



National Human Genome Research Institute (NHGRI)

Patent-Pending Technology Available for Licensing

Treatment of Heterotopic Ossification and Vascular Calcification

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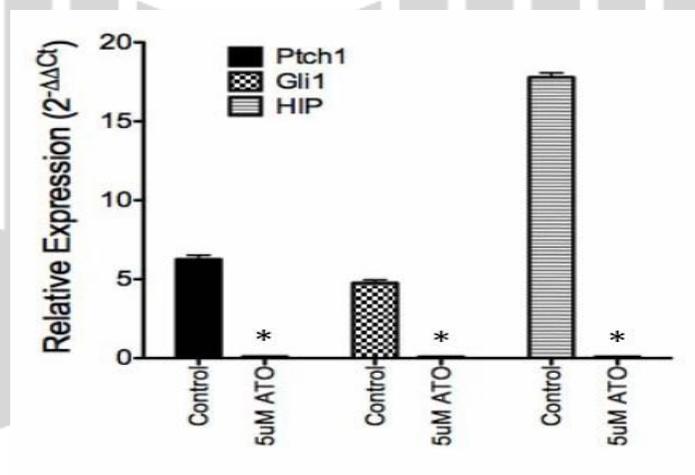
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Summary

Heterotopic ossification (HO) is the inappropriate presence of bone outside the skeleton. It can be caused by genetic diseases, for example, progressive osseous heteroplasia and fibrodysplasia ossificans progressive, or by injury, such as spinal cord injury, burns, fractures, joint arthroplasty, or complications of surgery. Vascular calcification is a related phenomenon, during which calcium salts are deposited in the area of vascular beds, for example in patients with atherosclerosis, chronic kidney disease, and type II diabetes. NHGRI investigators have discovered that administration of an antagonist of a Hedgehog pathway can result in amelioration of HO symptoms, as well as those of vascular calcification. The Hedgehog signal transduction pathway is important in the early development and in the adult state, especially in the proliferation of stem cells.

Potential Commercial Applications

Further investigation of the specific Hedgehog antagonists in the treatment of genetic and non-genetic HO, as well as vascular calcification could lead to improved therapies for patients suffering from these skeletal and vascular disorders.



Treatment of murine HO model limbs with a Hedgehog (Hh) pathway inhibitor, arsenic trioxide (ATO) inhibits the pathway activation, as shown by the decrease of various Hh markers after treatment: Patched 1 (Ptch1), Gli transcription factor 1 (Gli1), and Hh Interacting Protein (HIP).