

British scientists seek recognition of role in 'life on Mars' debate ...

London. The UK government last week joined the debate over whether life exists — or has existed — on Mars by hosting a conference in London on extra-planetary life, a major aim of which was to show that British research does not lag behind that of the United States.

Indeed, a press release issued prior to the meeting, eagerly taken up by newspapers on both sides of the Atlantic, said that research carried out by British scientists “offered the strongest support yet for the hypothesis that life once existed on the planet Mars”.

The meeting brought together most, if not all, of the UK planetary community. It was organized jointly by Ian Taylor, Britain's science minister and a keen enthusiast for space research, and Colin Pillinger, professor of astronomy at the Open University, and an acknowledged authority on carbon in extraterrestrial rocks.

Both say they are concerned that relevant British space research — and Pillinger's work in particular — had been unfairly ignored in the publicity that surrounded announcement by the National Aeronautics and Space Administration (NASA) in August of evidence of microbial activity in a martian meteorite ALH84001 (see box, right). At Taylor's request, the two met at Pillinger's laboratory in Milton Keynes just days after the announcement, and resolved to take steps to remedy the situation.

Seven years ago Pillinger and colleagues reported the discovery of carbon compounds in a martian meteorite, EETA 79001 (see *Nature* 340, 220; 1989). At the time, Ian Wright, one of Pillinger's co-authors, gave several interviews in which he explicitly discounted the possibility that the paper provided evidence of life on Mars.

But Pillinger says this work was an important signpost and helped pave the way for NASA's announcement and the subsequent publication of conclusions by researchers that are being interpreted as the first signs of life on the red planet. His work was not explicitly cited by the NASA researchers.

Taylor says that, when President Clinton announced plans for a US space science summit in the wake of the 'life on Mars' announcement, he was concerned that British researchers should not be left behind. “I genuinely felt that the excellent work done in the UK had been underestimated in all the publicity and hype at the time,” he says. “British science should be given its proper platform.”

Paul Murdin, director of science at the

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REASONS

Pause for thought: Colin Pillinger, of Britain's Open University, who announced new findings last week.

British National Space Centre, describes last week's meeting as a “stunning” achievement and says Britain's planetary science research potential has been clearly underestimated and should be more focused. Indeed, Murdin, who is also head of astronomy at the Particle Physics and Astronomy

Research Council, says he would “take seriously” any proposal to establish a single UK centre for Solar System sciences intended to “harness the terrific wealth of talent”.

Taylor says he would “welcome any such proposal”, particularly if it involved a “first-rank university or a number of universities”.

The meeting, held at the Royal Society, heard presentations from more than 20 British scientists engaged in planetary science and related activities, including astronomers, geologists, and members of life sciences communities.

Although the meeting itself was strictly scientific, several journalists had been invited to help publicize its conclusions. Pillinger, together with his colleague Ian Wright, presented unpublished results of a further analysis of the rock that featured in their 1989 *Nature* paper.

Their results appear to confirm that the organic carbon compounds discovered in ►

...as NASA's claims win few converts

Washington. Despite the announcement last week by a group British researchers that they had observed signs of biology in a second martian meteorite (see above), most space scientists and biologists remain sceptical that the claim made this summer by a US team of past life on Mars will stand up to scrutiny.

Although details of the new work have yet to be published, the scientific community has had three months to examine the evidence of ancient Martian life proposed last August by David McKay and colleagues at the National Aeronautics and Space Administration (NASA) Johnson Space Center in Houston and Stanford University. Few scientists have been won over by their arguments, and several have proposed alternative explanations for the data.

But no obvious flaws have yet been found in the work, says Timothy Swindle of the University of Arizona, who summarized dissenting viewpoints during a panel discussion of the Mars finding at a recent meeting of the American Astronomical Society's Division of Planetary Sciences (DPS). “If I had to bet, I'd bet that [McKay *et al.*] are not right, but I don't think that's been demonstrated,” he says, adding that an informal canvas

of his colleagues gave the NASA team a chance of between ten and fifty per cent of being proved correct.

Swindle's presentation at the DPS meeting — and a similar 'rebuttal' led by Harry McSween of the University of Tennessee at a recent meeting of the Geological Society of America — focused on several key questions regarding the McKay group's claims. One concerns temperature.

McSween and others argue that the carbonate 'globules' containing the purported fossils actually formed at temperatures too high for microbes to exist, which would virtually rule out the martian life hypothesis (see *Nature* 382, 49–51; 1996). Electron micrographs of the 'fossils' themselves are also under suspicion, says McSween; some microscopy experts believe the structures are simply artefacts of a coating process which was used to prepare the samples.

Jeffrey Bada of the Scripps Institution of Oceanography in San Diego believes the McKay group is being fooled by terrestrial contamination. He and his colleagues have also found biogenic amino acids and polycyclic aromatic hydrocarbons (PAHs) in the martian rock that was examined by the British ►

► the relatively young martian meteorite EETA 79001 seven years ago were of martian rather than terrestrial origin. One journalist was given an exclusive interview with Pillinger and the following day's headline read: 'Life on Mars was found by Britons'.

