Argentina

Institute for Medical Research "Mercedes y Martin Ferreyra"

Address: Casilla de Correo 389, 5000 Cordoba, Argentina. **Phone:** (+54-51) 681465; **Fax:** (+54-51) 695163; **E-mail:** immf@immf.unoor.edu.
Director/Head: Luis A. Beaugé.
Number of Research Scientists: 14; **Number of Staff:** 28.
Scientific Fields of Interest: Biology; Biochemistry/Biophysics; Medical Sciences.
Main Lines of Research and Training Activities: Ligands interactions with Na,K-ATPase enzyme and Na-K active system transport; Neural mechanisms controlling sexual behaviours; Ontogeny of microtubular proteins during neuritic differentiation and regulation by genetic and epigenetic factors; Psychobiology of early learning and interaction with alcohol; Neural control of gonadotrophin secretions; Neural control of water and sodium intake; Regulation of ion channels and neuronal excitability; Anatomy and development of the nervous system; Electrophysiology of the sinaptic transmission.
Major Scientific Results or Products: Numerous scientific publications.
Main Research Facilities Available: Library, CO_2 microprocessor incubator, laminar flow hood, inverted microscope facility; microscopy laboratory, dark room, electrophysiology facility, liquid scintillation counter, solid-crystal gamma counters, computers with respective printers and network, airfuge ultracentrifuge, Sorvall centrifuge; lyophilized spectrophotometer, 2 Beckman refrigerated centrifuges; HPLC and gas chromatography, spectrophotofluorometer with fast kinetic attachments.
Future Development Plans: Research will emphasize cellular and molecular aspects, including set up of patch clamp technique, intracellular recording in neurons *in vivo*, and *in vitro* (tissue slices and cultures), and use of voltage and ion selective dyes; molecular approach will include use of monoclonal antibodies against membrane protein and genetic manipulation to obtain hybrid forms of this protein.
Cooperation Arrangements with Developing Countries: Venezuela by agreement since 1970.
Other International Cooperation Arrangements: Marine Biological Laboratory, Woods Hole, MA, USA; Binghamton University, State University of New York, USA; Harvard Medical School, Boston, MA, USA.

Universidad de Buenos Aires — Facultad de Medicina, Departamento de Fisiología "Prof. Dr. Bernardo A. Houssay"

Address: Paraguay 2155 7° Piso, 1121 Buenos Aires, Argentina. **Phone:** (+54 1) 961 9866; **Fax:** (+54 1) 9636287. **E-mail:** cardinal@mail.retina.ar.
Director/Head: Daniel P. Cardinali.
Number of Research Scientists: 50; **Number of Staff:** 7.
Scientific Fields of Interest: Medical Sciences.
Main Lines of Research and Training Activities: Neuroendocrinology, Chronobiology, Physiology of Autonomic Nervous System, Neuroimmune-endocrine Interaction; Neurophysiology of Basal Ganglia; Membrane Physiology.
Main Research Facilities Available: Located at major faculty building, downtown Buenos Aires, facility comprises 38 laboratories, about 50 square metres each on 6th and 7th floors of central building; animal facilities, library and general services provided centrally by faculty. The following major equipment is available: telemetric devices and 10 experimental rooms for chronobiological studies; 6 liquid scintillation spectrometers; 10 refrigerated centrifuges; 5 HPLC systems with fluorometric, electrochemical and UV detection; 5 spectrophotofluorometers; 15 spectrophotometers; 5 electrophysiological units, comprising extracellular recording to patch clamp studies; about 60 microcomputers.
International Cooperation Arrangements: Scientific research projects in common with Spain, France, Germany, Mexico, Uruguay and Brazil, funded by Spanish government, Stiftung Volkswagenwerk, Sandoz Foundation for Gerontological Research, Commission of European Countries and Programa Latinoamericano de Investigación en Reproducción Humana.

Bangladesh

Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM)

Address: 122 Kazi Nazrul Islam Avenue, Dhaka 1000, Bangladesh.
Director/Head: Alamgir M.A. Kabir.
Number of Research Scientists: 12; **Number of Staff:** 15.
Scientific Fields of Interest: Medical Sciences.
Main Lines of Research and Training Activities: Antidiabetic properties of medicinal plants; malnutrition-related diabetes mellitus; epidemiology as a tool for genetic studies in diabetes mellitus; reproductive endocrinology.
Major Scientific Results or Products: Hypoglycaemic activities of *M. Charantia*, *T. fenum grecum*, *C. indica* and *H. indicus* confirmed; progress made on chemical nature and mechanism of action of active compounds involved; in the aetiology of malnutrition-related diabetes mellitus, environmental factors more important than hereditary factors; progress made on genetic transmission of diabetes in Bangladesh.
Main Research Facilities Available: Computers, library, animal house, refrigerators, centrifuges, liquid scintillation Beckman spectrometer, gamma counters, ultra-low temperature freezer, biofreezer, microscopes, PCs.
Future Development Plans: Plan to extend research into two more fields: biomedical research on drugs, and molecular biology.
Cooperation Arrangements with Developing Countries: Collaboration with research centres in Nepal, India, Thailand and China.
Other International Cooperation Arrangements: Department of Medical Cell Biology, University of Uppsala, Sweden; University of Basel, Switzerland; London University Hospital, UK.

Institute of Postgraduate Medicine and Research (IPGMR)

Address: Shahbag Avenue, Dhaka 1000, Bangladesh. **Phone:** (+880 2) 865010, 505194/8 PBX.
Director/Head: A.H.M.T.A. Chowdhury.
Number of Research Scientists: 150; **Number of Staff:** 600.
Scientific Fields of Interest: Biochemistry/Biophysics; Medical Sciences.
Main Lines of Research and Training Activities: All fields of medical and biomedical sciences. Applied and basic research in all fields of medical science. Training of specialists (doctors and medical teachers) in various disciplines of medicine. Postgraduate courses in various disciplines of medicine (fellowships, diploma, MD, MS, MPhil, MSc etc.).
Major Scientific Results or Products: Incidence and prevalence of hepatitis B virus infection in country; detection of AIDS cases in country; successful kidney transplantation and post-transplantation management; successful treatment of primary sterility cases and tubal recanalization; effective removal of various intracranial tumours.
Main Research Facilities Available: Library, equipment, space and trained manpower are insufficient. 2 computers available.
Future Development Plans: Opening of Endocrinology Unit and Plastic Surgery Unit; construction of modern animal house.
Cooperation Arrangements with Developing Countries: None.
Other International Cooperation Arrangements: None.

International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDRB)

Address: GPO Box 128, Dhaka 1000, Bangladesh. **Phone:** (+880 2) 600171-78; 600271-72; **Telex:** 675 612 ICDD BJ; **Fax:** (+880 2) 883116, 886050.
Director/Head: Demissie Habte.
Number of Research Scientists: 159; **Number of Staff:** 829.

Scientific Fields of Interest: Biochemistry/Biophysics; Environment; Medical Sciences; population and reproductive health.
Main Lines of Research and Training Activities: Research, Training and Health Care Provision. The Population Sciences and Extension Division runs two large projects: Demographic Surveillance System (DSS) at Matlab Field Station, and MCH-FP Extension Project. DSS used as sampling frame for many of Centre's studies and offers outstanding environment for prospective research. Much of the work of Community Health Division devoted to developing effective means to prevent illness and death due to diarrhoeal diseases. Recent work has included research into knowledge, attitudes and practices of families in relation to diarrhoea. In area of clinical studies, research currently being undertaken on epidemiology and management of cholera and shigellosis; determinants and management of persistent diarrhoea, and development of improvements in nutrition rehabilitation, including preparation of culturally appropriate foods; laboratory-based research on oral cholera and shigella vaccines, Entamoeba histolytica, viruses and diagnosis.
Major Scientific Results or Products: Oral rehydration therapy; development of ORS constituted with rice, maize; demographic surveillance system that provides invaluable data on determinants of child mortality, such as nutrition, maternal education, birth spacing and infectious diseases; appropriate nutrition during recovery from diarrhoea; family planning programme design.
Main Research Facilities Available: Library with CD-ROM search unit; laboratory: virology, bacterial genetics, molecular biology, immunology, environmental microbiology and nutrition and biochemistry; field Stations at Matlab, Sirajganj, Abhoyanagar; field hospital at Matlab.
Future Development Plans: More studies on cholera vaccine; watery diarrhoea, dysentery, persistent diarrhoea; nutrition and maternal and child health; population studies; community health; water and sanitation; family planning; modernization of library services; information technology strategy.
Cooperation Arrangements with Developing Countries: Support in training of physicians and paramedics in Iran, Cambodia, Peru and Ecuador; support in organizing field medical teams (training) for South-Asian countries; technical assistance of epidemic response among Rwandan refugees.
Other International Cooperation Arrangements: Johns Hopkins University, Baltimore, Maryland, USA; London School of Hygiene and Tropical Medicine, UK; University of Gøteborg, Sweden; University of Basel, Switzerland; NICED, Calcutta, India.

