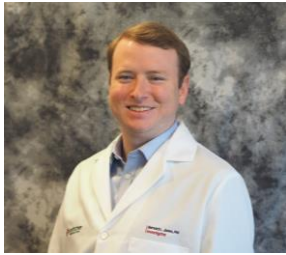


## 2016 Webb-Waring Biomedical Research Awards Investigator Research Profile



Bernard L. Jones, Ph.D.



**University of Colorado Anschutz Medical Campus**

Dr. Jones is currently an assistant professor in the department of radiation oncology at the University of Colorado School of Medicine Anschutz Medical Campus, where he also completed postdoctoral training in radiation oncology physics. He earned his Ph.D. and master's degree in medical physics from the Georgia Institute of Technology.

### Select Honors

Dr. Jones is a Paul Calabresi Clinical Oncology Scholar at the University of Colorado Cancer Center, and his research, "Patient-specific motion and treatment margins in pancreatic stereotactic body radiation therapy," was selected for the European Society for Therapeutic Radiology and Oncology (ESTRO) 33 Congress Report in 2014. It was also selected as a "best of ESTRO" at the American Society for Therapeutic Radiology and Oncology 2014 Annual Meeting.

### Medical Focus

Pancreatic cancer is a devastating disease with extremely high mortality and the search for new treatment paradigms is urgent. Stereotactic Body Radiation Therapy (SBRT) has shown promise in treating other cancers and may have potential in the treatment of pancreatic cancer. In SBRT, an extremely strong and highly focused beam of radiation is directed at the tumor, causing widespread vascular damage, tumor cell death, and ablation. However, the radiation beam must be delivered with extreme precision to avoid causing damage to other nearby tissue.

Treatment of pancreatic cancer using SBRT is difficult because the pancreas exhibits very erratic patterns of motion in response to respiratory movements, and this interferes with accurate delivery of the radiation. Because the pancreas sits very close to the small bowel, any errors in treatment delivery can cause severe and even fatal small-bowel toxicity. If the problem of motion were solved, clinicians could escalate this extremely potent therapy to a patient population that currently has limited treatment options.

### Research Proposal

Dr. Jones's research will investigate techniques to improve the precise delivery of SBRT for the treatment of pancreatic cancer by developing computational algorithms for tracking the real-time, respiratory-induced motion of the pancreas in the body. Most of the tools used to measure and account for pancreatic motion were developed for lung tumors, which undergo relatively small, consistent motion as the patient inhales and exhales. By developing delivery and planning techniques that are adapted to the true motion trajectory of the pancreas, Dr. Jones' work will provide a more accurate picture of true delivered dose and enable the design of treatment plans that reduce dose to the critical organs around the pancreas. As a result, the toxicity of pancreatic SBRT will be reduced and local control of radiation delivery improved, potentially improving outcomes for patients with pancreatic cancer.