TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO **ID CODE** 5884

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di Scienze Biomediche e Cliniche**

Scientist- in – charge: Prof.ssa Pelizzo - ID: 5884

Mario Spiniello

CURRICULUM VITAE

PERSONAL INFORMATION

Surname	Spiniello
Name	Mario

PRESENT OCCUPATION

Appointment	Structure
Math and science teacher	Scuola secondaria di 1^ grado "Monteverdi"

EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
Degree	Biomedical engineering	Politecnico di Milano	2020
Specialization	Biomedical engineering "cells and tessues"	Politecnico di Milano	2023

REGISTRATION IN PROFESSIONAL ASSOCIATIONS

Date of registration	Association	City

FOREIGN LANGUAGES

Languages	level of knowledge

English	B2
French	A2

AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2021/2022	Scholarship grant from Macciachini Monti foundation. (prize money 9 000 euro)
2017	**Word biotech tour** **Museum of Science and Technology in Milan and funded by the Biogen foundation & ASTC** Through this project, we supported a researcher at the University of Milan, carrying out various activities to promote her research work on microorganisms that can be able to derive nourishment from oil components. I personally presented the project through a comic monologue and was finally chosen to represent Italy internationally. Thanks to this experience, I participated in the final stage at the Wbt Global Summit in Tokyo and at the Science Centre World Summit in 2017, where I took part in top-level lectures by Shinya Yamanaka, for example. Here are the links for further information www.scws2017.org www.worldbiotechtour.org
2016	“giochi della chimica” national chemistry competition in Prato
2014	“Matematica e realtà” national math competition in Perugia

TRAINING OR RESEARCH ACTIVITY

In 2022 i taught the chemistry technology and organic chemistry chair at the ISIS Facchinetti Institute in Castellanza, organising and planning lessons and teaching workshops.

PROJECT ACTIVITY

Year	Project
2023	**Thesis project** ***"Multi-functionalized composite microchannels promote axonal regeneration in chronic spinal cord injury"*** One of the most dramatic diseases of the central nervous system (CNS) is spinal cord injury. Now, there are between 250 and 500 million people in the world suffering from this type of injury. Following an injury, the spinal cord is subject to a cascade of patho-physiological events that lead to the deterioration of the individual's condition, resulting in vertebral dislocation, multi-organ failure and, in some cases, even death. The impact of the injury generates an environment hostile to cell viability, promoting apoptosis and the production of pro-inflammatory factors that inhibit neuronal regeneration, promoting the extension of the injury itself. In the chronic phase, the lesion is surrounded by hypertrophic astrocytes; these form the gliotic scar, a chemical-physical barrier that hinders regeneration. To date, many mechanisms of spinal cord injury are well described, but the search for a therapeutic approach capable of resolving the devastating disease is still a great challenge. Many studies aim at investigating new strategies to reverse the pathophysiological course. In my thesis project I used biocompatible and resorbable peptide-based microchannels (SAPs, self-assembled peptides), capable of mimicking the extracellular matrix. The scaffold was implanted in an animal model (rat) with induced spinal cord injury. Functional regeneration of the spinal cord was subsequently assessed by means of behavioural analysis of the animals, with tests on physical performance and appropriate physical therapy. To assess recovery of cell function, anterograde neuro-markers were injected (Fluoro-emerald, FE) were injected, which allows primary cortex projections due to locomotion to be observed during the histological study and allows functional regeneration of the implant to be assessed. In my work, a concentration of FE-positive cells was observed in lamina VII, areas in which the greatest number of motor, premotor and primary cortex projections pass, confirming the regeneration process. Many histological analyses were performed, which confirmed the regeneration process. In addition, techniques that are still under development were implemented, as a correlation between the recovery time of motor performance and the post-injury motor performance score or a nether example is motor performance score and GABA-responsive area. through correlative analyses of this type it was possible to compare the different experimental groups with global analyses, obtaining global observations by comparing different data. After implantation, the lesion models studied showed promising results, particularly the channels + hNSC(0D) and channels + hNSC(12w) groups, counteracting the chronic phase of the disease with an increase in motor performance and the formation of a new neuronal network. in addition, tissue staining techniques were used in the project to analyse through fluorescent microscopy (apotom and confocal) the nature of the tissue both qualitatively and quantitatively, comparing the different samples with statistical analysis, different

	antibodies were used including SMI31, GABA, GFAP, and bTUB. This study aims to help the scientific community to better understand the mechanisms underlying the regeneration of the spinal nervous system, to obtain new therapeutic approaches.
2023	Design of a bioreactor for the simulation of peristalsis and sensor culture and automaticity to ensure automation and control.
2022	Design of a microchip culture chamber, using use of AutoCAD and Solidworks.
2021	Design of a cardiac patch for muscle tissue regeneration with fluid dynamics study on the diffusion of nutrients.
2021	Design of a resorbable prosthesis for maxillofacial surgery maxillofacial surgery
2020	Innovative aspects of the CRISPR/Cas9 technique and clinical approaches.
2020	Writing a paper on carbon microtubules for drug delivery.
2020	**Bachelor Theses** A three-year degree thesis at the LaBS of the Politecnico di Milano with Professor Maria Laura Costantino, the thesis dealt with methods for the three-dimensional reconstruction of anatomical features by comparing different software for the reconstruction of blood vessels with specific and pathological geometries.

PATENTS

Patent

CONGRESSES AND SEMINARS

Date	Title	Place
Nov 2017	Global Summit and at the Science Centre World Summit (SCWS2017)	Miraikan - The National Museum of Emerging Science and Innovation (Tokyo)

OTHER INFORMATION

Since April to September 2023 i have been carrying out tutoring and assistance activities for high school, middle school and universityy students in the field of rigenerative, translational and processing medicine

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

Please note that CV WILL BE PUBLISHED on the University website and It is recommended that personal and sensitive data should not be included. This template is realized to satisfy the need of publication without personal and sensitive data.

Please DO NOT SIGN this form.

Place and date: Varese, 13/09/23