The Hyperpolarized MRI Technology Resource Center (HMTRC) is a new Biomedical Resource Technology Center whose mission is to develop new advances in dissolution DNP techniques & instrumentation, specialized data acquisition methodology, and analysis software for biomedical research.

http://www.radiology.ucsf.edu/research/labs/hyperpolarized-mri-tech

The March 2012 Hyperpolarized Carbon-13 MRI Technology Development Workshop includes lectures, hands-on training and discussions on dissolution DNP methodology, polarizer instrumentation, MR Sequence and Acquisitions, Bioreactors, Animal Preps, Chemistry Preps and Software.

HMTRC is funded by NIBIB - NIH - Grant # EB013598
Workshop Schedule

Tuesday, March 20th

8:00am  Breakfast/Registration   Genentech Hall Auditorium

8:20  Introductions

8:30  Dissolution DNP Methodology & HP $^{13}$C MR Acquisition Developments: Dr. Dan Vigneron, UCSF

9:00  Development of HP MR Molecular Imaging Probes and Cell & Tissue Culture Models: Dr. John Kurhanewicz, UCSF

9:30  Open Source Tools and Methods for Processing Hyperpolarized $^{13}$C MR Data: Dr. Sarah Nelson, UCSF

10:00  Plenary Lecture by Dr. Matthew Merritt, UTSW
        Technical developments for DNP Polarizer instrumentation and HP Perfused Organs Studies.

10:30-11:00  Coffee Break

11:00-1:00pm  Hands-on Breakout Sessions
        Hands-on demos & discussions on the four DNP Polarizers, MR Sequence and Acquisitions, Bioreactors, Animal preps, and Chemistry preps will be held in the Surbeck Laboratory for Advanced Imaging and the UCSF Biomedical NMR Lab. Software hands on training and discussions will be held in Byers Hall Suite 212.

1:00-2:00  Lunch & Poster Session

2:00-5:30  Hands-on Breakout Sessions (Continued)

5:30  Plenary Lecture by Dr. Rahim Rizi, U. Pennsylvania
        Extending Carbon-13 and Nitrogen-15 T1 Relaxation time and its Application in Pulmonary metabolic Imaging and Spectroscopy

6:00  Plenary Lecture by Dr. Charles Cunningham, U. Toronto
        HP $^{13}$C MR Sequence Development for Cardiac Research

6:30-8:00  Dinner Reception
        Sponsored by Sigma-Aldrich Stable Isotopes
Workshop Faculty & Staff

Daniel B. Vigneron Ph.D., is a Professor in the Departments of Radiology & Biomedical Imaging and Bioengineering & Therapeutic Sciences at UCSF and is a member of the UCSF Cancer Center and the UCSF/UCB Bioengineering Graduate Group. He is the director of the NIH-funded Hyperpolarized MRI Technology Resource Center (HMTRC) and the project leader for the development of specialized dissolution Dynamic Nuclear Polarization (DNP) methodology & HP 13C MR acquisition techniques. His research focuses on the development and translation of new MR techniques for morphologic, metabolic and functional imaging and has extensive expertise in hyperpolarized carbon-13 MR leading the polarizer instrumentation and MR technique development at UCSF for preclinical research and translation for patient clinical trials of carbon-13 pyruvate.

John Kurhanewicz Ph.D., is a Professor in the Departments of Radiology and Pharmaceutical Chemistry at UCSF, and is a member of the California Institute for Quantitative Biology, the UCSF Cancer Center, and the UCSF/UCB Bioengineering Graduate Group. He is the director of the UCSF Biomedical NMR lab that contains the 14T micro-imaging spectrometer, 11.7 HMR spectrometer and adjacent DNP polarizer with extensive experience in NMR and MRI research for prostate cancer and other applications. He leads the HMTRC development of novel NMR-compatible cell & tissue culture bioreactors, new & optimized hyperpolarized molecular probes, and correlative pathological & molecular biomarker assays for preclinical hyperpolarized MR research.

Sarah J. Nelson Ph.D., is a Professor in the Departments of Radiology and Biomedical Imaging and Co-Chair of the Bioengineering and Therapeutic Sciences at UCSF. She has extensive experience in mathematical modeling, computation and MRSI data analysis. She has led the development of novel algorithms and techniques for the processing and display of MR spectroscopy and imaging data with a focus on brain tumor research. Dr. Nelson has worked closely with Drs. Vigneron and Kurhanewicz on the analysis of hyperpolarized 13C MR data for a wide variety of research projects. Dr. Nelson leads the HMTRC development of new analysis procedures and free open-source software specialized for hyperpolarized 13C metabolic imaging.

Robert Bok M.D., Ph.D., is a certified Urologic Oncologist and Assistant Professor in the Department of Radiology & Biomedical Imaging working in the UCSF Cancer Imaging Program. He received a Ph.D. in Biochemistry as well as an M.D. with specialized training in Internal Medicine and Hematology/Oncology. He has extensive experience in preclinical and clinical MR imaging research and oversees the animal facilities in the Surbeck Laboratory for Advanced Imaging and Biomedical NMR lab. Dr. Bok led the animal model aspects for numerous prior preclinical hyperpolarized MR studies and oversees the biological and animal care aspects for HMTRC preclinical research projects.

