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Newsletter of the Indo-French Centre for the Promotion of Advanced Research



Across the Innovation Chain

editor's note

We begin the New Year, welcoming the new Co-Chairperson of the Governing Body of CEFIPRA from the Indian side, Prof. Ashutosh Sharma, Secretary, Department of Science and Technology, Government of India.

The resolution of New Year for CEFIPRA is to strengthen its core programmes and expand its activities across the knowledge innovation chain for bringing value to the Indian and French S&T systems. We are aware that in this effort we have to travel many uncharted paths with many new partners.

CEFIPRA's core competency in supporting original investigations to gain new scientific knowledge, directed or not directed, towards the specific practical application has evolved in tune to the requirements of the Indo-French scientific communities. However, in consonance with the innovation policies of both the nations, CEFIPRA's role has expanded over recent time to support prototyping, pilot-scaling and pre-commercialization phases. Our experiences in this direction through Public Private Partnership (PPP) have been captured in this edition. Being at the nucleus of Indo-French S&T ecosystem, we have shared our new initiative in using large scale scientific research facilities in creating global common goods.

Some awardees of the dedicated mobility support programmes have shared their experiences on science and beyond in other partnering country. It pronounces the enabling role of CEFIPRA. Hope you will like their views. An organisation's performance should always be measured by the external stakeholders. Our lead article has justified the same.

This year, CEFIPRA will continue to evolve through new mechanisms of supporting knowledge generation, transformation, bringing solutions for economic and societal development to both the traditionally friendly nations. We will keep you posted about our efforts.

A bientôt! Till the next time!



Dr. Debapriya Dutta
Director, CEFIPRA

Welcome to the New Indian Co-Chair of the Governing Body of CEFIPRA, Prof. Ashutosh Sharma

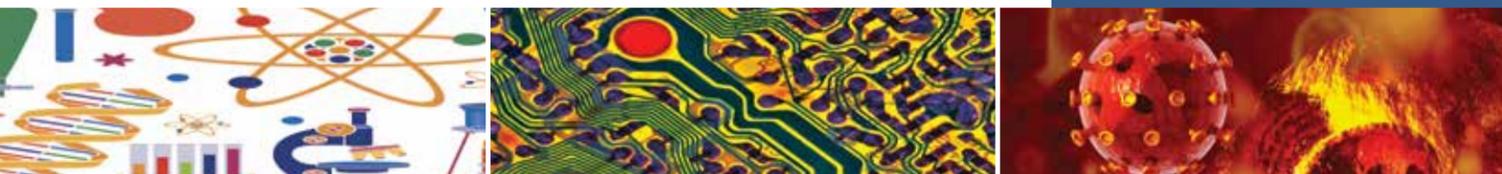
CEFIPRA welcomes new Co-Chairperson of the Governing Body of CEFIPRA from the Indian side, Prof. Ashutosh Sharma, Secretary, Department of Science and Technology, Government of India. He was a professor (1997), an Institute Chair Professor (2007) and the Head (2003-05) of Chemical Engineering, and the founding Coordinator of Nanosciences Center and Advanced Imaging Center at the Indian Institute of Technology at Kanpur. He has received his PhD from the State University of New York at Buffalo (SUNYAB; 1988)



Prof. Sharma has served on the Governing Boards/Councils of over 15 prominent scientific institutions in India and has had a broad international experience as a research faculty and as a Member of the European Research Commission. He is a recipient of numerous honors and awards including the inaugural Infosys Prize in Engineering and Computer Science, TWAS Science Prize of the World Academy of Sciences Bhatnagar Prize, Homi J. Bhabha Award of UGC and the Life-time Achievement Award of the Indian Science Congress.

Prof. Sharma is an elected Fellow of The Indian National Science Academy, The Indian Academy of Sciences, The National Academy of Sciences, India and Indian National Academy of Engineering, The World Academy of Sciences (TWAS) and the Asia-Pacific Academy of Materials. He has also served on the Councils of the first two.

Prof. Sharma was the lead Principal Collaborator from India for the CEFIPRA supported project on "Equilibrium, Dynamics and Morphology of Thin Films: Relationship of Film Stability and Morphology to Macroscopic Parameters of Wetting". He guided the scientific activities of CEFIPRA as a member of the Scientific Council during 2008 - 2011. CEFIPRA also has the honour of having him as a member of the Vision Group of CEFIPRA. CEFIPRA is confident to enhance its contribution for the development of Indo-French S & T collaboration under his able guidance.



CEFIPRA

An Important Actor in Indo-French Innovation Value Chain

CEFIPRA's extensive association over the years with researchers, policy makers, industry bodies among others in the two countries has created a network that incorporates both the key features, namely, the social capital (benefits accruing due to social structures that the network creates) and the network capital (economic benefits due to network membership). It has also supported scholars/research groups in both the countries in a variety of ways.

1987; to create an institutional mechanism that would further enrich the research partnership between the two countries. Figure 1 demonstrates the seminal role that CEFIPRA has played in catalysing research partnership between the two countries. One can observe, particularly in later period, how CEFIPRA has been playing a major role in promoting innovation partnership between the two countries.

CEFIPRA is an important outcome of the Indo-French bilateral partnership. It was established with much anticipation in

A strong desire has been witnessed in both the countries to take forward their fruitful partnership. The two countries have given



Prof. Sujit Bhattacharya
(AcSIR)
Senior Principal Scientist
(CSIR-NISTADS)

