

Invention Description

Dr. Ofra Benny with the late Dr. Judah Folkman have developed a drug called Lodamin which solves the limitations (reversible neurotoxicity, poor oral availability, short half-life) of TNP-470, the potent anti-cancer analogue of Fumagillin originally identified in Dr. Folkman's laboratory. Lodamin is a conjugate of TNP-470 to PEG-PLA polymer which forms nano-micelles, allowing for water solubility and importantly for oral availability. Lodamin inhibited primary tumor growth in mouse models of melanoma, lung, breast, brain and ovarian cancers by more than 80%, without neurotoxicity or other adverse events. Importantly, Lodamin also prevented melanoma-derived liver metastases, a condition which is incurable in humans, and prolonged survival in mice. In mouse corneal micropocket assays and in laser-induced choroidal neovascularization (CNV) bearing mice, Lodamin inhibited corneal neovascularization, CNV lesion size (by 71% when administered orally), and ocular vessel permeability. Preliminary data also indicates that Lodamin inhibits T cell differentiation to Th17, and significantly ameliorate inflammation in a mouse model of autoimmune disease.

Application

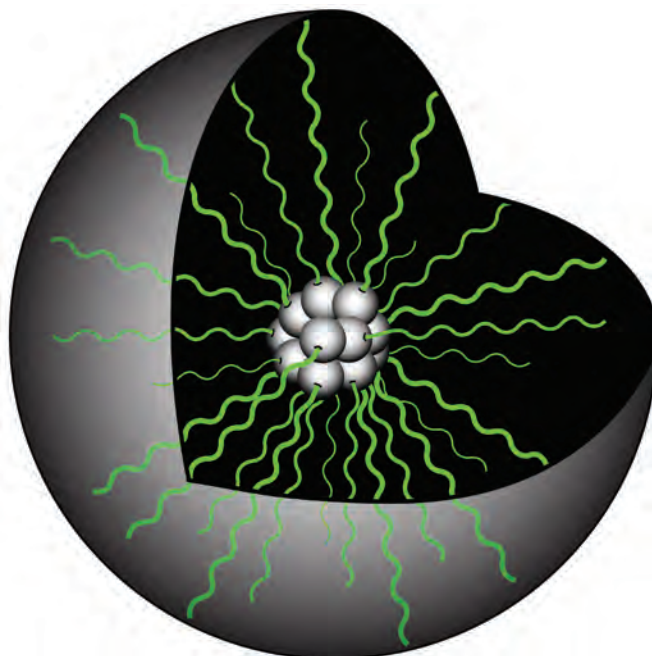
These in vivo results show that Lodamin could be a clinically useful treatment for at least three large unmet medical need areas: cancer, ocular neovascularization diseases of the retina and cornea such as age related macular degeneration and diabetic retinopathy, and autoimmune diseases such as arthritis and multiple sclerosis.

Business Opportunity

Exclusive license available in all territories

Inventors

M. Judah Folkman, MD, and Ofra Beny-Ratsaby, PhD



A Lodamin micelle

Competitive Advantage

- Oral formulation: improves patient attractiveness and provides means for chronic administration
- Expected to be safe: no crossing of blood brain barrier; no observed neurotoxicity, weight loss or tissue abnormalities; polymers are biocompatible, nonimmunogenic and FDA approved
- Potent anti-tumor and anti-metastatic activity: strongly inhibits primary tumors, prevents liver metastases without liver toxicity and prolongs survival, preferential accumulation in tumor tissue, slow release and long blood circulation time of at least 72hrs
- Large market potential: in vivo activity in oncology, eye diseases and autoimmune diseases
- Limited risk: existing safety/activity data in 300+ patients (9 cancer types) treated with TNP-470
- Unique mechanism of action: prevented capillary growth in response to every angiogenic stimulus tested, also inhibits leakage of fluid, potential for combination
- Strong IP position: composition of matter and method of use claims, international patents pending, long patent life

This technology is the recipient of a CHB Technology Development Fund Award in 2009.

Publication

An orally delivered small-molecule formulation with antiangiogenic and anticancer activity. Benny O, Fainaru O, Adini A, Cassiola F, Bazinet L, Adini I, Pravda E, Nahmias Y, Koirala S, Corfas G, D'Amato RJ, Folkman J. *Nature Biotechnology*. 2008 Jul; 26(7):799.

Point of Contact

Maude Tessier, Ph.D.
Associate Licensing Manager
Childrens' Hospital Boston
t: (617) 919-3015
maude.tessier@childrens.harvard.edu