MEETING REPORT

# Women in science*

An Indo-French seminar on 'Women in science' held recently, highlighted the scientific contributions and achievements of women working on collaborative Indo-French projects. The seminar also provided an opportunity for young women researchers to interact with each other as well as with experienced researchers.

The seminar had a multifold purpose: (1) To showcase the good research done by women scientists in the framework of the projects funded by the Indo-French Centre for Promotion of Advanced Research (CEFIPRA) over the past few decades. (2) To have an Indo-French dialogue to arrive at best practices for increasing women's participation in science and making it more efficient and effective, by learning from each other's experiences. (3) To provide a platform for young women scientists working in different areas of science to present their work, interact with the senior scientists participating in the seminar and with each other as well.

The seminar spanned two broad research areas: (1) health and life sciences and (2) physical and mathematical sciences. It included plenary talks by eminent women scientists from India and France, 20 scientific presentations by women researchers involved in joint Indo-French projects, and two poster sessions by more than 80 young researchers. The seminar showcased the good work done by French and Indian women scientists, both experienced and young researchers, with high-quality scientific presentations spanning varied topics from developmental biology and neuroscience, through nanocrystals, to galaxies and particle physics. These included two keynote addresses, one from each of the major themes of the seminar, by a French and an Indian scientist. The various posters presented also covered the same wide-ranging themes. Four of the posters were chosen for oral presentation. This was in keeping with the aim of emphasizing participation by younger women in the seminar. There was also a panel discussion on 'Issues on women in science: focus on Indo-French collaboration'. In addition, there was a session where information about opportunities for Indo-French collaborative research, particularly for the younger scientists was presented. The seminar was attended by almost 250 participants from France and India. Here we focus only on the deliberations in the context of issues on women in science, while noting that the scientific presentations were of the highest standard and catered well to the multidisciplinary nature of the seminar. It was a learning experience for all the participants, be it in science or issues of women in science, both in India and France.

The seminar was inaugurated by Anurag Kumar (Indian Institute of Science (IISc), Bengaluru), Eric Lavertu (Consul Général of France) and Debapriya Dutta (CEFIPRA). Manju Sharma (formerly at DBT, New Delhi) was the Chief Guest.

Accepting that there are very few women academicians in IISc, Anurag Kumar said that there are focused efforts to have more women as faculty members. He also noted that CEFIPRA has been a 'completely equitable, fair, and very successful' engagement between the Indian and French researchers. Delivering the welcome address, Rohini Godbole (IISc; one of the organizers of the seminar), said that the seminar is an extension of the activities of the Indian Academy Panel for Women in Sciences to the international level. Emphasizing that the issues faced by women in science are universal, she said that the seminar will provide a platform for a pragmatic discussion. She also hoped that through the seminar young women researchers would find 'role models that are nearer to them in space and time'. Debapriya Dutta gave an overview of women researchers in the 457 CEFIPRA projects that have been funded since the creation of the Centre in 1987: only 12% of the projects involve women. In addition, women have represented only 10% of the CEFIPRA Scientific Council members. These numbers must be improved, he emphasized. Jenifer Clark (Attaché for Science & Technology at the Embassy of France in India, one of the organizers of the seminar), welcomed and introduced the speakers. She spoke of her experience as a woman in science, who went on to a science policy career. Manju Sharma delivered a talk on 'Science and technology for women'. 'Though most of the gold medals in universities are bagged by women, only a few women become professional researchers, and only a small number of them reach the top of hierarchy in academic and research institutions' she said.

During the seminar, an august panel discussed the issues faced by women, and what could be done to improve the situation. The panel consisted of Graca Raposo-Benedetti (Institut Curie Paris), Ramakrishna Ramaswamy (Jawaharlal Nehru University, New Delhi), Usha Vijayraghavan (IISc), Veronique Pierron-Bohnes (Institute of Physics and Chemistry of Materials, Strasbourg, France), Sudha Nair (CEO of the first Biotech Park, Chennai exclusively for women), Namita Misra (L'Oréal India), Dipankar Chatterjee (IISc, Bengaluru) and Rohini Godbole. The theme of the discussion was 'Issues on women in science: focus on Indo-French collaboration'.

Women scientists currently have to work more than their male counterparts to go up the career ladder. This was the unanimous observation made by a panel comprising mostly of women scientists. In fact, according to an analysis presented at the seminar, in France's National Center for Scientific Research (CNRS), the male advantage for promotion is 1.32. The challenges faced by women pursuing a scientific career in France and India are similar, but more initiatives have been taken in France to improve the situation. In India too some programmes are in place to help women restart their career after a break; however, not many policy changes have taken place which will obviate the need for such schemes.

