



EMBASSY OF ITALY  
NEW DELHI

# INDO-ITALIAN COLLABORATION IN SCIENCE & TECHNOLOGY

## INSTITUTIONAL FRAMEWORK AND MEANS

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# Italy's long tradition in science

- **The University of Bologna - the first University in the western world:** the institution that we today call the University began to take shape in Bologna at the end of the eleventh century, when masters of Grammar, Rhetoric and Logic began to devote themselves to the law. In the nineteenth century a committee of historians, led by Giosuè Carducci, attributed the birth of the University to **the year 1088**.
- **The first woman in the world to graduate** in 1678 at the University of Padua: Elena Lucrezia Cornaro Piscopia graduated in Philosophy



# Some great names from the Past

- **Leonardo Da Vinci (1452-1519)**- the areas of his scientific studies included aeronautics, anatomy, astronomy, botany, cartography, civil engineering, chemistry, geology, geometry, hydrodynamics, mathematics, mechanical engineering, optics, physics and zoology
- **Galileo Galilei (1564-1642)**- created a telescope
- **Alessandro Volta (1745 -1827)** known for the Volta battery - un predecessor of the electrical battery, has discovered methane in 1777, invented the electrical condenser
- **Luigi Galvani (1737 - 1798)** - studies in the field of bioelectricity
- **Galileo Ferraris (1847 - 1897)** - constructed the first alternating current motor (1888)

# Italian Nobel Laureates

## In Chemistry

**Giulio Natta**, in 1963, for stereospecific catalysts for selective stereochemical polymerisation of  $\alpha$ -olefines (production of polypropylene)

## In Physics

**Gugliero Marconi**, in 1909, in recognition of his contributions to the development of wireless telegraphy

**Enrico Fermi**, in 1938, for his work on induced radioactivity. He is particularly known for his work on the development of the **first nuclear reactor**, and for his contributions to the development of quantum theory, nuclear and particle physics, and statistical mechanics

**Emilio Segre**, in 1959, discovered antiprotons

**Carlo Rubbia**, in 1984, for work leading to the discovery of the W and Z particles at CERN. The W and Z bosons are the elementary particles that mediate the weak interaction. Their discovery was a major success for what is now called the Standard Model of particle physics

**Riccardo Giacconi**, in 2002 for pioneering contributions to astrophysics, which have led to the discovery of cosmic X-ray sources

## In medicine

**Camillo Golgi**, in 1906 for his studies on the structure of the nervous system. He discovered a method of staining nervous tissue which would stain a limited number of cells at random, in their entirety. This enabled him to view the paths of nerve cells in the brain for the first time. He called his discovery the "black reaction" (in Italian, *reazione nera*), which later received his name (Golgi's method) or Golgi stain. The reason for the random staining is still not understood.

**Daniel Bovet**, in 1957 for his discovery of drugs that block the actions of specific neurotransmitters

**Salvador Luria**, in 1969 in molecular biology for his work on phages

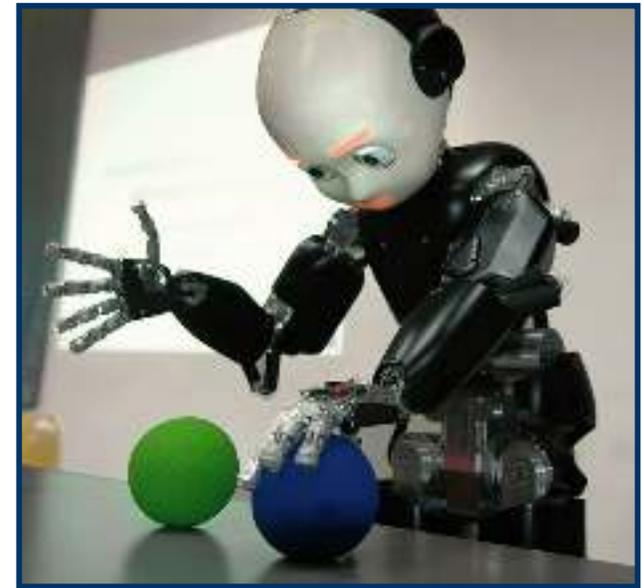
**Renato Dulbecco**, in 1975 for his work on oncoviruses

