2004 was a year dominated by news of war, disease and dark threats of bioterrorism and nuclear proliferation. But for the scientific community there were signs of progress and hope. Researchers continued to interrogate nature and produce intriguing results, ranging from the genetic sequence of the rat to the surprise discovery of a previously unknown and diminutive species of humankind. And scientists exasperated by the reluctance of policy-makers to take research seriously could draw some comfort, at least, from Russia’s ratification of the Kyoto Protocol on Climate Change. In the following pages, Nature highlights some of the events that excited the world of science over the past 12 months.

And as the calendar pages flip over to a new year, we’ve also been making some enquiries into what scientists think — and hope — is in store next. Given no constraints, we asked, what would you wish for in 2005? What follows is a sample of the responses our reporters got from researchers and policy-makers across all fields of study, along with summaries of the events that framed these aspirations. From the development of effective therapies against HIV and malaria, to the detection of life elsewhere in the Universe, to the ability to do research without the intrusion of politics or bureaucracy, the community’s wish list provides an insightful — and refreshingly optimistic — glimpse into the future.

“Open access to America from abroad.”
David Baltimore
President, California Institute of Technology

Students, scholars and at least one Nobel prizewinner have had trouble getting into the United States this year, thanks to immigration rules that have grown ever tighter since the terrorist attacks of 11 September 2001. Zhores Alferov, who won the 2000 Nobel Prize in Physics for his work on semiconductors, stormed out of the US consulate in St Petersburg, Russia, this September without his visa after being grilled about the nature of his work.

The situation has improved somewhat since heavy restrictions were introduced shortly after the attacks. Most background checks are now completed within 30 days — half the time it used to take — and are valid for up to a year, making it easier for foreign scientists working in the United States to travel home for holidays and family events. But it remains unclear whether these reforms will be enough to stop foreigners from spurning US academic institutions. This year’s omens were not good: for the first time in more than three decades, the number of international students enrolling in the United States fell. This is a trend that Baltimore finds deeply disturbing. With Europe and Asia becoming increasingly competitive, he says, the United States no longer has a firm lead in research. One of the reasons for this is that it’s now so much harder to come to the United States to study, he argues.

Meanwhile, other nations are making the most of the United States’ tough new rules. The number of foreign science students enrolled at universities in Australia has shot up by 32% since 2001. Asian students seem to be flocking to Britain too: the University of Cambridge, for example, has seen a surge in students from China. And China, in turn, is welcoming students from neighbouring countries such as Indonesia in record numbers.
"A malaria vaccine that really works and is cheap enough for African kids to afford."

Gustav Nossal
Immunologist, University of Melbourne, Australia

A trial vaccine, known as RTS,S/AS02A, was shown this year to shield some children from malaria: the first real success in the field. Much more work needs to be done to achieve full protection, and to make the jabs affordable. But more trials are under way.

"I wish for two burning plasma experiments in the world, instead of just one."

Gerald Navratil
Plasma physicist, Columbia University, New York

For plasma physics, 2004 was characterized by the constant dispute over where to build ITER, an international experimental reactor aimed at producing power from the fusion of hydrogen atoms. The community is united in its desire to see the project go ahead. But the six partners — Russia, China, South Korea, Japan, the United States and the European Union — are currently deadlocked over whether the reactor should be located in France or Japan.

The stalemate has led the Europeans to decide that, if necessary, they will go it alone. That could be okay, laughs Navratil, if it means that both the European and Japanese consortiums each build a machine. "Obviously we’d like to have at least one ITER," he says; but two would be even better. Observers, however, would be extremely surprised if this wish actually came true.

"I wish for a cataclysmic rearrangement of the tectonic plates — or alternatively some creative legislative gerrymandering — so that the San Andreas Fault line ends up just west of Boston, Massachusetts."

George Daley
Stem-cell scientist, Harvard University

It seems as though nothing short of serious seismic upheaval will be enough to get researchers on the US east coast the money they want to study human embryonic stem cells.

