



VirtualScopics Movie makes web debut

VirtualScopics—Our Story

Who is VirtualScopics?

What is an imaging core lab?

How can imaging help me conduct a more effective and efficient clinical trial?

What sets VirtualScopics apart from other imaging core labs?

The answers to these and other questions can be learned by watching the just released VirtualScopics movie (click above link).

VirtualScopics—Our Story provides an overview of who we are and what we do.

The movie features Chief Scientific Officer, Ed Ashton, explaining how specific imaging modalities can be utilized to effectively and efficiently conduct a clinical trial.

If you use imaging in your clinical trials, or are considering it, you owe it to yourself to spend a couple of minutes to learn about VirtualScopics.

To view the movie, click the link above or visit www.virtualscopics.com and click on Our Story.

Ask Ed: What is the difference between DCE-MRI and DCE-CT? Which should I use for my study?



Ed Ashton, PhD Chief Scientific Officer VirtualScopics, Inc.

DCE-MRI and DCE-CT are both techniques for estimating microvascular perfusion and permeability in vivo. DCE-MRI involves the periodic acquisition of T1 weighted images before, during and after injection of a gadolinium labeled tracer. In this series, the change of signal intensity over time in a region of interest can then be related to contrast agent concentration. By making use of a two-compartment model, with one compartment representing blood plasma and the other extra-vascular extra-cellular space (EES), the enhancement curves can be used to estimate parameters related to blood flow and permeability.

DCE-CT is a similar technique to DCE-MRI. The same models can be used with either method, and the iodinated contrast agents used in DCE-CT are similar in their pharmacokinetics to the agents used with DCE-MRI. The primary advantages of DCE-CT are speed and simplicity.

A multi-slice CT scanner can easily acquire a volume in less than 1 second with high resolution (<1 mm) and good SNR, whereas MRI systems are more limited in terms of both spatial and temporal resolution. Additionally, the relationship between signal intensity changes seen in a CT scan and concentration of contrast agent in tissue is linear and is not dependent on the pre-contrast signal. This is not generally true for MRI, though it can be achieved over a limited operating range.

The major disadvantage to DCE-CT is the associated radiation dose, which can be very high. The annual US limit for a nuclear worker is 50mSv, while a single DCE-CT scan may deliver a dose of 60mSv or more depending on the protocol. As a result, DCE-CT is advisable only if the speed it allows is absolutely necessary – for example, because the study requires the separate evaluation of blood flow and vascular permeability. In other cases, DCE-MRI will generally be the better choice.

Boston Imaging Seminar—10/8

We invite you to attend a COMPLIMENTARY 1/2 day seminar exploring the benefits and hidden pitfalls of selecting and implementing quantitative imaging in multi-site oncology clinical trials.

Learn about the latest trends in integrating functional imaging techniques, including DCE-MRI, FDG-PET and FLT-PET into your oncology trials, along with structural measurements including tumor volume and RECIST (1.0 & 1.1), as well as radio density with CT.

Presenters include:

Ed Ashton, Ph.D. – Chief Scientific Officer

Mark Tengowski, DVM, MS, Ph.D. – Director Clinical Affairs

Paul Roberts, Ph.D. – Senior Project Manager

The seminar will be held at Le Meridien Cambridge. Follow the below links for agenda and registration:

Seminar Agenda

Registration



Upcoming Events

EXHIBITING

ECCO 15: 15th Congress of the European Cancer Organization

Booth #C51 Hall 17
Berlin, Germany
September 20-24, 2009

ATTENDING

OARSI World Congress

Montreal, Canada
September 10-13, 2009

**Jon Riek presenting poster:
A Comparison of T2 Mapping Sequences at 1.5 Tesla for use in a Clinical Trial

CBI's 3rd Annual Oncology Clinical Trial Summit

Bethesda, MD
September 14-15, 2009

ACRIN Fall Meeting

Arlington, VA
September 30-October 3, 2009

**Ed Ashton presenting during the
ACRIN/QIBA DCE-MRI Technical Development Working Group on
Fri. Oct 2 10AM—12PM.

ACR/ARHP Annual Scientific Mtg.

Philadelphia, PA
October 16-21, 2009

**Mark Tengowski presenting abstract:
Early Treatment Effects of Anti-TNF Therapy On MRI Biomarkers of RA Activity by B. Wyman, B. Bloom, O. Troum, M. Tengowski

Phacilitate Leader's Forum

Boston, MA.
November 9-11, 2009

Molecular Targets & Cancer Therapeutics

Boston, MA.
November 15-19, 2009

Ask Jon: Which imaging modality and measurements will produce the most reliable assessment of the extent of COPD?



Jon Riek, PhD.
VP Technology & Product Development
VirtualScopics, Inc.

Chronic obstructive pulmonary disease (COPD) refers to chronic bronchitis and emphysema, a pair of two commonly co-existing diseases of the lungs in which the airway walls are remodeled and the lung parenchyma is destroyed. This causes a limitation of airflow to and from the lungs resulting in shortness of breath. Unlike asthma, the limitation of airflow is poorly reversible and typically worsens over time.

COPD is currently the fourth leading cause of death in the U.S and is predicted to become the third leading cause of death worldwide by 2030 (according to latest WHO estimates).

Computed tomography (CT) provides a non-invasive anatomic assessment and a densitometry map of the lungs. The extent of emphysema can be measured by evaluating the emphysema index (the percent of the lung that has a density less than -910 Hounsfield units (HU)) and the 15th percentile cutoff (the density in HU of the 15th percentile in a histogram of all density values in the lung).

These endpoints rely on specific density values, thus it is very important to ensure a consistently calibrated CT machine is utilized. The most common endpoints for measuring the airway remodeling are percent wall area (how much of the airway cross-sectional area is wall) and Pi10 (square root of wall area for a theoretical airway with an inner perimeter of 10mm).

Airway remodeling is more difficult to measure accurately and consistently than are the density measurements. Many researchers have attempted to extract airway wall measurements directly from the two-dimensional slices with limited success. The reproducibility of these techniques is heavily dependent upon positioning, airway orientation, selection of airways, and the algorithm used to determine the boundaries. Realizing that the airways are three-dimensional structures, one can see that they are much better suited to volumetric analysis. The use of three-dimensional modeling and segmentation reduces the measurement variability inherent in the two-dimensional techniques and produces more consistent and reliable numbers.

How Are We Doing?

At VirtualScopics we strive everyday to make your customer experience the best it can be. In that vein, we are asking you to let us know how we are doing.

Are we satisfactorily meeting your needs? Are there areas we can improve upon? Are there other services you wished we offered? Or even, should we make changes to these newsletters?

Our goal is to offer you a customer experience unmatched in the industry. Therefore, we welcome your open and honest comments so that we can meet that goal on every project.

Please submit your questions or comments on our web contact page.

VirtualScopics Oncology Promise:

"VirtualScopics pledges to provide quality image-based biomarker deliveries according to approved specifications while adhering to our customers' contractual timelines. If this promise is not met, the applicable analysis and/or delivery fee will be credited." In other words—Quality on-time data, or it's on us.