

carcinogenicity. Thomas' talk was complemented by David Reif's (National Centre for Computational Toxicology, EPA, USA) on developing 'a computational framework for the profiling and prioritization of environmental chemicals'. Their group has developed a software tool for predicting the toxicity of chemicals by taking several descriptors from multiple sources, such as chemical properties, pathway data, *in vivo* and *in vitro* data, etc. Their system, as described, deals with multiple data from several sources but with a systematic prioritization scheme, the authors have developed a framework with a highly accurate decision making kernel. The questions raised were answered by his collaborator, Amar Singh.

The last talk of the day was by Søren Brunak (Denmark Technical University). A full house attended the talk, which was on 'a large-scale analysis of tissue-specific pathology and gene expression of human disease genes'. Brunak couldn't make it for the live presentation, and so his pre-recorded talk was aired. The talk was on creating, annotating and analysing a pool of genetic data pertaining to human disease and the pathways associated with these genes.

The second day kicked off with a quick recap of day one, followed by Anshu Bhardwaj's talk on 'Open source

drug discovery (OSDD) – an open collaborative drug discovery model for tuberculosis'. She focused on the OSDD, emphasizing on the models developed for tuberculosis. The process of joining the OSDD for budding graduates was discussed, and she mentioned how the growth of these groups has increased in the last couple of years.

This was followed by the 'virtual poster session'. For this session, each poster was displayed on screen for four minutes and was open for discussion. The attendees were asked to contact the poster authors for further discussions using a dedicated forum at bioinformatics.org. The poster session was then followed by a group discussion, which was observed by over 20 participants. The topic was 'Bioinformatics to systems biology in India: grand challenges; how to improve bioinformatics skills to match the expectations of the international community', and it was moderated by Andrew Lynn (Jawaharlal Nehru University, New Delhi) with the help of Raghava.

With Indian graduate students and scientists currently experiencing a great deal of exposure to the discipline via the internet, most of the student communities unlike the Western nations seldom get a chance to interact with distinguished scientists in real-time. With this event, we

have shown how a virtual conference can be organized with low-cost logistics and how such conferences can become a promising enterprise. MegaMeeting.com was used to host the speaker presentations as well as the hubs, while the free service Livestream.com was used to stream the video from MegaMeeting.com and other sources. Such virtual conferences can experience some technical glitches, and Inbix'10 was no exception, but there is promise that in time we will learn to overcome them.

It is in fact a part of the function of education to help us escape, not from our own time – for we are bound by that – but from the intellectual and emotional limitations of our time.

– T. S. Eliot

Prashanth Suravajhala* and **Jeffrey W. Bizzaro**, Bioinformatics Organization, Hudson, Massachusetts, USA; **Pritish Varadwaj**, Bioinformatics Division, Indian Institute of Information Technology, Allahabad 201 301, India; **Tiratha Raj Singh**, School of Biotechnology, and **Arun Gupta**, School of Computer Science and Information Technology, Devi Ahilya University, Indore 452 001, India.

*e-mail: prash@bioclues.org

Toads as astrologers of earthquakes

Toads can foretell earthquakes by changing their behaviour, suggests a research article published in the *Journal of Zoology*¹. Rachel Grant and Tim Halliday of The Open University, UK carried out this research at L'Aquila, Italy in 2009. According to this study, five days prior to the earthquake of magnitude >4.5, activity of male common toads (*Bufo bufo*) in the breeding sites declined by 96%. This pattern persisted for 10 days after the earthquake in the breeding site, which was 74 km from the epicentre. Even breeding pairs (both male and female together in amplexus) responded similarly, with 100% decline on the day of earthquake. There was no egg laying process (spawning) during the earthquake period.

Researchers correlated the change in toads' behaviour to perturbations in the ionosphere due to large earthquakes.

Ionosphere is the uppermost electromagnetic layer of the atmosphere, between 85 and 600 km from the ground, ionized by solar radiation. Perturbations in the ionosphere due to earthquake are detected at very low frequency and the low frequency electromagnetic signals emitted by them.



Common toad (*Duttaphrynus melanostictus*).

Although there are anecdotal reports on response of animals (be it ant, spider, fish, birds or mammals) to earthquakes. For rarity and unpredictability of earthquake events, this particular study is perhaps the only one specifically monitoring the effects before, during and after the earthquake and that too in amphibians. More importantly, toads can be used as a form of earthquake early warning system.

1. Grant, R. A. and Halliday, T., *J. Zool.*, 2010, 1–9.

K. V. Gururaja, Centre for Infrastructure, Sustainable Transportation and Urban Planning, and Centre for Ecological Sciences, Indian Institute of Science, Bangalore 560 012, India.
e-mail: gururajakv@gmail.com