CURRICULUM VITAE

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Part I: General Information

Name:	**Mitchell S. Albert**
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Place of Birth:	New York, NY
Citizenship:	United States Canadian Permanent Resident

Education:

1985 B.S.	State University of New York, Purchase, NY (Experimental Psychology)
1993 Ph.D.	State University of New York, Stony Brook, NY (Physical Chemistry)

Postdoctoral Training:

1993-1994	Research Fellow in Radiology, University Hospital at Stony Brook, NY

Academic Faculty Appointments:

1994-1995	Instructor of Research in Radiology, University Hospital at Stony Brook, NY
1995-1997	Instructor in Radiology, Harvard Medical School, Boston, MA
1998-2004	Assistant Professor of Radiology, Harvard Medical School, Boston, MA Associate Professor of Radiology, Harvard Medical School, Boston, MA
2006-2011	Professor of Radiology, University of Massachusetts Medical School, Worcester, MA
2011-	Research Chair in Molecular Imaging and Advanced Diagnostics, Lakehead University, Thunder Bay, ON
2011-	Professor of Chemistry, Lakehead University, Thunder Bay, ON
2011-	Research Chair, Thunder Bay Regional Health Research Institute, Thunder Bay, ON
2011-	Scientist, Thunder Bay Regional Health Research Institute, Thunder Bay, ON
2012-	Adjunct Professor of Physics, Lakehead University, Thunder Bay, ON
2012-	Adjunct Professor of Biotechnology, Lakehead University, Thunder Bay, ON
2012-	Adjunct Professor of Health Sciences, Lakehead University, Thunder Bay, ON

2014-	Adjunct Professor of Biology, Lakehead University, Thunder Bay, ON
2016 -	Adjunct Professor of Medical Sciences, Northern Ontario School of Medicine, Thunder Bay, ON

Hospital or Affiliated Institution Appointments:

1994-1995	Research Associate in Radiology, University Hospital at Stony Brook, NY
1995-2006	Research Associate in Radiology, Brigham and Women's Hospital, Boston, MA
	Assistant Professor of Radiology, Harvard Medical School, Boston, MA
	Director, Hyperpolarized Noble Gas MRI Laboratory, Brigham and Women's Hospital, MA
1999-	Member, Center for Photonics, Boston University, Boston, MA
2004-2006	Associate Professor of Radiology, Harvard Medical School, Boston, MA
2006-2011	Professor of Radiology, University of Massachusetts Medical School, Worcester, MA
2006-2011	Director of MRI Research, University of Massachusetts Medical School, Worcester, MA
2006-2011	Director of Advanced MRI Center, University of Massachusetts Medical School, Worcester, MA
2006-2011	Director, Hyperpolarized Gas MRI Laboratory, University of Massachusetts Medical School, Worcester, MA
2011-	Research Chair, Thunder Bay Regional Health Research Institute, Thunder Bay, ON
2011-	Scientist, Thunder Bay Regional Health Research Institute, Thunder Bay, ON
2011-	Director, MRI Research Program, Thunder Bay Regional Health Research Institute, Thunder Bay, ON
2012-	Adjunct Professor of Physics, Lakehead University, Thunder Bay, ON
2012-	Adjunct Professor of Biotechnology, Lakehead University, Thunder Bay, ON
2012-	Adjunct Professor of Health Sciences, Lakehead University, Thunder Bay, ON
2014-	Adjunct Professor of Biology, Lakehead University, Thunder Bay, ON
2016 -	Adjunct Professor of Medical Sciences, Northern Ontario School of Medicine, Thunder Bay, ON

Other Professional Positions:

1985-1987	Research Assistant, Bourne Laboratory, Cornell Medical Center, NY
1995	Visiting Scientist, Lawrence Berkeley Laboratory, Berkeley, CA
1996-1997	Visiting Scientist, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA
1996-1997	Harvard University Tutor, Cabot House, Harvard University, Cambridge, MA

1998-	Scientific Advisor, Ministry of International Trade and Industry, Japan

Memberships in Professional Societies:

1987-1994	Student Member, Society of Magnetic Resonance in Medicine
1989-2000	Member Sigma XI, The Scientific Research Society
	Member, International Society of Magnetic Resonance in Medicine
2001-2004	Member, Publications Committee, International Society of Magnetic Resonance in Medicine
	Member, Electronic Publications Committee, International Society of Magnetic Resonance in Medicine
2011-	Committee Member, TBRHRI MRI Research Committee, Thunder Bay Regional Research Institute
2011-	International Workshop of Pulmonary Functional Imaging (IWPFI)
2012- 2012	Committee Member, TBRHSC MRI Purchase Committee, Thunder Bay Regional Health Sciences Centre
2013- 2013	Chair, TBRHRI Steering Committee Director of Research Operations, Thunder Bay, Regional Research Institute
2013-	Board member, International Workshop of Pulmonary Functional Imaging (IWPFI)
2013-	Committee Member, Lakehead University Senate Undergraduate Studies Committee, Lakehead University
2013-	Committee Member, Lakehead University Animal Care Committee, Lakehead University
2013-	Committee Member, International Workshop of Pulmonary Functional Imaging Committee, International Workshop of Pulmonary Functional Imaging
2017-	Director of Lakehead University Animal Satellite Facility Located at TBRHRI
2020-	Member, International Society of Magnetic Resonance in Medicine (ISMRM)

Leadership in Professional Societies:

1998	Session Chair, ISMRM, “Hyperpolarized Noble Gas and Other Nuclei” Scientific Session
2001	Founder and Chair, "Hyperpolarized Noble Gas MRI Study Group" International Society of Magnetic Resonance in Medicine
	Session Chair, ISMRM, “MR Imaging of Pulmonary Ventilation”, Scientific Session
	Session Chair, ISMRM, “Hyperpolarized Gas Imaging”, Scientific Session
2009-	Associate Editor and Editorial Board Member, North American Journal of Medicine and Science
	Co-chair, Imaging Core Resources Committee, UMass Medical School

2010-2011	MRI Advisory Committee, UMass Medical School
2011-2012	MRI Purchase Committee, TBRHRI
2012-	MRI Research Committee, Chair, TBRHRI
2013-	International Workshop of Pulmonary Functional Imaging (IWPFI) Committee, Board member
2014-	Co-Chair of the Summer School of Medical Imaging at Lakehead University, Thunder Bay, ON Magnetic Resonance in Medicine Journal Reviewer Journal of Magnetic Resonance Imaging Reviewer Medical Research Council Grant Reviewer (UK) ISMRM Abstract Reviewer
2018	NSERC Grant Reviewer, Medical Physics
2019	NIH Grant Reviewer, IPCA Study Group
2022	Associate Editor, Frontiers in Oncology North American Journal of Medicine and Science

Scientific Review Panels:

	The Burroughs Welcome Trust Review Panel
1997-	National Science Foundation, Biomedical Engineering and Research to Aid Persons with Disabilities Program Panel
1995-	Magnetic Resonance in Medicine Journal Reviewer
	International Society of Magnetic Resonance Scientific Meeting Reviewer
	Journal of Magnetic Resonance Reviewer
	National Science Foundation, Biomedical Engineering, Faculty Early Career Development Program Review Panel
	Journal of Magnetic Resonance Imaging Reviewer
	Israel Science Foundation Reviewer
1998	Concepts in Magnetic Resonance Reviewer
	Proceedings of the National Academy of Science Reviewer
	National Science Foundation, Atomic and Molecular Physics, Reviewer
2001	Medical Physics Journal Reviewer
2007	Journal of Magnetic Resonance Imaging Reviewer
	National Institutes of Health, Proposal Review Panel
	Philip Morris External Research Review Panel
	NMR in Biomedicine Reviewer
	NIH S10 Grant Review Panel
	NIH S10 Grant Review Panel
2009	NIH S10 Grant Review Panel
	NIH Ancillary Clinical Studies Grant Review Panel
2010	NIH Ancillary Clinical Studies Grant Review Panel
	Magnetic Resonance in Medicine Reviewer

2011	Natural Sciences and Engineering Research Council of Canada Review Panel
	Chest (Journal) Reviewer
	Magnetic Resonance in Medicine Journal Reviewer
2012	Magnetic Resonance in Medicine Journal Reviewer
2013	Magnetic Resonance in Medicine Journal Reviewer
	Chest Journal Reviewer
	Natural Sciences and Engineering Research Council of Canada Review Panel
	National Institutes of Health P41 Grant Review Panel and Center of Excellence Site Evaluation
2014	Magnetic Resonance in Medicine Journal Reviewer
	NMR in Biomedicine Journal Reviewer
	Medical Research Council (MRC), in partnership with the Department of Health, Welcome Trust, Cancer Research UK, British Heart Foundation, Arthritis Research UK and UK Research Councils, Grant Reviewer
2015	Magnetic Resonance in Medicine Journal Reviewer
	UK Research Council, Grant Reviewer
	International Society of Magnetic Resonance in Medicine abstract reviewer
2016-	National Institute of Health Grant Reviewer
	Magnetic Resonance in Medicine Journal Reviewer
	Journal of Magnetic Resonance Imaging Reviewer
	Natural Sciences and Engineering Research Council of Canada Grant Reviewer
	Medical Research Council Grant Reviewer (United Kingdom)
2019	National Institutes of Health Imaging Probes and Contract Agents (NIH IPCA) Study Section Review Panel Member

Awards and Honors:

1985	Honors Graduated in Experimental Psychology, State University of New York, Purchase, NY
1997	US Delegate for NSF, Korea-US Joint Biomedical Engineering Seminar, Seoul, Korea
1998-	Scientific Advisor, Ministry of International Trade and Industry, Japan
1998-2002	Partners in Excellence Award, Innovation and Leadership, Partners Health Care System, Boston, MA
1999	**United States Presidential Early Career Award for Scientists and Engineers (PECASE)**
2000	Thomas Alva Edison Patent Award in Emerging Technologies, Princeton University, Princeton, NJ
2001-2007	National Science Foundation CAREER Award
2001-2003	Thomson Leadership Award nomination, Brigham and Women's Hospital
2006-2009	GAANN Fellowship, State University of New York, Stony Brook, NY
2017	Lakehead University Merit Award for Extensive Contribution to Research
2020	Lakehead University Faculty Innovation Award

2020	ISMRM Summa Cum Laude Merit Award (Award to Yurii Shepelytskyi-PhD Student)
	Silver Medal from Hyperpolarized Media Study Group (Award to Yurii Shepelytskyi-PhD Student)
	Invitation to NeuroHighlights session (Award to Yurii Shepelytskyi-PhD Student)
	Ontario Graduate Fellowship Award (Award to Yurii Shepelytskyi-PhD Student)
2021	Lakehead University Merit Award
	Lakehead University Distinguished Researcher Award
2023	NSERC Conference Travel Fund (2023 ISMRM & ISMRT Annual Meeting & Exhibition)
2024	Postdoctoral Fellow Excellence Award 2024 (Award to Yurii Shepelytskyi)
	Rita Undergraduate Research Conference Oral Presentation, First place in the Science and Environmental Studies Faculty category Award to Aaron Hodgson)
	Wiley- Top Downloaded Article [Hyperpolarized 129Xe imaging of the brain: Achievements and future challenges]

Patents:

1. Albert MS, Balamore D, Cates GD, Driehuys B, Happer W, Saam B, Wishnia A. Magnetic resonance imaging using hyperpolarized noble gases. United States Patent 5,545,396. 1996 Aug 13. (Awarded)

2. Albert MS, Balamore D, Cates GD, Driehuys B, Happer W, Saam B, Wishnia A. Magnetic resonance imaging using hyperpolarized noble gases. United States Patent 5,785,953. 1998 Jul 28. (Awarded)

3. Albert MS, Balamore D, Cates GD, Driehuys B, Happer W, Saam B, Wishnia A. Magnetic resonance imaging using hyperpolarized noble gases. United States Patent 5,789,213. 1998 Aug 4. (Awarded)

4. Albert MS, Venkatesh A, Balamore D, Low-Field MRI. United States Patent 6,845,262. 2005 January 18. (Awarded)

5. Albert MS, Balamore D, Cates GD, Driehuys B, Happer W, Saam B, Wishnia A. Magnetic resonance imaging using hyperpolarized noble gases. United States Patent 6,123,919. 2000 Sep 26. (Awarded)

6. Albert MS, Ward C, Venkatesh AK, Method and apparatus for delivering a measured amount of gas. United States Patent 6,467,479 B1. 2002 Oct 22.

7. Albert MS, Spiegelman J, Venkatesh AK, Method and apparatus for delivering and recovering gases. United States Patent 6,471,747 B1. 2002 Oct 29. (Awarded)

8. Albert MS, Balamore D, Cates GD, Driehuys B, Happer W, Saam B, Wishnia A. Magnetic resonance imaging using hyperpolarized noble gases. United States Patent 6,593,144. 2003 Jul 15. (Awarded)

9. Albert MS, Balamore D, Cates GD, Driehuys B, Happer W, Saam B, Wishnia A. Apparatus for magnetic resonance imaging using hyperpolarized noble gases. European Patent, 1,873,544 A3. 2008 Apr 6. (Awarded)

10. Albert MS, Balamore D, Cates GD, Driehuys B, Happer W, Saam B, Wishnia A. Magnetic resonance imaging using hyperpolarized noble gases. European Patent, 0,754,009 B1. 2009 Nov 25. (Awarded)

11. Zheng S, Albert MS, Relaxation-Corrected ECG-Triggering and Navigator-Gating Technique. United States Patent 0,051,979. 2014 Feb 20.

12. Albert MS, Hane FT. *In vivo* Detection of a Xenon-Binding Cage Molecule. US, Canada, Europe. US2017/0348439 A1. 20162017 Dec 7. (Awarded)

13. Patent Submitted: Albert MS. Use of HP Xenon-129 MRI to Measure Xenon Signal Changes in the Brain Tissue Over a Period to Quantitatively Evaluate the Condition of CBF in an Individual. US, Canada, Europe. US 16/388218 (Pending)

14. Albert MS, Hane FT, Shepelytskyi Y, Li T. A method to detect brain functional activities using hyperpolarized 129Xe MR. US 16/747221 (Pending)

15. Albert MS, Shepelytskyi Y, Hane FT, Li T. Use of Octafluorocyclobutane for Lung Imaging. US 62/897,517 (Pending)

16. Albert MS, Hane FT., Shepelytskyi Y., Li T., Grynko V. A method to detect brain functional activities using hyperpolarized 129Xe Time-of-Flight (TOF) Magnetic Resonance Imaging. US 63/062640 (*pending*)

17. Shepelytskyi Y., Albert MS., Hane FT., Li T., Grynko O., Reznik A., Zavislyak IV. X-ray and photodetection using photoinduced magnetoelectric effect. US 63/225,102. (*withdrawn*).

18. Albert MS, Hane FT, Shepelytskyi Y, Li T, Grynko V. A method to detect perfusion and brain functional activities using hyperpolarized 129. Canada. 2020/08/07. (pending)

19. Albert MS. A method to detect altered cerebral blood flow in patients with Alzheimer's disease using hyperpolarized 129Xe MR. Canada. 2018/04/19. (Pending)

20. Albert, MS, Shepelytskyi Y., Hane FT., Li T., Grynko O., Reznik A., Zavislyak IV. Barium Hexaferrite X-ray Detector. (Pending)

21. Albert MS, Shepelytskyi Y, Batarchuk V, Reznik A, Hodgson A. A System and Methods for Organ-Targeted Multinuclear Functional and Molecular Magnetic Resonance Imaging. US, Canada, Europe. (Pending)

Most Significant Scientific Contributions:

I. Co-Invention of Hyperpolarized Noble Gas MRI. With colleagues from Stony Brook University and Princeton University, Dr. Albert created an entirely new field of MR imaging by integrating hyperpolarization of noble gases by spin-exchange optical pumping with in vivo MR imaging. He reported this invention in *Nature* in 1994, a seminal paper that has been cited over 835 times in the literature. HP gas MRI is a non-invasive technique that provides high-resolution images, and provides data on physiological function. This groundbreaking integrative advance has led to the development of many important applications, including those listed below, and it has already been successfully translated for clinical research use for specific conditions.

II. Development of Pulmonary Functional Imaging Using HP Gas MRI. Dr. Albert developed, and continues to refine, the technique of pulmonary functional imaging using HP gas MRI, which caused a paradigm shift in imaging the lungs (e.g., Venkatesh et al. 2003; Tzeng et al. 2007, 2008, 2009; Campana et al. 2009; Lee et al. 2009; Mullaly et al. 2009; Sun et al. 2009). HP gas MRI provided, for the first time, a technique that could image the functional ventilation of the periphery of human lungs, something other imaging modalities cannot do. Furthermore, it does so without radiation, which is particularly important for pediatric imaging, and imaging patients repeatedly over time. Recent improvements Dr. Albert developed include advanced techniques to quantify ventilation distribution and heterogeneity throughout the static ^{3}He MR image, and a technique to provide information about the percent ventilation in specific regions of the lungs.

III. Development of Pulmonary Airway Imaging using Dynamic HP Gas MRI. Standard HP gas MRI of the lungs images the periphery of the lungs. Dr. Albert also developed dynamic airway HP ^{3}He MRI, which is able to image the *airways* of the lungs **(**Booker et al. 2003, Lewis et al. 2005). He achieved this discovery by using fast-gradient-echo pulse sequences when a subject was inhaling gas. He was able to image human lung airways down to the seventh generation.

IV. Development of Ischemic Stroke Imaging Using HP Noble Gas MRI. Dr. Albert developed HP xenon MRI for imaging stroke, which has the potential to produce a rapid and accurate picture of stroke damage by non-invasively tracing where blood flows in the brain. His group has demonstrated that in vivo HP ^{129}Xe MRI is able to detect, with great anatomical specificity, an area of decreased cerebral blood flow induced by experimentally induced stroke in rats. His results demonstrated the feasibility of detecting stroke using HP ^{129}Xe MRI (Zhou et al. 2011). HP ^{129}Xe MRI may be valuable for stroke imaging by providing a complimentary technique that is simpler, more direct, and faster than proton MRI techniques. Faster imaging could help improve clinical outcomes for people suffering an ischemic stroke, where rapid treatment is vital.

V. Development of Functional Imaging of Cerebral Activity Using HP Noble Gas MRI. In preliminary research on using HP xenon MRI for imaging cerebral activity, Dr. Albert imaged a pain response in the cerebral cortex of rats, evoked by injection of capsaicin into the forepaw, which produces a pain stimulus. He demonstrated the first-ever use of HP ^{129}Xe MRI for functional brain imaging of cerebral activity, detecting a significant increase in activity in a part of the brain associated with forepaw stimulation (Mazzanti et al. 2011). Importantly, he was able to

detect this increase *with a single set of images* (BOLD proton fMRI requires many subjects and many signal averages), and he observed a much higher percent increase in signal over baseline than is possible with BOLD fMRI. This could be an important breakthrough, because HP ^{129}Xe MRI provides very high signal in a single-shot experiment.

VI. Development of ^{19}F Inert Fluorinated Gas Lung MRI. Dr. Albert is developing the use of inert fluorinated gases such as perfluropropane (PFP) and sulfur hexafluoride (SF_6) for pulmonary functional imaging (Couch et al. 2014). This technology provides similar SNR and resolution to hyperpolarized gas MRI but does not require the use of an expensive polarizer and expensive enriched isotopes. This technology has the potential to revolutionize the field of lung imaging.

VII. Development of Hyperpolarized ^{129}Xe Biosensor Molecular MR Imaging. Dr. Albert is developing the use of hyperpolarized ^{129}Xe, in combination with chemical exchange saturation transfer (CEST), to perform HyperCEST MR imaging. HyperCEST can enhance the ^{129}Xe MR signal up to a billion times compared to thermally polarized ^{129}Xe. This technology can potentially provide the resolution provided by PET imaging with the superior spatial resolution of MRI. We recently obtained the first ever *in vivo* images of supramolecular cucurbituril cages in the blood vasculature system of a rodent model (manuscript submitted to *Nature Scientific Reports*). This technology has the potential to revolutionize the field of molecular imaging of disease in the body.

VIII. Development of Hyperpolarized ^{129}Xe Functional MRI. For the first time ever, human volunteers have been imaged with Hyperpolarized ^{129}Xe functional MRI (fMRI). Preliminary results have shown that the HP ^{129}Xe fMRI has significant signal enhancement above the conventional proton bold MRI. In addition, for the first time ever, a participant with Alzheimer's disease has been imaged with HP ^{129}Xe fMRI and HP ^{129}Xe MRI. Slower profusion has been observed in Alzheimer's participants relative to healthy volunteers; this could have important implications in the diagnosis and treatment of Alzheimer's and other neurological diseases.

Leadership and Administration:

- Establishment and Director of the Center of Small Animal MRI Research at the Harvard Medical School, a multi-user MRI facility available to the entire Harvard Medical School and interfacing medical community.
    - Raising substantial funding to upgrade the Center's MRI equipment and infrastructure through an NIH-supported Shared Instrumentation Grant, matching funds from Harvard Medical School, and through a partnership with the Neurobiology Department at Harvard.
    - Recruitment and training of users at this MRI facility.
- Secured a 0.2 T Profile MRI system, donated by General Electric Medical Systems.
- Established a Research Agreement with General Electric Medical Systems for pulse sequence development.
- Established a Research Agreement for funding, and an Equipment Loan Agreement, with Amersham Health Inc. for a polarizer for xenon for conducting hyperpolarized gas MRI in

small animals.

- Founder and Director of Hyperpolarized Noble Gas MRI Laboratory. This includes assembling and interdisciplinary group of scientists in engineering, physics, chemistry and medicine.
- Founder and Chair of Hyperpolarized Noble Gas MRI Study Group at the International Society of Magnetic Resonance in Medicine (ISMRM). This study group brings together leading scientists from countries all over the world to meet annually to discuss and plan future developments in the sub-field of hyperpolarized gas MRI research.
- Received funding from Philips Medical Systems for Multi-Nuclear Spectroscopy system and other MRI hardware and software upgrades.
- Supervised Advanced MRI Center construction upgrade.
- MRI safety evaluation for Advanced MRI Center with Emanual Kanal.
- MRI shielding evaluation for Advanced MRI Center with Dennis Presky, MRA, Inc.
- Recruited and trained MR Physicist for Advanced MRI Center.
- Initiated clinical MRI trial with Bracco Diagnostics.
- Co-Chair, Imaging Core Resources Committee, University of Massachusetts Medical School.
- Established industry collaboration and funding from Sepracor Pharmaceuticals and directed clinical trial on testing efficacy of Brovana for COPD using hyperpolarized helium MRI.
- Established industry collaboration and funding from Vertex Pharmaceuticals and directing clinical trial on the repeatability of using hyperpolarized helium MRI for imaging cystic fibrosis.
- Director and establishment of the Advanced MRI Center for research at UMass Medical School.
    - Supervision of siting, power-up, and acceptance testing of the Philips 3T Achieva MRI system for research.
    - Established multi-nuclear imaging and interface on Philips 3T MRI.
    - Developed fMRI program and installed fMRI stimulus hardware and interface.
    - Developed cardiac imaging program.
    - Developed exam cards and MRI protocols for a multitude of imaging applications on the Philips 3T MRI.