Federal funds for such work remain limited to a few dozen cell lines. But on the day of George W. Bush’s re-election, a referendum in California backed an initiative to plough $3 billion of state funds into the field, turning a lot of researchers farther east green with stem-cell envy. Those outside California aren’t completely bereft. In April, Harvard University announced the creation of a stem-cell institute in and around Boston involving 100 researchers and funded with millions of dollars of private money. Three months later, the governor of New Jersey signed legislation to spend $9.5 million on stem-cell research.

The stage is now set for regulatory battles between the conservative federal government and those states using public money to pursue embryonic stem-cell research. A bill to ban ‘therapeutic cloning’ — which would use genetic material from a cloned embryo of the patient to make new cells for a potential transplant, for example — that has languished since 2001 may pass next year, thanks to the newly enlarged Republican majority in the Senate. Even if this bill doesn’t pass, limitations on stem-cell research could also be tacked on to unrelated legislation and end up as law if supporters of the research fail to muster the political muscle to stop them.

"I wish to see tranquility, security and freedom of thought granted for scientists and researchers in parts of the world suffering political turmoil."

Rawan Barakat
Plant scientist, Hebron University, Palestinian Authority

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news feature

A definitive cure in gene therapy for some sort of routine disorder that’s applicable to a large number of other diseases.

Mark Kay
Gene-therapy researcher, Stanford University

This year, the gene-therapy field began regrouping after a difficult period — and received a shot in the arm from a young technology called RNA interference.

In France, authorities allowed Alain Fischer of the Necker Hospital in Paris to restart a gene-therapy trial that had been on hold for almost two years. The trial uses gene therapy to cure children who have the fatal condition X-linked severe combined immunodeficiency disease (SCID), which leaves sufferers unable to fight off infections. But it and other SCID gene-therapy trials around the world have been on hold since last January because Fischer’s treatment caused cancer in two out of eleven children.

Now, regulatory authorities in France and elsewhere have decided that the SCID trials can resume, because the alternative — bone marrow transplants — isn’t always successful. In the United States, the Food and Drug Administration (FDA) has likewise decided to allow at least one trial to go ahead.

But will gene therapy prove successful? Enter RNA interference, a technique that takes advantage of natural human defence mechanisms and that many researchers think could deliver the first full cure in molecular medicine. Biotechnology companies seem to agree; this year, two of them — Sirna Therapeutics in Boulder, Colorado, and Acuity Pharmaceuticals in Philadelphia, Pennsylvania — filed applications with the FDA to begin clinical trials using RNA interference to treat macular degeneration, a progressive eye disease. They are likely to be joined next year by Sirna Pharmaceuticals of Cambridge, Massachusetts. Researchers at this firm have already demonstrated that RNA interference can be used to cut cholesterol in mice. A cholesterol-lowering treatment would be blockbuster for RNA interference, but that is still years away.

In the immediate future, look for more clinical trials in 2005 — including some using RNA interference to combat hepatitis C or HIV.

But although some scientists were grappling with the limits of today’s transportation, others were working on a project that they think could revolutionize tomorrow’s. Proving that space is accessible to your average billionaire as well as to space agencies, aerospace designer Burt Rutan and Microsoft co-founder Paul Allen launched the first private rocket to the outskirts of suborbital space and scooped the US$10-million X prize in the process. Rocket enthusiasts celebrated the achievement as the dawn of a new era of space tourism. But sceptics said that private space travel is unlikely to take off until engineers conquer the much harder feat of getting tourists into orbit. Virgin Galactic expects to begin commercial flights as early as 2007, with seats going for about $200,000 a pop. That probably falls outside the reach of most researchers — but some, at least, hope that the technology will one day find a use in faster-than-Concorde intercontinental travel.

“My wish? ET: call me.”

Louis Friedman
Executive director, Planetary Society

For Friedman, who heads a large space-advocacy group, there is no question about the major goal of space exploration: it is to find life. To this end the Planetary Society strongly supports SETI — the search for extraterrestrial intelligence that scans the skies for signs of communication.

