societies and allied groups.

The statement outlined the medical advances that have been made possible by fetal tissue, and described the value of its current applications in areas such as developmental biology and research on infectious diseases. The authors wrote of their "grave concerns" about the numerous legislative proposals now in play in the US Congress and in a dozen states — proposals that would restrict or prohibit fetal tissue research. They warned eloquently that the proposed laws "would limit new research on vaccines not yet developed, for treatments not yet discovered, for causes of diseases not yet understood". *Nature* shares the authors' grave concerns, and joins the AAMC in calling on US lawmakers to reject proposals that restrict access to fetal tissue.

"It is time for a de-escalation of the rhetoric and the creation of a space for calm and rational discourse."

The current episode is a reflection of a larger politics of division that has taken hold in the United States, and which has worsened alarmingly in recent months. It is time for a de-escalation of the rhetoric and the creation of a space for calm and rational discourse.

In the case at hand, that could begin with greater separation of the issues of fetal tissue research and abortion. Clearly, there is fair, honest and understandable disagreement on the morality of the latter. In a democracy, opponents of abortion are free to do their best within the law to change the law. But nobody benefits when they target by proxy an activity that is tangential to the act that they abhor and that is doing a great deal to advance our understanding of health and disease. ■

Stem the tide

Japan has introduced an unproven system to make patients pay for clinical trials.

Japan has been working feverishly to stay at the cutting edge of research and clinical applications in regenerative medicine. It has invested billions of yen in induced pluripotent stem (iPS) cells — made by reprogramming an individual's adult cells so that they can develop into any body tissue — and has overhauled its drug regulations to create a fast track to bring regenerative therapies to market.

The strategy is working, up to a point — in September, the first treatments were approved under the new law. According to bullish regenerative-medicine firms in Japan, the scheme is the fastest way to meet patients' needs. Without it, they argue, treatments get bogged down in phased clinical trials that can take several years and cost hundreds

of millions of dollars. But it is not clear whether the acceleration will benefit patients or help Japan's overburdened national health system.

One of the approved treatments, HeartSheet, is made of skeletal-muscle stem cells that are taken from a patient's thigh and grown in the lab. The sheet, made by the company Terumo, is then applied to the hearts of people who have severe cardiac failure. Japan's health ministry gave "conditional approval" for clinical use of the treatment after the company carried out a phase II trial, which hinted at its safety and efficacy in seven patients (Y. Sawa *et al. Circ. J.* **79,** 991–999; 2015).

The company can market and sell the treatment. The approval comes with the condition that, within 5 years, Terumo must provide data from at least 60 patients treated with HeartSheet and 120 controls to show that the treatment is effective. Officials at the Pharmaceuticals and Medical Devices Agency, which approves new treatments, say that the examination of these data will be just as strict as it would be for a conventional phase III clinical trial.

Such approvals feed two Japanese obsessions. First, they allow Japan to be at the forefront of regenerative medicine, something that it has pursued doggedly since iPS cells — which would go on to win one of the country's scientists a Nobel prize — became a national project. Second, Japan is determined to find new engines of economic growth, because it has enjoyed few successes in biotechnology so far.

Biotech firms around the world are excited about the approval, too. Stories of commercialization are a welcome counterpoint to the narrative of failure. California biotech firm Geron, once a trailblazer in regenerative medicine, has given up on embryonic stem-cell therapies and, just this year, Masayo Takahashi of the RIKEN Center for Developmental Biology in Kobe decided to halt her trial of iPS-cell-derived retinal grafts to treat age-related macular degeneration.

Patients are willing to pay, and pay dearly: the HeartSheet treatment costs nearly ¥15 million (US$122,000). Last month, the health ministry added it to the procedures covered by national health insurance, which will help. But patients still pay 10–30% of the cost for a drug that is not known to be effective. As they do so, they basically subsidize the company's clinical trial.

Japan has turned the drug-discovery model on its head. Usually, the investment — and thus the risk — is borne by drug companies, because they stand to gain in the long run. Now the risk is being outsourced. By the time it is clear whether a treatment works or not, the companies will have already made revenue from it.

