Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

DIE GANZE WELT DER ORTHOPÄDIE
Orthopädische Klinik
König-Ludwig-Haus

BEWEGUNG IST LEBEN
Bernhard-Heine-Centrum
für Bewegungsforschung

GUEST SEMINAR SERIES

Department of Musculoskeletal Tissue Regeneration

Date Tuesday 15th September 2026 at 16:30-17:30 o'clock

Location Orthopädische Hörsaal im Zentrum für Seelische Gesundheit
am König-Ludwig-Haus ◦ Brettreichstraße 11 ◦ 97074 Würzburg

Guest-Speaker

Prof. Hiroshi Asahara, M.D., Ph.D.
Department of Systems Biomedicine,
Institute of Science, Tokyo, Japan

Lecture "Athlete Giftedness and Genetics."

For seminar abstract and presenter's biosketch,
please refer to next page

Presentation abstract

In this lecture, I will present our recent findings on the genetic basis of athletic giftedness, focusing on the PIEZO1 E756del gain-of-function variant. We identified this variant at elevated frequency in elite Jamaican sprinters and demonstrated in tendon-specific mouse models that PIEZO1-mediated mechanosensing enhances jumping performance and running speed through upregulation of Mohawak (Mkx). These results connect tendon mechanobiology with elite athletic performance and open new perspectives on musculoskeletal adaptation, regeneration, and the genetics of physical capability.

Biosketch

Prof. Asahara's research focusses understanding the molecular and cellular mechanisms that govern musculoskeletal development, homeostasis, and disease. Following training as an orthopedic surgeon at Okayama University, he pursued postdoctoral research at Harvard Medical School and the Salk Institute, developing an understadning in chromatin-mediated gene regulation and transcription factor biology. This dual training in clinical medicine and molecular biology has shaped an integrative research program that bridges basic science and translational medicine. At Scripps Research and the Institute of Science Tokyo, his laboratory has four interconnected research themes: (1) the discovery of Mohawk (Mkx) as a master transcription factor of tendon and ligament development, and its roles in periodontal ligament, intervertebral disc, and musculoskeletal regeneration; (2) identification and functional characterization of Sox9 regulatory enhancers underlying congenital skeletal disorders using combinatorial CRISPR approaches; (3) the roles of microRNAs, including miR-140 and let-7, in cartilage homeostasis and OA; and (4) mechanosensory regulation of musculoskeletal performance via the ion channel PIEZO1.