

New targets for fascial, ligament and tendon research: Insights from the Utah paradigm of skeletal physiology*

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Abstract

Here an octogenarian argues that the physiology of fascia, ligaments and tendons has strong and useful analogs in some general features of bone physiology, including the latter's tissue-level mechanisms and functions and its mechanostat. Such analogs could provide unusually important targets for future collagenous-tissue research. Even by 2003 this field's authorities seldom discussed those analogs, so this text addresses that omission.

How well the above research proceeds could depend partly on A) informing collagenous-tissue physiologists about those analogs, B) on following a four-step analytical strategy, C) on "connecting the dots" between evidence and ideas from many fields of inquiry to find larger "messages" hidden in mountains of lesser things and D) on combining (i) cell- and molecular-biologic work, expertise and insights with (ii) live-animal research and expertise and insights of the Utah paradigm of skeletal physiology.

Why the "*in vitro/in vivo* collaboration" in "D" above? Partly because few if any skeletal tissue-level mechanisms function normally in current cell, tissue and organ culture

systems. Consequently an agent's *in vitro* effects usually cannot predict correctly its *in vivo* effects, although the former effects may help to explain the latter ones after other studies revealed the latter ones.

Things summarized in this article provide a foundation on which to build in the future. Aging and other things took me out of that "building game", so younger people will do that building when, how and if they wish to. The directions of building suggested in this article differ from currently accepted "wisdom" so it may take years for that building to begin in earnest.

*Note: a version of this text with a different title was published in the September 2003 issue of the Journal of Musculoskeletal and Neuronal Interactions¹.

References

1. Frost HM. New targets for fascial, ligament and tendon research: a perspective from the Utah paradigm of skeletal physiology. J Musculoskel Neuron Interact 2003; 3:201-209.

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