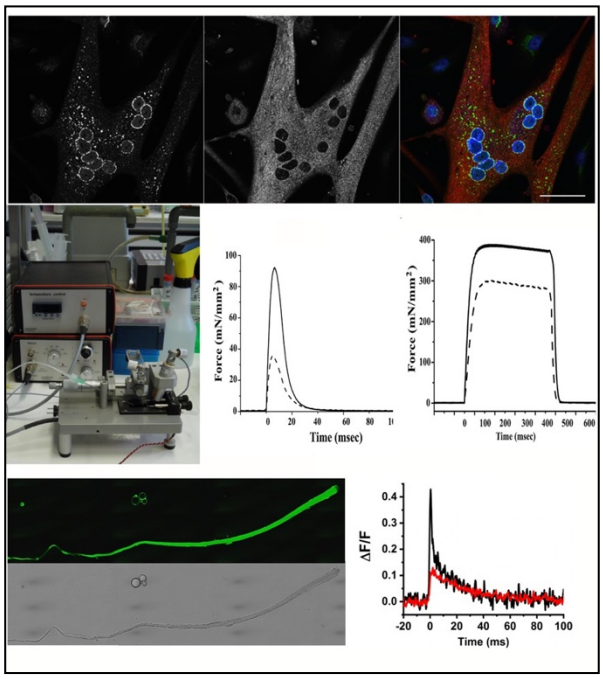
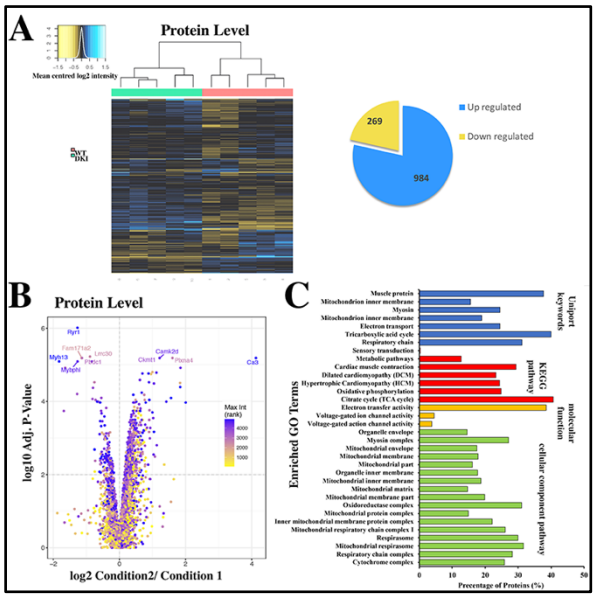
The main focus of my laboratory is to study the pathological mechanisms leading to congenital muscle disorders, with particular emphasis on changes occurring in the skeletal muscle of patients. One of the models we use to study skeletal muscle is quite unique to our laboratory since we use biopsy-derived human skeletal muscle cells differentiated into myotubes *in vitro*. This has allowed us to directly assess the effect of mutations in tissue obtained from patients affected by neuromuscular disorders. More recently we have developed several mouse models knocked in for *RYR1* mutations identified in severely affected children. These mouse models together with patient-derived biopsies allow us to gain a deep understanding of pathological changes occurring in muscles of patients; furthermore, they allow us to test the effects of potential pharmacological compounds to improve muscle function.

In both the patient-derived biopsies and in the muscles isolated from our animal models we investigate changes occurring in transcript, miR, muscle protein as well as epigenetic enzymes involved in chromatin / histone modification.

Several projects are currently ongoing in the laboratory. The Master's student would be directly involved in characterizing the biochemical, physiological and molecular changes occurring in muscles (including diaphragm, eye muscles, fast and slow twitch muscles) of patients as well as mouse models carrying mutations in the *RYR1* gene. All projects would be carried out in collaboration with senior lab members. These projects involve a broad range of techniques, including cell and tissue culture, molecular biology, cell biology, biochemistry, proteomic analysis, microscopy and imaging, and fluorescence measurements of intracellular [Ca^{2+}].





For more information please visit the website: https://biomedizin.unibas.ch/en/persons/susan-treves/

Or come and visit the lab (Lab 408) in the DBM