

Gregory M. Lanza, M.D., Ph.D.

Date: May 9, 2017

Citizenship: USA

Address and Telephone:

Office: Cardiovascular Division  
Washington Univ. School of Medicine  
Campus Box 8215  
660 S. Euclid Avenue  
St. Louis, MO 63110  
Telephone: 314-454-7460 (Lillie, Administrative Assistant)  
314-454-8813 (office)  
Beeper: 314-823-1724  
E-mail: [greg.lanza@mac.com](mailto:greg.lanza@mac.com)

Present Position: Professor of Medicine, Biomedical Engineering and  
Biology and Biomedical Sciences  
Oliver M. Langenberg Distinguished Professor of the  
Science and Practice of Medicine

Education:

1975: Bachelor of Arts  
Colby College  
Waterville, Maine 04901

1978: Masters of Science  
Department of Poultry Science  
University of Georgia  
Athens, Georgia 30606

1981: Doctor of Philosophy  
Department of Poultry Science  
University of Georgia  
Athens, Georgia 30606

1992: Doctor of Medicine  
Northwestern University Medical School  
Chicago, Illinois 60611

Academic Positions/Employment:

6/13 - Present Oliver M. Langenberg Distinguished Professor  
of the Science and Practice of Medicine  
Washington University Medical Center  
St. Louis, Missouri 63110

7/08-Present: Professor of Medicine/Cardiology

Washington University Medical Center  
St. Louis, Missouri 63110

- 7/08-Present: Professor of Biomedical Engineering  
Washington University Medical Center  
St. Louis, Missouri 63110
- 7/08-Present: Professor of Biology and Biomedical Sciences  
Washington University Medical Center  
St. Louis, Missouri 63110
- 2016-Present Kalocyte, LLC, Board Member  
Biogenerator  
4320 Forest Park Ave  
St. Louis, MO 63108
- 2016-Present Capella Imaging, LLC, Co-founder  
Biogenerator  
4320 Forest Park Ave  
St. Louis, MO 63108
- 2005-2015: Chief Science Officer  
Kereos, Inc. (Co-founder)  
St. Louis, MO 63108
- 9/04-6/08: Associate Professor of Medicine/Cardiology  
Washington University Medical Center  
St. Louis, Missouri 63110
- 9/04-6/08: Associate Professor of Biomedical Engineering  
Washington University Medical Center  
St. Louis, Missouri 63110
- 1/00-9/2004: Assistant Professor of Biomedical Engineering  
Washington University Medical Center  
St. Louis, Missouri 63110
- 7/99-9/2004: Assistant Professor of Medicine/Cardiology  
Washington University Medical Center  
St. Louis, Missouri 63110
- 1999-2005: Board Member  
Kereos, Inc. (Co-founder)  
St. Louis, MO 63108
- 2005-2015: Chief Scientific Officer (non-executive)  
Kereos, Inc. (Co-founder)  
St. Louis, MO 63108
- 7/96-6/99: Research Instructor of Medicine  
Washington University Medical Center

St. Louis, Missouri 63110

6/94-6/99: Cardiology Fellowship Program  
Barnes-Jewish Hospital  
Washington University Medical Center  
St. Louis, Missouri 63110

6/92-6/94: Medical Residency Program  
Department of Medicine  
Barnes Hospital  
Washington University Medical Center  
St. Louis, Missouri 63110

8/88-6/92: Northwestern University Medical School  
303 Chicago Avenue  
Chicago, Illinois

6/81-8/88: Animal Sciences Division  
Monsanto Company  
700 Chesterfield Parkway  
St. Louis, Missouri

1985-1988: Product Biology Research Manager

Budget: \$2.9 Million/yr; Responsibility: Establish and direct a preclinical product development research program for dairy use of recombinant bovine somatotropin in support of US and ex-US regulatory approvals. The position was responsible for supporting the development and optimization of the product, designing, conducting and analyzing target and model animal pharmacodynamic (efficacy and physiology), pharmacokinetic, safety (toxicology, clinical and anatomical pathology) and metabolism residue studies. Statistics and Quality Assurance groups were also created and managed between 1983 and 1988.

1984-1985: Senior Research Group Leader

1983-1984: Research Specialist

1981-1983: Senior Research Biologist

1976-1981: Department of Poultry Science  
University of Georgia  
Athens, Georgia 30602

Research at the MS and PhD levels focused on biochemically quantifying resistance/susceptibility of *Gallus domesticus* to aflatoxicosis and developing corresponding genetic selection programs.

1978: International Research in Greece

Responsibility: Provide consultation and conduct research in Greek agricultural environment concerning the incidence of tibial dyschondroplasia, an issue of international litigation between Voktas, Inc. and Central Soya, Inc. (P.I. Drs. Leo Jensen and Roland Leach)

**Medical Licensure and Board Certification:**

Diplomat of the National Board of Medical Examiners, Parts I, II and III  
Missouri Medical License: #101080 (1993)  
Diplomat of American Board of Internal Medicine, 1995-12/2005, 2006-12/2015  
Diplomat of American Board of Internal Medicine, Cardiology, 11/99-12/2009, 2009-12/2019  
American Society of Echocardiography, Specialty Certification in Echocardiography, 1999-12/2009, 2009-12/2019

**Honors and Awards:**

Phi Kappa Phi Honor Society  
Gamma Sigma Delta Agricultural Honor Society  
Hubbard Farms Charitable Foundation Scholarship  
Poultry Science Association Graduate Student Award  
Northwestern University Medical Student Research Grant  
NIH Research Festival for Outstanding PGY1 Researchers  
American Heart Association Fellowship, Missouri Affiliate (1995-1997)  
Bristol-Myers Squibb Fellowship Award (1997)  
Bracco Diagnostics Inc./Society for Cardiac Angiography and Interventions Fellowship (1998)  
1998 ACC/Littmann Scholarship Award  
American Heart Association, Missouri Affiliate – Beginning Grant (1999-2001)  
American College of Cardiology, Searle Career Development Award (2000)  
Barnes-Jewish Hospital Research Foundation Award (1999-2001)  
Biophys-NSERC Strategic Network for Bioplasmonics Systems University of Toronto, Expert Advisor 2010-2013  
Numerous NIH and DOD grants, NIH and ex-US study groups annually.  
Currently active NIH GDD study group (Gene and Drug Delivery), NCI U01 study group (2015-2017)  
GeniSphere, LLC –Scientific Advisory Board 2014-present  
American Society of Nanomedicine – Board of Directors 2013-2016.