Brazil

Fundação Oswaldo Cruz (FIOCRUZ)

Address: Av. Brasil, 4365, Caixa Postal 926, Campus de Manguinhos, 21045, 900 Rio de Janeiro RJ, Brazil. **Phone:** (+55 21) 598 4305/4308- 270-1738/1788/1103/1937; **Telex:** (055-21) 23239; **Fax:** (+55 21) 260-6707/5909741.
Director/Head: Carlos Médicis Morel.
Number of Research Scientists: 565; **Number of Staff:** 3,328.
Scientific Fields of Interest: Biology; Biochemistry/Biophysics; Chemistry; Engineering/Technology; Environment; Medical Sciences.
Main Lines of Research and Training Activities: Biotechnology; fine chemicals; endemics; public health; applied immunology; blood products; quality control; reagents; tropical medicine; ecology and the environment.
Major Scientific Results or Products: *Products:* drugs and vaccines, several international patents. *Equipment:* educational games on aids, diagnostic kits, diagnostic methods and reagents, inputs, biological control of vectors.
Main Research Facilities Available: Electronic microscopy centre; central animal house; the only Rhesus monkey reserve in South America; computer centre; main scientific library in Latin America; protein chemistry facilities; natural product centre.
Future Development Plans: Technology transfer; quality control programmes; joint ventures; vaccine centre; more than 600 research programmes; AIDS test programmes; agreements and covenants.
Cooperation Arrangements with Developing Countries: Organización Panamericana de la Salud; Centro Panamericano de Ecología Humana y Salud; Universidad Nacional Autónoma de México;

Universidad Autónoma de Venezuela; Instituto Nacional de la Salud de Cuba; Instituto Nacional de la Salud de México; Universidad Nacional de Colombia.
Other International Cooperation Arrangements: British Museum; Rockefeller Foundation; W.K. Kellog Foundation; World Health Organization; University of California; Japan International Cooperation Agency; Institut Pasteur; Gesellschaft für Technische Zusammenarbeit; European Economic Community; Harvard School of Medicine; National Institutes of Health; University of Yale; Universität Heidelberg, Universität Lübeck; Universität München.

Instituto Butantan

Address: Av. Vital Brasil, 1500, 05503, São Paulo SP, Brazil. **Phone:** (+55 11) 2118381; **Telex:** 83325; **Fax:** (+55 11) 815-1505.
Director/Head: Isaias Raw.
Number of Research Scientists: 150; **Number of Staff:** 800.
Scientific Fields of Interest: Biochemistry/Biophysics; Veterinary; Medical Sciences.
Main Lines of Research and Training Activities: Basic biomedical sciences; development and production of sera and vaccines for human use; biological products (monoclonals, hemoderivatives.).
Major Scientific Results or Products: Sera for snake bites, anti-tetanus, anti-diphtheria, anti-rabies; bacterial vaccines: Dpt, tetanus, diphtheria, BCG; viral vaccines, rabies, measles, influenza.
Main Research Facilities Available: *Biotechnology*: equipment for protein purification, fermentation and tissue culture. *General equipment*: two ultracentrifuges, refrigerated high-speed centrifuges, continuous centrifugation heads, liquid scintillator, gamma counter, differential spectrophotometer, luminometer, visible and fluorescence plate photometers for ELISA, spectrophotometers, autoclaves, ethylene dioxide sterilization, low temperature freezers, sonicator, laminar flow cabinets. Basic science laboratories in genetics, physiology, pharmacology, biochemistry, immunology, viral immunology, immunogenetics, physiopathology and pathology.
Future Development Plans: New facilities for production of hemoderivates, bacterial and viral vaccines, providing training on development and use of bacterial and cell products, downstream processing.
Cooperation Arrangements with Developing Countries: Constantly receiving visiting researchers from Latin American countries interested in snake venoms and anti-venom sera.
Other International Cooperation Arrangements: Agreements with Pasteur Institute and Max Planck Institute; International FDA (on development of meningitis B vaccine).

Instituto Evandro Chagas (IEC)

Address: Av. Almirante Barroso, 492, CP 1128, CEP 66090-000, Belém, Pará, Brazil. **Phone:** (+55 91) 2281022, 2267732, 2265262; **Fax:** (+55 91) 2261286, 2265262.
Director/Head: Jorge F.S. Travassos da Rosa.
Number of Research Scientists: 58; **Number of Staff:** 240.
Scientific Fields of Interest: Biology; Environment; Medical Sciences.
Main Lines of Research and Training Activities: Tropical medicine; biotechnology; endemics; public health; virology; parasitology; microbiology; pathology; epidemiology; environment.
Major Scientific Results or Products: Isolation and characterization of 183 arboviruses; studies on AIDS, rotaviruses, hepatitis, papillomaviruses, enteroviruses, and other viruses; bacterial and parasitological diseases; epidemiological studies, especially the course of epidemics; products: sera and antigens, development of serological techniques, other biological products.
Main Research Facilities Available: Electronic microscopy centre; central animal house (mice, rabbit, sheep, monkey); computer centre; library (tropical medicine and biology); modern laboratory equipment.
Future Development Plans: Molecular biology studies; experimental studies; development of new sera, antigens and other products; testing vaccine centre; joint ventures agreements.
Cooperation Arrangements with Developing Countries: Pan American Health Organization; NAMRID (Peru).
Other International Cooperation Arrangements: British Council, Rockefeller Foundation; World Health Organization; Yale University; Center for Disease Control and Prevention (CDC); ORSTOM (France); European Economic Community; London School of Tropical Medicine and Hygiene; Wellcome Trust.

Universidade de São Paulo — Instituto de Ciências Biomédicas

Address: Av. Prof. Lineu Prestes, 2415 Prédio Bio III, Cidade Universitaria, 05508.000 São Paulo, SP, Brazil. **Phone:** (+55 11) 8130900, 8130710; **Fax:** (+55 11) 8130845.
Director/Head: José Carnejro da Silva Filho
Number of Research Scientists: 187; **Number of Staff:** 291.
Scientific Fields of Interest: Biology; Biochemistry/Biophysics; Environment; Veterinary; Medical Sciences; Biotechnology.
Main Lines of Research and Training Activities: *Anatomy:* Dental structure (including ultra-structure); Ultra-structure of the spleen-regeneration; Elastic fibres system histomorphometry. *Pharmacology:* Lymphatic system (pharmacology and physiopathology); Endocrine regulation of murine submandibular salivary glands; Vascular reactivity in hypertension (role of endothelial cells). *Physiology and Biophysics:* The mechanisms of insulin secretion; Study of the cellular and molecular mechanisms involved in the metabolism and action of the thyroid hormone; Ionic channels of cell membrane. *Histology and Embryology:* Nerve regeneration in rodents; Receptors in the retina of birds; Fish histology; Proliferation and differentiation of the gastric mucosa of rodents. *Immunology:* Application of hybridoma technique and DNA probes in immunology and medical genetics; Evasion mechanisms of *T. cruzi* from the lytic activity of the complement system; Humoral immune response to human and experimental diseases. *Microbiology:* Oral microbiology; Environmental microbiology; Food microbiology; Enteropathogenic bacteria (cellular and molecular mechanisms). *Parasitology:* Characterization and functional aspects of leishmania cysteine proteinases; Molecular biology of vitellogenesis in nematode worms; Methodology of parasitological diagnosis.
Major Scientific Results or Products: About 200 publications on average per year.
Main Research Facilities Available: Irradiators; Scintillation counters; Electronic microscopes; Equipment for microtomography and for microsurgery; Electrophoresis equipment.
Cooperation Arrangements with Developing Countries: International Development Research Center (IDRC); Centro Argentino/Brasil. de Biotecnologia; Universidad Aguas Calientes, Mexico, and the University of San Marcos, Peru.
Other International Cooperation Arrangements: BID, USA; EXIMBANK, USA; ROA/Hungary, Europe; INSERM, France; University of California at San Diego; World Health Organization (WHO-IDR); Yale University School of Medicine, USA; Japan International Cooperation Agency (JICA), Japan; Salk Institute, Harvard University, USA.

