

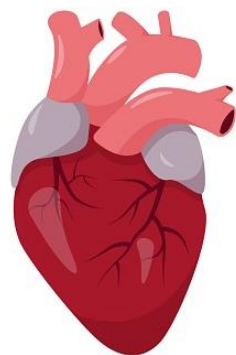


**SAPIENZA**  
UNIVERSITÀ DI ROMA

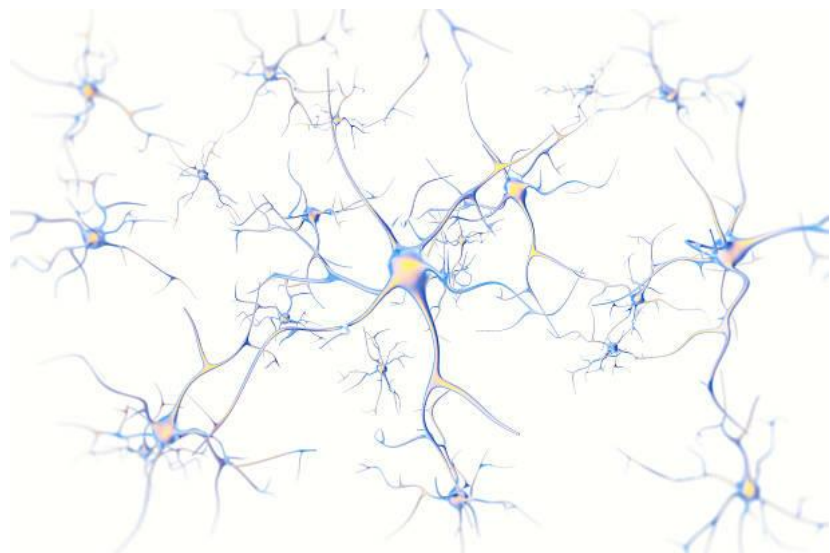
# **RUOLO DI SIRT<sub>3</sub> NELL'INIBIZIONE E RECUPERO DEI DANNI INDOTTI DA MICROGRAVITÀ NEL MUSCOLO**

**MICHELE AVENTAGGIATO, PhD**  
Dipartimento di Medicina Sperimentale  
SAPIENZA – Università di Roma

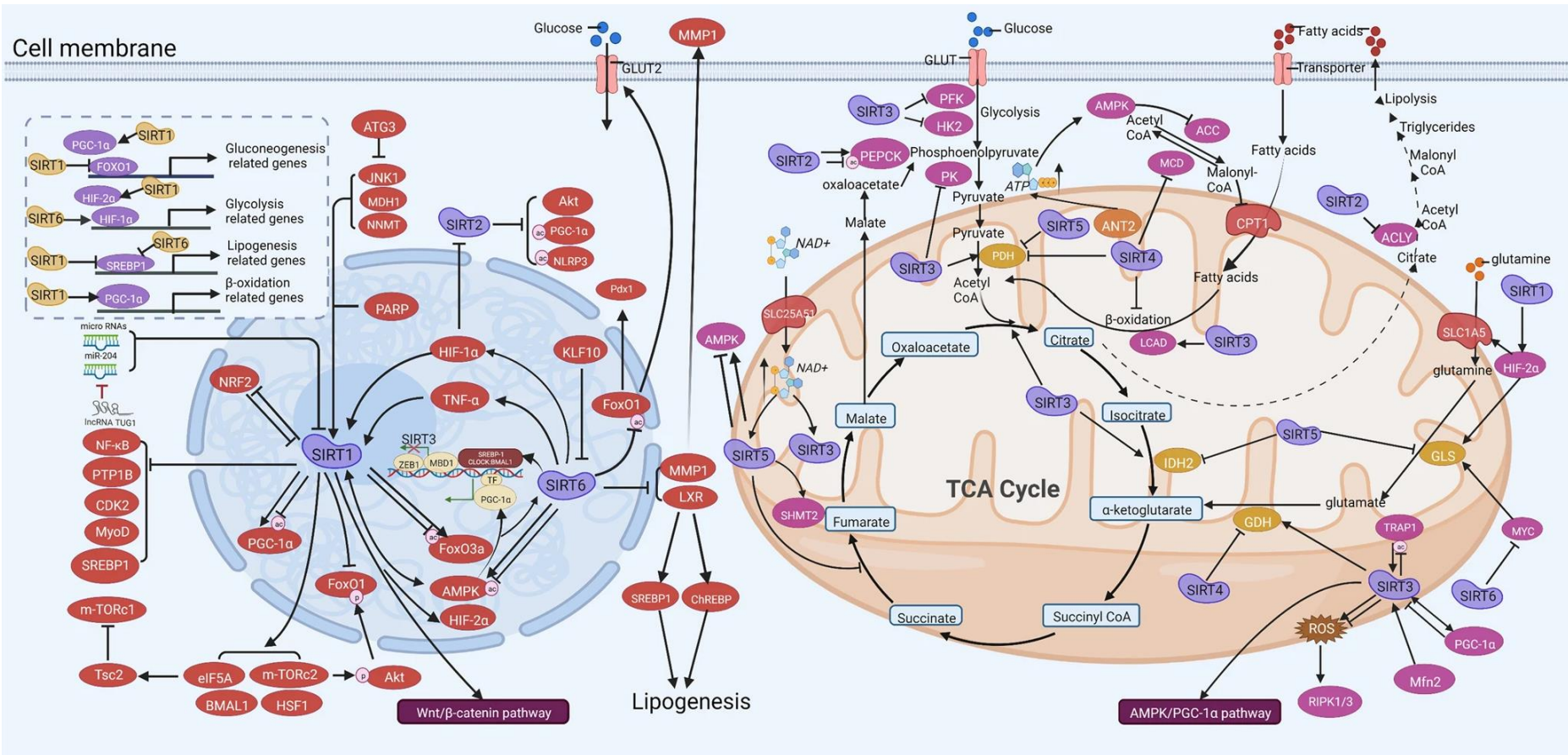
# EFFETTI DELL'ESPOSIZIONE A MICROGRAVITÀ



