

Repair of radiation induced bone damage in cancer patients using sclerostin antibody to fix breaks in DNA

Bone damage and/or fractures are common side effects of radiotherapy in cancer patients. Current treatments for radiation induced bone damage only reduce existing damage and produce adverse side effects. On the other hand, sclerostin antibody repairs bone damage by facilitating repair of double strand breaks in DNA.

Inventor
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STATE OF DEVELOPMENT

- Testing in rat models has shown that injection of the sclerostin antibody (Scl-Ab) treatment for 4 weeks following radiation treatment significantly contributed to DNA repair, and reduced bone damage
- Scl-Ab is currently being tested in clinical trials

APPLICATIONS

- Reduction of bone damage caused by radiation therapy

REFERENCE MEDIA

- Chandra et al. J. [Biol Chem](#), 2015, 290-157

DESIRED PARTNERSHIPS

- Co-development

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Problem

Bone damage and/or fractures are common side effects of radiotherapy that pose a major health threat to cancer patients. Current treatments for radiation induced bone damage include teriparatide, raloxifene, bisphosphonates, and salmon synthetic calcitonin. These treatments inhibit bone resorption by suppressing osteoclast activity or triggering osteoclast death. Many of these approaches have adverse side effects, such as reflux disease, esophageal erosion, muscle aches, and cardiovascular events.

Solution

In comparison to conventional treatments that simply reduce radiation damage, sclerostin antibody (Scl-Ab) actually repairs radiation induced bone damage. It reverses radiation damage in osteoblasts by activating the canonical Wnt/ β -catenin pathway, which facilitates repair of double strand breaks in DNA. In a rat model, the administration of sclerostin antibody (Scl-Ab) injections for 4 weeks post radiation treatment significantly contributed to DNA repair, and reduced bone damage. These results suggest that Scl-Ab treatment post radiation therapy can reverse radiation-induced bone damage in a clinical setting.

Advantage

- Enhances DNA repair in bone following radiation treatment
- Antibody well characterized and currently being tested in clinical trials