And now AcSIR

The Parliament has recently passed a bill regarding constitution of an Academy of Scientific and Innovative Research (AcSIR)[1]. The first few doubts that would enter the mind of the common man are whether the Council of Scientific and Industrial Research (CSIR) is to have a new name, whether it is to be abolished, or whether AcSIR is to function parallel to/under CSIR. It appears that CSIR will remain as such and AcSIR would be a body that awards Ph Ds to candidates enrolled for their doctorates in CSIR laboratories. The creation of AcSIR has raised many debates, including one in the Lok Sabha.

CSIR has been the premier research organization of the Government of India for over 60 years, completely devoted to research in major scientific areas. Though autonomous, it gets ~ 90% of its funds – for payment of salaries and execution of institutional research projects – from the government. Other government institutions such as the Department of Science and Technology, Department of Biotechnology, Indian Council of Medical Research and state councils of scientific research provide funds to support various projects. This is public money, though many CSIR research laboratories project it as money earned from non-governmental sources.

CSIR made a good mark in the international scientific platform in the 1980s, with excellent research papers of high citation index and journals of high impact factor. This was primarily because of the high degree of devotion, honesty and mentoring qualities of the then directors of its laboratories.

In creating AcSIR, the one important and justified motive is the benefit to the research students who work in CSIR laboratories under CSIR scientists and use CSIR facilities, but who have to register in another university under one more guide who only has an administrative control on the student and signs his thesis/research communications without contributing anything. In many cases, these students are harassed at the time of submission of thesis and later on for viva and other formalities. The formation of the new Academy would enable CSIR to be a working-cum-thesis-awarding centre for these students.

A Ph D in science is a coveted title in India and throughout the world and hence strict norms are followed during selection. A basic requirement to register for a Ph D in any university/institution in India is qualification in the NET examination. However, some universities conduct their own entrance examinations followed by an interview; a student can also pay a prescribed fee to register for a Ph D in some universities. In the context of AcSIR, the main crunch is in the selection of students.

So far, the main mandate of CSIR has been research and not teaching. Who are the researchers in these institutes? Besides permanent scientists and technical staff, a team of temporary researchers like junior research fellows (JRFs), senior research fellows (SRFs), research associates, research interns and project assistants work in CSIR institutes. JRFs are normally NET-qualified and become SRFs after two years if they have performed well. Candidates with a specific research experience may be directly appointed through interview as SRFs. The enrolment of candidates through an examination or a settled procedure is justified. The future will reveal the actual number of bright candidates (NET-qualified) who have been enrolled for Ph D in AcSIR.

The Academy will have to frame clear-cut guidelines regarding appointment of teachers – from the CSIR system or outside it. The situation should not be that the chief of the Academy picks his men for lucrative teaching positions through a 'committee system'. All scientists cannot become professors or associate professors. CSIR has already changed the nomenclature of its scientists, with effect from June 2011, as Chief Scientist, Senior Principal Scientist, Principal Scientist and so on.

Indian science and CSIR have been going through 'good' and 'bad' phases. Let us hope that the formation of this new Academy will eventually do some good for Indian science, and that this platform will not be used to fulfil personal goals and greed.

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Patalbhuvneshwar: a new sacred grove from Kumaon Himalaya

Sacred groves are traditionally managed forest patches of palaeo-endemics, which are conserved due to religious beliefs and represent climax vegetation. Sometimes these groves have higher richness and regeneration of medicinal and other economic plants than other reserve forests[1]. It is a myth that every grove is associated with local deities, ancestors or gods, and that all forms of vegetation in such a sacred grove are under the protection of the reigning deity and removal of even the dead wood is a taboo[2]. Studies on sacred groves of Kumaon Himalaya have been undertaken earlier[3–5] but Patalbhuvneshwar, a spectacular ancient cave site and one of the spiritual places of Uttarakhand, is reported here as a sacred grove, as the forest patch around the cave has a rich repository of biological resources along with cultural and indigenous knowledge and is conserved by the local communities on the basis of beliefs that 33 crore Gods and Goddesses reside here (Figure 1). It is approximately 160 m long and 90 ft deep limestone cave, which leads into a number of mysterious caves. Patalbhuvneshwar literally means the sub-terranean shrine of Lord Shiva, is a protected monument by the

Figure 1. Patalbhuvneshwar sacred grove.