**Editorial Boards (Active):**

WIRES: Nanomedicine and Nanobiotechnology – Wiley - (IF 4.09) (2010-Present)  
Nanomedicine: Nanotechnology, Biology, and Medicine – Elsevier- (IF 5.67) (2009-2015)  
Theranostics - Ivyspring (IF 8.85) (2011-present)  
Contrast Media and Molecular Imaging – Wiley – (IF 3.28) (2009-2015)

### **Professional Societies and Organizations (Active)**

Missouri Board of Healing Arts  
American Heart Association  
American College of Cardiologists  
Society of Cardiovascular Magnetic Resonance  
International Society for Magnetic Resonance in Medicine  
American Society of Echocardiology  
Society for Molecular Imaging  
Society of Nuclear Medicine  
American Society of Nanomedicine (Board Member)  
American Society of Pharmacology and Experimental Therapeutics

### **Invited Presentations (since 1997)**

1. Invited Speaker: Contrast Media Research, Kyoto, Japan, 5/97 - Enhanced detection of thrombi with a novel fibrin targeted magnetic resonance imaging agent.
2. Invited Speaker: Nycomed Imaging, Inc, Oslo, Norway, 6/97 - Review of targeted contrast applications for ultrasonic imaging.
3. Invited Speaker: NIH Seminar, Washington, DC, 9/97 - A novel targeted contrast agent for ultrasonic and magnetic resonance imaging.
4. Invited Speaker: Abbott, Inc, Chicago, IL, 10/97 - Review of targeted contrast technology for ultrasonic and MRI imaging.
5. Invited Speaker: Imclone Systems, Inc, Chicago, IL, 2/98 - Review of targeted contrast technology for ultrasonic and MRI imaging.
6. Invited Speaker: Acoustic Society of America, Seattle, WA 5/98 - Targeted acoustic contrast agents: new opportunities for ultrasound in medical diagnosis and therapy.
7. Invited Speaker: Abbott, Inc, Chicago, IL, 12/99- Updated review of targeted contrast technology for ultrasonic and MRI imaging.
8. Invited Speaker: WU Biochemical Engineering Seminar 12/99 - Molecular Imaging with Ligand-Targeted Immunoemulsions.
9. Invited Speaker: Schering AG, Inc, Berlin, Germany 5/2000- Updated review of targeted contrast technology for ultrasonic and MRI imaging.
10. Invited Speaker: Allerton Conference, Acoustic Contrast Agents, Allerton, Illinois 6/2000- Targeted acoustic contrast agents: new opportunities for ultrasound in medical diagnosis and therapy.
11. Invited Speaker: FMC Technology Review –2000, Princeton, NJ 9/2000 – Angiogenesis and Wound Healing.
12. Invited Speaker: Imaging in 2020 (NCI) – 9/2001 – “Molecular Imaging and Targeted Drug Delivery with a Novel Perfluorocarbon Nanoparticle”.

13. Invited Speaker: CMR 2001, 10/2001 Capri, Italy – “Molecular Imaging and Targeted Drug Delivery with a Novel, Ligand-Directed Paramagnetic Nanoparticle Technology”.
14. Invited Speaker: International Society for BioMEMS and Biomedical Nanotechnology 9/2001, Columbus, OH – “Magnetic Resonance Molecular Imaging and Targeted Drug Delivery with Site-specific Nanoparticles”.
15. Invited Speaker: NCI Unconventional Innovative Projects Program – Washington, DC - 2/2002 – “Molecular Imaging and Local Drug Delivery With a Novel  $\alpha_v\beta_3$ -Targeted Nanoparticle Emulsion for Noninvasive Detection and Treatment of Cancer”.
16. Invited Speaker: Vulnerable Plaque Symposium 3/2002 Atlanta, GA “MR Imaging of Fibrin to Detect Plaque Mural Thrombi”.
17. Invited Speaker: Saint Louis University Cardiology Seminar Series 5/2002 St. Louis, MO – ““Molecular Imaging and Targeted Therapy”.
18. Invited Speaker: Molecular Imaging Workshop 6/2002 Helsinki, Finland “Molecular Imaging and Targeted Therapy”.
19. Invited Speaker: Joint NASA-NCI Biomolecular Physics and Chemistry Program – Monterey, CA - 7/2002 – “Unconventional Innovative Projects Lessons Learned”.
20. Invited Speaker: NCI Unconventional Innovative Projects Program – San Diego, CA - 2/2003 – “Molecular Imaging and Local Drug Delivery With a Novel  $\alpha_v\beta_3$ -Targeted Nanoparticle Emulsion for Noninvasive Detection and Treatment of Cancer Update”.
21. Invited Speaker Seminar- Johns Hopkins Medical School - Department of Radiology 5/2003. Molecular Imaging and Targeted Drug Therapy.
22. Invited Speaker: Small Talk 2003. Molecular Imaging and Targeted Drug Delivery: Emerging Medical Paradigms.
23. Invited Speaker: American Chemical Society 2003. New York, NY. September, 2003. Molecular imaging and targeted drug therapy: merging paradigms in medicine.
24. Invited Speaker: IEEE -UFFC. Honolulu, HI. October, 2003. Molecular imaging and targeted drug delivery: merging medical paradigms.
25. Invited Speaker: Northwestern Echo 2003. Chicago, IL, October, 2003. Molecular Imaging.
26. Invited Speaker: AHA-Sunday Sessions. Orlando, FL. November, 2003. Molecular imaging and therapy; new paradigms for 21st century medicine.

27. Invited Speaker Society of Cardiac MRI. Barcelona, Spain February, 2004. State of the Art in Molecular Imaging and Targeted Therapeutics.
28. Invited Speaker: 5th Magnetic Microsphere Meeting Scientific and Clinical Applications of Magnetic Carriers. May, 2004. Lyon, France Molecular Imaging & Targeted Drug Delivery with a Site-specific Nanoparticle Platform Technology Emerging Opportunities for Non-invasive Diagnosis and Image-augmented Therapy.
29. Invited Speaker: International Symposium on Therapeutic Ultrasound. Kyoto, Japan, September, 2004. Molecular Imaging & Targeted Drug Delivery with a Site-specific Nanoparticle Platform Technology Emerging Opportunities for Non-invasive Diagnosis and Image-augmented Therapy.
30. Invited Speaker: 8th Annual Heart Failure Society of America. Toronto, Canada, September, 2004. Targeted Imaging and Therapeutics.
31. Invited Speaker: Gordon Research Conference. Waterville, Maine. June, 2004. Metals Meddle in Medicine.
32. Invited Speaker. Magnetic Nanoparticle Research Symposium, Baton Rouge, LA, June, 2004. Molecular Imaging & Targeted Drug Delivery with a Site-specific Nanoparticle Platform Technology Emerging Opportunities for Non-invasive Diagnosis and Image-augmented Therapy.
33. Invited Speaker: Evanston Hospital/Northwestern University Medical School. March, 2004. Ligand-Directed Nanoparticles in Molecular Medicine: Emerging Opportunities.
34. Invited Speaker: Society of Vascular Surgery/NHLBI Joint Workshop March, 2004, Bethesda, MD. Targeted Imaging and Therapeutics.
35. Invited Speaker. ISMRM Workshop on MR in Drug Development, McLean, VA April, 2004 MR Nanoparticles Technology Drug Development for Atherosclerosis.
36. Invited Speaker. American Society of Nuclear Cardiology. May, 2004, Bethesda, MD, Combined Therapeutic and Molecular Imaging Agent for Treatment and Monitoring of Plaque Angiogenesis in Atherosclerosis.
37. Invited Speaker. American Society of Nuclear Cardiology. May, 2004, Bethesda, MD, Nanotechnology and Molecular Imaging in Atherosclerosis.
38. Invited Speaker: Invited Speaker. AHA; Atherosclerosis, Thrombosis, and Vascular Biology. San Francisco, CA, May, 2004, Bethesda, MD, Combined Therapeutic and Molecular Imaging Agent for Treatment and Monitoring of Plaque Angiogenesis in Atherosclerosis.
39. Invited Speaker. Philips Medical Systems Molecular Imaging Users Group. September, 2004. Saint Louis, MO. Perfluorocarbon nanoparticles: a multimodal platform for targeted therapy and Molecular Imaging.

