CNR - Consiglio Nazionale delle Ricerche
Istituto di Tecnologie Biomediche - Institute for Biomedical Technologies
Sede di BARI
**www.itb.cnr.it** - **www.ba.itb.cnr.it**

The **CNR Institute for Biomedical Technologies (ITB)** is a cross-disciplinary institute. One of its primary aim is translating fundamental discoveries into new technologies by implementing public-private collaborations.

The **ITB-Bari** has been operating, for over thirty years, in **Bioinformatics and Genomics**, with multidisciplinary skills in bioinformatics, molecular and cellular biology, medicine, statistics and computer science.

The **Research lines** are particularly focused on **neurodegenerative diseases**, **cancer** and **nutrigenomics studies** carried out through a complementary and synergistic approach between "wet" and "dry" laboratories.
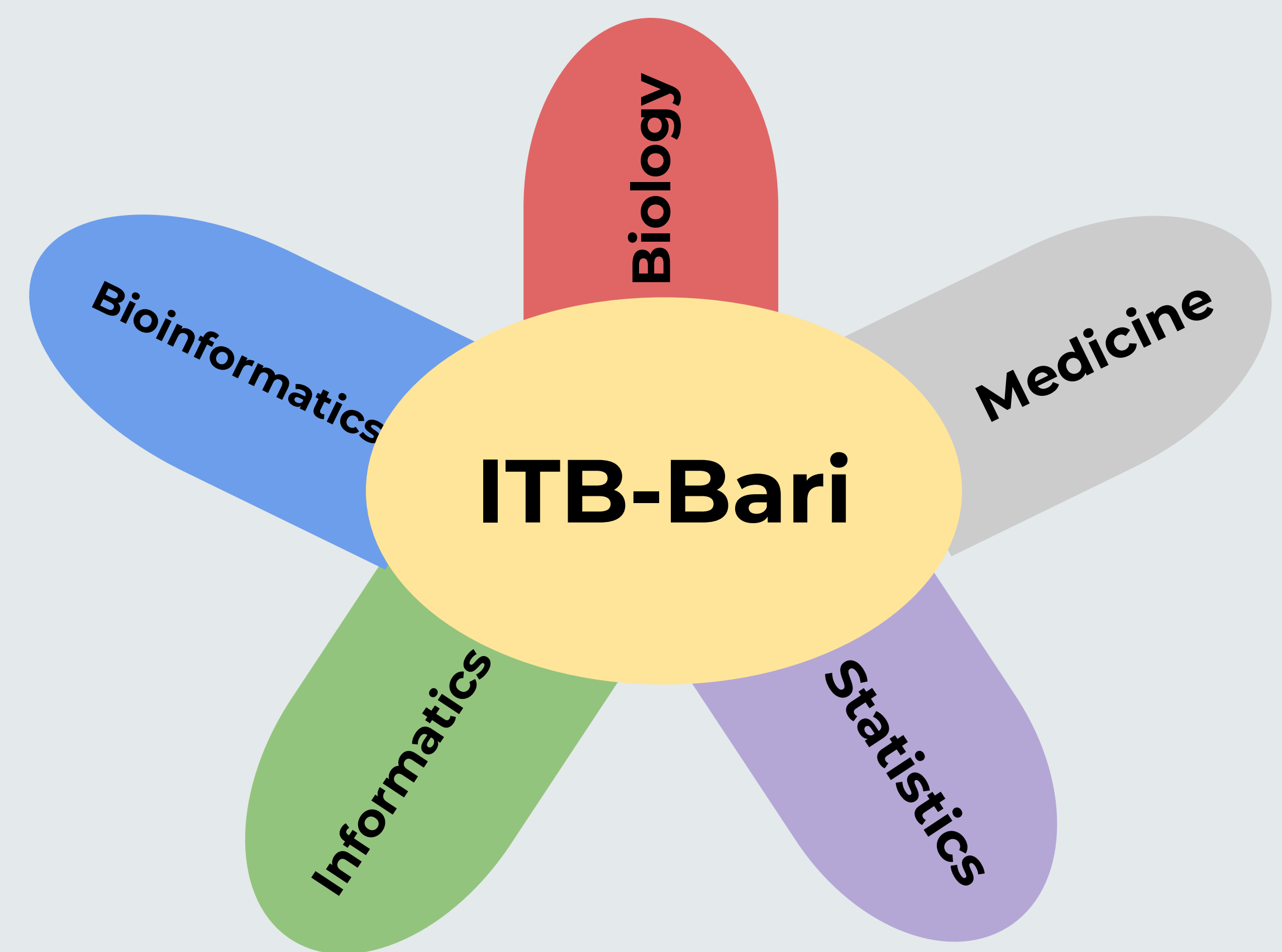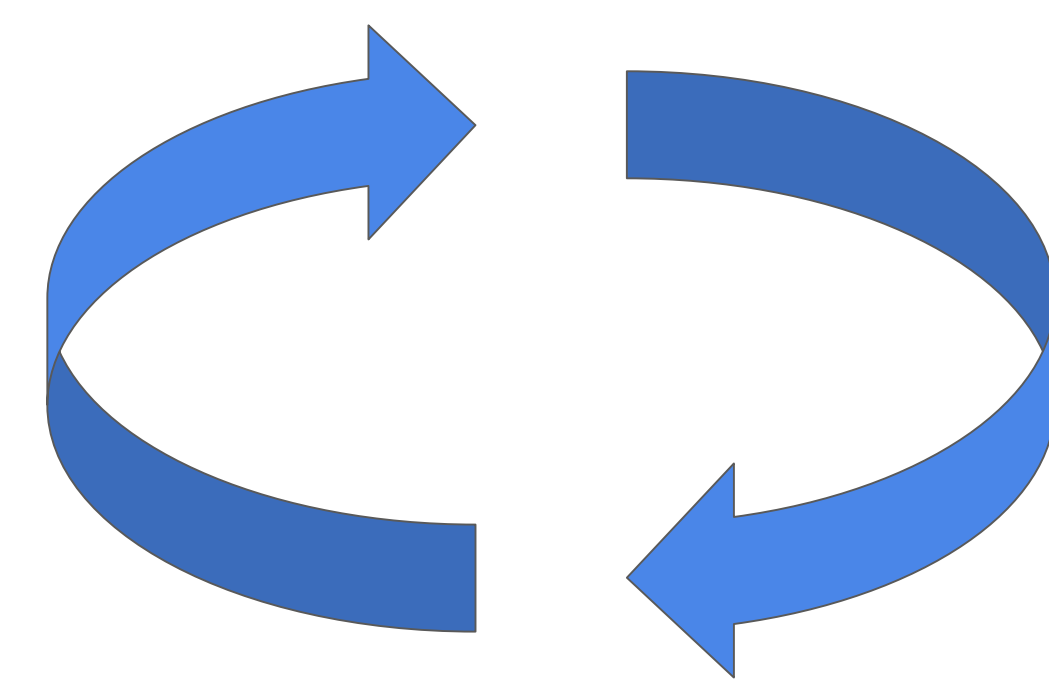