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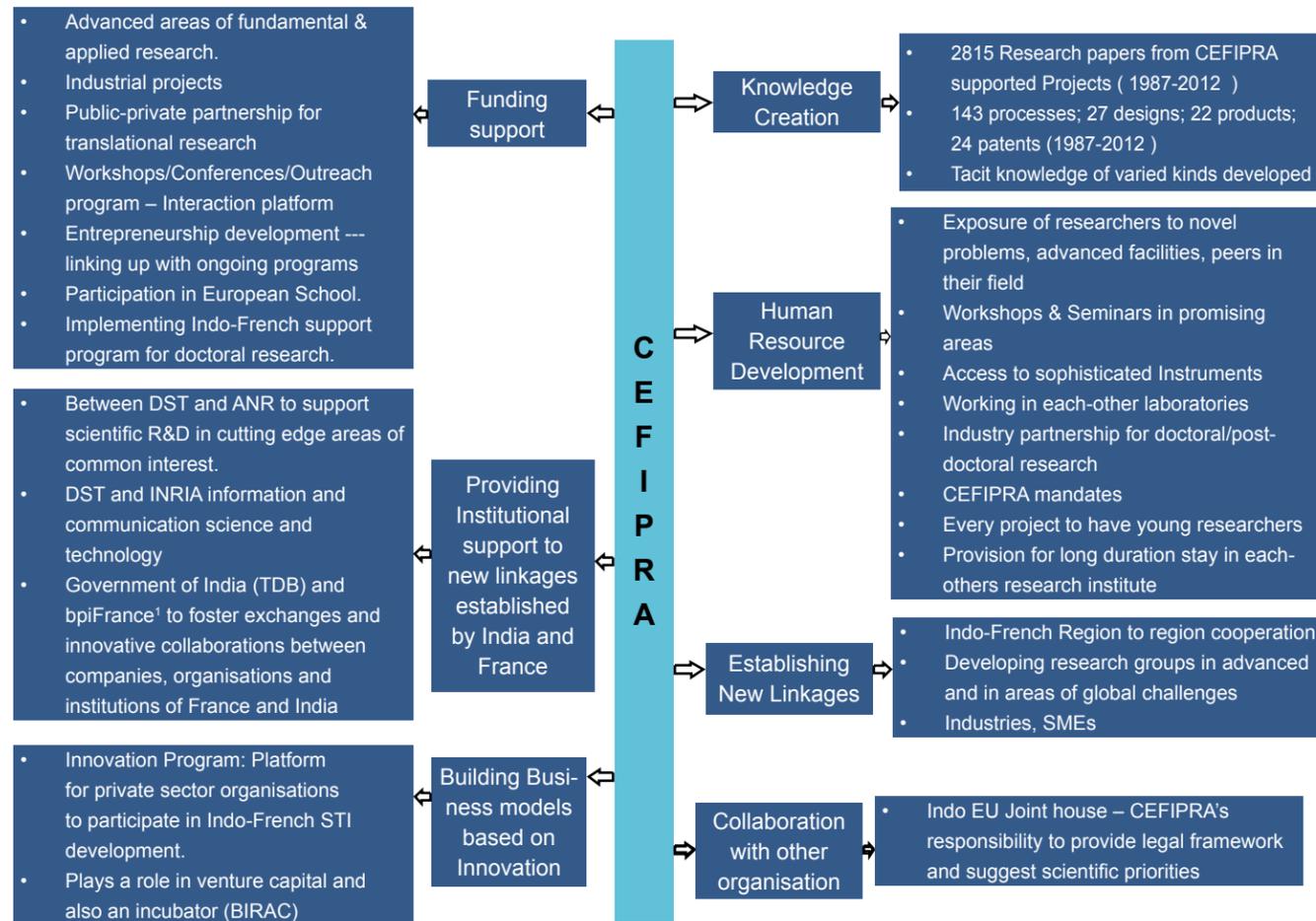


Figure 1 : CEFIPRA's Role in Strengthening Science Technology & Innovation between India and France

a strong stress on utilising their complementary strengths for promoting innovation which can help in exploiting the knowledge generated for creating desirable economic and/or social outcomes. Mechanisms are being evolved to provide opportunity to different stakeholders such as private industries and SMEs of both countries to productively participate in the process.

CEFIPRA: BUILDING KNOWLEDGE CAPITAL

One key activity of CEFIPRA is to support joint research by scientists of the two countries by funding projects in new cutting edge, niche areas and areas of major developmental significance where support is not forthcoming from normal channels. Many of the projects supported by CEFIPRA have led to strengthening of national research capacity or developing new research groups. CEFIPRA, for example, identified nanotechnology for project support when the Indian Nanotechnology Support Program had not even started. The tangible outcomes emerging

from CEFIPRA projects demonstrate a rich knowledge repository. An example of this is the climate-chemistry model, developed through CEFIPRA support which is now globally recognized as an important climate model. Similarly a project focusing on prognostic values of cytokines in cervical cancer developed "8 oxodG" as a marker to reflect a patient's chances of overcoming the lesion and predict response to radiation therapy. Another CEFIPRA project on factors prevailing for the selection of mycorrhizal strains in ash pond has led to the development of a better understanding of ash ponds and factors that help to develop fly ash reclamation technology. Many more important research outcomes have emerged from several other projects too numerous to be recounted in limited space. Projects supported by CEFIPRA under its Industrial Research Programme have also made significant impact. A good example of this is the improvements in the process for production of the anti-progestrone drug 'misoprostol' for commercial market.



CEFIPRA: AN IMPORTANT ACTOR IN INDO-FRENCH INNOVATION VALUE CHAIN

CEFIPRA's new activities amply exhibit that it is trying to strengthen existing linkages and also creating opportunities for developing new linkages with multiple individual and institutional stakeholders who have evolved into self-organised networks. Some of the novel new initiatives of CEFIPRA demonstrate how it is linking up closely with the ever changing Science, Technology and Innovation (STI) landscape of both the countries. Figure 1 gives a comprehensive overview of these new initiatives from CEFIPRA.

Recognising the scope and benefits of transnational regional synergy, CEFIPRA has started the Indo-French Region to Region Cooperation Program. The programme is aimed at providing opportunities to state level stakeholders in France and India to exploit complimentary capabilities at various stages of the knowledge innovation chain through focused dialogue leading to a joint identification of collaborative possibilities and priorities.

CEFIPRA is also progressively and pro-actively strengthening academia-industry linkages in both the countries. The academia-industry projects, and processes developed in partnership with organisations in the industrial sector are visible outcomes of these new initiatives. The French Industry is now showing keen interest in India and has opened R&D centres here. CEFIPRA is trying to reach out to new stakeholders so that it can play an effective role in exploiting the knowledge base of both the countries and in the process also strengthen industrial capabilities. A glimpse of this approach is manifested in the meetings CEFIPRA

is conducting with Indian SMEs to expose them to collaborative opportunities with French partners.

Among other novel initiatives is the partnership between Saint Gobain Research India Ltd. and CEFIPRA to support research in "sustainable habitat for hot and/or humid climate". This 5 year programme will support research in this field through the Saint-Gobain Post-Doctoral Fellowship.

Going forward, CEFIPRA is gearing itself to play a major role in providing crucial seed stage funding. Its recent partnership with BIRAC (Biotechnology Industry Research Assistance Partnership) is a step in this direction. Both organisations have come together to support Indian and French biotech start-ups and SMEs for promoting the innovation in both the countries.

CEFIPRA is now being seen as a successful model for bilateral S&T partnership and has influenced the evolution of similar mechanisms with other countries. A good example of this is the Indo-EU Joint House for Science and Innovation which has taken CEFIPRA as the benchmark institutional model to chart its own course and evolution. Success of CEFIPRA has placed an onerous responsibility upon its own shoulders.

The recent surge of dynamism in the Indo-French relations banks on CEFIPRA to synergize the strengths of the two countries and STI space. CEFIPRA has achieved tangible success addressing its core objectives, i.e. to support cutting edge research that leads to social and economic impact, identified when it was established more than 25 years ago.

Keeping these objectives constantly in focus will be critical as CEFIPRA moves ahead serving its mission. ●

Research & Development through Public Private Partnership: Experiences of CEFIPRA

The phenomenon of globalisation has encouraged, as well as made it possible, for publicly funded R&D agencies and the industry across international borders to enter into a dialogue to identify opportunities for collaborative initiatives that help achieve common goals. Innovation is the key word today in S & T community. There is a strong desire in India as well as France to create an enabling environment that not only nurtures and strengthens the Science, Technology & Innovation (STI) ecosystem of both the countries but also bolsters the ability to translate knowledge towards creation of global common goods.

