

indirectly related to the earth sciences wherein the GSI plays an important role in granting environmental clearance for various mega projects.

The role of the GSI in assessment and mitigation of natural hazards, delineation of areas susceptible to environmental degradation and in supply of the geological inputs for major geotechnical projects is well known. GSI generates reliable geoscientific data pertaining to the earth by surface surveys and drilling. It conducts marine surveys for assessment of seabed mineral resources. It is also entrusted with compilation of the earthquake database for the country, preparation of seismicity maps for seismic hazard studies and seismic microzonation, and landslide hazard zonation for future planning.

One of the greatest assets of the Geological Survey of India is its long-term tradition of excellence in unbiased earth-science research. Part of that legacy is in its commitment to provide geochemical information necessary to confront urgent environmental challenges. Geochemistry provides information on the distribution of chemical elements to help, define and understand environmental problems. This information is then utilized to solve relevant problems in the society.

As the primary National Earth science agency, the GSI leads in the collection, interpretation, and dissemination of earth science information. Only geoscience

provides assets for sustainable development. Climate forecast by the IMD is strengthened by use of reliable geological data. The assessment and monitoring of the impacts of natural and man-made disasters/hazards has stressed the need for prediction and prevention tools. As geological processes form the basis for evaluating the effects of such hazards, prediction models have to be dependent on geoscientific data.

Keeping in view the GSI's expertise in seismic-prone areas, a semi-autonomous body under the IMD has recently been set up in collaboration with GSI to evaluate and propagate awareness on risks related to seismic hazards and to carry out microzonation mapping on 1:10000 scale in the near future. In this joint initiative of Government of India and UNDP, seismic microzonation studies of 38 cities and urban agglomerations in different seismic zones have been taken up under the umbrella of the DST.

An 'Expert Committee' constituted by the Government in 2002 specifically recommended formation of such a Ministry with GSI as a nodal constituent and an executive arm with the D.G. GSI as its Secretary. As per the news item (10 May 2006, Express News Service), this role is now reposed to proposed 'Earth commission' consisting of 12 members with the Secretary of Ministry of Earth Science as its Head. But no mention of the Geo-

logical Survey of India has been made. This is naturally an anomaly which needs to be redressed urgently. The vision document of the Department of Science & Technology on the issue of Earth Sciences has grouped several subjects which are the key operational areas of the Geological Survey of India.

GSI is the leader in all the fields of earth sciences employing over 2000 eminent earth scientists and is way ahead of the combined strengths of scientists in IMD and the Department of Ocean Development. Further, no mining is done by GSI which is the domain of the Ministry of Mines. It further stresses the need for inclusion of GSI in the Ministry of Earth Sciences.

In view of GSI's pivotal role in sustainable development, its serious concern over environmental change and its unique contributions in studies related to all the physical aspects of earth and natural hazard prevention and mitigation, it is urgently required that the policy makers incorporate GSI in the newly formed Ministry of Earth Sciences at the earliest in the interest of science.

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Regulation of NF-kB

This correspondence is in response to the review article by Tripathi and Aggarwal¹ with a brief insight into the approaches that can be taken in the context of its modulation of oral inflammation and apoptosis, since these biological phenomena have been associated in several oral diseases.

As described in the review, an understanding of the intricate regulation of NF-kB is pivotal, since its induction is also involved in stress, inflammation and paradoxical cellular context-dependent role in apoptosis². One of the major inflammatory side effects of chemotherapy hampering optimal dosage combinations and regimens is oral mucositis³.

Topical corticosteroids have been the drug of choice for treating oral mucositis,

which is a side effect of chemotherapy³. However, their limitations in terms of toxicity and generalized immunosuppression, should be borne in mind, in the development of complementary and alternative medical approaches³ as well as targeted modulation of its activity using molecular approaches. In this regard, there is an obvious need to adopt a combinatorial approach. For example, corticosteroids have been shown to inhibit fibroblast proliferation and fibrosis⁴, while apoptin is selectively toxic to cancer cells without affecting normal fibroblasts⁵. This approach could selectively modulate the fibroblast-mediated inflammation, using corticosteroids, while specifically targeting cancer cells, using biomolecules, like apoptin. However, the efficacy and feasibility of such an

approach should be tested *in vivo*, with a large sample size, before any firm conclusions can be drawn and hence, more studies are warranted and this is consistent with the currently accepted Evidence-Based Research (EBR) approach⁵. Different pathways of regulation of NF-kB, for example IKK- β , have already been identified and elaborated upon in this and other reviews².