40. Invited Speaker: University of Virginia Cardiology Grand Rounds, Charlottesville, VA. September, 2004. Emerging Molecular Imaging and Targeted Therapy Opportunities.
41. Invited Speaker: University of Nebraska First Annual Biomagnetism Symposium. Lincoln, Nebraska, October, 2004. A Personalized Nanotechnology Approach to Cardiovascular Disease.
42. Invited Speaker: WU/Pfizer Retreat on Cardiovascular Disease October, 2004. A Personalized Nanotechnology Approach to Cardiovascular Disease.
43. Invited Speaker: NCI Nanotechnology Conference: Overcoming Barriers to Collaboration. Cleveland, OH, October, 2004. Development of Personalized Nanotechnology Approaches to Oncologic Disease.
44. Invited Speaker: University of Miami, Department of Medicine and Division of Cardiology Grand Rounds. December, 2004.
45. Invited Speaker: Ohio State University, Cardiology Grand Rounds. January, 2005.
46. Invited Speaker: Academy of Molecular Imaging, March, 2005.
47. Invited Speaker: Nanotech workshop at FDA. Personalized Medicine with -Ligand targeted Perfluorocarbon Nanoparticles, Shady Grove, MD March, 2005.
48. Invited Speaker, Clinical Diagnostics Program, San Francisco, CA April, 2005.
49. Invited Speaker, NCI Nanotechnology Workshop, Reno, NV, May, 2005.
50. Invited Speaker, Society of Nuclear Medicine, Toronto, CA, June, 2005.
51. Invited Speaker, Philips Medical Systems, Andover, MA, July, 2005.
52. Invited Speaker, American Association of Physicists in Medicine (AAPM), July, 2005.
53. Invited Speaker, Society of Molecular Imaging, Cologne, Germany, September, 2005.
54. Invited Speaker - 11th Samsung Intl Symposium of Molecular Imaging, Seoul, Korea, September, 2005.
55. Invited Speaker, Contrast Media Research Meeting, Evian, France, October, 2005.
56. Invited Speaker, Global Cardiovascular Interventions, Frankfurt, Germany November, 2005.
57. Invited Speaker, CHI- Clinical Biomarkers, Boston, MA, November, 2005.



58. Invited Speaker, New York Academy of Sciences, NY, NY December, 2005.
59. Invited Speaker, Philips Medical Systems, High-Risk Profiling Initiative, Eindhoven, NL. February, 2006.
60. Invited Speaker, European COST collaboration network on contrast agents, Orleans, France March, 2006.
61. Invited Speaker, 4th Fairberg's Cardiac Workshop, Charleston, SC, April, 2006.
62. Invited Speaker, Judkins Cardiac Imaging Symposium, Chicago, IL, May, 2006.
63. Invited Speaker, NIH Intramural Nanotechnology Conference, June, 2006.
64. Invited Speaker, SIS 2006: Emerging Technologies Symposium, Seattle, WA July, 2006.
65. Invited Speaker, MNiMBS Symposium, Ann Arbor, MI, September, 2006.
66. Invited Speaker, Missouri Nanotechnology Alliance, Columbia, MO, October, 2006.
67. Invited Speaker, Philips Life Sciences Symposium, Eindhoven, NL, October, 2006.
68. Invited Speaker, American Society of Cytopathology, Toronto, Canada, November, 2006.
69. Invited Speaker, FD & A, Washington, DC, November, 2006.
70. Invited Speaker, Wayne State University, Detroit, MI, December, 2006.
71. Invited Speaker, Georgia Tech, Atlanta, GA, January, 2007.
72. Invited Speaker, University of Turin, Turin, Italy, February, 2007.
73. Invited Speaker, European College of Radiology, Vienna, Austria, March, 2007.
74. Invited Speaker, Materials Research Society, San Francisco, CA, April, 2007.
75. Invited Speaker, CNST Nanotechnology Workshop, Champaign, IL, April, 2007.
76. Invited Speaker, University of North Carolina Medical School, Chapel Hill, NC, May, 2007.
77. Invited Speaker, International Society of Magnetic Research in Medicine, Plenary and Education Workshop, Berlin, May, 2007.
78. Invited Speaker, Nanomagnets Workshop, Madrid, Spain, June, 2007.
79. Invited Speaker, Evidence-Based Medicine Update at Hilton Head, July, 2007.

80. Invited Speaker, International Academy of Cardiology, Vancouver, CA, July, 2007.
81. Invited Speaker, "Targeted Therapeutics and drug delivery systems", University of Pennsylvania Seminar Series, Philadelphia, PA, November, 2007.
82. Invited Speaker, "Imaging Angiogenesis in Plaques", British Atherosclerosis Society Spring Meeting, Oxford, UK, April, 2008.
83. Invited Speaker, "Potential molecular imaging and targeting therapeutic applications with PFC nanoparticles", Mochtar Riady Institute for Nanotechnology Symposium, Jakarta, Indonesia, May, 2008.
84. Invited Speaker, 6<sup>th</sup> International Vulnerable Plaque Meeting, Vouliagmeni, Athens, June, 2008.
85. Invited Speaker, "Fibrin-targeted perfluorocarbon nanoparticles for targeted thrombolysis", International Sonothrombolysis Conference, Mannheim, Germany, July, 2008.
86. Invited Speaker, 1<sup>st</sup> Joint US-China Symposium on Nanobiology and Nanomedicine, Beijing, China, October, 2008.
87. Invited Speaker, "Theranostic Approaches to Cardiovascular Disease", SCMR 12<sup>th</sup> Annual Scientific Sessions, Orlando, FL, January, 2009.
88. Invited Speaker, Frontiers in Cutaneous Immunology 2009, Boston, MA, March, 2009.
89. Invited Speaker, "Molecular and nanoparticle based imaging: Part II: Cancer", Pittcon 2009 Symposium, Chicago, IL, March, 2009.
90. Invited Speaker, "Atherosclerosis imaging with nanoparticles", Symposium on Multimodality Cardiovascular Molecular Imaging, Bethesda, MD, April, 2009.
91. Invited Speaker, ISMRM 2009, Honolulu, HI, April, 2009.
92. Invited Speaker, "Atherosclerosis imaging with nanoparticles", Cardiovascular Molecular Imaging Symposium, Bethesda, MD, April, 2009.
93. Invited Speaker, "Nanomedicine: The evolution of a concept to a reality", JHMI, Baltimore, MD, May, 2009.
94. Invited Speaker, "Nanomedicine: From Theory to Application", Rome, Italy, June, 2009.
95. Invited Speaker, "Molecular imaging of atherosclerosis", 8<sup>th</sup> International Symposium on Highfield MR in Clinical Applications, Bonn, Germany, August, 2009.

