

## **Ankyrin Repeat and Kinase Domain Containin I (ANKK1) as a novel biomarker of myogenesis and muscle fiber differentiation**

Estrella Rubio Solsona.

Centro de Investigación Príncipe Felipe – Programa de Enfermedades Raras.

ANKK1, also known as RIP5, belongs to the receptor-interacting protein (RIP) serine/threonine kinase family. The RIPs are regulators of cell proliferation and differentiation in a broad variety of cell types and tissues. Although ANKK1 function is unknown, its location in radial glial cells during brain development points to its participation in developmental processes.

The main interest of studying this protein had been the association between the *ANKK1 TaqIA* single nucleotide polymorphism (SNP) and certain psychiatric conditions. Here, we present for the first time the expression study of ANKK1 in mice embryonic myoblast and adult muscles as well as the protein dynamics throughout muscle proliferation and differentiation. In E14.5 embryos we found a very specific pattern of Ankk1 expression in myoblast cytoplasm in the head and body. In adults we found Ankk1 expression in both the nuclei and cytoplasm of Satellite Cells (SC), a dormant muscle stem cells that in adult muscle held in reserve and activate in response to injury and degeneration. In addition in the adult muscle, Ankk1 was located at the subsarcolemma and it differentiates Type I (oxidative) and Type II (glycolytic) muscles fibers. Moreover, differentiation studies in mice (C2C12) and human (Rhabdomyosarcoma) cell models showed a complex Ankk1 dynamics during myoblast proliferation and differentiation.

In summary, our results suggest that ANKK1 could be a novel muscle cell biomarker that participates in muscle development and differentiated muscle cell fate that lead to two different fiber-Type compositions that in turn determines muscle phenotype. Future studies of ANKK1 in degenerative muscular diseases are warranty.