Universidade de São Paulo — Medical School of Ribeirão Preto (FMRP) — Department of Physiology

Address: CP 43655, Ribeirão Preto, CEP 05508, São Paulo, Brazil. **Phone:** (+55 16) 602-3012; **Fax:** (+55 16) 633-0017.
Director/Head: Celso Rodrigues Franci.
Number of Research Scientists: 13; **Number of Staff:** 27.
Scientific Fields of Interest: Biology; Biochemistry/Biophysics; Veterinary Sciences; Medical Sciences.
Main Lines of Research and Training Activities: Neuroendocrine control of reproduction; hypothalamic control of pituitary gland; study of individual differences in the regulation process of motivational systems; neuroendocrine control of body fluid homoeostasis; neurotransmission of the cardiovascular afferents in the central nervous systems; cytokineses in progressive renal disease: TGF; neurobiology of antipredator behaviour in the toad *Bufo paracnemis*, with special reference to tonic immobility; cardiovascular regulation, physiopathogenesis of arterial hypertension.
Main Research Facilities Available: Library, computers, network/Internet, polygraphs, gamma and beta scintillation counters, stereotaxis, centrifuges, microscopes, oscilloscopes, image analysis system.
International Cooperation Arrangements: Brazil-EUA (Pennington Biomedical Research, Bowman Gray School of Medicine of Wake Forest University, University of Virginia, University of Texas; Brazil-France (INSERM U288); Brazil; Brazil-Denmark (University of Copenhagen).

Universidade de São Paulo — Medical School of Ribeirão Preto (FMRP) — Department of Medicine, Clinical Nutrition (DMCN)

Address: Faculdade Medicina, 14049-900 Ribeirão Preto, SP, Brazil. **Phone:** (+55 16) 6230195; **Fax:** (55-16) 6230235.
Director/Head: J.E. Dutra de Oliveira.
Number of Research Scientists: 4; **Number of Staff:** 10.
Scientific Fields of Interest: Medical Sciences.
Main Lines of Research and Training Activities: Protein metabolism; lipids; vitamins and minerals; human metabolic balance studies; parenteral-enteral nutrition.
Major Scientific Results or Products: Results in metabolism of nutrients and dietotherapy.
Main Research Facilities Available: Metabolic unit for human studies; HPLC amino acid analyser gas chromatography; nutrition library.
Future Development Plans: Increasing facilities for training of Latin American physicians (MD) in clinical nutrition.
Cooperation Arrangements with Developing Countries: Part of Latin American Network of Institutions dealing with food and nutrition training and research.
Other International Cooperation Arrangements: World Health Organization; Pan American Health Organization.

Universidade Federal de Minas Gerais (UFMG) — Pediatric Nutrition Group, School of Medicine

Address: Av. Alfredo Balena 190, Belo Horizonte, MG 30130-100, Brazil. **Phone:** (+55 31) 2397443; **Fax:** (+55 31) 2734985.
Director/Head: Edison José Corrêa.
Number of Research Scientists: 6; **Number of Staff:** 3.
Scientific Fields of Interest: Medical Sciences.
Main Lines of Research and Training Activities: Nutritional disorders (malnutrition, obesity, rickets, vitamin A deficiency, cystic fibrosis, anaemia, microelements-zinc); breastfeeding; human milk composition; training on clinical nutrition (paediatric ambulatory of nutritional disorders); nutritional evaluation of communities.
Major Scientific Results or Products: Research data useful for publication and presentation in scientific events and for public health programming.
Main Research Facilities Available: Biomedical library; microcomputers; printers; BITNET; Internet; laboratory.
Future Development Plans: Promotion of postdoctoral training; exchange of visiting researchers.
International Cooperation Arrangements: International Center for Infancy (France); The United Nations International Children's Emergency Fund (UNICEF); UN Educational, Scientific and Cultural Organization (UNESCO); World Health Organization (WHO); Helen Keller Foundation; Kellogs; Trasher Foundation.

Cameroon

Immunology Biotechnology Laboratories (IBL) — WHO Collaborating Center for Research and Training in Immunology

Address: B.P. 4563, Nlongkak, Yaoundé, Cameroon. **Phone:** (+237) 203796; **Fax:** (+237) 203796.
Director/Head: Jacob L. Ngu.
Number of Research Scientists: 8; **Number of Staff:** 6.
Scientific Fields of Interest: Agriculture; Biology; Biochemistry/Biophysics; Veterinary; Medical Sciences.

Main Lines of Research and Training Activities: *Health Sciences*: Immunology of human onchocerciasis; immunology/parasitology of malaria; free radicals and malaria; molecular cloning in bacteria/yeast; biochemistry/immunology of trypanosomiasis. *Agricultural Sciences/Veterinary Medicine*: use of plant extracts in micropropagation of root crops and tubers; mechanisms of protection against African swine fever; medicinal plants.
Major Scientific Results or Products: Recombinant onchocercal proteins used to develop sensitive and specific diagnostic test for onchocerciasis; high level expression of fusion-free recombinant *O. volvulus* that are possible candidate vaccine subunits; three low cost, sensitive, specific diagnostic tests for onchocerciasis.
Main Research Facilities Available: Library, computer units, laminar flow hood, centrifuges: ultra, refrigerated and benchtop, minifuge, ovendryer, ELISA reader and washer, cell harvester, combi cool units, gel equipment (SDS PAGE, Western Blot, submarine), microwave oven, shaking water bath, distilling equipment, autoclave, inverted microscope, clinical microscope, incubator (CO_2 and aerobic) PCR machine, refrigerator, chest freezer, analytical balance.
Future Development Plans: Transfer to functional premises; training of African graduate/postgraduate students, scientists, laboratory support staff; research and commercial exploitation of research results to ensure relevance and sustainability.
Cooperation Arrangements with Developing Countries: ICIPE, Kenya.
Other International Cooperation Arrangements: New England Biolabs. LXR, S.F. University of California, S.F. Department of Pathology and University of Alabama at Birmingham, Department of Geographic Medicine in the United States; Institute of Child Health, University of London and the London Hospital Medical College Department of Immunology/Molecular Biology, University of London. Major Donors: World Health Organization (WHO), TDR and European Economic Community (EEC).

China

Chinese Academy of Medical Sciences (CAMS) — Cancer Institute/Hospital

Address: Peking Union Medical College, P.O. Box 2258, Beijing 100021, China. **Phone:** (+86 10) 6778-1331; **Fax:** (+86 10) 6771-3359.
Director/Head: Dong Zhi-wei.
Scientific Fields of Interest: Biology; Medical Sciences.
Main Lines of Research and Training Activities: As one of the biggest comprehensive cancer centres in China, the Cancer Institute/Hospital provides facilities for clinical care, basic research and professional education. For many years it has taken a steady aim on reducing the cancer incidence and mortality in a nationwide extent as its major purpose, and developed actively the study on carcinogenesis, cancer prevention, early diagnosis and effective treatment. The principle adopted for the on-going programmes is to integrate the basic research, clinical management and field work study as a whole to keep pace with and complement each other. In the research realm the most advanced and proven technical methods are applied; studies aiming at epidemiology, carcinogenesis, mechanisms of malignant change, prevention, diagnosis, treatment and relevant basic theories of the common cancers in China are carried out. As a professional education centre, 14 departments and 98 tutors are capable of enrolling Master of Doctor degree students. 1963 oncologic staff from all over the country have received advanced training in this Centre.
Major Scientific Results or Products: Number of awards obtained by Institute since National Science Congress held in 1978, such as National Sciences Congress Award, National Science and Technology Improvement Award, National Natural Science Award, Health Ministry Science Congress Award, Health Ministry Science and Technology Improvement Award and Awards of Science and Technology Improvement and Awards of Achievement at Academy level, totalling 100. Among the 3 outstanding scientists honoured in the “7th 5-year plan”, Achievements Evaluation Congress for their valuable work on the key oncologic projects, 2 came from this Cancer Centre.
Main Research Facilities Available: Sophisticated equipment is available: CT; MRI; angiographic machine; automatic biochemical analysis apparatus; 7 sets of medical linear accelerators; treatment planning system; Simulator; micro selectron HDR. All equipment considered to be of world advanced standard for cancer diagnosis, treatment and detection; 8 field stations in high incidence areas of

oesophageal cancer, liver cancer, lung cancer, stomach cancer for carrying out studies on aetiology and prevention; computer science in medical application; library.
Future Development Plans: The main tasks of this Institute are to carry out scientific research programmes assigned by State, programmes collaborating with other countries and programmes developed according to Institute and clinical work. It is important to strengthen clinical research, develop new techniques, and extend realm in cancer prevention and treatment; multidisciplinary therapeutic cooperation being considered (biological therapy, paediatric oncology).
Cooperation Arrangements with Developing Countries: In 1980, Cancer Institute/Hospital named one of WHO cancer research collaborating centres in China; established broad connections and collaborative relationships with many cancer institutes and scientific research bodies throughout world.
Other International Cooperation Arrangements: Some other collaborative research projects being carried out with USA, the UK and International Atomic Energy Agency in epidemiology, aetiology, immunology and cancer diagnosis and prevention, such as "clinical trials of breast cancer," "cellular and molecular studies of human hepatocarcinogenesis in China," "nutrition and intervention trials in Linxian, China."

