



## **eIF3f depletion impedes mouse embryonic development, reduces adult skeletal muscle mass and amplifies muscle loss during disuse**

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# eIF3f depletion impedes mouse embryonic development, reduces adult skeletal muscle mass and amplifies muscle loss during disuse

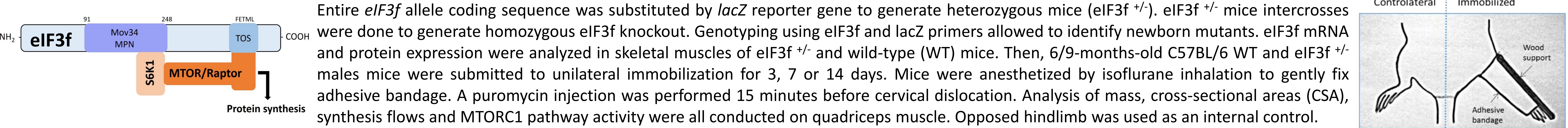
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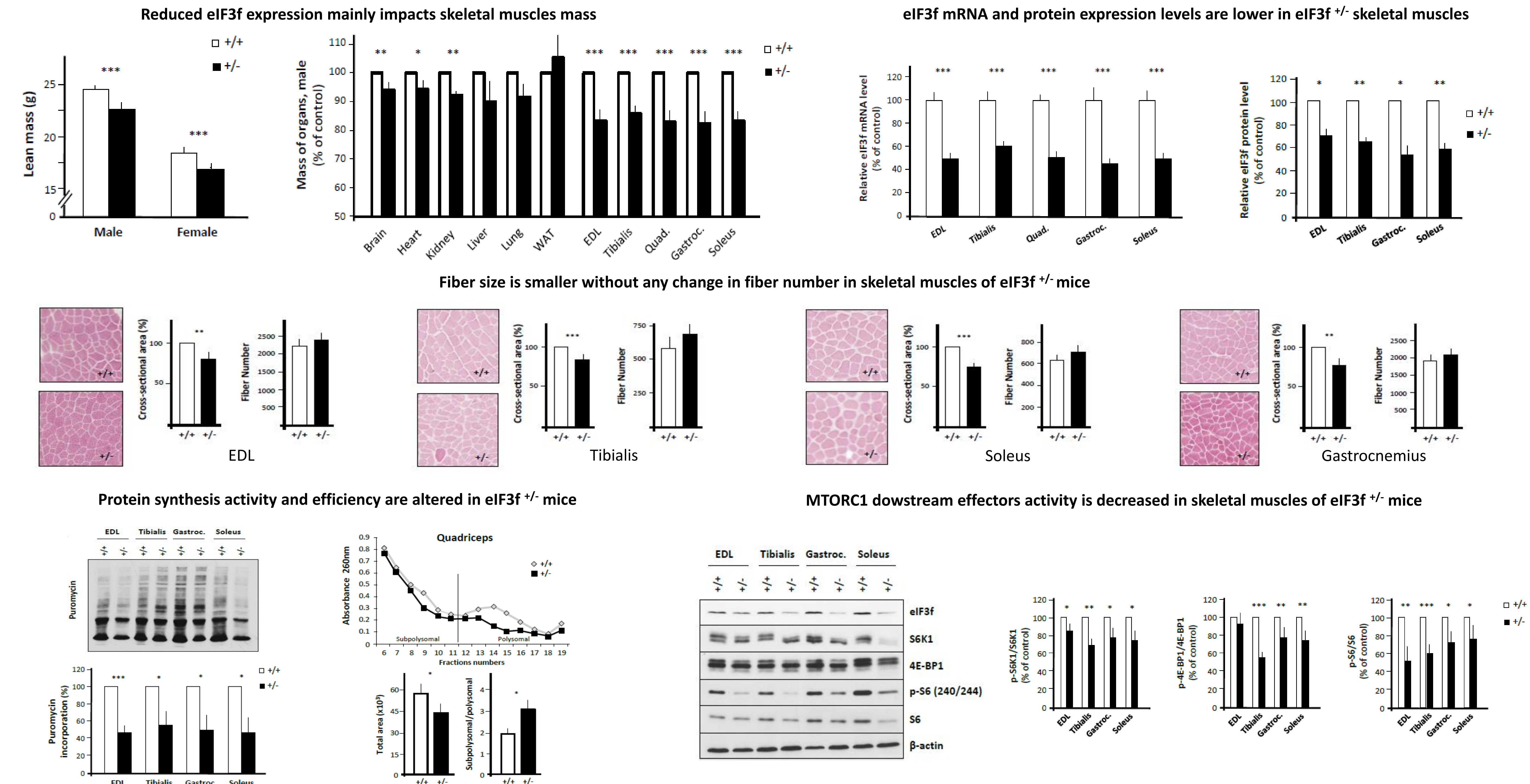
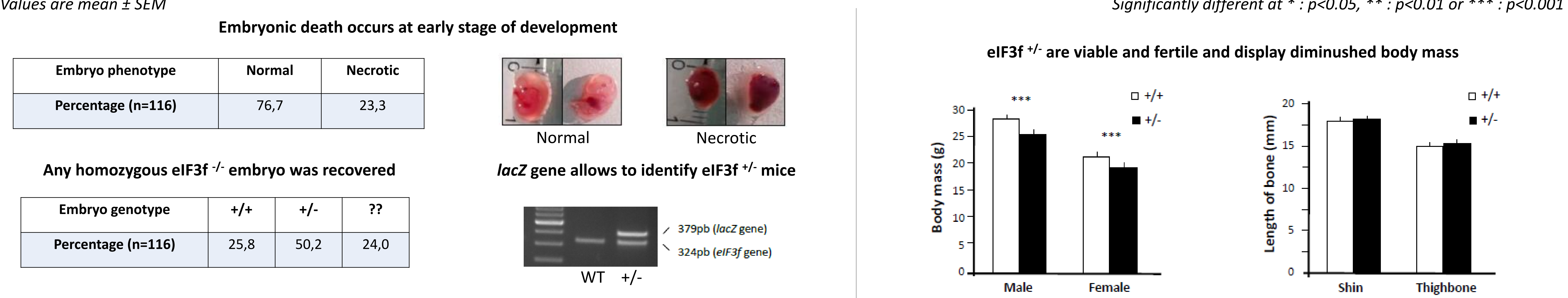
## INTRODUCTION

