

**Table 2.** FISTAB recommendations

Subject area	Level-I (Rupees in crores) [No. of departments]	Level-II (Rupees in crores) [No. of departments]	Total (Rupees in crores) [No. of departments]
Life sciences	27.29 [78]	9.92 [8]	37.21 [86]
Physical sciences	9.31 [31]	5.65 [5]	14.96 [36]
Chemical sciences	11.09 [24]	9.41 [7]	20.50 [31]
Engineering sciences	13.69 [33]	12.54 [9]	26.23 [42]
Earth and Atmospheric sciences	6.79 [15]	4.17 [3]	10.96 [18]
Mathematical sciences	0.97 [5]	1.10 [3]	2.07 [8]
Total	69.14 [186]	42.79 [35]	111.93 [221]

Source: DST Annual Report 2000–2001.

during the current year, i.e. 2001–2002 would also be utilized completely for providing support to the identified departments. Table 1 gives the number of proposals received from various universities and academic institutions.

The DST, through a two-tier committee structure: FISTAB and six subject

expert committees for the above-mentioned broad subject areas, short-listed 295 proposals (Level-I: 199; Level-II: 96) for detailed presentation. Subsequent to the presentations by the short-listed departments/institutions, 222 proposals (Level-I: 158, Level-II: 64) in all subject areas, at a total cost of Rs 118.82 crores

for 5-year duration, were recommended by the expert committees for consideration of the FISTAB. The FISTAB has finally recommended 221 proposals (Level-I: 186; Level-II: 35) at a total budget of Rs 111.93 crores, for five years. The details of the recommended budget are given in Table 2.

## Interaction meetings: Value addition in DST's R&D projects on animal sciences

Of late, there has been revival of interest in organismic biology, the world over<sup>1</sup>. The Programme Advisory Committee (PAC) on 'Animal behaviour, ecology and evolution', of the Department of Science and Technology (DST) was rechristened as PAC on animal sciences in 1996, to focus attention on faunal studies. The PAC aimed to strengthen the basic research activities in the animal sciences (read zoology), primarily across the universities and academic institutions through extramural R&D support.

The number of research proposals received in DST on animal sciences was dismally low to begin with, only 27 in 1996. The financial share of sanctioned projects was only 8% of the total expenditure under life sciences during 1990–1994. The rest, 92% was shared by the three remaining PACs on plant sciences, biochemistry, microbiology, cellular and molecular biology and medical sciences. The average cost of a project under animal sciences was Rs 8.50 lakhs only, as against the average cost of Rs 12.50 lakhs for a life sciences project.

The proposals submitted under PAC on animal sciences for funding were weak on various counts. Many of the projects were highly ambitious in terms of goals set for a period of three years with limited financial and human resources. Majority of them were poorly formulated with disjointed and non-complementary objectives, inadequate review of literature, inappropriate methodology, inflated budget and wrong choice of equipments, so much so that many a time it appeared as if the principal investigator (PI) wanted to set up a whole department or an institution. Also the research topics chosen, were not in the line of specialization of the proposer, but closer to the 'current fashion', irrespective of his/her past publications or experience. The other shortcomings were their repetitive research content, and poor presentations<sup>2</sup>. These contributed to a very poor approval rate, hardly around 20% of the total projects considered.

The proposals received from institutes of specialized agencies such as Indian Council of Agricultural Research (ICAR) and Council of Scientific and Industrial

Research (CSIR), etc. if they were in the very field for which these institutes were set up, generally did not attract a positive response. But the proposals which were not within the main mandate of the institute and dealt with the problems requiring extramural funds, were examined on their own merit, without any prejudice.

The PAC on animal sciences was highly concerned about this poor state of affairs. The Science and Engineering Research Council (SERC) – the apex body which oversees the extramural R&D funding in basic sciences and engineering within DST, was taking stock of its achievements during the past five years (1990–1994)<sup>3</sup> across the PACs and was in an introspective mood to ponder over the strengths and weaknesses of its various R&D funding programmes. The exercise by PACs-LS resulted in a document which provided a base for discussion on how to improve the status of R&D funding in animal sciences<sup>4</sup>.

