# Master 1 Musculo-Skeletal System, Locomotion, Exercise (MuSkLE)

*Ce travail a bénéficié d'une aide de l'Etat gérée par l'Agence Nationale de la Recherche au titre de France 2030 portant la référence « ANR-21-SFRI-0001 ».*

# Master Musculo-Skeletal system, Locomotion, Exercise

**Master MuSkLE**

International Excellence Program

Head : Pr Vincent Pialoux

**Field of teaching unique in France :**

From the molecular to the integrative level of the Musculo-Skeletal system

- **All courses in English -** 20 students maximum per promotion (>50% foreigners)
- **Disciplines:** Cell biology, Physiology, Biomechanics, Kinesiology, Health, Sport sciences
- **10-months internship** in one of the 19 research teams of the MuSkLE consortium
- **Incentive Scholarships** in addition to the usual internship gratification (for foreign students) :

Call for MuSkLE Excellence Scholarships

# Program 2025-2026 of the Master 1 MuSkLE

| Unit Type | Full name of the Units | ECTS | Lecture (h) | Tutorial (h) | Lab work (h) |
|---|---|---|---|---|---|
| ***12 ECTS among*** | ***Musculo-Skeletal system - Locomotion*** | | | | |
| UE | Bases of cellular mechanisms (*mandatory*) | 2 | | 18 | |
| UE | Fundamental and clinical myology | 6 | 36 | | |
| UE | Physiological and biomechanical bases of the musculo-skeletal system (*mandatory*) | 4 | 12 | 12 | |
| UE | Muscle function and locomotion | 6 | | 30 | |
| UE | Biomechanics of the locomotor system | 6 | 33 | 9 | 18 |
| ***6 ECTS among*** | ***Musculo-Skeletal system - Exercise and human performance*** | | | | |
| UE | Molecular genetics of neuromuscular disorders | 3 | 12 | 6 | |
| UE | Tissue morphogenesis and repair | 3 | 7,5 | 10,5 | |
| UE | Exercise physiology | 6 | | | |
| UE | Sciences 2 : Physical activity and chronic pathologies | 6 | | 33 | |
| ***6 ECTS among*** | ***From cell biology to skeletal muscle function*** | | | | |
| UE | Metabolic and nutritional physiopathologies from cells to patients | 6 | 24 | 12 | |
| UE | Pharmacology, toxicology and study models: from cells to animals | 6 | 34,5 | 25,5 | |
| UE | Advanced exercise physiology and biomechanics | 6 | | 45 | |
| ***6 ECTS among*** | ***From cell morphogenesis to human performance*** | | | | |
| UE | Molecular and cellular regulations of the cell fate | 3 | 10 | 8 | |
| UE | Functional investigation: from gene to patient | 6 | 36 | | |
| UE | Sciences 1 : Muscular biomechanic - MuSkLE | 6 | 13,5 | 3 | 10,5 |
| ***30 ECTS*** | **Internship** | | | | |
| UE | Internship in laboratory | 30 | | | |

**Cellular level**

**Tissular level**

**Integrative level**

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Master 1 MuSkLE pathway graduates for 2 Mentions of Master depending academic history and study field:

- Integrative Biology and Physiology (BIP)
- Training and Optimization of Sports Performance (EOPS)

Pedagogic contact: **vincent.pialoux@univ-lyon1.fr**

Administrative contacts:

✓ Mention EOPS: **Gestion-MUSKLE-STAPS@univ-lyon1.fr**

✓ Mention BIP: **Scolarite.Biosciences@univ-lyon1.fr**

More information

**Major requirements** (non-exhaustive list)

- Bachelor degree obtained before July 2025 in the field of Cell biology, Physiology, Biomechanics, Kinesiology, Health, Sport sciences
- Excellence of the academic background
- Internship and technical skills
- Letter of motivation
- Advanced contact with one of the team of the **MuSkLE**

How to apply

**https://ecandidat.univ-lyon1.fr/lyon1.fr/**

Application period:

1st Session: March 22nd 2026 - April 22nd 2026

2nd Session: June 1st 2026 - July 2nd 2026