

The 467th Medical Research Institute Seminar
The 40th Joint Usage/Research Program of Medical Research Institute Seminar

Date: 2012/2/3 (Friday)

Venue: M&D tower, 23 floor, Seminar room

Lecturer: Prof. Siegfried LABEIT
Chair, Dept. for Integrative Pathophysiology,
University Hospital Mannheim, Germany

Title: Regulation of Muscle Trophicity by MuRF-Family E3 Ubiquitin Ligases

Summary:

Skeletal and heart muscle trophicity is regulated by the balance of anabolic and catabolic pathways. Pathophysiological conditions of chronic stress will cause catabolism to become dominant, resulting loss of appropriate skeletal and heart muscle contractility, and ultimately severe muscle atrophy.

Induction of the atrophy inducing gene program includes an up-regulation of E3 ubiquitin ligases as critical components. In particular MuRF1 has been implicated in this process as a so-called atrogen. Here we present novel data on the roles of the muscle specific ubiquitin E3 ligases MuRF1, and its homologs MuRF2 and MuRF3. In particular, MuRF1 and MuRF2 together appear to control trophicity of the myocardium synergistically. Proteome studies in conjunction with in vitro ubiquitination assays have identified critical in vivo targets of the MuRF1,2 enzymes. Mechanistically, MuRF1 and MuRF2 interact with an overlapping set of myocardial stress response genes, and these data propose that MuRF1 and MuRF2 mediate longterm stress adaptations during chronic heart failure. Within this seminar we will discuss also if therapeutic modulation of MuRF1,2 activities and of related myocardial stress response pathways may be helpful to support the stressed heart.

Organizers: Dept. of Molecular Pathogenesis, Medical Research Institute
Prof. Akinori KIMURA (ex. 4905)

Co-organizer: Dept. of Bio-informational Pharmacology, Medical Research Institute
Prof. Tetsushi FURUKAWA (ex. 4950)