- Attracted international scholars from around the world and established international medical fellow and student training program with, and hosted scholars from:
    - Qinghai Medical School and Affiliated Hospital, China
    - Beijing University of Traditional Chinese Medicine, China
    - Seoul University, Korea
    - Tsukuba University, Japan
    - China Academy of Sciences, Wuhan, China
- Director and establishment of the Research MRI Program at the Thunder Bay Regional Research Institute.
    - Supervision of artifact removal renovation of the Philips 3T Achieva MRI system for research.
    - Established multi-nuclear imaging and interface on Philips 3T MRI.
    - Developed fMRI program and installed fMRI stimulus hardware and interface.
    - Developed exam cards and MRI protocols for a multitude of imaging applications on the Philips 3T MRI.
- Member of Senate Undergraduate Studies at Lakehead University
- Member of Animal Care Committee at Lakehead University
- Chair of MRI Research Committee at TBRHRI
- Member of MRI Purchase Committee at Thunder Bay Regional Health Science Center
- Member of Research Operations Selection Committee, TBRHRI

Major Research Interests:

1. Invention and development of Hyperpolarized Noble Gas Magnetic Resonance Imaging
2. Development of materials science applications using hyperpolarized xenon and helium
3. Morphology and functional lung and brain imaging
4. Magnetic resonance imaging methods
5. Molecular imaging using hyperpolarized xenon-129 biosensors for detection of disease

- MRI assessment of a murine model of recessive polycystic kidney disease
- Exploratory MR assessment of multiple sclerosis in the mouse brain

- Cardiac MRI
- Brain fMRI
- Interventional MRI
- Imaging pulmonary disorders using hyperpolarized gas MRI
- Molecular imaging using hyperpolarized xenon biosensors for cancer detection and other diseases
- Imaging pulmonary disorders using inert fluorinated gas MRI

Part II: Research, Teaching, and Clinical Contributions

A. Research Narrative:

Dr. Albert is the co-inventor of hyperpolarized gas MRI and the pioneering scientist who obtained the first ever hyperpolarized noble gas images, of xenon in mouse lungs. He published these groundbreaking results in Nature in 1994; this paper has received 497 citations. Dr. Albert received a U.S. Presidential Award and 9 patents for his work in this area.

Dr. Albert established the Hyperpolarized Noble Gas MRI laboratory, and assembled a multidisciplinary research team at the Brigham and Women's Hospital in 1995 that included engineers, physicians, computer scientists, graduate students, post-doctoral fellows, medical students, and undergraduate students. They have achieved numerous milestones and have become one of the world leaders in this field.

- measured the T1 of 129Xe in blood using hyperpolarized xenon, revealing a value of 4.2 s in venous blood, which increases to 13.5 s in oxygenated blood
- investigated the dynamics of xenon exchange and accumulation in the pulmonary tissues, in live rats
- obtained the first human hyperpolarized noble gas images
- performed extensive investigations to optimize pulse sequences for imaging with hyperpolarized noble gases
- developed a dynamically adaptive MRI method with zoom-in capability and acquired real-time images of the dynamics of gas flow in the lungs of rats
- performed lung imaging experiments using hyperpolarized ^{3}He in human subjects patients,
- developed and implemented a method to measure blood flow in the rat brain using hyperpolarized xenon
- conducted hyperpolarized xenon chemical shift imaging in the rat brain, and
- obtained the first in vivo hyperpolarized helium and xenon images of the lung in rats and humans at the very low magnetic field strength of 15 millitesla
- implemented solid-state diode lasers for converting the polarization apparatus from a laboratory technique into reliable clinical equipment
- obtained the first human airway images by implementing dynamic lung projection imaging
- directly observed bronchoconstriction and airway closure in asthmatics for the first time using this airway imaging technique after a methacholine challenge
- in collaboration with Kenneth Lutchen at Boston University, we used hyperpolarized ^{3}He MRI to image the airways and ventilation in a clinical trial of asthmatic patients

- obtained hyperpolarized ^{3}He ventilation and airway images of a patient with emphysema that had undergone a lung transplant
- in collaboration with Dr. David Sugarbaker at BWH, we used hyperpolarized ^{3}He MRI to explore the disease and treatment progression in mesothelioma patients
- in collaboration with Dr. Edward Lee at Children's Hospital Boston, we used hyperpolarized ^{3}He MRI to study asthmatic children
- in collaboration with Dr. Aaron Allen at the Dana Farber Cancer Institute, we used hyperpolarized ^{3}He MRI for radiation oncology treatment planning in patients with lung cancer
- used hyperpolarized ^{129}Xe to perform brain functional imaging of hypercapnia in a rat model
- demonstrated the first use of HP ^{129}Xe MRI for functional brain imaging of a stimulus evoked pain response in the cerebral cortex of the rat

Upon coming to the University of Massachusetts Medical School in 2006, Dr. Albert again assembled an expert multidisciplinary research group to focus on clinical applications of hyperpolarized noble gas MRI. We are presently:

- imaging stroke using hyperpolarized ^{129}Xe MRI in a rat model in collaboration with Dr. Marc Fisher at UMMS
- in collaboration with Alex Pines at UC Berkeley and Brenton Debouf at the University of Rhode Island, we are developing hyperpolarized xenon biosensors as a molecular imaging agent to detect atherosclerosis, dopamine brain receptors, and cancer
- in collaboration with Mark Madison and Steve Krinzman in the Pulmonary Medicine Division, we are imaging patients with COPD before and after treatment with bronchodilators
- in collaboration with Dr. Brian O'Sullivan in Pediatric Medicine, we are imaging patients with cystic fibrosis before and after treatment with antibiotics and hypertonic saline
- in collaboration with Kenneth Lutchen at Boston University and Mark Madison at UMMS, we are imaging asthmatics before and after acute hospitalization
- in collaboration with Sepracor, Inc., we are exploring the use of hyperpolarized helium to stage the progress of drug treatments for patients with COPD
- in collaboration with Vertex Pharmaceuticals, we are exploring the repeatability of using hyperpolarized helium MRI for imaging cystic fibrosis
- in collaboration with Vertex Pharmaceuticals, we are exploring the use of hyperpolarized xenon MRI for functional imaging of regional brain activation in response to pain

Upon joining the Thunder Bay Regional Research Institute and Lakehead University:

- in collaboration with Dr. Birubi Biman (Respirologist), performed clinical research trials on hyperpolarized gas MRI pulmonary imaging of asthma, COPD, asbestosis, bronchiectasis, and pulmonary infection at the Thunder Bay Regional Research Institute
- in collaboration with Dr. Birubi Biman (Respirologist), developed inert fluorinated gas MRI research trials at the Thunder Bay Regional Research Institute,
- developed and performed inert fluorinated gas MRI on animal models of lung inflammation.

- conducted clinical studies with both hyperpolarized Helium gas and inert fluorinated gases, obtained clinical data for comparison of the two lung imaging techniques.
- developed protocols of brain imaging using HP xenon MRI for rats, and conducted extensive animal experiments to develop this technique.
- initiated HP xenon human brain imaging clinical trials, in order to develop a novel technique that is superior in diagnosing early onset of Alzheimer's disease. To our knowledge, we have
    - obtained the world's first HP xenon brain image from AD patients;
    - potentially discovered a difference in time for xenon to wash out from the brain in healthy subject and AD patient. This difference, possibly due to degraded perfusion in AD patient' brain, has the potential to be devolved into a powerful tool for early brain abnormality diagnosis and stage evaluation.
    - preliminary results have been analyzed and have been published at the 2017 ISMRM international conference.
    - obtained the world's first xenon fMRI images from healthy subjects by direct measuring of the HP Xe wash-in dynamics. Three stimuli were tested using this technique: two rotating colorful visual stimuli, and the fist-clenching motor stimulus.
- conducted successful *in vivo* HyperCEST experiment in rats, and to our knowledge, obtained world's first *in vivo* images of the CB6 biosensors.
- conducted successful detection of colorectal tumor resistivity to 5-fluorouracil using ^{19}F CSI imaging in a rat model.

B. Funding Information:

Past:

1993-1994	Research Grant, National Science Foundation (SGER), Co-P.I., "Magnetic Resonance Imaging with Hyperpolarized 129Xe"
1994-1995	Research Grant, Center for Biotechnology, SUNY Stony Brook, (Innovative Technology Grant), P.I., "Magnetic Resonance Imaging Using Hyperpolarized 129Xe"
1996-1997	Research Grant, NASA/Smithsonian Astrophysics Lab, P.I., "Hyperpolarized Noble Gas MRI and Spectroscopy of Porous Media"
1998-2000	Research Grant, National Science Foundation, P.I., "Magnetic Resonance Imaging and Spectroscopy of Laser-Polarized Noble Gases for Biomedical Geophysics and Materials Science Investigations"
1998-2000	Research Grant, National Institutes of Health (R21), P.I., "Hyperpolarized 129Xe MRI of Brain Function and Pathology".
1998-2000	Research Grant, NSF, "Development of a hyperpolarized 129Xe generation system for enhanced biological MRI".
1998-2000	Biomedical Engineering Research Grant (Whitaker Foundation), P.I., "Magnetic Resonance Imaging Using Hyperpolarized129Xe"
1-2004	Research Grant, NSF, "RF Equipment for Hyperpolarized 129Xe and 3He MRI at Low Field".

1998-2002	Research Grant, NASA, (97-HEDS) P.I., “Hyperpolarized 129Xe MRI of the lungs, brain, and plants". Research Grant, NIH R01, P.I., “Enhanced Physiological MRI Using Hyperpolarized 129Xe”.
2000-2004	Research Grant, NSF, P.I., “Large volume production of hyperpolarized noble gas for biological magnetic research”.
2000-2004	Research Grant, NIH STTR, "Lung RF coils for hyperpolarized gas lung MRI".
2000-2001	Shared Instrumentation Grant, NIH, Co-P.I., “Upgrade of a 4.7T small animal MRI”.
2001-2004	Research Grant, NIH, R21, P.I., “Very low-field hyperpolarized gas magnetic resonance imaging”.
2001-2004	Research Grant, Whitaker Foundation, Co-PI, "Assessment of novel delivery methods for the treatment of malignant gliomas by magnetic resonance imaging".
2001-2007	NSF, CAREER Award, P.I., “Very low-field hyperpolarized gas magnetic resonance imaging”.
1998-2008	Amersham Health, P.I., "Hyperpolarized xenon MRI of the brain".
2008-2009	Research Grant, Bracco Diagnostics, P.I. “A Phase III, Multi-Center, Open-Label Study to Evaluate Safety and Efficacy Of Multihance at the Dose Of 0.10 Mmol/Kg in Magnetic Resonance Imaging of the Central Nervous System in Pediatric Patients”.
2008-2009	Research Grant, NIH-NIDA, R03, Co-investigator. “Imaging of nicotine sensitization in humans: a translational application of fMRI”.
2009-2011	Co-Investigator Hyperpolarized 129-Xenon-based MRI Probes for Brain Injury Project Description: The goal is to synthesize probe molecules that can be used in conjunction with MRI to image the distribution of peripheral benzodiazepine receptors (PBR) in the brains of living animals University of Rhode Island
2010-2011	Co-Investigator RF Interface System and Coil for Multi-Nuclear Lung MR Imaging at 3T Project Description: Recruit subjects ranging from smallest to largest sized lungs to assess extent of coverage of RF coils. Coils to be tested in a clinical setting for electrical National Institute of Health
2010-2011	Principal Investigator Assessing the longer-term stability and quantification of lung ventilation phenotype in cystic fibrosis patients by hyperpolarized helium-3 magnetic resonance imaging Project Description: The major goals of this study are to longitudinally assess changes in the pattern of lung ventilation in cystic fibrosis patients over 28 days by means of hyperpolarized helium-3 magnetic resonance imaging, and to evaluate multiple means of quantifying these images Vertex Pharmaceuticals Incorporated

2013 – 2015 Principal Applicant Comparison of the Effects of a Small Particle Corticosteroid, Alvesco®, to a Larger Particle Corticosteroid on the Small Airway Physiology of Asthmatic Subjects by Hyperpolarized Helium-3 MRI

2013 – 2015 Sunovion Pharmaceuticals, Inc. Clinical Trial
Total Funding - 314,944 (United States dollar)
Portion of Funding Received - 314,944

2012 – 2013 Principal Investigator Hyperpolarized Gas MRI for Collaborative Studies on Asthma
Funding Sources:

2012 - 2013 Canada Foundation for Innovation/ Ontario Research Fund – MEDI Leaders Opportunity Fund
Total Funding - 310,318 (Canadian dollar)
Portion of Funding Received - 310,318

2012 – 2013 Principal Investigator Xemed xenon polarizer
Funding Sources:

2012 - 2013 Ontario Research Fund Research Excellence Funding Total Funding - 1,000,000 (Canadian dollar)

NAG9-1469 (Albert) 09/18/07-09/17/09 1.2 calendar months
NASA $463,302 Direct Costs/ $719,424 Total Costs
Hyperpolarized Noble Gas Magnetic Resonance Imaging
The major goal of this project is to propose ground-based biomedical studies using a new diagnostic technology: magnetic resonance imaging (MRI) and spectroscopy of hyperpolarized noble gases.

R33 EB001689 (Albert) 05/15/03-04/30/10 3.60 calendar months
NIH $1,527,140 Direct Costs/ $2,232,214 Total Costs
Development of Airway Imaging Using HP 3HeMRI
The major goal of this project is to establish HP 3HE MRI as a clinically safe imaging modality that enables us to visualize airway dimensions.

NAG9-1041 (Albert) 09/18/07-09/17/09 1.80 calendar months
NASA $501,359 Direct Costs/ $660,213 Total Costs
Hyperpolarized 129XE MRI of the Brain, Heart, Lung (Augmented with Presidential Award)
The major goal of this project is to The goal of this project is to use this novel imaging and spectroscopy methodology for studying basic morphology and function of the brain, heart and lungs, with the eventual goal of testing the feasibility of using HypX-MRI for diagnostic purposes.

Pilot Research Prog. (Albert) 10/1/07 – 09/31/09
UMASS-WPI $200,000 Direct costs
Establishing New Avenues for Excellence in Stroke Imaging, Diagnostics, and Staging.
The major goal of this project is to use hyperpolarized xenon MRI to develop imaging for diagnosis and staging of stroke in animal models.

ASRC954/CT80024 Albert (PI) 05/27/08-12/31/09 1.20 calendar months

Sepracor $385,822 Direct Costs/ $488,636 Total Costs
Assessment of (R3,R)-Formoterol and (S,S)-formoterol (Brovana) for COPD using hyperpolarized 3He MRI.
To provide a highly sensitive, yet safe, method for establishing the clinical efficacy of the pulmonary pharmaceuticals using HP Gas MRI as the standard.

R01HL076778-04 (Lutchen) 12/01/04 – 01/31/10 1.20 calendar months
BU/NIH $1,758,936 Direct Costs, $2,206,587 Total Costs
Subcontract (Sun) $1,023,050 Total Costs
Airway Reactivity and Heterogeneity in Asthma
We propose to establish HP 3He MRI as a clinically safe imaging modality that enables us to visualize ventilation function and airway constriction.
Role: Co-investigator

CCTS Pilot Project Program (Albert) 05/1/08 – 06/30/10
UMASS $150,000 Direct costs
A New Technique for the Understanding and Diagnosis of Chronic Obstructive Pulmonary Disease (COPD):
Hyperpolarized ^{3}He MR Imaging
The major goal of this project is to perform translational research for the understanding, diagnosis and staging of COPD using hyperpolarized helium MRI

R43 NS065773-01A1 (Celver) 09/01/09- 08/31/11 0.6 calendar months
URI/NIH $313,201 Direct Costs/ $393,501 Total Costs
Subcontract (Albert) $60,852 Direct Costs/ $100,000 Total Costs
Hyperpolarized 129-Xenon-based MRI Probes for Brain Injury
The goal is to synthesize probe molecules that can be used in conjunction with MRI to image the distribution of peripheral benzodiazepine receptors (PBR) in the brains of living animals.
Role: Subcontract PI

VERTEX (Albert) 10/1/09-09/30/10 1.20 Calendar months
Vertex Pharmaceuticals $66,667 Direct Costs/ $90,000 Total Costs
Hyperpolarized Xenon functional magnetic resonance imaging in evaluating the perception of pain and analgesia in rats.
Investigator will construct apparatus and conduct Xe fMRI of rats to establish patterns of pain, analgesia and naïve administration of analgesic to determine if fMRI can be used as a quantitative measure for pain and analgesia, as judged by dose responsiveness of HP-Xe fMRI patterns.

R21 EB007767 (Gounis) 08/01/2007-07/31/10 0.24 calendar months
NIH $746,475 Direct Costs/ $1,213,023 Total Costs
Mechanical Clot Obliteration for the Treatment of Stroke
The major goal of this project is to develop and characterize a medical device intended to treat acute ischemic stroke outside of the 3-hour window for pharmacological treatment. Experiments in this work aim to develop an ultrasonic thrombectomy wire that produces cavitation streaming leading to obliteration of the fibrin matrix that binds occlusive clots.

Role: Co-investigator

VERTEX (Albert) 06/27/2010-06/26/2011 1.20 Calendar months
Vertex Pharmaceuticals $109,000 Direct Costs/ $137,340 Total Costs
Assessing the longer-term stability and quantification of lung ventilation phenotype in cystic fibrosis patients by hyperpolarized helium-3 magnetic resonance imaging
The major goals of this study are to longitudinally assess changes in the pattern of lung ventilation in cystic fibrosis patients over 28 days by means of hyperpolarized helium-3 magnetic resonance imaging, and to evaluate multiple means of quantifying these images.

NIH (SBIR-Hashoian) 08/01/10-07/31/11 1.20 calendar months
Clinical MR Solutions $62,341 Direct Costs/ $160,000 Total costs
RF Interface System and Coil for Multi-Nuclear Lung MR Imaging at 3T
We will recruit subjects ranging from the smallest to the largest size lungs to assess the extent of coverage of the RF coils, to ensure proper coverage for hyperinflated lungs. The coils will be tested in the clinical setting for electrical performance, SNR, and image quality. We will evaluate the quality of the hyperpolarized noble gas lung images resulting from the coils and score them by lung region for overall image quality, based upon visual appearance of resolution, clarity, and homogeneity.
Role: Subcontract PI

Title of Grant: Hyperpolarized Xenon MRI Biosensors Development Program
Source: NSERC: Discovery
Dollars Awarded: $205,000 total
Name of P.I.: Mitchell Albert
Project Objective: we seek to develop, validate, and optimize HP ^{129}Xe biosensor MRI to achieve the equivalent sensitivity of PET imaging, but with the improved spatial and temporal resolution of MRI, and without the ionizing radiation of PET.
We will pursue our objectives with the four following projects:
Project 1: We will synthesize and study a series of novel cryptophane-cage molecules.
Project 2: We will optimize xenon-cage cryptophane molecules for HyperCEST MR imaging using in vitro studies.
Project 3: We will synthesize cryptophane-affinity peptide conjugates to act as xenon imaging biosensors of HER2 status, and we will optimize these conjugates using in vitro studies.
Project 4: We will test HP xenon biosensor MRI in vivo using breast cancer cell lines.
Dates of Approved Project: 2012-2017 (5 years)
HQP Overlap: 0%
Budgetary Overlap: 0%
Grant Manager: Andrew Hacquoil

Title of Grant: Hyperpolarized Gas MRI for Collaborative Studies on Asthma
Source: Canada Foundation for Innovation/ Ontario Research Fund – Ministry of Economic Development and Innovation
Dollars Awarded: $ 310,318 total
Name of P.I.: Mitchell Albert

Project Objective: The objectives of this research program are to use the combined technologies of hyperpolarized (HP) ^{3}He MRI, made possible by the requested equipment, and Selected Ion Flow Tube Mass Spectrometry (SIFT-MS), to achieve the following: perform direct functional ventilation imaging of the lungs to assess the efficacy of hydrogen sulfide (H_2S) therapy for asthma and (2) identify breath H_2S level as a novel biomarker for early diagnosis and monitoring of asthma. No other research group in the world is presently capable of pursuing these objectives.
Dates of Approved Project: 03/2012-02/2013 (1 year)
HQP Overlap: 0%
Budgetary Overlap: 0%
Grant Manager: Andrew Hacquoil

Title of Grant: Comparison of the Effects of a Small Particle Corticosteroid, Alvesco®, to a Larger Particle Corticosteroid on the Small Airway Physiology of Asthmatic Subjects by Hyperpolarized Helium-3 MRI
Source: Sunovion Pharmaceuticals, Inc.
Dollars Awarded: $ 314,944 total
Name of P.I.: Mitchell Albert
Project Objective: Because HP ^{3}He MRI can measure even small changes in regional ventilation, we hypothesize that this technique will be more sensitive than spirometry in objectively detecting the beneficial effects of ciclesonide on small airway physiology of asthmatic subjects. Furthermore, we predict that the superiority of Alvesco to another larger particle inhaled corticosteroid will be evident using this technique.
Dates of Approved Project: 05/2013-04/2014 (1 year)
HQP Overlap: 0%
Budgetary Overlap: 0%
Grant Manager: Andrew Hacquoil

Title of Grant: NSERC CREATE in Medical Imaging Detector Technologies
Source: NSERC Collaborative Research and Training Experience (CREATE) (Co-Investigator)
Dollars Awarded: $1,647,075 total, $200,000 total (Albert funded portion)
Name of PI: Alla Reznik
Project Objective: To develop a training program for graduate students in medical imaging technologies, and a summer school of medical imaging (SSMI) for undergraduates.
Dates of Approved Project: 2012-2018 (6 years)
HQP Overlap: 0%
Budgetary Overlap: 0%
Grant Manager: Andrew Hacquoil

Title of Grant: Using 19F MRI for 5FU of Tumours
Source: Northern Ontario Academic Medicine Association (NOAMA) (Co-investigator)
Dollars Awarded: $50,000
Name of PI: Eric Davenport
Project Objective: To use 19F MRI for detection of tumor implants in a murine model of colorectal cancer and for monitoring of treatment using 5-FU.
Dates of Approved Project: 2014-2015
HQP Overlap: 0%

Budgetary Overlap: 0%

Title of Grant: Sputum Analysis in Asthma
Source: Northern Ontario Academic Medicine Association (NOAMA) (Co-investigator)
Dollars Awarded: $70,000
Name of PI: Birubi Biman
Project Objective: To develop and conduct sputum analysis for biomarkers of inflammation in patients with asthma and to correlate these finding with the results of hyperpolarized gas MRI lung ventilation studies.
Dates of Approved Project: 2014-2015
HQP Overlap: 0%
Budgetary Overlap: 0%

Title of Grant: Xemed xenon polarizer
Source: Ontario Research Fund for Research Excellence Funding
Dollars Awarded: $1,000,000 total
Name of P.I.: Mitchell Albert
Project Objective: To revolutionize diagnostic imaging and position Ontario as the global leader in hyperpolarized noble gas MRI thereby advancing our province's research and innovation agenda.
Dates of Approved Project: 03/2012-02/2013 (1 year)
HQP Overlap: 0%
Budgetary Overlap: 0%
Grant Manager: Murray Plitcha

Title of Grant: Development of hyperpolarized 129Xe gas magnetic resonance imaging based Alzheimer's disease early detection molecular probe
Source: BrightFocus Foundation (Postdoctoral Fellowship Award)
Dollars Awarded: $100,000
Name of P.I.: Francis Hane
Name of Mentor: Mitchell Albert
Project Objective: To develop HP ^{129}Xe biosensor MRI for detecting and quantifying amyloid oligomers to clarify mechanisms of AD progression and facilitate development and repositioning of effective drugs for treating AD.
Dates of Approved Project: 06/2015-05/2017 (2 years)
HQP Overlap: 0%
Budgetary Overlap: 0%
Grant Manager: Andrew Hacquoil

Title of Grant: Novel technology for early detection of Alzheimer's disease - clinical prototypes
Source: Weston Brain Institute - Transformational Research
Dollars Awarded: $ 286,510 (awarded)
Name of P.I.: Mitchell Albert
Project Objective: To develop HP ^{129}Xe functional MR brain imaging for humans to provide enhanced sensitivity (relative to traditional proton-based MR brain imaging methods) for

assessment of neural function in patients with Alzheimer's Disease to evaluate the efficacy of drug treatments.
Dates of Project: 05/2017 – 08/2017
HQP Overlap: 0%
Budgetary Overlap: 0%
Grant Manager: Andrew Hacquoil

Title of Grant: Testing of Hyperpolarized (HP) Gas MRI-based Xenon Cage Amyloid Ligand (XCAL) Biosensor on Alzheimer's Disease Model
Source: NOAMA AHSC AFP Innovation Fund 2015
Dollars Awarded: $48,970
Name of P.I.: Ayman Hassan
Project Objective: To image amyloid oligomers in animal model of AD using HP ^{129}Xe MRI-based biosensors
Dates of Approved Project: June 1, 2016 - June 1, 2018
HQP Overlap:0%
Budgetary Overlap:0%
Grant Manager: Terry Fode