In contrast, NASA now seems relatively unsure of its goals. Should it finish building the International Space Station? Stick with robots for most voyages, or push for piloted missions?

The Bush administration tried to create some focus this year by declaring that NASA would put astronauts back on the Moon by 2020, and then head for Mars. Initial funding for the president’s ‘Vision for Space Exploration’ was passed by Congress in November despite reservations from many lawmakers and scientists. It may provide a focus for the space programme, but it doesn’t seem to be a wildly popular one.

Some US scientists worry that if the tide shifts back to an expensive astronaut programme, it will detract from pure research without much obvious benefit. Missions already launched won’t feel the squeeze — including Messenger, which is due to arrive at Mercury in 2011, and the Cassini craft, which should release a probe down to one of Saturn’s moons, Titan, in January. But plans for spacecraft to study black holes and dark matter have been put on hold, conceivably delaying our discovery of wormholes and pockets of alien life in far reaches of the Universe. Unless, of course, ET calls us first.
For legal enforcement of the Hippocratic oath ‘first, do no harm’ to ensure that all physicians and researchers are held accountable if they violate ethical standards.

Vera Sharav

Every year has its share of people who lie, steal, cheat or fall prey to subtle ethical slip-ups in the lab.

Although 2004 wasn’t the worst of recent years, an array of scientists were nevertheless accused of plagiarism, fraud and other misbehaviour. Even the editors of journals confessed to the occasional ethical slip-up in their publishing practices — such as asking authors to add specific references to their papers to boost the journal’s impact factor. As a result, one association of medical journals, at least, has drawn up a code of good practice for themselves to keep things in line, which came into force this month.

The pharmaceutical industry came under attack when GlaxoSmithKline (GSK) was accused of suppressing results of clinical trials that suggested some antidepressants could increase the risk of suicidal behaviours in children. Rules were changed in the United States to ensure that these drugs were labelled with a warning, and that more data would generally be made available for public scrutiny. Twelve leading international medical journals decided that companies would have to register details of clinical trials in a public database if they want to have their results published. This, they hope, will redress the fact that only trials with positive results tend to be published or aired in public. GSK also promised to put summaries of its clinical-trial data for marketed drugs online for free — and has begun to do so.

The physical sciences suffered some unusual problems as well: staff were fired from Los Alamos National Laboratory in New Mexico after some classified computer-storage devices disappeared, forcing the lab to shut down for weeks for a security review. And one of this year’s science highlights — the successful cloning of human embryos in South Korea — was clouded by suspicions that one of the lab’s researchers was the source of some of the eggs; usually considered to be ethically unacceptable. Lab chief Woo Suk Hwang at Seoul National Laboratory put his work on hold after the accusations hit. A national bioethics law that comes into effect in January 2005 may help to sort out future issues.

Mum’s the word

Mouse eggs were persuaded to grow into apparently healthy mice without being fertilized by sperm, making for the first birth of a mammal without contribution from a father. The success doesn’t make men irrelevant — the genetic manipulations used by the team are for now, at least, technically and ethically infeasible in humans: the experiments produced far more dead and defective baby mice than normal ones.

As old as ice

Results have started to pour in from a core of Antarctic ice that dates as far back as 740,000 years, giving researchers a hint of temperatures and greenhouse-gas levels during the past eight ice ages. It took eight years, two attempts, and more than a bit of luck to extract the core. Initial tests suggest that our present interglacial period, like a similar one about 400,000 years ago, might last an exceptionally long time — another 16,000 years or so, without taking account of global warming.

In the hot seat

Climate researchers’ estimated that anthropogenic climate change has at least doubled the chances of a heatwave like the one that hit Europe in the summer of 2003. Although scientists have long thought that a warmer world will have more extreme weather, this result provided the most solid link so far between global warming and a single weather event. Such work could open the door for groups to win lawsuits against big emitters of greenhouse gases for damages caused by bad weather.

