3-ISTRAZIVACKO RAZVOJNI CENTAR ZA BIOINZENJERING BIOIRC DOO

EU RESEARCH FRAMEWORK PROGRAMME: Innovative Training Network "DECODE" (H2020-MSCA-ITN-956470)
RESEARCH FIELD: Biomedical Sciences and Engineering
RESEARCHER PROFILE: Early-Stage Researcher (ESR)
APPLICATION DEADLINE: 30/04/2021 (positions will remain open until being filled)
LOCATION: BIOIRC DOO Kragujevac, Prvoslava Stojanovica 6, 34000 Kragujevac, Serbia
TYPE OF CONTRACT: 36 months
JOB STATUS: Full-time
HOURS PER WEEK: 40
OFFER STARTING DATE: Between 01/06/2021 and 01/12/2021 or depending on the national and international Covid-19 regulations

General objectives of the DECODE project

DECODE focuses on the training of young scientists on the use of drug-eluting devices to combat the burden of peripheral artery disease (PAD). DECODE will provide young researchers with excellent scientific, technological and complementary skills through a multidisciplinary training programme having as an outmost scientific aim the development, optimization, and assessment of a drug eluting balloon system for the improved treatment of PAD. The aim of DECODE is twofold: a) to enhance the competitiveness and research careers of young researchers at European level as after the completion of the programme they will be able to face current and future challenges in the domain of biomedical engineering, b) to convert knowledge, ideas and expertise from both academic and non-academic sectors into a novel product which will improve the monitoring and treatment of patients suffering from PAD and their quality of life, providing thus a significant economic and social benefit.

For more information: (https://www.decodeitn.eu/)

Specific Information for the position

Three positions for PhD candidates are open at the BIOIRC DOO Kragujevac and University of Kragujevac in Serbia in the laboratory of Prof. Nenad Filipovic.
The PhD candidates will be enrolled in PhD studies at the University of Kragujevac.

Brief description of the laboratory and its role in DECODE

BIOIRC (www.bioirc.ac.rs) is a research centre devoted to computational modelling and software development for various problems in engineering and bioengineering. The research is largely based on the finite element method applied to solids, fluids, modelling of physical fields, multiphysics, and various coupled problems. Also, discrete particle methods, such as dissipative particle dynamics, are developed and coupled with continuum models in multiscale schemes. The solvers are accompanied by state-of-the art computer graphics as well as image processing methods and 3D medical image reconstructions. BIOIRC achieved significant results

in the field of bioengineering which are prominent at the national and international level. BIOIRC research team has rich experience in computer simulation of the cardiovascular system, muscle, bone and tissue mechanics. A large number of scientific publications and results have been issued as the result of collaboration with different national and international partners, spanning from blood flow modelling, cartilage muscle and tissue mechanics, thrombosis and plaque growth modelling, to molecular diffusion and multiscale modelling. The Centre is capable, with its hardware, software and researchers, to coordinate activities within the project.

Role in DECODE: (i) Hosting **3 ESRs (ESR3, ESR7, ESR8)**, (ii) Participation in the training programme and secondments, (iii) Main research contribution in computational modelling of Drug-coated balloons (DCB) angioplasty.

The **ESR3** will primarily be trained in **experimental procedures related to drug release from Drug-coated balloons (DCB)**.

The ESR3 will gain expertise in:
1) The release kinetics of the drug to the vessel using experimental procedures aiming to retain majority amount of drug on balloon during tracking and program faster drug delivery within shorter exposure time,
2) Clinical procedures related to peripheral artery disease (PAD) and conduction of animal studies,
3) Computational modelling and software engineering.

The **ESR7** will primarily be trained in **numerical modelling of the balloon-arterial wall interaction during an angioplasty of a stenotic peripheral artery with DCBs.**

The ESR7 will gain expertise in:
1) Delivering of in-silico clinical trial platform for peripheral stents testing in terms of safety, efficacy and long-term performance under realistic conditions found in peripheral arteries,
2) Development and validation of numerical modelling of the balloon-arterial wall interaction during an angioplasty of a stenotic peripheral artery with DCBs,
3) Algorithms for the balloon contact problem and drug stamping to vascular tissue,
4) Design and optimization of engineering structures, multi-scale modelling.

The **ESR8** will primarily be trained in **multiscale modelling for thrombosis/atherosclerotic plaque formation and progression.**

The ESR8 will gain expertise in:
1) Development of multiscale model for thrombosis/atherosclerotic plaque formation and progression to mimic the real atherosclerosis disease conditions in the peripheral arterial system,
2) Biomechanics of the cardiovascular system,
3) Multi-scale modelling.

University of Kragujevac – UoK (https://en.kg.ac.rs/) will award the doctoral degree to ESR 3, ESR7 and ESR8.

Several secondments to other consortium partners are planned.

Additional Information
According to the EU rules for the ITN projects, the recruited researchers must comply with the following conditions:
- are, at the date of recruitment, **early-stage researchers** (i.e. do not have a doctoral degree AND are in the first 4 years (full-time equivalent research experience) of their research career).
- are recruited under an **employment contract/equivalent direct contract** (i.e. other contract with equivalent benefits and social security coverage), including: sickness, parental, unemployment and invalidity benefits - pension rights and - benefits for accidents at work and occupational diseases.
- are employed for **at least 3 months and up to 36 months.**
- **are employed full-time.**
- work **exclusively** on the research training activities.
- must comply with the following **mobility rule**: have not resided in the country of the recruiting beneficiary for more than 12 months in the 3 years immediately before the recruitment date (and not have carried out their main activity (work, studies, etc.) in that country) — unless as part of a procedure for obtaining refugee status under the Geneva Convention. For beneficiaries that are international European interest organisations or international organisations: have not spent with the beneficiary more than 12 months in the 3 years immediately before the recruitment date.

Requirements
- You have a background in Biomedical Sciences, Engineering, Biomedical Engineering and Biomechanics.
- You are ambitious, well-organised and have excellent communication skills.
- You are fluent in oral and written English and have the ability to work effectively and collaboratively.
- You are an enthusiastic, self-motivated individual, willing to take part in personal skills training, international travel and public outreach activities.
- You have demonstrated commitment to high-quality research.

Application
Applications must contain the following documents:
- a personal (motivation) letter and curriculum vitae,
- a copy of degree certificates and associated certificates,
- a copy of degree projects and any previous publications,
- a proof of English language skills,
- two recommendation letters (or the names and email addresses of two references).
The documents should be sent to email: bioirc@kg.ac.rs.