

# Preclinical Connections

April 2010

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## An Inveon Customer Profile

For this edition, Siemens PCS profiled a customer from our home town of Knoxville, TN: Dr. Jon Wall from the University of Tennessee. Dr. Wall has our Inveon Trimodality system, a microPET P4, and a microCAT +SPECT system.



The University of Tennessee Graduate School of Medicine small animal imaging and translational research team (L to R): Dr. Amy LeBlanc, Dr. Jon Wall, Alan Stuckey, Dr. Stephen Kennel and Tina Richey.

### What is the main focus of your research?

Dr. Wall: For more than 15 years, our research has focused on understanding the complex reactions associated with amyloid-related disorders and finding effective treatment therapies for this family of diseases. Amyloidosis is a protein misfolding disorder in which normally soluble functional proteins aggregate and deposit in body organs as well-ordered fibrils, causing dysfunction and ultimately death. This disease process is most commonly seen in the brains of patients with Alzheimer's disease, but amyloidosis is also associated with type II diabetes, prion-

related diseases, multiple myeloma and rheumatoid arthritis. As part of a multi-disciplinary translational research group headed by Professor Alan Solomon, we have focused on developing novel therapies and diagnostic tools for amyloid diseases. One exciting finding that has come out of our research is that we have identified a monoclonal antibody, designated 11-1F4, that not only reacts specifically with amyloid fibrils from multiple diseases and but can also be used as a therapeutic in a mouse model of immunoglobulin light chain amyloidosis. Facilitated by the translational nature of PET, we have begun studying the use of this antibody

in patients with amyloidosis and are presently performing a biodistribution study by using PET0149CT with <sup>124</sup>I-labeled 11-1F4 antibody under the auspices of an FDA-approved exploratory-IND at UT Medical Center in Knoxville. Successful outcomes of the imaging study will support use of this antibody for therapy.

#### **How does your Siemens system enable you to achieve your research goals?**

Dr. Wall: The preliminary characterization of the 11-1F4 antibody as a fibril reactive reagent involved test tube studies and *in vitro* binding studies. However, it is always necessary to answer the question, "does this antibody bind amyloid deposits *in vivo*, where the biological environment is immeasurably more complex than the test tube?" We, thus, sought tools with which to document the distribution of the antibody in the mouse model of light chain amyloidosis. We had hypothesized that in order to be useful for therapy, the 11-1F4 mAb had to bind directly to the amyloid deposits and thereby facilitate their removal by the immune system. Small animal PET, SPECT and CT imaging proved to be the best method to document localization of the mAb.

I secured funding from an NIH development grant to build a research team for this effort. Using well established methods, Dr. Stephen Kennel prepared the <sup>125</sup>I-labeled antibody which was then imaged in mice with the human light chain amyloid xenografts using the dual modality SPECT/CT platform developed by Siemens. This allowed us to demonstrate specific co-localization of the antibody with the amyloid. In order to demonstrate this same reactivity in human patients, it was necessary to translate the low energy SPECT imaging technique (<sup>125</sup>I) to something more clinically relevant. Thus, using the same chemistry, we prepared <sup>124</sup>I-labeled 11-1F4 and showed, in collaboration with Dr. Jeffrey Yap and using a Siemens PET scanner, that the <sup>124</sup>I mAb also imaged the amyloid in mice. Finally, with approval from the FDA, and in collaboration with Dr. David Townsend, we began a first-in-human study using the <sup>124</sup>I-11-1F4 antibody in patients with light chain amyloidosis and have now demonstrated the reactivity of this potentially therapeutic reagent with amyloid in humans. This translation of a novel potentially therapeutic antibody – from the bench to the bedside – was made possible by being able to

demonstrate specific binding to the pathology, both in mice and humans, by using the highly translatable imaging methods of SPECT and PET in both species.

#### **What products/features could Siemens provide you to help you take your research to the next level?**

Dr. Wall: One of our major research goals is to develop novel tracers for studying and diagnosing patients with all types of peripheral amyloidosis. Currently, no such capabilities exist in the USA. To identify novel pan-amyloid tracers, we have developed methods that rely on comparing molecules in the same animal using dual-energy SPECT, thus our ability to quantitatively compare SPECT images is becoming increasingly important. With respect to translation of basic science, we have found it invaluable to be able to test novel tracers in "large" animal models with naturally occurring pathology, rather than mice with experimentally-induced often inappropriate pathologies. Therefore, large bore SPECT and PET/CT scanners to perform large animal (i.e. medium to large dogs) research we believe will considerably enhance the transition of tracers into patients.