Anne Pepin (CNRS) and Vineeta Bal (National Institute of Immunology, New

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Delhi) set the stage for a panel discussion by sharing some statistics on the status of women in science in India and France respectively.

CNRS, the largest public basic research organization in Europe, has more than 33,000 employees, with 20 Nobel laureates, 12 Field Medal laureates, and one Tuning Award laureate. Out of 25,000 permanent staff 42.6% are women, a 0.4% rise since 1999. Internal assessments have revealed that most male scientists reach managerial positions by the age of 40, which is not the case with women. Since 1954, only three Gold Medals have been given to women; Gold Medal is the highest honour for a scientist in France. However, things are slowly changing with new initiatives like 'The Mission for the Place of Women at CNRS' and the European INTEGER (Institutional Transformation for Effecting Gender Equality in Research) project.

While Pepin's presentation was filled with data and specific measures from the French Government, Bal presented the scarce data available in the Indian context, and spoke about lack of action taken by the Indian Government on the recommendations of the DST Task Force for Women in Science. The data show how women are under-represented in science in India. For example, less than 10% of IISc faculty are women; less than 25% of those who appear for the Joint Entrance Examination for IITs are girls, and out of 461 Bhatnagar Awards that have been given, only 15 have gone to women. The importance of obtaining precise statistics on the Indian situation was agreed upon by all participants.

Rohini Godbole and Jenifer Clark moderated the discussions. The audience of about 230 people also participated actively in the discussions. Women from the audience called for a more flexible institutional and government structure for women scientists, training on alternate careers, better child-care facilities at workplaces, increasing Indo-French cooperation involving women researchers (cooperating also with male researchers), more transparency in the procedures to deal with sexual harassment in science, providing childcare facilities during scientific conferences so that women can participate, as well as the importance of having around 30% women in scientific evaluation committee, especially in those of the CEFIPRA, among other things.

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MEETING REPORT

# Plant science research*

Plant sciences have flourished enormously with more precise achievements during the last several decades and many new potential areas have been identified. Growing concern on food security and biodiversity conservation coupled with the advent of molecular biology has renewed our interest and opened up new horizons furthering our understanding of plant life. Despite this, the progression in plant science research is still facing a number of challenges and has vast opportunities with many new dimensions yet to be explored. A national symposium held recently aimed to stress upon future research in this core domain of biological sciences. The symposium was attended by over 150 delegates and eminent scholars across all disciplines of plant sciences from almost all parts of the country. The event took stock of current developments and scientific innovations in existing and emerging areas together with the present and future challenges in plant sciences. The main idea of the symposium was to deliberate on plant science research to make it more meaningful to the environment and society. The deliberation spanned several important domains such as how potentially the future plant science research can be applied in human welfare, especially food security, nutraceuticals, renewable energy, climate change, biodiversity conservation and other ecosystem services.

The symposium was inaugurated by Gautam Kalloo (Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur). The inaugural session was followed by a series of technical sessions which included 12 invited lectures by eminent scientists. These were held in parallel with poster presentations by scientists and scholars. Kalloo emphasized on the significance of plant science research for attaining global food security. He strongly advocated that broadening of genetic base, germplasm utilization and molecular breeding can result in a future strategy ensuring food for all. Other demanding tasks like soil fertility erosion, stress resistance and constraints in organic farming faced by Indian farmers were emphasized. Enhancing the organic farming for horticultural crops would be a potential approach, both in terms of quantity and quality of produce and for maintenance of horticultural ecosystems. The need for re-orienting plant science research and implementation strategies to suit decision-makers to ensure safe and sufficient food for all, and concern for inclusive bio-based economic development to reduce inequality between farming and non-farming sectors were explained in detail. Innovative research needs to be coupled with an institutionalized mechanism that could help farmers to understand our research and developmental pursuits and resolution of discontent among them. This has relevance due to the fact that an increase of 1% of GDP from agricultural sector can increase the purchasing capacity in the poorest deciles by more than 2.5-fold to the rest of the economy. Despite this merit, the share of agriculture in GDP continues to decline. Thus, strengthening agriculture-oriented research in plant sciences would contribute to reducing both poverty and inequality in the society.

A. K. Tripathi (Central Institute of Medicinal and Aromatic Plants, Lucknow) stressed upon the significance of *Azospirillum*, a phytostimulator (root promoter) in non-leguminous crops. He uncovered the fact that a translational coupling between sigma and anti-sigma

*A report on the two-day national symposium on 'Emerging Trends and Challenges in Plant Science Research', organized by the Centre of Advanced Study in Botany, Banaras Hindu University, Varanasi during 19–20 February 2015.