The University of Udine (UNIUD) is an Italian Public University founded in 1978 by National Law. Currently, UNIUD offers 39 first cycle degree courses, 35 second cycle degree courses and 3 single cycle courses. In addition, the University offers postgraduate teaching and research, with a broad and diverse range of training courses. It has 15.635 students and 646 professors and researchers. Scientific research is performed and coordinated by 8 Departments and 9 Research centres and supported by a central administrative office. In the programming period 2014-2020 UNIUD has been involved in many different EU research projects:

HORIZON 2020: 34 projects

International programs: 45 projects

Territorial cooperation: 27 projects,

National and regional programs: 149 projects

Since May 2016, the University of Udine officially obtained the HR Excellence in Research Award from the European Commission. In the health care sector, UNIUD has 8 first cycle degree courses, 1 single cycle degree, 1 master degree course and 21 residency programs.

The Department of Medicine (**DAME**) has almost 100 professors and researchers and almost 2.000 students. DAME has managed in the period 2015-2020 59 research projects funded on competitive calls for a budget of almost 8M€.

HORIZON 2020: 9 projects

International programs: 5 projects

Territorial cooperation: 5 projects,

National and regional programs: 40 projects

Main research facilities for students and researchers at DAME:

- Cell Culture Platform (primary and organoid lines and cultures and for the preparation of histological samples for IHC analysis);
- Cell Imaging Platform, Electronic Microscopy and Nanoscopy (high resolution of the last generation, for the analysis of sub-cellular dynamics in normal and pathological conditions);
- Genomics and Bioinformatics Platform (analysis of genomes and transcriptomes using latest-generation NGS techniques);
- Simulation center for high level training and research.

DAME's scientific interests are focused on different research topics: Active ageing, Cardiovascular sciences, Degenerative and inflammatory diseases, Diabetes and nutrition, Education and simulation in health, Exercise physiology, sport medicine and rehabilitation, Imaging e advanced diagnostics, Microbiology and infectivology, Molecular and clinical oncology, Neurosciences, Pharmacology, Precision medicine, Public health and welfare, Tissue regeneration and transplantation, Women and children health.

<mark>If needed select the appropriate research cluster</mark>

Main research topics of **active ageing** cluster:

Active aging involves a general lifestyle strategy that allows preservation of both physical and mental health during the aging process. The Active aging group covers a multidisciplinary area including epidemiology and diseases risk factors, neurosciences and psychiatry, oncology, ophthalmology, diabetes, cardiovascular sciences, clinical and geriatric assessment, nutrition and health education, physiology and metabolism as well as sport science.

Main research topics of **Cardiovascular sciences** cluster:

The group is involved in basic, translational, and clinical researches in the field of cardiovascular medicine. In our labs, molecular and physiopathological mechanisms of cardiovascular diseases are evaluated in cellular

and animal models and in our Clinics, observational and clinical studies are performed on the most important topic of cardiovascular medicine.

Main research topics of **Degenerative and inflammatory diseases** cluster.
Chronic diseases' morbidity and mortality are characterized by degenerative and inflammatory processes whose molecular and physiopathological mechanisms are the focus of this group. Basic, translational, and clinical studies are currently performed in our Centers on the most important degenerative and inflammatory diseases.

Main research topics of **Diabetes and nutrition** cluster.
This cluster is focuses in clinical and preventive aspects of type 1 and type 2 diabetes, with particular emphasis on the role of precision medicine and the use of modern online monitoring techniques. Also, in this group nutrition and dietary habits are faced from the various clinical application point of view and through the study of innovative tools and methods for the detection of eating habits in the population.

Main research topics of **Education and simulation in health** cluster.
Health care undergraduate, postgraduate and advanced education innovations by designing and testing the effectiveness of simulation technology. The effective development of technical and non-technical skills among health-care professionals through mono and multidisciplinary courses are the main lines of research where qualitative, quantitative and multi-method approaches are used.

Main research topics of **Exercise physiology, sport medicine and rehabilitation** cluster.
The research focus of the cluster deals with exercise physiology, bioenergetics, biomechanics and rehabilitation. Apart from the study of basic mechanisms (spanning from isolated muscle fibers to organ and whole body physiology), translational applications to sports science, sports medicine, training/detraining, environmental physiology, exercise tolerance in chronic diseases, are proposed and analyzed. The research in the rehabilitation field gather together orthopedics and rehabilitation specialist to evaluate post-traumatic and pathological conditions.

Main research topics of **Imaging and advanced diagnostics** cluster.
Diagnostic tools are of pivotal importance to achieve reliable assessment of diseases, and refer patients to personalized treatment. This group includes different fields of research on imaging and advanced diagnostic techniques, including breast and abdominal radiology, oncology, hepatology, organ transplantation, and gynaecology. All them pay special attention to the implementation of novel technologies and related clinical applications.

Main research topics of **Microbiology and infectivology** cluster.
Experimental, clinical and laboratory investigations in the broad field of infectivology and clinical microbiology. The aim is to perform basic and applied research relevant to therapy and diagnostics in microbiology, infectious diseases, immunology and epidemiology as well as in aspects such as surveillance and prevention of microbial diseases.

Main research topics of **Molecular and clinical oncology** cluster.
There are multiple applications of molecular tests in clinical oncology. Selection of drugs based on the presence of actionable mutations has become a determinant part of cancer therapy, aimed to tailoring treatment to individual patients. This group is involved in molecular studies relevant to the mechanisms of disease and all aspects of oncology research for solid and hematologic neoplasms.

Main research topics of **Neurosciences** cluster.
Neurosciences represents one of the most exciting fields of research, with implications extending far beyond healthcare. Different disciplines are included in this group, including psychiatry, neurology, neurophysiology, neuro-physiopathology, cellular biology, histopathology, and neurogenetics

Main research topics of **Pharmacology** cluster.
This group is clinically oriented to the study of pharmacokinetics and pharmacodynamics of both new and commonly used drugs in human therapy. In our labs, basic research is conducted to test new chemical and biological compounds with potential benefits on the molecular process of cancer and other degenerative diseases.

Main research topics of **Precision medicine** cluster.
The focus of precision medicine is to identify effective therapeutic approaches for patients based on their individual genetic, environmental and lifestyle factors. Topics of the group contain microbiological and immunological investigation, biomarker research, immunotherapy, neuroscience and oncology research at the molecular, genetic, cellular and systems level.

Main research topics of **Public health and welfare** cluster.
The line of research gather together the researchers involved in the analysis of health needs and lifestyles and in the assessment of the quality of living environments, natural resources (dietary habits and food security, water, air, soil, landscape) and social protection resources. also, the effectiveness of primary prevention and empowerment measures activated in individual form (healthy citizen), group (with homogeneous health risks or related problems), communities or through social networks for improve health management, prevent risks and manage chronic diseases is studied.

Main research topics of **Tissue regeneration and transplantation** cluster.
Basic, translational and clinical research in the field of organ/tissue repair, regeneration and transplantation. The topics spread from basic research at the molecular level, development of organoids and regeneration of tissues, to immune response to allo and xeno-antigens, finally reaching the clinical level with applied research in the field of cells transplant and solid organ transplantation.

Main research topics of **Women and children health** cluster:
The group has several subsections which collaborate in a coordinated manner in teaching, research and patient care and promote the health of women and children by following an integrated approach covering areas such as Pediatrics, Nutrition and Health Education, Obstetrics, Gynecology and Oncology.

==Describe the specific competences of the research group/s involved in the project==

The UniUD Unit is based on the expertize of ………. research groups: