# Vitamin D Analogs for Treating Bone Cancers and Diseases

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## Technology description

The hormonally active form of vitamin D, known as calcitriol or 1,25 dihydroxyvitamin $D_3$, has shown promise for treating diseases ranging from osteoporosis to cancer to psoriasis. However, the hormone mobilizes calcium from bones and increases intestinal absorption of dietary calcium. Effective therapeutic concentrations can lead to hypercalcemia; a condition characterized by elevated blood calcium levels, alterations in mental status, muscle weakness and calcification of soft tissues and organs such as the heart and kidneys. Therefore, a need exists for new compounds that provide desirable therapeutic effects without causing dose-limiting hypercalcemia. UW–Madison researchers have developed vitamin D analogs,(20S)-3-desoxy-2-methylene-1a,25-diydroxy-19-nor-vitamin $D_3$ and (20R)-3-desoxy-2-methylene-1a,25-diydroxy-19-nor-vitamin $D_3$.These compounds exhibit promising anti-cancer activities: high receptor binding, and the arrest and induced-differentiation of proliferating cells. High calcemic mobilization suggests particular effectiveness in the treatment of bone diseases. The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing vitamin D analogs with high calcemic activity that may be useful in as anti-cancer agents, especially in the treatment and prevention of osteosarcomas.

## Application area

Therapy for bone diseases, osteoporosis and osteosarcoma
Prevention and treatment of leukemia, skin cancer, breast cancer, colon cancer and prostate cancer

## Advantages

High bone calcium mobilization
Lower intestinal calcium transport activity
Can be administered in many forms

## Institution

Wisconsin Alumni Research Foundation

Inventors

Izabela Sibilska
Rafal Sicinski
Margaret Clagett-Dame
Hector DeLuca
Lori Plum