India has declared the period of 2010-2020 as 'Decade of Innovation'. The Government of India has put a renewed emphasis on the urgent need to synergize science, technology and innovation. The Science, Technology and Innovation Policy 2013 is in furtherance of these pronouncements aiming to bring a fresh perspective to bear on innovation in the Indian context. Government of India has directed considerable efforts especially to promote flow of knowledge from the national laboratories and institutes of higher learning to the industry for technology development & commercialization. Promoting incubation programmes in premier technology institutes is one of such steps.

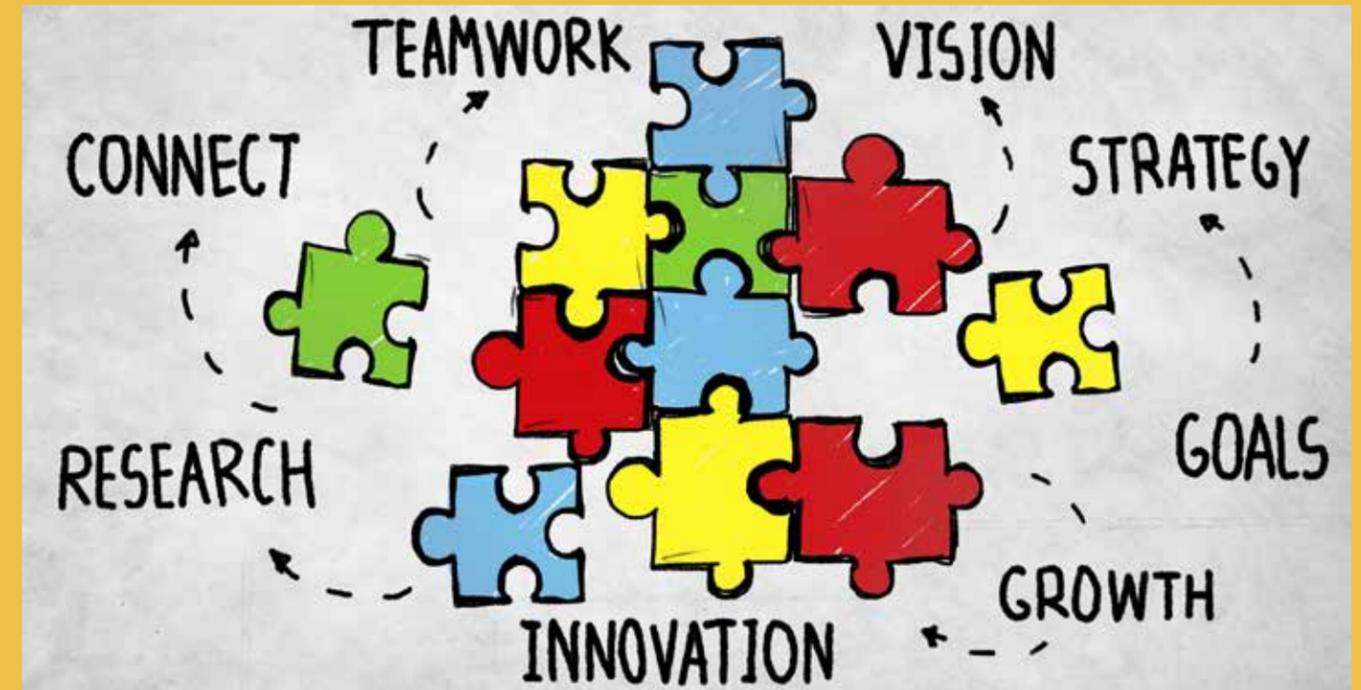
In parallel, France brought out its National Research and Innovation Strategy 2009, with identified priority areas that correspond not only with societal challenges but also with new economic opportunities with strong innovation potential requiring interdisciplinary research which involved mobilization of talent of top level researchers. Report on "Science Diplomacy for France" (2013) amplifies that priority has to be given to scientific cooperation with prominent countries (including emerging economies), for S&T collaborations by targeting high-

level S&T institutions and striking a balance in terms of emphasis on fundamental research and innovation. It gives priority to innovation and better coordination between business intelligence players (economic missions and companies) and those carrying out the science watch.

While Government of India has established several Software and Technology Parks in the country, the Government of France also has established Industrial Clusters (pole de competitivité) which facilitate alignment of Industry and Academia. Aerospace Valley is one such prominent cluster in southern France with multinational companies like Airbus and Boeing being an integral part of it. In India, the Bangalore Cluster is also rapidly gathering momentum to establish itself on an international scale.

CEFIPRA has been promoting Industry-Academia linkages since year 2002 as a part of its Industrial Research Programme (IRC). The programme has allowed participation of industries as active partners in research collaborations with knowledge organizations for products and process improvement & development. The collaborations promoted under IRC leveraged the research skills of the academia to enhance the competitiveness of the involved industrial partners. Till date a total of 25 projects have been supported under IRC in diverse areas of Catalysis, Information & Communication Technology, Genetics, Health Care Technologies, Material Science, Aerospace, etc. A prominent success of projects under the IRC is the drug 'Misoprostol' developed by an Indian private sector company (AVRA Labs). The drug is already being sold in South and South-East Asia, while the World Health Organisation is gearing up to make its usage global.

The fact that IRC is mainly driven by knowledge partners results in 'Technology Push' solutions for the Industry.



This approach has not found many takers in industry since the research product coming out of these projects is not necessarily aligned with the industry requirements. To fill this gap, CEFIPRA has recently opened a new category of activity called "Innovation Programme" to create effective public-private partnership, which can be categorised according to CEFIPRA's role:

CEFIPRA as Collaborator

CEFIPRA-SGRI PPP Programme

SAINT-GOBAIN RESEARCH INDIA LTD. (SGRI), a cross functional R&D center of Saint Gobain based in Chennai, a subsidiary of Saint Gobain, SA France. SGRI works for all of Saint-Gobain's industrial activities and

Sustainable Habitat for Hot and/or Humid Climates Programme

Project Title	Indian PI and Institution	Photo	French PI and Institution	Photo
Development of Design Guidelines for Building Envelope in Tropical Climates	B. Bhattacharjee IIT Delhi		Vinay Natarajan & Mr. Arunvel. T SGRI	
Structural Performance of OGS Buildings: GFRG vs. Conventional RC building systems	Devdas Menon IIT Madras		Satish Gunturi SGRI	
Multi-Objective Optimization of Day Lighting Systems	Benny Raphael IIT Madras		Arunvel T SGRI	
Controlled Experiment for Estimating the Energy Saving Potential and Indoor Thermal Comfort Improvement by use of High Albedo Surfaces on Pitched Concrete Roofs.	Vishal Garg IIT Hyderabad		Rathish SA SGRI	

feature

drives initiatives to develop sustainable habitat solutions for the region. These are envisaged in the form of transversal programmes such as energy solutions for hot climates, energy efficiency in buildings, affordable mass housing etc.

Saint-Gobain is a world leader in the habitat and construction market, designs, manufactures and distributes building and high-performance materials, providing innovative solutions to the challenges of growth, energy efficiency and environmental protection.