Title of Grant: Comparison of Xenon-129 MRI and Inert Fluorinated Gas MRI in COPD
Source: NOAMA AHSC AFP Innovation Fund 2015
Dollars Awarded: $49,265
Name of P.I.: Birubi Biman
Project Objective: To directly compare hyperpolarized gas and inert fluorinated gas MRI in participants with COPD
Dates of Approved Project: April 1, 2016- April 1, 2018 (Extend to Sept 30, 2020)
HQP Overlap:0%
Budgetary Overlap:0%
Grant Manager: Terry Fode

Title of Grant: Hyperpolarized Noble Gas MRI Detection of Radiation Induced Lung Injury
Source: NOAMA Clinical Innovation Fund
Dollars Awarded: $49,573
Name of P.I.: Dr. Kevin Ramchandar
Project Objective: Develop an imaging technology called HP 129Xe MRI for delineating regions of the lung in humans that are non-functional versus those that are viable to better inform beam-planning strategies, in an attempt to reduce Radiation Induced Lung Injury in lung cancer patients
Dates of Approved Project: May 1, 2016 – November 1, 2017 (Extend to June 30, 2020)
HQP Overlap: 0%
Budgetary Overlap: 0%
Grant Manager: Terry Fode

Title of Grant: CIHR post-doctoral fellowship
Source: Canadian Institutes for Health Research (CIHR)
Dollars Awarded: $135,000

Name of P.I.: Francis Hane
Project Objective: Development of hyper-polarized 129Xe gas magnetic resonance imaging based Alzheimer's disease early detection biosensor
Dates of Approved Project: July 2017 – July 2020
HQP Overlap: 0%
Budgetary Overlap: 0%
Grant Manager: Lakehead University

Title of Grant: Advanced Materials and Technologies for Medical Imaging Detectors and Techniques
Source: Mathematics of Information Technology and Complex Systems (MITACS)
Program: MITACS Accelerate
Dollars Awarded: $373,333, $10,000 (Albert funded portion)
Name of P.I.: Dr. Alla Reznik
Dates of Approved Project: 2018 – 2020

Title of Grant: Hyperpolarized Xenon-129 Functional Magnetic Resonance Imaging of Healthy Volunteers and Participants with Alzheimer's Disease
Source: NOAMA
Dollars Awarded: $49,812/ 2 years
Name of P.I.: Dr. Ayman Hassan
Dates of Approved Project: March 1, 2018 – March 1, 2020 (Extended to July 30, 2021)
Grant Manager: TBRHRI

CURRENT

Title of Grant: NSERC Discovery Grant - Hyperpolarized Xenon MRI Biosensors Development Program
Source: NSERC
Dollars Awarded: $225,000
Name of P.I.: Dr. Mitchell Albert
Project Objective: The aims of our objectives are to perform the basic research and engineering required to develop a series of novel functionalized supramolecular-cage molecules that are specifically functionalized for binding to disease tissue and test them first in vitro, and then in vivo in live animals.
Dates of Approved Project: April 2017 to April 2022
HQP Overlap: 0%
Budgetary Overlap: 0%
Grant Manager: Lakehead University

Title of Grant: Ontario Network of Excellence for Translation of Hyperpolarized MRI Technologies
Source: Ontario Research Fund – Research Excellence
Dollars Awarded: $2,415,470.00
Name of PI: Dr. Mitchell Albert (Co-PI) with Dr. Charles Cunningham
Dates of Approved Project: April 1, 2017 – March 31, 2023

Grant Manager: Lakehead University

Title of Grant: Hyperpolarized and Inert Gas MRI Study to Evaluate the Structure and Function of Lungs in Individuals Post-COVID-19 Infection
Source: Lakehead University SRC CIHR COVID19 Strategic Research Development Fund
Dollars Awarded: $ 10,000 (awarded)
Name of P.I.: Mitchell Albert
Project Objective: Investigating the effects of COVID-19 in patients with chronic lung disease including asthma and COPD will help to establish more effective strategies of treatment.
Dates of Project: 07/2020 – 03/2021 (Extended to June 30th, 2021)
HQP Overlap: 0%
Budgetary Overlap: 0%
Grant Manager: Lakehead University

Title of Grant: Lung Structure-Function in Survivors of Mild and Severe COVID-19 Infection: Xe MRI and CT for Rapid Evaluations and Next-wave Healthcare Planning
Source: Ontario Ministry of Health
Dollars Awarded: $ 730,000
Name of P.I.: Dr. Mitchell Albert (Co-PI) with Grace Parraga
Project Objective: novel MRI and CT images of COVID-19 survivors across five centres of excellence in Ontario to quantitatively evaluate post-infection lung abnormalities. This research will shed light on the long-term effects of COVID-19 to assist with planning for the health services needs of COVID-19 survivors.
Dates of Project: 04/2020 – 04/2022
HQP Overlap: 0%
Budgetary Overlap: 0%
Grant Manager: Lakehead University

Title of Grant: Hyperpolarized 129Xe Cerebral Perfusion MRI imaging Development, Fellowship
Source: Mathematics of Information Technology and Complex Systems (MITACS) Elevate Fellowship.
Total Funding - 120,000 **Portion of Funding Received** - 120,000 **Funding Competitive**?: Yes
Name of P.I.: Dr. Mitchell Albert
Dates of Project: July 2021 to July 2023

Title of Grant: The Canadian Respiratory Research Network Long COVID-19 Study
Source: CIHR Operating Grant: Emerging COVID-19 Research Gaps and Priorities Funding Opportunity
Dollars Awarded: $ 500,000
Name of P.I.: Dr. Mitchell Albert (Co-PI) with Dr. Andrea Gershon
Dates of Project: 1 year (start date TBD)

Title of Grant: Enhanced Sensitivity HP-gas MRI/PET Dual Modality Imaging for Alzheimer's Disease Detection
Source: NSERC Alliance
Dollars Awarded: $230,000

Name of P.I.: Dr. Alla Reznik
Date of Approved Project: January 2022 to January 2025
Grant Manager: Lakehead University

Title of Grant: Functional and Molecular Imaging using Hyperpolarized Xenon- 129 Magnetic Resonance Imaging
Source: Mitacs Accelerate
Dollars Awarded: $720,000.00
Name of P.I: Dr. Mitchell Albert
Date of Approved Project: October 24, 2022 to December 23, 2025
Grant Manager: Lakehead University

Title of Grant: Vascular Cognitive Impairment Detection Using Hyperpolarized Xenon-129 Brain MRI Imaging
Source: NOAMA- CIOF
Dollars Awarded: $49,036.00
Name of P.I: Dr. Ayman Hassan
Date of Approved Project: March 30, 2023 to March 30, 2025
Grant Manager: Lakehead University

Title of Grant: Investigation of the novel photoinduced magnetoelectric effect in magnetic material, Grant
Source: NSERC RTI
Dollars Awarded: $152,703.00
Name of P.I: Dr. Mitchell Albert
Date of Approved Project: April 2023 to March 30, 2024
Grant Manager: Lakehead University

Title of Grant: Intelligent PET Low-Dose Brain Imaging
Source: INOVAIT
Dollars Awarded: $1,985,330.94
Name of P.I: Michael Waterston
Date of Approved Project: 2024 to 2026

D. Report of Teaching:

1. Local Contributions:

Hospital Courses:

	Lecturer in Magnetic Resonance Imaging Using Hyperpolarized Xenon, Technologists Training Program, Continuing Education Seminar for Radiographers, Brigham and Women's Hospital, Boston, MA
2000	Lecturer in MR Physics Review, Residents Review for Board Exams, University of Massachusetts Medical School

2009 Lecturer in MR Physics Course, Residents Review for Board Exams, University of Massachusetts Medical School

2010 Lecturer in MR Physics Course, Residents Review for Board Exams, University of Massachusetts Medical School

Local Universities/Colleges:

1987-1988 Teaching Assistant, Department of Chemistry, State University of New York, Stony Brook, NY

1992 Teaching Assistant, Department of Chemistry, State University of New York, Stony Brook, NY

1993

Physics/Engineering/Technology, Nassau Community College, NY

1994 Lecturer in Electricity and Magnetism to Undergraduate Students in Physics, State University of New York, Purchase, NY

1994 Lecturer in Magnetic Resonance Imaging to Undergraduate Students in Chemistry, State University of New York, Purchase, NY

1996 Tutor in Chemistry, Physics and Pre-Medicine, Harvard and Radcliffe Cabot House, Harvard University, Cambridge, MA

2011-2012 Professor of MRI Physics and Medical Applications, Chemistry Department, Lakehead University, Thunder Bay, ON.

2012 Professor of Introduction to Medical Imaging, Chemistry Department, Lakehead University, Thunder Bay, ON.

2013-present Professor of CHEM 4516/5516 MRI Physics and Medical Applications, Chemistry Department, Lakehead University, Thunder Bay, ON.

2013-present Professor of CHEM 4515/5515 Introduction to Medical Imaging, Chemistry Department, Lakehead University, Thunder Bay, ON.

2020-present Professor of CHEM4111 Research Seminars, Chemistry Department, Lakehead University, Thunder Bay, ON.

2020-present Professor of CHEM4901 Honours Thesis, Chemistry Department, Lakehead University, Thunder Bay, ON.

Invited Teaching Presentations:

Hospital:

1995 Lecturer, Department of Radiology, Brigham and Women's Hospital MR Physics Research Seminar Series, "Hyperpolarized Xenon Magnetic Resonance Imaging"

1999 Lecturer, Center for Engineering in Medicine, Harvard Medical School, Boston, MA

2001 Department of Radiology, First Monday Seminars, "The Hype in Hyperpolarized Gas MRI: Dynamic Imaging of the lungs and Brain";
Harvard Medical School, Boston, MA, Neuroscience Retreat, “Hyperpolarized Xenon MRI of the Brain”

Brigham and Women's Hospital, Department of Radiology, "Hyperpolarized Gas MRI of the Lungs and Brain"

2006 University of Massachusetts Medical School, Department of Radiology, "Hyperpolarized Noble Gas MRI of the Lungs and Brain"

2007 University of Massachusetts Medical School, Department of Radiology, "Hyperpolarized Gas MRI for Pulmonary and Neuro Imaging"
Brigham and Women's Hospital, Department of Radiology, "Hyperpolarized Gas MRI of the Lungs"

University of Massachusetts Medical School, Department of Radiology, "Pulmonary and Neuro-Imaging Using Hyperpolarized Gas MRI"

2011 Thunder Bay Regional Research Institute, "Hyperpolarized Gas MRI of the lungs and Brain"

2012 Thunder Bay Regional Research Institute, "Hyperpolarized Gas MRI of the lungs and Brain"

Lakehead University, "Hyperpolarized Gas MRI of the lungs and Brain"

2013 Thunder Bay Regional Research Institute, "Hyperpolarized and Inert Gas MRI of the lungs and Brain"

Lakehead University, "Hyperpolarized and Inert Gas MRI of the lungs and Brain"

2014 Thunder Bay Regional Research Institute, "Hyerpolarized and Inert Gas MRI of the lungs and Brain"

Lakehead University, "Hyperpolarized and Inert Gas MRI of the lungs and Brain"

2015 Lakehead University, "Hyperpolarized and Inert Gas MRI of the lungs and Brain"

2017 Thunder Bay Regional Health Research Institute Monthly Seminar Series, "Hyperpolarized Noble Gas Applications and In Vivo Xenon-129 Biosensor Detection"

Lecturer at Jagiellonian University, Krakow, "Hyperpolarized and Inert Gas MRI and Xenon Molecular MRI"

Lecturer at Masaryk University in Brno, CZ with the Central European Institute of Technology (CEITEC), "Hyperpolarized and Inert Gas MRI and Xenon Molecular MRI"

2018 Lecturer at Jagiellonian University, Krakow, "Hyperpolarized and Inert Gas MRI and Xenon Molecular MRI"

Advisory and Supervisory Responsibilities:

1999- Mentoring fellows, graduate and undergraduate students (Biomedical Engineering) in the Hyperpolarized Noble Gas Laboratory, 10 h/week

Names of advisees or trainees

Undergraduate Senior Thesis Research Student Supervision (n = 47):

Duration Of Training (years)	Name	Current Position
1	Anastasia Bilek,	Graduate Student
1	Ramon Carpentar,	Graduate Student
1	Rosalynn Avakian,	Graduate Student
1	Malik A. King ,	Graduate Student
1	Sumit Jerath,	Graduate Student
1	David Bakhash,	Graduate Student
1	Chang K. Suh	Graduate Student
1	Gabriel Anderson	Graduate Student
1	Linh Le	Software Engineer, Mathworks, MA
1	Jose Otero	Graduate Student
1	Luke Tomycz	Medical School Student
1	Carol Pestien	Graduate Student
1	Eugene Lim	Graduate Student
1	Angela Tooker	Graduate Student, Cal Tech
1	Tina Lewis	Graduate Student
1	Jason Light	Medical School Student
1	Michael Stais	Graduate Student
1	Ajna Borogovac	Graduate Student
1	Chang W. Foo	Graduate Student
1	Sameer Doshi	Medical School Student, Rutgers
1	Ling Chen	Dental School Student
1	Allsion Bell	Graduate Student

At Lakehead University and TBRHRI

1	Hanna Aalto	Undergraduate Student
2	Camryn Newman	Undergraduate Student
3	Braeden Prete	Undergraduate Student
2	Ashlyn Kopanski	Undergraduate Student
1	Mehran Masoom	Undergraduate Student
3	Peter Smylie	Undergraduate Student
3	Krista Dowhouse	Undergraduate Student
2	Jordan Lovis	Undergraduate Student
2	Jordan Wentzell	Undergraduate Student
2	Thomas Sitter	Undergraduate Student
1	Christine Boissy	Undergraduate Student
2	Andrew Templeman	Undergraduate Student
3	Chris Viel	Undergraduate Student

1	Chris Syposz	Undergraduate Student
2	Steven Engler	Undergraduate Student
1	Laura Omeljaniuk	Undergraduate Student
1	Christian Mauro	Undergraduate Student
1	Stefanie Perrier	Undergraduate Student
1	Zachary Cordingley	Undergraduate Student
2	Sarah Yeo	Undergraduate Student
1	Skye Dusolt	Undergraduate Student
1	Mihnea Constantin	Undergraduate Student
1	Aaron Hodgson	Undergraduate Student
1	Antal Halen Kovacs	Undergraduate Student
1	Madeline Rapley	Undergraduate Student

Graduate Student Dissertation Research Supervision (n = 2):

Duration Of Training (years)	Name	Current Position
2	Daniel Kacher, M.S.	Clinical Engineer, MRI Division, BWH
4	Lei Zhao, Ph.D.	Vice President, MRI Scanner Company, China
4	Arvind Venkatesh, Ph.D.	Electrical Engineer, Custom One Design, MA
2	Peter Velikin, M.S.	Electrical Engineer
2	Gabriel Gomez, M.S.	Electrical Engineer, Teradyne, MA
2	Adelaide Zhang, M.S.	Electrical Engineer, Motorola, WI
2	Masaki Horii, M.S.	Ph.D. Graduate Student
2	Angela Tooker, M.Eng.	Ph.D. Graduate Student, CalTech
1	Erin McKinstry, M.S.	Biomedical Engineer
2	Yang-Sheng Tzeng, Ph.D.	R&D Scientist, Innov-X Systems
2	James Chen, M.S.	Ph.D. Graduate Student, MIT
3	Ronn Walvick, Ph.D.	Ph.D. Graduate Student, WPI
3	Ali Bourisly, Ph.D.	Ph.D. Graduate Student, WPI
2	Paul Desari, Ph.D.	Ph.D. Graduate Student, WPI
1	Linxi Shi, M.S.	M.S. Graduate Student, WPI

At Lakehead University and TBRHRI

1	Rubiya Mohammed (Current)	Ph.D. Graduate Student, LU
5	Vira Grynko	Ph.D. Graduate Student, LU
3	Yurii Shepelytskyi	Ph.D. Graduate Student, LU
1	Kyle Fediuk	MSc. Graduate Student, LU
2	Alanna Wade	MSc. Graduate Student, LU
2	Marcus Couch	Ph.D. Graduate Student, LU
2	Sana Albhari	MSc. Graduate Student, LU
2	Tao Li	MSc. Graduate Student, LU

1	Gowthan Gadjuwada	MSc. Graduate Student, LU
1	Avner Fitter	MSc. Graduate Student, LU

Postdoctoral Research Fellow Supervision (n = 17):

Duration Of Training (years)	Name	Current Position
2	Kuniyoshi Sakai, Ph.D.	Associate Professor, Tokyo University, Japan
1	Toru Inomata, Ph.D.	Research Associate, Osaka University, Japan
1	Luping Li, Ph.D.	Research Fellow, Northwestern University, IL
1	Chih-Liang Chin, Ph.D.	Sr Research Scientist, Abbott Pharmaceuticals
1	Svetlana Egorova, Ph.D.	Research Fellow, MRI Division, BWH
1	Lyubov Kubatina, M.D.	Nurse Assistant, MacLean Hospital
2	Kwan-Soo Hong, Ph.D.	Professor, Korea Science Institute
3	Mary Mazzanti, Ph.D.	MR Technologist
3	Xin Zhou, Ph.D.	Research Fellow, UC Berkeley
3	Xiangzhi Zhou, Ph.D.	Research Fellow, Northwestern University, IL
2	Haihua Bao, M.D.	Professor of Radiology, Qinghai Univ, China
1	Guoen Jin, M.D.	Professor of Medicine, Qinghai Univ, China
1	Guoyuan Li, M.D.	Medical Oncologist, Qinghai Hospital, China

At Lakehead University and TBRHRI

1	Viktoriia Batarchuk Ph.D. (Current)	Postdoctoral Fellow, Lakehead University
1	Yurii Shepelytskyi Ph.D. (Current)	Postdoctoral Fellow, Lakehead University
1	Vira Grynko Ph.D. (Current)	Postdoctoral Fellow, Lakehead University
2	Iain Ball, Ph.D.	Postdoctoral Fellow, TBRHRI
3	Matthew Fox, Ph.D.	Postdoctoral Fellow, TBRHRI
1	Karen Davenport, Ph.D.	Postdoctoral Fellow, TBRHRI
4	Francis Hane, Ph.D.	Postdoctoral Fellow, Lakehead University

Associate Scientist Supervision (n = 1):

1	Alexei Ouridov	Associate Scientist, TBRHRI

2. Regional, National, and International Contributions:

Invited Presentations:

Regional (n = 49):

1995 Brigham and Women's Hospital, MRI Division, Boston, MA, "Hyperpolarized 129Xe MRI".

1996	Children's Hospital, Department of Radiology, Boston, MA, "MRI of Hyperpolarized Xenon: Forging a New Diagnostic Tool".
1997	Massachusetts General Hospital, NMR Imaging Center, Charleston, MA, "MRI with Hyperpolarized Noble Gases: Prospects for Brain Imaging"
	Massachusetts General Hospital, Neuroradiology Department, Boston, MA, "MRI with Hyperpolarized Noble Gases: Prospects for Brain Imaging".
1998	Beth Israel Deaconess Medical Center, Department of Radiology, "Hyperpolarized Noble Gas Lung MRI".
1999	Brigham and Women's Hospital, Department of Radiology, "Dynamically adaptive Hyperpolarized Noble Gas MRI".
	Harvard Medical School, Department of Medicine, "Dynamic Hyperpolarized Noble Gas MRI".
2000	Harvard Medical School, Department of Medicine, "Hyperpolarized Noble Gas MRI".
2001	Harvard Medical School, Department of Medicine, "Hyperpolarized Noble Gas MRI".
2002	Boston University, Department of Biomedical Engineering, "Hyperpolarized Noble Gas MRI".
	University of Massachusetts, Department of Radiology, "Magnetic Resonance Imaging of Hyperpolarized Gases".
2003	WBZ Ch.4 news, "New Lung MRI", Boston, MA
2004	Beth Israel Deaconess Medical Center, Department of Radiology, "Hyperpolarized Noble Gas MRI of the Lung".
2005	Center for Neurological Imaging, University of Massachusetts, "Hyperpolarized Gas MRI of the Lungs and Brain".
2006	Harvard Medical School, Boston, MA, Neuroscience Retreat, "Hyperpolarized Xenon MRI of the Brain".

2006	Brigham and Women's Hospital, Department of Radiology, "Hyperpolarized Gas MRI of the Lungs and Brain".
	University of Massachusetts Medical School, Department of Radiology, "Hyperpolarized Noble Gas MRI of the Lungs and Brain".
2007	University of Massachusetts Medical School, Department of Radiology, "Hyperpolarized Gas MRI for Pulmonary and Neuro Imaging".
2007	Brigham and Women's Hospital, Department of Radiology, "Hyperpolarized Gas MRI of the Lungs".
2008	University of Massachusetts Medical School, Department of Radiology, "Hyperpolarized Gas MRI for Pulmonary and Neuro Imaging".
2009	University of Massachusetts Medical School, Department of Radiology, "Pulmonary and Neuro-Imaging Using Hyperpolarized Gas MRI".
2011	Thunder Bay Regional Research Institute, “Hyperpolarized Noble Gas MRI of the Lungs and Brain”.
2012	Thunder Bay Regional Research Institute, “Hyperpolarized Noble Gas MRI of the Lungs and Brain”.
	Lakehead University, “Hyperpolarized Noble Gas MRI of the Lungs and Brain”.
2013	Thunder Bay Regional Research Institute, “Hyperpolarized Noble Gas MRI of the Lungs and Brain”.
	Lakehead University, “Hyperpolarized Noble Gas MRI of the Lungs and Brain”.
2014	Thunder Bay Regional Research Institute, “Hyperpolarized Noble Gas and Inert Gas MRI of the Lungs and Brain”.
	Lakehead University, “Hyperpolarized Noble Gas and Inert Gas MRI of the Lungs and Brain”.
	Lakehead University Gairdner Lecture High School Series Speaker, “Hyperpolarized Noble Gas and Inert Gas MRI of the Lungs and Brain”.

Confederation College, “Pulmonary Functional Imaging Using Hyperpolarized and Inert Gas MRI”.

Invited lecture at Lakehead Chapter of the Professional Engineers Ontario, 52nd Engineering and Technology Conference, “Hyerpolarized and Inert Gas MRI of the Lungs and Brain”.

2015 Lakehead University Gairdner Lecture High School Series Speaker, “Hyperpolarized Noble Gas and Inert Gas MRI of the Lungs and Brain”.

2016 Lakehead University Research & Innovation Week - IGNITE, Pecha Kucha Series “Hyperpolarized Gas Magnetic Resonance Imaging”.

Lakehead University Gardiner Lecture High School Series Speaker, “Hyperpolarized Noble Gas and Inert Gas MRI of the Lungs and Brain”

Thunder Bay Regional Research Institute Research and Innovation Week - “Hyperpolarized and Inert Gas MRI and Xenon Biosensor Molecular MR Imaging”

2017 Lakehead University Research and Innovation Week - Celebrating our Authors Presentation “Hyperpolarized and Inert Gas MRI: Theory and Applications in Research and Medicine”

2018 Invited Speaker at Lakehead Neuroscience Interest Group (NeuRIG) – February 15, 2018; *Neuroimaging with Hyperpolarized Xenon and Xenon Biosensor Molecular MRI*

Invited Speaker at Lakehead Biology Seminar Series – March 2, 2018; *Biological Applications of Hyperpolarized Gas MRI*

2019 Invited Speaker for the Lakehead University Pre-Med Society – November 21 2019; *Pulmonary and Neuro Imaging with Hyperpolarized Xenon and Xenon Biosensor Molecular MRI*

2020 Fort William First Nation Reserve Community Information Session – March 2, 2020; *Pulmonary Imaging with Hyperpolarized and Inert Gases*

Lakehead University Gairdner Foundation Day Lecture High School Series Speaker – March 5, 2020; *Hyperpolarized Noble Gas and Inert Gas MRI of the Lungs and Brain*

2021 CBC News Interview, Thunder Bay. Making the invisible, visible: Ont. researchers use new imaging technique to see COVID-19 impact on lungs. January 25, 2021.

Invited speaker for the Lakehead Association of Biology Students Club at Lakehead University – January 27, 2021; *Hyperpolarized Xenon of the Lungs and Brain; and Xenon Biosensor MRI*

Invited speaker for Lakehead University Let's Talk Science "Let's Talk Brains" High School Series event – February 19 2021; *Neuroimaging with Hyperpolarized Xenon*

Invited seminar speaker for the Lakehead University Department of Physics – March 5, 2021; *Pulmonary and Neuro Imaging Using Hyperpolarized Gas MRI*

Lakehead University Gairdner Foundation Day Lecture High School Series Speaker – March 16, 2021; *Hyperpolarized MRI of the Lungs and Brain*

2022 Invited Speaker at Lakehead Biology Seminar Series – January 28, 2022; *Pulmonary and Neuro Imaging using Hyperpolarized Gas MRI*

2023 Invited Speaker at Soring Chapter event, Diagnostic Imaging Education day, Confederation College, Ontario, Canada- April, 2023 *MRI with Hyperpolarized and Inert Gas Contrast Agents and Xenon Biosensor Molecular MRI*, Ontario Association of Medical Radiation Sciences.

2024 Lakehead University Research and Innovation Week - Judge for the Graduate Poster competition (NSERC category)

National (n = 56):

1997 Society of Magnetic Resonance in Medicine, Ninth Annual Meeting, New York, NY, August 18-24, 1990. "23Na MRS of the Rat Brain In Vivo at 9.4 T: On the Permeability of the Blood-Brain Barrier to Shift Reagent.

1993 Gordon Conference on Magnetic Resonance, Brewster Academy, Wolfeboro, NH, "Biological Magnetic Resonance Imaging Using Hyperpolarized 129Xe".

Stony Brook University Colloquium, Stony Brook, NY, "Development of Magnetic Resonance Imaging Using Hyperpolarized Xenon".

State University of NY, Chemistry Society, Purchase, NY, "Developing New Imaging Modalities: "MRI Using Hyperpolarized 129Xe".

University Hospital at Stony Brook, Department of Radiology, Stony Brook, NY, "Magnetic Resonance Imaging Using Hyperpolarized 129Xe".

1994 Grumman Aerospace Corporation, Bethpage, NY, "New Developments in Medical Imaging Technology: HypX-MRI".

General Electric Corporation, Schenectady, NY, "MRI Using Hyperpolarized 129Xe".

Invited Lecture, Experimental Nuclear Magnetic Resonance Conference, Asilomar, California, April 10-15, 1994. "Hyperpolarized 129Xe Magnetic Resonance Imaging."

1995 Fox Chase Cancer Institute, Philadelphia, PA, "Hyperpolarized 129Xe-MRI".

National Institutes of Health, Heart Lung and Blood Division, Bethesda, MD, "MRI Using Laser-polarized Xenon".

Lawrence Berkeley Laboratory, Berkeley, CA, "A New Imaging Modality: HypX-MRI".

Yale University, Diagnostic Radiology, New Haven, CT, "MRI Using Hyperpolarized 129Xe".

Johns Hopkins Medical School, Department of Neuroradiology, Baltimore, MD, "A New Imaging Modality Using Hyperpolarized 129Xe-MRI".

1996 Mallinkrodt Medical, Inc., St. Louis, MO, "Hyperpolarized 129Xe Magnetic Resonance Imaging".

1997 University of Pennsylvania, Department of Radiology, Philadelphia, PA, "Hyperpolarized Xenon MRI".

University of New Hampshire, Department of Physics, Durham, NH, "Hyperpolarized Noble Gas MRI: Development and Biomedical Applications".

Schlumberger-Doll Research, Ridgefield, CT, "Hyperpolarized Gas MRI".

1999 Rice University, Department of Biomedical Engineering, Houston, TX, Dynamically Adaptive Hyperpolarized Noble Gas MRI”.

2001 Pacific Northwest National Laboratory (PNNL), "Hyperpolarized Noble Gas MRI studies of the Lung".

Radiologic Society of North America, Chicago, IL, "Measurement of Cerebral Blood Flow Using Hyperpolarized ^{129}Xe MR".

2001 Universities Space Research Association, Houston, TX, "Hyperpolarized ^{129}Xe MRI of the Brian and Lungs".

2002 University of Pennsylvania, Philadelphia, PA, "Hyperpolarized Noble Gas MRI: History and Applications".

2003 Discoveries & Breakthroughs Inside Science on local TV news across the country, "Helium MRI of the lung".

2004 University of Pennsylvania, Philadelphia, PA, “Basics of Hyperpolarized Noble Gas MR Imaging”.

2005 GE Healthcare, Princeton, NJ, “Hyperpolarized Noble Gas MRI of the Lungs and Brain: Present Progress”.

2006 The 2006 International Functional Lung Imaging Workshop at Penn, University of Pennsylvania, Philadelphia, PA, "Evaluating Ventilation Heterogeneity in Asthmatics Using Hyperpolarized ^{3}He MRI".

2008 Hyperpolarized Gas MRI of the Lungs and Brain, Radiology Dept, UMMS

Hyperpolarized 3He MRI of Asthma, ISMRM, Toronto

Pulmonary and Neuro Imaging Using Hyperpolarized Helium, Keystone Symposium, Lake Tahoe

Hyperpolarized 3He MRI, Vertex, Cambridge, MA

Hyperpolarized 3He MRI, Centocor, Radmore, PA

2009 Hyperpolarized Noble Gas MRI of the Lungs and Brain, Vertex, Cambridge, MA

2010 Hyperpolarized Noble Gas MRI of the Lungs and Brain, Lung Imaging Symposium, Vertex, Cambridge, MA

2011 The 2011 International Functional Lung Imaging Workshop at Penn, University of Pennsylvania, Philadelphia, PA, "Pulmonary Functional Imaging Using Hyperpolarized gas MRI".

2012 The 2012 International Functional Lung Imaging Workshop at Penn, University of Pennsylvania, Philadelphia, PA, "Pulmonary Functional Imaging Using Hyperpolarized gas MRI".

2013 The 2013 International Functional Lung Imaging Workshop at Penn, University of Pennsylvania, Philadelphia, PA, "Pulmonary Functional Imaging Using Hyperpolarized and Inert Gas MRI".

2014 University of Manitoba, “Hyperpolarized and Inert Gas MRI of the Lungs and Brain”.

University of Regina, “Hyperpolarized and Inert Gas MRI of the Lungs and Brain”.

University of Saskatchewan, “Hyperpolarized and Inert Gas MRI of the Lungs and Brain”.

2015 University of Alberta, “Hyperpolarized and Inert Gas MRI of the Lungs and Brain”.

Lethbridge University, “Hyperpolarized and Inert Gas MRI of the Lungs and Brain”.

University of Victoria, “Hyperpolarized and Inert Gas MRI of the Lungs and Brain”.

2016 World Molecular Imaging Conference, “HyperCEST MRI Detection of the Cucurbit[6]uril Xenon Cage in the Rat Abdomen in vivo”, New York City, USA.

Brain Mapping, “Hyperpolarized xenon brain functional MRI and inert gas imaging”, Miami, USA.

World Chemistry 2016, “Advances in MRI Using Hyperpolarized and Inert Gases and Molecular MR Imaging”, Toronto, Canada.

2017 International Conference on Magnetic Resonance Microscopy August 13-17, “Hyperpolarized and Inert Gas MRI Physics and Medical Applications”, Halifax, Nova Scotia.

Polarization in Noble Gases Conference, *Medical Applications of Hyperpolarized Noble Gases Including in vivo HyperCEST detection.* Park City, Utah, USA, October 8-14, 2017.

2018 University of Pennsylvania. *Advances in hyperpolarized xenon-129 magnetic resonance imaging*. XeMat Conference. May 4-9, 2018.

2019 International Workshop on Pulmonary Imaging (IWPI), Philadelphia, PA, USA, February 28-March 2, 2019.

International Society for Magnetic Resonance in Medicine (ISMRM), Montreal, QC, Canada, May 11-16, 2019.

National Institutes of Health (NIH) 2019 Conference, San Diego, CA, USA, June 6-7, 2019.

International Workshop on Pulmonary Functional Imaging (IWPFI), “Current Progress in 19F Lung MRI”, New Orleans, LA, USA, October 18-20, 2019.

2022 Imaging Network Ontario Symposium

2023 International Society for Magnetic Resonance in Medicine (ISMRM) and International Society for MR Radiographers &Technologist (ISMRT) Annual Meeting & Exhibition, Toronto, Canada (2023)

2024 Batarchuk V, Shepelytskyi Y, Grynko V, Hasselbrink C, Kovacs AH, Hodgson A, Rodriguez K, Aldossary R, Talwar T, DeBoef B, Albert MS. Novel Hyperpolarized 129Xe R3-Noria-methanesulfonate Supramolecular Cage at 3.0 T MRI. Imaging Network Ontario Symposium 2024(ImNO), Toronto, Canada (2024).

International (n = 70):

1992 Society of Magnetic Resonance in Medicine, Eleventh Annual Meeting, Berlin, Germany, August 8-14, 1992. "Susceptibility-Induced Contrast Enhancement During the Rapid Repetition of Dilution Bolus Injections."

Society of Magnetic Resonance, Third Scientific Meeting, Nice, France, August 19-25, 1995. "Measurement of 129Xe T1 in Blood to Explore the Feasibility of Hyperpolarized 129Xe MRI."

International Workshop on Perspectives of MR Imaging Using Polarized Gases, Les Houches, France, "Temporal Dynamics of Hyperpolarized 129Xe Resonances in living rats".

Invited Lecture, HELION97, Polarized 3He Beams and Gas Targets and Their Application, Kobe, Japan, "Development of Hyperpolarized Noble Gas MRI".

1998 Invited Lecture, US Delegate selected by the National Science Foundation, Korea-US Joint Biomedical Engineering Seminar, Seoul, Korea, "Dynamic hyperpolarized noble gas MRI: Development and biomedical applications".

Plenary Speaker, Sixth Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), Sydney, Australia, “Airway Disease: Hyperpolarized Gas MRI" and “Dynamic *in vivo* studies using hyperpolarized gases”.

Plenary Speaker, Japanese Society for Magnetic Resonance in Medicine (JSMRM), 26th Annual Meeting, Kyoto, Japan, September, 1998, "Hyperpolarized Gas Imaging".

Invited Lecture, Niels Bohr Institute, Copenhagen, Denmark, November, 1998, “Hyperpolarized Noble Gas MRI”.

Invited Lecture, Rigshospitalet Medical Center, Copenhagen, Denmark, November, 1998, “Hyperpolarized Noble Gas MRI”.

Invited Lecture, Lund University, Sweden, November, 1998, “Imaging using hyperpolarized noble gas”

1999 Invited Lecture, Hong Kong University Symposium on MRI, Hong Kong, China, "Dynamic Functional MRI Using Hyperpolarized Noble Gases: Development and Applications”

Plenary Speaker, Japanese Society for Magnetic Resonance in Medicine (JSMRM), 26th Annual Meeting, Kyoto, Japan, "Hyperpolarized Gas Imaging".

Invited Lecture, Second International Symposium on Ultra-fast Magnetic Resonance Imaging in Medicine (ISUM), Kyoto, Japan, January, 1999, “Fast Dynamic MRI Using Hyperpolarized Noble Gases”.

Invited Lecture, Matsuyama Prefecture, Ehime University, Tsukuba, Japan, January, 1999, “Lung Imaging Using Hyperpolarized Noble Gases”.

Invited Lecture, Sapporo Medical University, Sapporo, Japan, “MRI Studies Using Hyperpolarized Noble Gases”.

Invited Lecture, Wuhan Technical Institute of Physics and Mathematics, The Chinese Academy of Sciences, Wuhan, China, “Hyperpolarized Noble Gas Dynamic MRI”.

Invited Lecture, Tongji Medical University, Wuhan, China, “Clinical MRI using Hyperpolarized Noble Gases”.

Invited Lecture, Seventh Annual Meeting of the International Society of Magnetic Resonance in Medicine (ISMRM), Philadelphia, PA, “Resolving the Conflict over the T_1 Values of ^{129}Xe in Blood”.

Hyperpolarized gases in magnetic resonance: biomedical investigations and clinical applications, Les Houches, France, “Dynamically adaptive hyperpolarized noble gas MR imaging using spatially selective RF pulse encoding”.

Hyperpolarized gases in magnetic resonance: biomedical investigations and clinical applications, Les Houches, France, “Dynamic uptake of hyperpolarized ^{129}Xe in the rat brain”.

2000 Invited Lecture, BIOS2000, Technology Transfer Forum, Boston, MA, “Hyperpolarized Noble Gas Delivery System and Applications”.

2002 Plenary Lecture, Japanese Society of Magnetic Resonance in Medicine, Tokyo, Japan "Hyperpolarized noble gas MRI in the brain and lungs".

Invited Lecture, GE Medical Systems, Shanghai, China, "Hyperpolarized noble gas MRI in the brain and lungs".

Invited Lecture, Ryukyu University, Okinawa, Japan, “Hyperpolarized noble gas imaging of the lungs and brain”.

Invited Lecture, Nagasaki University, Nagasaki, Japan, “Hyperpolarized noble gas imaging of the lungs and brain”.

Invited Lecture, Yamaguchi University, Yamaguchi, Japan, “Hyperpolarized noble gas imaging of the lungs and brain”.

Invited Lecture, Ehime University, Ehime, Japan, “Hyperpolarized noble gas imaging of the lungs and brain”.

Invited Lecture, National Cardiovascular Center, Osaka, Japan, “Hyperpolarized noble gas imaging of the lungs and brain”.

2003 Eleventh Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), Toronto, Canada, “Hyperpolarized ^{3}He Imaging of human respiratory airways and quantification of airway diameters”.

2004 Twelfth Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), Kyoto, Japan, “Functional Brain Imaging Using Hyperpolarized ^{129}Xe".

Twelfth Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), Kyoto, Japan, “MRI Characterization of Kidney Lesions in Tuberous Sclerosis Mouse Model".

Twelfth Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), Kyoto, Japan, “MRI Assessment of Treatment of Tuberous Sclerosis Kidney with Rapamycin and IFN-g in a Mouse Model".

The 2nd International Workshop on Pulmonary Functional Imaging, Hyogo Japan, "Basics of Hyperpolarized Noble Gas MR Imaging".

2006 3rd International Workshop of Pulmonary Functional Imaging, Heidelberg, Germany, "Quantification of Ventilation Heterogeneity Changes in Asthmatic and Non-Asthmatic Lungs Using Hyperpolarized ^{3}He MRI".

Invited Lecture, Mainz University, Mainz, Germany, "Hyperpolarized Gas MRI of the Lungs and Brain".

The 2006 International Functional Lung Imaging Workshop at Penn, University of Pennsylvania, Philadelphia, PA, "Evaluating Ventilation Heterogeneity in Asthmatics Using Hyperpolarized ^{3}He MRI".

2008 Hyperpolarized Helium MRI of the Lungs, Qinghai University, China

3T MRI Applications and Hyperpolarized Helium MRI of the Lungs, Qinhai Medical School, China

Hyperpolarized 3He MRI of Asthma, ISMRM, Toronto

2010 Hyperpolarized Gas MRI of the Lungs, Beijing University of Chinese Medicine, Beijing, China

2011 Hyperpolarized Gas MRI of Asthma and COPD, Fifth International Workshop of Pulmonary Functional Imaging, Awaji, Japan.

2012 Hyperpolarized Xenon MRI of the Brain, Xemat Conference, Dublin, Ireland.

2013 Hyperpolarized and Inert Gas Pulmonary Functional Imaging, Sixth International Workshop of Pulmonary Functional Imaging, Madison, WI.

2014 Hyperpolarized and Inert Gas MRI of the Lungs and Brain, Invited speaker at Central European Institute of Technology (CEITEC), Brno, Czech Republic

Hyperpolarized Xenon Biosensor MRI for Detection of Lung Cancer, Invited speaker at Jagiellonian Centre of Experimental Therapeutics (JCET), Krakow, Poland

2015 Advancing Hyperpolarized and Inert Fluorinated Gas MRI Technology, BIT World Gene and Technology Conference, (keynote address) Qingdao, China, November 2015

Functional MR Imaging of the Lungs Using Hyperpolarized and Inert Gas, Guandong General Hospital Guangzhou, China, November 2015

Functional MR Imaging of the Lungs Using Hyperpolarized and Inert Gas, Guangzhou Medical University, Guangzhou, China, November 2015

Functional MR Imaging of Lungs and Brain Using Hyperpolarized and Inert Gas, Institution for Physics and Mathematics, Chinese Academy of Science, Wuhan, China, November 2015

MRI Enabled Contrast Agents - 19F, International Workshop on Pulmonary Functional Imaging Edinburg, United Kingdom, October 2015.

Xenon Biosensor Molecular MR Imaging with Surface Absorption Rate using Cucurbit[6]uril based Biosensors, World Molecular Imaging Conference, Honolulu, Hawaii, USA.

2016 Keynote Presentation: New advances in hyperpolarized xenon-129 biosensor MR molecular imaging, Molecular Biomarkers 2016, Berlin, Germany, September 2016

2017 Comparing Hyperpolarized and Inert Fluorinated Gas MRI of the Lungs and Xenon-129 Biosensor Molecular MRI, 2017 International Workshop on Pulmonary Imaging, University of Pennsylvania, Philadelphia, United States, March 2017

Hyperpolarized xenon functional MRI of the brain, 14th Annual World Congress Society for Brain Mapping & Therapeutics, Los Angeles, United States, April 2017

Hyperpolarized and Inert Gas MRI and Xenon Molecular MRI - Jagiellonian University, Krakow, Poland, October 18 2017

Red Hot 19F Human Lung MRI with Inert Fluorinated Gases - Red Hot MRI Symposium, Berlin, Germany, October 15-16 2017

Medical Applications of Hyperpolarized Noble Gases Including in vivo HyperCEST detection. Polarization in Noble Gases 2017, Utah, USA, October 8-14, 2017

2018 Guangzhou, China. Advances in fluorine magnetic resonance imaging. July 9, 2018.

2019 Jagellonian University Physics Institute, *Hyperpolarized gas MRI for the lungs and brain and Xenon Biosensor MR Molecular Imaging,* Krakow, Poland.

John Paul II Hospital, *Pulmonary and Neuro Imaging with Hyperpolarized Xenon MRI.* Krakow, Poland

Hannover Medical School, *Pulmonary and Neuro Imaging with Hyperpolarized and Inert Gases and Xenon Biosensors Molecular MRI*, Hannover, Germany

ISMRI Members Initiated Symposium, *Current progress in 19F Lung MRI Imaging*, Paris, France.

2020 Nominated presentation, Hyperpolarized Media Study Group, International Society for Magnetic Resonance in Medicine (ISMRM) Conference. (Yurii Shepelytskyi-PhD Student received Silver medal Award).

Invited presentation, Neuro-Highlights session, International Society for Magnetic Resonance in Medicine (top 6 ISMRM abstracts selected in technical development in neuroimaging).

2021 Polarization in Noble Gases (PiNG) Workshop, *Hyperpolarized 129Xe Brain MR Imaging and HP 129Xe Molecular Biosensor Imaging*, Virtual Meeting

2023 Hyperpolarized 129Xe Brain MR Imaging and HP 129Xe Biosensor Molecular MR Imaging. Study group for Quamtum Hyperpolarization for medical use on JSMRM, Japan Invited?: Yes, Keynote?: No

19F Lung Imaging with Octafluorocyclobutane , Albert M, International Workshop on Pulmonary Imaging. Perelman School of Medicine, University of Pennsylvania (Upenn), United States of America. (invited Speaker-Attended virtually), 2023

Red Hot Fluorine 19F MRI & SAMS (Small Animal MRI Symposiums meet) Krakow MRI Workshop, Cracow, Poland. December 2023

Pulmonary and NeuroImaging with Hyperpolarized and Inert Gases and Xenon Biosensor Molecular MRI. Jagiellonian University, Kracow, Poland. December 2023

2024 International Society for Magnetic Resonance in Medicine (ISMRM) & The International Society for MR Radiographers & Technologists (ISMRT) Annual Meeting & Exhibition, Suntec Singapore. May 2024

Part III. Bibliography

Original Reports:

1. Smith GP, Albert MS, Shindledecker RD, Jerome C, Ackerman SH. Ingestion of Sucrose Increases Hypothalamic Dopaminergic Activity. *Am J Physiol* 1992; 262:R624-627.

2. Albert MS, Huang W, Balschi JA, Springer CS. Aqueous Shift Reagents for High Resolution Cation NMR. *NMR in Biomed* 1993;6:7-20.

3. Albert MS, Huang W, Lee JH, Patlack CS, Springer CS. Susceptibility changes following bolus injections. *Magn Reson Med* 1993;29:700-708.

4. Driehuys B, Cates GD, Happer W, Mabuchi H, Saam B, Albert MS, Wishnia A. Spin transfer between laser-polarized 129Xe and surface protons. *Phys Lett A* 1993;184: 88-92.

5. Albert MS, Cates GD, Driehuys B, Happer W, Saam B, Springer CS, Wishnia A. Biological magnetic resonance imaging using hyperpolarized 129Xe. *Nature* 1994; 370:199-201. (This paper received 248 citations.)

6. Albert MS, Balamore D, Kornhauser SH. Magnetic resonance imaging using hyperpolarized 129Xe. *Am J Electromedicine* 1994; 150:72-80.

7. Albert MS, Schepkin VD, Budinger TF. Measurement of 129Xe T1 in blood to explore the feasibility of hyperpolarized 129Xe MRI. *J Comp Assist Tomgr* 1995;19(6):975-978.

8. Albert MS, Tseng CH, Williamson D, Oteiza ER, Walsworth RL, Kraft B, Kacher D, Holman BL, Jolesz FA. Hyperpolarized 129Xe MR imaging of the oral cavity. *J Magn Reson B* 1996;111: 204-207.

9. Sakai K, Bilek AM, Oteiza E, Walsworth RL, Balamore D, Jolesz FA, Albert MS. Temporal dynamics of hyperpolarized 129Xe resonances in living rats. *J. Magn. Reson*. B 1996;111:300-304.

10. Peled S, Jolesz FA, Tseng CH, Nascimben L, Albert MS, Walsworth RL. Determinants of tissue delivery for 129Xe magnetic resonance in humans. *Magn Reson Med* 1996;36:340-344.

11. Zhao L, Mulkern R, Tseng CH, Williamson D, Patz S, Kraft R, Walsworth RL, Jolesz FA, Albert MS. Gradient echo imaging considerations for hyperpolarized 129Xe MR. *J Magn Reson B* 1996;113:179-183.

12. Zhao L, Albert MS. Biomedical imaging using hyperpolarized noble gas MRI: Pulse sequence considerations. *Nucl Instr and Meth.* 1998;402:454-460.

13. Albert MS, Kacher DF, Balamore D, Venkatesh A, Jolesz FA, T_1 of ^{129}Xe in Blood and the Role of Oxygenation. *J Magn Reson*. 1999;140:264-273.

14. Spiegelman JJ, Venkatesh AK, Albert MA, Recycling system for hyperpolarized noble gases. *Eur. Radiol*. 1999; 9:B38.

15. Zhao L, Venkatesh AK, Albert MS and Panych LP, Dynamically adaptive hyperpolarized noble gas MR imaging using spatially selective RF pulse encoding. *Eur. Radiol.* 1999; 9:B3

16. Venkatesh AK, Zhao L, Pausak T, Ward CF, Jolesz FA and Albert MS, Hyperpolarized gas imaging using a simple programmable gas delivery system. *Eur. Radiol*. 1999; 9:B34.

17. Venkatesh AK, Li L-P, Chin C-L, Balamore D, Jolesz FA, Albert MA, Dynamic uptake of hyperpolarized ^{129}Xe in the rat brain. *Eur. Radiol*. 1999; 9:B41.

