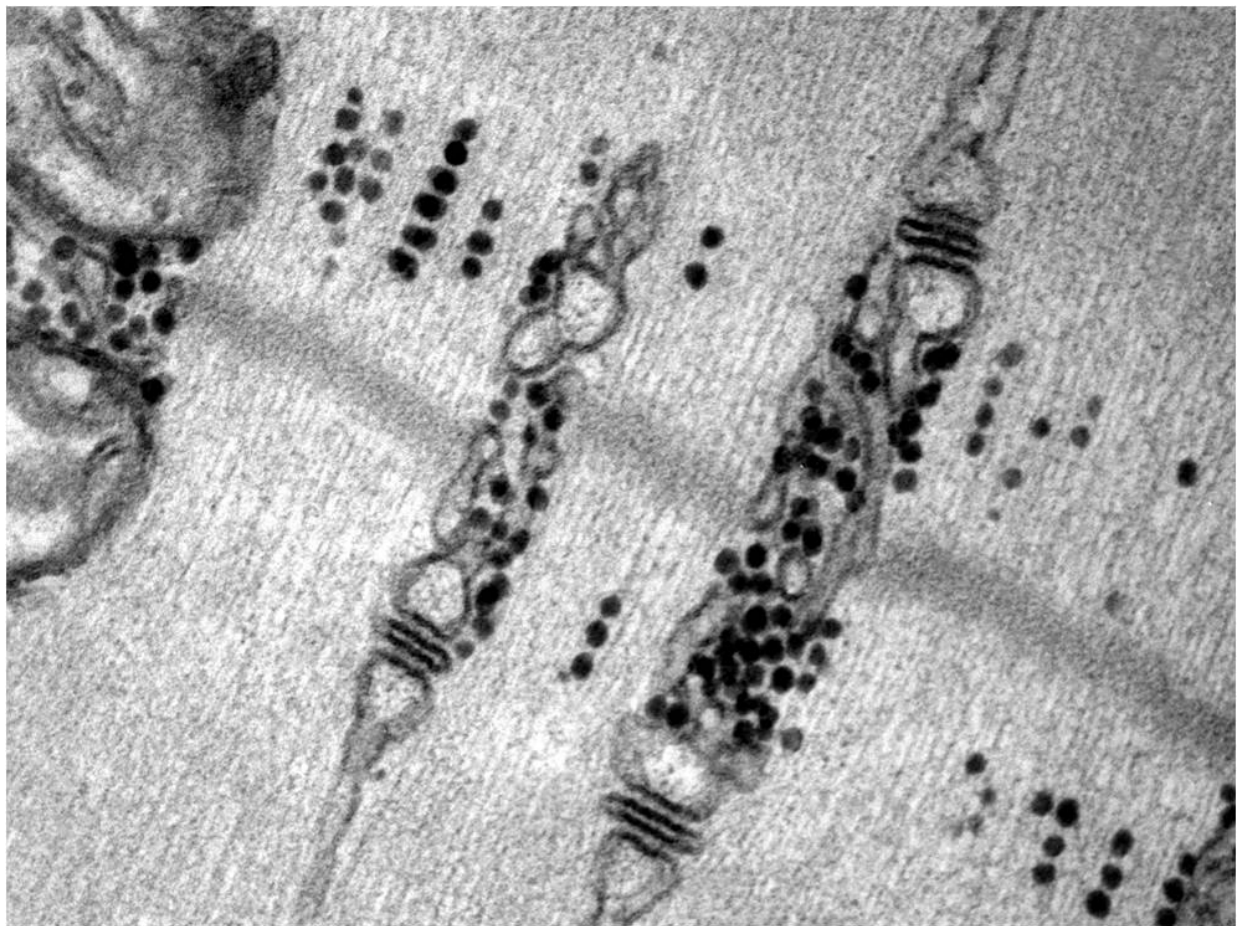


**Joachim Nielsen, MSc**

Role of glycogen stores in skeletal muscle function with special reference to muscle fatigue, aging, type 2 diabetes and immobilisation

Glycogen is a branched polymer of glucose readily fuelling glycolysis during conditions of elevated energy requirements. The importance of glycogen in skeletal muscle is best illustrated by the inability of continuing strenuous exercise when glycogen stores are depleted as shown in a large number of studies in the 1960s and 1970s. However, a direct cause-effect relationship between glycogen and muscle function remains to be established. One intriguing finding by electron microscopy is that glycogen is localized in distinct compartments inside the muscle cells, which suggests that distinct subfractions of glycogen might have different roles in skeletal muscle function and metabolism. In the present PhD-project using electron microscopy the effects of exercise, endurance training, muscle disuse, type 2 diabetes and aging on the content and regulation of subfractions of muscle glycogen in humans are investigated.

***What is the significance of glycogen localization?***

*Transmission electron microscopy image of skeletal muscle. Glycogen particles are seen as black dots (average diameter of 25 nm).*