Vol. 122, n. 1 (Supplement): 177, 2017

## IPMK and β-catenin take part in PLC-β1-dependent signaling pathway during myogenic differentiation

Giulia Ramazzotti<sup>1</sup>, Irene Faenza<sup>1</sup>, Anna Maria Billi<sup>1</sup>, Stefano Ratti<sup>1</sup>, Lucia Manzoli<sup>1</sup>

<sup>1</sup>Laboratorio di trasduzione del segnale, Dipartimento di Scienze Biomediche e Neuromotorie, Università di Bologna.

Phospholipase C (PLC)- $\beta$ 1 catalytic activity plays an essential role in the initiation of myogenic differentiation but the effectors involved in its signaling pathway are not well defined[1,2]. Here, we show that the overexpression of the Inositol Polyphosphate Multikinase (IPMK) promotes myogenic differentiation, and that IPMK targets the same cyclin D3 promoter region activated by PLC- $\beta$ 1. Moreover, cyclin D3 promoter activation relies upon c-jun binding to the promoter, both in response to PLC- $\beta$ 1 and to IPMK overexpression. Furthermore, both IPMK and PLC- $\beta$ 1 overexpression determines an increase in  $\beta$ -catenin translocation and accumulation to the nuclei of differentiating myoblasts resulting in higher MyoD activation. Therefore, our data show that PLC- $\beta$ 1, IPMK and  $\beta$ -catenin are mediators of the same signaling pathway that regulates cyclin D3 and myosin heavy chain (MYH) induction during myogenic differentiation.

## References

- Faenza I, Ramazzotti G, Bavelloni A, Fiume R, Gaboardi GC, Follo MY, Gilmour RS, Martelli AM, Ravid K, Cocco L. Inositide-dependent phospholipase C signaling mimics insulin in skeletal muscle differentiation by affecting specific regions of the cyclin D3 promoter. Endocrinology [Internet]. 2007; 148: 1108–17. doi: 10.1210/en.2006-1003
- Ramazzotti G, Faenza I, Gaboardi GC, Piazzi M, Bavelloni A, Fiume R, Manzoli L, Martelli AM, Cocco L. Catalytic activity of nuclear PLC-beta(1) is required for its signalling function during C2C12 differentiation. Cell Signal [Internet]. 2008; 20: 2013–21. doi: 10.1016/j.cellsig.2008.07.009

## Keywords

Myogenic differentiation, phospholipase C-β1, IPMK, β-catenin, inositol phosphates