**Rita Levi-Montalcini**, in 1986 for the discovery of Nerve growth factor

**Mario Capecchi**, in 2007, for discovering a method for introducing homologous recombination in mice employing embryonic stem cells

# Characteristics of S&T System in Italy

- Autonomous - independancy of Research institutions
- Coordinating role of Public Administration
- 60% public funding, 40% private, mostly from industries (SME)



# Main Institutional Actors in S&T

 <p><i>Ministero dell'Istruzione dell'Università e Ricerca</i></p>	 <p><i>Ministry of Foreign Affairs</i></p>	 <p>MINISTERO PER I BENI E LE ATTIVITÀ CULTURALI</p>	 <p>agenzia spaziale italiana</p>
 <p>Consiglio Nazionale delle Ricerche</p>	 <p>Agente nazionale per le nuove tecnologie, l'energia e gli alta-tech sostenibili</p>	 <p>Istituto Nazionale di Fisica Nucleare</p>	 <p>ISTITUTO SUPERIORE DI SANITÀ</p>
 <p>CRUI Conferenza dei Rettori delle Università Italiane</p>	 <p>ISTITUTO NAZIONALE DI ASTROFISICA INAF</p>	 <p>Istituto Nazionale di Geofisica e Vulcanologia</p>	 <p>iit ISTITUTO ITALIANO DI TECNOLOGIA</p>

# How YOU can collaborate in S&T with Italy

1. Joining hands with Italian scientists in:
  - bilateral research projects (in the calls of Executive Program, CSIR+CNR calls)
  - multilateral projects in FP7 calls
2. Sending Indian students to Italy and receiving Italian students in Indian Universities
3. Participating in Indo-Italian scientific thematic Workshops organised in India

# Institutional Bilateral Collaboration in S&T

Nodal Institutions: Department of Science and Technology (India) and the Ministry of Foreign Affairs (Italy)

Long tradition of the Indo-Italian scientific collaboration - the first bilateral Agreement between the two Governments was signed in 1978.

The last Agreement signed in November 2003.

The Agreement is executed through the "Executive Programs", of the 3 year duration.

The CALLS FOR PROJECT PROPOSALS ARE OPEN EVERY THREE YEARS.

Executive Programmes:

- identify the priority areas for the S&T collaboration
- define the projects to be financed and the norms for their implementation

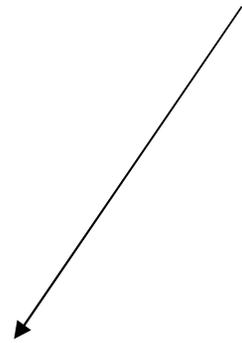
The Program is managed by the Department of Science and Technology (India) and by the Ministry of Foreign Affairs (Italy), with a partial contribution from the Italian Ministry of Education, University and Research

# Executive Program of Scientific and Technological Cooperation 2012-2014

[http://www.esteri.it/MAE/doc\\_politica\\_estera/Cultura/CooperScientificaTecnologica/Programmi%20esecutivi/20120120 PE Italia India 2012 2014.pdf](http://www.esteri.it/MAE/doc_politica_estera/Cultura/CooperScientificaTecnologica/Programmi%20esecutivi/20120120 PE Italia India 2012 2014.pdf)

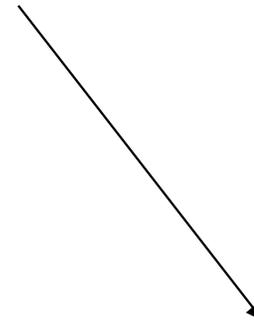
Companies as Partners together with Universities and Research Institutes in bilateral research project