18. Venkatesh AK, Zhao L, Balamore D, Jolesz FA and Albert MS, Using carrier-agents in live rats to deliver hyperpolarized ^{129}Xe, *Eur. Radiol*. 1999; 9:B44

19. Venkatesh AK, Zhao L, Balamore D, Jolesz FA, Albert MS. Evaluation of carrier agents for hyperpolarized ^{129}Xe MRI, *NMR in Biomed*. 2000;13:245-252.

20. Ramirez MP, Sigaloff KCE, Kubatina LV, Donahue MA, Venkatesh AK, Albert MS. Physiological response of rats to delivery of helium and xenon: Implications for hyperpolarized gas imaging. *NMR in Biomed*. 2000;13:253-264.

21. Albert MS, Balamore D, Kacher D, Venkatesh AK, Jolesz FA, Hyperpolarized ^{129}Xe T_1 in oxygenated and deoxygenated blood, *NMR in Biomed*. 2000;13:407-414.

22. Sun Y, Sugawara M, Mulkern RV, Hynynen K, Mochizuki S, Albert M, Zuo C, Simultaneous measurements of temperature and pH *in vivo* using NMR in conjunction with TmDOTP, *NMR in Biomed*. 2000;13;460-466.

23. Zhao L, Venkatesh AK, Albert MS, Panych L, Signal-to-noise comparison of encoding methods for hyperpolarized noble gas MRI, *J Magn Reson*. 2001;148,314-326.

24. Venkatesh AK, Zhao L, Balamore D, Jolesz FA, Albert MS. Hyperpolarized xenon MRI using gas-filled liposomes, *Academic Radiology*. 2002; 9, S270-274.

25. Sun Y, Zhou J, Stayner C, Fielding J, Shen X, Munasinghe J, Beier D , Albert MS, MRI Assessment of a Murine Model of Recessive Polycystic Kidney Disease, *Comparative Medicine*. 2002; 52;433-438.

26. Tooker AC, Hong KS, McKinstry EL Costello P, Jolesz FA, Albert MS, Dynamic imaging of distal airways in humans using hyperpolarized 3He MRI, *Radiology*. 2003; 227:575–579.

27. Venkatesh AK, Zhang AX, Mansour J, Kubatina L Oh CH, Blasche G, Ünlü S, Balamore D, Jolesz FA, Goldberg BB, Albert MS, MRI of the Lung Gas-Space at Very Low-Field Using Hyperpolarized Noble Gases, *Magn Reson Imaging*. 2003; 21:773-776.

28. Sun Y, Schmidt NO, Schmidt K, Doshi S, Rubin JB, Mulkern RV, Carroll R, Ziu M , Erkmen K, Poussaint TY, Black P, Albert M, Burstein D, Kieran MW, Perfusion MRI of U87 Brain Tumors in a Mouse Model, *Magn Reson Med*. 2004; 51:893-899.

29. Sun Y, Mulkern RV, Schmidt K , Albert M, Carrol R, Schmidt NO, Ziu M, Poussaint TY, Black P, Kieran MW: Quantification of Water Diffusion and Relaxation Times of Human U87 Tumors in a Mouse Model. *NMR in Biomed*. 2004; 17:399-404.

30. Schmidt NO, Ziu M, Carrabba G, Giussani C, Bello L, Sun Y, Schmidt K, Albert M, Black PM, Carroll RS. Antiangiogenic Therapy by Local Intracerebral Microinfusion Improves Treatment Efficiency and Survival in an Orthotopic Human Glioblastoma Model *Clinical Cancer Research* 2004; 10:1255-1262.

31. Schmidt KF, Ziu M, Schmidt NO, Vaghasia P, Cargioli TG, Doshi S, Albert MS, Black PM, Carroll RS, Sun Y. Volume reconstruction techniques improve the correlation between histological and *in vivo* tumor volume measurements in mouse models of human gliomas. *Journal of Neuro-Oncology.* 2004; 68:207-215.

32. Lewis TA, Y.S Tzeng, E.L. McKinstry, A.C. Tooker, K.S. Hong, Y. Sun, J. Mansour, Z. Handler, M.S. Albert, Quantification of Airway Diameters and 3D Airway Tree Rendering from Dynamic Hyperpolarized ^{3}He MRI, *Magn. Reson. Med*. 2005; 53:474-478.

33. Lee L, Sudentas P, Donohue B, Asrican K, Worku A, Walker V, Sun Y, Schmidt K, Albert MS, El-Hashemite N, Lader AS, Onda H, Zhang H, Kwiatkowski DJ, Dabora SL. Efficacy of a rapamycin analog (CCI-779) and IFN-gamma in tuberous sclerosis mouse models, *Genes Chromosomes Cancer*. 2005; 42:213-27.

34. Tzeng YS, Mansour J, Handler Z, Gereige J, Shah N, Zhou X, Albert MS, Measurement of the internal diameter of plastic tubes from projection MR images using a model-based least-squares fit approach, *Med Phys*. 2006; 33:1643-1653.

35. H Ji, D Li, L Chen, T Shimamura, S Kobayashi, K McNamara, U Mahmood, M Albert, Y Sun, R Al-Hashem, LR Chirieac, R Padera, RT Bronson, W Kim, PA. Jasnne, GI Shapiro, D Tenen, BE Johnson, R Weissleder, NE. Sharpless, K-K Wong. The impact of human EGFR kinase domain mutations on lung tumorigenesis and in vivo sensitivity to EGFR-targeted therapies, *Cancer Cell*. 2006; 485-295.

36. H Ji, X Zhao, Y Yuza, T Shimamura, D Li, A Protopopov, BL Jung, K McNamara, H Xia, KA Glatt, RK Thomas, H Sasaki, JW Horner, M Eck, M Albert, Y Sun, R Al-Hashem, RT Bronson, SK Rabindran , CM Discafani , E Maher, GI Shapiro, M Meyerson, K-K Wong. Epidermal growth factor receptor variant III mutations in lung tumorigenesis and sensitivity to tyrosine kinase inhibitors, *PNAS*. 2006; 103:7817–7822.

37. H Ji , Z Wang, SA Perera, D Li, MC Liang, S Zaghlul, K McNamara, L Chen, M Albert, Y Sun, R Al-Hashem, LR Chirieac, R Padera, RT Bronson, RK Thomas, LA Garraway, PA Jänne, BE Johnson, L Chin, KK Wong. Mutations in BRAF and KRAS converge on activation of the mitogen-activated protein kinase pathway in lung cancer mouse models, *Cancer Res*. 2007; May 15;67(10): 4933-9.

38. X. Zhou, M.L. Mazzanti, J.J. Chen, Y.-S. Tzeng, J.K. Mansour, J.D. Gereige, A.K. Venkatesh, Y. Sun, R.V. Mulkern and M.S. Albert. Reinvestigating Hyperpolarized 129Xe Longitudinal Relaxation Time in the Rat Brain with Noise Considerations, *NMR Biomed.* 2008 Mar;21(3):217-25.

39. Y-S Tzeng, E Hoffman, R Maurer, J Mansour, N Shah, J Tschirren, M Albert, Comparison of Airway Diameters Measurements from an Anthropomorphic Airway Tree Phantom Using Hyperpolarized ^{3}He MRI and High Resolution Computed Tomography, *Magn Reson Med*. 2007 Sep;58(3):636-42.

40. Y-S Tzeng, E Hoffman, J Cook-Granroth, J Gereige, J Mansour, Washko, M Cho, E Stepp, Lutchen, M Albert, Investigation of Hyperpolarized ^{3}He MRI Utility in Examining Human Airway Diameter Behavior in Asthma through Comparison with High-Resolution Computed Tomography, *Radiol.* 2008 June; 15(6): 799–808.

41. Y-S Tzeng, K Lutchen, M Albert, The Difference in Ventilation Heterogeneity between Asthmatic and Healthy Subjects Quantified using Hyperpolarized 3He MRI, *J Appl Physiol*. 2009; 106: 813 – 822.

42. X Zhou, H Bao, R Al-Hashem, H Ji, M Albert, K-K Wong, Y Sun. Magnetic Resonance Imaging of the Response of a Mouse Model of Non-Small Cell Lung Cancer to Tyrosine Kinase Inhibitor Treatment; *Comparative Medicine*. 2008; Vol 58, 276-281.

43. EY Lee, Y Sun, D Zurakowski, H Hatabu, U Khatwa, MS Albert. Hyperpolarized 3He MR Imaging of the Lung: Normal Range of Ventilation Defects and PFT Correlation in Young Adults, *J Thoracic Imaging*. 2009; 24(2), 110-114.

44. LM Campana, J Kenyon, S Zhalehdoust-Sani, Y-S Tzeng, Y Sun, M. Albert, KR Lutchen, Probing Airway Conditions Governing Ventilation Defects in Asthma via Hyperpolarized MRI Image Functional Modeling, *J Appl Physiol.* 2009 Apr; 106(4):1293-300. Epub 2009 Feb 12.

45. Mullally W, Betke M, Albert M, Lutchen K. Explaining clustered ventilation defects via a minimal number of airway closure locations. *Ann Biomed Eng.* 2009 Feb; 37(2) 286-300. doi: 10.1007/s10439-008-9603-z

46. T Tan, M Albert, Y Sun. The N-Methyl-D-Aspartate Receptor in Cerebral Ischemia, *N Am J Med Sci*. 2009; 2 (1), 9-14.

47. Matsuoka S, Patz S, Albert MS; Sun ,; Rizi RR, Gefter WB, Hatabu H. Hyperpolarized Gas MR Imaging of the Lung: Current Status as a Research Tool, *J Thorac Imaging.* 2009. 24;181-188.

48. Y Sun, J Butler, P Lindholm, R Walvick, J Gereige, X Zhou, H Bao, SH. Loring, M Ferrigno, M Albert, Marked pericardial inhomogeneity of specific ventilation at total lung capacity and beyond, *Respir Physiol Neurobiol.* 2009 Oct 31; 169(1):44-9. Epub 2009 Aug 5.

49. X Zhou, H Bao, A Takakura, J Zhou, M Albert, Y Sun, Polycystic Kidney Disease Evaluation by MRI in Ischemia-Reperfusion Injured *PKD1* IKO Mouse Model: Comparison of T2 Weighted FSE and True-FISP*, Investigative Radiology*. 2010; 45(1): 24-28.

50. X Zhou, Y Sun, M Mazzanti, N Henninger, J Mansour, M Fisher, M Albert, MRI of stroke using hyperpolarized 129Xe. *NMR Biomed*. 2011 Feb; 24(2):170-5.

51. Sun Y, O'Sullivan BP, Roche JP, Walvick R, Reno A, Baker D, Mansour JK, Albert MS. Using hyperpolarized 3He MRI to evaluate treatment efficacy in cystic fibrosis patients. *J Magn Reson Imaging.* 2011 Nov; 34(5):1206–1211.

52. AM Allen, M Albert, HB Caglar, P Zygmanski, R Soto, J Killoran, Y Sun, Can Hyperpolarized Helium MRI add to radiation planning and follow-up in lung cancer? *J Appl Clin Med Phys.* 2011 Jan 31; 12(2):3357.

53. Mazzanti ML, Walvick RP, Zhou X, Sun Y, Shah N, Mansour J, Gereige J, Albert MS. Distribution of hyperpolarized xenon in the brain following sensory stimulation: preliminary MRI findings. *PLoS One.* 2011; 6(7):e21607. Epub 2011 Jul 15.

54. Sun Y, O'Sullivan BP, Roche JP, Walvick R, Reno A, Baker D, Mansour JK, Albert MS. Using hyperpolarized (3) He MRI to evaluate treatment efficacy in cystic fibrosis patients. *J Magn Reson Imaging.* 2011 Sep 19. doi: 10.1002/jmri.22724. [Epub ahead of print]

55. Sun Y, Butler JP, Ferrigno M, Albert MS, Loring SH. "Ventilatory alternans": a left-right alternation of inspiratory airflow in humans. *Respir Physiol Neurobiol.* 2013 Jan 15;185(2):468-71.

56. Lui JK, Laprad AS, Parameswaran H, Sun Y, Albert MS, Lutchen KR. Semiautomatic segmentation of ventilated airspaces in healthy and asthmatic subjects using hyperpolarized (3)He MRI, *Comput Math Methods Med*. 2013; 624683. doi: 10.1155/2013/624683. Epub 2013 Mar 31.

57. Couch MJ, Ball IK, Li T, Fox MS, Littlefield SL, Biman B, Albert MS. Pulmonary Ultrashort Echo Time ^{19}F MR Imaging with Inhaled Fluorinated Gas Mixtures in Healthy Volunteers: Feasibility, *Radiology*. 2013; 269: 903–909. doi:10.1148/radiol.13130609.

58. Lui Z, Araki T, Okajima Y, Albert M, Hatabu H. Pulmonary hyperpolarized noble gas MRI: recent advances and perspectives in clinical application, *Eur J Radiol*. 2014 Jul; 83(7):1282-91. doi: 10.1016/j.ejrad.2014.04.014. Epub 2014 Apr 30.

59. Couch MJ, Ball IK, Li T, Fox MS, Ouriadov AV, Biman B, Albert MS. Inert fluorinated gas MRI: A new pulmonary imaging modality, *NMR Biomed*. 2014; 27: 1525–1534. doi: 10.1002/nbm.3165.

60. O'Sullivan B, Couch M, Roche JP, Walvick R, Zheng S, Baker D, Johnson M, Botfield M, Albert MS. Assessment of repeatability of hyperpolarized gas MR ventilation imaging in cystic fibrosis patients, *Acad Radiol*. 2014; 21(12):1524–1529. doi:10.1016/j.acra.2014.07.008

61. Ouriadov AV, Fox MS, Couch MJ, Li T, Ball IK, Albert MS. *In vivo* regional ventilation mapping by using fluorinated gas MRI with an X-centric FGRE method, *Magn Reson Med*. 2014 Aug 8; doi: 10.1002/mrm.25406.

62. Lui JK, Parameswaran H, Albert MS, Lutchen KR. Linking ventilation heterogeneity quantified via hyperpolarized 3He MRI to dynamic lung mechanics and airway hyperresponsiveness. PLoS One, 2015 Nov 16; 10(11): e0142738. doi: 10.1371/journal.pone.0142738.

63. Couch MJ, Blasiak B, Tomanek B, Ouriadov AV, Fox MS, Dowhos KM, Albert MS. Hyperpolarized Agents and Inert Gas MRI: The Future, *Mol Imaging Biol*. 2015; 17(2):149-162. DOI: 10.1007/s11307-014-0788-2.

64. Kruger SJ, Nagle SK, Couch MJ, Ohno Y, Albert M, Fain SB. (2015) Functional Imaging of the Lungs with Gas Agents. Journal of Magnetic Resonance Imaging, *J Magn Reson Imaging*. 2015 Jul 27. doi: 10.1002/jmri.25002.

65. Walvick RP, Roche JP, Reno AL, Gounis MJ, Albert MS. Evaluation of oxygen sensitivity of hyperpolarized helium imaging for the detection of pulmonary ischemia, *Mag Res Med*. 2016; 75(5): 2050-2054. Published. Refereed?: Yes

66. Hane F, Li T, Smylie P, Pellizzari R, Plata J, Tomanek B, DeBoef B, Albert M. *In vivo* detection of a hyperpolarized xenon magnetic resonance molecular imaging contrast agent, *Scientific Reports.* 2017; *7*, 41027: doi: 10.1038/srep41027.

67. Hane FT , Li T , Smylie P , Pellizzari RM , Plata JA , DeBoef B , Albert MS. (2017). In vivo detection of cucurbit[6]uril, a hyperpolarized xenon contrast agent for a xenon magnetic resonance imaging biosensor.Scientific reports. 7: 41027. Published. Refereed?: Yes

68. Couch MJ, Fox MS, Viel C, Gajawada G, Li T, Albert MS. Fractional Ventilation Mapping using Inert Fluorinated Gas MRI in a Rat Model of Inflammation*, NMR in Biomedicine.* 2016; *29*: 545-552.doi:10.1002/nbm.3493 Published. Refereed?: Yes

69. Hane F, Smylie P, Li T, Dowhos K, Ruberto J, Ball I, Tomanek B, DeBoef B, Albert M.

HyperCEST Detection of Cucurbit[6]uril in Blood Using an Ultrashort Saturation Pre-pulse Train, *Contrast Media Mol Imaging.* 2016; 11(4): 285-90.

70. Hane F, Robinson M, Lee B, Bai O, Leonenko Z, Albert M. Recent Progress in Alzheimer's Disease Research Part 3 – Diagnosis & Treatment, *J Alzheimer's Dis*. 2017; 57(3):645-665. doi: 10.3233/JAD-160907. Published. Refereed?: Yes

71. Hane F**,** Fernando A, Prete B, Karas S, Chahal S, Li T, De Boef B, Shepelytskyi Y, Wade A, Albert M. (2017) Cyclodextrin-based Pseudo-rotaxanes: An Easily Conjugatable Scaffold for Hyperpolarized Xenon Magnetic Resonance Imaging Biosensors. *ACS Omega*, 2018, *3* (1), pp 677–681, doi: 10.1021/acsomega.7b01744

72. Hane, Francis T and Fernando, Ashvin and Prete, Braedan RJ and Peloquin, Brianna and Karas, Scott and Chaudhuri, Sauradip and Chahal, Simrun and Shepelytskyi, Yurii and Wade, Alanna and Li, Tao and others. (2018). Cyclodextrin-Based Pseudorotaxanes: Easily Conjugatable Scaffolds for Synthesizing Hyperpolarized Xenon-129 Magnetic Resonance Imaging Agents. ACS omega. 3(1): 677--681. Published. Refereed?: Yes

73. Hane F, Li T, Plata J, Hassan A, Granberg K, Albert MS. Inhaled xenon washout as a biomarker of Alzheimer's disease. *Diagnostics*, 2018; 8, (41) doi:10.3390/diagnost. Published Refereed? Yes.

74. Couch MJ, Ball IK, Li T, Fox MS, Biman B, Albert MS. 19F MRI of the Lungs Using Inert Fluorinated Gases: Challenges and New Developments. *JMRI,* 2019; 49(2):343-354. Published. Refereed? Yes.

75. Shepelytskyi Y, Fox MS, Davenport K, Li T, Albert MS, Davenport E. In-Vivo Retention of 5-Fluorouracil Using 19F Magnetic Resonance Chemical Shift Imaging in Colorectal Cancer in a Murine Model. *Sci Rep*. 2019; 9(1):13244. Published. Refereed? Yes.

76. Shepelytskyi Y., Hane FT., Grynko V., Li T., Hassan A, Albert MS. Hyperpolarized ^{129}Xe Time-of-Flight MR Imaging of Perfusion and Brain Function. *Diagnostics* 2020, 10 (9): 630. Published. Refereed? Yes

77. Shepelytskyi Y., Li T., Grynko V., Wade A., Newman C., Hane F., Albert MS. Evaluation of Fluorine-19 Magnetic Resonance Imaging of the Lungs Using Octafluorocyclobutane in a Rat Model. *Magn. Reson. Med.* 2020, 85(2): 987-994.

78. Yeo S., Shepelytskyi Y., Grynko V., Albert MS. Molecular Imaging of Fluorinated Probes for Tau Protein and Amyloid-β Detection. *Molecules* 2020, 25 (15): 3413. Published. Refereed? Yes.

79. Fernando PUAI., Shepelytskyi Y., Cesana PT., Wade A., Grynko V., Mendieta AM., Seveney LE., Brown JD., Hane FT., Albert MS., DeBoef B. Decacationic Pillar[5]arena: A New Scaffold for the Development of 129Xe MRI Imaging Agents. *ACS Omega.* 2020; 5(43): 27783-277788. Published. Refereed? Yes.

80. Shepelytskyi Y., Newman CJ., Grynko V., Seveney LE., DeBoef B., Hane FT., Albert MS. Cyclodextrin-Based Contrast Agents for Medical Imaging. *Molecules.* 2020; 25(23): 5576. Published. Refereed? Yes.

81. Shepelytskyi Y., Grynko V., Li T., Hassan A., Granberg K., Albert MS. The effects of an initial depolarization pulse on dissolved phase hyperpolarized 129Xe brain MRI. *Magn. Reson. Med*. 2021, 86(6):3147-3155. Published
Refereed? Yes, Open Access? No

82. Grynko V., Shepelytskyi Y., Li T., Hassan A., Granberg K., Albert MS. Hyperpolarized 129Xe multislice imaging of the human brain using a 3D gradient echo pulse sequence. *Magn. Reson. Med*. 2021; 86(6):3147-3155. Published
Refereed? Yes, Open Access? Yes

83. Shepelytskyi, Y., Li, T., Grynko, O., Reznik, A., Grynko, V., Hane, F.T. and Albert, M.S., 2021. Photoinduced nonlinear magnetoelectric effect detection in Zn2Y hexaferrite. *Appl. Phys. Lett.* 2021, 119(6): 062401. Published
Refereed? Yes, Open Access? No

84. Shepelytskyi Y., Grynko V., Rao MR., Li T., Agostino M., Wild JM., Albert MS. Hyperpolarized ^{129}Xe imaging of the brain: Achievements and Future Challenges. *Magn. Reson Med.* Magn Reson Med. 2022 Jul;88(1):83-105. Published
Refereed? Yes, Open Access? Yes

85. Matheson AM, McIntosh MJ, Kooner HK, Lee J, Desaigoudar V, Bier E, Driehuys B, Svenningsen S, Santyr GE, Kirby M, Albert MS, Shepelytskyi Y, Grynko V, Ouriadov A, Abdelrazek M, Dhaliwal I, Nicholson JM, Parraga G, Persistent ^{129}Xe MRI Pulmonary and CT Vascular Abnormalities in Symptomatic Individuals with Post-Acute COVID-19 Syndrome. Radiology. 2022 Jun 28:220492. Published
Refereed? Yes, Open Access? Yes

86. Kooner HK, McIntosh MJ, Matheson AM, Venegas C, Radadia N, Ho T, Haider EA, Konyer NB, Santyr GE, Albert MS, Ouriadov A, Abdelrazek M, Kirby M, Dhaliwal I, Nicholson JM, Nair P, Svenningsen S, Parraga G. 129Xe MRI ventilation defects in ever-hospitalized and never-hospitalized people with post-acute COVID-19 syndrome. BMJ Open Respir Res. 2022 May;9(1):e001235. Published
Refereed? Yes, Open Access? Yes

87. Matheson AM., McIntosh MJ., Kooner HK., Abdelrazek M., Albert MS., Dhaliwal, I., Nicholson, JM., Ouriadov A., Svenningsen S., & Parraga G. Longitudinal follow-up of postacute COVID-19 syndrome: DLCO, quality-of-life and MRI pulmonary gas-exchange abnormalities. Thorax. 2023 Jan 3:thorax-2022-219378.
Refereed? Yes, Open Access? Yes

88. Mikowska L., Grynko V., Shepelytskyi Y., Ruset IC., Deschamps J., Aalto H.,

Targosz-Korecka M., Balamore D., Haranczyk H., Albert MS. Revealing a Third Dissolved-Phase Xenon-129 Resonance in Blood Caused by Hemoglobin Glycation. Int. J. Mol. Sci. 2023; 24(14):11311. https://doi.org/10.3390/ijms241411311

89. Shepelytskyi Y., Grynko V., Batarchuk V., Hasselbrink CL., Kovacs AH., Ruset IC., Rodriguez K., Al Taradeh N., Talwar T., DeBoef B., Albert MS. (2023). R3-Noria-methanesulfonate: A Molecular Cage with Superior Hyperpolarized Xenon-129 MRI Contrast. ACS Sensors.

90. Grynko V.,Shepelytskyi Y.,Batarchuk V.,Aalto H.,Li T.,Ruset IC.,DeBoef B.,Albert MS. (2023). Cucurbit[6]uril Hyperpolarized Chemical Exchange Saturation Transfer Pulse Sequence Parameter Optimization and Detectability Limit Assessment at 3.0T. ChemPhysChem. : e202300346.

    * The research published by Grynko V. et. al. has been showcased as the Front Cover of ChemPhysChem December's issue

91. Batarchuk V, Shepelytskyi Y, Grynko V, Kovacs AH, Hodgson A, Rodriguez K, Aldossary R, Talwar T, Hasselbrink C, Ruset IC, et al. Hyperpolarized Xenon-129 Chemical Exchange Saturation Transfer (HyperCEST) Molecular Imaging: Achievements and Future Challenges. *International Journal of Molecular Sciences*. 2024; 25(3):1939.

