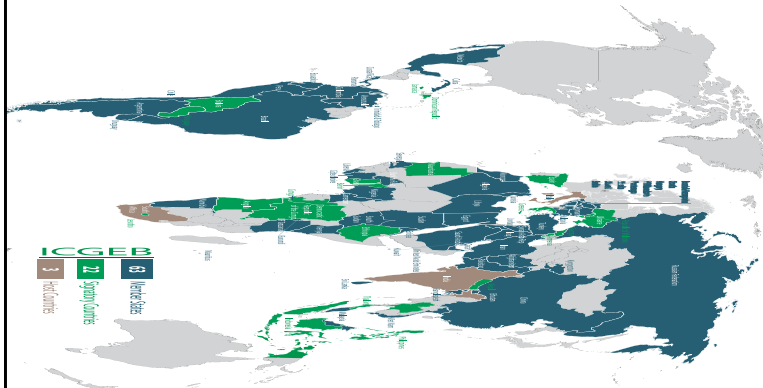




# ICGEB

International Centre for Genetic  
Engineering and Biotechnology

Developing  
Knowledge



80+ Signatory Countries, 60+ Member States, 3 Components:  
Trieste (Italy) - New Delhi (India) - CapeTown (South Africa)



1987-1995  
a special project  
of UNIDO



1995-today  
An independent  
international  
organisation



ICGEB Director, Arturo Falaschi with UNIDO Director General, Mauricio de Maria y Campos, 20 February 1996, Transfer of Assets UNIDO-ICGEB

## The ICGEB mandate

An International  
Organisation for research,  
training and technology  
transfer in Life Sciences to  
promote sustainable global  
development

Developing Knowledge

## The ICGEB instruments of action

- Cutting-edge **research** in its laboratories in Trieste, New Delhi and Cape Town (6 macro areas)
- Advanced education supported by long- and short-term **fellowships** for PhD students and post-docs
- Organisation of **meetings, courses and workshops** at the international level
- Competitive **grants** for scientists in Member Countries, including Early Career Return Grants
- **Technology transfer** to industry for the production of biopharmaceuticals and diagnostics
- Provision of **technical assistance** and capacity enhancement in the regulation of biotechnology and its products



**ICGEB** International Centre for Genetic Engineering and Biotechnology | Developing Knowledge

The Arturo Falaschi Fellowship Programme  
**Postdoctoral Fellowships**

Trieste ITALY New Delhi INDIA Cape Town SOUTH AFRICA

ICGEB offers competitive **Postdoctoral Fellowships in Life Sciences** to highly motivated scientists wishing to pursue post-doctoral research in a **world-class scientific environment**.

The Fellowships comprise a very **competitive** package including stipend, travel provision, **health insurance** and additional benefits.

The most successful fellows will also be eligible to apply for ICGEB **Early Career Research Grants** to support their own research programmes as young Blupen return to an ICGEB Member State.

**Closing dates for applications:**  
**31 March and 30 September 2018**

Nationals from **ICGEB Member States** are encouraged to apply

[www.icgeb.org/fellowships.html](http://www.icgeb.org/fellowships.html)

**Information and Applications:**  
ICGEB CRP & Fellowships Unit  
Loc. Politecnico, SP-34100 Trieste, ITALY  
Tel. +39-040-3757382/7347  
Email: [fellowships@icgeb.org](mailto:fellowships@icgeb.org) | [www.icgeb.org](http://www.icgeb.org)

**ICGEB** International Centre for Genetic Engineering and Biotechnology | Developing Knowledge

The Arturo Falaschi Fellowship Programme  
**PhD Fellowships**

Trieste ITALY New Delhi INDIA Cape Town SOUTH AFRICA

ICGEB offers competitive **PhD Fellowships in Life Sciences** to highly motivated scientists wishing to pursue PhD research studies in a **world-class scientific environment**.

