

## Enhancing ethical sensitivity in Indian science

The recent Guest Editorial in *Current Science*<sup>1</sup> titled 'Ethics and Indian science' has opened up a complex moral aspect daunting the scientific community. It highlights the lack of ethical guidelines in universities and science institutions, which is a serious concern. Half a century ago, scientists did not come across such grave concerns in science. But in recent decades, cases involving scientific misconduct have increased. Scientists receive more research grants now compared to a few decades ago, because Government agencies and business corporations expect rapid inventions in the essential health, food and energy sectors to meet the increasing developmental needs. As a result, scientists from academia and industries are increasingly engaging in collaborations by incorporating ethical components in research policies, as they directly deal with society<sup>2</sup>.

As a matter of fact, it is not easy to cover all loopholes while creating science policies, since ethical aspects often involve a complex and diverse range of topics from agriculture crops to environment protection, and from medicine/missile manufacturing to lab/zoo animal care. To make matters worse, some controversial technologies further create ethical dilemma with divisive subject matters that include genetic engineering, nanotechnology, genomic sequencing, digital rights, artificial wombs, artificial intelligence, cyber weapons and self-destructing weaponized drones. A decade ago, *Nature*<sup>3</sup> published an article that surveyed several thousand NIH-funded scientists in the United States and found numerous ethically questionable practices threatening the foundation of scientific integrity. So, the problem of ethics in science is not limited to India, but equally chronic in the US which has a tradition to enforce sound ethical policies.

The thorny issues of ethical transgression have often been discussed in various scientific forums, journals and conferences. Some shocking unethical practices linked to academic institutions in India

were discussed in a previous editorial in *Current Science*<sup>4</sup>. So, there is no short supply of discussions on this uneasy subject. Nevertheless, due to lack of legally binding ethical protocols in academic and research institutions, high-profile cases often end up in courts. Examples of recent provocative allegations legally investigated include plagiarism by the former Vice-chancellor of Delhi University and misconduct towards staff by the Director General of The Energy and Resources Institute, New Delhi. These cases show the lack of effective ethical policies in academic and research institutions to uphold professional standards with high ethical values.

India being the largest democracy nation in the world, the Government has left most of the ethical and professional responsibilities to institutions, rather than creating a centralized policy involving ethics in science. But, institutions are many; therefore, it might not be easy to develop ethical guidelines without formal mandate and guidance from the Government. Most ethical issues involving science have been left to individual scientists who are supposed to maintain high moral values while serving the society. So, ethics has often been taken for granted by institutions as the individual responsibility of teachers and scientists. When ethical problems arise, institutions review them on a case-by-case basis to assess implications of legal violations (criminal or civil), if any. The management then takes action and when contending parties are dissatisfied, they proceed take the judicial route for a verdict.

In order to tackle ethical issues institutionally, India needs a legally binding, centralized ethical policy, supported by detailed guidelines covering all known controversial aspects, starting from the highest institutional authorities in the Government including the Ministry of Education and the Ministry of Science and Technology, Government of India. Once detailed guidelines are in place, institutions can use them as baseline refer-

ence and further amend them, if needed. In order to come up with a generalized ethical policy, GoI, especially the Prime Minister's Office may need to take an initiative to set up a high-level strategic committee involving leading scholars to formulate guidelines, by coordinating both the Ministry of Education and the Ministry of Science and Technology. An expert committee can review all the existing policies, protocols and standard operation procedures from various institutions, including Government research laboratories and compile them as basic legally binding ethical policy guidelines. Then, the ministries can forward them to the respective academic, science and technology institutions for implementation. This way, the institutions will not have difficulties to enforce professional standards of ethics in science.

As Stephen Jay Gould said, 'Science is not a heartless pursuit of objective information. It is a creative human activity, its geniuses acting more as artists than as information processors'. So, the Indian scientific community must continue to engage politicians and policy-makers to rejuvenate an irrevocable ethical policy for academic and scientific institutions across the country before it is too late.

1. Mukhi, S., *Curr. Sci.*, 2015, **110**, 955–956.
2. Iaccarino, M., *EMBO Rep.*, 2001, **15**, 747–750.
3. Martinson, B. C., Anderson, M. S. and de Vries, R., *Nature*, 2005, **435**, 737–738.
4. Ramaswamy, R., *Curr. Sci.*, 2015, **109**, 1007–1008.

GOVINDASAMY AGORAMOORTHY<sup>1,\*</sup>  
JEGANATHAN PANDIYAN<sup>2</sup>

<sup>1</sup>College of Pharmacy and Health Care,  
Tajen University,

Yanpu, Pingtung 907, Taiwan

<sup>2</sup>Department of Zoology & Wildlife  
Biology,

AVC College,

Mannampandal 609 305, India

\*e-mail: agoram@tajen.edu.tw