**MICROGRAVITÀ**



# RUOLO DELLE SIRTUINE IN FISIOLOGIA E PATOLOGIA



**FISIOLOGIA**  
 Funzionalità del tessuto muscolare  
 Funzionalità del sistema cardiovascolare  
 Sensibilità/Resistenza all'Insulina  
 Stress Ossidativo

**PATOLOGIA**  
 Cancro  
 Neurodegenerazione  
 Diabete  
 Morte cellulare  
 Senescenza

**IPOTESI**

**MICROGRAVITÀ**

**SIRTUINE**

Differenziamento  
cellulare

Autofagia

Mantenimento/Ripristino della  
funzionalità dei tessuti danneggiati















Meccanismi  
Molecolari



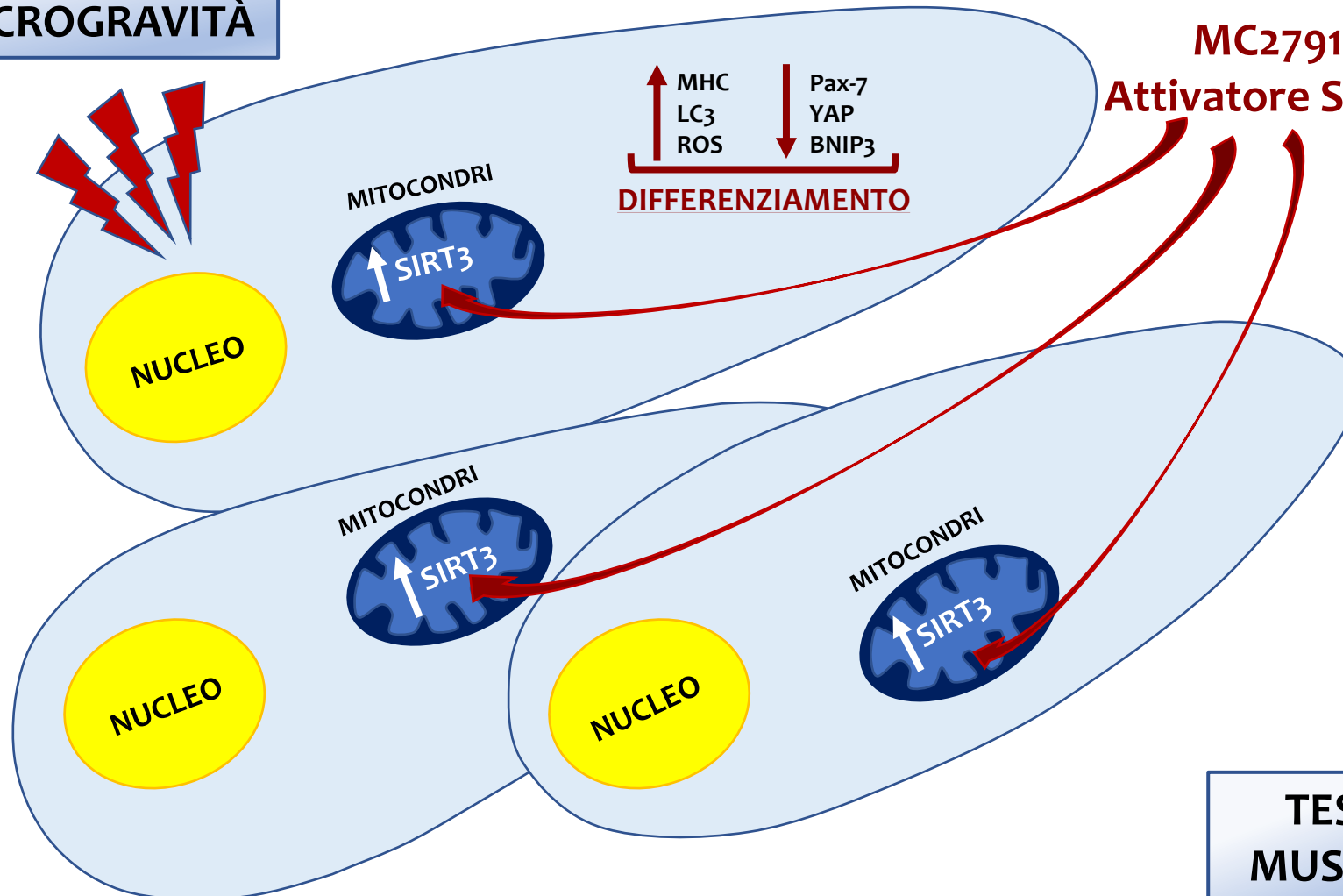
# RUOLO DI SIRT3 NEL RECUPERO DEL DANNO INDOTTO DALLA MICROGRAVITÀ

Article

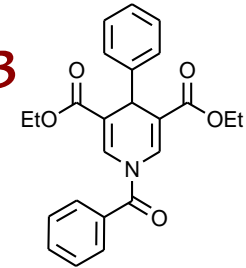
## Role of SIRT3 in Microgravity Response: A New Player in Muscle Tissue Recovery