Muscle mass homeostasis is controlled by protein synthesis and degradation. Eukaryotic initiation factor 3f, a subunit of eIF3 complex, is a fundamental element of MTORC1 pathway, allowing physical interaction between S6K1 and MTOR. Phosphorylation of downstream effectors of MTORC1 pathway like S6 leads to enhanced translational capacity and myotubes hypertrophy. Despite its important role in protein synthesis regulation shown *in vitro*, its physiological role in skeletal muscle is poorly described. Generation of mice carrying a mutation in the *eIF3f* gene allows to further define *in vivo* eIF3f roles in muscular homeostasis.

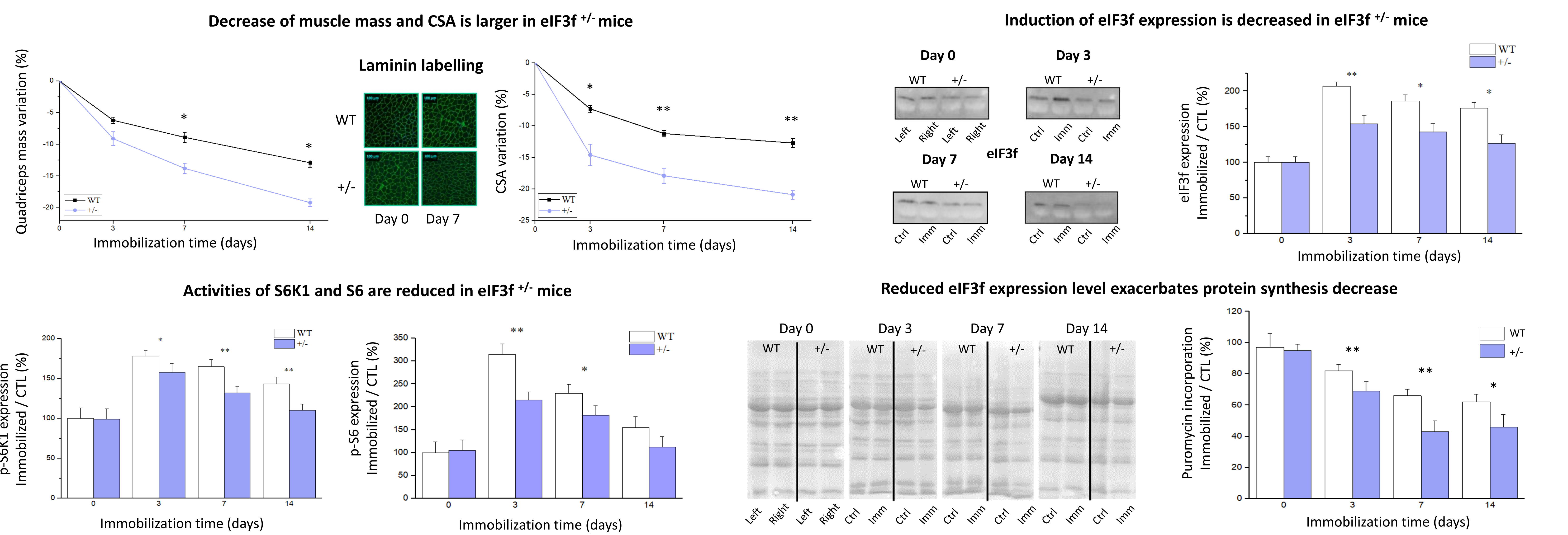
## MATERIAL & METHODS



## MODEL CHARACTERIZATION



## HINDLIMB IMMOBILIZATION STUDY



## CONCLUSION

Embryonic death suggests an essential role of eukaryotic Initiation Factor 3f for mice development. Whole body partial depletion allows normal growth despite a body mass reduction without change in body size. Mass lowering concerns only lean mass, skeletal muscles of heterozygous mice displaying a smaller fiber size. eIF3f mRNA and protein expressions are reduced in muscles of eIF3f<sup>+/-</sup> mice, as well as protein synthesis and MTORC1 pathway activity. During immobilization, reduction of eIF3f induction results in a stronger atrophy, with a larger decrease in muscle mass and CSA in eIF3f<sup>+/-</sup> mice. Protein synthesis is also reduced and associated with a lower MTORC1 pathway activity in eIF3f<sup>+/-</sup> mice. These results confirm *in vivo* the essential role of eIF3f in development, muscular growth and muscle mass homeostasis.