## Recent Product Announcements and Software Releases

### **Bone Morphometry Software Analysis Software**

As we announced at our Users Group Meeting in Montreal last September, a bone morphometry analysis software package that is compatible with our Inveon CT data is slated to be released by Ratoc System Engineering Co., Ltd. at the end of March, 2010. For more information about this product, please see the website <http://www.ratoc.co.jp/ENG/>. More details will follow in the next edition of our Newsletter, once the package has been officially released.

### **Inveon Acquisition Workplace version 1.5**

IAW 1.5 is anticipated to roll-out in July, 2010. The highlights of this release were summarized in the previous Siemens Preclinical Connections Newsletter and include support for new SPECT collimators for imaging rats, improvements to SPECT reconstructions and corrections, the addition of OP-MAP reconstruction

for PET acquisitions with very low count rates and continued workflow improvements.

The new collimators for the Inveon SPECT system support imaging with larger radii of rotation to enable imaging of larger subjects such as rats. The new "Rat Pinhole Collimator Kit" includes a shorter pyramid with a focal length of 70 mm. With the variable positioning of the Inveon SPECT detectors, the imaging volume can be configured to give "bore" sizes of between 95 to 115 mm, with the actual transaxial field of view of being between 72 - 87 mm. The flexibility of the Inveon SPECT system enables the user to fine-tune these settings to achieve the most suitable settings for the subject being imaged, thereby resulting in the best resolution/sensitivity possible. There are three different collimators in the new collimator set:

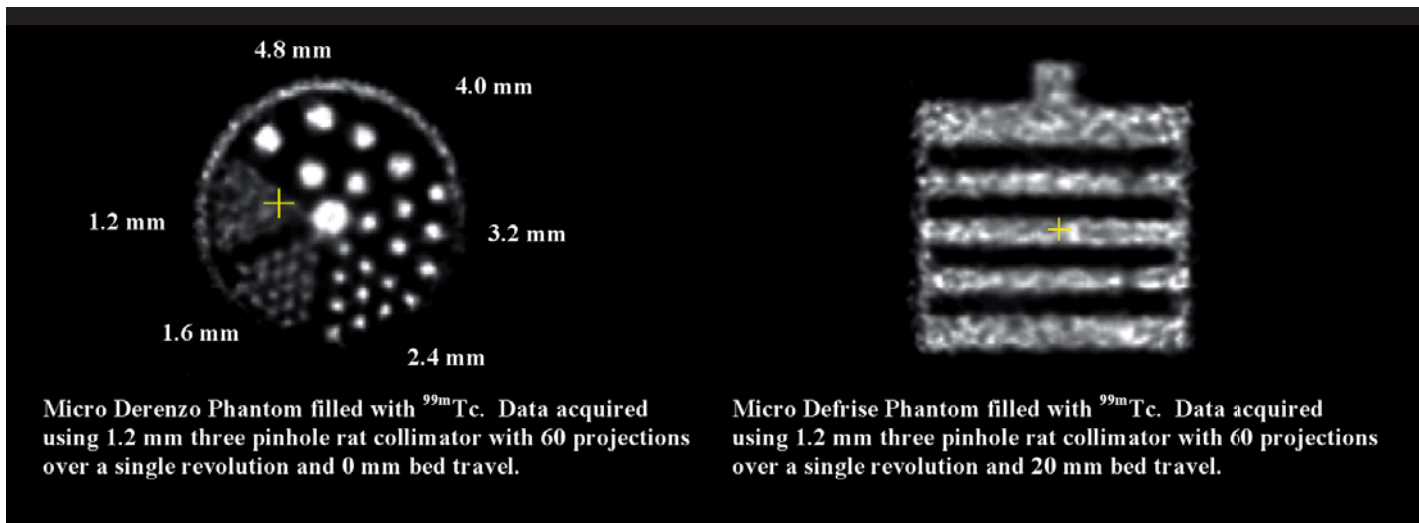
- Rat General Purpose collimators with a single 1.5 mm pinhole

- Rat Whole Body collimators (high resolution) with three 1.2 mm pinholes
- Rat Whole Body collimators (high sensitivity) with three 1.8 mm pinholes

The kit also contains a 70 mm wide fixed pallet designed to support imaging of larger subjects. This new pallet now enables up to 30 cm axial FOV for the Inveon SPECT•CT system.