96. Invited Speaker, Contrast Media Research '09, Copenhagen, Denmark, October, 2009.
97. Invited Speaker, "Diagnostics, imaging, and Therapeutics", 2009 International Institute for Nanotechnology (IIN) Symposium, Evanston, IL, October, 2009.
98. Co-Chair in session "Diagnostics: Imaging and Biosensors", American Society for Nanomedicine Conference, Potomac, MD, October, 2009.
99. Invited Speaker, Nanomedicine and Molecular Imaging Summit, Albuquerque, NM, February, 2010.
100. Invited Speaker, 4<sup>th</sup> Harbin International Molecular Imaging Summit Forum (HIMISF), Harbin, China, March, 2010.
101. Invited Speaker, "Nanomedicine approaches to image-guided drug delivery", CCRNP Nanobiology Seminar Series, Frederick, MD, April, 2010.
102. Invited Speaker, "Fibrin-specific thrombolytic nanoparticles", Princeton Conference, Boston, MA, April, 2010.
103. Invited Speaker, "Next Generation of Imaging Platforms: Clinical Validation of Nano Carriers/Probes/Agents", AAPM 52<sup>nd</sup> Annual Meeting, Philadelphia, PA, July, 2010.
104. Invited Plenary, 2010 World Molecular Imaging Congress, Kyoto, Japan, September, 2010.
105. Invited Speaker, "Nanotechnology: Pathway to the Clinic", The 2<sup>nd</sup> Joint US-China Symposium on Nanobiology and Nanomedicine, Washington, DC, September, 2010.
106. Invited Speaker, "Nanotechnology and Imaging of the Skin", Harvard Skin Disease Research Center's 4<sup>th</sup> International Conference on Skin Immunology, Boston, MA, March, 2011.
107. Plenary Speaker, Nanotechnology for Healthcare, Petit Jean Mountain, AR, April, 2011.
108. Invited Speaker, "Advancements in Nanomedicine Extend the Horizon of Diagnosis and Therapy", NanoDDS' 11, Salt Lake City, UT, October, 2011.
109. Session Chairman [Session 3: Theranostics (Part 2)] and Presenter, CMR 2011 Conference, Galveston, TX, October, 2011.
110. Invited Speaker, American Society for Nanomedicine (ASNM), Gaithersburg, MD, November, 2011.
111. Invited Speaker, 4<sup>th</sup> International Conference NanotechItaly 2011, Venice-Mestre, November, 2011.

112. Invited Speaker, “The Perfect Individual Image”, Symposium on Personalized Medicine, Austria, January, 2012.
113. BiopSys Expert Advisor, BiopSys All Network Meeting, Toronto, CA, January, 2012.
114. Invited Speaker, XVI School of Pure and Applied Biophysics on Multimodal Methods for Cell Imaging and Tracking, Venice, Italy, Jan/Feb 2012.
115. Session Chair, Society for Endocrinology BES 2012, Harrogate, UK, March, 2012.
116. Invited Moderator “Development and Evaluation of Targeted Imaging Probes- Part II” and Speaker “Imaging Angiogenesis and Arteriogenesis, “Multi-Spectral CT of the Vasculature”, 3<sup>rd</sup> Cardiovascular Molecular Imaging Symposium, Bethesda, MD, April, 2012.
117. Invited Speaker “Translational Preclinical Studies to First in Man”, SNM 2012 Annual Meeting, June, 2012.
118. Invited Speaker, “Development of MRI Theranostic Agents for Angiogenesis”, Founding Conference for Molecular Imaging Group of CSR & the 5<sup>th</sup> China Advanced Forum for Molecular Imaging, Harbin, China, July, 2012.
119. Invited Speaker “Development of MR Theranostic Agents for Angiogenesis”, 5<sup>th</sup> Annual Symposium on Integrating Nanotechnology with Cell Biology and Neuroscience, Albuquerque, New Mexico, August, 2012.
120. Invited Seminar Speaker “Nanomedicine Drug Delivery and Imaging Technologies from CTRAIN”, Bioengineering Fall Seminar Series, University of Maryland College, Hyattsville, MD, September, 2012.
121. Invited Speaker, 5<sup>th</sup> Image Guided Therapy Workshop, Boston, MA, September, 2012.
122. Invited Speaker, SRRSH 7<sup>th</sup> International Academic Week, Hangzhou, China, October, 2012.
123. Invited Speaker “Nanotheranostics for Cardiovascular Disease and Cancer”, Symposium on Nanomedicine, Boston, MA, November, 2012.
124. Invited Speaker “Therapeutic Nanotechnology”, AACR Annual Meeting, Washington, DC, April, 2013.
125. Invited Speaker “Nanocardiology – Cardiovascular Application”, British Cardiovascular Society Annual Conference, London Excel, June, 2013.
126. Invited Speaker, 2013 Cancer Nanotechnology Gordon Research Conference, Boston, MA, July, 2013.
127. Invited Speaker, “Approaching Unmet Medical Needs with Integrated Imaging

- and Therapy Technologies”, Yale University, New Haven, CT, October, 2013.
128. Invited Speaker “Emerging Technological Approaches to Cardiovascular and Pulmonary Disease”, Nanomedicine Day, Manhattan, NY, October, 2013.
  129. Invited Speaker, “Advanced Nanotechnologies Addressing Intractable Medical Issues”, University of Pennsylvania, October, 2013.
  130. Invited Speaker, “Characterization of Early Neovascular Response to Acute Lung Ischemia using Simultaneous  $^{19}\text{F}/^1\text{H}$  MR Molecular Imaging” CMR, Beijing, China, November, 2013.
  131. Invited Speaker, Houston Methodist Research Institute, Houston, TX, January, 2014.
  132. Invited Speaker, American Society of Nanomedicine, Rockville, MD, March, 2014.
  133. Invited Speaker, “Targeted nanoparticles for imaging dynamic processes”, DDW 2014, Chicago, IL, May, 2014.
  134. Invited Speaker, “Imaging insights in atherosclerosis”, NYU Symposium, New York, NY, May, 2014.
  135. Invited Speaker, “Diagnosis of ventricular assist device (LVAD) thrombosis using fibrin-specific  $^{99\text{m}}\text{Tc}$  imaging agent”, St. Louis, MO, June, 2014.
  136. Invited Speaker, “Development of Sn-2 lipase labile prodrugs for targeted Nanotherapy,” Liposome Research Days, Copenhagen, Denmark, August, 2014.
  137. Invited Speaker, NHLBI Biomedical Lecture Series, Bethesda, MD, June, 2015.
  138. Invited Speaker, “Imaging thrombus inside the VAD *In Situ*”, at the Gordon Research Conference on Assisted Circulation, Lucca (Barga), Italy, June 2015.
  139. Invited Speaker, 1<sup>st</sup> Photon Counting CT Workshop, Lyon, France, September 2015
  140. Invited Speaker, 2015 Chinese Congress of Radiology, Harbin, China, September 2015.
  141. Invited Speaker, United Imaging, Shanghai Pudong, China, September 2015
  142. Invited Speaker, American Society for Nanomedicine, Crystal City, VA, October, 2015.
  143. Invited Speaker, University of Nebraska Medical Center, Omaha, NE, November, 2015.