Archaeological Survey of India. It is situated in Bhuvneshwar village, Berinag tehsil, Pithoragarh District, Uttarakhand and lies between 29°39.235′N and 80°05.240′E, encompassing an area of 3 ha at an altitude of 1618 m.

Patalbhuvneshwar is a magnificent repository of limestone rock formations which are believed to be 'Jatas', the hair of Lord Shiva and mouth of 'Shesnag' the snake of Satyug, although these figures are formed due to crystallization and deposition of minerals from water, which is still flowing inside the cave. There is a myth that King Rituparna of the Sun dynasty discovered this cave as mentioned in the *Skand Puran*. It is also believed that the Pandavas found shelter in these caves during their banishment. In AD 1191, Adi Shankaracharya selected this place for his prayer. Since then, the *Bhandaris* (priest family) are performing religious rites at the grove; however, some other communities like *Guro* and *Rawal* also pray in this grove. The temperature of the area is moderate during summer and sometimes reaches up to 28°C, whereas the winter season is long and temperature drops down to –1°C. The nature of the soil is acidic due to the presence of *Cedrus deodara* trees, and sometimes the colour of the soil changes from reddish to black. As the cultural core is surrounded by a rich cover of relict vegetation, it forms an integral part of the environment and biodiversity. The forest is sub-temperate type with a dense canopy of *C. deodara*, the sacred tree of Kumaon Himalaya.

The grove shelters a number of medicinal and other economically important plants and a vast knowledge on the multiferous uses of these plants is being preserved among local communities through folklore. During the study, 25 medicinal plants were found belonging to 24 genera under 17 families. Parmeliaceae of lichens is the dominant family followed by Apiaceae, Asteraceae, etc. of angiosperms. Among angiosperms Astercaceae members such as *Eupatorium adenophorum* are used to treat skin diseases of *Bidens pilosa* for toothache; *Taraxacum officinale* for kidney disorders; *Chaerophyllum acuminatum* and *Pimpinella diversifolia* (Apiaceae) for stomach disorders and ache; *Geranium ocellatum* (Geraniaceae) for headache; *Arisaema jacquamontii* (Araceae) for snake bite; *Osbeckia stellata* (Melastomaceae) for burns; *Viola canescens* (Violaceae) for cold, cough, fever and jaundice; *Berberis asiatica* (Berberidaceae) for eye disorder, fever, tonic and diabetes; *Quercus leucotricophora* (Fagaceae) as an energy drink; *Valeriana jatamansi* (Valerianaceae), a vulnerable plant species, for urinary trouble and stomach ache; *Oxalis corniculata* (Oxalidaceae) for piles, cuts and stomach problems; *Urtica dioca* (Urticaceae) for swelling and aerial part is used as fodder to enhance the milk of cattle; *Prinsepia utilis* (Rosaceae) for skin diseases and *Rhododendron arboreum* (Ericaceae) is used as an instant energy drink. Fronds and rhizome of pteriophytic species *Adiantum capillus-veneris* and *A. lunulatum* are used to treat cold, cough and eye diseases, whereas *Selaginella byopteris* is used for the treatment of skin diseases. Five species of Parmeloid lichens, *Parmotrema tinctorum*, *Ramalina reticulata*, *Flavoparmelia caperata*, *Everniastrum cirrhatum* and *Usnea pseudosinensis*, which are commonly known as 'Chadila' or 'Jhula' are used as spices in cold and cough.

Among the other potential plants, three species are edible (fruits of *Pyracantha crenulata*, *B. asiatica* and *Duchnesnia indica*), two are used as fuel (*Quercus leucotricophora* and *Cedrus deodara*), three are used in making agricultural implements and household goods (*Q. leucotricophora*, *P. crenulata* and *C. deodara*), one for timber (*C. deodara*) and one species is used for ornamental purposes (*A. capillus-veneris*).

Being a pilgrimage and tourist place, anthropogenic activities like traditional rituals, intense grazing, poaching, rampant collection and unsustainable harvesting of forest products are of great threat to the grove, coupled with low level of community conservation awareness. The needs of the local communities should be addressed, thereby respecting traditional rights over resources and resource use system. Traditional forest and land-use system is a great challenge for conservation initiatives and to save the natural and cultural resources long-term conservation and management programmes should be launched in a comprehensive manner.

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