HAMLET (Human Alpha-lactalbumin Made LEthal to Tumor cells)
A New Concept for Cancer Therapy

HAMLET offers a unique vision for the improvement of cancer-specific therapies:

• HAMLET is a tumoricidal protein-lipid complex, formed by two molecules present in human milk: partially unfolded α-lactalbumin and oleic acid. HAMLET is formed when α-lactalbumin undergoes a conformational change and binds to oleic acid. The activity of HAMLET was discovered by serendipity, while using human milk fractions to investigate adherence of bacteria to lung carcinoma cell lines.

• HAMLET kills cancer cells of different origins (>40 different types of cancer cells) and is active in multiple oncology and dermatology indications.

• HAMLET does not kill healthy differentiated cells in the laboratory and has not shown toxicity against healthy tissues in animal models or clinical studies. Instead, HAMLET accumulates specifically in tumor tissues.

• Remarkably, HAMLET identifies conserved unifying characteristics of cancer cells. HAMLET acts through a broad attack on membrane constituents and multiple intracellular targets with conserved structural motifs. These mechanisms differ from molecules targeted by most traditional monoclonal antibody or small molecule-based therapeutics.

• HAMLET has been shown to be safe and effective as demonstrated in two proof-of-concept human clinical trials. Convincing therapeutic efficacy was demonstrated in a topical skin papilloma study and in patients with bladder cancer, HAMLET induced rapid shedding of dead tumor cells and a reduction in tumor size after one week. Therapeutic effects have also been demonstrated in several animal cancer models, including glioblastoma, bladder cancer and most recently, colon cancer.

Current projects focus on the difference in HAMLET sensitivity between healthy cells and tumor cells, structure of the complex and clinical studies in patients with bladder cancer.