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**Notum: A Novel Regulator of Bone and Its Implications in Osteoporosis**

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• Osteoporosis is a silent, dangerous pathology frequently undiagnosed until patients experience a major fracture.
• About 1 in 2 women and 1 in 4 men ages 50 and above will experience bone fractures due to osteoporosis.
• Fractures from osteoporosis may lead to a 20% increase in mortality.
• Notum is a lipase, primarily expressed in the liver, that inhibits the Wnt signaling pathway. The Wnt pathway is involved in growth, development, and healing.
• Recently, inhibition or absence of Notum led to increased endocortical bone formation and thickness via osteoblast activity in a mouse model.
• Potentially, modifying factors that affect Notum expression could promote anabolic bone growth.

HYPOTHESIS

Notum expression is affected by mechanical loading and aging.

RESULTS

Notum expression increases in aged bone

SUMMARY

• Mechanical loading decreases Notum protein expression in an osteocyte cell line, MLOY4.
• Mechanical loading has no affect on Notum expression in an osteoblast cell line, MC3T3-E1.
• Aging increases the expression of the Notum gene in a mouse model.

FUTURE DIRECTIONS

• Continue trials on assessing mechanical loading affect on Notum expression in osteoblast cell line, MC3T3-E1.
• Future studies in inhibiting Notum expression in bone via a small molecule inhibitor and an siRNA will be conducted to investigate a potential novel approach to promoting anabolic bone growth.