The micro-Derenzo phantom image below shows that objects as small as 1.6 mm can be resolved using the 3 x 1.2 mm pinhole collimator. The micro-Defrise phantom image shows that good image uniformity is achieved across the axial FOV.

The Rat Pinhole Collimator kit will be released concurrently with IAW 1.5.



Some more of the major features (not listed above) and known issues for the IAW 1.5 Release are listed below, and more information and details can be found in the "Inveon New Features Guide", the "Inveon Release Notes" and the "Inveon Known Issues" documents which can be accessed from the Help menu within IAW 1.5 or found on the documentation CD.

1. Important Note: IAW 1.5 will be the last software release supporting the PET Cylinder Inversion Normalization. Please convert PET studies over to Component-Based Normalization.
2. When the CT X-ray source has not been turned on for more than 48 hours, the system recommends that the user auto-condition the X-ray source. It is recommended that this procedure is run weekly to maintain optimum source performance and to extend the life of the X-ray source
3. IAW has a limitation such that if the acquired CT image volume is larger than 1.5 GB, it cannot be automatically transformed to co-register with the PET or SPECT data. However, it is possible to perform a PET•CT or SPECT•CT workflow with no transformation matrix selected. This enables a PET•CT or SPECT•CT workflow where the acquired CT dataset exceeds the 1.5 GB limit to be successfully executed. This may happen when acquiring a CT dataset with a significantly extended axial FOV. The workaround is to load the

unregistered data into IRW and perform a software registration prior to analyzing the data.

4. Continuous bed motion now gives a uniform image for 30 cm axial field of view on the Inveon Dedicated PET. This change will also require the new carbon fiber pallet. Please contact your local service representative to order this pallet.
5. Inveon PET now uses a per ring deadtime correction rather than the previous default method of a global deadtime correction.
6. IAW can now load transformation matrices created in IRW as well as those from ASIPro for use in PET•CT and SPECT•CT workflows. Please refer to the IAW User Manual for details of the process for acquiring the PET•CT and SPECT•CT transformation matrices.
7. CT projections are now transferred to Cobra as 2-byte integer data rather than as 4-byte floating point data when the optional beam hardening correction is applied directly by Cobra rather than by IAW. This change resolves an issue causing image blur which occasionally occurred when reconstructing 4-byte floating point data by Cobra with a down-sample factor of four. This has the added benefit of reducing the networking bandwidth and also reduces the processing load on the host computer.

#### Inveon Dedicated PET Docked to Inveon Multimodality Known Issue and Workaround

1. When performing a gating study when the dedicated PET is docked to the multi-modality CT gantry, please note the following:

- a. When performing a PET only gated study, the gating equipment MUST be plugged into the gating ports on the docked PET in order for the gating tags to be incorporated into the listmode data.
- b. When performing a PET•CT gated study, the gating equipment MUST be plugged into the gating ports on the CT in order for the gating tags to be incorporated into the listmode data.

#### Inveon Dedicated PET Update Project

The Inveon Dedicated PET Update project has now been completed and officially released. The updates in the design of the Inveon Dedicated PET scanner include:

- (1) An improved hardware design to actively stabilize and cool the environment around the PET detectors and electronics.
- (2) Dual transmission scanning capabilities.
- (3) A reduction in audible noise from the PET scanner.
- (4) Optimized continuous bed motion capabilities, with improved uniformity across the entire 30 cm FOV.

## Upcoming PCS Events

Save the date! Our annual Users Group Meeting has been scheduled. This year, Anne Smith will be organizing this on behalf of Siemens PCS. The Users Group Meeting will be held on September 7th, just before the World Molecular Imaging Conference in Kyoto, Japan. We will also host our 7th annual Image of the Year (IOY) competition, which will include the following categories:

- Inveon™ Image of the Year
- Multimodality Image of the Year
- Translational Image of the Year (New!)
- Best Presented Image of the Year
- Honorable Mentions

Please note that you need not be physically present at the Users Group Meeting or at the IOY competition to participate or win. The deadline for the image submissions is Wednesday, July 21, 2010. Therefore, be thinking of some fantastic images and research you may have, and get your work showcased. Please send Anne an Email at [anne.m.smith@siemens.com](mailto:anne.m.smith@siemens.com) if you have any questions