In order to leverage the knowledge base of public funded R&D institutions, SGRI joined hands with CEFIPRA to conceptualise and launch the “Sustainable Habitat for Hot and/or Humid Climates” programme. The programmes core objective is to support collaborative research in the broad area of sustainable habitat through competitive grants.

As many as 25 proposals were received against the Call for Proposals under the programme. After a rigorous scrutiny and discussions, a total of five proposals were short listed for evaluation by a joint CEFIPRA-SGRI expert committee. Based on the decision of the committee four proposals were recommended for support.

CEFIPRA-Airbus Group: Aerospace Programme

CEFIPRA signed a Letter of Intent (LOI) in October 2013 with Airbus Group, France for creating a new innovation initiative called the ‘Airbus-CEFIPRA Aerospace Programme’.

The programme aims to foster research in India in the field of aerospace, particularly related to topics such as avionics, composite materials, high performance computing, nanotechnology, structural health monitoring, miniaturization of Smart systems based on MEMS/NEMS.

In addition, the letter of intent envisages the launch of ‘Airbus Postdoctoral Fellowship’ in India. Directed towards young French scientists, it will sponsor 2-3 postdoctoral fellows annually to pursue aerospace related research work in top universities and R&D institutions of India. The duration of the programme will be 5 years starting from 2014.

CEFIPRA as Facilitator

CEFIPRA-BPI France-BIRAC: Joint Call for Expression of Interest

CEFIPRA, Biotechnology Industry Research Assistance Council (BIRAC), a Section 25 (Not-for-Profit) Company under the Ministry of Science & Technology, Government

of India and Bpi-France, a public investment bank in France, have launched a Joint call for Expression of Interest (JEOI) for Indian and French SME/Companies/Startup in the area of red biotechnology upto commercialization.

Proposals shall have at least one company from India and one from France each as joint applicant. A registered company from India along with the registered company from France or Vis-à-vis shall be the Joint applicants (1+1 model).

Companies can have co-applicants and collaborators from academia, research institution, national laboratory, clinical establishment. Partners can be a for profit-company, not-for-profit organization, society, limited liability partnership or a trust.

The JEOIs are invited for development of industrial application oriented health technologies in the domains of Cancer, Cardio-Vascular Diseases and Infectious diseases.

The last date for application is 20th March 2015. More details can be ascertained from CEFIPRA's website www.cefipra.org

National Entrepreneurship Board-ALSTOM Incubator Center

Alstom is a world-wide company addressing the world's energy and transport markets. Alstom has recently formulated its innovation policy and a global innovation group. Under this initiative, the Corporate Innovation Group of Alstom approached CEFIPRA for launching an Incubator Programme in India. The objective of the programme is to be a forefront player in setting up innovation ecosystems in emerging markets in close linkage with local governmental organizations, local universities and NGOs active in the country.

Appreciating this opportunity for furthering Franco-Indian collaboration in innovation under its PPP programme, CEFIPRA approached the National Entrepreneurship Board (NEB), Government of India which has a mandate to support similar activities for launching the Incubator Programme in partnership with each other. Simultaneously CEFIPRA also approached Karnataka State Council for Science and Technology (KSCST) for providing the local anchorage for the programme. KSCST sent a Request for Expression of Interest to 13 universities in Karnataka. Responding to the request, seven universities agreed to participate and stake their claim for establishing the incubator in Karnataka. After evaluation of applications received, Jain University was selected for establishing the NEB-ALSTOM Incubator. Jain University has applied for the registration of a Section 25 Company for the purpose and is expected to complete the registration process shortly. ●



INDO-FRENCH HEALTH TECHNOLOGY PROGRAMME CALL FOR EXPRESSION OF INTEREST

Biotechnology Industry Research Assistance Council (BIRAC), Bpifrance Financement (Public Investment Bank) and Indo French Center for the Promotion of Advanced Research (CEFIPRA) invite Joint Expression of Interest (JEOI) for development of industrial application oriented health technologies in the areas of Cancer, Cardiac and Infectious Diseases upto **PRE-COMMERCIALIZATION STAGE**

Theme of the call

- Identification of new targets or biomarkers that leads to development of sensitive, specific and affordable diagnostic tests.
- Development of new therapeutic options in terms of therapeutic protein or drugs
- Affordable process development for existing therapeutics having potential implication on effective Industrial Scale-up for cost effective production.

Who can apply

Project proposal shall have at least one start-up / SME from India and one from France each as joint applicant (1 + 1 model).

They can have Co- Applicants and Collaborators from Academia, Research Institution, National Laboratory, Clinical Establishment, Profit Company, Not-for-Profit Organization, Society, LLP, Trust or Foundation.

Please visit www.cefipra.org or www.birac.org for eligibility details and other information.

For more information, please contact at:

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Enabling Role of CEFIPRA in Mobility Support

Mobility of scientists and researchers across international barriers offer a wide range of benefits at multiple levels. Apart from personal development and career enhancement, researchers benefit from diversifying their competence by working on projects in universities/companies in countries other than their own. For higher education institutions, a high level of mobility among students – incoming and outgoing – is a sign of quality and rigor. Finally, at a country's level, mobility enhances international competitiveness, stimulates effective job markets and supports the interaction between citizens.

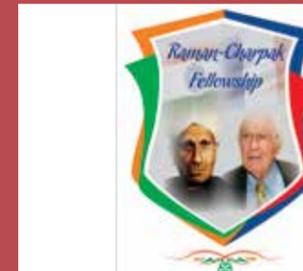
Since 2013 CEFIPRA's scientist and student mobility programmes have made significant contributions in terms of creating futuristic networks between the individual scientists and S&T institutions of India and France. Mobility support programmes focus on students allowing them to get exposed to different scientific & technological ecosystems, work in a variety of work settings and also get a better understanding of social and cultural norms of the other country. This enhanced understanding is expected to lay a robust foundation for lifelong professional and inter-personal interactions and enhanced coordination for future collaborative research programmes.

Another reason for CEFIPRA's emphasis on having a dedicated mobility support programme is considering the rising trend of young entrepreneurs taking to global scale. Scientific and technological institutions across India and France are promoting entrepreneurship through formation of spin-off companies involving faculty. Young scientists having exposure to each other country's S & T ecosystem are more likely to expand their joint efforts cutting across the knowledge innovation value chain. We requested two students who received mobility support from CEFIPRA to share their experiences with ENSEMBLE



RAMAN CHARPAK FELLOWSHIP PROGRAMME

The fellowship programme is implemented by CEFIPRA with joint funding from the Department of Science and Technology (DST), Government of India and the Science & Technology Department of the French Embassy in India, Ministry of Foreign Affairs, Government of France. So far, 28 Indian and 9 French PhD students have availed this opportunity.



Science in India: My Experiences about it, and beyond

I am a PhD student in astrophysics at the Paris Observatory. CEFIPRA's Raman-Charpak Fellowship enabled me to spend four months at the Indian Institute of Science, Bangalore, during the course of my Ph.D. Though my collaboration with Professor Chanda Jog there had started as a short-term internship right before my Ph.D., the Raman-Charpak fellowship in 2013 gave me the opportunity to pursue and finalise the work that had been started. It was truly an enriching experience- academically, culturally and personally.

