



## **MFI-Cardiac Technologies**

### **Non-Confidential Summary**

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This document summarizes investigational technologies under development by MultiFunctional Imaging, LLC. The technologies described herein are investigational, and they are not available for sale or for use as part of a medical device or product. This information is intended to educate potential investors and the scientific community about ongoing technology developments, and to obtain preliminary feedback from these groups and future potential users.

The technologies discussed herein are protected by one or more issued or pending patents.

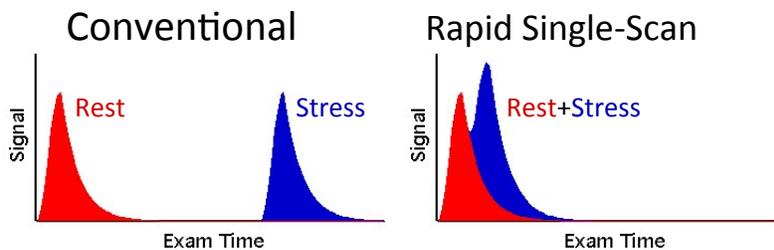
## Overview

MFI is developing new technologies for acquiring rest and stress myocardial perfusion PET images in a single scan. Current approaches requires that two separate scans be performed, resulting in long procedure times where the patient must be positioned twice with two CT or transmission scans for PET attenuation correction. Using patent multi-tracer image processing algorithms, MFI is developing techniques where both the rest and stress images can be acquired in a single scan [1-5]. These techniques have the potential to greatly reduce procedure time, eliminate the need for a 2<sup>nd</sup> CT or transmission scan (thereby reducing radiation exposure), and provide natively co-registered rest and stress myocardial perfusion images.

## Features

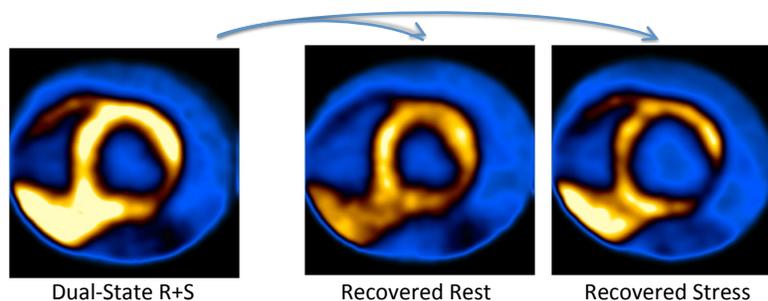
### **Single-Scan Rest+Stress Cardiac PET Imaging Techniques**

- Dynamic Rest+Stress imaging provides full dynamic images at both rest and stress, amenable to quantifying myocardial perfusion, pharmacologic stress only
- Static Stress + Dynamic Rest imaging is amenable to both exercise and pharmacologic stress, provides full dynamic quantitation for rest flows
- When using <sup>13</sup>N-ammonia, technique may allow for both rest and stress doses to come from a single cyclotron run
- Technology may optionally be used to correct separate-scan images for residual tracer activity from the first scan, when present



### **Dual-State Image Processing Technologies**

- Algorithms model rest and stress tracer distribution kinetics
- Images with tracer overlap are processed to separate and recover rest and stress image components
- Output rest and stress images can formatted as static or dynamic imagesets according to the imaging protocol and user-defined options



## Targeted Advantages

- Acquisition of rest and stress cardiac PET images in a single 15-20 min. scan
- Greatly increased throughput
- Improved patient experience
- Only need to position the patient once
- Potential for reduced radiation exposure – only one CT or transmission scan needed for PET attenuation correction
- Natively co-registered rest and stress images
- When using [<sup>13</sup>N]-ammonia, both rest and stress doses can be obtained from a single cyclotron run

## References

- [1] T. C. Rust, E. V. DiBella, C. J. McGann, P. E. Christian, J. M. Hoffman, and D. J. Kadrmas, "Rapid dual-injection single-scan <sup>13</sup>N-ammonia PET for quantification of rest and stress myocardial blood flows," *Phys Med Biol*, vol. 51, pp. 5347-62, Oct 21 2006.
- [2] D. J. Kadrmas and A. Sitek, "Algorithms for Stress Image Recovery from Single-Scan Dual-Injection Rest/Stress Cardiac PET," *J Nucl Med*, vol. 50, p. 121P, 2009.
- [3] D. J. Kadrmas, E. V. R. Di Bella, N. F. Black, and T. C. Rust, "Rapid Multi-Tracer PET Imaging Systems and Methods," USA Patent 7,848,557, December 7, 2010.
- [4] D. J. Kadrmas, T. C. Rust, J. L. Lazewatsky, P. J. Slomka, D. S. Berman, M. F. DiCarli, and A. Sitek, "Single Scan Rest-Stress Cardiac PET Imaging with Flurpiridaz F18," *J Nucl Med*, vol. 53, p. 140, 2012.
- [5] D. J. Kadrmas and A. Sitek, "Comparison of Stress-First and Rest-First Techniques for Single-Scan Cardiac PET," in *IEEE Nuclear Science Symposium and Medical Imaging Conference*, 2012.

## About MULTIFUNCTIONAL IMAGING

MFI, LLC is developing state-of-the-art technologies for advanced medical imaging applications, targeting streamlined solutions for obtaining and quantifying multiple imaging results in a single scan. Founded in November 2011, MFI is based on several patented and patent-pending technologies developed in cooperation with the University of Utah. These technologies include systems and methods for single-scan dual-state rest+stress myocardial perfusion PET imaging (MFI–Cardiac Technologies), single-scan multi-tracer PET imaging for quantification and assessment of multiple aspects of tumor function (MFI–Oncology Technologies), and fast and robust kinetic modeling for analysis of dynamic imaging data (MFI–Kinetic Technologies). MFI’s Founder and Chief Science Officer is Dan J. Kadrmas, Ph.D., who also holds appointments as Tenured Professor in the Utah Center for Advanced Imaging Research (UCAIR), Department of Radiology, and as Associate Director–PET Physics, Molecular Imaging Program, Huntsman Cancer Institute at the University of Utah. The Chief Executive Officer, Dave Dolan, MBA, possesses a broad professional background in developing service programs for diagnostic imaging clients. He has over 18 years of experience with executive roles at GE Healthcare, GE Capital, SPX Corp and Becton Dickinson.

## Legal

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**DAN J. KADRMAS, PH.D.**  
FOUNDER AND CHIEF SCIENCE OFFICER

615 ARAPEEN DRIVE, SUITE 302  
SALT LAKE CITY, UT 84108-1254

P: 801.953.5655  
F: 801.585.3592  
E: DAN.KADRMAS@MFIIMAGE.COM