## Collaborations Corner

It is always fun when I visit some of you and see your hard won "Image of the Year" trophies proudly displayed in your research labs. We would like to give you the opportunity to more easily showcase your trophies and images - virtually, on the internet. Below is a virtual trophy that you can embed on your website and will also include the year the award was won. Siemens will also be happy to include a link to your small animal imaging websites and virtual trophies on our website. Please send me an Email ([anne.m.smith@siemens.com](mailto:anne.m.smith@siemens.com)) and I'll send you the appropriate virtual trophy image and collect the internet links.

On another subject, a few columns ago I wrote about at least one good thing to come out of the economic downturn which was government stimulus funding being used to fund more research. This trend continues at least in the US, since the latest Shared Instrumentation Grant (SIG) from the National Center for Research Resources (NCRR, part of the National Institutes of Health) raised the upper limit of funding from \$500k to \$600k. For more information about this grant, please see:

[http://www.ncrr.nih.gov/biomedical\\_technology/shared\\_instrumentation/](http://www.ncrr.nih.gov/biomedical_technology/shared_instrumentation/).

The NCRR since 2006 is also sponsoring another program called the Clinical and Translational Science Awards. The goal is to eventually build a consortium of 60 institutes that share a common vision to reduce the time it takes for laboratory discoveries to become treatments for patients, to engage communities in clinical research efforts and to train clinical and translational researchers. Currently, 46 institutes have been awarded grants, and in 2009 the awards ranged from \$20M to \$34M to each institute over a five year period. For more information and eligibility requirements, please see:

[http://www.ncrr.nih.gov/clinical\\_research\\_resources/clinical\\_and\\_translational\\_science\\_awards/](http://www.ncrr.nih.gov/clinical_research_resources/clinical_and_translational_science_awards/).

One last thought, don't forget to make plans to come to our Users Group Meeting September 7th, 2010 in Kyoto, Japan, and keep thinking of good submissions for our annual Image of the Year Contest!

With best regards,

Anne M. Smith



Official Image of the Year Virtual Trophy, that you can use to showcase past Image of the Year Winners from your lab on your internet site.

# Service and Application Updates

*Notes from our Senior Manager of Customer Service, Steve Kincaid.*

I am pleased to announce that effective March 1, 2010, our Preclinical Solutions Service group based at the factory will be merging with the Clinical Service group. We have been working towards this goal for more than a year, and the transition so far has been very smooth. This change will allow us to more effectively utilize the Customer Service (CS) support groups that are already in place such as Serviceability and Documentation (SD), Product Support (PS), Headquarter Support Center (HSC), Training Centers (TC), Service Marketing (SM), and Workflow and Support (WS). The HSC teams based in Hoffman Estates, IL and Knoxville, TN are currently training four additional team members (one based in Boston) to provide field technical support for the Preclinical customers based in the USA.

The Siemens Training centers in Erlangen, Germany and Cary, NC are now equipped with Inveon equipment and have begun offering training courses for both Siemens personnel and our Preclinical customers. The transfer of training from

Knoxville to our worldwide training centers has resulted in improvement of the quality of classes and facilities, while increasing the frequency of training classes offered. If you would like to attend a refresher Inveon training or send new members of your team for training, please contact your local service organization for details.

Inveon Acquisition Workplace (IAW) 1.4.3 and Inveon Research Workplace (IRW 3.0) releases are available world-wide. We highly recommend that you have your system's software upgraded today. In addition, don't forget to work with your local Siemens service team to schedule your yearly maintenance visits, since this will ensure that your Siemens Preclinical Product will continue to perform smoothly and to specifications. Please remember as well to defragment the host F: drive when it contains 600 GByte or more of data.

One last note - we're growing! I'm happy to introduce Dr. Keiko Takamoto, who is our new Preclinical Application Support

Specialist in Japan. She has been with Siemens for one year, working on the Clinical Applications Support Team in Japan. Before joining Siemens, Keiko worked for Philips/Hitachi as a team leader of Nuclear Medicine Application Specialists in Japan. Keiko has a degree in Radiology from the Osaka University, where she did research work in the area of metabolic change in the mouse brain during over-expression of an amino acid. Therefore, Keiko is no stranger to preclinical research! Keiko's email address is keiko.takamoto@siemens.com. Please welcome Keiko to the Preclinical Solutions Support Team! In addition, we are actively searching for another member to be on our Knoxville-based Applications Support team. Interested and qualified candidates can find the job listing either at [www.monster.com](http://www.monster.com) or at [www.siemens.com](http://www.siemens.com).