**Fellowships include:**  
Participation in a competitive **research** programme  
Access to state-of-the-art **facilities**  
Participation in **ICGEB Meetings, Seminars and Journal Clubs**  
A competitive **stipend**, travel provision plus full coverage of **tuition fees** and **health insurance**

**Closing date for application:**  
**31 March 2018**

Nationals from **ICGEB Member States** are encouraged to apply

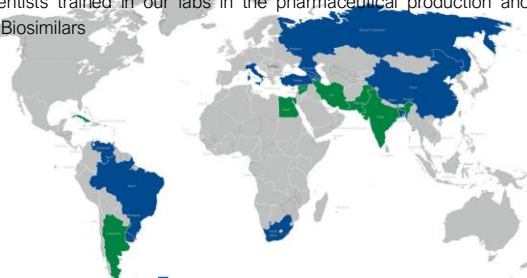
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## Relationship with Industry Technology Transfers

- ~70 collaboration agreements
- 20 different countries: Argentina, Bangladesh, Brazil, China, Cuba, Egypt, India, Iran, Italy, Jordan, Pakistan, Russia, South Africa, Sri Lanka, Switzerland, Syria, Turkey, United Arab Emirates, Uruguay, Venezuela – where the products are in many cases already on the market
- >100 Scientists trained in our labs in the pharmaceutical production and Quality control of Biosimilars



■ Countries where technology has been transferred ■ Countries where technology has reached market



# ICGEB

## Annual Report 2016

### ICGEB AT A GLANCE

2016

<b>INSTITUTIONAL</b>	
Founded	1983
Fully operational	1987
Components	3
Full Member States	64
Additional Signatory Countries	22
<b>PERSONNEL</b>	
Total Personnel	660
Scientific Personnel	550
<b>RESEARCH</b>	
Research Groups	47
Active Research Grants	75 (6.9 Million Euro)
Publications since 1988	>2800
Publications in 2016	201
<b>FELLOWSHIPS</b>	
Fellowships awarded since 1988	1344
Fellows on board 2016	303
PhD students on board 2016	150
<b>MEETINGS &amp; COURSES</b>	
Meetings and Courses since 1988	534
Meetings and Courses in 2016	34
<b>GRANTS</b>	
CRP-Research Grants since 1988	484
CRP-Research Grants 2016	21
Countries with ongoing CRP Grants	39
<b>OUTREACH</b>	
Podcasts since 2011	469
iTunes U and YouTube Downloads	>100,000/year
Social media	

International Centre for Genetic Engineering and Biotechnology | Developing Knowledge

## ICGEB New Delhi

### *Diagnostic kits*



## Research Groups in 2017

Trieste: 18 ~ 200 scientists  
New Delhi: 25 ~ 400 scientists  
Cape Town: 2 ~ 30 scientists

Total: 45

*Biosafety: 2 additional Groups,  
1 in Trieste and 1 in Cape Town*

## Research Pillars of ICGEB

### Our Mandate:

**Promotion of Cutting-Edge Research in the Life Sciences** with the aim of aiding Research, Development and Capacity Building within our Member Countries, on topics related to health, food security and sustainable development:

### Our Research Pillars:

**Cancer:** There is an ever-growing need for an improved understanding of the mechanisms of cancer development, which in turn will aid better treatment and diagnosis.

**Infectious Diseases** including *Malaria, Dengue, TB, HPV, HIV, Chikungunya, neglected tropical diseases* are major health problems often outside their traditional endemic areas, owing to climate change and population movement.

**Non-Infectious Diseases** are rapidly gaining in prevalence; in an ageing global population *Cardiovascular and Neurodegenerative Diseases* are major drains on health infrastructures and society. Approaches aiming to understand the causes, development, diagnosis and treatment of these diseases are required.

**Food Security:** crop improvement and development of methodologies for understanding the interactions between plants and soil bacteria are major objectives. Such activities will aid production of *Disease Resistant Crops*, expand cultivatable areas and *increase crop yields* through use of environmentally friendly *biofertilisers*.

**Biofuels** are essential for *sustainable* development. Understanding and developing the optimal methods for second generation biofuel production under diverse global conditions is paramount.

