Fundação Oswaldo Cruz (known as Fiocruz)

Attached to the Brazilian Ministry of Health.

- range of activities include
  - research development
  - highly-regarded hospital and ambulatory care services
  - production of vaccines, drugs, reagents, and diagnostic kits
  - education and training of human resources
  - information and communication in the area of health, science and technology
  - quality control of products and services,

- ## The Foundation

Institutional profile

- ## Units and offices

  - Foundation is installed in 10 states and has an office in Maputo, capital of Mozambique, Africa.
  - Fiocruz has units in the Northeast, North, Southeast and Southern of Brazil.
  - 16 scientific and technical units, focused on teaching, research, innovation, assistance, technological development and extension in the health field.
  - A technical unit for support, acting in the production of laboratory animals and animal derived.
  - The four technical and administrative units are dedicated to the physical management of the Foundation, its trade operations and economic and financial management.

Technical and scientific units

- ### Fiocruz Africa

  - Implementation and reformulation of the National Institutes of Health of the countries of the Community of Portuguese Speaking Countries (CPLP).
  - Transfer of technology for the production area and differentiated support for strengthening the health systems of countries of the CPLP.

- ### Fiocruz Amazônia

  - Studies of the ecology of transmissible diseases, microbial diversity, diagnosis and control of infectious diseases and health history in the Amazon.
  - Acquisition, storage, distribution and preservation of bacteria, fungi and yeasts in their biological collections.

- ### Fiocruz Bahia

  Research, education, information and providing reference services in health. Located in Salvador.

- Graduation programs at master's and doctorate levels in the biotechnology and medical investigative (PgBMI) and human pathology and experimental (PgPAT) - Biomedical Library.
- Training and upgrading for the Unified Health System (SUS) and System Science, Technology and Innovation in Health.

Fiocruz Minas

Focused on research of health hazard prevalent in Minas Gerais. Specially neglected diseases such as **Chagas** disease, **intestinal helminths**, **schistosomiasis**, **leishmaniosis**, **malaria**, **virology**, and **anthropology** of health.

- Study infectious and parasitic diseases such as Chagas disease, schistosomiasis, leishmaniosis and malaria.
- Reference Services in Chagas disease, schistosomiasis, cutaneous leishmaniosis, National and International **Reference Center for Phlebotominae**,
- Reference Center for Training and of **Phlebotomine** Vectorial Competences and Reference Center for Leishmaniosis.

Fiocruz Paraná - Carlos Chagas Institute (ICC)

It is a unit focused on research in cell and molecular biology in the area of human health problems and veterinary medicine for the development of biotechnology products and for teaching in biosciences and biotechnology.

- Assistance in the development of **biotechnology products**, such as diagnostic reagents, vaccines, antisera and drugs.
- Development of research on pathogens relevant to human health.
- Laboratories for work with **stem cells and lentivirus**.
- **Reference Center for Hantavirus** for South Region.
- Production of **reagents kits** for laboratory diagnosis.

Fiocruz Pernambuco

- Reference laboratories in the control of **vector mosquitoes and plague**;
- Reference laboratories for the Northeast in the area of **schistosomiasis, leishmaniosis and Chagas'** disease.
- Reference to Service of **filariasis** at the national level,

Immunobiological Technologie Institute (Biomanguinhos)

Provide to the population essential products for the prevention, diagnosis and treatment of diseases

Its products protect against **yellow fever, polio, meningitis A and C, measles, mumps and rubella** (MMR), **rotavirus, Haemophilus influenza type b (Hib), meningitis; pneumococcus** bacteria.

- Production of reagents kits for laboratory diagnosis.
- Production of biopharmaceuticals.

- ## Institute of Drug Technology (Farmanguinhos)

Among the **products antibiotics, anti-inflammatory, anti-infective, antiulcerantes, pain relievers**, medicines for **endemic** diseases such as **malaria** and **tuberculosis**, **antiretroviral AIDS**, medicines for **cardiovascular** and **central nervous** system and programs **diabetes** and **hypertension**.

- Research and technological development in chemical synthesis.
- Research and technological development in natural products chemistry.