Michele Aventaggiato <sup>1</sup>, Federica Barreca <sup>1</sup>, Laura Vitiello <sup>2</sup>, Simone Vespa <sup>3</sup>, Sergio Valente <sup>4</sup>, Dante Rotili <sup>4</sup>, Antonello Mai <sup>4</sup>, Lavinia Vittoria Lotti <sup>1</sup>, Luigi Sansone <sup>5,6</sup>, Matteo A. Russo <sup>5,6</sup>, Mariano Bizzarri <sup>1</sup>, Elisabetta Ferretti <sup>1</sup> and Marco Tafani <sup>1,\*</sup>

MICROGRAVITÀ



MC2791  
Attivatore SIRT3



TESSUTO  
MUSCOLARE

# MIOBLASTI

# CARDIOMIOBLASTI

24h Normogravità

24h Microgravità

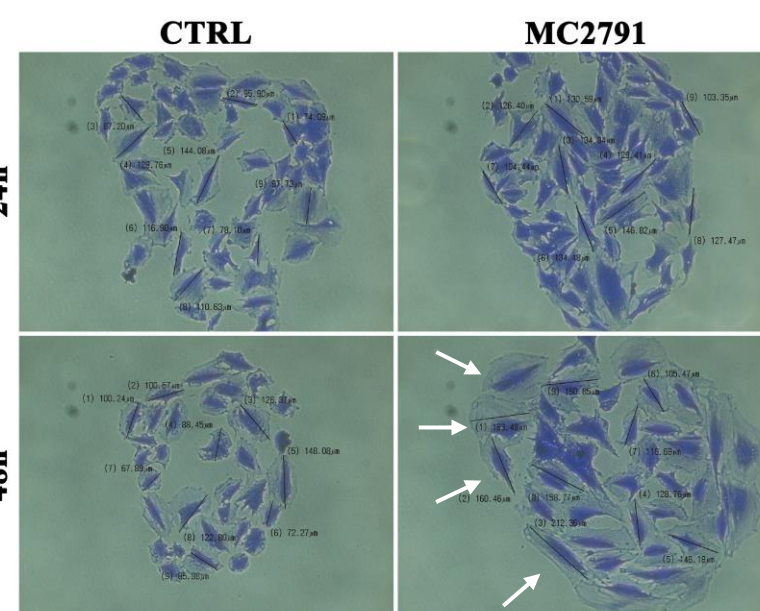
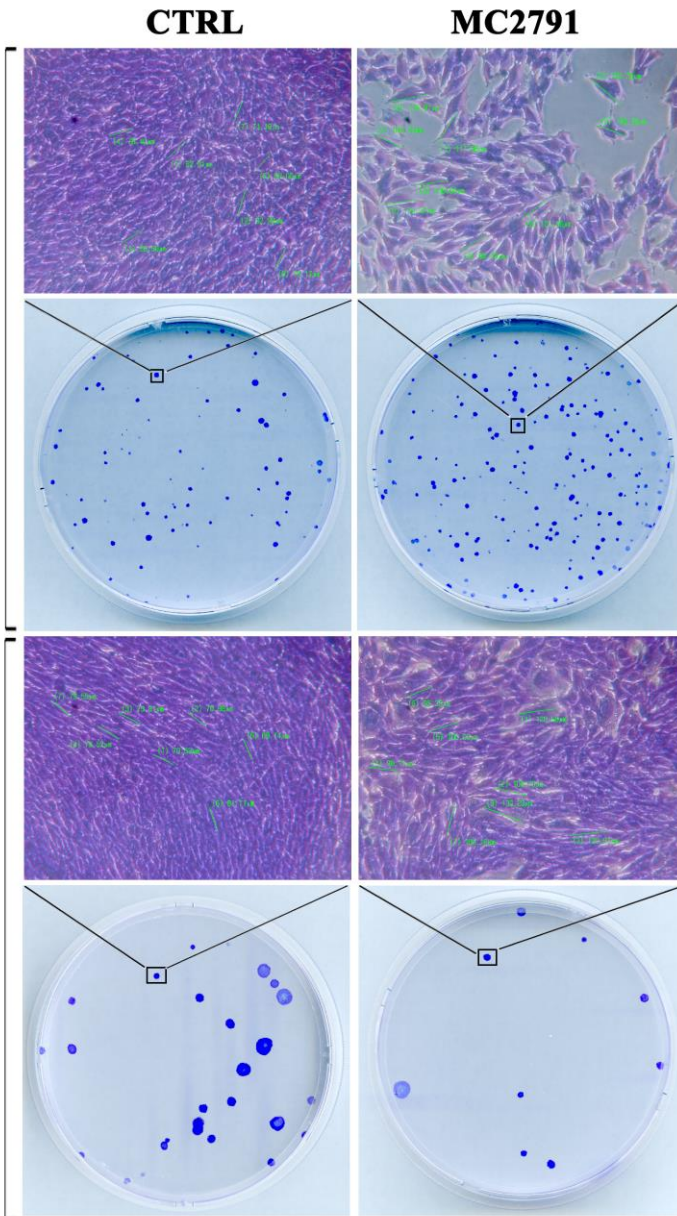
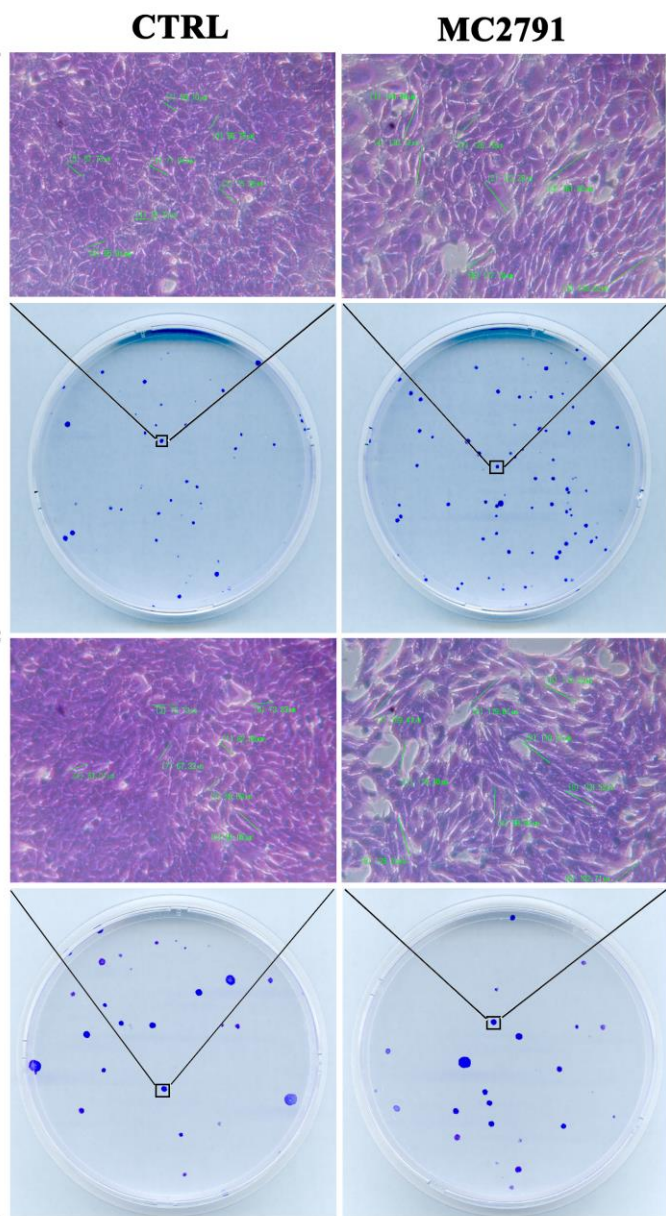
48h Normogravità

