Institute Pasteur – Fondazione Cenci Bolognetti

President: Prof. Paolo Amati Emeritus Professor of Molecular Genetics Sapienza University of Rome

At present the Pasteur Institute of Rome:

Finances high-level research projects selected by a peer review system projects have a three-year term and are carried out in the university's laboratories.

Supports young graduates by awarding two-year term fellowships abroad and in Italy upon their return, and awards post-doctoral fellowships supporting researchers who have completed their period of training.

Co-funds 3 Ph.D. Courses in Pasteurian Sciences at the Doctorate School in Biology and Molecular Medicine at the Sapienza University of Rome.

Organizes seminars, conferences and international meetings

Promotes the dissemination of scientific knowledge in schools, with activities designed for students and teachers, and in society in general by organizing cultural events for the wider public such as bookshop talks.

Board of directors:

Prof. Paolo Amati – *President* - Emeritus Professor of Molecular Genetics - Sapienza University of Rome

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Vincenzo Barba – *Member* - Professor of private law - Faculty of Economics - Sapienza University of Rome

Dr. Nicoletta Silvestri - *Head of administration office*

RESEARCH

1- Structure and biology of microorganisms

- Novel **redox sensing** pathways in **parasitic** microorganisms
- Involvement of *E coli* **acid resistance genes** in **virulence** expression and in adaptation to changing environmental conditions
- Exploring the *Pseudomonas aeruginosa* **cell envelope** as a source of novel protein drug targets
- Detecting and characterizing specialized **ribosomes translating specific** classes of mRNAs in **Archaea**

2-Molecular genetics of eukaryotes

- **RNA-RNA and RNA-protein interactions**: role of long non-coding RNAs in gene expression control
- Role of **Parp-1** in the transcriptional control of key genes involved in pathological events
- **Epigenetic** priming of DNA **topoisomerase** I **inhibitors**
- Identification of new factors required for **telomere capping** in **Drosophila**
- Sequence diversity and evolution of human endogenous **retroviral LTRs**: the role of ectopic gene conversion
- Disease due to **mitochondrial tRNA mutations**: cellular models to evaluate novel therapeutic strategies
- Identification of novel **Hedgehog**/**Gli pathway antagonists** in brain tumors treatment
- Role of ATP-dependent **chromatin remodeling** complexes in **midbody** formation and cytokinesis
- Circadian Rhythms and Stress: Functional role of period gene
- Functional interactions between the **MRN** complex and **N-Myc** in **neuronal development** and **carcinogenesis**
- The influence of **epigenetics**, DNA **repair** and cell cycle pathways on the **gene therapy** approach of Small Fragment Homologous Replacement (SFHR)
- **Targeting** DNA and **histone methylation** for **cancer** therapy: identification and development of new DNMT and EZH2 inhibitors
- Transcriptional regulation through long-range **chromatin interactions** in **muscle** cells: the CDKN1C-KCNQ1 locus
- Counteracting the hostile microenvironment to improve **regeneration** and **stem cell-mediated therapy** in **dystrophic** animal models: the role of Interleukin-6 (IL-6)
- *In vivo* selection of **JARID histone demethylases inhibitors** and their use to enlighten the biological role of these enzymes in yeast and mammalian cells with focus on **transcriptional regulation**.
- A **Drosophila** model for **Spinal Muscular Atrophy** (SMA): identification and characterization of SMN interactors and phenotypic modifiers.
- Development of molecular tools to prevent **EMT** in **liver fibrosis**
- Biological characterization and in vitro culture of **human spermatogonial stem**

3- Pathogenic mechanisms of infection-related diseases

- Deciphering the identity of **Torque Teno virus (TTV)** as marker and potential determinant of immunity
- Critical role of the **inflammasome** activation/evasion induced by *Shigella Flexneri* and *Pseudomonas aeruginosa*: analysis of bacterial triggers and host cell responses

- Defining the contribution of the **VirF** protein to the regulative circuitry and to the genome plasticity of ***Shigella*** and **enter invasive *E.coli***
- **Cross-talk** between Adherent-invasive *Escherichia coli* (**AIEC**) and host cell nucleus: role of bacterial and cellular epigenetic mechanisms involved in cell DNA damage and repair system
- Selective inhibition of **Hemagglutinin maturation** by cellular **oxidoreductases**: a potential target for novel anti-influenza strategies
- Modulation of growth factor **receptor signaling** induced by the expression of the **HPV16** E5 **viral oncoprotein**

4- Cellular and molecular immunology

- Immunological and epigenetic signatures in **liver cancer**
- Characterization of immune reservoirs Involved in the adaptive **remodeling** to **cardiac pressure** overload
- Expression of the ligands of the activating **NK cell receptors NKG2D** and **DNAM- 1** in human **cytomegalovirus** infected cells: role of the DNA damage response pathway, of the cellular senescence and of viral immediate-early proteins
- Molecular mechanisms Involved in attenuating **FceRI expression** and **signaling**
- Immunometabolic checkpoints of **Treg** performance in **HCV**-related **metabolic inflammation** and **cancer**
- Characterization of functional properties and **migration capacity** of different **NK** cell subsets in **hematological** malignancies
- **Interleukin 32**: molecular expression, epigenetic regulation and biological activities in human immunodeficiency virus-1 Novel mechanistic insights on Notch3 signaling role in T Cell Leukemia
- Molecular and functional characterization of the mechanisms **regulating CD28 co-stimulatory** signals in T lymphocytes

5- Molecular interactions

- Unravelling the ERp57/PDIA3, a multifunctional protein disulfide isomerase involved in **cellular stress response**, cell **signaling** and **tumor progression**: potential therapeutic target in several human diseases
- The role of nucleosomes in the **protection** of **telomeres** from DNA damage response
- Allosteric control in the synthesis and sensing of cyclic-di-GMP, a master **regulator** of **bacterial growth** and **physiology** (DAMPs)
- Developmental alterations of **autonomic** and **central neurons** in a mouse model of **Duchene muscular dystrophy**
- **Spontaneous** generation of **RNA**
- **PDZ** domains and **cancer**
- Molecular and functional approaches to investigate the **neuroprotective** and **neuromodulatory** roles of chemokines and their receptors in the **central nervous system**
- Towards a therapy for **mitochondrial tRNA disorders**(DAMPs)
- Taming **HIPK2 kinase** activity to tackle cellular diseases and **cancer**

6- New anti-microbial agents

- New azole derivatives as **antiprotozoal agents**
- Fighting **microbial infections**: a multidisciplinary strategy to develop short-sized native peptide-based antimicrobials
- New non-nucleoside **antiviral agents** targeting **HIV-1** reverse

- Bacterial **P450 Cytochromes** as tools for designing novel **antimicrobial agents**

7- Biology of malaria and other vector-borne diseases

- **Modeling** the human bone marrow niche in vivo and its role in **malaria**
- **Population genomics** of the malaria mosquito *Anopheles gambiae*

New laboratory

Pasteur Laboratory– Italia - Director: John Hiscott

Research center for studies conducted in the field of molecular medicine, biotechnology and nanotechnology.