



Free Education!

Introducing the 2011 Webinar Series

After garnering rave reviews in 2010, VirtualScopics will offer a 2nd educational webinar series in 2011. Our experts will be discussing new topics while also sprinkling in some important previous presentations.

This is a **complimentary** offering from VirtualScopics. Our aim is to help those in the pharmaceutical and medical device industry gain a better understanding of the benefits of using quantitative imaging in clinical trials.

We will commence the series on **Wednesday, February 23** with *Chief Technical Officer Jon Riek* presenting **Quantitative Imaging for Cartilage Repair Studies Using MRI**.

To view the complete schedule and register for all webinars please visit [here](#).

March 9 - Assessing Spinal Fusion Systems Using Imaging

March 23 - What to look for in an Imaging Core Lab

April 6 - Introducing: The VirtualScopics/PPD Alliance

April 20 - Measurement of Fat & Muscle Using CT and MRI

May 18 - Assessing Central Nervous System Studies Using CT & MRI

June 1 - Reproducibility and Early Treatment Effects of Anti-TNF Therapy for Rheumatoid Arthritis

June 15 - Integrating Functional & Structural Imaging in Clinical Trials

Ask Ed: Is whole body diffusion MRI really a potential replacement for FDG-PET imaging?



Ed Ashton, PhD
Chief Scientific Officer
VirtualScopics, Inc.

At first glance, the simple answer to this question would seem to be no. Diffusion MRI measures the freedom with which water molecules are able to move within tissue, while FDG-PET measures glucose metabolism. Clearly diffusion cannot be used as FDG-PET is in the context of disease staging. However, in most cases the changes observed in FDG-PET images of cancer patients after chemotherapy are related not to changes in the glucose metabolism of individual cancer cells, but rather to changes in cellular density within tumors. Interestingly, the changes observed in tumors using diffusion MRI are largely related to cellular density as well, since dying cells are replaced by fluid which does not impair the movement of water molecules as tightly packed cell walls do. Seen from this perspective, it seems much more reasonable to think that these two modalities might provide similar information in the context of a clinical trial – and in fact, a number of small studies in the past two years have suggested that there is a strong correlation between the changes observed in tumors post therapy using these techniques.

A great deal more research is needed before this relationship can be demonstrated definitively, but if it does bear out, the replacement of FDG-PET scanning with diffusion MRI in some applications could provide significant benefits. A typical FDG-PET scan provides a radiation dose of roughly 7mSv (as a point of comparison, dosing for a mammogram is ~0.05mSv, while a body CT is ~10mSv) and costs on the order of \$3500.00. Moreover, FDG scanning is inconvenient for the patient, requiring both a four to six hour fast prior to the scan and a minimum of 60 minutes under controlled conditions between the tracer injection and the beginning of the scan. Diffusion MRI, in contrast, is a quick and non-invasive procedure which typically costs less than \$1000.00.

VirtualScopics & PPD announce strategic alliance



In late October, VirtualScopics and PPD announced an exclusive strategic alliance that will provide clients with best-in-class, comprehensive clinical development and medical imaging services for oncology clinical trials. Both companies feel strongly that this partnership will greatly benefit clients by providing an integrated single point of contact to VirtualScopics' advanced imaging expertise and PPD's global leadership in oncology research.

Teams from both companies have been working hard on various systems and process integrations. The seamless integration of services will establish a more efficient, tailored approach across several key areas of the clinical trial process including study start-up, screening and enrollment, protocol implementation, management of image data and proactive risk management.

Keep watching this space and the VirtualScopics web site as we will provide updates on the alliance and the progress of the integration as it continues to develop throughout 2011.

To learn more about the strategic alliance and its potential benefits to you, [download this informational piece](#), or [visit our web site](#).

For more information on **VirtualScopics'** technology or services, please contact us at +1 585-249-6231 x206 or chris_gilman@virtualscopics.com.



On the road with VirtualScopics:

2011 Conference Schedule

During 2011 you'll have numerous opportunities to meet the VirtualScopics team at a variety of important industry conferences.

We kick off the year in San Diego at the American Association of Orthopedic Surgeons Annual Meeting. Chief Technical Officer Jon Riek (pictured at right) will be on hand to discuss our work in medical device clinical trials such as imaging in cartilage repair studies and the assessment of spinal fusion systems.

Visit us at booth 3928 to discuss any of your imaging or clinical trial questions.

As with any event, feel free to contact us prior to schedule an on-site meeting at your convenience.

Contact VirtualScopics

American Association of Orthopedic Surgeons

Booth # 3928
San Diego, CA
February 15-18, 2011

Partnerships in Clinical Trials

Booth # 1115
Phoenix, AZ
March 30-April 1, 2011

ISMRM - Annual Meeting

Montreal, Quebec, CA
May 7-13, 2011

ASCO

Booth # 22036
Chicago, IL
June 4-8, 2011

DIA

Booth # 1229
Chicago, IL
June 19-23, 2011

Complete 2011 Conference Schedule

Ask Jon: What imaging endpoints should I measure in a cartilage repair trial?



Jon Riek, PhD. Chief Technical Officer VirtualScopics, Inc.

Microfracture surgery is the current standard of care for repairing lesions in articular cartilage. As such, many trials will use microfracture as a control. Before determining which imaging endpoints are appropriate, one must first determine the question the trial is attempting to answer.

If the trial is to determine whether there is an increased success rate or rate of repair, then structural MRI endpoints may be sufficient. Success should be measured by improvements in activities of daily living and reduction in pain. The percentage of the cartilage defect that is filled by repair tissue is

highly correlated with these measurements. In addition to poor cartilage repair fill, microfracture can fail in several ways including osseous overgrowth and peripheral integration failure. Other contraindications include bone defects and persistent bone marrow lesions. These factors can all be determined from structural MR images.

If the trial is to determine whether the repair tissue resembles normal hyaline cartilage and is thus more durable than the fibrocartilage created by microfracture, compositional MRI endpoints may also be appropriate. T2 mapping and Delayed Gadolinium-Enhanced MRI of Cartilage (dGEMRIC) can be used as measures of similarity between the repair tissue and the surrounding hyaline cartilage.

In addition to quantitative imaging endpoints, semi-quantitative MRI scoring, such as MOCART, can provide additional information about the success and quality of the repair.

The choice of endpoints will be trial-specific and needs to take into consideration the question to be answered and the burden and benefit to the subject.

DCE-MRI - A Clinical Trial Workhorse

If you followed last year's webinar series you know DCE-MRI has wide ranging uses in drug development. Oncology, arthritis, disc degeneration, and the measurement of muscle and fat are just a sampling of the areas where VirtualScopics has used this versatile and valuable tool. Combining the technology's flexibility with our expert analysis can help sponsors learn valuable information in early phase trials:

- Drug safety, Dosing levels, Dose Scheduling, Efficacy, Mechanism of action

Whether you are running a single or multi-center trial, DCE-MRI can help you make an earlier go/no go decision. For more information review the paper "Early DCE-MRI Findings Predict Tumor Volume Changes" (http://www.virtualscopics.com/oncology.aspx) by Chief Scientific Officer Ed Ashton.

Got a question? Ask VirtualScopics!

No, we can't tell you who is going to win the Super Bowl, but we can answer your questions regarding imaging and/or its uses throughout clinical studies. With numerous in-house experts you can expect to receive a prompt and confident response to your inquiry.

Contact VirtualScopics (http://www.virtualscopics.com/contact-us.aspx)