## Research: Macro-Areas and Groups in 2016

### 1. Infectious Diseases (12 Groups)

#### VIROLOGY

Alessandro Marcello (TS)  
Sujata Sunil (ND), Navin  
Khanna (ND) Anmole Chande  
(ND) Lawrence Banks (TS)  
Jeffrey Dorfman (CT) Mauro  
Giacca (TS) Oscar Burrone (TS)



#### PARASITIC DISEASES

Frank Brombacher (CT) Pawan  
Malhotra (ND) Asif Mohammed  
(ND) Renu Tuteja (ND) Dinkar  
Sahal (ND) Amit Sharma (ND)  
Neel Sarovar Bhavesh (ND)



### 2. Non-Communicable Diseases (16 Groups)

#### CARDIOVASCULAR DISORDERS

Mauro Giacca (TS)  
Serena Zaccagna (TS)  
Francesco Loffredo (TS)



#### CANCER

Luiz Zerbini (CT)  
Iqbal Parker (CT)  
Mike Myers (TS)



#### HEMATOLOGY

Dimitar Efremov (TS)



#### NEUROBIOLOGY

Emanuele Buratti (TS)  
Fabian Feiguin (TS)



#### MOLECULAR GENETICS

Francisco Baralle (TS)  
Andrés Muro (TS)  
Franco Paganì (TS)



#### IMMUNOLOGY

Oscar Burrone (TS)  
Federica Benvenuti (TS)  
Dinkar Sahal (ND)  
Dhiraj Kumar (ND)





## Scientific Output

**ICGEB Publications from 2010-2016 include articles in:**

Nature, Nature Medicine, Nature Cell Biology, Nature Rev. Cancer,  
Nature Comm., Cell Host & Microbe,  
PLoS Pathogens, EMBO J., Genes Dev., Trends Biochem. Sci.,  
Proc. Natl Acad. Sci. USA, J Exp. Med, Blood

	Trieste	New Delhi	Cape Town	Total ICGEB
Total publications	610	805	137	1552
Total IF	3280.2	2467.8	788	6536
IF/Publication	5.4	3.1	5.8	4.2
Publication/year	87.1	115.0	19.6	221.7

Citations Trieste: 2014 - 6075; 2015 – 5858; 2016 – 5587.

ICGEB Group Leaders are Editors or Editorial Board members  
on more than 60 international journals



## External Research Support

2010-2016  
included grants from

European Research Council (ERC), EU FP7 and Horizon 2020 Program,  
Wellcome Trust UK, AICR UK, Royal Society UK,  
National Institutes of Health USA, Bill and Melinda Gates Foundation USA,  
Leukemia and Lymphoma Society USA, JDRF USA,  
World Anti-Doping Agency (WADA) Canada, Grand Challenges Canada,  
AXA Research Foundation France, AFM France,  
MRC and National Research Foundation South Africa  
Telethon Italy, AIRC Italy, AriSLA Italy,  
Italian Ministries of Agriculture, Health, University and Research, Labour and Social Policies

External Grants 2016				
	Trieste	New Delhi	Cape Town	Total ICGEB
No. Grants	32	76	11	119
Total (Euro)	2,955,666	3,110,905	490,124	6,556,695



International Centre for Genetic  
Engineering and Biotechnology (ICGEB)  
Trieste Component, Italy

18 research groups, >200 scientists

Research programs in:

- Virology (HIV, papillomavirus, rotavirus)
- Human molecular genetics
- Molecular immunology
- Gene therapy
- Recombinant biopharmaceuticals (BDU)
- Cardiovascular disorders
- Neurodegeneration
- Cancer
- Biosafety

Advanced core facilities and  
services include:

- Facilities for in vivo experimentation
- BL3 safety laboratories
- Viral vector production unit (AAV)
- Advanced microscopy NIKON facility
- Proteomics facility
- Peptide synthesis and chemical modification
- Flow cytometry and cell sorting
- High throughput screening platform –  
siRNA, miRNA whole genome libraries
- Scientific Services for Member Countries –  
Biosafety and Biosimilar Production



<http://www.icgeb.org>



Fluorescence Microscopy Core Facility (FMCf) - [www.icgeb.trieste.it/fluorescence-microscopy.html](http://www.icgeb.trieste.it/fluorescence-microscopy.html)

