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namely thymic epithelial cells. Thymic epithelial cells are susceptible to damage from a variety of insults, including organ and bone marrow transplantation, chemotherapy and radiotherapy, complications related to HIV/AIDS, the natural aging process, malnutrition, and radiation poisoning due to nuclear disaster. Damage to thymic epithelial cells increases the rate of thymic atrophy, reducing the capacity of the thymus to educate maturing T- cells, and ultimately compromises immune function.

Currently, there are no effective clinical interventions to promote *in vivo* restoration and rejuvenation of thymic function following insult. The inventors have addressed this unmet need by demonstrating that systemic administration of recombinant IL-22 following thymic insult promotes the growth of the thymic epithelial cells critical to thymic rejuvenation and, thereby overcomes thymic atrophy and restores proper immune function.

## Advantages

Mitigates iatrogenic immune effects associated with organ or bone marrow transplantation and with chemotherapy or radiotherapy for cancer, thereby allowing more patients to benefit from such therapies.

## Areas of Application

Therapy in the setting of:

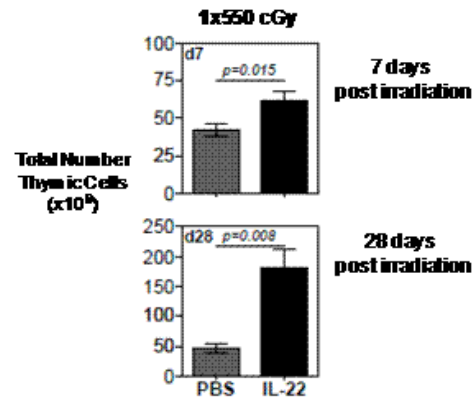
- organ or bone marrow transplantation,
- chemotherapy or radiotherapy for cancer,
- complications related to HIV/AIDS,
- the natural aging process,
- malnutrition,

radiation poisoning due to nuclear disaster;

Restoration of bone marrow function;

Vaccine adjuvant to boost T-cell production in response to vaccination in immunocompromised patients.

## IL-22 administration following total body irradiation promotes thymic rejuvenation



## Stage of Development

*In vivo* proof-of-concept established in two mouse models of thymic injury: total body irradiation and syngeneic bone marrow transplantation;

Work in progress supports the use of IL-22 to restore bone marrow function;

Initial proof-of-concept work underway for use of IL-22 as a vaccine adjuvant.

## Lead Inventor

[Marcel van den Brink](#), MD, PhD, Laboratory Head, Sloan Kettering Institute, Memorial Sloan Kettering

## Patent Information

U.S. Basic and Divisional Patents issued.

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## Stage of Development

Animal studies

## Types

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