## Types of the Projects



Significant projects

(the expenses of the research covered)



Mobility projects

(finances the mobility of the researchers)

## Priority areas for 2012-2014

- Agriculture and Food Science and Technology
  - Design Engineering and Technology
  - Electronics, Information Communication Technology
  - Energy and Environment
  - Health, Biotechnology and Medicine
  - Nanotechnology and Advanced Materials
  - Space and Physics
  - Technologies applied to Cultural and Natural Heritage
  - Transport Systems including Automotive Technologies
- 
- 12 collaborative projects, supporting the mobility of researchers
  - 6 "significant research projects", covering not only mobility, but also the research expenses

*Preference was given to projects that involve industrial counterparts*

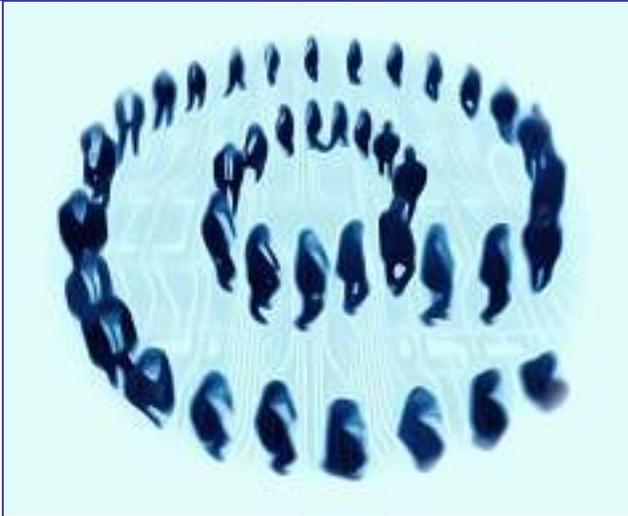
## Benefits for the Italian Companies participating in the project proposals together with a partner from University or other Research Institution:

- Opportunity to innovate the product
- Opportunity to innovate the production process
- Opportunity to develop new products
- Opportunity to improve human resources skills
- Opportunity to meet highly innovative Italian and Indian Companies and R&S Institutions
- Opportunity to increment business opportunities
- Opportunity to meet informally GoI officials
- Opportunity to display own products and solutions to opinion leaders

# Researchers' Mobility

## PURPOSE

- Catalyst of others funds in the two Countries
- Propaedeutical for further developments



## MODALITY

- Assessment work performed by Italy and by India
- Italy finances the trips of Italian researchers and the stay of Indian and vice versa
- Validity = Validity of the Executive Programme

**With whom to collaborate in Italy**

# Higher Education and Research Institutions

Higher Education in Italy is based on a system in which universities are expected to fulfill the twin tasks of teaching and doing research.

The Italian higher education is structured in a binary system:

- The University Sector
- The Non-university Sector

The University Sector is made up of **89 university institutions**:

- 58 state universities
- 17 non-state universities (legally recognized)
- 2 universities for foreigners
- 6 university institutions specialized in postgraduate studies
- 6 telemetric universities



## Universities in Italy

A complete list of Italian Universities:

<http://www.universitaitaliane.it/>

## Higher education in Italy is organized in 3 cycles:

### 1. Undergraduate studies

"First degree" (Laurea, 180 credits, 3 years)

### 2. Graduate studies

"Second degree" (Laurea specialistica, 300 credits, 2 years)

"1st Level Master degree" (60 credits, 1 year min.)

### 3. Postgraduate studies

"Research doctorate degree" (3 years)

"Specialization degree" (120-300 credits, 2-5 years)

"2nd Level Master degree" (60 credits, 1 year min.)

Many Universities offer full degree programmes in English and an increasing number of them run Master courses in English with a full range of subjects spanning from Business Administration to Medicine as well as from Engineering to IT, Fashion and Design.