My Ph.D. deals with star formation and its implications on the dynamics of galaxies. Galaxies used to form much more stars ten billion years ago, and one of the key questions is to understand how star formation decreased since then, and why? A part of my work is to use observations of distant galaxies to understand how stars were formed ten billion years ago, and to run numerical simulations to better grasp the processes at stake. My collaboration with Chanda Jog enabled me to approach the issue of star formation from a different angle. The analytical approach as well as the properties of the interstellar medium we had to take into account was new to me. This work led to a refereed publication in the *Astronomy & Astrophysics Journal* and was later presented in international conferences and seminars. We now plan to develop simulations to test our results and

to generalize our calculations.

This stay in India enabled me to participate in the life of the astrophysics research team at the Indian Institute of Science, and to interact with researchers there and in other Indian institutes. I could also visit the Pune Inter-University Centre for Astronomy and Astrophysics (IUCAA) for a week, and attended seminars and talks at the Raman Research Institute (RRI) and Indian Institute of Astrophysics (IIA), Bangalore. I also gave talks at the IISc and at the IUCAA.

I have always been interested in science popularization and teaching, and my stay in India provided me with the amazing opportunity to start writing for the "In School" edition of *The Hindu*, targeting young students. I am now regularly contributing to its science page with articles about astrophysics, and I really enjoy writing these articles and answering the questions readers may have.



Jonathan Anthony Freundlich
Physical Science
Paris Observatory



It was also great to live and to work at the IISc campus in Bangalore. The campus is indeed wonderfully quiet and green despite being in the middle of the city, and surrounded by lively neighbourhoods. The weather in Bangalore is just perfect, and it is at a base to discover southern parts of India. Living in India for a while permitted me to discover an incredibly rich culture from the inside and make lifelong memories: from amazing temples to ruined cities and forts, Goan beaches and Bharata Natyam festivals, from paddy fields and sugar

cane harvest and jaggery in the countryside to busy markets in jam-packed cities and spotless new malls, from addictive new kinds of food like idlis, masala dosas and pani-poori, to shiny weddings and colourful festivals.

Last but not the least, my stay in India was a wonderful human experience. Living in campus hostels allowed me to meet many other students and make lifelong friends. I will definitely come back to India, sooner than later. ●



ESONN TRAINING PROGRAMME

As a part of its mandate to create enabling opportunities for students in India and France, CEFIPRA made an agreement with University of Joseph Fourier, France in 2013 to obtain slots for Indian doctoral students in the prestigious Euro School of Nano Science and Nano Technology conducted every year in Grenoble. The benefits of such support is enormous since the exposure to the students, will enable them to become the future S & T ambassadors between India and France.

In 2013, six students and in 2014, 8 students from India were supported by CEFIPRA for this training. CEFIPRA has now invited the applications from the suitable candidates for the 2015 course which will begin from August 23rd to September 12th 2015 at Grenoble – France.



Biplab Pal

DST-INSPIRE fellow,
University of Kalyani
West Bengal

Science in France: My Experiences about it and beyond

Participating in European School on Nanosciences and Nanotechnologies (ESONN-2014) at Grenoble was a great learning curve for a young student like me. It was my first visit to a European country and during the three week stay I learned new things, not just about science but also about culture and traditions.

The arrangements were precise and in order. Still the organizers were always ready to help a participant for any kind of problem. The programme kicked off on 25th August, with a warm welcome over a wine and cheese party. President of CNRS joined in and informed the participants about the history of the ESONN school.

ESONN School is special as it gives equal emphasis on the laboratory work along with

the theoretical lectures. In fact, half of the programme is devoted to practical work in advanced laboratories in different institutes in Grenoble. This gives theoreticians a chance to understand what is actually happening in the real life experiments, and the other way around as well.

There were a total of 46 participants from different countries all around the world. My interactions with most of them were really fruitful. I got to know many new things about different perspectives of my current areas of research and also about the modern areas of research in the field of nanoscience in general. There were two sessions – session A (Nanoelectronics) and session B (Interface between Physics, Chemistry and Biology), with common lectures every day intended for all participants. It shows that nanoscience and nanotechnology is not bound to any particular branches of science, but is rather interdisciplinary.



There were several invited eminent scientists from different countries in Europe who taught us different courses on nanoscience and nanotechnology. There were some excellent lectures on near-field microscopy, mesoscopic transport, molecular electronics, spintronics, MOSFET physics and technology, single electron effects, technologies of nanofabrication and so on. These lectures not only helped us develop a better understanding of the theories behind different mechanisms but also demonstrated through real life experiments. The classes were extremely interactive, enabling students to contribute their points of view. The scientific interaction with the participants during the poster session was really fruitful for me.

The facilities, the instruments and the technologies they use in all the labs were truly world-class which I thoroughly enjoyed being a theoretical researcher. I learned about simulation techniques and tools which would be useful for my research.

One thing I must mention is their “clean room” facilities – the clean rooms they have for some sophisticated experiments and fabrications were really amazing!

There were lectures that were not directly related to science, but were extremely interesting! Especially the lecture on “The role of ethics in science” that highlighted the importance of ethics in pursuit of science and the lecture “From science to business with nanotechnologies” that dwelled upon business potential of nanotechnology as a business and the linkages between science and business.

Eight participants, including me, from India at ESONN’2014 came from different parts of the country representing diverse cultures and linguistic backgrounds. Not only did we become good friends, each of us also became good friends with several other students from other nationalities which made the whole experience even more satisfying and rewarding. It was really a nice and memorable experience for me to interact with such a diverse set of individuals both scientifically as well as socially.

Though I had heard about it before, I witnessed and was impressed with the cleanliness in Europe as well as habit of people being punctual for various commitments. Overall the stint at Grenoble was a great learning experience, not only from the point of view of Physics, but in a variety of other ways as well.

I am really grateful to CEFIPRA for giving me this opportunity. It has given me lot of encouragement and confidence to do well in my future research. Whatever I have learned from there, I shall try to utilize those for my future research works.

I strongly believe that to support the young Indian doctoral students to participate in the ESONN training programme is a great initiative taken by CEFIPRA, and they should continue with it in future. This gives a great opportunity for the young strongly motivated Indian PhD students working in the field of nanosciences to get an excellent international exposé which is really beneficial for their future research work and also helpful to build a long-term collaborative research network between India and France. ●

Probing the Invisible

Using large scale scientific research facilities to find unsolved answers of science has always been the need of the scientific communities. Efforts have been made in this regard by many Governments across the world to setup such facilities at international levels. One of the biggest examples of a jointly created facility is the Large Hadron Collider (LHC), the world's largest and most powerful particle accelerator. LHC, the largest machine in the world was built in collaboration with over 10,000 scientists and engineers from over 100 countries. It also involved hundreds of universities and laboratories. LHC continues to operate at the very boundaries of scientific knowledge as model of international collaboration in science and technology.