Table-top accelerators

High-quality electron beams for use in accelerators were produced by laser focusing. This eliminates the need for the massive magnets that have traditionally been used to focus such beams, and whittles down the instrumentation needed to make a particle accelerator from the size of a football stadium to the size of a lab. The ever-shrinking size of these devices will make them increasingly accessible to universities and individual research teams.

Home-made cure

A compound was mixed in the lab that could make for cheaper antimalarial drugs. Doctors currently recommend that high doses of artemisinin-based treatments be used in countries that have problems with resistance to drugs such as chloroquine. But artemisinin, which comes from a Chinese plant, is very expensive. A public–private partnership created a cheaper synthetic version, which is now in clinical trials in Britain.

“...I’d wish to find out if there is life on Mars; perhaps martians can be detected by a whiff of their farts.”

Roger Buck
Geologist, University of Washington, Seattle

If you’re looking for extraterrestrial life, then Mars is a great place to start. Tantalizing discoveries this year meant that the possibility of finding microbial life — ancient or contemporary — on the red planet once again becomes an attractive future of research, so that France on board scientists’ proposals for the lander, Beagle 2 — the only one explicitly designed to look for signs of life — didn’t survive the trip to the planet’s surface.

“...the successful cloning of human embryos in South Korea — was clouded by suspicions that one of the lab’s researchers was the source of some of the eggs; usually considered to be ethically unacceptable. Lab chief Woo Suk Hwang at Seoul National Laboratory put his work on hold after the accusations hit. A national bioethics law that comes into effect in January 2005 may help to sort out future issues.”

Alain Trautmann, cell biologist and leader of Save Research, an unprecedented scientific revolt against French government policies and science funding.
cautiously optimistic. Activists have now been portrayed as terrorists by some sections of the media, and their often militant approach has been exposed by undercover journalists. And in November, Oxford won a court injunction barring protestors from the immediate vicinity of the proposed site for its animal house. Stein and Aziz say that the threats they receive have now almost petered out.

They are also confident that the public is behind them — thanks in part to a strange experience Stein had at a Royal Institution event on nutrition and neuroscience this September. Stein and his brother Rick, a famous chef in Britain, co-hosted the event. They found themselves harassed by activists dressed in animal suits shouting that John was a “monkey torturer”. But when police arrived, says John, they ended up having to protect the protestors from members of the public, rather than the Stein brothers from the protestors. Enraged, the public had turned on the picketers.

The recipe for a good 2005, say Stein and Aziz, would include more support from their university and fellow researchers in their efforts to explain why animal research is needed. Equally importantly, it would also involve the resumption of building work on Oxford’s animal facility, which has been on hold since July. The university insists a new contractor will be found. But as Nature went to press, no builder had been named.

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One scheme spurred on by the Kyoto Protocol looks set to make an impact in 2005: the idea of trading permits to emit carbon dioxide. About twice as many CO₂ equivalents’ swapped hands in 2004 as in 2003. By January 2005, Europe’s Emissions Trading Scheme will be in place, making carbon a government-regulated asset. Observers hope that giving emissions reductions a financial value will spur companies to cut down on their atmospheric garbage — even in countries that have not signed Kyoto, such as the United States. But no one yet knows if it will really reduce overall emissions.

Meanwhile, Hollywood’s blockbuster The Day After Tomorrow gave the public a vivid snapshot of abrupt climate change, when it portrayed the entire Northern Hemisphere freezing solid in a matter of days. That may be a ridiculous exaggeration of what could happen in real life, but science continues to uncover evidence that dramatic temperature swings have occurred in the distant past, taking place over thousands or even hundreds of years. This year, for instance, researchers found hints of a warm Arctic climate in the Cretaceous period some 70 million years ago. Data from samples taken during this year’s Arctic Coring Expedition may soon tell us how the North Pole once turned into a mild Mediterranean basin.