144. Invited Speaker, Keynote: "Fluorine magnetic resonance imaging with perfluorocarbon nanoparticles", ASME 5th NanoEngineering for Medicine & Biology, Houston, TX, February, 2016
145. Invited Speaker, 14<sup>th</sup> European Symposium on Controlled Drug Delivery, Egmond Ann Zee, the Netherlands, April, 2016
146. Invited Speaker, "Contact-Facilitated Drug Delivery of Lipase-Labile Prodrugs with Targeted Lipid-based Nanotherapies", Center for Nanotechnology in Drug Delivery Seminar, UNC Chapel Hill, April, 2016
147. Invited Speaker, "Contact-facilitated drug delivery of lipase-labile prodrugs with targeted lipid-based nanotherapies", 2016 Precision Nanomedicine Symposium, Beijing, China, July, 2016
148. Invited Speaker, "Photoacoustic neovascular imaging and treatment", 1<sup>st</sup> International Biophotonics Conference, Singapore, July, 2016
149. Invited Speaker, "Achieving effective extravascular targeted drug delivery in solid and liquid cancers", GRC Drug Carriers in Medicine and Biology Conference, Waterville Valley, NH, August, 2016
150. Invited Speaker, "Anti-angiogenic nanotherapy inhibits airway remodeling and hyper-responsiveness of dust mite triggered asthma in brown Norway rat", 14<sup>th</sup> International Nanomedicine & Drug Delivery Symposium (NanoDDS' 16), Baltimore, MD, September 2016
151. Invited Speaker, "US Clinical Nanotechnology - Update" Symposium on Nanotech for Cancer Research, NCI, Paris, France, November 2016.
152. Invited Speaker, "<sup>19</sup>Fluorine Magnetic Resonance Imaging with Perfluorocarbon Emulsions", University of Texas, Southwestern. Houston, February 2017.

### **Research Support:**

#### **ACTIVE**

**NIH U54 CA199092 (Achilefu/Lanza)**

9/1/2015-7/31/2020

*Center for Multiple Myeloma Nanotherapy*

Administrative Core

Project 1 (Lanza)

*Project 1: Preclinical and Clinical Imaging and Treatment of Multiple Myeloma with CMYC-MAX Nanoparticles*

The overarching aim of this program will be to select and develop a transformative and clinically translatable VLA-4 targeted cMyc-Max antagonist PD nanotherapeutic candidate to maximize multiple myeloma survival.

**NIH R01 HL122471-01A1 (Lanza/Achilefu)**

04/01/2015-01/31/2019

*Diagnosis of Left Ventricular Assist Device Intrapump Thrombosis*

The specific aims of this project are: Aim 1. Utilize <sup>99m</sup>Tc-F4A prototype agent to quantify and characterize thrombus accumulation in LVAD circuits (i.e., inlet, pump, outlet components) and compare nuclear signal with pump histopathology results. Aim

2. Improve the current <sup>99m</sup>Tc-F4A probe to improve synthetic yield, increase production scale, and to permit simplified <sup>99m</sup>Tc chelation to N2S2 motif in the presence of a cyclic peptide. Aim 3. Correlate the fibrin nuclear signals and distribution patterns from the explanted LVADS using <sup>99m</sup>Tc-F4A or its analogues with patient clinical data.

**SBIR HHSN268201400042C (Wang/Lanza)** 09/08/2014-09/07/2017

National Institutes of Health (Subaward from Ocean NanoTech LLC)

***Manganese-based MRI Contrast Agent for Risk Stratification of Atherosclerotic Plaque***

This SBIR proposal supports the development of two, very closely related manganese-based nanoparticle agents designed to work in conjunction with current MRI plaque characterization techniques to triage patients with ruptured unstable and highly vulnerable carotid plaques to the most appropriate management strategy.

**NIH R01 HL113392 (Lanza)** 04/01/2012-02/28/2018

***Theranostic Approach to Asthma Using Anti-Angiogenic Nanomedicine***

The overarching hypotheses of this proposal are to use nanomedicine approach to noninvasively characterize bronchial angiogenesis (new vessel formation), to deliver acute antiangiogenic therapy to reduce airway remodeling and improve pulmonary function, and to maintain the acute benefits of this new treatment with standard-of-care low dose steroids.

**Completed**

**NIH R01CA154737 (Lanza, Pan, Weilbaeher)** 07/01/2011-04/30/2017 NCE

***Next Generation Approaches to Breast Cancer Using Image Guided Drug Delivery***

This proposal compares the anti-tumor effectiveness of anti-angiogenesis on tumor progression with and without zoledronic acid.

**R42 HL112518 (Phase 2) (Wang/Lanza)** 07/01/2012-07/31/2016

National Institutes of Health (Subaward from Ocean NanoTech LLC)

***Bismuth-Organometallic Nanoparticles for Spectral CT Imaging of Coronary Ruptured Plaque***

We propose the development of a novel thrombus-specific computed tomography (CT) nanoparticle (i.e., NanoK) approach for direct rapid assessment of coronary disease, which would complement parallel new advances in multidetector CT (MDCT), more specifically the development of Spectral (multicolored) CT.

**CA100623 (Lanza)** 09/1/2011-08/31/2014

US Army Medical Research Acquisition Activity

***Treatment of Multiple Myeloma with VLA4-targeted Nanoparticles Delivering Novel c-***

***MYC inhibitor Prodrug*** The proposal describes a VLA-4, targeted nanomedicine to deliver c-Myc inhibitor prodrugs to MM cells with the expectation of minimizing off-target toxicity and extending life expectancy.

**U01 NS073457 (Hourcade)** 09/27/2010-08/31/2013

***Characterization/bioinformatics-modeling of nanoparticle: complement interactions***

The goal of this program is to develop QSAR models to predict complement and immune response to nanoparticle.

