



Department of Anatomy and Cell Biology

Hosted by Dr. Marc McKee

Hierarchical structure of bone revisited

Dr. Natalie Reznikov

Postdoctoral Fellow, Faculty of Dentistry
McGill University



Bone is formed from common bioavailable elements at "ambient" conditions in living organisms, yet it surpasses all known materials in terms of its unique combination of mechanical properties – having high stiffness, high toughness and light weight. To achieve these remarkable properties of bone, Nature uses hierarchical organization: the smallest components form distinct structures that are themselves components of larger structures, and so on. This talk highlights recent findings about the 3D structure of bone, from the nanometer scale to the millimeter scale. A 3D analysis of bone across multiple hierarchical levels reveals self-similarity in its organization. Self-similar patterns – also known as fractal-like patterns – are common in Nature and can also be observed in the structure of plants, geologic formations, lightning bolts and social groups. I will present bone architecture in this context, explaining similarities to natural and engineered structures.

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11:30 am

**Strathcona Anatomy Building
3640 University Street
Room 2/36**

www.mcgill.ca/anatomy/seminars
anatomysec.med@mcgill.ca