Books, Chapters and Editorials:

1. Albert MS, Balamore D. Development of hyperpolarized noble gas MRI. *Nucl Instr and Meth* 1997; 441-453.

2. Albert MS, Zhao L, Panych LP. Fast dynamic MRI using hyperpolarized noble gases. In: *Naruse S, Watari H, editors. Ultrafast Magnetic Resonance Imaging in Medicine*. Amsterdam: Elsevier; 1999. p. 239-245.

3. Hatabu H, Stock KW, Sher S, Edinburgh KJ, Levin DL, Garpestad E, Albert MS, Mai VM, Chen Q, Edelman RR. Magnetic resonance imaging of the thorax: Past, present, and future. In *McLoud TC, Editor. Clinics in Chest Medicine.* Philadelphia: WB Saunders; 1999. 20;775-803.

4. Matsuoka S, Patz S, Albert MS; Sun ,; Rizi RR, Gefter WB, Hatabu H. Hyperpolarized Gas MR Imaging of the Lung: Current Status as a Research Tool. Journal of Thoracic Imaging, 2009. 24;181-188

5. T Tan, M Albert, Y Sun, The N-Methyl-D-Aspartate Receptor in Cerebral Ischemia, North American Journal of Medicine & Science, Vol. 2, Issue 1, 9-14, 2009.

6. Fox MS, Couch MJ, Albert MS. Hyperpolarized ^{129}Xe MRI of the brain. In: *Hyperpolarized Xenon-129 Magnetic Resonance: Concepts, Production, Techniques and Applications*, edited by Thomas Meersmann. Royal Society of Chemistry (2015).

7. Couch MJ, Ouriadov AV, Albert MS. Imaging of the Respiratory System. In: *^{19}F Magnetic Resonance Imaging, edited by Ulrich Flögel* (revisions submitted Nov 2014).

8. Couch MJ, Fox MS, Blasiak B, Tomanek B, Ouriadov AV, Dowhos KM, Albert MS. Medical Applications of Hyperpolarized Gases in MR Imaging and NMR Spectroscopy. In: *Gas Phase NMR*, edited by Karol Jackowski, 2016, pp 364.

9. Couch MJ, Ouriadov AV, Albert MS. Pulmonary Imaging Using 19F MRI of Inert Fluorinated Gases. Mitchell Albert and Francis Hane. *Hyperpolarized and Inert Gas MRI in Research and Medicine*. 2016, pp 480-500., Elsevier. Refereed? Yes

10. Hane F, Albert M, et al. Hyperpolarized gas MRI and the Brain. In *Hyperpolarized and Inert Gas MRI: Theory and Applications in Research and Medicine. Edited by M. Albert and F. Hane.* 2016, Elsevier. New York. USA

11. Albert M, Hane F, Dalip Balamore. Introduction*. In Hyperpolarized and Inert Gas MRI: Theory and Applications in Research and Medicine. Edited by M. Albert and F. Hane*. 2016, pp 1-30 ; Elsevier. New York. USA. Referred? Yes.

12. Albert M, Hane F. *Hyperpolarized and Inert Gas MRI: Theory and Applications in Research and Medicine.* 2016; Elsevier, New York, United States

13. Chahal S, Prete B, Wade A, Hane F, Albert M. (2018). Brain Imaging Using Hyperpolarized ^{129}Xe MRI. In *Methods in Enzymology.* Edited by I. Dmochowski. Elsevier. New York USA. 305 – 320. Refereed? Yes.

Thesis:

Albert MS. Biomedical MR studies using 1H2O, 23Na, and the invention of spin-polarized 129Xe imaging [Ph.D. Thesis]. Stony Brook, New York: State University of New York, 1993.

Abstracts:

1. Albert MS, Driehuys B, Saam B, Springer CS, Cates GD, Wishnia A. Spin polarized 129Xe NMR imaging. Gordon Conference, Brewster Academy, Wolfeboro, NH, 1993.
   Abstract
   Published
   Refereed?: Yes, Invited?: Yes

2. Tseng CH, Oteiza ER, Walsworth RL, Albert MS, Nascimben L, Peled S, Sakai K, Jolesz FA. Biological studies with laser-polarized 129Xe. DAMOP Meeting of the American Physical Society, Ann Arbor, MI, 1996.
   Abstract

Published
Refereed?: Yes, Invited?: Yes

3. Albert, MS. Biomedical applications of hyperpolarized 129Xe. International Workshop on Perspectives of MR Imaging Using Polarized Gases, Centre de Physique des Houches, Les Houches, France, 1996:5.
Abstract
Published
Refereed?: Yes, Invited?: Yes

4. Zhao L, Mulkern R, Tseng CH, Williamson D, Patz S, Kraft R, Walsworth RL, Jolesz FA, Albert MS. Optimal pulse sequences for hyperpolarized 129Xe MR. International Workshop on Perspectives of MR Imaging Using Polarized Gases, Centre de Physique des Houches, Les Houches, France, 1996:15.
Abstract
Published
Refereed?: Yes, Invited?: Yes

5. K. Sakai, A.M. Bilek, E. Oteiza, R.L. Walsworth, D. Balamore, F.A. Jolesz, and M.S. Albert, Temporal dynamics of hyperpolarized 129Xe resonances in living rats. International Workshop on Perspectives of MR Imaging Using Polarized Gases, Centre de Physique des Houches, Les Houches, France, 1996:33.
Abstract
Published
Refereed?: Yes, Invited?: Yes

6. Peled S, Walsworth RL, Albert MS, Jolesz F, Nascimben L, Tseng CH. Model of hyperpolarized 129Xe uptake in human tissue. International Workshop on Perspectives of MR Imaging Using Polarized Gases, Centre de Physique des Houches, Les Houches, France, 1996.
Abstract
Published
Refereed?: Yes, Invited?: Yes

7. Albert MS. Development of hyperpolarized noble gas MRI. HELION97, The Seventh RCNP International Workshop on Polarized 3He Beams and Gas Targets and Their Applications, Kobe, Japan, 1997:PL12-2.
Abstract
Published
Refereed?: Yes, Invited?: Yes

8. Zhao L, Albert MS. Biomedical imaging using hyperpolarized noble gases: pulse sequence considerations. HELION97, The Seventh RCNP International Workshop on Polarized 3He Beams and Gas Targets and Their Applications, Kobe, Japan, 1997:PL12-3.
Abstract
Published
Refereed?: Yes, Invited?: Yes

9. Albert MS. Hyperpolarized Noble Gas MRI: History and Applications. First International Workshop on Pulmonary Functional Imaging, Philadelphia, PA, 2002.
   Abstract
   Published
   Refereed?: Yes, Invited?: Yes

10. Albert MS. Quantification of airway diameters for assessing pathophysiological changes in asthma. 2004 International Workshop on Pulmonary Functional Imaging at Penn, Philadelphia, PA, 2004
    Abstract
    Published
    Refereed?: Yes, Invited?: Yes

11. Smith GP, Albert MS, Shindledecker RD, Jerome C, and Ackerman SH. Ingestion of sucrose increases hypothalamic dopaminergic activity. Society of Neuroscience. New York, New York, 1987;13:16.
    Abstract
    Published
    Refereed?: Yes, Invited?: Yes

12. Albert MS, Acuff VR, Otsuka T, Wei L, Breslin VT, Fenstermacher JD, Springer CS. Pharmacokinetics of DyTTHA3- in the rat: direct determination of blood Dy by atomic emission. Proceedings of the Eighth Annual Meeting of the Society of Magnetic Resonance in Medicine. Amsterdam, The Netherlands, 1989:804.
    Abstract
    Published
    Refereed?: Yes, Invited?: Yes

13. Albert MS, Lee JH, Patlack CS, Fenstermacher JD, Springer CS. 23Na MRS of the rat brain *in vivo* at 9.4 T: on the permeability of the blood-brain barrier to shift reagent. Proceedings of the Ninth Annual Meeting of the Society of Magnetic Resonance in Medicine. New York, New York, 1990:36.
    Abstract
    Published
    Refereed?: Yes, Invited?: Yes

14. Albert MS, Lee JH, Springer CS. The use of TmDOTP5- as a 23Na shift reagent in living rat studies at 9.4 T. Proceedings of the Ninth Annual Meeting of the Society of Magnetic Resonance in Medicine. New York, New York, 1990:1269.
    Abstract
    Published
    Refereed?: Yes, Invited?: Yes

15. Lee JH, Albert MS, Huang W, Springer CS. 23Na CSI of the rat brain *in vivo* at 9.4 T: on the impermeability of the blood-brain barrier to shift reagents. Proceedings of the Tenth Annual

Meeting of the Society of Magnetic Resonance in Medicine. San Francisco, California, 1991:440.
Abstract
Published
Refereed?: Yes, Invited?: Yes

16. Albert MS, Lee JH, Huang W, Springer CS. Transient susceptibility-induced contrast enhancement during the first pass of a bolus saline injection. Proceedings of the Tenth Annual Meeting of the Society of Magnetic Resonance in Medicine. San Francisco, California, 1991:779.
Abstract
Published
Refereed?: Yes, Invited?: Yes

17. Albert MS, Lee JH, Huang W, Springer CS. Susceptibility contrast with a bolus saline injection. Proceedings of the Tenth Annual Meeting of the Society of Magnetic Resonance Imaging. San Francisco, California. In J Magn Reson Imaging 1992;2P:143.
Abstract
Published
Refereed?: Yes, Invited?: Yes

18. Albert MS, Huang W, Lee JH, Springer CS. Susceptibility-induced contrast enhancement during the rapid repetition of dilution bolus injections. Proceedings of the Eleventh Annual Meeting of the Society of Magnetic Resonance in Medicine. Berlin, Germany, 1992:1124.
Abstract
Published
Refereed?: Yes, Invited?: Yes

19. Albert MS, Springer CS, Murphy R, Wishnia A. Relaxation of 129Xe in model biological systems: on probing the mechanism of general anesthesia. Proceedings of the Eleventh Annual Meeting of the Society of Magnetic Resonance in Medicine. Berlin, Germany, 1992:2104.
Abstract
Published
Refereed?: Yes, Invited?: Yes

20. Albert MS, Springer CS, Wishnia A. 129Xe relaxation catalysis by oxygen. Proceedings of the Eleventh Annual Meeting of the Society of Magnetic Resonance in Medicine. Berlin, Germany, 1992:4710.
Abstract
Published
Refereed?: Yes, Invited?: Yes

21. Palyka I, Albert MS, Springer CS. Relaxographic imaging of CR distribution volumes in the mouse. Proceedings of the Twelfth Annual Meeting of the Society of Magnetic Resonance in Medicine. Berlin, Germany, 1993:778.
Abstract

Published
Refereed?: Yes, Invited?: Yes

22. Huang W, Albert MS, Volkow ND, Springer CS. Functional imaging of the rodent brain at 9.4 T. Proceedings of the Twelfth Annual Meeting of the Society of Magnetic Resonance in Medicine. Berlin, Germany, 1993:1378.
Abstract
Published
Refereed?: Yes, Invited?: Yes

23. Albert MS, Driehuys B, Saam B, Springer CS, Cates GD, Wishnia A. Hyperpolarized 129Xe magnetic resonance imaging (HypX-MRI). Proceedings of the Thirty Fifth Experimental Nuclear Magnetic Resonance Conference, 1994:34.
Abstract
Published
Refereed?: Yes, Invited?: Yes

24. Albert MS, Schepkin VD, Budinger TF. Measurement of 129Xe T1 in blood to explore the feasibility of hyperpolarized 129Xe MRI. Proceedings of the Third Annual Meeting of the Society of Magnetic Resonance. Nice, France, 1995:1193.
Abstract
Published
Refereed?: Yes, Invited?: Yes

25. Peled S, Jolesz FA, Albert MS, Walsworth RL. Calculation of spin-exchange polarized 129Xe uptake in tissue for MR applications. Proceedings of the Third Annual Meeting of the Society of Magnetic Resonance. Nice, France, 1995:1192.
Abstract
Published
Refereed?: Yes, Invited?: Yes

26. Albert MS, Schepkin VD, Budinger TF. Imaging hyperpolarized natural abundant xenon 129Xe. Proceedings of the Third Annual Meeting of the Society of Magnetic Resonance. Nice, France, 1995:1201.
Abstract
Published
Refereed?: Yes, Invited?: Yes

27. Sakai K, Bilek AM, Tseng CH, Balamore D, Walsworth RL, Oteiza E, Jolesz FA, Albert MS. Hyperpolarized 129Xe lifetimes in the blood of living rats. Proceedings of the Thirty Seventh Experimental Nuclear Magnetic Resonance Conference, 1996:323.
Abstract
Published
Refereed?: Yes, Invited?: Yes

28. Albert MS, Tseng CH, Williamson D, Oteiza E, Walsworth RL, Kraft B, Kacher D, Holman BL, Jolesz FA. Demonstration of hyperpolarized 129Xe MR imaging (HypX-MRI) of the human oral cavity. Proceedings of the Thirty Seventh Experimental Nuclear Magnetic Resonance Conference, 1996:323.
Abstract
Published
Refereed?: Yes, Invited?: Yes

29. Albert MS, Balamore D, Sakai K, Kacher D, Walsworth RL, Oteiza E, Jolesz FA. Hyperpolarized 129Xe lifetimes in blood. Proceedings of the Fourth Annual Meeting of the International Society of Magnetic Resonance in Medicine. New York, New York, 1996:1357.
Abstract
Published
Refereed?: Yes, Invited?: Yes

30. Sakai K, Bilek AM, Tseng CH, Balamore D, Walsworth RL, Oteiza E, Jolesz FA, Albert MS. Temporal dynamics of hyperpolarized 129Xe resonances in living rats. Proceedings of the Fourth Annual Meeting of the International Society of Magnetic Resonance in Medicine. New York, New York, 1996:1359.
Abstract
Published
Refereed?: Yes, Invited?: Yes

31. Albert MS, Tseng CH, Williamson D, Oteiza E, Walsworth RL, Kraft B, Kacher D, Holman BL, Jolesz FA. Demonstration of hyperpolarized 129Xe MR imaging (HypX-MRI) of the human oral cavity. Proceedings of the Fourth Annual Meeting of the International Society of Magnetic Resonance in Medicine. New York, New York, 1996:1356.
Abstract
Published
Refereed?: Yes, Invited?: Yes

32. Mair R, Tseng CH, Albert M, Patz S, Srinivasaro M, Walsworth R. Complex fluid studies using NMR of laser-polarized noble gases. Proceedings of the Thirty Eighth Experimental Nuclear Magnetic Resonance Conference, 1997.
Abstract
Published
Refereed?: Yes, Invited?: Yes

33. Albert MS, Balamore D, Sakai K, Jolesz FA. Hyperpolarized 129Xe *in vivo* peak assignment in the rat using *in vitro* tissue samples. Proceedings of the Fifth Annual Meeting of the International Society of Magnetic Resonance in Medicine. Vancouver, Canada, 1997:2109.
Abstract
Published
Refereed?: Yes, Invited?: Yes

34. Kacher D, Balamore D, Jolesz FA, Albert MS, 129Xe T1 measurement in lysed RBC suspensions and the role of oxygenation. Proceedings of the Fifth Annual Meeting of the International Society of Magnetic Resonance in Medicine. Vancouver, Canada, 1997:1403.
Abstract
Published
Refereed?: Yes, Invited?: Yes

35. Kacher D, Shimizu K, Walsworth RL, Jolesz FA, Albert MS. Projection-reconstruction imaging with hyperpolarized 129Xe. Proceedings of the Fifth Annual Meeting of the International Society of Magnetic Resonance in Medicine. Vancouver, Canada, 1997:2112.
Abstract
Published
Refereed?: Yes, Invited?: Yes

36. Zhao L, Mulkern R, Tseng CH, Williamson D, Patz S, Kraft R, Walsworth R, Jolesz FA, Albert MS. Optimization of RF pulses for hyperpolarized 129Xe MRI: The variable flip angle approach. Proceedings of the Fifth Annual Meeting of the International Society of Magnetic Resonance in Medicine. Vancouver, Canada, 1997: 2106.
Abstract
Published
Refereed?: Yes, Invited?: Yes

37. Zhao L, Mulkern R, Tseng CH, Williamson D, Oshio K, Hakon G, Walsworth R, Jolesz FA, Albert MS. Multiple echo techniques for hyperpolarized noble gas MRI. Proceedings of the Fifth Annual Meeting of the International Society of Magnetic Resonance in Medicine. Vancouver, Canada, 1997:305.
Abstract
Published
Refereed?: Yes, Invited?: Yes

38. Zhao L, Venkatesh A, Balamore D, Jolesz FA, Albert MS. Vascular infusion of hyperpolarized 129Xe for MRI. Proceedings of the Sixth Annual Meeting of the International Society of Magnetic Resonance in Medicine. Sydney, Australia, 1998:1908.
Abstract
Published
Refereed?: Yes, Invited?: Yes

39. Albert, M.S. Airway Disease: Hyperpolarized Gas MRI. Proceedings of the Sixth Annual Meeting of the ISMRM. Sydney, Australia, 1998:413.
Abstract
Published
Refereed?: Yes, Invited?: Yes

40. Zhao, L., Mulkern, R., Venkatesh, A., Gubbjartsson, H., Jolesz, F.A., Albert, M.S. Hyperpolarized ^{129}Xe T_2 and Diffusion Measurements for Fast Spin-Echo MRI. Proceedings of the Sixth Annual Meeting of the ISMRM. Sydney, Australia, 1998:451.

Abstract
Published
Refereed?: Yes, Invited?: Yes

41. M.S. Albert, D. Balamore, D. Kacher, A. Venkatesh, F.A. Jolesz, Resolving the Conflict over the T1 Values of 129Xe in Blood, Proceedings of the Seventh Annual Meeting of the International Society of Magnetic Resonance in Medicine, Philadelphia, PA, 1999.
Abstract
Published
Refereed?: Yes, Invited?: Yes

42. A.K. Venkatesh, T. Pausak, C.F. Ward, F.A. Jolesz, M.S. Albert, Hyperpolarized noble gas imaging using a simple programmable gas delivery system, Proceedings of the Seventh Annual Meeting of the International Society of Magnetic Resonance in Medicine, Philadelphia, PA, 1999.
Abstract
Published
Refereed?: Yes, Invited?: Yes

43. A.K. Venkatesh, L. Zhao, D. Balamore, F.A. Jolesz, M.S. Albert, Using Carrier-Agents in Live Rats to Deliver Hyperpolarized 129Xe, Proceedings of the Seventh Annual Meeting of the International Society of Magnetic Resonance in Medicine, Philadelphia, PA, 1999.
Abstract
Published
Refereed?: Yes, Invited?: Yes

44. L. Zhao, A.K. Venkatesh, M.S. Albert, and L.P. Panych, Dynamically adaptive hyperpolarized noble gas MRI using multi-resolution line scan encoding, Proceedings of the Seventh Annual Meeting of the International Society of Magnetic Resonance in Medicine, Philadelphia, PA, 1999.
Abstract
Published
Refereed?: Yes, Invited?: Yes

45. L. Zhao, A.K. Venkatesh, M.S. Albert and L.P. Panych. SNR analysis of orthogonal encoding methods for hyperpolarized noble gas MRI. Proceedings of the Eighth Annual Meeting of the International Society of Magnetic Resonance in Medicine, Denver, CO, 2000; 2185.
Abstract
Published
Refereed?: Yes, Invited?: Yes

46. L. Zhao, A.K. Venkatesh, G.P. Zientara, F.A. Jolesz, M.S. Albert and L.P. Panych, Optical Flow Imaging of Rat Lung Dynamics Using Hyperpolarized Noble Gas MRI. Proceedings of the Eighth Annual Meeting of the International Society of Magnetic Resonance in Medicine, Denver, CO, 2000; 2188.

Abstract
Published
Refereed?: Yes, Invited?: Yes

47. A.K. Venkatesh, L.V. Kubatina, A.X. Zhang, C-H. Oh, D. Balamore, F.A. Jolesz and M.S. Albert, In Vivo MRI at 0.015 Tesla Using Hyperpolarized Xenon. Proceedings of the Eighth Annual Meeting of the International Society of Magnetic Resonance in Medicine, Denver, CO, 2000; 2189.
Abstract
Published
Refereed?: Yes, Invited?: Yes

48. Y.J. Yang, M.S. Albert, K.H. Min, A.X. Zhang, A.K. Venkatesh, G.R. Gomez, D. Balamore, R.S. Hashoian, C-L. Chin and C.H. Oh, RF Coil Optimization for 0.015 Tesla Very Low-Field Hyperpolarized Noble Gas MRI. Proceedings of the Eighth Annual Meeting of the International Society of Magnetic Resonance in Medicine, Denver, CO, 2000; 1425.
Abstract
Published
Refereed?: Yes, Invited?: Yes

49. M.P. Ramirez, L.V. Kubatina, K.C.E. Sigaloff, M.A. Donahue, A.K. Venkatesh and M.S. Albert. Developing Safe Breathing Protocols for Hyperpolarized Noble Gas MRI. Proceedings of the Eighth Annual Meeting of the International Society of Magnetic Resonance in Medicine, Denver, CO, 2000; 2192.
Abstract
Published
Refereed?: Yes, Invited?: Yes

50. Y. Sun, J. Zhou, S. Shen, C. Stayner, J. Munasinghe, D. Burstein and M. Albert. Transgenic Mouse MRI of Polycystic Kidney Disease. Proceedings of the Eighth Annual Meeting of the International Society of Magnetic Resonance in Medicine, Denver, CO, 2000; 1451.
Abstract
Published
Refereed?: Yes, Invited?: Yes

51. Sun Y, Heese O, Carroll R, Mochizuki S, Black P, Albert M. MRI Monitoring of the Development of Brain Tumors in Rat Glioma Models. The 39th Conference, the Japanese Society of Medical Electronics and Biological Engineering. May, 2000, Tokyo, Japan.
Abstract
Published
Refereed?: Yes, Invited?: Yes

52. Albert M, Venkatesh A, Zhang A, Oh CH, Kubatina L, Balamore D, Jolesz FA. Very low-field hyperpolarized noble gas MRI in vivo. Proceedings of the 41st Experimental NMR Conference, Asilomar, CA, 2000.
Abstract

Published
Refereed?: Yes, Invited?: Yes

53. Tooker, A., A. Zhang, A.K. Venkatesh, K.S. Hong, and M. Albert, Hardware for performing hyperpolarized helium imaging on a clinical MR imager. Proceedings of the Ninth Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2001: p. 1154.
Abstract
Published
Refereed?: Yes, Invited?: Yes

54. Venkatesh, A.K., K.S. Hong, L. Kubatina, Y. Sun, R. Mulkern, F.A. Jolesz, and M.S. Albert, Using dynamic hyperpolarized xenon MR to measure brain perfusion. Proceedings of the Ninth Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2001: p. 951.
Abstract
Published
Refereed?: Yes, Invited?: Yes

55. Venkatesh, A.K., K.S. Hong, L. Kubatina, Y. Sun, R. Mulkern, F.A. Jolesz, and M.S. Albert, Direct observation of the transport of 129Xe from the lung-gas to the tissue and the blood. Proceedings of the Ninth Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2001: p. 954.
Abstract
Published
Refereed?: Yes, Invited?: Yes

56. Venkatesh, A., D.F. Kacher, K. Kuroda, D. Balamore, F.A. Jolesz, and M.S. Albert, Temperature measurement using the 129Xe chemical shift. Proceedings of the Ninth Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2001: p. 2194.
Abstract
Published
Refereed?: Yes, Invited?: Yes

57. Hong, K.S, Venkatesh, A.K., L. Kubatina, Y. Sun, R. Mulkern, F.A. Jolesz, and M.S. Albert, Brain perfusion measurement using dynamic hyperpolarized xenon MR. the Radiological Society of North America, 87th Annual Meeting, 2001: p. 480.
Abstract
Published
Refereed?: Yes, Invited?: Yes

