




# Data Card - Cohesion policy & research on Multiple Sclerosis

*May 2024*


OPENCOESIONE



Multiple sclerosis is a neurodegenerative disease that affects the central nervous system: it is complex and unpredictable, but it is not contagious or fatal. Multiple sclerosis is characterized by an anomalous reaction of the immune defenses that attack some components of the central nervous system, mistaking them for foreign agents, which is why it falls under autoimmune diseases. Thanks to treatments and research advances, people with multiple sclerosis can maintain a good quality of life, with an expectation not far from that of those who do not receive this diagnosis. It is also for this reason that cohesion policies have invested in research and innovation projects, often linked to increasing and improving the predictive capacity of the onset of this disease, supporting universities, in projects also carried out in collaboration with enterprises in the pharmaceutical sector: it happened in all programming periods and from 2021-2027 the commitment to health also becomes

the object of a specific national programme, the [National Programme Health Equity](#), aimed in particular at 7 regions of Southern Italy classified as less-developed regions.

On the occasion of World Multiple Sclerosis Day celebrated on 30th May, a Data Card describes some of the financed projects aimed at financing the scientific research and to raise public awareness of the disease from which at least 2.8 million people suffer worldwide and this figure is certainly underestimated. It is no coincidence that the theme chosen for the 2024 and 2025 World Days is "Diagnosis", given that 83% of countries globally have conditions that make early diagnosis of the disease difficult and that however "is fundamental to allow early treatment with disease-modifying therapies that can minimize relapses and reduce future disability" and "also allows lifestyle changes to help manage multiple sclerosis" as






explained by the MS International Federation, which promotes the Day.

In Italy there are 1 million people affected by multiple sclerosis: in addition to the 133,000 people with MS (2 out of 3 are women) there are their family members and caregivers, their relatives, friends, acquaintances, and their doctors, health and social workers, work colleagues, the entire local network. It is estimated that every year in Italy there are over 3,600 new cases (6 new cases per year per 100,000 people, 12 in Sardinia); mortality in Italy is estimated at 0.8 per 100,000 people. The average prevalence of multiple sclerosis for Italy is therefore estimated at around 215 cases per 100,000 inhabitants in mainland Italy, with the exception of Sardinia (400 cases per 100,000 inhabitants).

In 2022 was promoted a Charter of Rights for People with multiple sclerosis and related pathologies, their family members and caregivers, "providing thus a a strong and united voice to all the people involved and

looking forward to the future because many rights claimed by people with multiple sclerosis are the same as those claimed by those with another chronic disease or disability" explains the Italian Association for Multiple Sclerosis. The rights referred to are 10: to the 7 initially recognized in a first version of the Charter, established in 2014, which are Health, Research, Self-determination, Inclusion, Work, Information, Active participation, 3 have been added - Education and Training, Simplification, Innovation. The new Charter, which was also signed by the Minister for Disabilities in January 2023, also recognizes the role of family members and caregivers, who support those who have a diagnosis and are dealing with a chronic illness.



“Early diagnosis is essential to prevent the disease from evolving into the most dangerous progressive form. This day is an opportunity to raise awareness of support for research” the Minister said last year on the occasion of 2023, adding that “people cannot and must not be identified with their disease because everyone, in addition to the cure, needs to live a full and dignified life also from a social and relational point of view”.



*5 projects financed by Cohesion policy*



## ENDOGENOUS RETROVIRUSES AND EBV IN MULTIPLE SCLEROSIS: STUDY OF THE MOLECULAR MECHANISMS LINKED TO PATHOGENESIS

The cohesion policy has contributed, through research grant support, to a study conducted by a working group at the University of Sassari and published by the prestigious scientific journal Plos One. The goal of the research was to understand how some of the mechanisms that lead to the neurodegeneration that causes the onset of multiple sclerosis are driven by environmental factors, including viruses. The study, in particular, seeks to reconstruct the causal relationship between viral infections and this pathology, a topic not yet fully understood. Among the factors proposed and analyzed by the research are the Epstein Barr virus (EBV) and two members of the W family of human endogenous retroviruses (HERV), the Multiple Sclerosis retrovirus (MSRV) and the ERVW-1 element, which expresses the envelope protein (pericapsid) of the virus, called Syncytin-1. “As regards the EBV virus - explains an article published on the website of the Italian Multiple Sclerosis Association - there are many studies that support its association” with the disease. The risk of multiple sclerosis (MS) is low, in fact “in subjects who are EBV-negative, and the scientific community agrees on two links between EBV and MS: 1) having been infected late with EBV, becoming ill with infectious mononucleosis (associated with an increased MS risk by 2-4 times), and 2) having had, before the onset of MS, a high level of antibodies directed against EBV nuclear antigens (EBNA, Epstein-Barr nuclear antigens)”.

### Data

#### Funding monitored

€ 161.730,00

#### State of progress

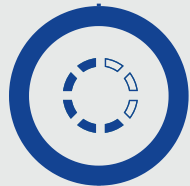
Completed

#### Financial source

[ROP CRO ESF SARDEGNA](#)

#### Beneficiary

[ORTU SILVIA, MEI ALESSANDRA](#)



# PLATFORM FOR THE IDENTIFICATION OF TARGETS OF PHARMACOLOGICAL RELEVANCE FOR THE TREATMENT OF NERVOUS SYSTEM AND ONCOLOGICAL DISEASES WITH HIGH TREATMENT NEEDS)

The project focuses on the research and development of innovative drugs for central nervous system diseases and cancer, using tumor genomics to identify new therapeutic targets and develop personalized treatments. The research and development platform worked from preclinical and clinical studies. The focus is the identification of new tumor targets and the development of new drugs, covering the entire drug discovery process, from target validation to the selection of the therapeutic candidate.