48h Microgravità

Normogravità

24h

48h



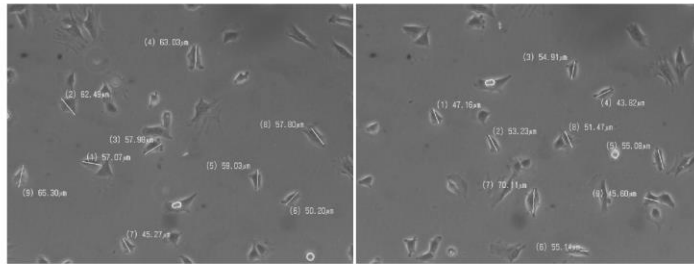


## NORMOGRAVITÀ

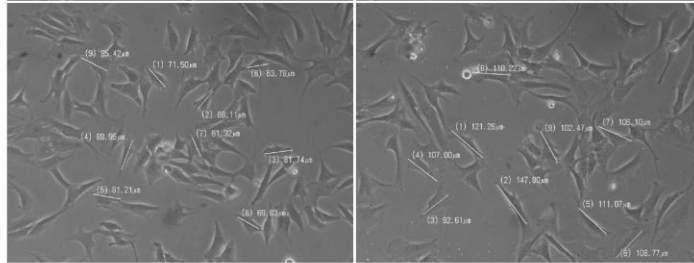
**CTRL**

**MC2791**

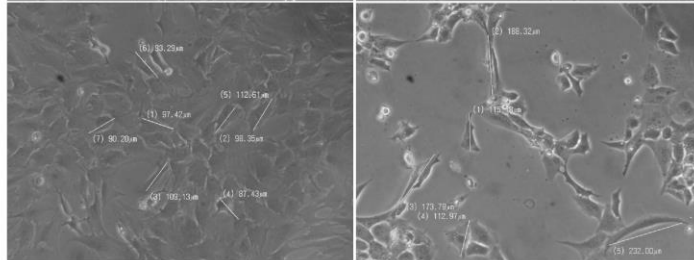
**T0**



**T1**



**T2**

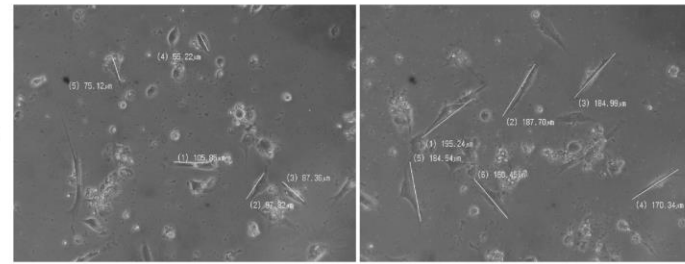


## 24h MICROGRAVITÀ + NORMOGRAVITÀ

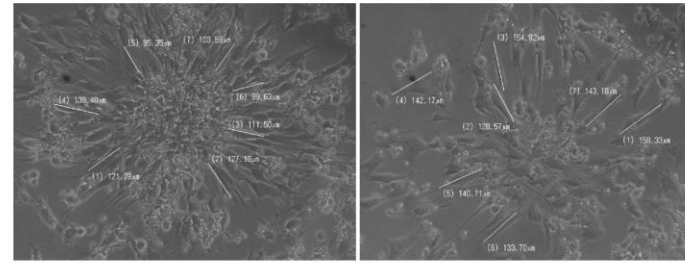
**CTRL**

**MC2791**

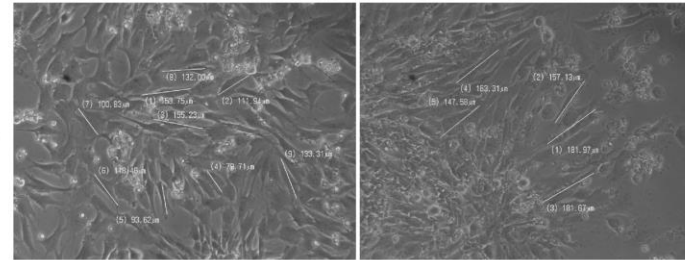