List of courses in English offered in Italy:

<http://www.cruis.it/HomePage.aspx?ref=2094#>

More details about the courses in English language provided by Italian Universities can be found in the following websites:

[http://www.iicnewdelhi.esteri.it/IIC Newdelhi/Menu/Opportunita'/Studiare in Italia](http://www.iicnewdelhi.esteri.it/IIC_Newdelhi/Menu/Opportunita'/Studiare_in_Italia)

<http://www.study-in-italy.it/index.html>

[http://www.iicnewdelhi.esteri.it/IIC NewDelhi/Menu/Opportunita'/Borse di studio/Altre Borse/](http://www.iicnewdelhi.esteri.it/IIC_NewDelhi/Menu/Opportunita'/Borse_di_studio/Altre_Borse/)

<http://www.studiare-in-italia.it/studentistranieri/>

# The Non-university Sector

There are 4 types of education institutions:

1. Higher schools of design (polytechnics for the arts, academies of fine arts, higher institutes for applied arts, music conservatories and recognized music institutes, higher institutes for musical and choreographic studies, national academies);
2. Higher education in language mediation;
3. Higher integrated education (FIS) and programmes of higher technical education & training (IFTS);
4. A few specific fields (e.g. archiving, diplomacy, restoration, military studies, etc.) which, along with their respective institutions, fall under the supervision of ministries other than that of Education.

# Non-University Research Institutes

## Institutes of the National Research Council (CNR)

The National Research Council is the greatest research public body of Italy.

It was founded on November 18 of 1923; in 1945, it became a public body. It has carried out training, promotion and research coordination activities in every scientific and technological sector.

In 2003 CNR became a "national public organization committed to carry out, promote, spread, transfer and improve research activities in the main sectors of knowledge growth and of its applications for the scientific, technological, economic and social development of the Country.

There are **over 100 Scientific** Institutes under the CNR. For the complete list:

[http://www.cnr.it/istituti/Istituti\\_eng.html](http://www.cnr.it/istituti/Istituti_eng.html)

Since 1995 CNR has a very active scientific collaboration with CSIR, which is implemented through the provisions of the MoU and operated with periodic calls for the projects. At present 10 bilateral projects are running under this scheme