Role: Co-investigator

**NIH U54 CA136398 (Wang)** 09/01/2008-08/31/2013  
**Project 1 (Lanza): Photoacoustic/Optical/Ultrasonic Imaging of Sentinel Lymph Nodes and Metastases**  
The goal of this program is to provide a novel real-time noninvasive clinical imaging tool for sentinel lymph node mapping.  
Role: Co-Investigator

**NIH R01 AR056468 (Pham)** 07/01/2008-04/30/2013  
**Targeted Nanotherapy in the Treatment of Inflammatory Arthritis**  
The goal of this study is to use the unique perfluorocarbon nanoparticle platform to impede and reverse inflammation in animal models of arthritis.  
Role: Co-Investigator

**NIH R01 HL094470 (Lanza)** 09/01/2009-08/31/2012  
**Colloidal Iron-Oxide Nanobeacons for Theranostic Use in Atherosclerosis**  
The goal of this project is to develop colloidal iron oxide nanoparticles for molecular imaging and targeted therapy of thrombosis and angiogenesis in cardiovascular disease.

**NIH R01 NS059302 (Lanza)** 06/01/2007-05/31/2012  
**Fibrin-Specific Thrombolytic Nanoparticles for Acute Stroke**  
The goal of this project is to develop and evaluate fibrin-targeted thrombolytic nanoparticles for treatment of acute stroke.

**R01 HL073646 (Wickline)** 02/01/2010-01/31/2012  
**“Methods in Molecular Imaging and Targeted Therapeutics”**  
Development of Targeted Nanoparticles for Cardiovascular Imaging and Therapy.

**NIH U54 CA119342 (Wickline)** 09/30/2005-08/31/2010  
**SCCNE Core 3 - Biosignature and Vector Development Core (Lanza)**  
The purpose of this core is to implement Phage Display technology at Washington University.  
Role: PI

**NIH U54 CA119342 (Wickline)** 09/30/2005-8/31/2010  
**SCCNE Project 1 - Neovascular-Directed Nanoparticles for Detection, Characterization and Treatment of Neoplasia with MRI (Project PI: Lanza)**  
The subject of this proposal is the application of a novel paramagnetic site-targeted contrast "platform technology" for sensitive and specific imaging of molecular epitopes expressed on tumor neovasculature alone and in combination with the local delivery of chemotherapeutic agents.  
Role: PI

**NIH U54 CA119342 (Wickline)** 09/30/2005-08/31/2010  
**SCCNE Project 3 - Acoustic Nanobeacons for Targeted Detection and Treatment of Tumor Angiogenesis (Wickline)**  
The hypothesis of this project is that imaging with novel ultrasound contrast agents can delineate selected molecular epitopes associated with angiogenesis, inflammation, and metastasis in tumors at very early stages in the process of tumor expansion with the use of ligand-targeted, perfluorocarbon nanoparticle emulsion contrast agents.



Role: Co-Investigator

**NIH R01 HL078631** (Lanza)

09/22/2004-08/31/2008

***Combined Therapeutic-Imaging Agent for Atherosclerosis***

This project explores the potential of HMG-CoA reductase inhibitors to sustain the acute "atherolytic" response of targeted fumagillin therapy and will evaluate the safety, pharmacokinetics, and pharmacodynamics of this technology.

Role: PI

**NIH R01 EB001704** (Lanza)

04/01/2004-01/31/2009

***Molecular Imaging of Angiogenesis by MRI***

The goal of this project is to test the hypothesis that alpha(v)beta(3)-targeted paramagnetic nanoparticles will allow sensitive detection of the early molecular signatures of angiogenesis.

Role: PI

**Additional Past Research Grant Support Detail**

American Heart Association Fellowship, Missouri Affiliate (1995-1997):

Principal Investigator (PI)

Barnes Jewish Hospital Foundation (1996-1997): \$50,000, Principal Investigator

Bracco Diagnostics Inc/Society for Cardiac Angiography and Interventions Fellowship (1998-1999): \$25,000, Principal Investigator

American Heart Association, Missouri Affiliate – Beginning Grant (1999-2000):

\$35,000/yr, Principal Investigator

Barnes Jewish Hospital Foundation (1999-2000): \$50,000, Principal Investigator

American College of Cardiology Searle Award in Cardiovascular Disease (2000)

\$40,000, Principal Investigator

National Cancer Institute (2000-2003): \$2,092,153, Principal Investigator

Barnes Jewish Hospital Foundation (2000-2001): \$40,000, Principal Investigator

National Cancer Institute (2002-2005): \$2,782,905, Principal Investigator

National Cancer Institute (2003-2006): \$5,097,055, Principal Investigator

National Health Lung and Blood Institute (2004-2008): ~\$1,000,000,

Principal Investigator

National Institute of Neurological Disorders and Stroke (2007-2012) \$1,490,141,

Principal Investigator

**Issued US Patents**

**(International Patents, provisional US, invention disclosures, and US applications in process excluded)**

1. DeGeeter M J, **Lanza GM**, Vineyard BD. Composition and method for improving feed utilization or tissue production in animals. 10/21/1986, Monsanto Company (St. Louis, MO). US Pat. No. 4,618,604. EEC Pat No. EP00139624B1, 04/15/1987.
2. DeGeeter M J, **Lanza GM**. Method for improved bovine milk production. 08/03/1983, Monsanto Company (St. Louis, MO). EEC Pat No. EP00085036A1.

3. **Lanza GM**, Alkan MH, Klegerman ME, Vonesh MJ, McPherson DD. Acoustically reflective liposomes and methods to make and use the same. 03/18/1997, Northwestern University (Evanston, IL), US Pat. No: 5,612,057.
4. **Lanza GM**, Wickline SA. Avidin-Biotin conjugated emulsions as a site specific binding system. 11/25/1997, Barnes-Jewish Hospital (St. Louis, MO). US Pat. No. 5,690,907.
5. **Lanza GM**, Wickline SA. Method of MRI using avidin-biotin conjugated emulsions as a site specific binding system. 07/14/1998, Barnes-Jewish Hospital (St. Louis, MO). US Pat No. 5,780,010.
6. **Lanza GM**, Alkan-Onyuksel MH, Klegerman ME, Vonesh MJ, McPherson DD, Kane BJ, Murer SE. Acoustically reflective liposomes and methods to make and use the same. 01/12/1999, Northwestern University (Evanston, IL). US Pat No. 5,858,399.
7. **Lanza GM**, Wickline SA. Site specific binding system, imaging compositions and methods. 11/23/1999, Barnes-Jewish Hospital (St. Louis, MO). US Pat No. 5,989,520.
8. **Lanza GM**, Wickline SA. Site specific binding system, nuclear imaging compositions and methods. 09/28/1999, Barnes-Jewish Hospital (St. Louis, MO). US Pat No. 5,958,371.
9. **Lanza GM**, Wickline SA. Site specific binding system, imaging compositions and methods. 04/15/2003, Barnes-Jewish Hospital (St. Louis, MO). US Pat No. 6,548,046.
10. **Lanza GM**, Wickline SA. Ligand-targeted emulsions carrying bioactive agents. 01/13/2004, Barnes-Jewish Hospital (St. Louis, MO). US Patent No. 6,676,963.
11. **Lanza GM**, Wickline SA. Site-specific binding system, imaging compositions and methods. 11/23/2004, Barnes-Jewish Hospital (St. Louis, MO). US Patent No. 6,821,506.
12. **Lanza GM**, Wickline SA. Paramagnetic particles that provide improved relaxivity. Barnes-Jewish Hospital (St. Louis, MO). 03/22/2005. US Patent No. 6,869,591.
13. **Lanza GM**, Hall CS, Wickline SA. Enhanced ultrasound detection with temperature-dependent contrast agents. 02/20/2007, Barnes-Jewish Hospital (St. Louis, MO). US Patent No. 7,179,449.
14. **Lanza GM**, Wickline SA. Methods for targeted drug delivery. 03/06/07, Barnes-Jewish Hospital (St. Louis, MO). US Patent No. 7,186,399.
15. **Lanza GM**, Wickline SA. Blood clot-targeted nanoparticles. 05/22/07, Barnes-Jewish Hospital (St. Louis, MO). US Patent No. 7,220,401.