Peder Larson Ph.D., is an Assistant Professor in the Department of Radiology and Biomedical Imaging at UCSF. Dr. Larson’s graduate work in the Department of Electrical Engineering at Stanford University provided extensive training in technical MRI pulse sequence development. During his post-graduate research at UCSF, he continued to pursue technical MRI improvements, with a focus on hyperpolarized 13C applications and prostate 1H MRSI. He is the PI of an NIH R00 grant titled Hyperpolarized C-13 MR Pulse Sequence Developments for Novel Contrast and an expert in HP 13C MR sequences.

David Wilson M.D., Ph.D., is an Assistant Professor in the Department of Radiology and Biomedical Imaging. He received his Ph.D. in Chemistry and is currently faculty in the UCSF Neuroradiology section. Dr. Wilson’s research is focused on the development of new agents for molecular imaging using hyperpolarized 13C MR and positron emission tomography combining both his strong chemistry background and medical training. He has been highly successful in developing new hyperpolarized molecular probes and with Prof. Kurhanewicz is working on HMTRC projects in optimizing hyperpolarized probe preparations and probe polarization procedures.
Mark Van Criekinge M.S., is a highly experienced Engineer with outstanding expertise in DNP (dynamic nuclear polarization) process engineering, high field magnet systems, low-temperature cryo-inserts, polarizer electronics and dissolution fluid path design and construction. He has extensive industrial experience having worked as a lead systems engineer with Varian Inc. for 20 years and with the DNP polarizer, having worked with Oxford instruments on the development of the commercial HyperSense DNP polarizer product. He leads HMTRC polarizer instrumentation developments.

Subramaniam Sukumar Ph.D., has extensive experience in MR sequence development having formerly worked at GE and Varian and oversees the MR technique development on the 14T imaging-spectrometer in the Biochemical NMR Lab. He has, under the direction of Drs. Kurhanewicz and Vigneron, developed high resolution MR and novel hyperpolarized $^{13}$C sequences for high field 14 T MR animal studies. For HMTRC projects, Dr. Sukumar develops new MR sequences optimized for the needs of collaborative projects.

Lynn Delos Santos is a highly experienced staff research scientist specializing in pathology, immunohistochemistry and biochemical arrays. She oversees Dr. Kurhanewicz’s pathology and molecular biology lab in which tissue pathologic and biochemical analysis is done for HMTRC studies.

Kayvan Keshari Ph.D., is a postdoctoral researcher in Dr. Kurhanewicz’s group with extensive experience in conducting hyperpolarized MR studies and developing new 3D cell and tissue culture NMR compatible bioreactor designs. Using these tools, he acquires novel tissue and cell culture hyperpolarized $^{13}$C data in collaboration with HMTRC investigators.

Plenary Speakers

This workshop includes plenary lectures focused on Hyperpolarized MR technology development given by:

- Dr. Matthew Merritt from the University of Texas Southwestern on “Technical developments for DNP Polarizer instrumentation and HP Perfused Organs Studies”

- Dr. Rahim Rizi from the University of Pennsylvania on “Extending Carbon-13 and Nitrogen-15 T1 Relaxation time and its Application in Pulmonary Metabolic Imaging and Spectroscopy”

- Dr. Charles Cunningham from the University of Toronto Sunnybrook on “HP $^{13}$C MR Sequence Development for Cardiac Research”
Registration Information and Fees

HMTRC Workshop Registration Fee

Academic Participant $250
Industry Participant $500

University of California personnel please email hmtrc@ucsf.edu before registering to follow UC policies.

Location: The HMTRC Workshop will be held on Tuesday, March 20, 2012 on the UCSF Mission Bay Campus in the Genentech Hall Auditorium, 600 16th Street, San Francisco, CA 94158. Your name badge and workshop program will be available for pick up at the registration counter located outside the Genentech Hall Auditorium.

Registration: Online registration for the HMTRC Workshop is available at https://www.123signup.com/register?id=crqpt. VISA, Mastercard, and Discovercard are accepted. The HMTRC Workshop Registration Fee includes hands-on training/demo costs, and related MR scanner, DNP supplies, bioreactor, animal and chemistry costs. Breakfast and Lunch included. Register Early, Enrollment is Limited. No registration at the door.

Refund Policy: If you enroll and cannot attend, a refund of the registration fee less $45 will be granted by March 1, 2012. After this date, a total of $100 will be deducted from your refund. Refunds will not be granted to registrants who fail to cancel prior to the opening of the course. If you are unable to attend, you may send another person in your place. Send refund requests to hmtrc@ucsf.edu and please include a reason for the cancellation. Refunds will be processed within 60 days after the workshop.

Hotel Accommodation: A special rate is offered at San Francisco Courtyard Marriott located on 299 Second Street, San Francisco, CA 94105 (1.6 miles away) at a nightly rate of $182 plus tax. Participants can reserve their hotel stay by utilizing one of these links. The cut-off date for hotel reservation at the rate of $182 plus tax is Wednesday, March 7, 2012.

1) 2 Queen beds: http://www.marriott.com/hotels/travel/sfocd-courtyard-san-franciscodowntown/?toDate=3/22/12&groupCode=uhsuhsb&fromDate=3/19/12&app=resvlink
2) King bed: http://www.marriott.com/hotels/travel/sfocd-courtyard-san-franciscodowntown/?toDate=3/21/12&groupCode=uhsuhsa&fromDate=3/19/12&app=resvlink
University of California, San Francisco
Mission Bay Campus
1700 4th St. (Cross Street 16th St.)

Registration desk in Genentech Hall entrance, outside Auditorium on 1st Floor