Best regards,  
Steve

## Best Bug Catcher

This issue's Best Bug Catcher award goes to Dr. Thomas Opfermann from the Leibniz Institute for Natural Product Research and Infection Biology, Hans Knoell Institute in Jena, Germany. Dr. Opfermann was instrumental in tracking down and solving an issue with the Fusion Maximum Intensity Projection (MIP) Tool in the Inveon Research Workplace (IRW) package.

This issue occurs only when IRW is set in the rodent display mode. If you are not familiar with the primate and rodent display modes, these allow the display of the orthogonal views to be flipped, with dorsal being upper-most in the axial view in rodent mode and ventral upper-most in primate mode. This allows the data to be displayed in a manner consistent with the normal subject orientations used in scanning these different animal types and avoids the odd situation where the bed is displayed "on top" of the subject. This

mode can be changed as follows. Select the "Configuration" option from the "Application" menu in IRW. Select the "Views" tab in the displayed Configuration window. Choose the "Primate" or "Rodent" display modes as desired and click "OK" to close the window and apply the setting.

When viewing data with the rodent display mode selected, everything is displayed perfectly normally in all the orthogonal views and in any MIPs of any single dataset (i.e. displaying the source or target only). The fusion MIP is also initially displayed correctly and most normal interactions are possible (zooming, panning, dragging crosshairs, etc.). However, after performing image registration or after toggling the visibility or binding of the cross-hairs, the target data in the fusion MIP is incorrectly displayed with a 180 degree rotation so that it appears misaligned with the source data.

Until this issue is resolved in a future release of IRW, the suggested work around is to switch IRW to use the Primate display mode when viewing data in the fusion MIP. This takes five mouse clicks and about five seconds to make the fusion MIP useful! It is a little inconvenient but this makes it possible to continue to view rodent data in the rodent display mode in most views and then just flip the display mode when viewing the fusion MIP. Of course, if no registration is performed in IRW and the cross-hair visibility or binding is not toggled, then the issue will not be seen anyway and the fusion MIP can continue to be used in rodent display mode as normal.

Thanks to Dr. Thomas Opfermann for his time, efforts and insight on this issue!

## Update from Asia-Pacific Regions

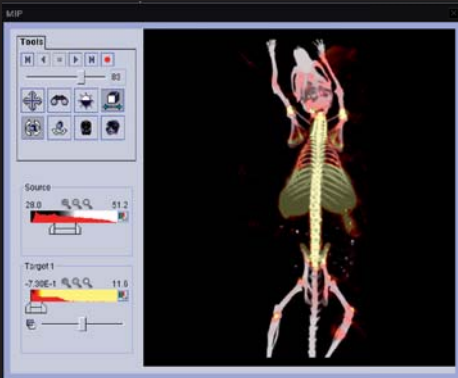
Jason Beirne is our new Business Development Manger for Preclinical Solutions and Cyclotron in the Asia-Pacific region (covers from India to New Zealand, with the exception of Japan). Jason is a trained nuclear medicine technologist, and has previous experience working in radiopharmacy, managing imaging centers, setting up imaging and radiopharmaceutical distribution businesses and pursuing other Healthcare-related experiences. Jason's role will be to grow the cyclotron and preclinical business in this region and will support the local sales and service teams. Jason can be reached at [jason.beirne@siemens.com](mailto:jason.beirne@siemens.com).

Please welcome Jason to the Preclinical Solutions Team!

## Name that Artifact!

The MIP image from a helical SPECT•CT data acquisition in the figure below contains "artificial activity" outside of the mouse's body (i.e. the activity is physically not there). Do you know the reason for this, and how to eliminate this artifact?

Please send your response to: [anne.m.smith@siemens.com](mailto:anne.m.smith@siemens.com).