The government argues that its system will encourage firms to bring to market regenerative-medicine treatments that might work. They will, at least, work well enough to make it past small initial trials. Many drugs do that, and then most of them fail at phase III.

"Japan could find itself flooded with unsuccessful treatments."

Biotech companies in other countries are keen on the idea and have pushed their own regulatory bodies to follow Japan's lead. This is a bad move. Regulatory agencies around the world should resist pressure to create such fast-track systems, at least until Japan has proved that its system works. That will take time. The country will have to demonstrate that its health-care system can withstand the costs of the new regenerative-medicine treatments, and that patients do not feel cheated. What happens when, inevitably, one of the fast-track drugs turns out to be ineffective? Company officials and government representatives say that patients will not be reimbursed, even though some might have paid up to ¥4.5 million (the rest covered by health insurance) for an ineffective treatment.

Japan's drug authority must guarantee that the post-commercialization evaluation of the drugs will be as rigorous as it says. It will not be easy to rein in a drug that has already been approved, whether that approval is conditional or not. If lax evaluation means that ineffective drugs are not revealed, or are not taken out of circulation, Japan could find itself flooded with unsuccessful treatments. And that would not be good for patients, the government or the biotech companies that want to see their truly effective medicines noted as such. ■

Future-proofing

Hard decisions on issues that will affect future generations should not be sidestepped.

"It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness." Charles Dickens had it about right in *A Tale of Two Cities*. As *Nature* went to press, negotiators in Paris were edging towards a global deal to try to secure a safe ecological future for all — a few weeks after mass murder on the city's streets. Nobody was getting too excited about the prospects, or the impact of an eventual deal, but those at the meeting seemed confident that nations would come together to agree, well — something. From a political perspective, a weak treaty that nudges action against climate change forwards is wiser than nothing at all. From a scientific point of view, of course, anything less than full speed ahead is foolishness.

Meanwhile, a week ago and a world away in Washington DC, scientists were meeting to discuss another future for the world. Assuming that the climate talks can secure a habitable planet for humanity, then just what will those humans be like? While environmentalists search for new technologies to safeguard the future, biologists have a whole box of new tools that can reveal and manipulate the genome. As we report on page 173, the atmosphere at the Washington meeting — convened to discuss the implications of human-gene-editing techniques — was cordial and hopeful.

The parallels between the two issues — global warming that can alter the world outside and technology such as CRISPR–Cas9 that can rewrite our world inside — are telling. Most of the major concerns will not affect the people currently worrying about them. They are talking and acting on behalf of generations to come, those unspoken voices that trouble us from the future. Is it fair to leave them an ecosystem very different from the one we enjoy, which they will recognize only as history? Is it ethical to fiddle with the human germ line to introduce changes that will echo through future families and alter the legacy of human diversity?

Politicians and policymakers struggle when they are required to put the needs of the unborn ahead of the demands of voters and funders. So both the climate negotiations and the gene-editing discussions have a zoom function, to illustrate the near-term challenges and opportunities: the local pledges and actions to cut emissions right now, and the basic research needed to make an experimental technique safe for clinical use. Both are necessary steps, but both in their own way dodge the big questions. What does the world do to accelerate these feel-good emissions cuts and gear them up to meaningful collective action? And what does society want to do with a fully operational gene-editing system?

The current discussions on genetics and climate have much to commend them. They have learned the lessons of the past and are trying to break down the conventional political and scientific hierarchy to reflect the rise of nations such as China. The people most directly affected by the decisions reached — indigenous and poor communities in the developing world and individuals and families affected by genetic disorders — are being consulted and listened to (although not enough). The mood is, generally, cordial and constructive.

➲ NATURE.COM
To comment online, click on Editorials at:
go.nature.com/xhunqv

The worry is that the bar in both discussions is set too low. We should be wary about celebrating times that seem the best only because we have put the worst decisions off for another day. ■