Over the last fifty years, France has put in determined efforts in developing its own major physics and astronomy research facilities. Recently shared scientific computing networks, like GANIL (National Large Heavy Ion Accelerator) at the national level, or the European Organisation for Nuclear Research (CERN) and European Southern Observatory (ESO) at the European level, or the International Thermonuclear Experimental Reactor (ITER) and Atacama Large Millimetre Array (ALMA) at the global level, are valuable assets for maintaining the high quality and competitiveness in S&T research. Indeed, the hosting of a major research instrument in France automatically creates a new hub for international scientific elite and provides opportunities to boost academic cooperation. (See the table that depicts the area wise Large-scale facilities managed by the CEA-CNRS).

While the above story is for France, the Government of India has done its own bit in building up large scale facilities in India. The Raja Ramanna Centre for Advanced Technology (RRCAT) in Indore, reactors like Dhruva, CIRUS and Apsara in Bhabha Atomic Research Centre, Mumbai are only a few examples. These examples have served as pillars for numerous international exchanges.

Understanding the need of the hour, CEFIPRA has taken an initiative to develop an Indo-French Network Programme for Synchrotron Science. CEFIPRA and Synchrotron SOLEIL signed an MoU on 14 October 2014 to facilitate the use of the Soleil Synchrotron Facility in France by Indian scientists. While SOLEIL has agreed to make beam-time available at its synchrotron facility in Saclay based on its usual evaluation/review

process, CEFIPRA would consider providing the financial support to the selected successful scientists/researchers to carry out experiments during the beam time assigned by SOLEIL. As a follow up of the MoU, a Call for Proposals under the programme was launched on 10 November, 2014. A total of two proposals were recommended for support by an expert committee. ●

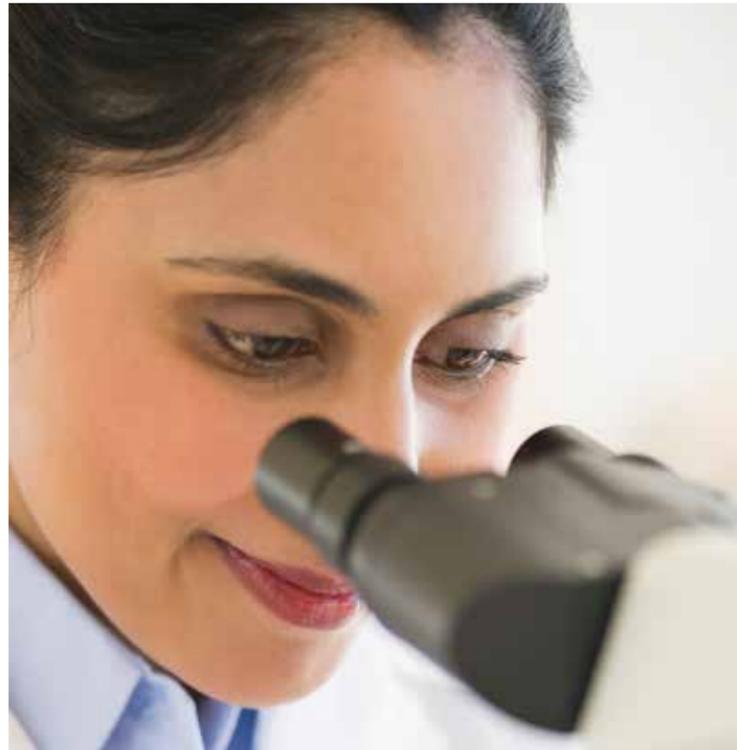
Large-scale facilities managed by the CEA-CNRS

Neutron sources Orphée-laboratoire Léon Brillouin (LLB) Laue-Langevin Institute (ILL)	Saclay European facility in Grenoble
Light sources Soleil Synchrotron ESRF XFel	Saint-Aubin, near Saclay European facility in Grenoble European infrastructure under construction in Hamburg (Germany)
Nuclear and high-energy physics Ganil& Spiral 2 Cern-LHC, Fair	Caen Global infrastructure near Geneva European facility in Darmstadt (Germany)
Environment Icos	European infrastructure network: under construction
Supercomputing Genci, Prace	(Grand équipement national de calcul intensif) European infrastructure network: under construction

INDO-FRENCH SEMINAR

Women in Science Through CEFIPRA

CEFIPRA since its evolution has had no specific focus of promoting women scientists as a part of its research programmes. Out of 457 projects that have been supported by CEFIPRA, there have been 56 projects (17%) which have involved women scientist (s) either from India or from France as Principle Collaborators. Out of these 56 projects, 14 projects had women PIs from both sides. These projects involved 52 Indian Women scientists (3 Indian PIs received 2 projects each) & 55 French Women scientists.



Recognising this gap, and to highlight the scientific contribution and achievements of women PIs in collaborative Indo-French projects and to offer a learning opportunity for young researchers, in particular young women, about Indo-French cooperation in science, CEFIPRA supported an Indo-French Seminar on “Women in Science Through CEFIPRA” from 3-5 February 2015 at the Indian Institute of Science,



Bangalore. The event was jointly organized by the Science Department of the French Embassy in India; Indian Academy Panel for Women in Sciences (an initiative by the Indian Academy of Sciences) and the Indian Institute of Science. The seminar provided an opportunity to have a focused dialogue involving experts from both countries on possible mechanisms and best practices for increasing participation of women in scientific pursuits. The seminar also served as a platform for young women scientists working in different areas of S&T landscape to present their work as well as highlight the challenges they face in pursuing their objectives.

The inaugural session was attended by distinguished dignitaries from India and France including Prof. Anurag Kumar, Director, Indian Institute of Science; Mr. Eric Lavertu, Consul Général of France; Dr Debapriya Dutta, Director of CEFIPRA and other eminent scientists. The Chief Guest on the occasion was Dr Manju Sharma, Former Secretary to the Govt. of India, Department of Biotechnology, Principal Advisor to the Dept. Science and Technology, Gujarat, Distinguished Women Scientist Chair, NASI, Allahabad. The seminar was attended by almost 250 participants, coming from both France and India.

Noting that there are indeed very few women academicians at the Indian Institute of Science, Prof. Anurag Kumar underscored the importance of focussed efforts to draw in more women to faculty positions in scientific institutions. He also highlighted that CEFIPRA represents a “equitable and very successful” mechanism of engagement between Indian and French researchers. Delivering the Welcome Address, Prof. Rohini Godbole,

Indian Institute of Science, and one of the organisers of the seminar said that the conduct of the seminar will not only serve as a forum for meaningful discussions, it will also help young women researchers to find “role models that are nearer to them in space and time”.

Mr. Eric Lavertu, Consul General of France in Bangalore, said, “the seminar provides a very good opportunity for researchers to interact with each other.” Dr. Debapriya Dutta, Director of CEFIPRA gave an overview of professional profiles of women researchers in the 457 projects that have been funded by CEFIPRA since it was set up in 1987. Dr Jennifer Clark, Attaché for Science & Technology at the Embassy of France in India, spoke of her experiences as a woman professional in S&T field who branched out into the field of science policy.