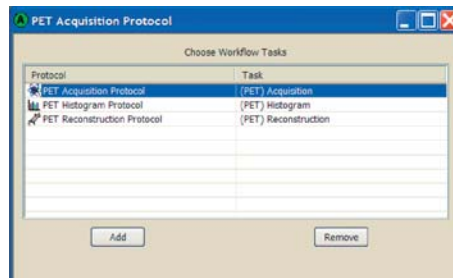
A SPECT•CT MIP image of a Tc-99 radiotracer: whole body mouse acquisition using the 5-pinhole MWB pinhole collimator.


## A Tip from our Application Support Group

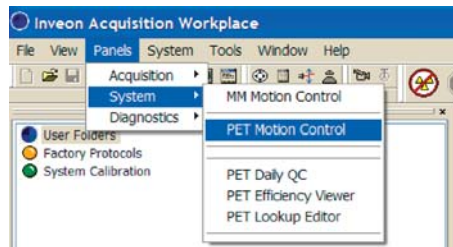
Meerna Nino, our Knoxville-based Applications Support Specialist offers this tip:

For Inveon Docked Multimodality systems, normally, specimens are loaded on the multimodality bed when performing scans. But, did you know that you can load the specimen on the dedicated PET bed to perform PET-only scans without undocking the scanners? This feature, which was implemented in IAW 1.2, is especially convenient for procedures that are unique to the dedicated PET, such as continuous bed motion scans which are not currently possible with the multimodality bed. The following procedure, a standalone PET acquisition, illustrates this feature:

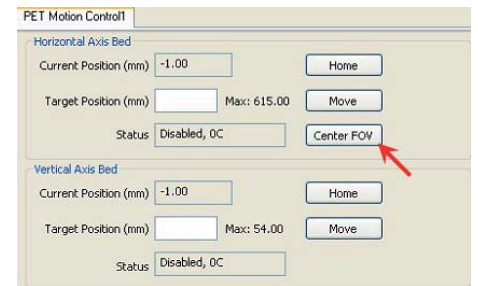
1. Setup a PET workflow on the dedicated PET Host PC.



2. From the IAW toolbar click the Toggle Laser Power icon  to turn on the dedicated PET lasers.
3. Place your specimen or other object on the dedicated PET bed and laser align it, both vertically and horizontally.
4. From the IAW pull-down menus, select *Panels > System > PET Motion Control*.



5. In the PET Motion Control Menu click Center FOV.



6. Go back to the workflow from step 1, and click Start Workflow. IAW will automatically determine that the workflow comprises only PET protocols, and perform the scan on the dedicated PET scanner.

Anne Smith, author of ASIPro, offers this bonus tip:

Have you ever clicked on the ASIProVM icon on the desktop, and ASIPro did not open? Rather than rebooting your computer, try one of two things.

1. If you have no jobs running in microQ, shut down all IDL applications (microQ, microQView and any local IDL applications that may be running). Then, click on the ASIProVM desktop icon, and ASIPro should now open.
2. If you are unable to shut down all IDL applications, open a command window (Start->Run, and type 'cmd'), and type 'set temp'. The command window will display a folder or directory name. Browse to this folder and delete the file "asipro.run". Finally, click on the ASIProVM desktop icon, and ASIPro should now open.

The root cause was that ASIPro was not able to shut down properly, and delete the 'asipro.run' file that lets the system know ASIPro is running. Deleting this file by one of the two ways listed above will fix the issue.

## Brush Up Section

**Editor's Note:** When citing the manufacturer's name of our products in publications, please use the following name: Preclinical Solutions, Siemens Healthcare Molecular Imaging.

### Some useful websites and organizations – can sign up for Newsletters

Information about drug discovery and personalized medicine:

<http://www.innovation.org/>

Latest news and grant proposals available from National Cancer Institute:

<http://imaging.cancer.gov/>

Sign up for the Society of Nuclear Medicine's daily SmartBrief:

<http://www.smartbrief.com/snm/>

### Inveon Papers

Identification of Splenic Reservoir Monocytes and Their Deployment to Inflammatory Sites. Swirski\* FK, Nahrendorf\* M, Etzrodt M, Wildgruber M, Cortez Retamozo V, Panizzi P, Figueiredo JL, Kohler RH, Chudnovskiy A, Waterman P, Aikawa E, Mempel TR, Libby P, Weissleder R, Pittet MJ. *Science*. 2009;325(5940): 612-6 - PMID: 19644120 - PMCID: PMC2803111