58. Yanping Sun, Sophia Wang, Rona Caroll, Nicholas Seyfried, Ronald Tabnbador, Marcelle Machluf, Robert Mulkern, Peter Black, Mitchell Albert. MRI of Human U87 Gliblastoma in a Mouse Model. The 42nd Experimental Nuclear Magnetic Resonance Conference. March, 2001, Orlando
Abstract
Published

Refereed?: Yes, Invited?: Yes

59. Y. Sun, R.V. Mulkern, M.S. Albert, D. Burstein, R. Carroll, M. Kieran: Diffusion Imaging of Brain Tumors with Gadolinium Enhancement. The 43nd Experimental Nuclear Magnetic Resonance Conference. April, 2002. Asilomar, CA
Abstract
Published
Refereed?: Yes, Invited?: Yes

60. Tooker, A., E. McKinstry, K.S. Hong, P. Costello, F.A. Jolesz, and M.S. Albert, Signal dynamics of distal airways and lung periphery imaging in humans using hyperpolarized 3He MRI. Proceedings of the International Society for Magnetic Resonance in Medicine 10th Annual Meeting, 2002: p. 2020.
Abstract
Published
Refereed?: Yes, Invited?: Yes

61. Y. Sun, R. Carroll, N. Seyfried, M. Machluf, N. O. Schmidt, R. V. Mulkern, J. Munasinghe, P. Black, M. Albert: MRI Assessment of Endostatin Anti-angiogenesis Treatment of Human Brain Tumors in Nude Mice, Proceedings of the International Society for Magnetic Resonance in Medicine 10th Annual Meeting, 2002: p. 2138.
Abstract
Published
Refereed?: Yes, Invited?: Yes

62. Y. Sun, D. Burstein, R.V. Mulkern, K. Schmidt , M. Albert, R. Carroll, N. O. Schmidt, M.W. Kieran. Perfusion MRI of brain tumors in a mouse model using arterial spin labeling. ISMRM Workshop on In vivo Functional and Molecular Assessment of Cancer, 128- 129, 2002.
Abstract
Published
Refereed?: Yes, Invited?: Yes

63. T. Lewis, E. McKinstry, A. Tooker, Z. Handler, J. Mansour, M. Albert. Hyperpolarized ^{3}He Imaging of human respiratory airways and quantification of airway diameters. Proceedings of the International Society for Magnetic Resonance in Medicine 11th Annual Meeting, 2003, p. 505.
Abstract
Published
Refereed?: Yes, Invited?: Yes

64. T. Lewis, E. McKinstry, A. Tooker, Z. Handler, J. Mansour, M. Mazzanti, M. Albert. Visualization of methacholine-induced airway constriction hyperpolarized ^{3}He. Proceedings of the International Society for Magnetic Resonance in Medicine 11th Annual Meeting, 2003, p. 1406.
Abstract
Published

Refereed?: Yes, Invited?: Yes

65. Y.S. Tzeng, J. Yen, J. Mansour, Z. Handler, M. Albert. Improving the construction of 3D airway tree models from hyperpolarized ^{3}He MR images. Proceedings of the International Society for Magnetic Resonance in Medicine 11th Annual Meeting, 2003, p. 1405.
Abstract
Published
Refereed?: Yes, Invited?: Yes

66. M.L. Mazzanti, Y. Sun, J. Mansour, N. Shah, S.S. Doshi, F. Jolesz. Functional Brain Imaging Using Hyperpolarized ^{129}Xe. Proceeding of theTwelfth Annual Meeting of the International Society for Magnetic Resonance in Medicine, 2004, p. 166.
Abstract
Published
Refereed?: Yes, Invited?: Yes

67. Y. Sun, S. Doshi, L. Lee, P. Sudentas, B. Donohue, K. Asrican, A. Worku, V. Walker, N. El Hashemite, A. Lader, H. Onda, H. Zhang, M.S. Albert, F. Jolesz, D.J. Kwiatkowski, S. Dabora. MRI Characterization of Kidney Lesions in Tuberous Sclerosis Mouse Model. Proceedings of the Twelfth Annual Meeting of the International Society for Magnetic Resonance in Medicine, 2004, p. 80.
Abstract
Published
Refereed?: Yes, Invited?: Yes

68. Y. Sun, K. Schmidt, S. Doshi, L. Lee, P. Sudentas, B. Donahue, K. Asrican, A. Worku, V. Walker, N. El Hashemite, A. Lader, H. Onda, H. Zhang, M.S. Albert, F. Jolesz, D.J. Kwiatkowski, S. Dabora. MRI Assessment of Treatment of Tuberous Sclerosis Kidney with Rapamycin and IFN-g in a Mouse Model. Proceedings of the Twelfth Annual Meeting of the International Society for Magnetic Resonance in Medicine, 2004, p. 185.
Abstract
Published
Refereed?: Yes, Invited?: Yes

69. M. Albert. Basics of Hyperpolarized Noble Gas MR Imaging. Proceeding of the 2nd International Workshop on Pulmonary Functional Imaging, 2004, p. 96.
Abstract
Published
Refereed?: Yes, Invited?: Yes

70. Y-S Tzeng, JB Szender, NM Shah, JK Mansour, PA Kritek, GR Washko, EP Ingenito, E Israel, KR Lutchen, MS Albert. Relating Heterogeneous Constriction and Ventilation Distribution in Healthy versus Asthmatic Lungs through Visualization with Hyperpolarized 3He MRI. Proceedings of the Thirteenth Annual Meeting of the International Society for Magnetic Resonance in Medicine, 2005, p. 360.
Abstract

Published
Refereed?: Yes, Invited?: Yes

71. Y-S Tzeng, JK Mansour, N Shah, GR Washko, PA Kritek, EP Ingenito, E Israel, KR Lutchen, MS Albert. Quantification of Ventilation Heterogeneity from Hyperpolarized ^{3}He MR Images Using Coefficient of Variation. Proceedings of the Thirteenth Annual Meeting of the International Society for Magnetic Resonance in Medicine, 2005, 363.
    Abstract
    Published
    Refereed?: Yes, Invited?: Yes

72. Y-S Tzeng, J Tschirren, J Mansour, Z Handler, NM Shah, EA Hoffman, MS Albert. Comparison of Airway Diameter Measurements from an Anthropomorphic Airway Tree Model Imaged Using Hyperpolarized ^{3}He MRI and Multidetector CT. Proceedings of the Thirteenth Annual Meeting of the International Society for Magnetic Resonance in Medicine, 2005, p. 360.
    Abstract
    Published
    Refereed?: Yes, Invited?: Yes

73. M.L. Mazzanti, Y. Sun, N. Shah, J. Mansour, F. Jolesz, M.S. Albert. Functional Brain Imaging of Pain Response Using Hyperpolarized Xenon MRI. Proceedings of the thirteenth annual meeting of the International Society of Magnetic Resonance in Medicine, 2005, p. 360.
    Abstract
    Published
    Refereed?: Yes, Invited?: Yes

74. Y.-S. Tzeng, J.B. Szender, N.M. Shah, J.K. Mansour, P.A. Kritek, G.R. Washko, E.P. Ingenito, E. Israel, K.R. Lutchen, M.S. Albert. Visualization and Quantification of Ventilation Heterogeneity in Healthy and Asthmatic Subjects Using Hyperpolarized ^{3}He MRI. 100th Annual Meeting of American Thoracic Society, 2005.
    Abstract
    Published
    Refereed?: Yes, Invited?: Yes

75. J.B. Szender, Y-S Tzeng, G.R. Washko, P.A. Kritek, N.M. Shah, J.K. Mansour, E. Israel, E.P. Ingineto, M.S. Albert, and K.R. Lutchen. Impact of Deep-Inspirations on Ventilation and Mechanical Heterogeneity in Asthmatic versus Healthy Lungs. 100th Annual Meeting of American Thoracic Society, 2005.
    Abstract
    Published
    Refereed?: Yes, Invited?: Yes

76. N. Shah, Y. Tzeng, J. Mansour, H. Simon And M. Albert. Projection Reconstruction Pulse Sequence For Rendering 3D Airway Trees From Hyperpolarized ^{3}He MRI. 2005 Annual Fall Meeting of BMES Biomedical Engineering Society, 2005.

Abstract
Published
Refereed?: Yes, Invited?: Yes

77. J. Kenyon, Y.S. Tzeng, J.B. Zender, L.M. Campana, G.R. Washko, E. Israel, M.S. Albert, K.R. Lutchen. Image Functional Modeling (IFM) Using Hyperpolarized Helium MRI. Proceedings of the Fourteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2006, p. 20.
Abstract
Published
Refereed?: Yes, Invited?: Yes

78. J.D. Gereige, Y. Sun, J.K. Mansour, F.L. Jocobson, P. Lingholm, J.P. Butler, S.H. Loring, M. Ferrigno, M.S. Albert, Regional Ventilation Differences at Large Lung Volumes Assessed Using Hyperpolarized ^{3}He MRI. Proceedings of the Fourteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2006, p. 268.
Abstract
Published
Refereed?: Yes, Invited?: Yes

79. X. Zhou, M.L. Mazzanti, J.J. Chen, J.K. Mansour, J.D. Gereige, A.K. Venkatesh, Y. Sun, R.V. Mulkern, M.S. Albert. Improved Determination of Hyperpolarized ^{129}Xe T1 in the Rat Brain. Proceedings of the Fourteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2006, p. 274.
Abstract
Published
Refereed?: Yes, Invited?: Yes

80. Y.S. Tzeng, N. Shah, J. Mansour, J. Gereige, G. Washko, E. Israel, K. Lutchen, M. Albert. Ventilation Heterogeneity Indices Computed from Hyperpolarized ^{3}He MRI Captures Differences Between Asthmatic and Non-Asthmatic Lungs. Proceedings of the Fourteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2006, p. 334.
Abstract
Published
Refereed?: Yes, Invited?: Yes

81. R.M Al-Hashem, H. Ji, M.S. Albert, K.K. Wong, Y. Sun. MRI Assessment of a Treatment for Non-Small Cell Lung Cancer in a Mouse Model. Proceedings of the Fourteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2006, p. 354.
Abstract
Published
Refereed?: Yes, Invited?: Yes

82. Y-S Tzeng, NM Shah, JK Mansour, JD Gereige, GR Washko, E Israel, KR Lutchen, MS Albert. Quantification of Ventilation Heterogeneity Changes in Asthmatic and Non-Asthmatic Lungs Using Hyperpolarized 3He MRI. American Thoracic Society, San Diego, CA, 2006.
Abstract
Published
Refereed?: Yes, Invited?: Yes

83. X Zhou, J James Chen, M Mazzanti, J Mansour, M Albert. Lung MRI using Hyperpolarized "He Gas at Very Low Field, Biomedical Engineering Society Annual Meeting, Chicago, Oral Platform Presentation, 2006.
Abstract
Published
Refereed?: Yes, Invited?: Yes

84. MS Albert, J Cook-Granroth, J Gereige, JK Mansour, KR Lutchen, EA Hoffman. Airway Behavior Following a Methacholine Challenge Observed Using Hyperpolarized ^{3}He MRI and High Resolution CT, Proceedings of the Sixteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2007, 947.
Abstract
Published
Refereed?: Yes, Invited?: Yes

85. Y-S Tzeng, NM Shah, JK Mansour, J Gereige, GR Washko, MH Cho, E Stepp, KR Lutchen, MS Albert. Response to Deep Inspirations in Reactive and Non-Reactive Asthmatic Subjects Using Hyperpolarized ^{3}He MRI. Proceedings of the Sixteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2007, 2784.
Abstract
Published
Refereed?: Yes, Invited?: Yes

86. X Zhou, Y Sun, M Mazzanti, N Henninger, J Gereige, J Mansour, M Fisher, M Albert. Imaging Stroke with Hyperpolarized ^{129}Xe MRI. Proceedings of the Sixteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2007, 1275.
Abstract
Published
Refereed?: Yes, Invited?: Yes

87. X Zhou, Y-S Tzeng, J Mansour, M Mazzanti, Y Sun, M Albert. Optimum Ventilation Mixture Ratio for Maximizing HP ^{129}Xe MR Brain Signal. Proceedings of the Sixteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2007, 1270.
Abstract
Published
Refereed?: Yes, Invited?: Yes

88. X Zhou, J Chen, J Mansour, M Albert. Very Low Field 15 mT System for Hyperpolarized Noble Gas MRI. Proceedings of the Sixteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2007, 3289.
Abstract
Published
Refereed?: Yes, Invited?: Yes

89. Y Sun, J Gereige, D Sugarbaker, M Albert, Assessment of Ventilation Function and Airway Structure in Mesothelioma Using Hyperpolarized ^{3}He MRI. Proceedings of the Sixteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2007, 2783.
Abstract
Published
Refereed?: Yes, Invited?: Yes

90. Y Sun, J Gereige, P Zygmanski, C Polvorosa, R Soto, H Hatabu, A Allen, M Albert. Using ^{3}He MRI for Assessment of Radiation Treatment for NSCLC. Proceedings of the Sixteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, 2007, 2869.
Abstract
Published
Refereed?: Yes, Invited?: Yes

91. Y. Sun, A. Allen, J. Gereige, P. Zygmanski, C. Polvorosa R. Soto, Hiroto Hatabu, M. Albert, Evaluation of Lung Cancer Treatment with Radiation Using 3He MRI. Ameircan Journal of Respiratory and Critical Care Medicine, Vol. 177, p403, 2008
Abstract
Published
Refereed?: Yes, Invited?: Yes

92. Yanping Sun, Jessica Gereige, Joey Mansour, David Sugarbaker, Mitchell Albert, Using Hyperpolarized 3He MRI to Evaluate Lung Function in Mesothelioma. American Journal of Respiratory and Critical Care Medicine, Vol. 177, p413, 2008
Abstract
Published
Refereed?: Yes, Invited?: Yes

93. Y Sun, S Zhalehdoust-Sani, H Bao, Y-S Tzeng, J Mansour, J Gereige, X Zhou, MH Cho, E Israel, KR Lutchen, MS Albert, Ventilation and Heterogeneity in Mild-to-Moderate and Severe Asthmatics Using Hyperpolarized 3He MRI, The Sixteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, Toronto, Canada, 2008.
Abstract
Published
Refereed?: Yes, Invited?: Yes

94. Y Sun, X Zhou, M Mazzanti, M S Albert, Hyperpolarized ^{129}Xe MRI Of The Brain, Lungs And Plants Augmented With MRI Pulse Sequence Development, NASA Human Research Program Investigators' Workshop, League City, Texas, 2008.

Abstract
Published
Refereed?: Yes, Invited?: Yes

95. Y Sun, Y-S Tzeng, X Zhou, MS Albert, Hyperpolarized Noble Gas Magnetic Resonance Imaging, NASA Human Research Program Investigators' Workshop, League City, Texas, 2008.
Abstract
Published
Refereed?: Yes, Invited?: Yes

96. R Walvick, B Bastan, A Reno, J Mansour, Y Sun, X Zhou, M Mazzanti, M Fisher, CH Sotak, MS Albert, Hyperpolarized Magnetic Resonance ^{129}Xe Imaging of a Rat Model of Transient Ischemic Stroke, SPIE Conference Proceedings Paper, SPIE medical Imaging, 2009.
Abstract
Published
Refereed?: Yes, Invited?: Yes

97. Y. Sun, S. Krinzman, T. Tan, T. Bishop, A. Sosa, S. Rajan, A. Reno, Y-S. Tzeng, S. Zhalehdoust-Sani, K. R. Lutchen, J.M. Madison, and M.S. Albert, Using Hyperpolarized 3He MRI to Distinguish Asthmatics from Healthy Subjects, The Seventeenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, Honolulu, Hawaii, 2009.
Abstract
Published
Refereed?: Yes, Invited?: Yes

98. Y. Sun, T. Tan, S. Zhalehdoust-Sani, Y-S. Tzeng, K. Lutchen, and M.S. Albert, Hyperpolarized 3He MRI Heterogeneity and Ventilation Defect Volume Correlates with Asthma Severity, The Seventeenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, Honolulu, Hawaii, 2009.
Abstract
Published
Refereed?: Yes, Invited?: Yes

99. Y Sun, JP Butler, JD Gereige., SH Loring, P Lindholm, M Ferrigno, MS Albert, Hyperpolarized ^{3}He MRI of Pulmonary Ventilation in Competitive Breath-hold Divers during Glossopharyngeal Insufflation and Exsufflation, The Seventeenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, Honolulu, Hawaii, 2009.
Abstract
Published
Refereed?: Yes, Invited?: Yes

100. Y Sun, X Zhou, Y-S Tzeng, R Walvick, M Mazzanti, MS. Albert, Hyperpolarized Noble Gas Magnetic Resonance Imaging, NASA Human Research Program Investigators' Workshop, League City, Texas, 2009.

Abstract
Published
Refereed?: Yes, Invited?: Yes

101. Y. Sun, B. O'Sullivan, R. Walvick, A. Reno, L. Shi, D. Baker, J. Mansour, M.S. Albert, Using Hyperpolarized ^{3}He MRI to Evaluate Therapeutics in Cystic Fibrosis Patients, Proceedings of the Eighteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, Stockholm, Sweden, 2010.
Abstract
Published
Refereed?: Yes, Invited?: Yes

102. Y Sun, L Shi, G Jin, A Reno, S Zhalehdoust-Sani, SJ Krinzman, J Liu, KR Lutchen, JM Madison, MS Albert, Assessing the Persistence of Ventilation Defects in Asthmatics at Baseline and Following Methacholine Challenge Using Hyperpolarized ^{3}He MRI, Proceedings of the Eighteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, Stockholm, Sweden, 2010.
Abstract
Published
Refereed?: Yes, Invited?: Yes

103. RP Walvick, BT Bratane, J Bouley, N Henninger, M Albert, M Fisher, MRI of Emboli Localization and Lysis in an Embolic Model of Rat Middle Cerebral Artery Occlusion, Proceedings of the Eighteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, Stockholm, Sweden, 2010.
Abstract
Published
Refereed?: Yes, Invited?: Yes

104. RP Walvick, AL Reno, M Gounis, MS Albert, Detection of Pulmonary Ischemia using the Oxygen Sensitivity of Hyperpolarized Helium MRI in a Rodent Model of Pulmonary Embolism, Proceedings of the Nineteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, Montreal, Canada, 2011.
Abstract
Published
Refereed?: Yes, Invited?: Yes

105. RP Walvick, AL Reno, AA Bognadov, MS Albert, Pulmonary Blood Volume Mapping using a Modified T1 Weighted, Steady State MRI Technique in a Rodent Model of Hypoxic Pulmonary Vasoconstriction, Proceedings of the Nineteenth Annual Meeting of the International Society of Magnetic Resonance in Medicine, Montreal, Canada, 2011.
Abstract
Published
Refereed?: Yes, Invited?: Yes

106. Couch M, O'Sullivan B, Roche JP, Walvick R, Zheng S, Baker D, Johnson M, Botfield M, Albert MS. Assessment of repeatability of hyperpolarized gas MR ventilation imaging in cystic fibrosis patients. Proceedings of the Twentieth Annual Meeting of the International Society of Magnetic Resonance in Medicine, Melbourne, Australia, 2012.
Abstract
Published
Refereed?: Yes, Invited?: Yes

107. Iain K. Ball, Marcus J. Couch, Tao Li, Matthew S. Fox, Jordan A. Lovis, Ralph Hashoian, Shalyn L. Littlefield, Birubi Biman, and Mitchell S. Albert. *Apparent Diffusion Coefficient Mapping in Human Lungs using ^{19}F MRI of Inert Fluorinated Gases*. Proceedings of the 11th Imaging Network of Ontario Symposium, Toronto, February 4 – 5, 2013. (Oral Presentation)
Poster
Published
Refereed?: Yes, Invited?: Yes

108. Marcus J. Couch, Iain K. Ball, Tao Li, Matthew S. Fox, Jordan A. Lovis, Ralph Hashoian, and Mitchell S. Albert. *Image Optimization in Phantoms for ^{19}F MRI of Inert Fluorinated Gases*. Proceedings of the 11th Imaging Network of Ontario Symposium, Toronto, February 4 – 5, 2013. (Poster Presentation)
Poster
Published
Refereed?: Yes, Invited?: Yes

109. Marcus J. Couch, Iain K. Ball, Tao Li, Matthew S. Fox, Jordan A. Lovis, Ralph Hashoian, Shalyn L. Littlefield, Birubi Biman, and Mitchell S. Albert. *^{19}F Ultra-Short Echo Time MRI of Human Lungs Using Inert Fluorinated Gases*. Proceedings of the 11th Imaging Network of Ontario Symposium, Toronto, February 4 – 5, 2013. (Oral Presentation)
Poster
Published
Refereed?: Yes, Invited?: Yes

110. Iain K. Ball, Marcus J. Couch, Tao Li, Matthew S. Fox, Ralph Hashoian, Shalyn L. Littlefield, Birubi Biman, and Mitchell S. Albert. *^{19}F Apparent Diffusion Coefficient MRI of Inert Fluorinated Gases in Human Lungs.* The 2013 International Pulmonary Imaging Workshop, Philadelphia PA, May 16 – 18, 2013. (Poster and Oral Presentation)
Poster
Published
Refereed?: Yes, Invited?: Yes

111. Marcus J. Couch, Iain K. Ball, Tao Li, Matthew S. Fox, Shalyn L. Littlefield, Ralph Hashoian, Birubi Biman, and Mitchell S. Albert. *Comparison of ^{19}F MRI of Human Lungs using 3D Gradient Echo and UTE Techniques*. The 2013 International Pulmonary Imaging Workshop, Philadelphia PA, May 16 – 18, 2013. (Poster Presentation)
Poster
Published

Refereed?: Yes, Invited?: Yes

112. Marcus J. Couch, Iain K. Ball, Tao Li, Matthew S. Fox, Shalyn L. Littlefield, Ralph Hashoian, Birubi Biman, and Mitchell S. Albert. *^{19}F UTE MRI of Human Lungs Using Inert Fluorinated Gases*. The 2013 International Pulmonary Imaging Workshop, Philadelphia PA, May 16 – 18, 2013. (Poster Presentation)
Poster
Published
Refereed?: Yes, Invited?: Yes

113. Mitchell S. Albert. *New Advances in Pulmonary Functional MR Imaging Using Inert Gases*. The 2013 International Pulmonary Imaging Workshop, Philadelphia PA, May 16 – 18, 2013. (Oral Presentation)
Poster
Published
Refereed?: Yes, Invited?: Yes

114. Marcus J. Couch, Iain K. Ball, Tao Li, Matthew S. Fox, Shalyn L. Littlefield, Birubi Biman, and Mitchell S. Albert. *^{19}F Ultra-Short Echo Time MRI of Human Lungs Using Inert Fluorinated Gases*. American Thoracic Society International Conference, Philadelphia PA, May 17 – 22, 2013. (Poster Presentation)
Poster
Published
Refereed?: Yes, Invited?: Yes

115. Marcus J. Couch, Iain K. Ball, Tao Li, Matthew S. Fox, Shalyn L. Littlefield, Ralph Hashoian, Birubi Biman, and Mitchell S. Albert. *^{19}F UTE MRI of Human Lungs Using Inert Fluorinated Gases*. 6th International Workshop for Pulmonary Functional Imaging, Madison WI, July 18 – 20, 2013. (e-Poster Presentation)
Poster
Published
Refereed?: Yes, Invited?: Yes

116. Marcus J. Couch, Iain K. Ball, Tao Li, Matthew S. Fox, Shalyn L. Littlefield, Ralph Hashoian, Birubi Biman, and Mitchell S. Albert. *Comparison of ^{19}F MRI of Human Lungs using 3D Gradient Echo and UTE Techniques*. 6th International Workshop for Pulmonary Functional Imaging, Madison WI, July 18 – 20, 2013. (Oral Presentation)
Abstract
Published
Refereed?: Yes, Invited?: Yes

