Public Health Epidemiology, Statistics and Economics

Progetto di ricerca **Research project**	*"Technology assessment of Genotype-based optimization of care of individuals with cardiomyopathies"* **(PUBLIC.1)**
Tipo/Type	Borsa Dipartimentale Department Scholarship
Borse/Scholarships	1
Abstract	To date, the global burden of genetically driven cardiomyopathies (CMP)is difficult to estimate, given the limited epidemiological studies. Due to introduction of next-generation sequencing (NGS) technologies, the knowledge of the genetic bases of cardiomyopathies has largely increased. In light of this, many genes and loci have been identified. The project aims to describe a complete overview of studies with patients with CMP's and positive genetic testing. We will try to define differences in outcome prediction when stratifying patients based on genotype. We will study patients with CMP's with genetic testing and classify them according to their phenotype and genotype. Gene variants will be classified as pathogenic/likely pathogenic (P/LP). The combined study endpoints will be: 1) primary outcome: all-cause mortality or organ death-heart transplantation; 2) arrhythmic secondary outcome: sudden cardiac death or major ventricular arrhythmias; and 3) heart failure-related secondary outcome: heart failure–related death or heart transplant or left ventricular assist device implant. Comparisons between groups will be made using appropriate statistical tests. Appropriate time-to-event models will be used to investigate potential genetic determinants of outcomes. The impact of using Genotype-based healthcare optimization technologies will be assessed.
Tutor	Prof. Lorenzo Giovanni Mantovani

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Progetto di ricerca **Research project**	"Lifestyle-related risk in workers: population-based occupational epidemiologic evidence" **(PUBLIC.2)**
Tipo/Type	Borsa Dipartimentale Department Scholarship
Borse/Scholarships	1
Abstract	Prevention of cardiovascular disease (CVD) is of key importance in reducing morbidity, disability and mortality worldwide. Early diagnosis of life-style risk factors is thought to be beneficial for individuals and populations. However, most epidemiologic evidence on occupational population(s) is based on studies conducted several decades ago, when the spread of life-style risk factors were profoundly different in magnitude. The aim of the study is to estimate prevalence of CVD life-style risk factors in working population(s) in Italy, and to investigate the potential impact of life-style related risk factors management on the burden of CVD, using available evidence and direct empirical testing.
Tutor	Prof. Lorenzo Giovanni Mantovani

Public Health Epidemiology, Statistics and Economics	
Progetto di ricerca **Research project**	"Machine learning and predictive statistical models for the assessment of the impact of biomarkers in the clinical contexts of the IMPACT project" **(PUBLIC.3)**
Tipo/Type	Borsa Dipartimento di Eccellenza 2023-2027 Scholarship Department of Excellence 2023-2027
Borse/Scholarships	1
Abstract	This project aims to develop algorithms that integrate clinical variables (i.e. US imaging and FNA/histological data) to improve the diagnostic assessment in different cohorts of patients (I.e. thyroid nodules). The algorithms will be validated using AI and biostatistical methods to analyze and weigh the various granular variables present in reporting systems. The ultimate goal is to provide more accurate and reliable R predictions, which can aid physicians in the management of patients .This integrative approach will require the development of advanced AI and machine learning algorithms to analyze and interpret the complex and heterogeneous data generated by different platforms. These algorithms will integrate multiple data types to identify key features and biomarkers. Additionally, they will need to provide transparent and interpretable outcomes to facilitate their use as clinical decision support tools by pathologists and clinicians.
Tutor	Prof. Fabio Pagni