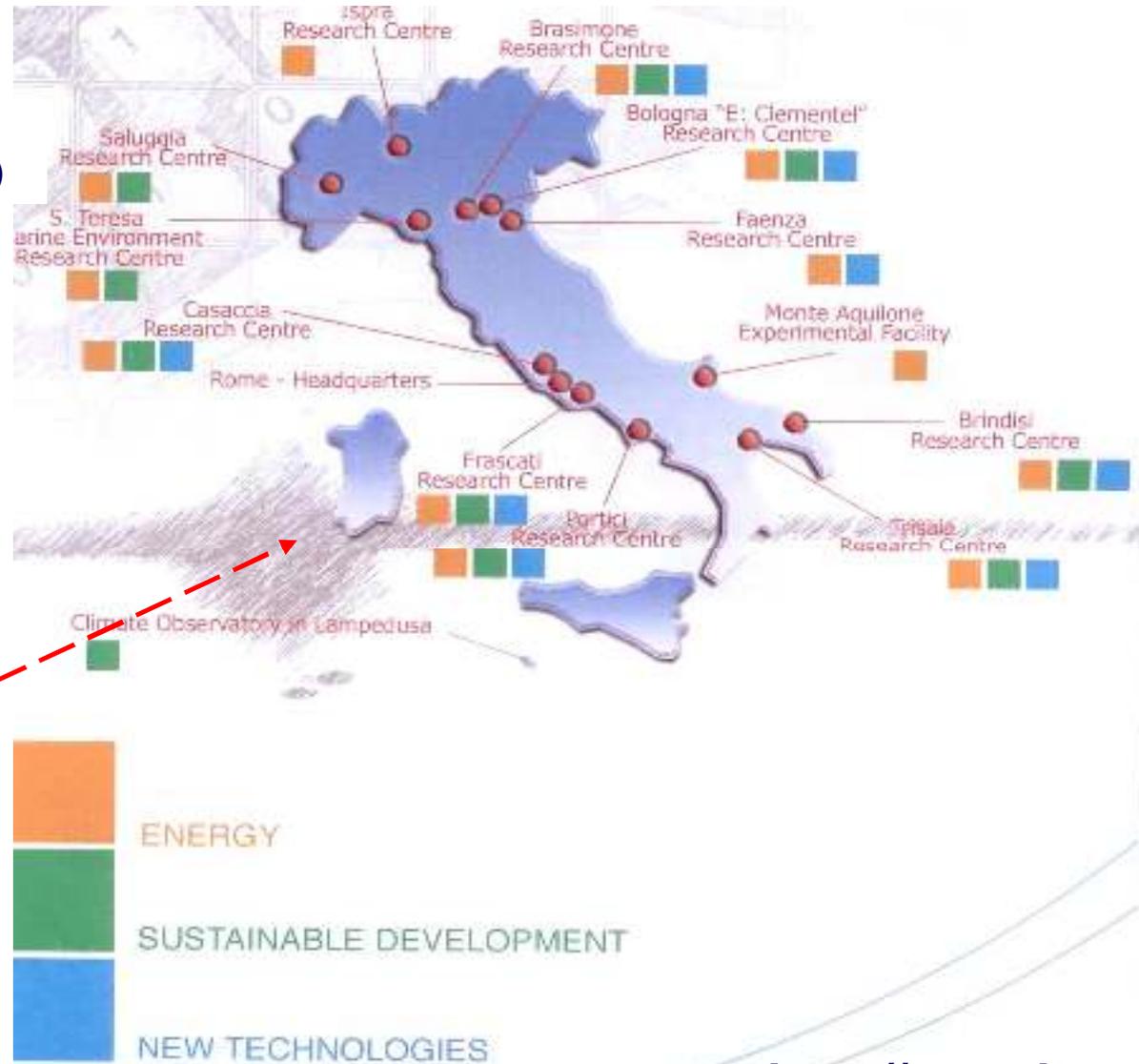
# ENEA: Italian National Agency for New Technologies, Energy and Sustainable Economic Development

<http://enea.it>

- **ENEA** is one of the main Italian research bodies. It operates in the fields of energy, environment and new technologies to support competitiveness and sustainable development. Its research activities are carried out in several areas of expertise, among which:
- **Energy, Nuclear Fusion and Fission, Environment, Biotechnology, Food and Agriculture, Health, New Technologies and Materials, Nanotechnology, ICT**
- **ENEA** research activities are realised inside its 9 Research Centres and 5 Research Laboratories distributed on the Italian territory.

# ENEA Research Centres

ENEA – EU liaison office in Brussels (Belgium)



<http://enea.it>

# ENEA International Fellowship Programme 2013

Call for Application 2013. Deadline: February 21, 2014

<http://www.enea.it/it/lavoro-studio/lavoro/borse-di-studio-internazionali/enea-international-fellowship-programme-2013>

(ENEA implements the European Charter for researchers and the Code of conduct for their recruitment and strongly encourages applications from women)

