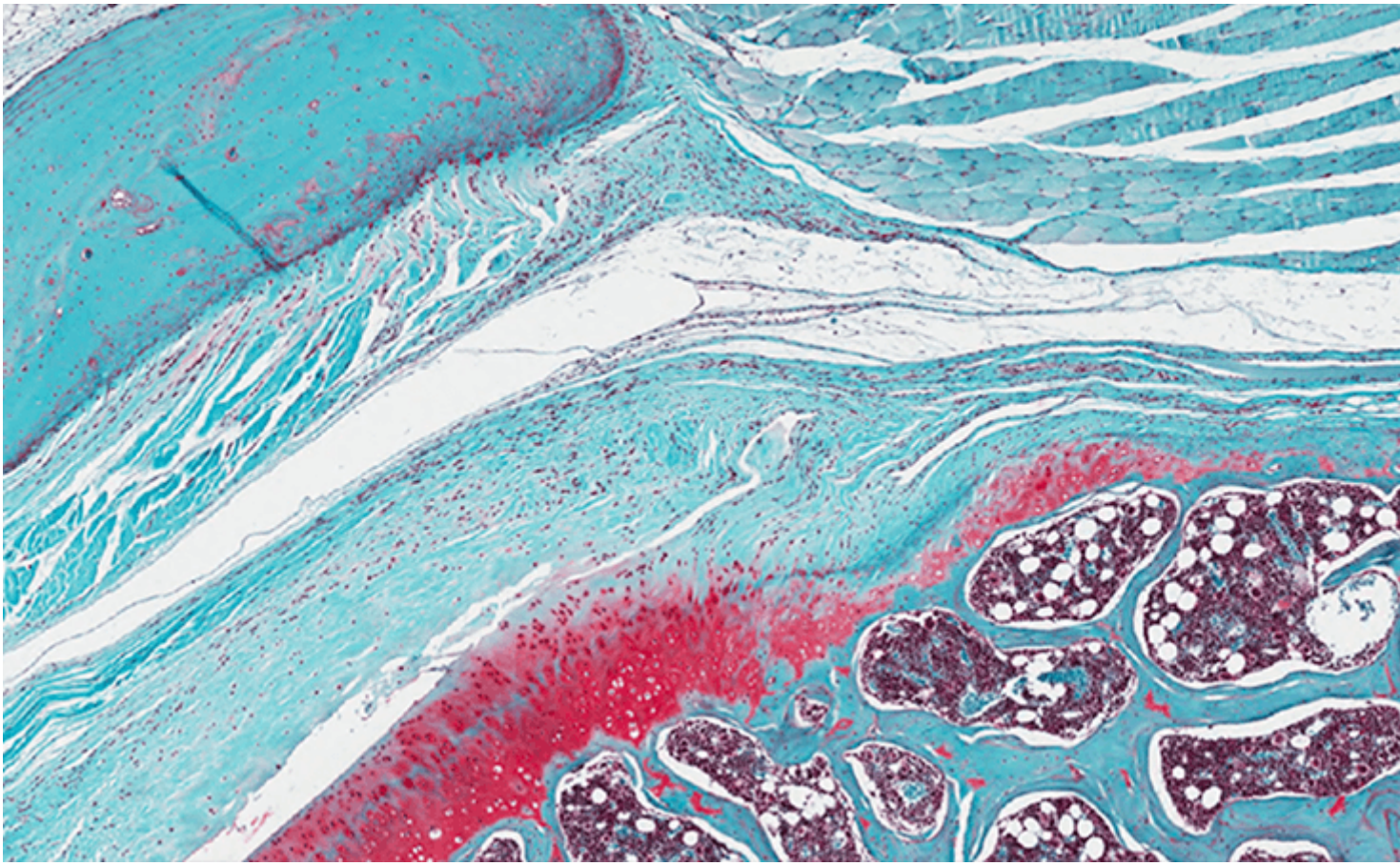
Musculoskeletal Diseases [1]

Our research in Musculoskeletal Diseases (MSD) focuses on discovering innovative therapies for muscle wasting and bone disorders. Novartis has a long history in the treatment of disorders of bone metabolism, such as osteoporosis but currently available therapies for osteoporosis do not effectively prevent non-vertebral bone fractures.

Our strategy is therefore to discover and develop novel anabolic agents that stimulate bone formation rather than slowing down bone loss. In the area of muscle wasting, our approach is focused on developing compounds that either stimulate anabolic pathways or inhibit catabolic pathways in skeletal muscle.

Our MSD research concentrates on muscle wasting associated with disuse (i.e. from other diseases such as cancer, chronic obstructive pulmonary disease, and aging) andosteoporosis.



The shoulder is a complex three-dimensional organization of different musculoskeletal tissues. In the image shown here, a special dye (Safranin-O) mainly stains in red the differentiating chondrocytes of cartilage (c) and growth plate (gp) producing proteoglycans. The turquoise color (Fast Green) is counterstaining all other surrounding tissues (m:muscle; b: bone; spt: supraspinatus tendon). Nuclei are stained black. Image by Renzo Schumpf and Nathalie Accart/Novartis.

Footnotes:

Selected Publications:

Bone Overgrowth-associated Mutations in the LRP4 Gene Impair Sclerostin Facilitator Function [2]
Leupin O, Piters E, Halleux C, Hu S, Kramer I, Morvan F, Bouwmeester T, Schirle M, Bueno-Lozano M, Fuentes FJ, Itin PH, Boudin E, de Freitas F, Jennes K, Brannetti B, Charara N, Ebersbach H, Geisse S, Lu CX, Bauer A, Van Hul W, Kneissel M. (2011) J Biol Chem 286, 19489,

The SCF-Fbxo40 Complex Induces IRS1 Ubiquitination in Skeletal Muscle, Limiting IGF1 Signaling [3]
Jun Shi, Liqing Luo, John Eash, Chikwendu Ibebunjo, David J. Glass (2011)Dev Cell. 21, 1.

Galphai2 Signaling Promotes Skeletal Muscle Hypertrophy, Myoblast Differentiation, and Muscle Regeneration [4]
Giulia C. Minetti, Jerome N. Feige, Antonia Rosenstiel, Florian Bombard, Viktor Meier, Annick Werner, Frederic Bassilana, Andreas W. Sailer, Peter Kahle, Christian Lambert, David J. Glass, and Mara Fornaro (2011) Sci Signal 4. Nov 26, ra80.

Links
[1] https://www.novartis.com/our-science/research-disease-areas/musculoskeletal-diseases
[2] http://www.jbc.org/content/286/22/19489.full
[3] http://www.cell.com/developmental-cell/abstract/S1534-5807(11)00409-6
[4] http://stke.sciencemag.org/cgi/content/abstract/sigtrans;4/201/ra80