

## Scheda di dottorato 37 ° ciclo – Bando PON “Ricerca e Innovazione” 2014 – 2020



UNIONE EUROPEA  
Fondo Sociale Europeo



PROGRAMME'S NAME	<b>SURGICAL SCIENCES</b>
DURATION	3 years
PROGRAMME START DATE	01/01/2022
LANGUAGE	Italian, English
COORDINATOR	Prof.ssa Annalisa Patrizi ( <a href="mailto:annalisa.patrizi@unibo.it">annalisa.patrizi@unibo.it</a> )
CURRICULA	N/A
RESEARCH TOPICS	<a href="#">Detailed list at the bottom of the present document</a>
PhD POSITIONS	2
ADMISSION PROCEDURE	Qualifications and research proposal evaluation

### Available Positions and Scholarships

Actions	Position n.	Financial Support	Research Topic
Action IV.5 – “PhDs on green topics”	1	PhD Scholarship	Dermatologic pathologies, microbiome alterations and environmental impact: development of strategies aimed at guiding decision making in the clinical setting to reduce antibiotics misuse
Action IV.4 “PhDs on innovation topics”	2	PhD Scholarship	Analysis and application of vibrational spectra in the cardiac regenerative potential

### Required and Supporting Documents to be attached to the application

*(only documents in Italian, English, French, German and Spanish shall be considered as valid and be assessed by the Admission Board)*

Only qualifications obtained during the last 5 calendar years shall be taken into consideration, except for the University Degree. **The Admission Board will assess the relevance of the supporting documents to the criteria listed in Art. 3 of the Ministerial Decree 1061/2021 (see also Art. 4 of the Call for applications).**

REQUIRED DOCUMENTS	
<b>Identity document</b>	Valid identity document with photo (i.e. identity card, passport)
<b>Curriculum Vitae</b>	No specific CV format is required
<b>Degrees</b>	Documents attesting the awarding of the first and second cycle degrees (see Art. 3 of the Call for Applications)
<b>Research proposal</b>	Multi-annual research proposal, with special emphasis on the activities to be completed during the first-year course. The proposal must meet the following requirements: <ul style="list-style-type: none"> <li>- <b>it cannot exceed 20,000 characters</b>, including spaces and formulas, if present. This figure does not include: the title, the outline, references and images (such as graphs, diagrams, tables etc. - where present);</li> <li>- <b>it must be written following the templates</b> provided for Action IV.4 – “PhDs on Innovation topics” and Action IV.5 “PhDs on Green topics”. The templates are attached to the Call for Application and available for download on the University website.</li> </ul>

SUPPORTING DOCUMENTS	
<b>Publications</b>	Lists of publications (i.e. monographs, articles on scientific journals), minor publications (conference papers, etc.), abstracts and posters presented during national and international conferences, etc.

## Evaluation criteria

The **results of the admission exams** will be available from 03/11/2021 on [Studenti Online](#) (select “summary of the requests in progress” > “see detail” and open the .pdf file at the bottom of the page). **No personal written communication will be sent to applicants concerning the examinations results.**

Scores will be expressed in points out of 100, as follows.

Minimum score for eligibility: 60 points, Maximum score: 100 points

<b>Qualifications evaluation</b>	University degree final mark. Graduands shall be evaluated according to the Weighted Average Mark (WAM)	10 points max <ul style="list-style-type: none"> <li>- 10 points for 110 and Lode</li> <li>- 8 points for 109 to 110 included</li> <li>- 6 points for 105 to 108 included</li> <li>- 4 points for 101 to 104 included</li> <li>- 3 points for 95 to 100 included</li> </ul>
	Publications (only publications related to the topics of the Doctorate will be evaluated)	10 points max <ul style="list-style-type: none"> <li>- 3 points for each publication in ISI / Scopus and class A journals,</li> <li>- up to a maximum of 1 point for participation at conference proceedings, conferences posters or other publications</li> </ul>
<b>Research proposal evaluation</b>	Scientific value and innovative nature of the proposal	20 points max
	Ability of the project to foster the synergy between research and the productive world	20 points max
	Identification of parameters allowing the measurability of expected results	20 points max
	Adherence of the proposal to the objectives of the Action PON R&I 2014-21	20 points max