- ## Institute of Scientific and Technological Communication and Information in Health (ICICT)

Unit that participates in the **formulation, implementation and evaluation of public policies**, develops **strategies** and performs actions of information and communication in science, technology and innovation in health.

- ## Joaquim Venâncio Polytechnic School of Health (EPSJV)

- Prepares educational materials in different media to students and teachers.
- As a WHO Collaborating Center for Technical Education, develops national and international technical cooperation in its acting areas.
- It is based on the Workstation Observatory of Health Technicians, which integrates the Network Observatory of Human Resources in Health.

- ## National Institute for Quality Control in Health (INCQS)

Unit with direct performance on health surveillance. It is national reference for laboratory-analytical issues relating to quality control.

- **Quality control of products** for human consumption, including food, medicines, blood and blood products, biopharmaceuticals, cosmetics, sanitizing products, diagnostic reagents and medical supplies in general.
- Establishing standards and methodologies for quality control of laboratory network of SUS.
- Promotion of regulatory actions in partnership with the health surveillance agency.
- Technical assistance, as a reference unit, to national network of laboratories for quality control in health.

- ## National Institute of Infectolgy (Ipec)

Unit focused on clinical research, education, referral services and assistance in infectious diseases.

- Medical Care Reference in infectious diseases. There are treated patients with HIV /AIDS, HTLV, Chagas disease, toxoplasmosis, leishmaniosis, mycoses, tuberculosis, acute febrile diseases (dengue, malaria, influenza, measles, and leptospirosis), and poisonous animals (snakes, scorpions and spiders).
- Care service at the Reference Center for Special Immunobiological (vaccination).
- Conducting clinical trials on prevention, treatment, diagnosis and factors relating to infectious diseases.

- ### National Institute of Women, Children and Adolescents Health Fernandes Figueira (IFF)

  Unit focused on education, research, service, technological development and extension in the health of women, children and adolescents.

  - **Reference activities in pediatrics**, pediatric surgery, **medical genetics**, **neonatology**, **food** and **nutrition**, **gynecology**, **obstetrics**, pediatrics, pathology, clinical pathology and **human milk bank**.

- ### Oswaldo Cruz House (COC)

  COC is the home of the most significant collection of documents of health of Brazil and the only post-graduation in the history of science and health in the country

- ### Oswaldo Cruz Institute (IOC)

  Act in the area of research, technological development and innovation. Provides reference services for the **diagnosis** of **infectious** and **genetic** diseases and **vector control**.

  - Clinical services to **leprosy and hepatitis**.
  - Conducting **reference tests to laboratories** network of SUS in the care of various diseases in sanitary and epidemiological surveillance.

- ### Sergio Arouca National School of Public Health (Ensp)

  Focused on the maintenance and development of reference services, specialized in the analysis and discussion of health problems of the Brazilian population:

  - The Collaborating Center in Pharmaceutical Policy Area
  - The Centre of Studies of Worker's Health and Human Ecology
  - The Germano Sinval Faria School Health Center
  - The Centre for Surveillance and Monitoring of Disease.

Technical support unit

- ### Laboratory Animals Breeding Center (Cecal)

  Focused on the production of laboratory animals and derivatives. Also works on development of animal biotechnology.

International relations

NORTH-SOUTH COOPERATION

- Meetings of the United Nations in Rome (2003), Paris (2005), Accra (2008), and Busan (2011) aimed to increase the efficacy of this cooperation based on joint planning.

- Recent negotiations have structured new modalities of relations with large-scale institutions, including the establishment of a FIOCRUZ-Pasteur Nucleus, the FIOCRUZ-Yale University Alliance, and the consolidation of programs supported by the NIH.

SOUTH-SOUTH COOPERATION

- Better quality of life and more health equity for the populations;
- Generation of knowledge and innovation in science and technology applied to health;
- Expanded production of (and access to) essential health inputs;
- Guaranteed adequacy of health-related environmental initiatives.