Effective use of PI3K and MEK inhibitors to treat mutant Kras G12D and PIK3CA H1047R murine lung cancers. Engelman JA, Chen L, Tan X, Crosby K, Guimaraes AR, Upadhyay R, Maira M, McNamara K, Perera SA, Song Y, Chirieac LR, Kaur R, Lightbown A, Simendinger J, Li T, Padera RF, Garcia-Echeverria C, Weissleder R, Mahmood U, Cantley LC, Wong KK. *Nat Med*. 2008;14(12)::1351-1356 - PMID: 19029981 - PMCID: PMC2683415

### Review Papers

Whole-animal imaging – the whole picture. (Technology feature by Baker M.) *Nature*, 463;February 18, 2010;977-980. (<http://www.nature.com/nature/journal/v463/n7283/full/463979a.html>) Looking and listening to light: the evolution of whole-body photonic imaging. Ntziachristos V, Ripoll J, Wang LV, Weissleder R. *Nature Biotechnology*, 23;3;313-320. (<http://www.nature.com/nbt/index.html>)

### Exciting New Technology

Multiwave imaging and super resolution. Fink M, Tanter M. *Physics Today*, February 2010;28-33. (<http://scitation.aip.org/getabs/servlet/GetabsServlet?prog=normal&id=PHTOAD00006300000200002800001&idtype=cvips&gifs=yes&ref=no>).

## Upcoming Meetings and Workshops

### Meetings

#### Molecular Neuroimaging Symposium (Hosted by SNM)

May 6-7, 2010, Natcher Auditorium, National Institutes of Health, Bethesda, MD

URL: [www.molecularimagingcenter.org](http://www.molecularimagingcenter.org)

#### Ultrasonic Imaging and Tissue Characterization

May 17-19, 2010, Holiday Inn Rosslyn at Key Bridge, Arlington, VA

URL: <http://uitc-symposium.org/>

#### SNM Annual Meeting 2010\*

June 5-9, 2010

Salt Lake City, UT

URL: <http://interactive.snm.org/>

#### 2010 NIH Regional Seminars on Program Funding and Grants Administration: Philadelphia, PA & Portland, OR

June 23-25, 2010, Portland, OR

URL: <http://grants.nih.gov/grants/guide/notice-files/NOT-OD-10-025.html>

#### Gordon Research Conference: Metals in Medicine

June 27 - July 2, 2010, Proctor Academy, Andover, NH

URL: <http://www.grc.org/programs.aspx?year=2010&program=metalsmed>

#### AAPM Annual Meeting

July 18-22, 2010, Pennsylvania Convention Center, Philadelphia, PA

URL: <http://www.aapm.org/meetings/2010AM/>

#### AAPM Summer School: Teaching Medical Physics: Innovations in Learning

July 22-25, 2010, immediately following the 2010 AAPM Annual Meeting

University of Pennsylvania

URL: <http://www.aapm.org/meetings/2010SS/>

SCHOLARSHIPS: Deadline to submit a scholarship application for the 2010 Summer School is February 11, 2010.

URL: <http://www.aapm.org/meetings/2010SS/ScholarshipInfo.asp>

#### 8th Annual International Symposium on Functional Neuroreceptor Mapping of the Living Brain

July 22-24, 2010, University of Glasgow, Scotland, UK

URL: <http://www.nrm10.org>

#### 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society

August 31-September 1, 2010, Sheraton Center, Buenos Aires, Argentina

URL: <http://embc2010.embs.org/>

#### 2010 World Molecular Imaging Congress\*

September 8-11, 2010, Kyoto, Japan

URL: <http://www.wmicmeeting.org/dev/>

#### Eighth IEEE International Symposium on Biomedical Imaging, ISBI 2011

April 20-23, 2011, Chicago, IL

Email: [emb-conferences@ieee.org](mailto:emb-conferences@ieee.org)

URL: <http://www.wmicmeeting.org/dev/>

\*Representatives from Siemens PCS will attend and you can find them in the Siemens booth

Please send requests for workshop/meeting announcements in future newsletters to the Siemens PCS Connections Newsletter Editor.

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Siemens PCS User Forum  
(created and moderated by users)  
<http://micropetusers.proboards.com/index.cgi>

The National Translational Research Program Update  
at the National Cancer Institute  
<http://imaging.cancer.gov/programsandresources/specializedinitiatives/ntroi>

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