16. **Lanza GM, Wickline SA.** Paramagnetic particles that provide improved relaxivity. 06/26/07, Barnes-Jewish Hospital (St. Louis, MO). US Patent No. 7,235,227.
17. **Lanza GM, Wickline SA, Harris T.** Integrin targeted imaging agents. 08/14/07, Barnes-Jewish Hospital (St. Louis, MO) US Patent No. 7,255,875.
18. **Lanza GM, Wickline SA, Athey PS, Gulyas G, Kiefer GE.** Chelating agents with lipophilic carriers. 10/9/07, Barnes-Jewish Hospital (St. Louis, MO) & The Dow Chemical Corporation (Midland, MI). US Patent No. 7,279,150.
19. **Lanza GM, Wickline SA, Harris T.** Integrin targeted imaging agents. 03/18/08, Barnes-Jewish Hospital (St. Louis, MO) US Patent No. 7,344,698.
20. **Lanza GM, Wickline SA, Harris T.** Integrin targeted imaging agents. 01/09/08, Barnes-Jewish Hospital (St. Louis, MO) & Bristol Myers Squibb Medical Imaging, Inc. (North Billerica, MA) US Patent No. 7,566,442.
21. **Lanza GM, Wickline SA, Athey PS, Gulyas G, Kiefer GE.** Chelating agents with lipophilic carriers. Barnes-Jewish Hospital (St. Louis, MO) The Dow Chemical Company (Midland, MI). 6/1/2010. US Patent No. 7,727,512.
22. **Lanza GM, Wickline, SA.** Targeted atherosclerosis treatment. Barnes-Jewish Hospital. 9/28/2010. US Patent No. 7,803,374
23. Schlesinger P, Soman N, **Lanza G, Wickline SA.** Nanoparticle delivery systems comprising a hydrophobic core and a lipid/surfactant layer comprising a membrane-lytic peptide. Washington University. 5/17/2011. US Patent No. 7,943,168.
24. **Lanza, GM, Wickline; Samuel A.** (St. Louis, MO), Kiefer; Garry E. (Richardson, TX), Athey; Phillip S. Targeted MR imaging agents. 8/23/11. US Patent No. 8,003,078.
25. Schlessinger P, Soman N, **Lanza G, Wickline SA.** Nanoparticle delivery systems for membrane-integrating peptides. Washington University (St. Louis, MO). 7/30/13. US Patent No. 8,496,945.
26. Hughes MS, McCarthy J, **Lanza G, Wickerhauser MV, Wickline S.** Applying renyi entropy to detect changes in scattering architecture. Washington University (St. Louis, MO). 8/6/13. US Patent No. 8,500,644.
27. Wickline SA, Pan H, Soman NR, **Lanza GM, Schlesinger PH.** Universal anchor peptide for nanoparticles. Washington University (St. Louis, MO). 12/31/13. US Patent No. 8,617,516.

28. Wickline SA, **Lanza GM**. Methods for improving muscle strength. Washington University (St. Louis, MO). 8/4/2015. US Patent No. 9,095,521.
29. Wickline SA, **Lanza GM**. Methods for improving muscle strength. Washington University (St. Louis, MO). 8/16/2016. US Patent No. 9,415,018.
30. **Lanza GM**, Wickline SA, Pan D, Senpan A: Particles for imaging. Washington University (St. Louis, MO). 9/20/2016. US Patent No. **9,446,150**.
31. **Lanza GM**, Wickline SA, Pan D. Ligand directed toroidal nanoparticles for therapy and diagnostic imaging. Washington University (St. Louis, MO) 10/18/2016. US Patent No. 9,468,607.
32. **Lanza GM**, Pan D, Doctor A, Spinella P. Blood substitute composition and method of use. Washington University (St. Louis, MO) 11/8/16. US Patent No. 9,486,508.
33. **Lanza GM, Pan D**. Prodrug compositions, prodrug nanoparticles, and methods of use thereof, Washington University (St. Louis, MO) 11/22/16. US Patent No. 9,498,439.

#### **Bibliography (Manuscripts):**

1. **Lanza GM**, Washburn KW, Wyatt RD, Edward HM Jr: Depressed 59 Fe absorption due to dietary aflatoxin. *Poultry Sci* 1979; 58 (6): 1439-1444. PMID: 15121254.
2. **Lanza GM**, Washburn KW, Wyatt RD: Variation with age in response of broilers to aflatoxin. *Poultry Sci* 1980; 59 (2): 282-288. PMID: 7413558.
3. Stewart RG, Wyatt RD, **Lanza GM**, Edwards HM Jr, Ruff MD: Physiological effects of Gentian violet on broiler chickens. *Poultry Sci* 1980; 59 (2): 234-239. PMID: 7413553.
4. **Lanza GM**, Washburn KW, Wyatt RD: Strain variation in hematological response of broilers to dietary aflatoxin. *Poultry Sci* 1980; 59 (12): 2686-2691. PMID: 7267517.
5. Washburn KW, Maeda Y, **Lanza GM**: Protein polymorphisms in a randombred chicken population. *Anim Blood Groups and Biochem Gen* 1980; 11 (4): 261-269. PMID: 6166222.
6. **Lanza GM**, Washburn KW, Wyatt RD: A time-course analysis of chick (*Gallus domesticus*) response during aflatoxicosis. *Toxicon* 1981; 19 (4): 563-566. PMID: 7330891.
7. **Lanza GM**, Washburn KW, Wyatt RD: Effect of linoleic acid on broilers to graded levels of aflatoxin. *Arch Geflugelk* 1981; 45: 206-211.

