Seminar

Role of NAMPT and NAD+ precursors for skeletal muscle health and disease

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Time: 11:15

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Host: Nils J. Færgeman, BMB, SDU.

Abstract: NAD+ is important in energy metabolism and as a substrate for enzymes controlling a wide range of metabolic processes that maintain cellular homeostasis. Over the past years, we have investigated the role of nicotinamide phosphoribosyltransferase (NAMPT) and specific NAD+ precursors in humans and mice for the ability of cells to adapt to metabolic stress. NAMPT is ubiquitously expressed and it is the enzyme mainly responsible for maintaining NAD+ levels in mammalian cells. Knockout of Nampt in mouse skeletal muscle has recently been shown to result in severe pertubations in NAD+ levels and to lead to fiber degeneration and reduced muscle function. Moreover, we and others have shown that

NAMPT levels decrease with age in humans, and that exercise training is a potent intervention to circumvent this decline in NAD+ salvage capacity. These findings highlight the importance of maintaining NAD+ levels in skeletal muscle, and they suggest that strategies to boost NAD+ availability in skeletal muscle could be a viable way to alleviate conditions related to skeletal muscle dysfunction. Using novel muscle-specific Nampt knockout mouse models and samples obtained from a clinical trial with the NAD+ precursor nicotinamide riboside (NR), we are further detailing the role of the NAD+ salvage systems in skeletal muscle. Data from experiments using these models will be presented and discussed.