“A big budget Hollywood movie epic that will make scientists the new idols of today’s youth, causing a burst of interest in careers in science. Back off, rock stars, TV actors and athletes!”

Francis Collins
Director, National Human Genome Research Institute, Bethesda, Maryland

If The Day After Tomorrow wasn’t good enough for Collins, there’s plenty to look forward to — perhaps with mixed feelings. Among the films due out in 2005 is Fantastic Four, in which a group of astronauts gain superpowers after being exposed to cosmic radiation. Also set to hit the screens is the cult classic The Hitchhiker’s Guide to the Galaxy, in which a spaceship with an improbability drive can do the seemingly impossible (as long as it knows how improbable it is). And in a new version of War of the Worlds, we will be treated to Tom Cruise’s portrayal of life as a scientist. The gulf between celluloid and reality looks unlikely to be bridged any time soon, although even fantasy is sure to spark some interest in science — of a sort.

“A brightly coloured parrot that sits on my shoulder and every time I look at new data it screeches in my ear: ‘But what does this really mean and is it important?”

Brandon Wainwright
human geneticist, Institute for Molecular Bioscience, University of Queensland, Australia

“In the past, at least, activists have gone beyond threats: supporters stand could be dangerous. In January, protests helped to force the building contractor working on a new animal research centre. Six months later, the university had to speak up after activists scored two notable victories. In January, protests helped to force the building contractor working on a new animal research centre. Six months later, the university had to speak up after activists scored two notable victories. In January, protests helped to force the building contractor working on a new animal research centre. Six months later, the university had to speak up after activists scored two notable victories. In January, protests helped to force the building contractor working on a new animal research centre. Six months later, the university had to speak up after activists scored two notable victories. In January, protests helped to force the building contractor working on a new animal research centre. Six months later, the university had to speak up after activists scored two notable victories.

“I'd like to be able to get on with my experiments, which help people with dyslexia and Parkinson’s disease, without being harassed by extremists.”

John Stein
Neuroscientist, University of Oxford, UK.

When Stein this summer decided to join the handful of UK researchers who speak publicly about the benefits of animal research, he knew he would soon be the target of animal-rights activists. “I got a continuous stream of abusive e-mails,” he sighs. One read: “What is the difference between a Nazi and a vivisector? Answer: nothing.”

Stein and his colleague Tipu Aziz decided to speak up after activists scored two notable victories. In January, protests helped to force the University of Cambridge to abandon plans for a primate research centre. Six months later, the building contractor working on a new animal house at Oxford pulled out.

Both Stein and Aziz knew that taking a stand could be dangerous. In the past, at least, activists have gone beyond threats: supporters of animal research have been attacked with baseball bats and had letter bombs posted to their homes.

But the close of 2004 finds the pair cautiously optimistic. Activists have now been portrayed as terrorists by some sections of the media, and their often militant approach has been exposed by undercover journalists. And in November, Oxford won a court injunction barring protestors from the immediate vicinity of the proposed site for its animal house. Stein and Aziz say that the threats they receive have now almost petered out.

They are also confident that the public is behind them — thanks in part to a strange experience Stein had at a Royal Institution event on nutrition and neuroscience this September. Stein and his brother Rick, a famous chef in Britain, co-hosted the event. They found themselves harassed by activists dressed in animal suits shouting that John was a “monkey torturer”. But when police arrived, says John, they ended up having to protect the protestors from members of the public, rather than the Stein brothers from the protestors. Enraged, the public had turned on the picketers.

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Steven Rose, neuroscientist, Open University, Milton Keynes, UK.

“Very high on my wish list of discoveries for 2005 would be the development of a molecule that would elicit broadly reactive neutralizing antibodies against HIV.”

