

# SRP Diabetes Seminar

## “MicroRNA-1 regulation of skeletal muscle flexibility via pyruvate metabolism”

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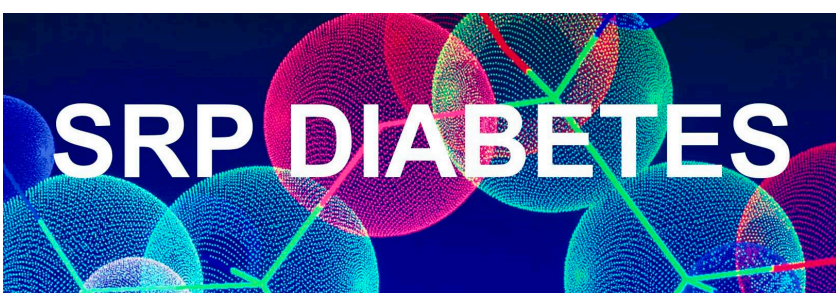
MicroRNA-1 (miR-1) is the most abundant microRNA in adult skeletal muscle. To understand the function of miR-1 in muscle, we generated an inducible, muscle-specific, miR-1 knockout (KO) mouse. Using RNA-seq and AGO2 eCLIP-seq analyses, we identified bona fide miR-1 target genes that regulate pyruvate metabolism through alternative splicing of the PKM gene via the miR-1 target gene PTBP1. The up-regulation of PKM2 in the miR-1 KO caused muscle to undergo metabolic reprogramming towards aerobic glycolysis which, in turn, impaired metabolic flexibility and endurance exercise performance. In contrast, the physiological down-regulation of miR-1 in response to a hypertrophic stimulus in both humans and mice resulted in a similar cancer-like metabolic reprogramming as observed in the miR-1 KO, i.e., aerobic glycolysis, that supported muscle cell growth. Taken together, these findings demonstrate that miR-1 influences metabolic flexibility of skeletal muscle by regulating pyruvate metabolism which affects both endurance exercise performance and muscle hypertrophy.

**Registration to [Arja.Kants@ki.se](mailto:Arja.Kants@ki.se) latest June 5** for the mingle after the seminar.

Host: **Ferdinand von Walden** / SRP Diabetes

Tuesday 10 June 2025 | 15:00-16:00

Peter Reichard seminar hall, Biomedicum, Solnavägen 9, Solna



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