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Office of Technology Management

IMAGING AND TREATMENT OF PATHOPHYSIOLOGIC CONDITIONS BY CERENKOV RADIATION

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Background: Around 1 million patients receive radiation therapy every year with an estimated cost of $2,000 per treatment. The market demands technologies that can provide efficacious therapeutics and diagnostic imaging while minimizing harmful side effects. Photodynamic therapy can simultaneously serve imaging and therapeutic purposes. FDA-approved drugs for photodynamic therapy have gained market share in treating cancers and other diseases. However, current therapeutic options are limited by the penetrability of light and have not reached their full treatment potentials.

Technology Description: To address this problem, scientists at the School of Medicine at Washington University in St. Louis have invented a photodynamic therapy using Cerenkov Radiation which is not limited by diffusional limitation of light. The treatment completely eradicates tumors in a fibrosarcoma xenograft mouse model, and kills human cancer cells at ~100 fold lower radioactivity than what is typically used for clinical nuclear radiotherapy. This invention can potentially enable efficient imaging and treatment with reduced side effects.

Key Advantages:

- Deep tissue imaging and treatment via systemic administration
- Low toxicity
- Low procedural invasiveness
- Highly effective at eradicating cancer cells