OARSI TRAVEL SCHOLARSHIP

Applicant: Asmaa EL MAARBANI, PhD, University of Jean Monnet (France)

Host Institution: Center of Experimental Orthopaedics (Homburg Germany)

Host supervisor: Pr. Magali Cucchiarini

OARSI Travel Scholarship report

Introduction

As part of my PhD project, I have been investigating the effects of dietary interventions, particularly the ketogenic diet, on osteoarthritis (OA). Over the past three years, my research has focused primarily on in vitro study using murine primary chondrocytes and the ATDC5 cell line. This study revealed promising insights into the role of ketone bodies, such as β-hydroxybutyrate (BHB), in modulating cellular metabolism and epigenetic regulation in cartilage.

Receiving the OARSI Traveling Fellowship provided me with the opportunity to extend this work to a human model. Specifically, the fellowship enabled me to spend two months at the Center of Experimental Orthopaedics in Homburg, Germany, under the supervision of Prof. Magali Cucchiarini. This collaboration represented a crucial step in translating my findings from murine systems to human primary chondrocytes.

Research Activities

During my stay, I received hands on training in the isolation and culture of primary human articular chondrocytes from osteoarthritic cartilage tissue. This experience was invaluable, as it allowed me to apply techniques I had previously used in murine systems to human samples.

Once the chondrocytes were successfully cultured and seeded in six-well plates, I tested the effects of:

- ✓ **BHB (β-hydroxybutyrate):** a ketone body elevated during a ketogenic diet.
- ✓ **Butyrate (BUT):** a short-chain fatty acid
- ✓ **Trichostatin A (TSA):** a synthetic histone deacetylase inhibitor.

Following treatment, RNA and protein were extracted. RNA was reverse transcribed into cDNA, and the expression of several candidate genes was evaluated using PCR. In parallel, Western blot analysis is being conducted to investigate histone modifications, particularly under BHB treatment, to assess whether ketone bodies act as epigenetic modulators in human chondrocytes.

These experiments were performed using chondrocytes from two osteoarthritic patients, with plans to continue as additional samples become available. This step towards patient derived models greatly enhances the translational potential of my project

Academic and Professional Development

In addition to the experimental work, I had the opportunity to present my project to the research team in Homburg. The presentation generated a stimulating scientific discussion, which provided me with valuable feedback and new perspectives on my work.

Beyond research, I integrated very well into the laboratory environment and felt warmly welcomed by colleagues. This experience improved not only my scientific communication skills but also my ability to adapt to a new cultural and academic environment. Living in Germany also encouraged me to start learning a new language, further broadening my personal and professional horizons.

Impact of the Fellowship

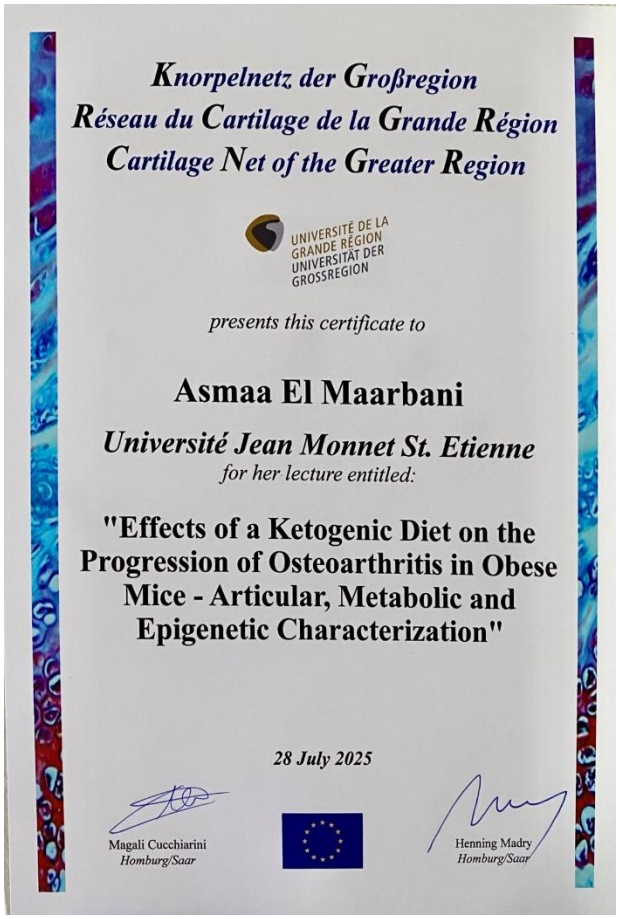
The collaboration with Prof. Magali Cucchiarini and her team has been a pivotal milestone in both my project and my career. The fellowship allowed me to:

- ✓ Transition from murine models to human primary chondrocytes, a key step in validating the translational relevance of my findings.
- ✓ Acquire new technical expertise in chondrocyte isolation and human cartilage analysis.
- ✓ Establish valuable international connections in the osteoarthritis research community.
- ✓ Strengthen my prospects for future collaborations and career opportunities in the field of musculoskeletal research.

Conclusion

The OARSI Traveling Fellowship has been a transformative experience, significantly advancing my project and shaping my career path. By enabling me to bridge the gap between murine models and human cartilage, the fellowship has increased the scientific impact of my work and broadened my professional network.

I am deeply grateful to OARSI for this opportunity and to Prof. Magali Cucchiarini and her team for their guidance and support during my stay in Homburg.



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presents this certificate to

Asmaa El Maarbani

Université Jean Monnet St. Etienne
for her lecture entitled:

"Effects of a Ketogenic Diet on the Progression of Osteoarthritis in Obese Mice - Articular, Metabolic and Epigenetic Characterization"

28 July 2025

Magali Cucchiarini
Homburg/Saar

Henning Madry
Homburg/Saar