Chinese Academy of Medical Sciences (CAMS) — Cardiovascular Institute and Fu Wai Hospital

Address: Peking Union Medical College (PUMC), 167 A Bei Li Shi Road, Fu Cheng Men Wai, Beijing, China. **Phone:** (+86 10) 68314466; **Fax:** (+86 10) 68313012; **E-mail:** fuwaih@public.bta.net.cn.
Director/Head: Runlin Gao.
Number of Research Scientists: 176; **Number of Staff:** 1,118.
Scientific Fields of Interest: Medical Sciences.
Main Lines of Research and Training Activities: The main lines of research work in this institute include epidemiologic, clinical and basic researchers on cardiovascular diseases. The training activities mainly include postgraduate training for master and doctoral degree, post-doctorial and continuous training programmes.
Major Scientific Results or Products: 174 scientific achievements, including 7 National Awards have been received, for example, for design and manufacture of prosthetic biovalve and mechanical heart valve, studies on aorta-arteritis, pulmonary hypertension, primary hypertension, coronary heart disease, interventional cardiology and cardiovascular surgery.
Main Research Facilities Available: Digital cardiovascular system of Philip Intergris BH 3000 and BC2000; Imatron Model C150 Ultrafast CT Electron Beam Scanner; CO2 Incubator; library with 23,800 volumes of books and magazines; Three-probe SPECT; DNA sequencer; ultracentrifuge; positron emission computer; 128XP computed sonography system; medical biochemical analyser; high performance liquid chromatography; colour Doppler echocardiography.
Future Development Plans: To improve and enhance basic research work, especially emphasis on molecular biological studies on cardiovascular diseases.
International Cooperation Arrangements: China-US collaborative study on cardiopulmonary epidemiology. China-Germany collaborative study on molecular genetics of hypertension and stroke.

Chinese Academy of Medical Sciences (CAMS) — Institute of Basic Medical Sciences

Address: 5 Dong Dan San Tiao, Beijing, 100005, China. **Phone:** (+86 1) 556546; **Fax:** (+86 1) 5124876.
Director/Head: Deng Xi-xian.
Number of Research Scientists: 323; **Number of Staff:** 436.
Scientific Fields of Interest: Biology; Biochemistry/Biophysics; Engineering/Technology; Environment; Medical Sciences.
Main Lines of Research and Training Activities: Studies of various fields in basic medicine as well as development and application of molecular biology and biotechnology techniques involved. Study about the mechanism of certain diseases with high incidence and mortality rates such as carcinomas of liver, lung and uterine cervix, atherosclerosis and some genetic diseases. Study of antifertility science and family planning. Responsible to the premedical courses for the undergraduates as well as the graduates of Peking Union Medical College.

Major Scientific Results or Products: Study on effect of high density lipoprotein (HDL) and apolipoprotein AI (apoAI) against development of atherosclerosis; study on prenatal diagnosis of Thalassaemia and other genetic diseases; study on mechanism of carcinogenesis (carcinomas of liver, lung and uterine cervix); study on vascular mechanism of systemic and pulmonary hypertension.
Main Research Facilities Available: Main facilities for laboratories of molecular biology, cell biology, immunology, physiology, pathology, bioengineering etc. Including most of the precision instruments required for research and teaching in these fields; well equipped library (particularly for the medical literatures) affiliated with academy and medical school.
Future Development Plans: National Laboratory for Medical Molecular Biology constructed for advanced research and postdoctoral training; strengthening of research group in studying mechanism of diseases stated above, particularly at genetic level.
International Cooperation Arrangements: Scientist exchange with Rockefeller University; student exchange with UCSF, Australia and Stanford, CA.

Chinese Academy of Medical Sciences (CAMS) — Institute of Clinical Medicine

Address: 1 Shuai Fu Yuan, East Dist., Beijing, China. **Phone:** 5127733; **Telex:** 4020; **Fax:** (+86 1) 512-4875; **E-mail:** 100730.
Director/Head: Zhu Yu.
Number of Research Scientists: 466; **Number of Staff:** 297.
Scientific Fields of Interest: Biochemistry/Biophysics; Medical Sciences.
Main Lines of Research and Training Activities: Radical treatment of choriocarcinoma. Clinical and basic study of hormone secreting pituitary tumour. Advancement of artificial supporting treatment. The diagnostic technique for prenatal congenital and hereditary diseases. The investigation of lymphatic metastasis of ovarian carcinoma. The investigation of scoliosis. The investigation of the spectrum of antinuclear antibody and its clinical use. Training the medical students and graduate students for their doctorate degrees and master degrees.
Major Scientific Results or Products: National Advancement of Science and Technology Award: 10 projects. Municipal and Provincial Advancement of Science and Technology Awards: 142 projects.
Main Research Facilities Available: Large equipment (200) for scientific research; computers (100) ; field stations (34); library: 1.
Future Development Plans: New techniques of diagnosis and treatment; clinical use of molecular biology.
International Cooperation Arrangements: “The Prevention and Management of Infertility,” WHO; “Mechanism of Diabetic Retina Lesions,” NIH, USA.

Colombia

Hospital San Juan de Dios — Instituto de Immunología

Address: Apartado Aereo 44709, Bogotá, Colombia. **Phone:** (+57 1) 2339006; **Fax:** (+57 1) 2803999; **E-mail:** mpatarro@andescol.
Director/Head: Manuel Elkin Patarroyo.
Number of Research Scientists: 10; **Number of Staff:** 70.
Scientific Fields of Interest: Agriculture; Biochemistry/Biophysics; Chemistry; Medical Sciences.
Main Lines of Research and Training Activities: Synthetic vaccines; organic chemistry; biophysics of macromolecules; molecular biology of tuberculosis; molecular biology of plants.
Major Scientific Results or Products: Development of first synthetic vaccine against malaria, SPf66 which is undergoing Phase IV trials in Africa, Asia and Latin America; development of first specific diagnostic method for tuberculosis using molecular biology tools.
Main Research Facilities Available: Organic chemistry; immunology; molecular biology; two field stations.

Future Development Plans: Become leading centre in world for research into knowledge-based design of synthetic vaccines for developing world and for improvement of nutritional standards for people in Third World.
International Cooperation Arrangements: Armauer-Hansen Institute, Germany; Rockefeller University, USA; Chiron Corporation, USA; University of California at San Francisco, USA; Harvard University, USA; Scripps Clinic, USA.

Côte d'Ivoire

Pharmacodynamic and Biochemical Research Laboratories — "Laboratoire Antigène"

Address: c/o Faculty of Sciences and Techniques, Université de Cocody, 22 B.P. 582, Abidjan 22, Côte d'Ivoire. **Phone:** (+225) 449-000 to 08; **Telex:** 26138 Rectu-cu; **Fax:** (+225) 445-330; 440-412.
Director/Head: Frederic Guede Guina.
Number of Research Scientists: 30; **Number of Staff:** 2.
Scientific Fields of Interest: Biology; Biochemistry/Biophysics; Chemistry; Medical Sciences.
Main Lines of Research and Training Activities: Pharmacodynamic and biochemical research of natural substances and pharmacopoeia: Research on anti-infectious substances; Cardiovascular substances; Antimalarial substances; Cholinomimetic and cholinolytic substances.
Major Scientific Results or Products: Purification of MSN, cardiotonic and antihypertensive molecule (with patents); purification of MISCA, antifungal molecule; purification of OLSU, alkaloid used against malaria and chloroquine resistance.
Main Research Facilities Available: Equipment; animal facilities; 2 computers with printers; library with 70 field book, 60 main publications, journals and proceedings.
Future Development Plans: Produce molecules and medicines from natural sources, in collaboration with industry and productive partners of medicine and development firms.
Cooperation Arrangements with Developing Countries: Collaboration with Lomé in microbiology; Ouagadougou in chemistry; Bamako in pharmacology; planned collaboration with South Africa in biochemistry.
Other International Cooperation Arrangements: Collaboration with Paris, Frankfurt, New Orleans, Florida and Lausanne. Planned with Italy, Osaka and Glasgow.

