

Abzyme Files Patent Application for pH-dependent anti-CD3 Antibodies

Royersford, PA, November 16, 2020. Abzyme Therapeutics LLC, a biotech company focused on developing antibodies for diagnostic and therapeutic applications, has filed a patent application entitled "Antibodies Binding to Human CD3 at Acidic pH", USPTO number 63/109,005. This patent application is an important step forward for Abzyme Therapeutics solidifying its intellectual property position in the field of therapeutic antibody development.

Monoclonal antibodies are widely used for treatment of various cancers. On-target off-tumor binding to normal tissues is an obvious toxicity concern as many tumor-associated antigens are expressed in both tumor and normal tissues. Optimization of specific tumor targeting could be achieved by taking advantage of the extracellular acidity of solid tumors relative to normal tissues. Due to poor vascular perfusion, regional hypoxia, and fermentative glycolysis, the extracellular pH in most solid tumors is in the 6.0–6.8 range. In contrast, non-cancerous cells maintain their extracellular pH at physiological levels (7.3–7.4). Thus, an antibody with high binding affinity at acidic pH (pH 6.0 – pH 6.8), but with none or reduced binding affinity at normal pH will significantly minimize the on-target off-tumor toxicity. Tumor-microenvironment or TME-specific antibodies with reduced or no on-target off-tumor binding would find potential application in various forms of antibody-mediated and cell-mediated therapies including antibody monotherapies, antibody-drug conjugate or ADC therapy, T cell-engaging immunotherapy and CAR-T. TME-specific antibodies will reduce on-target off-tumor adverse effects while allowing dose-escalation

The invention provides for new anti-hCD3 antibodies that, in contrast to prior art anti-CD3 antibodies, bind specifically to human CD3 at acidic pH, but do not significantly bind to human CD3 at neutral or physiological pH, methods to produce these antibodies and therapeutic uses of these antibodies. These antibodies are able to activate T cells at acidic pH while having significantly reduced activity at neutral or physiological pH.

“We successfully created anti-CD3 antibodies that bind and activate human T cells at acidic pH that will be an important foundation for engineering bispecific T-cell engaging antibodies for solid tumors. As we pride ourselves as innovators, we are extremely pleased to achieve this milestone filing this application” said Dr. Tran, CEO and co-founder of Abzyme. “In addition, using the same approach, we were able to develop other pH-dependent antibodies targeting the acidic tumor microenvironment”.

For further information and interest in licensing these novel anti-CD3 antibodies, please contact:

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