



BIOLOGICS

Monoclonal NKG2D Antibodies for the Treatment of Autoimmune and Inflammatory Disorders

Brief Description of Technology

Two anti-human NKG2D monoclonal antibodies to specifically target and/or inhibit the NKG2D receptor on immune cells [e.g., CD4+ T cells].

BUSINESS OPPORTUNITY

Exclusive license
Non-exclusive license
Sponsored research

TECHNOLOGY TYPE

Diagnostic
Therapeutic

STAGE OF DEVELOPMENT

Preclinical *in vitro*

PATENT INFORMATION

Patent pending

INVESTIGATOR

Thomas Spies, PhD
Veronika Groh-Spies, MD
Clinical Research Division

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Tech ID: 00202
partnering@fredhutch.org
206-667-4304

Technology Overview

A precise balance of effector T cell activity is required to maintain effective immune surveillance without initiating an autoimmune reaction. NKG2D is an activating receptor that interacts with MHC Class I MICA and MICB glycoproteins. Drs. Spies and Groh made the discovery that rheumatoid arthritis and other immunoproliferative disorders are often associated with abnormal expression of NKG2D receptor in immune cells [particularly CD4+CD28- T cells]. These cells are cytotoxic, secrete large amounts of IFN-gamma and proliferate upon stimulation. The Spies Lab has developed two unique anti-human NKG2D monoclonal antibodies to specifically target the NKG2D receptor. Therapeutic immunomodulation can then be achieved through targeted cellular inhibition by contacting the cell with a cytotoxic agent [e.g., radioisotope, toxin, or drug].

Applications

- Rheumatoid arthritis and other autoimmune and inflammatory diseases
- Applicable for use in radioimmunotherapy and chemotherapy treatments

Advantages

- Cell-specific targeting
- Stratifies patient populations through CD4+CD28- NKG2D+ cells and associated MIC ligands
- Compatible with cytotoxic agents for therapeutic purposes

Market Overview

In 2017, approximately 54.5 million Americans [25% of the population] suffered from rheumatoid arthritis. By 2040, prevalence is expected to rise to 78 million. This disease progression is one of many facets spurring market growth with a predicted market value of USD 30.7 billion by 2025, up 4.5% from 2019. Rheumatoid arthritis is known to affect women two-fold compared to men, and increases in healthcare expenditure in developed countries are fueling therapy development. Asia Pacific is projected to have the greatest growth due to investment opportunities through India and China, as well as low manufacturing and facility costs.