Egypt

Research Institute of Ophthalmology (RIO)

Address: 2 El-Ahram Street, P.O. Box 90, Giza, Egypt. **Phone:** (+20 2) 5735-688; 5717-881; **Fax:** (+20 2) 5735-688.
Director/Head: Mahmoud Hamdi Ibrahim.
Number of Research Scientists: 300; **Number of Staff:** 500.
Scientific Fields of Interest: Medical Sciences.
Main Lines of Research and Training Activities: *Research activities:* basic, epidemiological, biostatistical, clinico-experimental, clinical. *Educational activities:* lecturing, workshops, seminars, round-staff, training courses, upgrading programmes. *Clinical activities:* diagnosis, treatment, surgical-operating, health-care, rehabilitation.
Major Scientific Results or Products: National Research Project to detect most common eye diseases among primary school children in Egypt (11,200 pupils in 1995); establishment of ophthalmic unit in Abu-

Zaabal Leprosarium to provide eye health care to leprous on-site; national programme for prevention of blindness in Egypt.
Main Research Facilities Available: Most sophisticated equipment for ophthalmic research and practising; computer laboratory, central library and training classes; auditorium; 250 person conference hall with audio-visual-phonetic facilities connected with operating theatres; animal-house for experimental ophthalmology.
Future Development Plans: Determining national policy for prevention of blindness; national programme for control of occupational eye diseases among industrial, agricultural, sanitary, and municipal workers; establishment of regional branches in different localities in Egypt to spread services.
Cooperation Arrangements with Developing Countries: Pakistan, India, Indonesia, Arab countries, Africa and Latin America.
Other International Cooperation Arrangements: USA, Canada, Japan, UK, Germany, Italy, France, Netherlands, Spain and EU.

Ethiopia

Addis Ababa University — Institute of Pathobiology

Address: P.O. Box 1176, Addis Ababa, Ethiopia. **Phone:** (+251 1) 137438; **Telex:** 21205; **Fax:** (+251 1) 755296.
Director/Head: Teshome Gebre-Michael.
Number of Research Scientists: 18; **Number of Staff:** 36.
Scientific Fields of Interest: Biology; Veterinary Sciences; Medical Sciences.
Main Lines of Research and Training Activities: Schistosomiasis, Leishmaniases, Fascioliasis, intestinal helminthiasis, Development of Endod *(Phytolacca dodecandra)* as a molluscicide and detergent. Onchocerciasis, trypanosomiasis, malaria, food microbiology.
Major Scientific Results or Products: Epidemiological information generated on: schistosomiasis, leishmaniasis, intestinal helminthiasis, fascioliasis; molluscide and detergent developed from Endod, vaccine against filaria, food-borne diseases.
Main Research Facilities Available: State-of-art diagnostic equipment for leishmaniasis, scintillation counter, deep freeze centrifuges, desktop computers, small library, incubators, deep freezers, microscopes, insectary, animal house, field station, small generators, field vehicles.
Future Development Plans: Capability building through collaborations with national and international organizations by formulating and implementing projects jointly: providing bench space for outside researchers.
Cooperation Arrangements with Developing Countries: International Centre of Insect Physiology and Ecology and through it with countries that have similar collaborations.
Other International Cooperation Arrangements: Collaboration with Wellcome Trust, WHO, TDR, IDRC, University of Oslo, Natural History Museum, London, Norwegian Research Council, NUFU, SAREC (planned).

Ghana

University of Ghana — Noguchi Memorial Institute for Medical Research (NMIMR)

Address: P.O. Box 25, Legon, Ghana. **Phone:** (+233 21) 500374; **Telex:** 2556 UGL GH; **Fax:** (+233 21) 502182.
Director/Head: F.K. Nkrumah.
Number of Research Scientists: 23.

Scientific Fields of Interest: Medical Sciences.
Main Lines of Research and Training Activities: Problems of communicable diseases and nutrition; provision of training opportunities for postgraduate students in medical research; provision of specialized laboratory diagnostic and monitoring services in support of public health programmes.
Main Research Facilities Available: Equipment: cell culture systems; immunological assays systems (Elisa, IF, Fascan, etc.); monoclonal production; electron microscope; atomic absorption spectrophotometer; HPLC; coulter counter; automatic blood analyser; computers, amino acid analyser; biological safety cabinets; clinical auto analyser; ultra centrifuge; UV/VIS spectrophotometer; PCR Block.
Cooperation Arrangements with Developing Countries: Collaboration network between Ghana, Kenya and Zambia.
Other International Cooperation Arrangements: Ghana/Japan medical cooperation agreement; Accra/Copenhagen link on malaria research; NMIMR-Japan International Cooperation Agency (JICA)-World Health Organization (WHO) collaboration on training in laboratory diagnosis of Yellow Fever and other EPI Viral diseases; major donors include Japan International Cooperation Agency (JICA) and Government of Ghana, Accra-Edinburgh Link on Malaria Research, USAID/NMIMR OMNI Project, NMIMR/DBL Filariasis Research; NMIMR/IFPIR collaboration; WHO/OCP/South-West Ghana Onchocerciasis Project; NMIMR/NIH, Japan HIV Project; US Navy/NMIMR/Navrongo Malaria Project; Abbott/NMIMR, Onchocerciasis Project; NMIMR/IDRC Urban Agriculture Project, NMIMR/AMVTN (African Malaria Vaccine Testing Network).

India

National Institute of Immunology (NII)

Address: Shahid Jeet Singh Marg, JNU Complex, New Delhi 110 067, India. **Phone:** (+91 11) 686-3004 to 9, 686-3011 to 13, 686-2281, 686-3274, 657455; **Telex:** 031-73383 NII IN; **Fax:** (+91 11) 686-2125.
Director/Head: Sandip K. Basu.
Number of Research Scientists: 110; **Number of Staff:** 122.
Scientific Fields of Interest: Biochemistry/Biophysics; Veterinary; Medical Sciences; Immunology; Molecular Biology.
Main Lines of Research and Training Activities: Immunological regulation of fertility (antigonadotropin vaccine for women, research on sperm and egg antigens as candidate birth control vaccines, vaccine delivery systems, animal birth control injection); vaccines against communicable diseases (antileprosy vaccine for therapy and prophylaxis against leprosy, live recombinant vaccine against rabies, recombinant vaccine for small cell lung cancer; research on vaccine for TB); development of immunodiagnostics (for tuberculosis, typhoid, amoebiasis, hepatitis B, streptococcus, brucellosis, rotavirus, blood group antigens, pregnancy, ovulation; DNA probes for TB, HBV, Papilloma virus, human DNA fingerprinting, embryo sexing,); embryo biotechnology (micromanipulation, cryopreservation and sexing of embryos; non-surgical embryo transfer in cattle); bioprocess development for r-DNA products.
Major Scientific Results or Products: Phase II clinical trials on women with antigonadotropin vaccine; antileprosy vaccine in Phase III clinical trials in field area and 2 hospitals in Delhi; TALSUR animal birth control injection commercialized; transfer of technology to industry of diagnostic kits for detection of pregnancy, amoebic liver abscess, typhoid and blood group antigens (others being validated); recombinant vaccines for rabies and B hCG; recombinant LTB, luciferase and human growth hormone; standardized ETT and IVF methods for cattle.
Main Research Facilities Available: Gene synthesizer, peptide analyser, oscillation camera, computer workstation, scanning and transmission electron microscopes, laparoscopes, ultrasonographs, ultracentrifuges, micromanipulators, scintillation counters, fluorescent microscopes, LN plants, spectrophotometers, deep freezers, incubators, laminar flow hoods; microvax II computer.
Future Development Plans: Basic and applied research in biology and biotechnology.
Cooperation Arrangements with Developing Countries: Collaboration between NII and the International Centre for Diarrhoeal Disease Research (ICDDR), Dhaka, Bangladesh.
Other International Cooperation Arrangements: Exchange programme between Institut Pasteur, Paris and NII; Indo-French scientific exchange programme; South-to-South (STS) cooperation in population sciences and reproductive health supported by Rockefeller Foundation; collaboration between

NII and the Centre for Biomedical Research (CBR) of the Population Council, New York; Project on Contraceptive Development and Research in Immunology (CD&RI); UN Development Programme (UNDP) project on strengthening of NII, development of diagnostic methods using modern immunological and biomedical approaches; Integrated Long-Term Programme (ILTP) of Cooperation in Science and Technology between India and Russia; Indo-Swedish scientific exchange programme; Indo-United Kingdom scientific research collaboration; NII is a World Health Organization (WHO) Collaborating Centre for Research and Training (CCRT) in Immunology; part of UNESCO's International Network for Molecular and Cell Biology and FAO's Asian Network for Biotechnology applied to Animal Production and Health.