INSTRUMENTS

- Leica DMLB upright microscope;
- Leica Laser Microdissector LMD;
- Leica DMIRE2 inverted microscope;
- Zeiss LSM510 confocal microscope with lasers 488, 514, 543 nm and 2 PMT + microinjector (Eppendorf);  
(Purchased 1998 – end of support)
- Zeiss LSM510 META equipped with lasers 458, 477, 488, 514, 543, 633 nm, 2 PMT + META detection module  
for emission spectra analysis; (Purchased 2004, end of support)

NEW PURCHASES

- Nikon Eclipse Ti-E inverted for live imaging + CMS (Andor) + stage incubator (Okolab) (Purchased 2014)
- Zeiss LSM880 with lasers 405, 458, 488, 514, 543, 633 nm, 3 PMT + Airyscan with 32 GaAsP channels for fast  
high-resolution fast acquisition (bid finalized 2017)

USERS (no charge)

- ICGEB groups
- External users from neighboring institutions
- FluoMicro@ICGEB Course 2016-2017
- Training of ICGEB short-term research fellows

MANAGEMENT

- Alessandro Marcello GL Molecular Virology
- Paola Massimi – staff Tumour Virology
- Online booking system
- Maintenance and training of users





## ICGEB Trieste Core Facilities

BL3 containment laboratory

Proteomics and mass spectrometry

Peptide synthesis and chemical modification

Advanced optical microscopy

Flow cytometry and cell sorting

Animal house

AAV Vector Unit (AVU)

Bioinformatics

High throughput, whole genome siRNA screening

Technical services and mechanics workshop

## HTS Facility



### MAIN GOAL:

Perform genome-wide RNA interference screens in human/mouse cells (upgradable for screening of small molecules in the future)

### EQUIPMENT:

- liquid handling station
- automated high-content-microscope
- multimode microplate reader
- cell washers, liquid dispensers, microplate sealer



### LIBRARIES:

- human whole-genome siRNA library (approx. 20 000 genes)
- mouse whole-genome siRNA library (approx. 18 000 genes)
- small siRNA sublibraries targeting specific intracellular pathways



ICGEB Core Facilities can be accessed by scientists from all our Member Countries

- supported through the ICGEB Fellowship Programme.
- 39 PhD students, 12 nationalities

Advanced core facilities and services include:

- Facilities for in vivo experimentation
- BL3 safety laboratories
- Viral vector production unit (AAV)
- Advanced microscopy NIKON facility
- Proteomics facility
- Peptide synthesis and chemical modification
- Flow cytometry and cell sorting
- High throughput screening platform – siRNA, miRNA whole genome libraries
- Scientific Services for Member Countries – Biosafety and Biosimilar Production



<http://www.icgeb.org>



## Becoming a Member State of ICGBE

Article 20 ICGBE Statutes: States may accede "by depositing instruments of accession with the Depositary after their request of membership has been approved by the Board".



1. A country wishing to become a Member State of the ICGBE is required to send a "Letter of Interest" to the ICGBE Director-General.
2. Once the request is approved by the ICGBE Board of Governors, the Government should deposit an "Instrument of Accession" with the Depositary, the UN Secretary General. At this stage the country establishes its consent to be bound by the Statutes and it becomes an ICGBE "Signatory Country".
3. States have to seek preliminary / ex post approval (ratification) of the Statutes by their national, legislative authorities.



## How to become a Member of ICGBE

4. Entry into force for a country, 30 days after deposit date of its Instrument of Accession. At this point the Country acquires access to all the activities foreseen by the ICGBE Work Programme.

5. Four key steps to become a "Member State":

- ✓ **Assess** national situation (legislative and administrative procedures)
- ✓ **Identify** and contact the authority responsible for signing the Instrument( e.g. Head of State, Prime Minister, Minister of Foreign Affairs)
- ✓ **Prepare** and sign the instrument of accession, ratification, acceptance as well as the other declarations eventually needed such as the full powers
- ✓ **Deposit** instrument with the Depositary

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ICGBE Board of Governors approved Dominican Republic request of membership during its 11th Session, on 24-25 November, 2004.

