MedicalXpress

Patent awarded for method to dampen immune response

January 18 2011

National Jewish Health has been issued a US patent claiming a method to desensitize B cells by inactivating antigen receptors on their surfaces. The method, discovered by John Cambier, PhD, Chairman of the Integrated Department of Immunology at National Jewish Health, holds promise for treatment of B-cell mediated diseases, such as lymphoma and leukemia, rheumatoid arthritis, lupus and rejection of organ transplants. This therapeutic approach has the potential advantage of inactivating B cells instead of killing them as current treatments do. Therefore, this potential therapy could be more rapidly adjusted in response to the changing needs of patients.

B cells are a crucial part of the adaptive immune response, responsible for making antibodies that can neutralize and destroy pathogens. Several diseases, however, are associated with malfunction of B cells. For example, B cells can turn cancerous in diseases such as lymphoma and leukemia. In autoimmune diseases, such as rheumatoid arthritis or lupus, B cells turn against their own bodies and attack their tissues. B cells can also attack transplanted organs, which they recognize as foreign and potentially harmful.

The recently issued patent describes a method to inactivate B cells by disassembling their B-cell receptors. B cells begin producing antibodies after their B-cell receptors encounter foreign protein fragments, known as antigens. The B-cell receptor contains two distinct subunits; a receptor, which engages antigens, and a transducer, which transmits an activating signal to the interior of the cell.

About a decade ago, Dr. Cambier's laboratory, discovered that the two subunits could be separated, which disables the B cell's ability to recognize antigens and produce antibodies. In 2003, National Jewish Health received a patent (#6,503,509) for this method of B -cell desensitization. The most recent patent (#7,825,224) related to this technology claims the use of antibodies that bind to the transducer subunit of the receptor to inactivate the B cell.

Dr. Cambier's laboratory has recently developed several antibodies against one of the transducer elements, CD79, that have already yielded promising results.

"In contrast to current therapies for B-cell diseases, this method does not kill B cells, it merely inactivates them," said Dr. Cambier. "That could potentially allow for greater flexibility in using a therapy that is developed with this technology. Instead of the months to years it sometimes takes for the effects of current therapy to wane, our method could be reversed within days."

Dr. Cambier has recently received research funding from the State of Colorado and National Jewish Health through the Bioscience Discovery Evaluation Grant Program to further develop this promising technology.

"This research funding underlines our commitment to promote the translation of our scientists' research findings into therapeutic or diagnostic products that can ultimately help patients worldwide," said Emmanuel Hilaire, PhD, Manager of the Technology Transfer Office at National Jewish Health. "National Jewish is currently exploring various commercialization venues for its licensing, including the creation of a start-up company in Colorado."

Provided by National Jewish Health