It was evident that additional inputs were essential in the proposals, if the arrival and approval rates had to improve. Therefore, it was decided to organize a

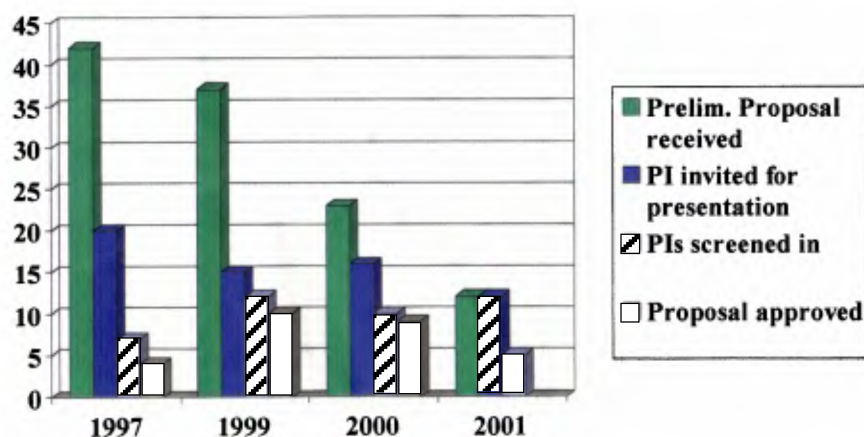


Figure 1.

series of interaction meetings among respective PAC members/outside experts and prospective PIs around a preliminary proposal, to ensure value addition in terms of science, presentation and discussion<sup>5</sup>. Such meetings were organized around a known authority on the subject. Preliminary proposals were invited from the interested research workers. These proposals were screened and if found suitable were chosen for inviting the PIs for detailed presentation before a panel of experts, including the PAC members. All prospective PIs also participated in the discussion that took place during the

presentation and afterwards. It was expected that the PIs would emerge wiser and formulate better R&D proposals<sup>6</sup>. Finally, only promising PIs, with workable research problems, were approached to write detailed proposal to DST<sup>7</sup>. These proposals, processed through usual peer-review system, received favourable technical comments and therefore were generally recommended for approval, with few exceptions.

Four such meetings have already been organized on subjects such as chromosome and evolution, mammalian ecology, herpetological ecology and marine

invertebrates: reproduction and early development. In the past five years, 114 preliminary proposals have been examined, out of which 63 were invited for detailed presentation and finally 34 (29.82%) were found suitable for recommending to make proposals to DST (Figure 1). There have been three positive developments due to these interaction meetings; (a) the total number of proposals being submitted to PAC on animal sciences has gone up two-fold, i.e. in fifties from 1998 onward; (b) approval rate of the proposals was up from 20% in 1996 to 40% in 2000; and (c) coverage of the subjects has been increased.

1. Lakhota, S. C., *Curr. Sci.*, 2000, **78**, 1414–1415.
2. Balaram, P., *Curr. Sci.*, 1999, **77**, 1005–1006.
3. Report, Department of Science and Technology, 2000.
4. Report, Department of Science and Technology, 2000.
5. Iyer Sridhar, D. and Mukhopadhyaya, Ranadhir, *Curr. Sci.*, 2000, **79**, 1518–1519.
6. Sitaramam, V., *Curr. Sci.*, 2000, **79**, 136–137.
7. Gupta, Y. K., *Curr. Sci.*, 2000, **78**, 9.

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## FROM THE ARCHIVES



Vol. IV] APRIL 1936 [No. 10]

### Progress of science in India

In the course of his address welcoming the delegates to the Joint Session of the Scientific Societies held at Bangalore (10th–14th April), Sir C. V. Raman, Kt., F.R.S., N.L., pointed to three ideals which should guide research workers to secure for India a prominent place in the scientific map of the world. A fastidious attention to a high standard of quality in scientific research constitutes the first ideal; weeds shall have no place in the

garden of science and, to ensure a steady and wholesome growth and development, the weeds must be scrupulously kept out. The second ideal is to recognise the essential unity of knowledge. Science should not be conceived in terms of water-tight compartments even as a matter of administrative expediency. Administrative separatism leads to intellectual separatism and eliminates that essential factor which makes for intellectual co-operation among scientists pursuing different branches of knowledge, a co-operation which is necessary for the fruitful progress of science. Many of the outstanding discoveries have been made in laboratories which have stood for such an ideal, and where several scientific subjects are studied in close juxtaposition. To cite one instance, the discovery by von Laue, of the diffraction of X-ray, was made possible in the favourable environment provided by the Munich Laboratory where such stalwarts like Prof. Sommerfeld, the eminent mathe-

matical physicist, and Prof. Granz, the famous mineralogist and crystallographer, were working. Lastly, it is necessary to recognise the leadership which mathematical thought possesses in the progress of science. It is utterly futile to evaluate science on the gold standard. There is an amazing contempt for scientific work which does not bring an immediate monetary return. 'With all the emphasis I can command, I sound a note of warning of the dangers of this attitude' said Sir C. V. Raman. 'The deeper and fundamental aspects of science appeal to but a few who possess a disciplined attitude of mind. No progress can be achieved in any branch of science if we lose our respect for, or withhold support to, the fundamental science of Mathematics and Philosophy; the more we neglect these the less we advance.' Research, not founded on fundamental mathematical concepts, is like food devoid of vitamin, that entity which makes all the difference between calories and nutriment.