# Science Park, San Pariciano (Trieste)

- **The Third World Academy of Science (TWAS )** is an autonomous international organization based in Trieste, Italy. Its principal aim is to promote scientific capacity and excellence for sustainable development in the South. It was founded in 1983 by a distinguished group of scientists from the South under the leadership of the late Nobel laureate Abdus Salam. It has 1032 members from 92 Countries, among which 15 Nobel Prize Laureates. It offers fellowships for postgraduate training, postdoctoral and advanced research scholarships - <http://twas.ictp.it/prog/exchange>
  - Programmes
  - Training – PhD fellowships
  - Human capital mobility
  - Research grants
  - Prizes
  - Dissemination of information
- **The Abdus Salam International Center for Theoretical Physics:** an institution that is run by scientists for scientists. The Centre supports research groups in several areas of physical sciences and mathematics. The scientific sections are also responsible for organizing high-level training courses, workshops, conferences and topical meetings: <http://www.ictp.it/>
- **International Centre for Genetic Engineering and Biotechnology** <http://www.icgeb.org>

The Centre is dedicated to advanced research and training in molecular biology and biotechnology and holds out the prospect of advancing knowledge and applying the latest techniques in the fields of:

  - biomedicine
  - crop improvement
  - environmental protection/remediation
  - biopharmaceuticals and biopesticide production

# 45 centres of excellence

Recognised officially in the year 2000 till 2002 by the Ministry of Research and University.

Fields (examples):

- hydrological risk management
- applied biology
- biotechnological research
- different branches of medicine
- information technology
- sustainable development
- climate change research
- genomics
- technologies applied to archaeological research

To find more on other Research Institutes:

<http://www.istruzione.it/web/ricerca/enti-di-ricerca/elenco-enti>

# Scholarships offered by Government of Italy to Indian citizens

The scholarships are offered by the Italian Ministry of Foreign Affairs.

The award of scholarships is administrated by the Department of Higher Education in the Ministry of Human Resource Development, Government of India, New Delhi.

The period of the scholarship varies from 3 months onwards in the case of language studies to 12 months maximum for S&T studies.

The scholarships are announced on the website

[http://mhrd.gov.in/external scholar english](http://mhrd.gov.in/external_scholar_english)

A Joint Selection Committee constituted by the Ministry Officers, Experts among University Professors and Representatives of the Embassy of Italy and its Cultural Centre.

# Indo-Italian Thematic Workshops - organised in India by the Embassy of Italy objective: creation of new ties

## List of Thematic Workshops 2008-2012

### 2008

- Indo-Italian International Conference on Green and Clean Environment, Pune, 20 - 21 March 2008
- Workshop on Evolving Strategy for Improving Air Quality of Indian Cities", New Delhi 1.10.2008
- Seventh Annual Indo-Italian Workshop on IT, 4 September 2008 and Indo-Italian Summer School "IT : Industry, Education and Research", Hyderabad, 4 - 6 September 2008
- Indo- Italian Seminar on : "Standardization of Wood Testing Processes" Bangalore, 5 November 2008
- Technical Meet "Surviving Trauma 2008 - Emergency medicine", 13 -16 October 2008, New Delhi
- Indo -Italian Seminar on Green Chemistry and Natural Products, Delhi, 5 - 6 December 2008-12-08
- 4th Indo-Italian Workshop on Chemistry and Biology of Antioxidants, Delhi 7 December 2008

## 2009

- "From Galileo to Black Holes", Pune, 23 February and Mumbai, 28 February
- Indo-Italian Astronomy Fortnight "From Galileo to Modern Frontiers - a Tribut to Galileo Galilei", New Delhi, 16 Novembre - 1 Dicembre
- Technical Meet "Surviving Trauma 2009 - emergency medicine paediatric edition" New Delhi, 26 -30 October
- Eighth Annual Indo-Italian Workshop on IT, and Indo-Italian Summer School "IT : Industry, Education and Research", Hyderabad, 15-21 October
- Indo- Italian Workshop "Conservation of Mural Paintings, New Delhi, 20 - 21 October
- Indo- Italian Seminar on "Use of Modern Technologies in Forestry and Advancement in Wood Science", Bangalore, 19 November
- Indo-Italian Scientific Workshop "Application of Synchrotron Radiation to Condensed Matter Problems: Basic and Applied Research", Bangalore, 23 - 25 November
- Indo-Italian Conference "Emerging Trends in Waste Management Technologies", Pune, 3-4 December
- 3rd Indo-Italian seminar on "Green Chemistry", New Delhi, 9 December
- 6th Indo-Italian Workshop "Chemistry and Biology of Antioxidants", 10-11 December