117. Marcus J. Couch, Iain K. Ball, Tao Li, Matthew S. Fox, Shalyn L. Littlefield, Ralph Hashoian, Birubi Biman, and Mitchell S. Albert. *^{19}F Apparent Diffusion Coefficient MRI of Inert Fluorinated Gases in Human Lungs*. 6th International Workshop for Pulmonary Functional Imaging, Madison WI, July 18 – 20, 2013. (Oral Presentation)

Abstract
Published
Refereed?: Yes, Invited?: Yes

118. Krista M. Dowhos, Jordan S. Wentzell, Matthew S. Fox, Iain K. Ball, Tao Li, Gowtham Gajawada, Brenton De Boef, and Mitchell S. Albert. *Enhanced ^{129}Xe Hyper-CEST Efficiency with PK11195 Functionalized Cryptophane-A.* 6th International Workshop for Pulmonary Functional Imaging, Madison WI, July 18 – 20, 2013. (e-Poster Presentation)
Poster
Published
Refereed?: Yes, Invited?: Yes

119. Marcus J. Couch, Iain K. Ball, Tao Li, Matthew S. Fox, Alexei V. Ouriadov, Birubi Biman, and Mitchell S. Albert. *Optimized Strategies for ^{19}F MRI of Human Lungs and Comparison of UTE and Gradient Echo Imaging.* Proceedings of the International Society for Magnetic Resonance in Medicine, 22nd Annual Meeting, Milan, Italy, May 10 – 16, 2014.
Abstract
Published
Refereed?: Yes, Invited?: Yes

120. Marcus J. Couch, Iain K. Ball, Tao Li, Matthew S. Fox, Birubi Biman, and Mitchell S. Albert. *Gravitational Distribution Gradient of Inert Fluorinated Gases in Human Lungs Using ^{19}F Ultra-Short Echo Time MRI.* Proceedings of the International Society for Magnetic Resonance in Medicine, 22nd Annual Meeting, Milan, Italy, May 10 – 16, 2014.
Abstract
Published
Refereed?: Yes, Invited?: Yes

121. Krista M. Dowhos, Matthew S. Fox, Iain K. Ball, Tao Li, Gowtham Gajawada, Jordan Wentzell, Brenton De Boef, and Mitchell S. Albert. *Enhanced ^{129}Xe Hyper-CEST Efficiency Using PK11195 Functionalized Cryptophane-A.* Proceedings of the International Society for Magnetic Resonance in Medicine, 22nd Annual Meeting, Milan, Italy, May 10 – 16, 2014.
Abstract
Published
Refereed?: Yes, Invited?: Yes

122. Jordan A. Lovis, Matthew S. Fox, Iain K. Ball, Tao Li, Marcus J. Couch, Tao Li, and Mitchell S. Albert. In Vivo chemical Shift Imaging of 5-Fluorouracil and It's Metabolites. Proceedings of the International Society for Magnetic Resonance in Medicine, 22nd Annual Meeting, Milan, Italy, May 10 – 16, 2014.
Abstract
Published
Refereed?: Yes, Invited?: Yes

123. Sana R. Alharbi, Marcus J. Couch, Tao Li, Matthew S. Fox, Birubi Biman, and Mitchell S. Albert. *Correlation Between Hyperpolarized ^{3}He MR Measurements of Ventilation Defect Percentage and Body Mass Index.* American Thoracic Society, Sand Diego, May 17-21, 2014.
Abstract
Published
Refereed?: Yes, Invited?: Yes

124. Marcus J. Couch, Matthew S. Fox, Chris Viel, Gowtham Gajawada, Tao Li, and Mitchell S. Albert. *Detection of Inflammation in an LPS-Instilled Rat Model using Inert Fluorinated Gas MRI*, American Thoracic Society, Denver, May 15-20, 2015.
Abstract
Published
Refereed?: Yes, Invited?: Yes

125. Marcus J. Couch, Iain K. Ball, Tao Li, Matthew S. Fox, Birubi Biman, and Mitchell S. Albert. *Can Inert Fluorinated Gas MRI Provide Meaningful Functional Lung Information Similar to Hyperpolarized ^{3}He MRI?* American Thoracic Society, Denver, May 15-20, 2015.
Abstract
Published
Refereed?: Yes, Invited?: Yes

126. Marcus J. Couch, Iain K. Ball, Tao Li, Matthew S. Fox, Birubi Biman, and Mitchell S. Albert. *Comparing Pulmonary MRI using Inert Fluorinated Gases and Hyperpolarized ^{3}He: Is ^{19}F MRI Good Enough?* Proceedings of the International Society for Magnetic Resonance in Medicine, 23rd Annual Meeting, Toronto ON, May 30 – June 5, 2015.
Abstract
Published
Refereed?: Yes, Invited?: Yes

127. Marcus J. Couch, Matthew S. Fox, Chris Viel, Gowtham Gajawada, Tao Li, and Mitchell S. Albert. *Fractional Ventilation Mapping using Inert Fluorinated Gas MRI in a Rat Model of Inflammation*, Proceedings of the International Society for Magnetic Resonance in Medicine, 23rd Annual Meeting, Toronto ON, May 30 – June 5, 2015.
Abstract
Published
Refereed?: Yes, Invited?: Yes

128. Francis T. Hane, Peter S. Smylie, Tao Li, Krista M. Dowhos, Julia A. Ruberto, Iain K. Ball, Brenton DeBoef, Mitchell.S. Albert. *Xenon Biosensor Molecular MR Imaging in Blood with Reduced Surface Absorption Rate Using Cucurbit[6]uril based Biosensors*, World Molecular Imaging Congress 2015, Honolulu, HI, September 2-5, 2015.
Abstract
Published
Refereed?: Yes, Invited?: Yes

129. Albert M, Hane F. (2015). *Magnetic Resonance Imaging of Hyperpolarized 129-Xe in the Brain.* XeMat 2015. Dresden, Germany.
Abstract
Published
Refereed?: Yes, Invited?: Yes

130. Hane F**,** Brown J, Dowhos K, Rhoat J, Fox M, Ball I, Li T, Moore C, Golen J, Rheingold A, Euler W, Albert M, DeBoef B. (2015). *Xenon-binding cyclotriveratrylene is detectable by NMR*. Biophysical Society of Canada 1st Annual Meeting. Waterloo, Canada
Abstract
Published
Refereed?: Yes, Invited?: Yes

131. Francis Hane, Tao Li, Peter Smylie, Jennifer Plata, Raiili Pellizzari, Boguslaw Tomanek, Brenton Deboef, Mitchell Albert. (2016). In Vivo MRI Detection of Cucurbit[6]uril Xenon Cage HyperCEST Effect in Rat Abdomen. 14th Annual Meeting of the Imaging Network Ontario, Toronto, Canada Conference Date: 2016/3
Poster
Published
Refereed?: Yes, Invited?: No

132. Francis T. Hane, Tao Li, Peter Smylie, Mitchell Albert. (2016). In Vivo Detection of Cucurbit[6]uril in Rat Abdomen. International Society for Magnetic Resonance in Medicine, 24th Annual Meeting, Singapore, Singapore Conference Date: 2016/5
Abstract
Published
Refereed?: Yes, Invited?: Yes

133. Hane F, Li T, Smylie P, Albert M. (2016). HyperCEST MRI Detection of the Cucurbit[6]uril Xenon Cage in the Rat Abdomen in vivo. World Molecular Imaging Congress, New York, United States Conference Date: 2016/1
Abstract
Published
Refereed?: Yes, Invited?: Yes

134. Li, Tao and Hane, Francis T and Lawrence-Dewar, Jane M and Hassan, Ayman and Granberg, Karl and Pellizzari, Raiili M and Plata, Jennifer A and Albert, Mitchell S. (2017). Using Hyperpolarized 129Xe MRI to Detect Impaired Cerebral Perfusion in Human Brain with Alzheimer's Disease. International Society of Magnetic Resonance in Medicine (ISMRM), Honolulu, United States (487) Conference Date: 2017/4
Abstract
Published
Refereed?: Yes, Invited?: Yes

135. Hane F, Li T, Lawrence-Dewar J, Hassan A, Granberg K, Plata J, Pellizzari R, Albert MS. (2016). Using hyperpolarized 129Xe in human participants to perform functional magnetic

resonance imaging (fMRI). International Society for Magnetic Resonance in Medicine (ISMRM), Conference Date: 2017/4
Abstract
Submitted
Refereed?: Yes, Invited?: Yes

136. A Kopanski, F Hane, T Li, M Albert. (2016). 1H Magnetic Resonance Imaging of the Lungs using Propane as an Inhalation Agent. International Society for Magnetic Resonance in Medicine (ISMRM), Conference Date: 2017/4
Abstract
Submitted
Refereed?: Yes, Invited?: Yes

137. Prete PRJ, Chahal S, Fernando A, Li T, Hane F, Deboef B, Albert MS. (2017). *Cyclodextrin-based rotaxanes as conjugatable molecular imaging biosensors for hyperpolarized ^{129}Xe MRI.* International Society of Magnetic Resonance in Medicine (ISMRM) conference, 25th Annual Meeting, Honolulu, United States,
Conference Date: April 22-27, 2017.
Abstract
Submitted
Refereed? Yes, Invited? Yes

138. Albert MS. (2017). *Hyperpolarized Xenon Functional MRI of the Brain*. 14th Annual World Congress Society for Brain Mapping & Therapeutics, Los Angeles, United States.
Conference Date: April 18-20, 2017.
Abstract
Published
Refereed? Yes, Invited? Yes.

139. Albert MS. Albert MS. (2017). Comparing Hyperpolarized and Inert Fluorinated Gas MRI of the Lungs and Xenon-129 Biosensor Molecular MRI. International Workshop on Pulmonary Imaging, Conference Date: 2017/3
Abstract
Published
Refereed? Yes, Invited? Yes.

140. Albert MS. (2017). *Magnetic Resonance Imaging with Hyeperpolarized and Inert Gas Contrast Agents and Xenon Biosensor Molecular MRI.* ICMRM, Halifax, NS, Canada.
Conference Date: August 13-17, 2017.
Abstract
Published
Refereed? Yes, Invited?: Yes

141. Albert MS. (2017). *Hyperpolarized and Inert Gas MRI Physics and Medical Applications.* ICMRM, Halifax, NS, Canada.

Conference Date: August 13-17, 2017.
Abstract
Published
Refereed? Yes, Invited?: Yes

142. Albert MS. (2017). Medical Applications of Hyperpolarized Noble Gases Including in vivo HyperCEST detection. Polarization in Noble Gases Conference, Conference Date: 2017/10
Abstract
Published
Refereed? Yes, Invited? Yes.

143. Albert MS. (2017). Hyperpolarized and Inert Gas MRI Technology and Biosensor Molecular MRI. Hyperpolarized and Inert Gas MRI Technology and Biosensor Molecular MRI, Krakow, Poland Conference Date: 2017/10
Abstract
Published
Refereed? Yes, Invited? Yes.

144. Albert MS. (2017). Red Hot 19F Human Lung MRI with Inert Fluorinated Gases. Red Hot MRI: Fluorine Imaging Symposium, Conference Date: 2017/10
Abstract
Published
Refereed? Yes, Invited? Yes.

145. Shepelytskyi Y, Davenport K, Fox MS, Li T, Albert MS, Davenport E. (2017). 19F Chemical Shift Imaging (CSI) as a novel method for detection of 5-fluorouracil (5-FU) in colorectal tumor. Northern Health Research Conference, Conference Date: 2017/10
Abstract
Published
Refereed? Yes, Invited? Yes.

146. Hane F, Li T, Lawrence-Dewar J, Hassan A, Granberg K, Pellizzari R, Plata J, Albert MS. (2017). Detecting functional brain activity using hyperpolarized (HP) 129Xenon Magnetic Resonance Imaging (MRI). Northern Health Research Conference, Conference Date: 2017/10
Abstract
Published
Refereed? Yes, Invited? Yes.

147. Prete PRJ, Chahal S, Fernando A, Li T, Hane F, Deboef B, Albert MS. (2017). HyperCEST Detection of Cyclodextrin-Based Pseudorotaxanes using Hyperpolarized 129Xenon Magnetic Resonance Imaging at 3.0T. Polarization in Noble Gases, Conference Date: 2017/10
Abstract
Published
Refereed? Yes, Invited? Yes.

148. Prete PRJ, Chahal S, Fernando A, Li T, Hane F, Deboef B, Albert MS. (2017). HyperCEST Detection of Cyclodextrin-Based Pseudorotaxanes using Hyperpolarized 129Xenon Magnetic Resonance Imaging at 3.0T. Polarization in Noble Gases, Conference Date: 2017/10
Abstract
Published
Refereed? Yes, Invited? Yes.

149. Prete PRJ, Chahal S, Fernando A, Li T, Hane F, Deboef B, Albert MS. (2017). Using hyperpolarized 129Xe Magnetic Resonance Imaging to Identify Potential Supramolecular Scaffolds for Xenon Biosensor Molecular Imaging Agents. Northern Health Research Conference, Conference Date: 2017/10
Abstract
Published
Refereed? Yes, Invited? Yes.

150. . Li T, Hane F, Lawrence-Dewar JM, Hassan A, Granberg K, Pellizzari R, Plata J, Albert MS. (2017). Can hyperpolarized 129Xe MRI Detect Changes in Human Cerebral Perfusion Caused by Alzheimer's Disease? . Northern Health Research Conference, Conference Date: 2017/10
Abstract
Published
Refereed? Yes, Invited? Yes.

151. Li T, Hane F, Lawrence-Dewar JM, Hassan A, Granberg K, Pellizzari R, Plata J, Albert MS. (2017). In vivo detection of impaired cerebral perfusion in the human brain in Alzheimer's disease using hyperpolarized 129Xe MRI. Polarization in Noble Gases, Conference Date: 2017/10
Abstract
Published
Refereed? Yes, Invited? Yes.

152. Hane F, Li T, Smylie P, Pellizzari R, Plata J, Albert MS. (2017). Results of the first In Vivo HyperCEST detection of a hyperpolarized xenon biosensor, cucurbit[6]uril. Northern Health Research Conference, Conference Date: 2017/10
Abstract
Published
Refereed? Yes, Invited? Yes.

153. Plata J, Hane F, Li T, Smylie P, Pellizzari R, Albert MS. (2017). Detection of a cucurbit[6]uril biosensor in an animal model using hyperpolarized xenon MRI. Polarization in Noble Gases, Conference Date: 2017/10
Abstract
Published
Refereed? Yes, Invited? Yes.

154. Braedan R.J. Prete, Dave Robinson, Ashvin Fernando, Yurii Shepelytskyi, Alanna Wade, Francis T. Hane, Brenton DeBoef & Mitchell S. Albert. (2018). Benzene-Appended

Cucurbit[6]uril as a Potential Biosensor Scaffold for Hyperpolarized 129Xe MRI Molecular Contrast Agents. In Proc. Intl. Soc. Mag. Reason. Med 26. International Society for Magnetic Resonance in Medicine, Paris, France (3034) Conference Date: 2018/6
Abstract
Published
Refereed? Yes, Invited? Yes.

155. Yurii Shepelytskyi, Karen Davenport, Matthew S. Fox, Tao Li, Mitchell Albert and Eric Davenport. (2018). Detection of 5-Fluorouracil (5-FU) Tumor Trapping Using Fluorine-19 Chemical ShiftImaging in a Murine Model of Colorectal Cancer. In Proc. Intl. Soc. Mag. Reason. Med 26. International Society for Magnetic Resonance in Medicine, Paris, France (4001) Conference Date: 2018/6
Abstract
Published
Refereed? Yes, Invited? Yes.

156. Albert MS. (2018). Advances in hyperpolarized xenon-129 magnetic resonance imaging. XeMat Conference at the University of Pennsylvania, Philadelphia, United States Conference Date: 2018/5
Abstract
Published
Refereed? Yes, Invited? Yes.

157. Shepelytskyi Y, Li T, Hane F, Wade A, Grynko V, Newman C, Albert M. (2019). Octafluorocyclobutane as a novel 19F MRI gas agent for significant lung image quality improvement. Proc. Intl. Soc. Mag. Reason. Med 27. International Society for Magnetic Resonance in Medicine, Montreal, Canada (1881) Conference Date: 2019/1
Abstract
Published
Refereed? Yes, Invited? Yes.

158. Shepelytskyi Y, Campbell M, Hane F, Li T, Solomin V, Grynko V, Albert M. (2019). Fluorine-19 (19F) Labeled Benzothiazole Derivative as a Biosensor for Detection of Alzheimer's Disease using Magnetic Resonance Imaging. Proc Int. Soc. Mag. Reson. Med 27. International Society for Magnetic Resonance in Medicine, Montreal, Canada (4369) Conference Date: 2019/4 \
Abstract
Published
Refereed? Yes, Invited? Yes.

159. Shepelytskyi Y. Hane FT., Grynko V., Li T., Hassan A., Albert MS. (2020). Hyperpolarized 129Xe function brain mapping. Proc Int. Soc. Mag. Reson. Med. International Society for Magnetic Resonance in Medicine, (0556) Conference Date: 2020/1
Abstract
Published
Refereed? Yes, Invited? Yes.

160. Yeo SK., Shepelytskyi Y., Grynko V., Hane FT., Li T., Albert MS. (2020). Detection of Tau Aggregates Using Lansoprazole in an Ex Vivo Rat Model of Alzheimer's Disease. Proc Int. Soc. Mag. Reson. Med. International Society for Magnetic Resonance in Medicine, (2996) Conference Date: 2020/1
Abstract
Published
Refereed? Yes, Invited? Yes.

161. Newman C., Shepelytskyi Y., Fernando A., Cesana PT., Li T., Wade A., Grynko V., Mendieta AM., Hane FT., DeBoef B., Albert MS. (2020). In-vitro HyperCEST detection of decacationic pillar-5-arene. Proc Int. Soc. Mag. Reson. Med. International Society for Magnetic Resonance in Medicine, (3078) Conference Date: 2020/3
Abstract
Published
Refereed? Yes, Invited? Yes.

162. Shepelytskyi Y., Grynko V., Li T., Hassan A., Granberg K., Albert MS. (2021). The effects of an initial depolarization pulse on the dissolved phase hyperpolarized 129Xe images. Proc Int. Soc. Mag. Reson. Med. International Society for Magnetic Resonance in Medicine, (3574) Conference Date: 2021/1
Abstract
Published
Refereed? Yes, Invited? Yes.

163. Grynko V., Shepelytskyi Y., Li T., Hassan A., Granberg K., Albert MS. (2021). Multi-slice imaging of the human brain with hyperpolarized 129 Xe. Polarization in Noble Gas Workshop, (13) Conference Date: 2021/12
Abstract
Published
Refereed? Yes, Invited? Yes.

164. Grynko V., Shepelytskyi Y., Li T., Hassan A., Granberg K., Albert MS. (2021). Multi-slice imaging of the human brain with hyperpolarized 129 Xe. Polarization in Noble Gas Workshop, (13) Conference Date: 2021/12
Abstract
Published
Refereed? Yes, Invited? Yes.

165. Albert MS. (2021). Hyperpolarized 129 Xe Brain MR Imaging and HP 129 Xe Molecular Imaging. Polarization in Noble Gas workshop, (18-19) Conference Date: 2021/12
Abstract
Published
Refereed? Yes, Invited? Yes.

166. Matheson AM., Kooner HK., Bier E., Lu J., Driehuys B., Kirby M., Santyr G., Albert MS., Shepelytskyi Y., Grynko V., Svenningsen S., Ouriadov A., Dhaliwal I., Nicholson JM.,

Parraga G. (2022). 129Xe GasTransfer MRI RBC-to-Barrier Ratio in Post-Acute COVID19 Syndrome: Polarization in Noble Gas workshop, (18-19) Conference Date: 2021/12
Abstract
Published
Refereed? Yes, Invited? Yes.

167. Grynko V., Shepelytskyi Y., Li T., Hassan A., Granberg K., Albert MS. (2021). Multi-slice imaging of the human brain with hyperpolarized 129 Xe. Polarization in Noble Gas Workshop, (13) Conference Date: 2021/12
Abstract
Published
Refereed? Yes, Invited? Yes.

168. Matheson AM., Kooner HK., Bier E., Lu J., Driehuys B., Kirby M., Santyr G., Albert MS., Shepelytskyi Y., Grynko V., Svenningsen S., Ouriadov A., Dhaliwal I., Nicholson JM., Parraga G. (2022). 129Xe GasTransfer MRI RBC-to-Barrier Ratio in Post-Acute COVID19 Syndrome: Clinically relevant?. Proc. Int. Soc. Mag. Reson. Med 30. International Society for Magnetic Resonance in Medicine Annual Conference 2022, London, United Kingdom (2211)
Abstract
Published
Refereed? Yes, Invited? Yes.

169. Grynko V., Shepelytskyi Y., Li T., Aalto H., Ruset I.C., Albert M.C. (2022). Maximization of cucurbit [6] uril hyperpolarized chemical exchange saturation transfer with saturation pre-pulse train optimisation at 3 T. World Molecular Imaging Congress, Miami, United States
Abstract
Published
Refereed? Yes, Invited? Yes.

170. Shepelytskyi Y., Grynko V., Li T., Hassan A., Granberg K., Albert MS. Hyperpolarized 129Xe Time-of-Flight pulse sequence for substantial brain signal stability improvement. Imaging Network Ontario Symposium 2022 (digital poster at ImNO 2022 meeting).

171. Grynko V., Batarchuk V, Shepelytskyi Y, Aalto H., Deschamps J., Ruset IC., Albert, MS. Maximization of cucurbit[6]uril hyperpolarized chemical exchange saturation transfer (HyperCEST) in bovine blood at 3.0 T. In: Proc. Intl. Soc. Mag. Reson. Med. International Society for Magnetic Resonance in Medicine (31).
Conference Date: 2023/06
Abstract
Published
Refereed? Yes, Invited? Yes.

172. Mikowska L, Grynko V, Shepelytskyi Y, Ruset IC, Deschamps J, Aalto H, Targosz-Korecka M, Haranczyk H, Balamore D, Albert MS. Effect of glucose on the HP 129Xe dissolved phase blood resonances. In: Proc. Intl. Soc. Mag. Reson. Med. International Society for Magnetic Resonance in Medicine (31). 31. 2023:4503.
Abstract

Published
Refereed? Yes, Invited? Yes.

173. Batarchuk V., Grynko V., Shepelytskyi Y., Aalto H., Deschamps J., Ruset IC., Albert, MS. Hyperpolarized chemical exchange saturation transfer (HyperCEST) maximization of cucurbit[6]uril imaging biosensor in blood for 3.0 T clinical MRI. In: Imaging Network Ontario Symposium 2022 Proceedings, 2023. p. 60.
Abstract
Published
Refereed? Yes, Invited? Yes.

174. Shepelytskyi, Y., Batarchuk, V., Lishchuk, I., Li T., Ochkovskaya, K., Grynko, V., Biman, Albert, M. Ventilation Segmentation Accuracy Enhancement using Kirsch Operator in Pulmonary MRI. 2023 IEEE Nuclear Science Symposium, Medical Imaging Conference and International Symposium on Room-Temperature Semiconductor Detectors, 2023, doi: 10.1109/NSSMICRTSD49126.2023.10338689.

175. Batarchuk, V., Shepelytskyi, Y.,Grynko, V., Hasselbrink, C., Kovacs AH., Hodgson, A., Rodriguez, K., Aldossary, R., Talwar, T., DeBoef, B., Albert MS. Novel Hyperpolarized 129Xe R3-Noria-methanesulfonate Supramolecular Cage at 3.0 T MRI. Imaging Network Ontario Symposium 2024 (Pitch and poster presentation at ImNO 2024 meeting).

176. Batarchuk, V., Shepelytskyi, Y.,Grynko, V., Hasselbrink, C., Kovacs AH., Hodgson, A., Rodriguez, K., Aldossary, R., Talwar, T., DeBoef, B., Albert MS. 129Xe HyperCEST Imaging of a Novel R3-Noria-methanesulfonate Supramolecular Cage using a 3.0 T Clinical MRI. International Society for Magnetic Resonance in Medicine (ISMRM) & The International Society for MR Radiographers & Technologists (ISMRT) Annual Meeting & Exhibition, Suntec Singapore 2024 (Digital poster presentation).