**T0**



**T1**



**T2**

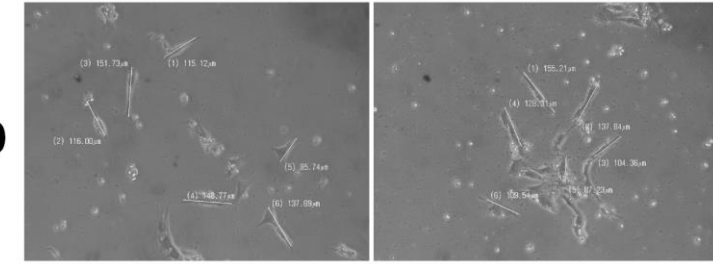


## 48h MICROGRAVITÀ + NORMOGRAVITÀ

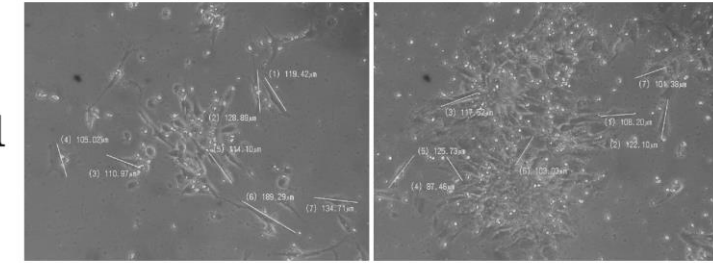
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**MC2791**

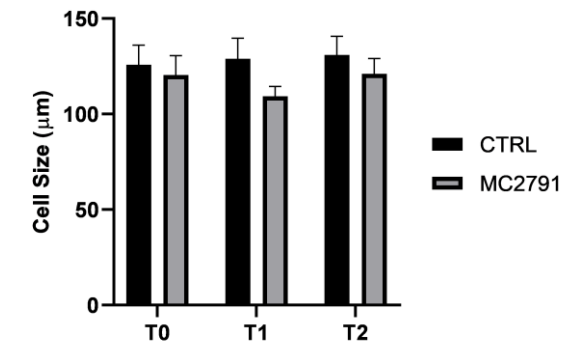
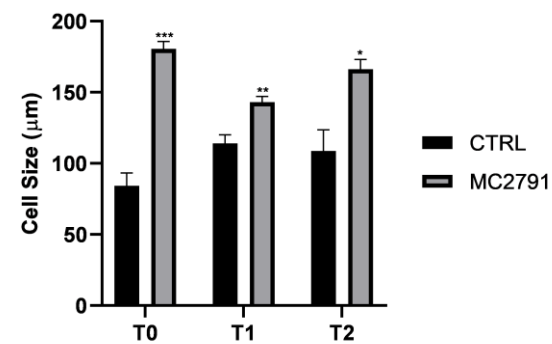
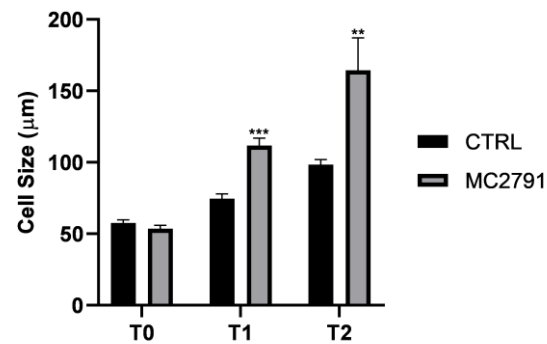
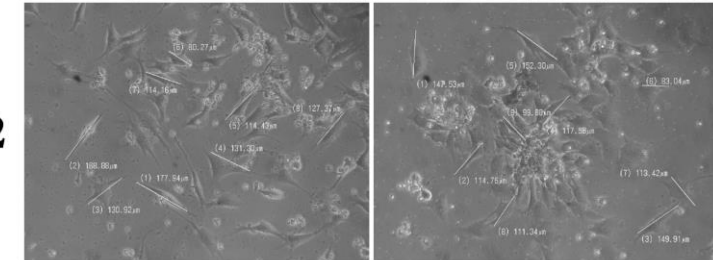
**T0**