The seminar spanned across two broad themes: 1) Health and Life sciences and 2) Physical and Mathematical Sciences. The program included plenary talks by eminent women scientists from India and France, presentations by women researchers involved in joint Indo-French projects, and two poster sessions involving more than 80 young women researchers. There was also a panel discussion “Issues on Women in Science: Focus Indo-French Collaboration”. Some of the main recommendations of the panel were to include more women in Indo-French panels and committees, especially the CEFIPRA Scientific Council, and to make it compulsory in Indo-French conferences and seminars to involve at least one woman speaker.

The importance of affirmative action to increase gender equality in research, and in particular with regard to Indo-French science, was agreed by all. ●

Seminar on "Organic Semiconductor Gas Sensors"10-12, February
2015 Reims, France

The Indo-French Conference on "Organic Semiconductor Gas Sensors" was organized jointly by ITODYS, Université Paris Diderot, and TPD Bhabha Atomic Research Centre (BARC), Mumbai at Reims during 10-12, February 2015. The conference was supported by CEFIPRA. The conference focused on the utility of organic semiconductors i.e. molecular semiconductors and conducting polymers, which exhibit electrical conductivity in a wide range i.e. from insulator to semiconductor to metals for their potential applications in gas sensors. Attended by 10 scientists from India and 22 from France, the conference had a total of 32 oral presentations on various aspects of organic gas sensors. The conference provided a platform for the scientists of both countries to interact on topics of mutual interest so as to conceptualise

and formulate new collaborative research projects for funding consideration from CEFIPRA. Several state-of-the-art issues were discussed, including:

- Detection of interstellar organic molecules to understand and find the origin and distribution of life in the universe.
- Role of high-charge carrier mobility for development of highly sensitive organic semiconductor sensors.
- Potential of organic-organic as well as inorganic-organic nanocomposites as a route for sensitivity and selectivity enhancements.

New ideas generated through the seminar were:

- Importance of implementation of nanostructures in sensing layers such as TiO₂ and other nanorods.



- Importance of surface chemistry to attach sensing layers.
- Future role of surface science in sensor devices to track biomarkers in the universe.
- New ideas emerged, for example implementing carbon nanotube based sensing layers on gravimetric transducers.
- New characterization techniques, such as, Kelvin Probe techniques for sensor evaluation.

The conference was the first in terms of giving scientists from India and France working in the area of organic semiconductors a common platform for discussions. The formal and informal discussions during the three day period allowed them to know about each other's experimental facilities as well as exchange notes on sensor fabrication. The meeting has also created possibilities of new collaborative research projects in the near future. ●

Visit by CNRS – Biology Group6 February
2015

A group of scientists from CNRS- Biology Group visited CEFIPRA on February 6, 2015. The visit took place under the programme for the Institute of Biological Sciences (INSB) Mission in India to introduce the delegation to CEFIPRA's activities under various programmes for promotion of science and technology collaboration between India and France. The purpose of INSB mission to India was to launch new collaboration and to study new opportunities in the field of Biology. The group was headed by the new Director, CNRS India, Dr. Srinivasa Kaveri.

Dr. Debapriya Dutta, Director, CEFIPRA welcomed the delegation with a presentation on "CEFIPRA-Role in Biological Sciences" to explain the CEFIPRA's contribution in Biological Sciences across the knowledge innovation value chain. He also presented a few Projects of CNRS in the area of Biological Sciences approved through CEFIPRA.

It was discussed that based on the CEFIPRA supported projects with CNRS in different domains; system level programmes need to be developed. ●

Visit by Trainees of Indian Institute of Public Administration26 February
2015

The Indian Institute of Public Administration, New Delhi has been organizing the training programme entitled 'Science, Technology and Emerging Trends in Governance' sponsored by the Department of Science and Technology, Government of India since 2012. The programme targets scientists and technologists from various governmental agencies. The 4th training programme in the series was successfully organized at the Indian Institute of Public Administration from 23rd to 27th February, 2015.

Dr Debapriya Dutta, Director, CEFIPRA delivered two lectures on 'Aligning Science, Technology and Governance' and 'Science Diplomacy, International Collaboration' respectively. The participants also visited CEFIPRA for an interactive session on key areas of scientific collaboration, research and deliberated upon various issues including potential of Indian S&T community, and prospects of advanced research collaboration.



The participating Scientists and Technologists highly appreciated and evinced interest in the pioneering work undertaken by the Indo-French Centre for the Promotion of Advanced Research. ●

MOBILITY OF SCIENTISTS SUPPORTED UNDER CEFIPRA PROJECTS
 JANUARY- FEBRUARY 2015

S. No.	Project Title	Name Institutional Affiliation	Institution Visited	
1	Multilingual word spotting for degraded documents	Umapada Pal Computer Vision and Pattern Recognition, Indian Statistical Institute, Kolkata	Université François Rabelais Tours Polytech Tours	
2	Tropical cyclones in the Bay of Bengal: Oceanic response and air-sea interactions	Jerome Vialard Laboratoire d'Océanographie et de Climatologie: Experimentation et Analyses Numériques, Paris	National Institute of Oceanography, CSIR, Goa	
3	Mechanisms of Lysine acetyltransferase (KAT/HAT) activation by small molecule activators and use thereof in memory	Anne Laurence Boutillier Faculté de Psychologie, Laboratoire d'Imagerie et de Neurosciences Cognitives, Director of Research CNRS, Strasbourg	Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur	
4	Interstellar and intergalactic medium at high redshift: Reservoir for galaxy formation	Patrick Petitjean Institut d'Astrophysique de Paris, CNRS Paris	Inter University Centre for Astronomy & Astrophysics, Pune	
5	Gene resources from polluted soils	Fraissinet Tachet Laurence Ecologie Microbienne, Université Lyon 1, CNRS, Villeurbanne	Department of Biotechnology, Thapar University, Patiala	
6	Distant obscured galaxies from GMRT and Herschel	Alain Omont Université Paris Sud XI, Institut d'Astrophysique Spatiale, Orsay	National Centre for Radio Astrophysics, Tata Institute of Fundamental Research, Pune	
7	Tropical cyclones in the Bay of Bengal: Oceanic response and air-sea interactions	Christian Ethe Laboratoire d'Océanographie et de Climatologie: Experimentation et Analyses Numériques, Paris	National Institute of Oceanography, CSIR, Goa	
8	Studying the role of rpoN, the alternative sigma factor, in the pathogenicity of R. solanacearum, the causal agent of bacterial wilt in plants	Stephane Genin Laboratoire des Interactions Plantes Micro-organismes, INRA, CNRS, Castanet Tolosan	Department of Molecular Biology and Biotechnology, Tezpur University	

MOBILITY OF SCIENTISTS SUPPORTED UNDER CEFIPRA PROJECTS
 JANUARY- FEBRUARY 2015

9	High anisotropy molecular magnets: Synthesis & Modelling	Jean Pascal Sutter Laboratoire de Chimie de Coordination, CNRS, Toulouse	Solid State and Structural Chemistry Unit, Indian Institute of Science	
10	The Immuno-Psychiatry in South India Study (IPS): Immunogenetic and Immuno-phenotype Characterization of Major Psychoses	Ravi Philip Rajkumar Department of Psychiatry, Jawaharlal Institute Of Postgraduate Medical Education And Research, Puducherry	University of Paris Diderot	