The collaboration between industry, research and academia has made it possible to translate biological knowledge into new therapies, thus improving the quality of life of patients. The project contributes to the strategy for intelligent specialization of the Lombardy Region (S3), intervening in the field of innovative therapeutic approaches to satisfy unsatisfied medical needs, especially in the neurological and oncology sectors.

The need for treatment for the pathologies in question concerns approximately one billion people in the world who suffer from Alzheimer's disease (AD) and Parkinson's disease (PD), in constant numerical growth due to the aging of the population, but also from debilitating pathologies such as depression or multiple sclerosis which have a major impact on the quality of life.

## Data

### Funding monitored

€ 3.940.045,48

### State of progress

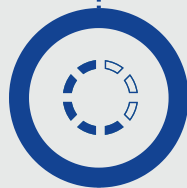
Completed

### Financial source

ROP ERDF LOMBARDY 2014-2020

### Beneficiary

PUBLIC PRIVATE PARTNERSHIP



TheThe project involved 7 excellent partners with the aim of addressing technological challenges in the development of new approaches to diagnosis and treatment of diseases such as melanoma and multiple sclerosis.

The action focused on cell engineering and the use of nanocarriers to reach and treat specific diseased areas: using nano-engineered immune cells, the project aims to improve the precision of current diagnostic techniques, such as MRI (magnetic resonance imaging) and CT scans, particularly for conditions such as multiple sclerosis and metastatic melanoma. This innovative approach offers the possibility of targeted treatments and non-invasive monitoring of prognosis. The project also developed direct targeting strategies using nanostructured compounds. Finally, it addressed the regulatory aspects to ensure the conformity and validity of the proposed products. The initiative is presented as fundamental to exploit the opportunities of the growing nanomedicine market and to promote sustainable diversification in the pharmaceutical sector.

**Data**

**Funding monitored**

€ 1.665.681,71

**State of progress**

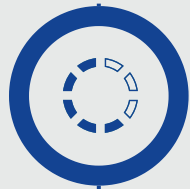
Completed

**Financial source**

ROP ERDF TOSCANA 2014-2020

**Beneficiary**

UNIVERSITY OF SIENA





## CREATION OF THE LIVING LAB PROJECT AND HOME TELEMEDICINE SYSTEM TO SUPPORT PERSONALIZED, PRECISION AND PREDICTIVE CARE PATHS FOR MULTIPLE SCLEROSIS

The "SOSTIENE" project, promoted by an entreprize in collaboration with the Department of Chemistry, Biology and Biotechnology of the University of Perugia, was created to develop a personalized tele-assistance platform to help patients suffering from Multiple Sclerosis (MS ) to manage their condition.

This innovative solution, based on the most advanced information technologies, offers personalized and predictive care, actively involving patients in their rehabilitation journey. The project started with a needs survey, conducted together with patients and professionals, to ensure that the platform is effective and suited to their needs. Two main tools have been developed: one to provide direct assistance to patients and doctors, encouraging active patient participation through "narrative medicine"; an advanced tool for analyzing biological data and providing clinical decision support. The trial was conducted in collaboration with the Italian Multiple Sclerosis Association (AISM) and the Rehabilitation Department USL UMBRIA2 – Foligno Hospital. The focus of the interventions is on the epidemiological scenario of MS in Umbria (established in the 5 municipalities of the Urban Agenda of the Umbria Region), with a patient population consisting of a total of approximately 1,600 cases.

### Data

#### Funding monitored

€ 70.645,26

#### State of progress

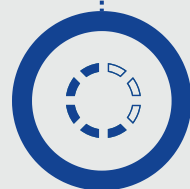
Concluded

#### Financial source

[ROP ERDF UMBRIA 2014-2020](#)

#### Beneficiary

[KELL S.R.L.](#)



# PASSBAND: PLASMONIC SENSOR NEURODEGENERATIVE DISEASE

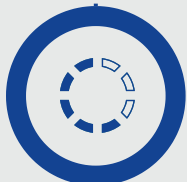
The "Passband" project has developed special sensors to identify certain proteins in cerebrospinal fluid that are crucial for early diagnosis of diseases such as Alzheimer's and multiple sclerosis. This can help start treatments earlier, thus slowing the progression of diseases and reducing the risk of permanent disability. The project focused on creating plasmonic biosensors to detect proteins linked to neurodegenerative diseases such as Alzheimer's and multiple sclerosis. Two approaches are used: one based on antibodies and the other on molecules called aptamers (nucleic acids having the property of binding to a molecule or protein). A technique has also been developed to precisely position biomolecules on substrates, reducing costs and increasing efficiency. The goal is to create a sensitive and precise system for early diagnosis of these diseases. While the antibody approach immediately showed promising results, the aptamer approach went through an optimization phase.

## Data



### Funding monitored

€ 50.343,24



### State of progress

Concluded



### Financial source

[ROP ERDF VENETO 2014-2020](#)



### Beneficiary

[ARCADIA S.R.L.](#)



COESIONE  
ITALIA



# OPENCOESIONE

Verso un migliore uso delle risorse: scopri, segui, sollecita.

**#CoesioneItalia #EUinmyRegion**