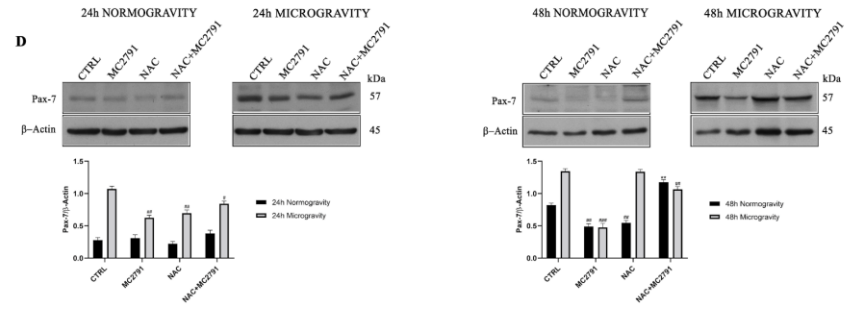
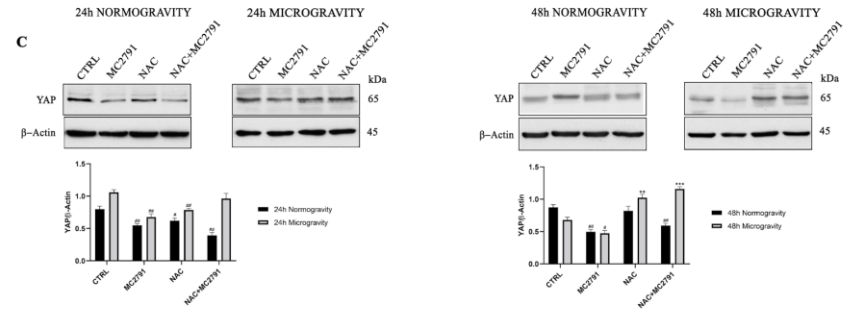
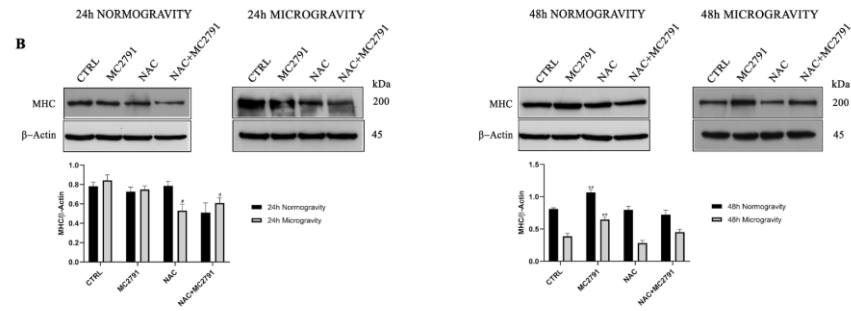
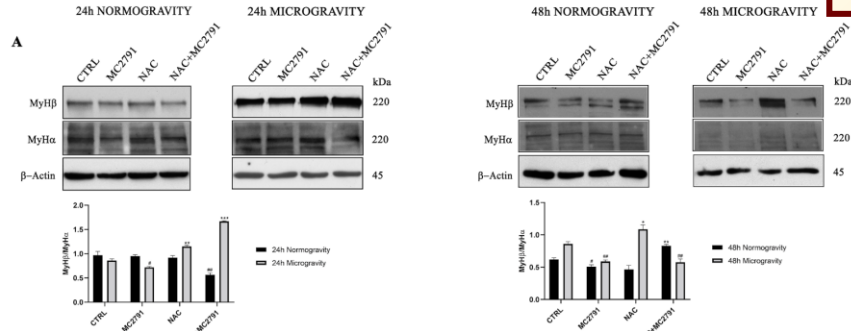
**T1**



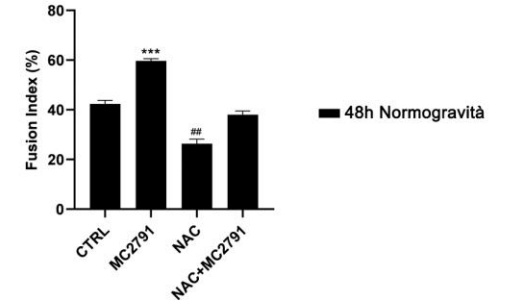
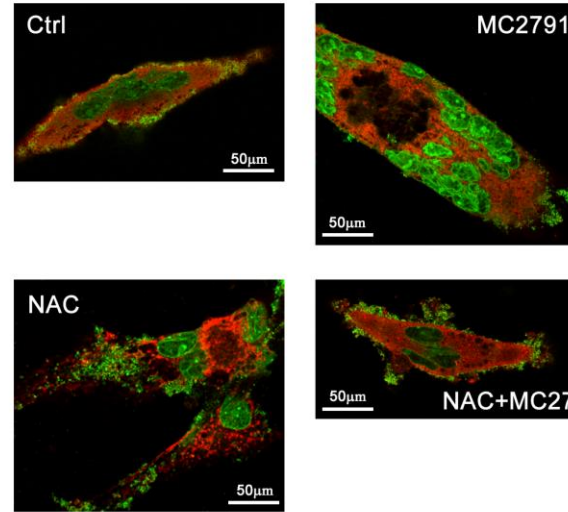
**T2**



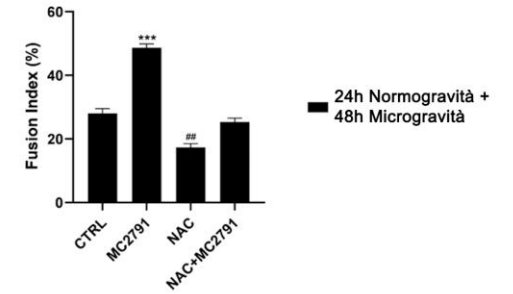
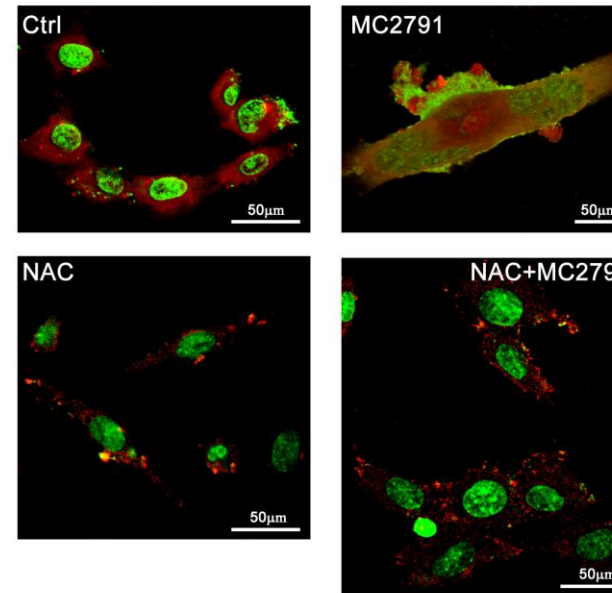
# STUDIO DELLO STATO DIFFERENZIATIVO



## 48h Normogravità



## 24h Microgravità + 48h Normogravità





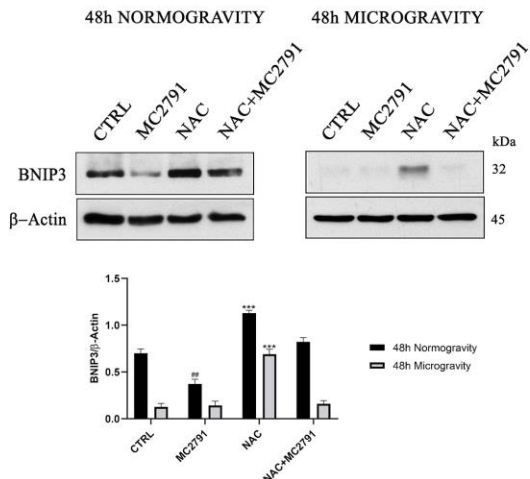
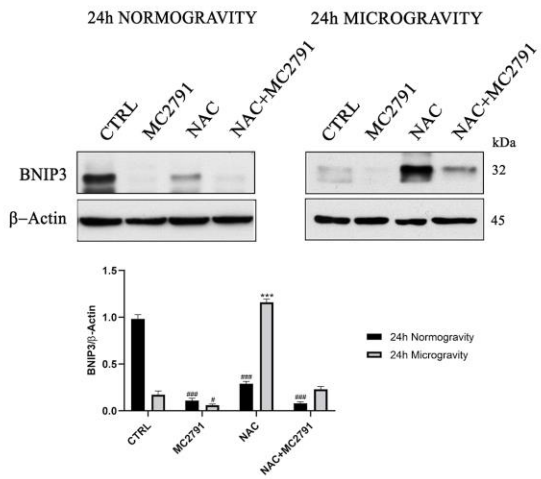
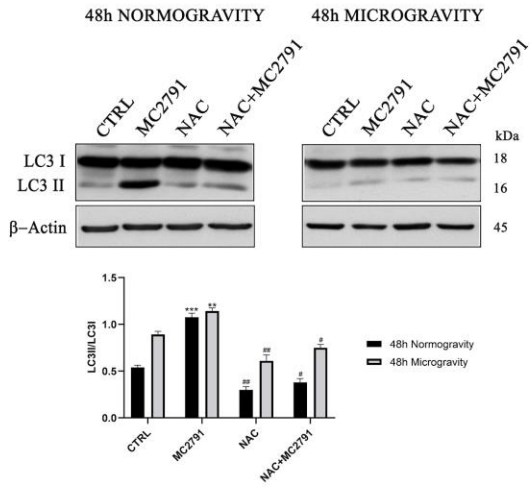
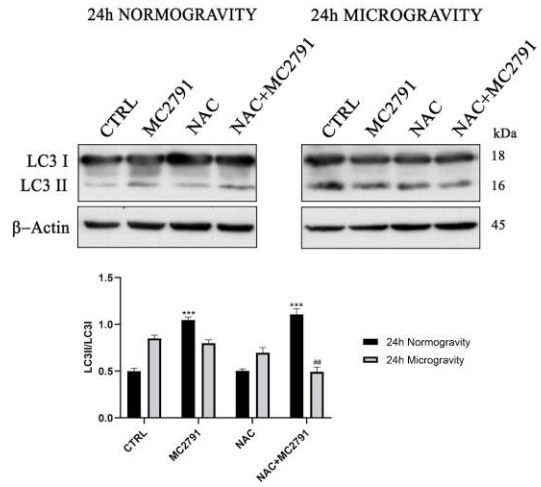
**ATTIVAZIONE  
SIRT3**



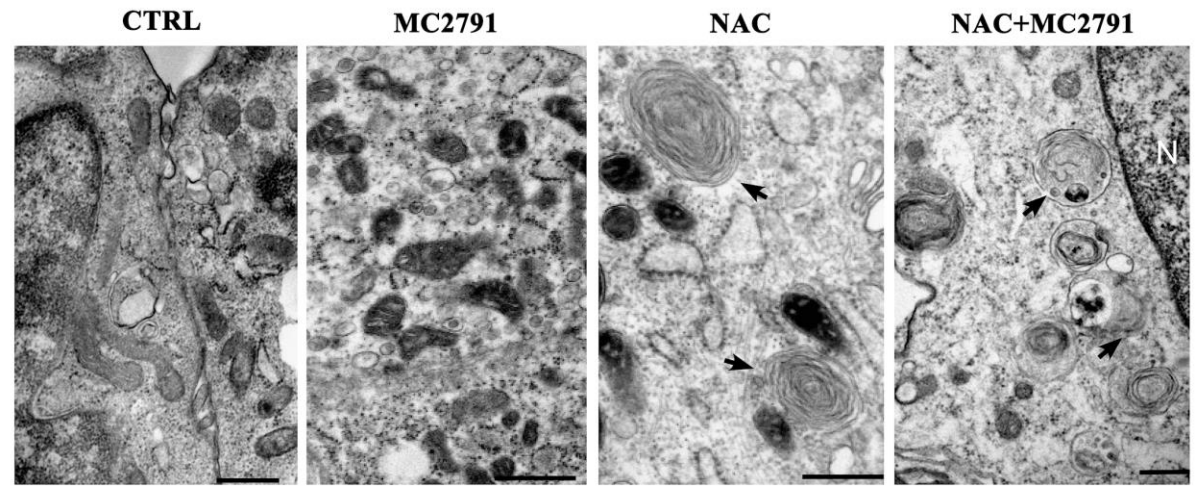
**AUTOFAGIA E  
MITOFAGIA**



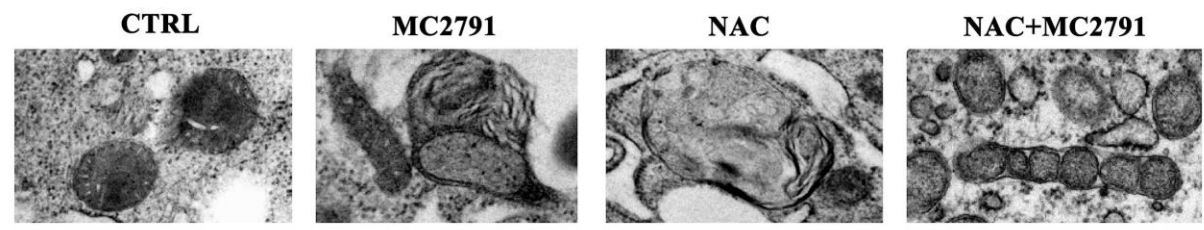
**DIFFERENZIAMENTO**



**MICROGRAVITÀ**



500nm



## CONCLUSIONI

**SIRT3 può essere considerato un MEDIATORE coinvolto nel recupero del danno indotto da microgravità**

**Studiare il ruolo delle sirtuine mitocondriali e nucleari nel riadattamento alle condizioni di gravità terrestre in seguito ad esposizione a microgravità**

**Analizzare il coinvolgimento delle Sirtuine come SENSORI DI GRAVITÀ e interattori con proteine strutturali del TESSUTO MUSCOLARE SCHELETRICO e CARDIACO per favorire la loro funzionalità**

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Prof.ssa Stefania Mardente  
Prof.ssa Lavinia Vittoria Lotti  
Prof. Mariano Bizzarri

Dott.ssa Eleonora Foglio  
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