## 2010

- Indo-Italian Workshop "Frontiers of Fundamental and Industrial Electrochemistry: A Challenge For a Better World", New Delhi, 30-31 August
- Indo-Italian Workshop "Nanostructured Semiconductors, Ultra Thin Films and Applications", Chennai, 8-10 September
- Ninth Annual Indo-Italian Workshop on IT, and Indo-Italian Summer School "IT : Industry, Education and Research", Hyderabad, 11-14 October

- Indo-Italian Workshop "Impact of Climate Change and Anthropogenic Activities on Soil and Water Resources", Roorkee, 22-24 October
- Indo-Italian Workshop on "Conservation of Wooden Cultural Heritage", Panjim and Talaulim (Goa), 28 - 30 October
- Indo-Italian Workshop "Industrial and Pharmaceutical Biotechnology", Madurai, 12-14 November
- 7th Indo-Italian Workshop "Chemistry and Biology of Antioxidants", New Delhi, 16 November
- 4th Indo-Italian Seminar "Green Chemistry and Natural Products", New Delhi, 17 November
- Indo-Italian Workshop "Bacteria and Fungi for Environmental Sustainability", Noida (New Delhi), 29 November -1 December
- Indo-Italian Workshop "Contemporary Dentistry", New Delhi, 3-4 December
- "Indo-Italian Workshop on Sustainable Development of Ground Water Resources", Nagpur, 20 October

## 2011

- Environmental Research and Monitoring in the Himalaya in the Climate Change Perspective, New Delhi, 3 February
- Indo-Italian Workshop "Advances in Fluvial Hydraulics and Water Resources Development and Management", Pune, 15-16 September
- 9<sup>th</sup> Indo-Italian Workshop on Chemistry and Biology of Antioxidants: Natural Products based Antioxidants from Medicinal Plants as Leads towards Development of Novel Drugs, New Delhi 10-11 October
- Indo-Italian Workshop on Stone Conservation, New Delhi, 12-14 October
- Indo-Italian Workshop on IT: Education, Research & Industry and Autumn School for lectures in Computer Science
- Indo-Italian Workshop on gravitational waves, Pune, 1-2 November
- "Electrochemical Energy Conversion: Achievements and Perspectives", New Delhi and Chandigarh, 30 November - 3 December

## 2012

- **The restless Universe: High Energy Astronomy and Recent Italian Contributions to this Field, Calcutta, 30 January**
- **Solaris2012 - Indo-Italian Workshop, Varanasi, 7-9 February**
- **Indo-Italian Symposium on Tissue Engineering, New Delhi, 21 February**
- **International Conference "Nanostructured Ceramics and other Nanomaterials - Indo-Italian Workshop on Industrial Applications of Nanomaterials, New Delhi, 13-16 March**
- **Indo-Italian Meet on Bilateral Cooperation in Space Sciences, Ahmedabad, 3-4 July**
- **Indo-Italian Workshop "IT: Education, Research & Industry" and Summer School on Computer Science, Hyderabad, October**
- **Indo-Italian Conference "Food Biotechnology: Food safety and Industrial Processing", Patiala, 21-23 November**

## 2013

- **"Indo-Italian Forum on Biopolymers and Tissue Engineering", (21-23 febbraio 2013, Chandigarh).**
- **Indo-Italian Workshop and the launch of "Indo-Italian Center of Excellence on Environmental Sustainability", (5-6 March 2013, Nagpur).**
- **Indo-Italian Workshop "Organic Materials for Photonic Applications" (24-26 July, Chennai).**
- **Indo-Italian Workshop "IT: Education, Research and Industry" (18 - 20 November, Hyderabad).**
- **Indo-Italian Workshop "Nanoscale Excitations in Emergent Materials" (Ahmedabad, 25 - 26 November 2013).**