Postgraduate Institute of Medical Education and Research

Address: Sector 12, Chandigarh 160 012, India. **Phone:** (+90 172) 541062; **Fax:** (+90 172) 540401.
Director/Head: B.K. Sharma.
Number of Research Scientists: 98; **Number of Staff:** 1,883.
Scientific Fields of Interest: Medical Sciences.
Main Lines of Research and Training Activities: *Training:* Postgraduate/postdoctoral degrees MD/MS/MCh/DM/MDS/PhD in clinical subjects; BSc, MSc technology courses in pathology, biochemistry, microbiology, radiodiagnosis, radiotherapy, pharmacology and biotechnology, BSc/MSc in nursing; Short term clinical attachment for candidates from various parts of the country; Elective training for undergraduates coming from developed and developing countries. *Research:* Dental Caries, Fluorosis, diarrhoeal disease, rheumatic heart disease, hypertension, liver diseases, leprosy, haematology, toxicology, epilepsy, transplantation, venereal diseases, communicable diseases, rheumatology, paediatric allergy, maternal health and family welfare, paediatrics.
Major Scientific Results or Products: DNA analysis in relation to genetic defects in Thalassaemia. Polymerase chain reaction for diagnoses of tuberculosis, H. pylori associated gastro-intestinal diseases, immunohistochemical studies, evaluation survey of IUCD projects, isoenzymes as markers for diseases, primers for detection of virulent strains, magnesium acetate mouthrinsers on plaque acidigenicity, image guided fine needle aspiration cytology, hyperfractioned radiotherapy, brachytherapy, drug deaddiction.
Main Research Facilities Available: Library housed in separate complex close to hospital with large number of national and international journals, periodicals, text books and reference books, videoendoscopy, laparoscopy, gamma spectrometer, electromagnetic unit, image analyser, antenatal diagnosis of diseases, immunodiagnostic, surveillance of hospital infections, mycology, virology, diarroeal diseases, nitrous oxide-oxygen-sedation in dentistry, pneumolithotripsy, paediatric allergy, immunology, pneumology.
Future Development Plans: Oral Health Sciences, Advanced Paediatric Centre, Trauma Centre, Cardiac Centre, Drug-deaddiction Centre, Nuclear Medicine, Computerization of various facilities. CRD, ICU, minimally invasive surgery, organ transplantation.
Cooperation Arrangements with Developing Countries: MD/MS/MCh/MDS training to students from developing countries (postgraduate and postdoctoral). Arrangements with various SAARC countries for higher training in Indian Hospitals.
Other International Cooperation Arrangements: Clinical Parasitology (WHO), Biochemistry (WHO), Elective training of medical students.

Iran, Islamic Rep.

Djanbazan Biomedical and Rehabilitation Engineering Research Centre

Address: P.O. Box 19615/616, Tehran, Iran, Islamic Rep. **Phone:** (+98 21) 296530; **Telex:** 224326 DBRE; **Fax:** (+98 21) 295202; **E-mail:** dbrerc@irearn.bitnet.
Director/Head: Ali Khoshbaten.
Number of Research Scientists: 50; **Number of Staff:** 50.

Scientific Fields of Interest: Biochemistry/Biophysics; Materials; Engineering/ Technology; Medical Sciences.
Main Lines of Research and Training Activities: Specialize in research in disability related disciplines; include diverse such areas as prosthesis and implant design, where research and possible end products are directly applicable to disabled, to more theoretical and abstract research, such as simulation and modelling studies in medical and biomedical engineering; strong nucleus of physicians and medical and laboratory scientists in group investigating wide range of areas, such as drug design, clinical testing of drugs and working mechanisms of drugs.
Major Scientific Results or Products: FES: research and development of functional electrical stimulators; Ultrasound: in-depth studies into building ultrasonic scanners and tissue characterization; Fundermol: design of new natural ointment for burn treatment; Shape Memory Alloys: design and application of shape memory alloys as implants.
Main Research Facilities Available: Monitoring equipment, such as EMG, EKG; laser Doppler flowmetry instruments and access to MRI and CT scanners; number of PCs and software packages in areas such as mechanical and electrical CAD and finite element analysis.
Future Development Plans: Advance work in rehabilitation research through well-established programme of industrial collaboration and through industrial liaison office, plans underway to investigate disabled community's real needs and turn research results turn into products.
Cooperation Arrangements with Developing Countries: Research agreement in rehabilitation research with Shanghai University in China.
Other International Cooperation Arrangements: In 1992, UN donated US$10,000 for purchase of books.

The Medical Sciences University of Tehran — Faculty of Pharmacy

Address: P.O. Box 14155/6451, Tehran 14174, Iran, Islamic Republic. **Phone:** (+98 21) 6406757; **Fax:** (+98 21) 6461178.
Director/Head: A. Shafiee.
Number of Research Scientists: 69; **Number of Staff:** 150.
Scientific Fields of Interest: Biology; Biochemistry/Biophysics; Chemistry; Environment; Medical Sciences.
Main Lines of Research and Training Activities: Medicinal chemistry; pharmacology and toxicology; pharmacognosy; biotechnology; pharmaceutics (formulation, biopharmaceutics); radiopharmacy; clinical pharmacy; basic sciences and public health; social pharmacy.
Major Scientific Results or Products: Codeine phosphate, morphine sulphate, nifedipine, naloxone and RIA Elisa Kits (already in industrial scale). Heterocyclic chemistry, natural products, pharmacology, toxicology, biotechnology and pharmaceutics (many articles in international journals).
Main Research Facilities Available: HPLC-MS; GC-MS; NMR 400, 80; FTIR; atomic absorption; polygraph; HPLC.
Future Development Plans: Emphasize applied research.
International Cooperation Arrangements: Canada, England, Germany, France and Australia. WHO, IOCD, IBRO.

Malaysia

Institute for Medical Research, Malaysia

Address: Jalan Pahang, 50588 Kuala Lumpur, Malaysia. **Phone:** (+60 3) 2986033; **Fax:** (+60 3) 292-0675.
Director/Head: J.W. Mak.
Number of Research Scientists: 100; **Number of Staff:** 450.
Scientific Fields of Interest: Medical Sciences.

Main Lines of Research and Training Activities: *Research*: Tropical Medicine, community medicine, cancer, traditional medicine, environmental health; Specialized medical diagnostic services: All fields. *Training:* Medical laboratory technologists, Postgraduate courses in microbiology and parasitology.
Major Scientific Results or Products: Medical diagnostic kits; epidemiological data in support of control programme strategies.
Main Research Facilities Available: All types.
Future Development Plans: Cancer; environmental health; traditional medicine; tropical medicine.
Cooperation Arrangements with Developing Countries: SEAMED-TROPMED countries.
Other International Cooperation Arrangements: IMR is WHO Regional Centre for Research and Training in Tropical Diseases.

Mexico

Center for Research and Advanced Studies — Department of Experimental Pathology

Address: CINVESTAV, Instituto Politécnico Nacional (IPN), Depto. Patologia Experimental, Apdo. 14-740, 07000 Mexico, D.F. Mexico. **Phone:** (+52 5) 7545116, 7525947; **Telex:** 1772826 PPTME; **Fax:** (+52 5) 7545116.
Director/Head: Adolfo Martinez-Palomo.
Scientific Fields of Interest: Medical Sciences.
Main Lines of Research and Training Activities: Biomedical research on human parasitic diseases prevalent in Mexico: malaria, amoebiasis, giardiasis, Chagas' disease, leishmaniasis and trichomoniasis. Main objectives: Increase knowledge on mechanisms of disease in these parasitic infections; provide alternatives for better control of infections. Research and formal training at MSc and DSc levels provided in following disciplines applied to parasitology: development biology, pathology, cell biology, immunology, genetics, molecular biology, virology and molecular entomology.
Major Scientific Results or Products: Better understanding of mechanisms of pathogenesis of experimental hepatic and intestinal amoebiasis; design of new models of intestinal and hepatic amoebiasis; clarification of mechanisms of *in vitro* cytopathic effect produced by pathogenic amoebas; evidence on existence of species differences between pathogenic and nonpathogenic amoebas; definition of molecular bases for adhesion and cytopathic effect in amoebiasis; search for effective immunogens in experimental amoebiasis using purified or recombinant amoebic antigens; analysis of cytopathic effect of giardias isolated from asymptomatic and symptomatic infections in children.
Main Research Facilities Available: Equipment, computers, bibliographic support required for modern biomedical research.
Future Development Plans: Expand scope to include viral infections in addition to parasitic diseases.
Cooperation Arrangements with Developing Countries: Federal University of Rio de Janeiro, Brazil.
Other International Cooperation Arrangements: Research collaboration and postgraduate training programmes carried out with Harvard University, University of California/Berkeley and San Francisco and New York University. Major donors include: Rockefeller Foundation, MacArthur Foundation, McConnell Clark Foundation, Howard Hughes Foundation, Pew Foundation and World Health Organization (WHO)-TDR. Other cooperation arrangements with: Rehovot Institute, Israel; National Institute of Health, USA.

