Dr. Annemarie Lang
2019 OARSI Belt and Road Scholarship
The 2019 OARSI Belt and Road Scholarship enabled me to work in the laboratory of Dr. M. Farooq Rai, PhD in the Department of Orthopaedic Surgery of Washington University School of Medicine (St. Louis, MO). Our collaborative research project aimed at testing and optimization of a disease-responsive gene therapy approach to treat osteoarthritis (OA). We have characterized a disease-inducible IL-4 gene therapy in murine chondrocytes in which the Cox-2 promoter is up-regulated by inflammatory cytokines IL-1β and TNFα, serving as a feedback-controlled genetic switch upstream of the IL-4 transgene. This is the first application of this approach in murine chondrocytes and therefore paves the way towards its application in a mouse model of (post-traumatic) OA. If successful, these inducible and switchable (on/off) promoters that respond to the disease progression offer a promising alternative for stable or long-term transduction and may revolutionize current gene therapy approaches.

This fellowship provided me not only with the opportunity to acquire new skills in preclinical mouse model, but also to work in a different scientific environment dedicated for basic and translational research. It also allowed me to get mentored by Dr. Rai and his team member Dr. Lei Cai. Additionally, I had the opportunity to interact with Prof. Farshid Guilak, PhD and his lab members resulting in a new collaboration with Alireza Savadipour for the use of AFM-based Nano-indentation to determine the cartilage stiffness in a specific gene knockout mouse strain.

This scholarship facilitated our collaborative work, provided me with the monetary support, and fostered my international network and experience. It was indeed a great pleasure and honor to earn this prestigious scholarship and I am truly thankful to OARSI for this award. I highly recommend young investigators to take advantage of this unique opportunity to explore immense research experience beyond borders.