BIOINFORMATICS

bioinformatics.ba.itb.cnr.it

OMICS

Research & Development

- Design and development of algorithms, workflows, web applications
- Design and development of specialized database, biobank data management and biological BigData integration
- Bioinformatics and biostatistics analysis of Next-Generation Sequencing (NGS) datasets
- Application of Artificial Intelligence methods to data analysis
- Analysis and tools to investigate non-coding RNA role in biological processes in various organisms
- Study of the cross kingdom effects of plant miRNAs on human tumor cell lines
- Molecular study of abiotic/biotic effects on crop plants

- Identification of new biomarkers for the diagnosis/prognosis of human tumors
- Genomic and transcriptomic approaches for cellular proliferation studies
- Study of molecular profiles associated with neurological multifactorial diseases and their phenotypic aspects
- Pharmacogenomics/pharmacoepigenomics as part of the innovative strategies of Personalized Medicine for the treatment of rare neurological diseases.
- Study of transcriptomic and proteomic profiles in Cellular Vescicles (EVs) in neurodegenerative diseases
- Nutrigenomics applied to the study of the effects of grape intake

- Training, Community Building and Networking at National and International level

Laboratories

(Bio)Informatics infrastructure:
- Local computing: ~100 CPU cores, 1 TB RAM and about 100TB of storage
- CNRBiOmics: High Performance & Cloud Computing (~12.000 core), GPUs and Large Storage (~5PB)
- Bioinformatics web services for omics data analysis
- Various public and locally developed bioinformatics frameworks, analysis tools and pipelines.

Molecular and cellular biology labs:
- NGS platforms and expertise for Omics studies
- Instruments for validation of massive sequencing for molecular diagnosis
- Tools for quantitative and qualitative analysis of RNA (2100 Bioanalyzer, Agilent e fluorimetro Qubit 2.0), Digital PCR (Life Technologies),
- CNRBiOmics: QuantStudio 12K Flex Real-Time PCR system, DNA Sequencer 3500DX Genetic Analyzer (ThermoFisher)

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