Nigeria

National Institute for Medical Research (NIMR)

Address: 6 Edmond Crescent, P.M.B. 2013, Yaba, Lagos, Nigeria. **Phone:** (+254 1) 861454, 861732, 800090-4; **Fax:** (+254 1) 861454, 861732, 800090-4; **E-mail:** sysop@nga.heathnet.ng.
Director/Head: L.A. Salako.
Number of Research Scientists: 40; **Number of Staff:** 243.
Scientific Fields of Interest: Medical Sciences.
Main Lines of Research and Training Activities: Research Activities are grouped into programmes, two main groups: (A) Communicable Diseases (five programmes): 1. HIV/AIDS; 2. Tuberculosis; 3. Malaria; 4. Diarrhoea; 5. Meningitis. (B) Non-Communicable Diseases (two programmes): 1. Nutritional deficiency; 2. Haemoglobinopathies.
Major Scientific Results or Products: Sero-epidemiology of HIV; development of improved Ogi (Nigerian fermented weaning food) for diarrhoea control. Production (on laboratory scale) of meningococcus vaccine and ABO antisera; offer diagnostic services (specialised and routine) to public e.g. HIV testing, prenatal diagnosis.
Main Research Facilities Available: Facilities for *in vitro* cultivation of malaria parasite, molecular biology and field studies for relevant programmes; two outstations. ELISA machine and reader, fluorescent microscope, PCR machines, facilities for protein and DNA studies; spectrophotometers, HPLC, ultracentrifuges, gamma counter, scintillation counter; library with 6,000 monographs and 30 journal titles; CD-ROM.
Future Development Plans: To expand present facilities to conduct scientific research optimally in relevant disciplines, including biotechnology and epidemiology.
Cooperation Arrangements with Developing Countries: Institutions in East Africa, West Africa on HIV and diarrhoea diseases; cooperation with International Centre for Genetic Engineering and Biotechnology, New Delhi, India.
Other International Cooperation Arrangements: Cooperation with University of Maryland, USA. Support from WHO, UNICEF, UNDP, ODA.

Pakistan

Aga Khan University (AKU)

Address: Stadium Road, P.O. Box 3500, Karachi 74800, Pakistan. **Phone:** (+92 21) 4930051; **Telex:** 29667 AKHMS PK; **Fax:** (+9 21) 4932095; **E-mail:** cvellani@akuc.edu.
Director/Head: Camer W. Vellani.
Number of Research Scientists: 25; **Number of Staff:** 75.
Scientific Fields of Interest: Biochemistry/Biophysics; Medical Sciences; Education.
Main Lines of Research and Training Activities: Research is in basic medical sciences - biochemistry, anatomy, physiology, pharmacology, microbiology and pathology, as well as in Community Health Sciences. There is some research in clinical departments (medicine, surgery, paediatrics) and in nursing. Training includes postgraduate medical education and an MSC in epidemiology. PhDs are done in association with other universities in Pakistan and abroad.
Major Scientific Results or Products: Infectious disease (immunology of tuberculosis and leprosy), pharmacology, biochemistry and community health sciences and initial work on policy related studies in school education.
Main Research Facilities Available: Usual laboratory equipment for research in molecular biology, biochemistry, immunology; extensively computerised internal network being installed; biomedical library with 500 journals; field stations urban and rural for community research.
Future Development Plans: New research building under construction to be completed in 1999; strategic plan for research being developed.

Cooperation Arrangements with Developing Countries: Existing collaborations with Karolinska (Stockholm), Toronto, British Columbia, McMaster (Canada) and Royal Postgraduate Medical School (UK); partnership with University of Toronto and Oxford (UK) for education.
Other International Cooperation Arrangements: Part of Aga Khan Development Network, which is committed to development of communities in developing countries; significant international cooperation: CIDA for development of Women Health Professionals Programme to improve nursing in Pakistan, in partnership with McMaster University; EC, UNDP, CIDA and AKF funded programme grants for initial 6 years of Institute for Educational Development.

National Institute of Health — Clinical Research Division

Address: Islamabad, Pakistan. **Phone:** (+92 51) 240514; **Telex:** NAIB 5811-PAK; **Fax:** (+92 51) 240797.
Director/Head: Shaukat H. Kiani.
Number of Research Scientists: 10; **Number of Staff:** 90.
Scientific Fields of Interest: Medical Sciences.
Main Lines of Research and Training Activities: Clinical trials of indigenous drugs in allopathy, homeopathy and Unani systems of medicine; clinical trials of vaccine and sera manufactured locally and abroad; research in epidemiology of tropical communicable diseases, infectious diseases and dangerous pathogens; laboratory investigation for research of diseases.
Major Scientific Results or Products: On-going research in medical sciences to establish bioavailability; pharmacokinetics and pharmacodynamics of drugs/medicine vaccine and sera; establish facts about test tube results vs. clinical trial results; on-going research to reduce cost of treatment and provide efficient and effective health care services.
Main Research Facilities Available: Well-equipped 50 bed hospital available supported by strong laboratory investigation system and drugs analysis and study laboratory system for allopathy, homeopathy and Unani systems of medicine.
Future Development Plans: Strengthening of existing facilities.
Cooperation Arrangements with Developing Countries: National Institute of Health is World Health Organization (WHO) collaborating centre for research and training in viral diagnostics; cooperation can be extended to developing countries in field research and studies.

Papua New Guinea

Papua New Guinea Institute of Medical Research (PNGIMR)

Address: P.O. Box 60, Goroka, E.H.P. 441, Papua New Guinea. **Phone:** (+675) 7322800; **Fax:** (+675) 721998.
Director/Head: Michael Philip Alpers.
Number of Research Scientists: 20; **Number of Staff:** 230.
Scientific Fields of Interest: Environment; Medical Sciences.
Main Lines of Research and Training Activities: Major disease problems of Papua New Guinea: pneumonia, malaria, diarrhoeal disease, typhoid, sexually transmitted diseases, filariasis, malnutrition, anaemia, measles, hepatoma. Women's health. Diseases particular to Papua New Guinea: kuru, pigbel (enteritis necroticans), swollen belly syndrome (strongyloidiasis). Diseases of modernization: diabetes, asthma, cardiovascular disease. Environmental health: medical anthropology, human genetics.
Major Scientific Results or Products: Evaluation of vaccine against pigbel showing efficiency and effectiveness; epidemiological elucidation of transmission kuru; evaluation of pneumococcal vaccine against pneumonia in children showing efficacy and immunogeneticity; epidemiological elucidation of spatial and temporal variation in malaria, and progress in development of malaria vaccines; epidemiological definition of asthma as new disease in rural communities.
Main Research Facilities Available: Bacteriological, virological, immunological, parasitological, entomological and molecular biological laboratories; vehicles, field equipment and field stations for

epidemiological and behavioural studies; 75 microcomputers and software; library of tropical medicine and biomedical science with 3,500 books and 120 journals; branches with offices, laboratories and staff accommodation in Goroka, Madang, Tari, Maprik, Wewak, Port Moresby and Lae.
Future Development Plans: Expanded library and seminar facilities; new programmes in operational and pharmacological research; expanded programmes on vaccine development and evaluation in malaria, pneumonia, typhoid and viral diseases (poliomyelitis, measles, hepatitis, encephalitis); expanded programmes on sexually transmitted diseases and AIDS, diseases of modernization and environmental health.
Cooperation Arrangements with Developing Countries: Cooperation in typhoid research with colleagues in Malaysia.
Other International Cooperation Arrangements: Collaboration with Walter and Eliza Hall Institute of Medical Research, Melbourne; Queensland Institute of Medical Research and University of Queensland, Brisbane; Imperial College, London, Institute of Molecular Medicine and Department of Zoology, Oxford University, Case Western Reserve University, Cleveland.