MOBILITY OF STUDENTS SUPPORTED UNDER CEFIPRA PROJECTS
 JANUARY- FEBRUARY 2015

Domain	Name Institutional Affiliation	Institution Visited	
Pure and Applied Chemistry	Nimesh Shah Department of Chemistry, Indian Institute of Technology Bombay	CEA-Saclay Gif sur Yvette	
Life and Health Sciences	Swati Dudhal Institute for Stem Cell Biology and Regenerative Medicine, Tata Institute of Fundamental Research	UMR 787 INSERM/UPMC, Faculté de Médecine, Groupe Hospitalier Pitié-Salpêtrière Paris	
Pure and Applied Chemistry	Mitasree Maity Department of Organic Chemistry, Indian Institute of Science	Institut des Sciences Moléculaires, Université Bordeaux 1 CNRS UMR 5255	
Life and Health Sciences	Dhruvi Patwardhan Centre for Neuroscience, Indian Institute of Science	Hôpital Robert Debre, INSERM U 676 Paris	
Pure and Applied Chemistry	Abhishake Mondol Centre for Interdisciplinary Sciences, Tata Institute of Fundamental Research	CRPP, UPR 8641 University Bordeaux	
Life and Health Sciences	Supriya Khedkar National Centre for Biological Sciences, Tata Institute of Fundamental Research	UMR 7238 CNRS University Pierre and Marie Curie	

RAMAN CHARPAK FELLOWS 2015

Domain	Name Institutional Affiliation	Institution Visited	
Chemical Sciences	Saravanan Kumar CSIR-CENTRAL ELECTROCHEMICAL RESEARCH INSTITUTE	UNIVERSITY PARIS SUD	
Life Sciences	Nidhi Chadha University of Delhi	Institut des Neurosciences Cognitives et Intégratives d'Aquitaine	
Physical Sciences	D. Prabhu CSIR - National Chemical Laboratory, Pune	Laboratoire de Chimie de la Matière Condensée de Paris (LCMCP)	
Mathematical and Computational Sciences	Francois Nunzi University of Paris, Diderot	Indian Institute of Science, Bangalore	
Medical Sciences	Morgat Clément University of Bordeaux	Institute of Nuclear Medicine and Allied Sciences, Delhi	

Farewell to Dr. Dominique Aymer and Welcome to Dr. Sridhar Kaveri

Dr. Dominique Aymer Bid Adieu to India after heading the CNRS Office in India as a Director for four years at a ceremony held on 5th February, 2015.

CEFIPRA welcomes Dr. Sridhar Kaveri as the Director, CNRS Office in India. The bridges of scientific cooperation between CNRS and India built by Dr. Aymer will be further extended and strengthened by his successor Dr. Sridhar Kaveri.

Dr. Sridhar Kaveri has been actively involved in Indo-French research activities. Dr. Sridhar Kaveri received his Veterinary Medicine degree in Bangalore India, and his Ph.D. at the Pasteur Institute, Paris. After joining CNRS in 1990, Dr. Kaveri has been leading a research team involved with the basic and applied aspects of immunopathology and immunotherapy. He has received several research awards.



Dominique Aymer



Sridhar Kaveri

CEFIPRA has supported a project on "Catalytic antibodies in immune-mediated disorders" which was headed by Dr. Kaveri as lead Principal Collaborator from France. CEFIPRA hopes to have increased interaction with CNRS through more collaborative research activities during Dr. Kaveri's tenure as Director, CNRS Office in India. ●

Indo-French Centre for the Promotion of Advanced Research (CEFIPRA) is India's first and France's only bilateral organisation which has been in existence for the past 27 years, committed to promote collaboration between the scientific communities of the two countries across the knowledge innovation chain.

CEFIPRA has joined hands with Université Joseph Fourier, Grenoble, France for supporting Indian doctoral students to participate in the European School on Nano-sciences and Nano-technologies (ESONN) in Grenoble, France - Session 2015 (August 23rd 2015 - September 12th 2015).

ESONN 2015 (12th edition) is a three-week course aimed at providing training for graduate students, postdoctoral and junior scientists from universities and laboratories in the field of nanosciences and nanotechnologies in Physics, Biology and Chemistry. The academic and practical courses cover the elaboration, functioning and characterization of nano-objects. The details of which are <http://www.esonn.fr> and ESONN 2015 flyer (Link).

APPLICATION PROCESS

1) Applicants for the school should first register through ESONN web-site (<http://esonn.fr/>) as per the instructions given.

2) After applying to ESONN, Indian candidates (only doctoral students) interested for CEFIPRA-ESONN Fellowship may apply to CEFIPRA with the following documents:

- Candidates must provide CEFIPRA their application for ESONN in the prescribed format.(Link)
- A detailed CV indicating complete educational background from higher secondary/PUC or equivalent onwards, specifying subjects, marks and class obtained.
- Please specify GATE Score/CSIR-UGC Fellowship/NET results. (enclose scanned copies)
- List of publications (if any)
- Details of doctoral research programme (2-3 Pages)
- Two References (1. From PhD guide and 2. From a professor who knows the applicant for some years)
- Application should be labelled as "Application for ESONN-CEFIPRA Fellowship 2015" and should be sent to E-mail ID: submit@cefipra.org

Funding Support:

Only the Selected candidates from both sides (ESONN and CEFIPRA), will be considered for CEFIPRA-ESONN Fellowship 2015. The expenses related to the participation of these students shall be borne by the CEFIPRA and the details of the fellowship support are:

- Letter for gratis visa.
- ESONN Fees (Including boarding and lodging charges at ESONN).
- To and fro Air tickets (International travel) plus the travel expenses to the nearest international airport.
- Travel Insurance.
- A total amount of Euro 500 for the complete duration covering daily expenses /any other utility expenses/ miscellaneous expenses.

Kindly note:

- Application send by a candidate through post or to any other E-mail ID will not be considered for selection.
- Applications received after due date or received only at one side will not be considered for evaluation.
- The results for CEFIPRA-ESONN Fellowship 2015 will be declared on CEFIPRA website: www.cefipra.org.

**Application
Deadline
May 12th, 2015**

**For more details please contact:
Dr Debapriya Dutta**

Director

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Forthcoming **Events**

- Indo-French Workshop on “Scientific Cooperation for Agricultural Research”; 9-11 March 2015, NASC Complex, New Delhi, India.
- Indo-French seminar on "New trends in Electron Device Modeling"; March 30 to April 1, 2015, Bangalore.
- Indo-French workshop on “Digital Manufacturing & Prototyping”, 13-15 April, 2015; Mahindra Ecole Centrale, Hyderabad.



Indo-French Centre for the Promotion of Advanced Research (CEFIPRA) is a model for international collaborative research in advanced areas of science and technology. The centre was established in 1987 with support from Department of Science & Technology, Government of India and the Ministry of Foreign Affairs, Government of France.



For further information please contact:

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