Reasoning of dissertation topic and competency of potential supervisor for admission onto joint LSU and TU doctoral studies in 2019

Area of research (title and code)	**Biomedicine**
Field of research (title and code)	**Biology**
Topic of research	
Institution	**Lithuanian Sports University**

Potential supervisor

Pedagogical and scientific degree	**Name, surname**	**Academic position**
Prof., Dr.	Tomas Venckūnas	Prof.

Short reasoning of proposed dissertation topic

Title
Changes of muscle characteristics and motor unit pool during aging: effects of genotype, diet and physical activity
Summary Aging is known to negatively affect skeletal muscle size and quality. Few of the possible contributing factors affecting muscle wasting (aka sarcopenia) and motor unit (MU) loss during aging are reduced activity levels, increased fat reserves and associated higher level of systemic inflammation. Dietary interventions such as total calorie restriction or specific amino acid restriction are promising approaches in combating muscle wasting and weakness due to aging, and the effectiveness of these interventions is to be tested on the animal model first. Due to many reasons such as relatively short lifespan and small body size, laboratory mouse model serves well in investigating the effective countermeasures of aging related deterioration of motor function. The study is to be performed on laboratory mice of different strains (that is different genetic background): the normal sized animals (B6), long-term selected for either very high (BEH) or very low (BEL) muscle and body size. The animals will be switched from their standard chow diet to amino acid methionine restriction or basic calorie restriction when aged 12 months, and the activity patterns, MU size and numbers, muscles characteristics, among other measurements will be followed longitudinally until the age of 28 months when animals are sacrificed and the tissues harvested for in-depth analyses.

Tomas Venckūnas