US engineering

Backing for long shots

Washington

RESEARCHERS who fail to win a grant from the National Science Foundation's engineering directorate will not in future be able to blame the foundation's excessive caution or lack of vision. The dynamic new assistant secretary for engineering, Nam Suh, has instituted a new grant for proposals that are rejected by the peer review system but which are so exciting that they perhaps ought to be funded just in case. This year, 12 such "high risk/high return" projects have been supported, with grants worth a total of \$1.2 million.

The new grant is administered by a special 7-member Committee on Innovative and Exceptional Research (to distinguish it, presumably, from the rest of the research supported by the foundation). The committee's chairman, William Butcher, explains that the grant was established to counter a fear that peer reviews of research proposals are inherently biased against "way-out ideas". Besides funding risky proposals, the committee can consider "highly innovative truly exceptional proposals" (it has not yet received any of these) and, for the sake of completeness, proposals that do not fall into any of the other categories (so far, they all do).

This year the committee was unable to use all the \$2 million at its disposal, perhaps because the scheme only got under way in March, but next year Suh (himself a former grant holder) is planning to put aside \$3-4 million for off-beat ideas, two per cent of his total budget. Because this is less than allowed tolerances on spending, the scheme has not been formally sanctioned by the directorate's advisory board, although according to Butcher most members know about it and approve. The high risk projects supported this year include a scanning optical microscope with a resolution of 50 micrometres, which could be used to examine living cell membranes, studies of polymerization in supercritical fluids and a proposal to generate "squeezed state light", which one reviewer described as being potentially as important as the discovery of the laser.

Butcher emphasizes that the new grant does not eliminate peer review: all proposals are still put through the normal assessment procedure, but some that get mixed reviews and so are rejected by programme managers are given a second chance by his committee. Only one in three of the proposals considered by the committee were funded this year, but Nam Suh hopes that as the word gets around that his directorate will support off-beat ideas, researchers will be encouraged to be more daring in the sorts of applications they make. **Tim Beardsley**

US gene cloning

Academics barred from P4 lab

Washington

THE National Institute of Allergy and Infectious Diseases (NIAID) is to ban the use by outsiders of its high containment laboratory at the Frederick Cancer Research Facility in Maryland. The laboratory, which was much used in oncogene research in the late 1970s, is one of only a handful of laboratories with P4 rating, the highest level of containment facility, and research being conducted there may have to be reclassified at a lower level of confinement if it is to continue elsewhere.

The Frederick laboratory, although formally run by and for the National Institutes of Health (NIH), has in practice often been used by outside researchers who needed access to secure containment. For the past year, the laboratory has been used successfully by Jack Murphy of Boston University Medical Center to clone fusion genes consisting of a synthetic oligonucleotide coding for human alpha-melanocyte stimulating hormone and portions of the structural gene for diphtheria toxin; the research could eventually lead to a "magic bullet" treatment for melanoma.

Last week Murphy went to the subcommittee on toxin cloning of the NIH Recombinant DNA Advisory Committee (RAC) to ask permission to continue the work at a lower level of containment, and also to seek approval for developing under P4 containment chemotherapeutic agents that would kill T and B cells carrying interleukin-2 receptors. This work, to be done in collaboration with Terry Strom of Beth Israel Hospital in Boston, might allow the creation of specific immune defects to prevent rejection in transplant pa-

tients, because resting and "memory" lymphocytes do not express interleukin-2 receptors.

Myron Levine of the University of Maryland, one of the most liberal members of the toxin subcommittee, said the proposed new work should be done only under P4 containment; other members agreed, noting that the effects of chronic exposure to such agents would be unpredictable and potentially harmful. But the subcommittee was then informed by Malcolm Martin, department chairman of the NIAID molecular biology laboratory, that Murphy could no longer use the Frederick facility because of the institute's decision to restrict access to NIH employees.

Faced with the option of preventing Murphy's work altogether, the subcommittee decided that the transplant rejection work could go ahead under P3 conditions, while the melanoma work could be reclassified as a hybrid between P2 and P3 until more toxicity data are gathered.

Martin explained later that the decision to exclude non-NIH workers had been taken because of competition from intramural research and an imminent refurbishment. There is another P4 laboratory in the NIH division of safety that is still available to outside researchers, although the space available is too small for many purposes. But Martin said that to require containment higher than P2 for Murphy's work "doesn't make any sense" because the host bacterium, the disabled K-12 strain of *Escherichia coli*, has no potential to colonize humans. **Tim Beardsley**

Indian guided missile nearly ready

New Delhi

THE Indian missile programme has reached a crucial stage and an advanced guided missile is expected to be ready as early as next year. Earlier this month, Prime Minister Rajiv Gandhi and Defence Minister P. V. Narasimha Rao saw the missile at the Defence Research and Development Laboratory (DRDL) at Hyderabad. They also watched the simulated flight of the indigenously developed missile and the static testing of its motors. Mr Gandhi later laid the foundation stone for a £75 million research facility at a 1,000-acre site 22 kilometres from Hyderabad where the missiles will be "assembled, tested and checked out". The new facility is scheduled to be fully operational in three years, but it is expected to show results next year.

No details are available about the missile's capability or range or if it can carry a nuclear payload. But the development has been welcomed in India in the light of Pakistan's nuclear ambitions. According

to defence scientists, it will have solid and liquid propellant motors and will be "highly sophisticated". The propellants, inertial guidance and control systems have all been developed indigenously.

The missile programme is directed by Mr Abdul Kalam, director of DRDL and chief designer of India's satellite launch vehicle, the workhorse of the Indian Space Research Organisation (ISRO). Four years ago, Kalam was brought from ISRO to DRDL to develop a surface-to-air missile for the defence system that depended exclusively on missiles imported from the Soviet Union.

DRDO, under the directorship of Dr V.S. Arunachalam, who is a metallurgist, is also working on electronic warfare, early warning systems, radars, submarines and a main battle tank (MBT) for the army. DRDO recently signed an agreement with Italy for collaboration on electronic counter-measure systems.

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