Pillinger also decided to publicize separate results, obtained just one week before the meeting, of an isotope analysis of small amounts of carbonate taken from the much older meteorite ALH 84001. These results appeared to corroborate the findings of the NASA researchers by suggesting that the carbonates were formed from microbially-produced methane.

Pillinger says the researchers do not regret discussing unpublished research directly with the media, even though he was aware that this might reduce its chances of being published by some journals. He says such an action was necessary for the meeting to achieve one of its main objectives — to generate publicity for British science.

Taylor says he disagrees with suggestions that the meeting amounted to 'science by press conference', preferring to describe Pillinger's actions as "instant peer review". The minister also rejects suggestions that such procedures encourage a 'publicize first, publish second' mentality. "I don't think scientists will depart from the desire to publish or get citations. Colin Pillinger is already well established. He quite naturally felt he could take a risk. I give him credit for that."

► team, EETA 79001.

Furthermore the pattern of PAH types and distributions is an "almost exact overlay" of what McKay's group reported for their meteorite, Allan Hills 84001, says Bada. But he adds that the amino acids and hydrocarbons are almost certainly from Antarctica, not Mars. Bada's detailed analysis of ice from the Allan Hills region shows that it's "loaded with [PAHs], and it looks just like what's in the meteorite".

These and other nagging doubts have led even NASA researchers — including those working on plans to revamp the agency's strategy for exploring Mars — to be extremely cautious in supporting the McKay team's conclusions. According to John Logsdon, however, of the Space Policy Institute at George Washington University, the 'discovery' has already had a significant effect at NASA.

Logsdon points out that the justification for robotic exploration of the planet (the US Mars Global Surveyor spacecraft, the first of three missions headed for Mars this year, was scheduled to launch this week) has shifted more explicitly to include a search for life. And he says that extreme cuts to NASA's budget floated in some budget projections earlier this year now seem unlikely.

Meteorite researchers also will



Monica Grady of the Natural History Museum in London agrees that scientists have a duty to communicate to the public, although she adds that she is personally not in favour of portraying science "as a competition or as a conflict".

Grady, who is the third author on the 1989 *Nature* paper, says she is less sceptical of the NASA announcement of life on Mars than she was in August, and acknowledges that she is "a great believer that we will find life in a planetary system". But she emphasizes that definitive answers to this question will be found only by further research and from future Mars missions.

Ehsan Masood

benefit from the finding. NASA and the National Science Foundation (NSF) are each spending about \$1 million to fund work that might settle whether the Mars rocks contain signs of life, and will ask for proposals from the scientific community later this month.

Forty-seven research teams already have samples of the twelve known martian meteorites, and 16 more have requested samples. Allocation of samples has been suspended until after the NASA/NSF solicitation, however, partly so that the committee in charge of deciding who receives samples can strengthen its expertise in certain scientific areas, including palaeobiology and organic geochemistry, according to Marilyn Lindstrom, a meteorite curator at the Johnson Space Center. Lindstrom says that samples will be allocated independently of funding decisions, and that the NSF and NASA will coordinate their research funding so as not to overlap.

Many space scientists hope the additional money and attention will draw new blood to the field and lead to interdisciplinary collaborations. McKay's team plans to continue looking for cellular structure in its microfossils and pursuing other investigations, but is keeping quiet about how and when it might release further results.

Tony Reichhardt

Settlement deprives peer review of its day in court

Washington. A Seattle-based biotechnology company has agreed to pay \$21 million to a rival which claimed that it stole information subsequently used for a patent application from a paper under confidential review for publication in *Nature*.

The out-of-court settlement, which was reached on 31 October — only days before the case was due to be heard in a Seattle courtroom — deprives the science community of a legal judgement on the confidentiality of the peer review process.

Cistrion, a small, New Jersey-based company, had taken Immunex of Seattle to court on the basis that an Immunex scientist had taken data on a protein, interleukin-1 (IL-1), from a paper submitted to *Nature* in 1984 by a Cistrion team, and that Immunex had then used it for its own research and patent applications. The paper was rejected for publication, and IL-1 turned out to have little commercial significance.

Evidence for the theft included a set of errors in a DNA sequence in the original paper, which was later repeated in Immunex's patent applications. Immunex denied stealing the data. But according to documents filed to the court, the company was preparing a defence which argued that the peer review process is not legally confidential, and that material cannot be regarded as confidential once submitted for publication in a peer-reviewed journal.

Immunex has now agreed to pay \$21 million to Cistrion over a three-year period and assign some of its patents on IL-1 to the New Jersey company. When prospects for IL-1 were brighter, Immunex received more than \$100 million from a major pharmaceutical company for a share of its work on the protein.

Cistrion initially sued for \$150 million, which it later reduced to \$70 million. A joint statement from the two companies said that the settlement "was made without any concession or admission of liability".

Henry Grausz, chairman of Cistrion — which has seven employees and had sales last year of just \$700,000 — said it "believes it holds a strong position in the IL-1 area". Immunex has 800 employees and annual sales of \$160 million. It is now fighting to regain some of the settlement costs from its liability insurers.

Had the case gone to court, the outcome could have hinged on whether material submitted to a peer-reviewed journal is legally confidential. "If it had come to court, the point would have been decided," says Sir John Maddox, former editor of *Nature*, who was due to appear as an expert witness for Cistrion.

Colin Macilwain