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2<sup>nd</sup> International Conference on

## **Antibodies and Therapeutics**

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## Plant based expression of therapeutic monoclonal antibodies targeting viral and bacterial infections

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2014 Liberia Ebola outbreak and subsequent treatment of two aid workers with an experimental cocktail of plant made pharmaceuticals (PMP) brought the attention of plants as a source for therapeutic proteins to the world. Expression of antibodies in plants is not novel. One of the first reported cases was in 1989, but widespread acceptance and recognition of plants as a viable manufacturing system for recombinant protein production has grown greatly in the last decade. Fraunhofer Center for Molecular Biotechnology uses transiently transformed *Nicotiana benthiamana* plants to express and manufacture recombinant full length murine and human antibodies for use as reagents and therapeutics. The transient transformation expression planform allows for quick screening, scale-up and pilot-scale production in a multi-use facility in rapid succession. Plants harbor no known human pathogens that add a level of safety over traditional expression systems. In addition, plant growth, antibody production and purification are performed without introduction of animal based products. Examples of plant growth and against viral and bacterial pathogens will be reviewed.

## Biography

Karczewski received his PhD in Biochemistry from Medical University of Lodz, Poland. After coming to the US he joined Biochemistry Department at Merck Research Laboratories, West Point Pa., where he made numerous contributions to drug discovery efforts, including discovery of novel natural product- and antibody-based inhibitors of intergrins and invented high throughput screening methods which led to discovery of novel inhibitors of cardiac ion channels and other pharmaceutically relevant targets. In 2009 Dr. Karczewski moved to Vaccines Basic Research (also at Merck Research Laboratories) where his research was aimed at discovering novel recombinant vaccines and biologics against bacterial and viral pathogens, including Clostridium Difficile, Chlamydia, RSV, CMV and Neisseria meningiditis. In 2014 Dr. Karczewski joined Fraunhofer Center for Molecular Biotechnology where he supports several projects focusing on plant-based vaccines and monoclonal antibodies.

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