○ International partnerships

NORTH-SOUTH

- French :
  - FIOCRUZ is the only Brazilian institution that belongs to the Pasteur World Network
  - Projects with the Alliance Nationale pour les Sciences de la Vie et la Santé (Aviesan),
  - French national institution that includes the Institut National de la Santé et de la Recherche Médicale
  - Institut de Recherche pour le Développement (IRD)
  - Centre National de la Recherche Scientifique (CNRS
- In the United States:
  - National Institutes of Health (NIH),
  - Centers for Disease Control and Prevention (CDC)
  - The international agencies of Canada (CIDA), Japan (JICA), and Germany (GIZ) support tripartite projects together with FIOCRUZ and developing countries.
  - With the support of the European Commission, FIOCRUZ coordinates the EU-LAC Health Project, including a consortium of organizations from various countries (Germany, Argentina, Brazil, Costa Rica, Spain, Italy, Mexico, and Switzerland), **aimed at policymaking** to support cooperation in research and development (R&D).
  - FIOCRUZ also has agreements with universities in the United Kingdom, Portugal, Spain, Australia, and Belgium.

SOUTH-SOUTH

- Mainly include institutions from African countries whose official language is Portuguese and member countries of the Union of South American Nations (Unasul) and other Latin American countries.
- Network of National Health Institutes (Rins), Network of National Schools of Public Health (Resp), Network of Technical Schools in Health (Rets), and the Pan-Amazonian Network for Science and Technology.

Organizations and institutions

- **Public and private institutions**
  - German Federal Enterprise for International Cooperation (GIZ)
  - Canadian International Development Agency (CIDA)
  - Japan International Cooperation Agency (JICA)
  - Global Alliance for TB Drug Development (TB Alliance)
  - National Alliance for Life Sciences and Health (Aviesan) – France
  - Association of Portuguese-Speaking Universities (AULP)
  - Centers for Disease Control (CDC) – USA
  - International Development Research Centre (IDRC) – Canada
  - Drugs for Neglected Diseases Initiative (DNDI) – multilateral
  - National Institutes of Health (NIH) – USA
  - Institute Pasteur International Network (RIIP) – France

Research and teaching

- Produce knowledge for the control of diseases such as AIDS, malaria, Chagas' disease, tuberculosis, hanseniasis, measles, rubella, schistosomiasis, meningitis and hepatitis, and other topics related to public health, including violence and climate change.

Biological collections

- three categories:
  - microbiological collections
  - zoological collections
  - Histopathologic collection.

- **Microbiological Collections:**
  - Collection of Bacteria from Amazon (CBAM)
  - Bacteria Collection of the Atlantic Forest (CBMA)
  - Culture Collection of Bacillus and Related Genera (CCGB)
  - Bacterial Culture Collection of Health Importance (CCBS)
  - Culture Collection of Filamentous Fungi (CCFF)
  - Collection of Fungi from Amazon (CFAM)
  - Collection of Pathogenic Fungi (CFP)
  - Leptospira Collection (CLEP)
  - Leishmania Collection (CLIOC)
  - Reference Culture Collection on Health Surveillance (CMRVS)
  - Mycological Collection of Trichocomaceae (CMT)
  - Protozoa Collection (COLPROT)
  - Collection of Trypanosoma from Wild and Domestic Mammals and Vectors (COLTRYP)

- **Zoological Collections:**
  - Ceratopogonidae Collection (Coleção de Ceratopogonidae - CCER)
  - Entomological Collection of Oswaldo Cruz Institute (CEIOC)
  - Phlebotomine sandflies Collection (COLFLEB)
  - Simuliidae Collection of Oswaldo Cruz Institute (CSIOC)
  - Triatominae Collection of Oswaldo Cruz Institute (CTIOC)
  - Chagas Disease Vectors Collection (COLVEC)
  - Medical Malacology Collection (CMM)
- **Histopathological Collections:**
  - These collections for the comprehension about the epidemiological diseases and the environments
  - Greater understanding of the evolution of diseases as well as pathogens, vectors and reservoirs.
  - Important to the revaluation of histopathological and/or molecular diagnosis and to the study of the influence of diseases in the habits and customs of society.
  - Collection of Yellow Fever (CFA)

Production and innovation

- One of the largest public pharmaceutical laboratories in the country - the Drug Technology Institute (Farmanguinhos) - Fiocruz contributes with nearly 40% of the drug purchased by the Ministry of Health from official laboratories.
- Fiocruz has also one of Brazil's largest public laboratories for vaccine production:
  - **vaccine against yellow fever, polio, meningitis A and C, MMR, monovalent Hib and Hib+DTP**
  - Produces about six million reagents for diagnosis of **HIV-1, HIV-1 / 2, Chagas' disease, dengue fever, leishmaniosis and leptospirosis**.