## Research Topics

### n. 1 - GREEN

<b>Thematic area SNSI 2014-20</b>	Thematic area: Health, nutrition, quality of life Development trajectory: Systems for urban environment safety, environmental monitoring and prevention of critical events or risks
<b>PNR 2021-2027*</b>	Research field: 5.1 Health Area of application: 5.1.1 General issues Section 7. Health promotion, disease prevention and access to the National Health Service
<b>Project title</b>	<b>Dermatologic pathologies, microbiome alterations and environmental impact: development of strategies aimed at guiding decision making in the clinical setting to reduce antibiotics misuse</b>
<b>Project description</b>	<p>The aim of the project is that of monitoring the abuse and overdosage of antibiotics in dermatologic patient populations in order to reduce related negative effects both at the individual (i.e., microbiome alterations)<sup>1</sup> and at the global level (i.e., pharmaco-resistance and impact on diverse ecosystems)<sup>2</sup>. The abuse of antibiotics and consequential alteration of the microbiome seems to be potentially correlated with the development of alterations not only at the somatic level (dermatological, gastrointestinal, gynecological, respiratory) but also at the level of neuronal functioning with consequential effects of cognitive and behavioral nature as well as with a diminished quality of life.</p> <p>The environmental implications relate to the contamination of sewage waters, hence of diverse ecosystems: partially metabolized drugs are excreted in the sewage waters and permeate the environment contributing to the modification of biodiversity and increasing the resistance to antibiotics of various animal and floral species<sup>4</sup>. If on the one hand it is necessary to increase the efficacy of sewage water purification and to invest in "green pharmacy", it is also necessary to educate doctors and patients on the correct usage of pharmaceuticals in order to limit their noxious and potentially polluting effects.</p> <p>The indiscriminate use of antibiotics can be reduced through various lines of intervention<sup>5</sup>:</p> <ol style="list-style-type: none"> <li>1. Developing strategies aimed at raising awareness in patients on the negative effects of antibiotics misuse/abuse (both systemic and local) and on the importance of avoiding their self-prescription.</li> <li>2. Studying the individual factors (personality, coping styles, trait anxiety) that modulate the indiscriminate search for pharmacological therapy and/or the request of antibiotics to the doctor.</li> <li>3. Training dermatologists so that they can avoid collusive strategies and so that they can orient the patient towards the management of the condition and the eventual pharmacological therapy.</li> </ol> <p>To this aim, the present project aims to:</p> <ol style="list-style-type: none"> <li>a) Monitor the use of antibiotics in diverse dermatological patient populations;</li> <li>b) Collect data on objective (i.e., microbiome alterations, illness progression) and psychological indexes (i.e., quality of life, perceived stress, psychophysical wellbeing, cognitive efficiency);</li> <li>c) Correlate the use and abuse of antibiotics with patient's personality and other individual traits</li> <li>d) Plan psycho-educational strategies (information campaigns and healthcare protocols) and evaluate their efficacy in terms of orienting decision-making in the dermatological setting.</li> </ol>
<b>Mandatory traineeship</b>	Min. 6 months max. 12 months
<b>Company type</b>	Healthcare: dermatology
<b>Stay abroad</b>	6 months

## n. 2 - INNOVATION

<b>Thematic area SNSI 2014-20</b>	Thematic area: Health, nutrition, quality of life Development trajectory: Regenerative, predictive and personalised medicine
<b>PNR 2021-2027*</b>	Research field: 5.1 Health Area of application: 5.1.1 General issues Section 6. Development of strategies for the replacement of the function of damaged organs and tissues - regenerative medicine
<b>Project title</b>	<b>Analysis and application of vibrational spectra in the cardiac regenerative potential</b>
<b>Project description</b>	In mammals, including humans, the proliferative and regenerative ability of cardiac muscle cells dramatically declines at birth. Recent studies in the molecular cardiology field have identified specific molecular mechanisms (growth factors, cytokines, extracellular matrix components, hormones and signal transduction pathways) capable of stimulating the proliferation of cardiomyocytes and a good degree of tissue regeneration in animal models after severe cardiac damages induced for example by myocardial infarction. Hyperspectral imaging is an innovative technique that allows to capture all the information of an electromagnetic spectrum, from ultraviolet to infrared radiations. In this project we will use the hyperspectral imaging technology to record vibrational waves associated with cardiomyocytes isolated from mouse models, whose proliferation has been boosted through the manipulation of specific molecular mechanisms. It will therefore be studied how the vibration waves vary according to the stimulation performed. The potential pro-proliferative and pro-regenerative effect of these frequencies will then be evaluated in combination with other stimuli, paving the way towards a novel approach for cardiac regeneration.
<b>Mandatory traineeship</b>	Min. 6 months max. 12 months
<b>Company type</b>	Data and analytics
<b>Stay abroad</b>	6 months

\*the translation of PNR 2021-2027 has been carried out by the PhD Unit

