

## In this issue

### **B for Bone Health**

#### *Vitamin B<sub>12</sub> and bone density*

Healthy bones have higher bone mineral density. When bone mass decreases, men and women develop osteoporosis and become prone to fractures. Presently, parathyroid hormone injections are used to treat the condition. But when administered for more than two years, it could raise the chances of developing bone cancer. Hence, there is an urgent need to identify new therapies for osteoporosis.

Vitamin B<sub>12</sub> (B<sub>12</sub>) is vital for functions ranging from energy generation to DNA synthesis. But, recently, literature from clinical trials and animal research has hinted that B<sub>12</sub> may also affect bone mass.

To understand this association, Vijay K. Yadav and his colleagues altered the B<sub>12</sub> absorption mechanism in mice. They found that the B<sub>12</sub> deficiency specifically affected bone formation through the production of a liver metabolite – taurine. On **page 1632** read a Review Article where Yadav discusses his findings.

### **On Firmer Ground**

#### *Simulator for disaster management*

The intensity of destructions caused by earthquakes depends largely on the geography of an area. Therefore, studying ground motions of earthquakes can help us in identifying vulnerable areas.

Making such predictions is difficult due to the sheer size of the affected region. But using advanced technology, a team of researchers has developed a computer simulation that can make accurate ground motion predictions over a large terrain. They discuss the model in a Research Article on **page 1709**.

This model is based on the spectral finite element method, a highly accurate numerical technique. It makes use of the topography and bathymetry data in addition to/along with three-dimensional velocity models obtained from satellites and seismic

signals recorded on the earth. The predictions of the computational model were first validated with data recorded during the 2012 earthquake in the Sumatra region. The model was then used to simulate the ground motions of the 2004 Sumatra earthquake, also the third largest earthquake ever recorded.

### **Making the Right Choice**

#### *Selecting quality journals*

The number of publications is an important parameter for determining the research merit of scientists. But apart from the quantity of papers, publishing in quality journals is an important indicator of academic credibility. In this respect, most scientists rely on impact factor for choosing journals. However, recently, there has been a surge in the number of national journals with no systematic way of measuring their scientific value.

In a General Article on **page 1613** in this issue, Bhaskar Mukherjee from the Banaras Hindu University discusses an alternative scale for determining the quality of Indian journals. He designed his inclusion criteria by consulting various international databases that are used to index science journals.

According to his findings, some crucial determinants of a journal's quality are: regularity of publication, the disclosure of editorial board members and their affiliations, heterogeneity among board members, number of contributions from foreign authors, citations and a transparent and timely review process.

### **Toxic Mercury?**

#### *An alternative view*

Mercury is a toxic metal which causes brain defects and foetal abnormalities. Fatal cases of organic mercury poisoning were first reported in 1865. But, one of the most widespread cases of mercury poisoning dates back to 1950s in Japan where industrial effluents containing mercury were released

in the Minamata Bay. As people in the vicinity consumed fish, the metal accumulated in their body and culminated in mercury poisoning.

However, researchers from Varanasi argue that not all kinds of mercury are toxic. In a Review Article on **page 1650**, the researchers present various cases where other forms of mercury, mainly inorganic mercury, have been used in the Ayurvedic and Chinese systems of medicine.

In its sulphide form, mercury is sparsely absorbed by the body. This prevents its accumulation and subsequent toxicity. Unlike its organic variant, it does not cross the blood-brain barrier or the placenta. It is also not absorbed through the skin and can be used for making topical applicants.

### **Painting a Picture**

#### *From social media to mapping*

Most tourists capture and post pictures of the places they visit on their social media accounts. These images frequently carry metadata that reveals the date, time or the place where the image was made. A group of researchers from the Indian Institute of Remote Sensing (IIRS) have used this information to map tourist activity in Kedarnath, Uttarakhand.

This area is frequented by both tourists and pilgrims. But after a recent episode of a flash flood in June 2013, there has been a decrease in the number of visitors.

The researchers from the IIRS used images posted on Flickr to track the visitation of foreign tourists to Kedarnath. Because Flickr is not common among Indians, it increases the chances of identifying foreign visitors.

In a Research Communication on **page 1755**, the researchers provide an assessment of the technique and details on how it could be used by the tourism industry for planning and management.

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