While there are well-documented differences, between mice and humans, in the biological responses with respect to teeth in the oral cavity, mutations (transgenic mice) in several genes including *Tabby* (soluble TNF ligand – Ta), *downless* (TNF receptor – dl) and *Crinkled* (death domain adaptor – Cr) gene have resulted in abnormal tooth development displaying

ectodermal dysplasia phenotype and this pathway is involved in NF- κ B activation⁷. Hence, such an approach would provide an insight into the species-specific differences in dentition. On the other hand, recognizing the need to reduce the number of animal experiments along with the imperative need to adopt a multi-prolonged approach for the therapy of human oral diseases, genetically engineered human fibroblast in monolayer/epithelial co-culture systems, could be used to screen bioactive (natural/engineered), compounds with biopharmaceutical potential and aid drug development. This complementary and alternative medical approach may be a stepping stone paving the way for design

of future experiments to meet the stringent criteria set in the guidelines for EBR in medicine⁶.

1. Tripathi, P. and Aggarwal, S., *Curr. Sci.*, 2006, **90**, 519–531.
2. Karin, M. and Greten, F. R., *Nat. Rev. Immunol.*, 2005, **5**, 749–759.
3. Saadeh, C. E., *Pharmacotherapy*, 2005, **25**, 540–554.
4. González-Moles, M. A. and Scully, C., *Crit. Rev. Oral Biol. Med.*, 2005, **84**, 294–301.
5. Guelen, L., Paterson, H., Gaken, J., Meyers, M., Farzaneh, F. and Tavassoli, M., *Oncogene*, 2004, **23**, 1153–1165.

6. Chiappelli, F., Prolo, P., Rosenblum, M., Edgerton, M. and Cajulis, O. S., *Evid. Based Compl. Alt. Med.*, 2006, **3**, 3–12. Epub 2006 Feb 5.
7. Miletich, I. and Sharpe, P. T., *Hum. Mol. Genet.*, 2003, **12**, R69–R73.

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NEWS

International Cosmos Prize

The International Cosmos Prize, a top award in ecology, for 2006 has been conferred for the first time on an Indian scientist, Raman Sukumar, Professor at the Centre for Ecological Sciences, Indian Institute of Science, Bangalore. Sukumar is the 14th recipient of this annual award instituted by the Commemorative Foundation for the International Garden and Greenery Exposition at Osaka, Japan. The Cosmos Prize is given for achievements with a 'long-term perspective' derived from 'holistic' and 'interdisciplinary methods'.

While selecting Sukumar for this award, the International Cosmos Prize Committee noted his academic achievements over the past quarter century in the fields of ecology and conservation biology in the Western Ghats of southwestern India. In particular, his research on the ecological relationship between humans and elephants and the resolution of conflicts between them has been internationally

recognized as pioneering work in the little-explored field of the coexistence of wildlife and humans. The committee noted his comprehensive work on various aspects of elephant biology and conservation, including the use of telemetry to understand ecology and behaviour, survey of habitats and identification of corridors for preservation, and efforts to promote coexistence of humans and the world's largest land animal. This research has provided a scientific platform for the protection of wildlife over a broader area in Asia, a region where the human population is expanding rapidly.

The committee also observed that Sukumar has expanded his research through work on tropical forest structure and dynamics, explaining how past climate change has shaped vegetation patterns in the Western Ghats, and predicting how future climate change could impact the region's ecology.

At the more practical level, Sukumar had formulated and implemented many proposals on biodiversity conservation and the preservation of the natural environment in India. For 'its universal approach in preserving the natural environment and its efforts to conserve life amid the urbanization that is taking place throughout the world', the committee stated that Sukumar's work deserves the honor of the 2006 International Cosmos Prize, which aims for the 'harmonious coexistence of nature and mankind'.

The awards ceremony and commemorative lectures will be held in late October 2006 in Japan. Past recipients of the Cosmos Prize include Ghillelan Prance (1993), George Schaller (1996), Richard Dawkins (1997), Jared Diamond (1998), David Attenborough (2000), Peter Raven (2003) and Daniel Pauly (2005). More details can be found at <http://www.expo-cosmos.or.jp>