

Congressional agendas

A US Congress newly dominated by Democrats needs to exercise financial restraint. Manned spaceflight is a good candidate for cuts, and energy research needs belated leadership.

The Democrats who will make up majorities in both houses of the 110th US Congress in January face a difficult two years. Despite having their hands once again on the purse strings, without control of the executive there will be many areas where their ability to make good on the change they have promised will be constrained. But there is good that can be done on various issues of particular interest to the research community.

One tempting possibility is to use Congress's investigative powers to delve into the Bush administration's past and future use, and alleged abuse, of scientific advice. That may be useful in setting standards for future administrations of either party, and might well have practical political benefits. But it is not, for now, the highest priority.

That honour goes to policy on energy and climate. Congress will doubtless be keen to assert US leadership in this area; climate is, among other things, a particular interest of Senator Joe Biden, the likely chair of the Senate Committee on Foreign Relations. And the world would undoubtedly benefit from wise leadership over the next two years as the post-Kyoto agenda becomes clear. But any leadership worthy of the name must be by example.

There are various proposals for cap and trade approaches to greenhouse gases that Democratic majorities might introduce to Congress — notably a bill sponsored by senators John McCain (Republican, Arizona) and Joe Lieberman (Democrat, Connecticut). Unfortunately, with the likelihood of vigorous opposition from the oil and gas lobby and the current administration's firm position on the other side of the argument, passing such legislation, while desirable, might not be possible. If that proves to be the case, it will be time to abandon the aggrandizing rhetoric of leadership, and to settle for signalling a statesmanlike interest in 'followership'. Finding ways to demonstrate that the United States is coming into line with informed opinion and policy in the rest of the world would in itself be a step forward.

Meanwhile, a strengthened commitment to energy research and

development, and an honest approach to the evidence base in this area, should be more achievable. Congress should not turn its back on the possibility of renewed investment in nuclear power, as some Democrats will be keen to do. But it should also set up a proactive congressional review of which other energy technologies are ripe for development and innovation. Energy independence is a popular theme in the United States; solutions to the problem that also reduce carbon emissions have a clear mandate.

The new congressional leaders will find themselves in a more difficult position on the scientific issue that had the highest profile in the campaign: stem-cell research. The stance that led to President George W. Bush's regrettable veto of legislation that would have relaxed constraints on the use of federal funds for stem cells was not shared by all of his party — but not all Democrats favour overturning the veto. There is thus more reason than ever for the research community to furnish members of Congress with opportunities to educate themselves on the issues — an effort that, although it may take time, could prove vital to progress. What's more, if Bush's veto was an attempt to establish stem-cell research as a wedge issue that would help at the polls, it failed fairly comprehensively, so that opposition might conceivably be open to negotiation.

What the Democrats should not be expected to do is provide significant increases in funding overall — something they have both the power and the temptation to do. The damage done to America and the rest of the world by unsustainable deficits is real, and any lack of zeal in facing this problem would be a mistake. In that context, this would be a good time for Congress to look again at Bush's plans for NASA to re-establish a human presence in deep space. The outgoing Republican Congress gave its Republican president too much benefit of the doubt on this undertaking. The new Congress must, at the very least, articulate more convincing reasons than have yet been heard for such a colossal expenditure. ■

Order for microbes

Burgeoning microbial gene data require coherent efforts to make them readily usable.

Microbes don't subscribe to the single life. They are coupled with complex ecosystems of diverse, mutually dependent species. This complexity and the vast numbers of microbes in the ocean, the soil, in our gut and almost everywhere else pose a challenge to those seeking to understand microbial ecology.

In the 1980s, surveying the microbial world by sequencing the collective ribosomal RNA opened up new avenues. For the first time it was possible to get a glimpse of the make-up of complex microbial

systems. It's a reasonable assumption that the more similar these sequences are, the more closely related the microbes are, and the more closely related their lifestyles must be — hence the pursuit of insights into what microbes might be doing in their environments.

But this assumption turned out to be fragile, as it emerged that microbes frequently shuffle around their genes both within and between species. A similarity in one gene does not necessarily correlate with the absence or presence of other genes in the genome.

Fortunately, the continuous decrease in sequencing costs allows today's microbiologists to sequence not only a single gene from each of the most abundant species in a microbial ecosystem, but also, at least in theory, all the genes present. These composite genomes, or 'metagenomes', provide a wealth of information that could only be dreamt of even a couple of years ago. With sequencing facilities