Musculoskeletal Research Center

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MUSCULOSKELETAL RESEARCH CENTER at Washington University

in this issue

2013 Summer Educational Series

Once again, the Musculoskeletal Research Center will sponsor a summer educational series: New Directions in Musculoskeletal Research. This series will take place in June and July, Fridays at 9am on the 11th floor of the BJCIH building, in the A/B conference room. The topics and speakers are:

Date	Speaker
June 28	**Dr. Kelle Moley** | *Obstetrics & Gynecology* *"Clinical & Translational Science Award and the Washington University Institute of Clinical & Translational Sciences"*
July 12	**Dr. Deborah Novack** | *Bone & Mineral Diseases* *"Using Musculoskeletal Tissues for Laser Capture Microdissection"* Round Table Discussion (F. Rai, M. Killian, D. Beebe)
July 19	**Renate Lewis** | *Neurology* *"TALENs and CRISPR for Genome Engineering in Mice"*
July 26	**Dr. Steve Johnson and Ryan Gray** | *Genetics* *"Zebrafish as a Model System for Musculoskeletal Research"*

Avioli Musculoskeletal Seminar Series

BJCIH Bldg. \| 11th floor A/B Conference Room Fridays @ 9am

5/3	Debabrata Patra, PhD	*Orthopaedic Surgery*
5/10	Sheila Stewart, PhD	*Cell Biiology and Physiology*
5/17	Rajeev Aurora, PhD	*Saint Louis University School of Medicine*
5/24	Michelle Hurchla, PhD	*Weilbaecher Lab*

For more information about the MRC and the Cores, please click here:
http://muscoloskeletalcore.wustl.edu

Please remember to include reference to support from the Musculoskeletal Research Center in your abstracts and publications.
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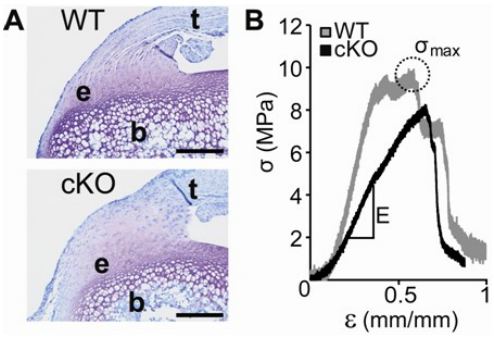
from the National Institute Of Arthritis And Musculoskeletal And Skin Diseases.

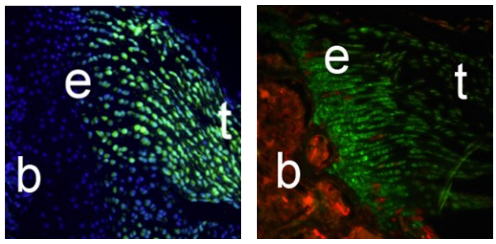
Scleraxis (Scx) mouse models available at Washington University

M. Killian, A. Schwartz, S. Thomopoulos

Scleraxis is a transcription factor critical for tendon development, and is expressed throughout development in musculoskeletal and cardiac tissues. While *Scleraxis* is required for the development of force-transmitting tendons (Murchison, Price et al. 2007), it is not clear if it is required for the attachment of tendon to bone attachment, also known as the enthesis. Using *Scleraxis*-floxed mice (R. Schweitzer), which was conditionally deleted (cKO) in the appendicular skeleton during mesoderm development (PRX-Cre), we investigated the morphology, bone morphometry, and material properties of the supraspinatus enthesis at key post-natal time points. Mice lacking *Scleraxis* in the appendicular skeleton demonstrated impaired enthesis maturation and organization compared to their wild-type littermates (Figure 1A). Additionally, supraspinatus entheses of cKO mice demonstrated reduced ultimate strength and elastic moduli compared to their age-matched littermates (Figure 1B). Ongoing studies are currently underway to establish the roles of both molecular and mechanical cues that drive organization and structure of the enthesis.



ScxGFP – A small transgenic construct that provides expression of GFP in tissues where Scx is expressed (Figure 1C). This model is useful for visualization of tendons and ligaments and for in vitro studies investigating tenogenic differentiation (Pryce, Brent et al. 2007).



ScxGFP ScxCre;Rosa mTmG

ScxCRE – A BAC transgenic model useful for targeted gene deletion in tendons and ligaments (Figure 1D). (Blitz, Viukov et al. 2009).

Blitz, E., S. Viukov, et al. (2009). "Bone ridge patterning during musculoskeletal assembly is mediated through SCX regulation of Bmp4 at the tendon-skeleton junction." Developmental cell **17**(6): 861-873.

Murchison, N. D., B. A. Price, et al. (2007). "Regulation of tendon differentiation by scleraxis distinguishes force-transmitting tendons from muscle-anchoring tendons." Development **134** (14): 2697-2708.

Pryce, B. A., A. E. Brent, et al. (2007). "Generation of transgenic tendon reporters, ScxGFP and ScxAP, using regulatory elements of the scleraxis gene." Developmental dynamics : an official publication of the American Association of Anatomists **236**(6): 1677-1682.

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