Docket #: S19-455

Deferoxamine prophylaxis for radiation-induced fibrosis

Radiation therapy is a common option in diseases like breast cancer, but can also cause significant damage to the skin. Permanent scarring and fibrosis can result, with both aesthetic and functional consequences for cancer patients.

Stanford researchers have developed a method to reduce scarring and fibrosis in response to radiotherapy, improving on the limited efficacy of existing fat graft-based reconstruction techniques. By pre-treating fat tissue with deferoxamine, the inventors demonstrate increased vascularity, greater retention of grafted fat cells, and increased perfusion at wound sites in a mouse model of radiation injury.

Researchers have further developed a transdermal patch that is capable of delivering deferoxamine without injection into irradiated skin. Patches can also be modulated with varying textures and doses to modulate deferoxamine exposure.

Applications

- Reconstructive surgery following radiation therapy for cancers including:
    - Head and neck cancer
    - Breast cancer

Advantages

- Uses an FDA-approved medication
- Transdermal patch delivery increases patient convenience/compliance
- Prophylactic option to further improve wound healing over post-treatment measures

Publications

- Prophylactic treatment with transdermal deferoxamine mitigates radiation-induced skin fibrosis Shen et al., Sci Rep. 2020 Jul 23;10(1):12346.

Patents

- Published Application: WO2021101646
- Published Application: 20220409559
- Published Application: 20250375400
- Issued: 12,403,106 (USA)

Innovators

- Derrick Wan
- Michael Longaker
- Geoffrey Gurtner

Licensing Contact

Inyoung Lee

Licensing Manager, Life Sciences

Email