Anthony Fauci
Director, National Institute of Allergy and Infectious Diseases, Bethesda, Maryland

Those attending July’s XV International AIDS Conference in Bangkok, Thailand, heard one refrain repeated over and over: we have the tools to treat the epidemic — but they’re not reaching the majority of the 39 million people living with HIV. The epidemic is deeply entrenched in sub-Saharan Africa, home to more than 60% of people with HIV; and it threatens to take off in Russia and China, as well as India, which has the second highest number of HIV infections. But the antiretroviral medications that could treat patients are still too costly for most to afford. Faced with this daunting prospect, leaders are calling for preventative treatments that can stop the spread of AIDS once and for all.

But progress on an AIDS vaccine is slow. Although there are at least a dozen vaccines in clinical trials, researchers do not have high hopes that any will completely prevent people from contracting HIV. Many experts are convinced that what is needed to meet this goal is a vaccine that will stimulate antibodies that recognize and neutralize all forms of HIV. Structural biologists are now hard at work trying to identify these ‘broadly neutralizing’ antibodies.

“We are facing increasing risk of new emerging infections. I wish for constant vigilance, and for the resources to combat this threat with good science, surveillance and public policy based on science not politics.”

Paul Tam
Acting pro-vice-chancellor, University of Hong Kong

Severe acute respiratory syndrome, or SARS, may now seem like a distant threat, but there are other viruses to worry about. This year, bird flu led to the death by disease or slaughter of tens of millions of birds in countries across southeast Asia, and it killed at least 32 people in Thailand and Vietnam.

Evidence has emerged that the viral strain of greatest concern, H5N1, is present in pigs in China — an animal that could provide the perfect place for bird and human viruses to meet and mix, producing a lethal, highly transmissible version. Alarming, H5N1 seems to have passed from person to person in one case, when a Thai girl probably passed the disease to her mother. If the virus adapts to pass more easily between people, a deadly pandemic similar to those in the twentieth century is likely.

“The next pandemic is inevitable. In fact it’s overdue,” says David Ho, an infectious-disease expert at Rockefeller University in New York. And surveillance and healthcare systems in the developing countries may not be able to cope, he says.

“A time controller. This would allow — at least subjectively — the flow of time to be increased, decreased or stopped. I believe some drugs have this effect!”

Arthur C. Clarke
Science-fiction author

Cloning paper pulled
Fertility researcher Panayiotis Zavos had a peer-reviewed paper on human cloning pulled — because he publicized his work. Zavos created a fuss in the newspapers in September when he announced that he had created cloned embryos by mixing genetic material from dead people with cow eggs. The Journal of Assisted Reproduction and Genetics then pulled a paper on similar work, although Zavos claims it was a different study.

Locked out
A vetted Iranian physicist was banned from his workplace at the Stanford Linear Accelerator Center, a US Department of Energy lab in California. Colleagues told Nature that no explanation was offered for his expulsion. Shahram Rahatlou suspected his ban resulted from heightened security checks after 11 September 2001. Other Iranians said that it was now harder for them to work at, or even visit, government facilities. Rahatlou has since been offered a four-year position in Rome.

Missing plague
After reporting several vials of plague bacteria missing from his lab, and then admitting he might have accidentally destroyed them himself, US microbiologist Thomas Butler was sentenced to two years in prison for fraud this March. This is more lenient than the penalty sought by US prosecutors, who called for millions of dollars in fines and at least ten years in prison. But some researchers say it was unfair to make an example out of a 62-year-old, respected researcher with no terrorist ambitions.

For art’s sake
A US university geneticist and an artist were accused of mail and wire fraud because of the way they allegedly obtained bacteria for art exhibitions. The investigation began when laboratory equipment, bacteria and books on biowarfare were found in the home of performance artist Steven Kurtz. The bacteria were found to be harmless, but both he and Robert Ferrell were accused of defrauding the supplier by using the organisms for non-research purposes outside the lab. Kurtz’s case is set for a hearing on 11 January, while Ferrell’s has been put on hold due to illness.

