

Màj 07/04/2020

The Master Biology and Health Science is a training by and for research in biological sciences applied to health. It aims to acquire a certain number of skills divided into five blocks. Each skill block (SB) is presented below with its components and the critical learnings necessary for their acquisition.

SB1. Contribute to a research activity in the field of Biology and Health Sciences

- by identifying the challenges of research in Biology and Health Sciences (calls for projects, scientific policy, health economics, etc.);
- by organizing a bibliographic monitoring of international scientific literature in a specific domain;
- by basing hypotheses on the most recent concepts in a specific field of research.

Critical learnings

- knowing in depth the most recent fundamental concepts in Biology and Health Sciences;
- managing bibliographic resources to locate scientific literature related to a specific research topic;
- having a scientific English level enabling reading and understanding the literature in a specific research field.

SB2. Design an experiment in Biology and Health Sciences in a specific area by defining a problem and formulating objectives

- by producing a review of the international scientific literature related to the research project;
- by using the most appropriate methodologies to verify hypotheses while taking into account technological advances in research field;
- by describing rigorously and precisely the experimental procedure and by planning the steps of implementation;
- by arguing the relevance of models and methods' choice (biological model, analysis techniques, statistical tests);
- by taking into account the aspects of ethics, professional behavior, environmental responsibility, health and safety linked to the experimental approaches and the biological study models chosen.

Critical learnings

- selecting the scientific literature in relation to a specific research project;
- having a scientific English level enabling reading publications and understanding the described methods;
- analyzing various types of documents (reports, project assessments, publications) and then making a critical synthesis;
- assessing the quality and relevance of a work or a scientific approach;
- knowing the applications of Biology and Health research in terms of diagnostic markers, therapeutic strategies and personalized medicine;
- knowing regulation in terms of ethics and biomedical research.

SB3. Implement an experimental approach in Biology and Health Sciences

- by using basic techniques and relevant equipment essential to experimentation in the field;
- by selecting the relevant tools for collecting data;
- by knowing the limits of validity of a model and by identifying potential sources of error;
- by arguing choices in relation to the techniques used;
- by applying health and safety rules in the laboratory;
- by working independently within a team, by analyzing their own actions in a professional situation and by self-assessment to improve their practice.

Critical learnings

- having a sufficient level of expertise in basic techniques and functioning of equipment essential for experimentation in the field of molecular biology, biochemistry, physiology and cell biology;
- knowing the limits of the methods and tools used;
- knowing the rules of hygiene and safety in the laboratory;
- having a scientific English level enabling understanding of the methods used and communication within a research team.

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SB4. Analyze collected data in a basic, clinical or pharmacological research study

- by selecting the appropriate tools for the analysis;
- by exploiting, reviewing and contextualizing experimental data and by making a critical analysis according to the standards of the field, respecting the principles of scientific integrity;
- by validating a model by comparing assumptions with experimental results;
- by assessing the limits of validity of a model and identifying the sources of error.

Critical learnings

- knowing and controlling the main methods of analysis and statistical processing of data recorded in basic, clinical or pharmacological research studies;
- knowing the limits of the analysis methods and tests used
- using the software and the most relevant data processing methods (in particular, statistics) for the type of data to be analyzed.

SB5. Communicate scientific data

- by synthesizing data from both the scientific literature and experimentally self-acquired;
- by presenting and discussing concepts or results from various supports (oral presentation, poster, written report, etc.);
- by communicating in a clear and structured manner while adapting the level of expression and specialization to the target audience.

Critical learnings

- having a scientific English level enabling reading and understand scientific documents in the field of specialty then make a written and oral restitution in English;
- using current office software to design a presentation (slideshow, poster) or write a scientific document (article, report).