



# VCU

VIRGINIA COMMONWEALTH UNIVERSITY

## “MRI-Compatible Breath-Hold Management System” VCU #16-111

### Applications

- System to control breathing for the following:
  - MRI and CT scanning
  - Radiotherapy

### Advantages

- Components are MRI compatible
- Controlled breath-holds to limit artifacts during scanning
- Predictable breath-hold pattern

### Inventors

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### Technology Summary

Recently, several studies have surfaced demonstrating the importance of controlled patient movement during scanning and radiotherapy treatments. These studies show that movements such as independent repositioning and breathing can result in significant artifacts during MRI and CT scanning. Often, inconsistencies in breathing result in irregular scans for imaging and treatment of the precise location, shape and volume of tumors (see figure below). This poses a need to develop systems that decrease variability during scanning due to patient movements. Researchers at VCU have developed an improved system for controlled breath-holds that is both CT and MRI compatible. It is composed of an engineered mouthpiece to mechanically control breath-holds for the duration of imaging. This system is easy to apply and results in predictable breath-hold patterns that decrease artifacts during scanning.

### Technology Status

This invention has been modeled and prototyped.

Patent pending: U.S. and foreign rights available.

This technology is available for licensing to industry for further development and commercialization.