Vaccines

- **DTP and Haemophilus influenza type B (Hib)**
  - Combined DTP and Haemophilus influenza B (Hib) vaccine is also known as tetravalent, protection against diphtheria, tetanus, whooping cough and severe infections by the Haemophilus influenza type B.
- **Yellow fever**
  - The attenuated strain 17D of the Yellow Fever virus.
- **Haemophilus influenza type B (Hib)**
  - This against severe infections caused by the Haemophilus influenza type B, as meningitis and pneumonia.
- **Meningitis A and C**
  - Biomanguinhos signed a technical cooperation agreement with Mèrieux Institute from France and is been produced the polysaccharidic vaccine against meningococcus serogroups A and C.

- **Poliomyelitis**
  - Strains of attenuated Sabin virus types I, II and III spread in human diploid cell culture (MRC5) are used.
- **Measles, Mumps and Rubella**
  - Biomanguinhos and the company GlaxoSmithKline signed a technological transfer agreement of the measles, mumps, and rubella vaccine (MMR).

Medications

- Farmanguinhos, one of the Fiocruz's production units, guarantees:
  - Producing drugs for endemic diseases, such as **TB and malaria**, for **central nervous system**, and for **diabetes** and **hypertension**.
  - The **Artesunate + Mefloquine** (ASMQ), an innovative medicine against **malaria**, developed with international partners.
- Farmanguinhos also produce antiretroviral medicine to supply the National STD/Aids Program.
- Soon, it will be able to manufacture 50 million doses of human insulin per year.

Reactive

The Oswaldo Cruz Foundation produces kits and reagents for diagnosing several diseases, developed in Biomanguinhos.

- **NAT HIV/HCV**
- **DPP® HIV – 1/2**
- **Immunoblot Quick DPP® HIV-1/2**
  - Provides confirmation of HIV infection in up to 20 minutes.
  - Kit is more sensitive and specific, providing more precise and reliable results.
- **DPP® Syphilis**
- **DPP® Visceral Canine Leishmaniosis**
  - Offering results within about 15 minutes
  - It doesn't need a laboratory structure and equipment, making field use easier.
  - it is a screening test, it allows only the positive cases to be taken for confirmation
- **DPP® Leptospirosis**
  - Its reducing the response time of the laboratory diagnosis
  - the amount of procedures undertaken
  - Improving the final quality of the result of the testing for the disease.
- **Canine leishmaniosis - IFI**
  - is a confirmation examination,
  - its result can be obtained after 24 hours after it's done

- **Human leishmaniosis**
- **Chagas disease**
  - High specificity and sensitivity and the standardization of its execution.
  - This allows identification of antibodies of the IgM kind.
  - Also used to confirm positive, doubtful or negative results obtained with the IHA and EIE.
- **Canine Leishmaniosis - Elisa**
  - Screening method and its results are commonly expressed in reagent or non-reagent.
  - Its sensitivity varies from 71 to 100% and its specificity, between 85 and 100%
- **Helm test**
  - It is a qualitative-quantitative test based on the technology of the Kato-Katz method.
  - The kit identifies the prevalence of illnesses such as schistosomiasis to increase the inspection and monitoring actions for parasitary diseases, on top of working on its prevention.

Health services

- The National Institute of Women, Children and Adolescents Health Fernandes Figueira (IFF)
  - Work related to breastfeeding
  - **reference for children with cystic fibrosis**
- Assistance to patients with infectious diseases such as STD/ AIDS, tegumental leishmaniasis, fungal infections, Chagas' disease, TB and dengue.
- The Oswaldo Cruz Institute (IOC), boasts a clinic for Hansen's disease treatment.