**IMAS MASTER Academic Year 2024 - 2025**

**Proposal of M1/M2 Internship**

**PROJECT TITLE AND SUMMARY:**

Unveiling the One Health Impact of Oilseed Rape Traits using Mass Spectrometry Metabolomics

Oilseed rape (OSR) is a crucial crop with applications in food, biofuel, and industrial products. However, its impact on human and animal health remains a question. This Master 2 internship offers an exciting opportunity to explore the "One Health" perspective of OSR, utilizing cutting-edge mass spectrometry (MS) metabolomics.

This internship aims to investigate the influence of various OSR agricultural traits on the health of both humans and animals consuming OSR-derived products. By employing MS metabolomics, we will identify and quantify key metabolites within OSR seeds and related products that might influence health outcomes.

**HOST UNIT: C2VN Marseille, BIOMET Platform**

**MAIN ACTIVITIES:**

**One Health Approach:**

The "One Health" concept acknowledges the interconnectedness between animal, human, and environmental health. This project will analyze OSR from this perspective by:

* **Investigating OSR metabolites:** Examining potential health-modulating metabolites within OSR seeds influenced by different agricultural traits.
* **Animal and human health implications:** Assessing the potential impact of identified metabolites on animal and human health through clinical chemistry and large-scale metabolomics (the science that studied the metabolic systems).
* **Interconnectedness:** Establishing a link between OSR traits, specific metabolites, and their potential health effects, fostering a holistic understanding of OSR's impact within the One Health framework.

**Mass Spectrometry (MS) Metabolomics:**

MS is a powerful analytical technique that enables the identification and quantification of a wide range of metabolites within a biological sample. In this project, you will:

* **Sample preparation:** Learn techniques for extracting and preparing OSR seed and potentially related product samples for MS analysis.
* **Data acquisition:** Gain experience operating high-resolution MS instruments to generate detailed metabolite profiles.
* **Data analysis:** Utilize sophisticated software to identify and quantify metabolites based on accurate mass measurements and spectral databases.
* **Data interpretation:** Use cutting-edge informatic systems and statistics to interpret complex metabolite profiles

This internship is ideal for students with a strong background in life sciences, chemistry, or related fields, and a keen interest in:

* **Metabolomics:** A desire to explore this rapidly evolving field and its applications in health research.
* **One Health:** A passion for understanding the interconnectedness of animal, human, and environmental health including agricultural practices.
* **Analytical techniques:** An interest in learning and mastering MS-based analytical methods.

**Impact and Future Directions:**

Your research will contribute to a deeper understanding of how OSR agricultural traits influence the health of consumers and animals within the One Health framework. This knowledge can guide future breeding programs and agricultural practices for a more sustainable and health-conscious OSR production system.

**EXPECTED SKILLS:**

Throughout this internship, you will gain valuable skills in:

* **MS analytical techniques:** Sample preparation, data acquisition, and data analysis.
* **Metabolomic data interpretation:** Understanding the biological significance of identified metabolites and advanced training in statistics.
* **Scientific communication:** Presenting your research findings in written reports and potentially at scientific conferences.
* **One Health research:** Applying a holistic approach to understand the impact of agricultural practices on health.

**INDEMNISATION:**

- about 600 € / month

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Location: Faculté médecine la Timone, Marseille

Duration: 2 months

Dates : January\_June 2025

Level : Master 2

Internship profile : Research