8. **Lanza GM**, Washburn KW, Wyatt RD, Edwards HM Jr: Strain variation in <sup>59</sup>Fe absorption during aflatoxicosis. *Poultry Sci* 1981; 60 (3): 500-504. PMID: 7301719.
9. **Lanza GM**, Washburn KW, Wyatt RD, Marks HL: Genetic variation of physiological response to aflatoxin in *Gallus domesticus*. *Theor and Appl Genet* 1982; 63 (3): 207-212. PMID: 24270818.
10. Brah GS, **Lanza GM**, Pott PL, Washburn KW: Effect of deviations from normality on selection intensities for shell deformation and egg weight in chickens. *Poultry Sci* 1982; 61: 424-428.
11. **Lanza GM**, Washburn KW, Wyatt RD, Marks HL: Effect of dietary aflatoxin concentration on the assessment of genetic variability of response in a randombred population of chickens. *Genetics* 1983; 104 (1): 123-131. PMCID: PMC1202059.
12. Renwick GM, Washburn KW, **Lanza GM**: Genetic variability in growth response of chicks to cold brooding temperature. *Poultry Sci* 1985; 64 (5): 785-788. PMID: 4001065.
13. Washburn KW, Wyatt RD, Potts PL, **Lanza GM**: Effects and mechanism of aflatoxin variation in shell strength. *Poultry Sci* 1985; 64: 1302-1305.
14. Bauman DE, Eppard PJ, DeGeeter MJ, **Lanza GM**: Responses of high-producing dairy cows to long-term treatment with pituitary somatotropin and recombinant somatotropin. *J Dairy Sci* 1985; 68 (6): 1352-1362. PMID: 4019880.
15. Eppard PJ, Bauman DE, Curtis CR, Erb HN, **Lanza GM**, DeGeeter MJ: Effect of 188-day treatment with somatotropin on health and reproductive performance of lactating dairy cows. *J Dairy Sci* 1987; 70 (3): 582-591. PMID: 3584601
16. Frazin LJ, **Lanza G**, Vonesh M, Khasho F, Spitzzeri C, McGee S, Mehlman D, Chandran KB, Talano J, McPherson D: Functional chiral asymmetry in descending thoracic aorta. *Circulation* 1990; 82 (6): 1985-1994. PMID: 2242523.
17. Han G, Chandran KB, Vonesh M, Joob A, Greene R, **Lanza G**, Khasho F, McPherson DD: Non-linear passive elastic properties of the left ventricular myocardium: Application of finite element analysis to 3-D geometry obtained from ultrasound images. *Mechanics Computing in 1990's and Beyond* 1991; 519-523.
18. Frazin LJ, Vonesh MJ, Chandran KB, Khasho F, **Lanza G**, Talano JV, McPherson DD: Doppler guided retrograde catheterization system. *Proc of SPIE* 1991; 1425: 207.
19. **Lanza GM**, Zabalgoitia-Reyes M, Frazin L, Meyers SN, Spitzzeri CL, Vonesh MJ, Mehlman DJ, Talano JV, McPherson DD: Plaque and structural

- characteristics of the descending thoracic aorta using transesophageal echocardiography. *J Am Soc Echo* 1991; 4 (1): 19-28. PMID: 2003933.
20. Collier RJ, Miller MA, Hilderbrandt JR, Torkelson AR, White TC, Madsen KS, Vicini JL, Eppard PJ, **Lanza GM**: Factors affecting insulin-like growth factor-I concentration in bovine milk. *J Dairy Sci* 1991; 74 (9): 2905-2911. PMID: 1779049.
  21. Eppard PJ, Hudson S, Cole WJ, Hintz RL, Hartnell GF, Hunter TW, Metzger LE, Torkelson AR, Hammond BG, Collier RJ, **Lanza GM**: Response of dairy cows to high doses of a sustained release bovine somatotropin administered during two lactations. I. Production response. *J Dairy Sci* 1991; 74 (1): 3807-21. PMID: 1757623.
  22. Cole WJ, Eppard PJ, Boysen BG, Madsen KS, Sorbet RH, Miller MA, Hintz RL, White TC, Ribelin WE, Hammond BG, Collier RJ, **Lanza GM**: Response of dairy cows to high doses of a sustained release bovine somatotropin administered during two lactations. II. Health and Reproduction. *J Dairy Sci* 1992; 75 (1): 111-123. PMID: 1541726.
  23. Frazin LJ, Vonesh MJ, Khasho F, **Lanza G**, Chandran KB, Talano JV, McPherson DD: A Doppler guided retrograde catheterization system. *Cath Cardiovasc Diagn* 1992; 26 (1): 41-50. PMID: 1499062.
  24. Eppard PJ, Bentle LA, Violand BN, Ganguli S, Hintz RL, Kung L Jr, Krivi GG, **Lanza GM**: Comparison of the galactopoietic response to pituitary-derived and recombinant-derived variants of bovine growth hormone. *J Endocrinology* 1992; 132 (1): 47-56. PMID: 1737958.
  25. Eppard PJ, Rogan GJ, Boysen BG, Miller MA, Hintz RL, Hammond BG, Torkelson AR, Collier RJ, **Lanza GM**: Effect of high doses of a sustained-release bovine somatotropin on antibody formation in dairy cows. *J Dairy Sci* 1992; 75 (11): 2959-2967. PMID: 1460127.
  26. Han GJ, Chandran KB, Gotteiner NL, Vonesh MJ, Joob AW, Greene R, **Lanza GM**, McPherson DD: Application of finite element analysis with optimisation to assess the *in vivo* non-linear myocardial material properties using echocardiographic imaging. *Med Biol Engin Comp* 1993; 3 (5): 459-467.
  27. Eppard PJ, White TC, Birmingham BK, Hintz RL, Bentle LA, Wood DC, Salsgiver WJ, Rowold E, Miller MA, Ganguli S, Hale MD, Krivi GG, Collier RJ, **Lanza GM**: Pharmacokinetics and galactopoietic response to recombinant variants of bovine growth hormone. *J Endocrinol* 1993; 139 (3): 441-450. PMID: 8133211.
  28. Christy DH, Wallace KD, **Lanza GM**, Holland MR, Hall CS, Scott MJ, Cacheris WP, Gaffney PJ, Miller JG, Wickline SA: Quantitative intravascular ultrasound demonstration using a novel site targeted acoustic contrast agent. *Proc IEEE Ultrason Symp* 1995; 1125-1128.

29. Alkan-Onyuksel H, Demos SM, **Lanza GM**, Vonesh MJ, Klegerman ME, Kane BJ, Kuszak J, McPherson DD: Development of inherently echogenic liposomes as an ultrasonic contrast agent. *J Pharm Sci* 1996; 85 (5): 486-490. PMID: 8742939.
30. **Lanza GM**, Wallace KD, Scott MJ, Cacheris WP, Abendschein DR, Christy DH, Sharkey AM, Miller JG, Gaffney PJ, Wickline SA: A novel site-targeted ultrasonic contrast agent with broad biomedical application. *Circulation* 1996; 94 (12): 3334-3340. PMID: 8989148.
31. