



Seminar

Friday January 29th 14.00

Salle Guillermond – Bâtiment l'Herbier – 9 rue Raphael DUBOIS –
Domaine Universitaire de la DOUA

(http://oscar.univ-lyon1.fr/appli-externe/plan/plans/plan_campus_ouest.html)

Pura Muñoz-Cánoves

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<https://www.icrea.cat>

<https://www.upf.edu/cellbiology/>

"Tissue regenerative decline with aging: focus on muscle stem cells "

Abstract

Our group aims to understand the mechanisms regulating stem cell homeostasis and regenerative functions. Research is specially centered on stem cells of skeletal muscle (i.e., satellite cells). Recently, we have focused on two areas: 1) the functional decline of satellite cells with aging; and 2) the physiopathology of muscular dystrophies, with a specific interest in the contribution of inflammation and fibrosis to dystrophy progression. Concerning the first area, work from different laboratories has demonstrated that both environmental and cell-autonomous signals alter satellite cell regenerative potential with aging. I will discuss our latest results showing that satellite cells in their homeostatic quiescent state are equipped with quality control mechanisms to preserve their fitness, and how age-associated alterations in these protective mechanisms lead to stem cell loss of function and regenerative capacity.

If you wish to meet Pura Muñoz-Cánoves on Friday January 29th, please contact Bénédicte Chazaud (benedicte.chazaud@inserm.fr).

Selected recent publications:

- García-Prat L, Martínez-Vicente M, Perdiguero E, Ortet L, Rodríguez-Ubreva J, Rebollo E, Ruiz-Bonilla V, Gutarra S, Ballestar E, Serrano AL, Sandri M, Muñoz-Cánoves P. Autophagy maintains stemness by preventing senescence. **Nature**. 2016 529(7584):37-42.
- Pessina P, Kharraz Y, Jardí M, Fukada S, Serrano AL, Perdiguero E, Muñoz-Cánoves P. Fibrogenic Cell Plasticity Blunts Tissue Regeneration and Aggravates Muscular Dystrophy. **Stem Cell Reports**. 2015 4(6):1046-60.
- Pessina P, Cabrera D, Morales MG, Riquelme CA, Gutiérrez J, Serrano AL, Brandan E, Muñoz-Cánoves P. Novel and optimized strategies for inducing fibrosis in vivo: focus on Duchenne Muscular Dystrophy. **Skelet Muscle**. 2014 Aug 25;4:7.
- Sousa-Victor P, Gutarra S, García-Prat L, Rodríguez-Ubreva J, Ortet L, Ruiz-Bonilla V, Jardí M, Ballestar E, González S, Serrano AL, Perdiguero E, Muñoz-Cánoves P. Geriatric muscle stem cells switch reversible quiescence into senescence. **Nature**. 2014 506(7488):316-21.
- Vidal B, Ardite E, Suelves M, Ruiz-Bonilla V, Janué A, Flick MJ, Degen JL, Serrano AL, Muñoz-Cánoves P. Amelioration of Duchenne muscular dystrophy in mdx mice by elimination of matrix-associated fibrin-driven inflammation coupled to the alphaMbeta2 leukocyte integrin receptor. **Hum Mol Genet**. 2012 21(9):1989-2004.
- Ardite E, Perdiguero E, Vidal B, Gutarra S, Serrano AL, Muñoz-Cánoves P. PAI-1-regulated miR-21 defines a novel age-associated fibrogenic pathway in muscular dystrophy. **J Cell Biol**. 2012 196(1):163-75.
- Perdiguero E, Sousa-Victor P, Ruiz-Bonilla V, Jardí M, Caelles C, Serrano AL, Muñoz-Cánoves P. p38/MKP-1-regulated AKT coordinates macrophage transitions and resolution of inflammation during tissue repair. **J Cell Biol**. 2011 195(2):307-22.
- Vidal B, Serrano AL, Tjwa M, Suelves M, Ardite E, De Mori R, Baeza-Raja B, Martínez de Lagrán M, Lafuste P, Ruiz-Bonilla V, Jardí M, Gherardi R, Christov C, Dierssen M, Carmeliet P, Degen JL, Dewerchin M, Muñoz-Cánoves P. Fibrinogen drives dystrophic muscle fibrosis via a TGFbeta/alternative macrophage activation pathway. **Genes Dev**. 2008 22(13):1747-52.
- Serrano AL, Baeza-Raja B, Perdiguero E, Jardí M, Muñoz-Cánoves P. Interleukin-6 is an essential regulator of satellite cell-mediated skeletal muscle hypertrophy. **Cell Metab**. 2008 7(1):33-44..
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