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Therapeutic potential of intrabodies in cancer therapy

Intracellular antibodies can be used to knockdown virtually every intracellular protein and desired epitope. ER intrabodies expressed as scFv's in the ER are capable to inhibit proteins passing the ER, such as cell surface receptors, intracellular receptors, Golgi located or secretory proteins. In addition to this inhibitory machinery, cytosolic and nuclear proteins can be inhibited by single domain antibodies comprising only the variable domain of the heavy chain derived from camels or sharks. Mouse tumor models with ER and cytosolic intrabodies provided evidence that intrabodies have the potential to inhibit tumor growth *in vivo*. The main challenge today is to target the intrabody gene or intrabody protein specifically and efficiently to the tumor cells. New improvements of cell specific adeno-associated viruses and cell-specific nanoparticles are promising and might pave the way to translate intrabodies into clinics in the next decades.

Biography

Thomas Böldicke received his PhD 1982 at the Max-Planck-Institute of Molecular Genetics, Berlin. He started his career as Post doc at the German Research Centre for Biotechnology (GBF, Brunswick) in the Department of Genetics and Cell Biology by John Collins. Now he is Senior Scientist at the Helmholtz Centre for Infection Research (HZI, former GBF) and project leader intrabodies. In 2011, he qualified as a Professor in Molecular Biology and Cell Biology at the Technical University of Braunschweig. He is an expert in generating mouse and human hybridomas and in selecting and modifying recombinant antibodies. In the last decade he focused on the construction and characterization of intracellular antibodies. He has published 35 manuscripts.

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