

### 3. Life and Health in a Changing World

**Partner countries** – Sweden, Japan, Denmark, France, Canada, Switzerland, the United Kingdom, Belgium, Switzerland, the United States, Germany, Portugal, the Netherlands, Argentina, Mexico, Australia, Spain.

**Graduation Courses** - Bioethics; Biological Sciences (Molecular Biology), Clinical and Cultural Psychology; Health Sciences; Medical Sciences; Informatics, Geography, Molecular Pathology.

The speed and intensity of changes to the conditions of life on Earth have prompted increasing efforts to ensure health and wellbeing – goals humankind has pursued for centuries. Human healthcare is a challenge that, according to the World Health Organization, requires efficient, low-cost equipment and materials for disease prevention, treatment, and rehabilitation. Although science has developed rapidly since the twentieth century, the speed of health technology transfer has not kept pace. This situation is more critical in countries with fewer resources for health care, which means that their populations are often denied access to adequate treatment. Brazil has serious exclusion-related problems, which call for the development of methods, materials, and equipment to meet growing demands for human-centered, dignified care. Diagnostic evaluations of problems related to health/disease phenomena in human populations are important, as is the identification of the factors that determine them, since they can serve to: ascertain the real scope of these problems; provide information needed for the adequate planning, execution, and evaluation of disease prevention, control, and treatment initiatives, and to set priorities; and to identify what factors cause certain illnesses (e.g., using modern technologies to understand the genetic and molecular mechanisms of pathogens). This information could feed into research efforts to develop new methods for the diagnostic evaluation, planning, execution, and evaluation of prevention, control, and treatment initiatives for established and emerging diseases. Furthermore, current life habits and recent technologies are turning serious diseases into chronic diseases, prolonging life expectancy, and creating as yet unstudied stages of treatment. Finally, it is a very challenging task to plan and implement programs, policies, legislation, and research in a unified manner, where professionals from different areas join forces to improve the results of public policies. In particular, if threats to health (e.g., outbreaks of zoonoses, antibiotic-resistant bacteria, and food safety issues) are to be detected, adequately and efficiently addressed, and prevented, epidemiological and laboratory data must be shared across different sectors – government, academia, and specialists. Another challenge is the inversion of the age pyramid in Brazil, which calls for a greater understanding of the different factors related to the ageing process.

### Subtheme 3.1. Genetic and molecular mechanisms in diseases

- *Develop research projects and provide postgraduate education opportunities in international collaborations to consolidate and expand on scientific knowledge concerning genetic and molecular mechanisms in diseases using modern technologies, and identifying the factors that cause different diseases and conditions*

### 3.2 Health and society, epidemiology of chronic, emerging, and neglected infectious and non-infectious diseases

- *Develop research projects and provide postgraduate education opportunities in international collaborations to consolidate and expand on scientific knowledge concerning health and society in general, as well as the epidemiology of chronic, emerging, and neglected infectious and non-infectious diseases. Diagnostic evaluations of problems related to health/disease phenomena in human populations enable: the provision of information for the planning, execution, and evaluation of disease prevention, control, and treatment initiatives; the selection of priorities in this area; and support for research into new methodologies for the diagnostic evaluation, planning, execution, and evaluation of prevention, control, and treatment initiatives for established and emerging diseases.*