Autism paper ‘flawed’
Magical journal The Lancet took the unusual step of distancing itself from one of its own papers and attacking its findings. In February, editors declared that Andrew Wakefield’s 1998 paper linking the measles, mumps and rubella vaccine with autism was “flawed” owing to conflicts of interest and should not have been published. Wakefield said that there was no conflict. The paper caused many parents in Britain to decline the triple vaccine, and, as a result, measles incidence increased.
news feature

Odds & ends

Down with a bang
NASA’s Genesis mission, which was designed to bring samples of the solar wind back to Earth, crashed into the Utah desert in September. The craft had such delicate detectors that mission designers had planned for Hollywood stunt pilots to swoop in and catch the capsule by its parachute, allowing for the softest possible landing. But the parachute didn’t open, owing to an error in the design drawings that led to some crucial switches being installed upside down.

A whale of a time
An otherwise ordinary day in a busy Taiwanese street was interrupted in February by 60 tonnes of exploding sperm whale. The dead whale was being delivered by truck to a laboratory for an autopsy, when the carcass exploded after gas from decomposition built up inside. Luckily, only some of the internal organs fell into the street. The focus for the post mortem — the heart and lungs — was still intact.

Newton revealed
A 300,000-word interpretation of the biblical book of Revelation that Isaac Newton wrote in the late seventeenth century was published online in August. The eye-opening text, peppered with references to dragons and reflections on distrust of the Catholic faith, revealed Newton’s intense interest in spiritual matters. More than half of Newton’s works seem to have been predominantly about religion rather than science.

From the archive
A theoretical physicist aired his life history, including stories of growing up as a Polish Jew in occupied France during the Second World War, in an unusual medium this year. He put it all on the arXiv physics preprint server, which more usually hosts original research. But the archive won’t put everything up online. Researchers who feel they have been unfairly excluded from the server banded together this year to form their own ‘archive freedom’ services, but space scientists were quoted as saying a cheque would be best.

Beagle wrangling
No one really knows what happened to the ill-fated Beagle 2 lander when it went missing on its descent to Mars this time last year. But the bigger question may be who will pay for the failed attempt. The European Space Agency (ESA) ‘lent’ mission leaders in the United Kingdom £16 million (US$21 million) for the project, and this autumn some ESA-funded researchers were beginning to grumble about whether, and how, the space agency would ever get it back. Britain may or may not want to repay in kind with goods and services, but space scientists were quoted as saying a cheque would be best.

“To find an organism in ocean sampling that would help to eliminate the world’s dependency on carbon-based fuels.”
Craig Venter, head, J. Craig Venter Science Foundation, Rockville, Maryland

“A spell check for English (Euro-speak) to add to my computer languages of English (UK) and English (US). And a dictionary to go with it, so I can work out what the Euro-words actually mean.”
Anon

Coffee-breaks at European science conferences this year were alive with complaints about the increasingly difficult application process for European ‘Framework’ grants. Scientists say that the forms, riddled with neologisms such as ‘sideground’, are becoming increasingly impossible to read, let alone to fill out. There actually is a glossary for the Framework programme (see http://fp6.cordis.lu/fp6/glossary.cfm), but sadly neither it nor the Oxford English Dictionary includes the word ‘sideground’. If you dig through the European Commission’s Intellectual Property Rights Helpdesk website, you’ll find that the word means “information and rights acquired in parallel with a project”.

Scientists say that the increasingly complex application forms seem to want them to prove that they will help cure Europe’s economic and social ills, while doing a bit of science on the side. Writing the research project is the easy part, they say; trying to work out how to handle the political add-ons is a full-time job.

The details of the Seventh Framework Programme, to begin in 2006, will be hammered out during 2005. But it’s a good bet that any wish for simplicity in the new application forms won’t be granted. Researchers instead set their hopes on the creation of the planned European Research Council, which should be distanced from politics in Brussels.

Add your thoughts to Nature’s wish list at www.nature.com/news/specials/wishlist

“A firm commitment by the European Commission to earmark enough money for the European Research Council, no matter whether the research budget will be doubled or not.”
Erwin Neher, biophysicist, Max Planck Institute for Biophysical Chemistry, Göttingen, Germany