**And others:**

[http://www.ambnewdelhi.esteri.it/Ambasciata\\_NewDelhi/Menu/I\\_rapporti\\_bilaterali/Cooperazione+scientifica/Eventi/](http://www.ambnewdelhi.esteri.it/Ambasciata_NewDelhi/Menu/I_rapporti_bilaterali/Cooperazione+scientifica/Eventi/)



Thank you ! Italy awaits you

# Summary of Italy mobility schemes and fellowships for researchers & students (to and from India)

- **Name:** Executive Programme for Scientific and Technological Cooperation between the Italian Republic and the Republic of India

**Outline:** Grants for bilateral projects between Italian and Italian scientists

**Research Fields:** Science and technology

**Organisation:** Italian Ministry of Foreign Affairs

**Deadlines:** Calls every three years

**Web page:**

[http://www.esteri.it/MAE/EN/Politica\\_Estera/Cultura/CooperScientificaTecnologica/ProgrammiEsecutivi/Bandi.htm?LANG=EN](http://www.esteri.it/MAE/EN/Politica_Estera/Cultura/CooperScientificaTecnologica/ProgrammiEsecutivi/Bandi.htm?LANG=EN)

**- Name: Scientific & Technological Cooperation between the Council of Scientific & Industrial Research (CSIR), India and the Consiglio Nazionale delle Ricerche (CNR), Italy**

**Outline:** Grants for bilateral projects between Italian and Indian scientists (limited to the scientists of the two Institutions)

**Research Fields:** Science and technology

**Organisations:** CNR and CSIR

**Deadlines:** Calls every three years

**Web page:** [http://rdpp.csir.res.in/csir\\_acsir/Home.aspx](http://rdpp.csir.res.in/csir_acsir/Home.aspx)

- **Name:** Agreement between the Italian Ministry of Foreign Affairs and the Ministry of Human Resources development, India

**Outline:** Scholarships for Indian students

**Research Fields:** Fashion Technology, ICT, Language, Economics, & Management, Environment, Biotechnology

**Organisation:** Italian Ministry of Foreign Affairs, Italy and the Ministry of Human Resources Development, India

**Deadlines:** Annual calls

**Web page:**

<http://borseonline.esteri.it/borseonline/it/index.asp> and [www.education.nic.in](http://www.education.nic.in)

**Name:** Euraxess Italy

**Outline:** Research positions & fellowships in Italy; advice & support on mobility to and from the country

**Web page:** <http://www.euraxess.it/>

- **Name:** **Jean Monnet Fellowships**

**Outline:** Offers fellowships to post-docs at an early stage of their academic career for research in the following areas: Institutions, Governance, and Democracy; Migration; Economic and Monetary Policy; Competition Policy and Market Regulation; Energy Policy; and International and Transnational Relations.

**Research Fields:** Social Sciences

**Organisation:** European University Institute

**Nationalities:** Candidates of all Nationalities: are eligible.

**Duration:** One or two years

**Budget:** The basic stipend is € 2,000 per month.

**Deadlines:** October

**Web page:**

<http://www.eui.eu/ProgrammesandFellowships/Index.aspx>

- **Name: Max Weber Programme**

**Outline:** The Programme is designed for post-docs who have received a doctorate in economics, law, history, social and political sciences, or a related field, within the last 5 years and who want to advance in their research and academic training, in an active multidisciplinary environment.

**Research Fields:** Social Sciences

**Organisation:** European University Institute

**Nationalities:** Open to all nationalities.

**Duration:** 1 or 2 years

**Budget:** The basic stipend is € 2,000 per month.

**Deadlines:** October

**Web page:**

<http://www.eui.eu/ProgrammesandFellowships/Index.asp>

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