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TWAS Science Frontiers

It was in 1983 that the late Professor Abdus Salam founded The Third World Academy of Sciences or TWAS at Trieste, Italy. Over the 25 years of its existence, and with over 870 Fellows from 90 countries from across the globe, it has graduated from being the 'Voice of the Scientists of the South' to one of the scientists of the world itself. With the changes that have occurred over the last several decades, the terms First, Second and Third World have lost their meaning. Thus, a few years ago, TWAS re-christened itself as The Academy of Sciences for the Developing World (yet retaining the more popular acronym TWAS). In this role, TWAS partners and works with other organizations such as the Abdus Salam Institute of Theoretical Physics (ICTP) at Trieste, UNESCO and the Institute of Advanced Studies of the UN University, the Inter-Academy Panel (IAP), InterAcademy Medical Panel (IAMP), International Council of Science (ICSU), and most of the national academies of science across the world. In India, it has strong academic links with JNCASR, CSIR and DBT laboratories. India has over 157 elected Fellows of TWAS.

TWAS is celebrating its 25th year in 2008 and the Silver Jubilee Meeting will be held at Mexico City in November 2008. Among the many things that are planned to celebrate this landmark year is a collection of commentaries from several of its Fellows, termed TWAS Science Frontiers. We present one set of 13 such articles in this issue of *Current Science*; another set will hopefully be published in the next a few months.

The TWAS Science Frontiers offers a set of commentaries, much along the lines of current trends, new developments, and current opinions on a variety of themes spanning the spectrum of science, technology, engineering, medicine and agriculture. Each of the authors is an expert in his/her own field, and commands great respect among peers across the world, yet has a great commitment to the country where he/she lives. It is this recognition and authority that is reflected in each of the 13 contributions published in the special section. Some of these span the broad canvas of the chosen field and its trends, while some others are more concerned with issues and problems that developing countries face and how these are, or can be, addressed. We at TWAS hope that readers would find these articles of interest. See special section.

The science (and economics) of the treatment for scorpion bite victims

Fortunately, only a very small minority of the readers of *Current Science* are likely to have experienced scorpion sting first hand; all would however be familiar with the extreme pain (and worse!) that accompanies it. In many parts of India, the rural poor, and especially their children are much less fortunate, and mortality due to scorpion bite is not insubstantial. Given associated socioeconomic and political milieu, finding a cure would neither lead to money nor honours; this ensured that organized science would have no time for it.

Fortunately for the patients, however, the lone crusade of Bawaskar changed all that, and the simple and inexpensive treatment based on prazosin, pioneered by him several decades ago demonstrated a spectacular drop in the scorpion sting related mortality. His single-handed efforts to make rural clinicians aware of his findings have saved countless lives in India, and (through rigorous documentation in prestigious journals like the *Lancet*), in other parts of the world. An alternative treatment for scorpion stings is based on antivenin, and is being quite actively promoted by its proponents. Opinions differ among specialists about the efficacy of the two treatments, though there should be no dispute about the relative costs. As pointed out by H. S. Bawaskar and P. H. Bawaskar (**page 1337**), the prazosin-based treatment is about one hundred times less expensive (Rs 30 vs Rs 3500). The article is not just about economics, however; an even-handed comparison of the two is presented, ably and rigorously supported by detailed clinical investigations. Utility of prazosin helps preserve and protect the natural resources essential for preparation of scorpion antivenin. One hopes that these findings will reach a much wider audience through the pages of *Current Science*. To know more about how a dedicated scientific effort can truly lead to a substantial reduction in human suffering, see page 1337.

Tunable surface functionality

While surface functionalization of silica nanoparticles is routinely practiced, traditional routes based on silane coupling agents give little room for tunability in terms of surface density of functional groups. Prathap Chandran *et al.* (**page 1327**) report a 'click' chemistry-based protocol that builds on the functionality imparted by the traditional silane coupling agents to afford an easy protocol to tune the density of the silica nanoparticle surface capping. They have used an appropriately modified molecule bearing a 'pyrene' moiety as the photoactive coupling agent enabling the study of surface functionalization variance. While in the article the authors decorate the silica surface with an alkyne group, by employing appropriate molecules silica nanoparticles decorated with azide groups can also be easily obtained. Then molecules bearing an azide group or an alkyne group can be 'clicked' to the above-mentioned alkyne capped or azide capped silica particles respectively. Thus the procedure reported in the article can be extended to obtain a wide variety of surface-decorated silica nanoparticles.