Saudi Arabia

King Faisal Specialist Hospital and Research Centre

Address: P.O. Box 3354 (MBC-03), Riyadh, 11211, Saudi Arabia. **Phone:** (+966 1) 422 7850; **Fax:** (+966 1) 442 7854.
Director/Head: Sultan T. Al-Sedairy.
Number of Research Scientists: 41; **Number of Staff:** 98.
Scientific Fields of Interest: Biology; Biochemistry/Biophysics; Chemistry; Environment; Medical Sciences.
Main Lines of Research and Training Activities: Four departments. *Department of Biological and Medical Research,* for basic and translational research; *Department of Radionuclide and Cyclotron Operations,* develops and provides diagnostic radiotracers and radiopharmaceuticals for clinical and research studies; *Biomedical Statistics and Scientific Computing Department,* for applied biostatistics, mathematics and informatics, and for the analysis and interpretation of biological lab investigations and of clinical patient studies; *Biomedical Physics Department,* provides essential support for cancer treatment and dosimetry as well as expertise in health safety and monitoring of radiologic diagnostics equipment in the Hospital.
Major Scientific Results or Products: Nucleus is insulated from large cytosolic calcium ion changes; Monomeric IgE evokes a transient calcium rise in individual human neutrophils; elevated pyrogenic cytokines in heatstroke; effect of cytokines mediated modulation of NM23; identification of 'shamma' (a chewable agent) as carcinogen; isolation of repair gene in yeast homologous to human gene; optimization of sensitivity and stability of WEIII 164 clones 13 in presence of Actinomycin-D for Tumor Necrosis Factor (TNF) bio-assay; new missense mutation and polymorphism in pyridoxine responsive and non-responsive Homocystinuria; gene expression in chondrocytes using PCR; characterization of fission yeast RAD2 gene; development of techniques for quantification of *Acanthamoeba trophozoites* in culture; diagnostic implications of *cladosporium*; isolation and characterization of local environmental pollutants and allergens; development of analytical methods for resolution an analyses of racemic drugs and chiral pharmaceuticals in both bulk, dosage forms and biological fluids using chiral chromatography; synthesis of biologically active compounds for pharmacological evaluation with aim to improve on their biological activity, elucidate essential pharmacophores and understand structure in activity relationships of these agents with emphasis on fluorinated medicinals; projects in field of antioxidant and anticancer agents on-going; isolation of herpes sample virus type I; cytomegalovirus detection by biotinylated DNA probes; cytogenetic characterization of AT heterozygotes using lymphoblast; Inhibition of mutagenic activities of aflatoxin B, etc. by Cassia senna; detection of Der p, Der f, Per a 1 and Fel dl, in homes of patients in Saudi Arabia; identification of Ulocladium as aeroallergen.
Main Research Facilities Available: Positron Emission Tomography (PET); flow and image cytometry; tumour tissue and serum bank; DNA sequencing and synthesizing; true confocal scanning microscopy (TCS); animal facility; computer and statistic facility; environmental sampling equipment (viable and non-viable); tissue culture facility; gas chromatograph; capillary electrophoresis equipment; TLC densitometer

scanner; HPLC equipment; motor measurement equipment (OPTOTRAK, AMTI, QUESTOR (radiography); automated oligosynthesizer; cytogenetic analyser; PCRs; tissue culture suite; mass spectrometry; atomic absorption and other spectrophotometer; gamma and liquid scintillation counter; fluorescence spectrometer; cyclotron; thermal cyclers; automated DNA sequencer; E-mail and CC mail facility.
Future Development Plans: Build collaborative industrial partnerships with leading pharmaceutical companies to obtain and provide additional resources in several areas key to organization's research objectives.
International Cooperation Arrangements: ALK Laboratories (Denmark); Allergy Unit, Department of Medical Research, Taichung Veterans General Hospital, Taiwan; International Atomic Energy Commission, Vienna; University of Wales (Cardiff); Baylor University; Colombia University, New York; Yale University; University of Virginia; Duke University; George Washington University; King Saud University; King Abdulaziz City for Science and Technology (KACST); Natural Heart and Lung Hospital/Harefield Hospital/Imperial College, London. Hoffman-LaRoche; El: Lilly.

Senegal

Institut Pasteur de Dakar (IPD)

Address: 36 Avenue Pasteur, BP 220, Dakar, Senegal. **Phone:** (+221) 239883; **Fax:** (+221) 238772; **E-mail:** moreaujp@pasteur.pasteur.sn.
Director/Head: Jean-Paul J. Moreau.
Number of Research Scientists: 26; **Number of Staff:** 81.
Scientific Fields of Interest: Medical sciences.
Main Lines of Research and Training Activities: Arbovirology and haemorrhagic fever viruses; molecular virology; immunology of malaria; immunogenetics; epidemiology (mainly arboviruses and malaria); Enteropathogenic Bacter; polio viruses and Influenza viruses; African Simian Retroviruses; medical entomology.
Major Scientific Results or Products: Most important collection of African arboviruses; knowledge in epidemiology and immunology of malaria; knowledge in epidemiology and entomology about arboviruses; thermostabilized yellow fever vaccine.
Main Research Facilities Available: P3 class laboratories; 34 laminar flow devices; 2 cytofluorimeters; 2 field stations (DIELMO and N' DIOP for Malaria studies); more than 50 microcomputers; Internet connection, library.
Future Development Plans: Establishing a Department of Virology from present different laboratories of virology in an effort to pool resources to survey emerging viral diseases in West Africa.
International Cooperation Arrangements: International network of Pasteur and associated institutes (24 institutes on the five continents).

Tanzania

National Institute for Medical Research (NIMR)

Address: P.O. Box 9653, Dar es Salaam, Tanzania. **Phone:** (+255 51) 30770; **Telex:** 41919 NIMR TZ; **Fax:** (+255 51) 30660.
Director/Head: W.L. Kilama.
Scientific Fields of Interest: Medical Sciences.
Main Lines of Research and Training Activities: Research on medical sciences emphasizes on the development of an appropriate technology for diagnostic purposes, e.g. RIA, ELISA, IFA, etc.

Collaborative research programme as well as organizing training activities in the field of medical sciences on both national and international basis. Field and laboratory research aiming at developing and/or testing of new methods or approaches for health promotion, disease prevention, diagnosis, treatment and control. The target diseases are those of public health importance in the country and include malaria, schistosomiasis, gastro-intestinal parasitoses, diarrhoeal diseases, sexually transmitted diseases (STDs) including AIDs, filariasis (and onchocerciasis), tuberculosis, and trypanosomiasis.
Major Scientific Results or Products: Inputs and guidelines for national control programmes for target diseases.
Main Research Facilities Available: 10 Micro-computers; 2 medical libraries; 2 research centres; 7 research stations; high-performance thin layer chromatography (HPTLC) scintillation counter; fluorescent and research microscopes.
Future Development Plans: Development of health systems research unit, research coordination, and database for decision- and policy-makers, and manpower development.
Cooperation Arrangements with Developing Countries: Hosting co-sponsored regional scientific conferences, seminars, workshops, etc.
Other International Cooperation Arrangements: Advising and/or supervision of international students undertaking research in Tanzania as part of their training; Reviewing research and training proposals submitted to donors, for example, WHO/TDR, IDRC, SAREC, UNICEF, ICI, SDC, NIMR/DBL.

Thailand

Health Science Research Institute

Address: 88/7 Soi Bamrasnaradura Hosp., Tivanond Road, Amphur Muang, Nonthaburi 11000, Thailand. **Phone:** (+66 58) 99850-8; 99869; **Fax:** (+66 58) 99869.
Director/Head: Jakkriss Bhumisawasdi.
Number of Research Scientists: 20; **Number of Staff:** 50.
Scientific Fields of Interest: Biochemistry/Biophysics; Chemistry; Environment; Veterinary Sciences; Medical Sciences.
Main Lines of Research and Training Activities: Research on medical sciences With emphasis on developing an appropriate technology for diagnostic purposes, e.g. RIA, ELISA, IFA, etc. Collaborative research programme as well as organizing training activities in the field of medical sciences on both national and international basis.
Major Scientific Results or Products: Organize an appropriate national model on laboratory aspects for diagnosis e.g. neonatal screening, external quality control assessment programme, etc.
Main Research Facilities Available: Radioisotope laboratory with all analytical concept instrumentation, computers); experimental animal centre; biohazard laboratory; scientific equipment centres.
Future Development Plans: Due to public health problems of developing countries, most research programmes focus on utilizing local technology as much as possible.
Cooperation Arrangements with Developing Countries: Organize training programmes for scientists and supervise research programmes for production of RIA kit for developing countries.
Other International Cooperation Arrangements: Some coordinating programmes have been conducted as training resources on aspects of RIA, IRMA, and Monoclonal Antibody Production.

Zimbabwe

Blair Research Laboratory

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Director/Head: S.K. Chandiwana.
Number of Research Scientists: 40; **Number of Staff:** 140.
Scientific Fields of Interest: Biology; Engineering/Technology; Medical Sciences.
Main Lines of Research and Training Activities: Health System Research; HIV/AIDS Research; Schistosomiasis research; malaria research; communicable diseases and health technology. Training is offered on attachment basis in all the aspects with special emphasis on diagnosis molecular biology, immunology, epidemiology and drug resistance.
Main Research Facilities Available: Computers, PCR equipment, cell culture equipment, E.G. laminar flow hoods, CO2 incubators, spectrophotometers, ELISA readers, library.
Future Development Plans: To upgrade INFRA structure and equipment; create modern laboratory facilities; develop staff to enhance performance of scientists and improve competency of technical and support personnel.
Cooperation Arrangements with Developing Countries: Kenya, Zambia, Sudan, South Africa.
Other International Cooperation Arrangements: University of Oxford, Imperial College, London School of Tropical Medicine and Hygiene, Danish Bilharziasis Laboratory, Danish School of Pharmacy, Johns Hopkins.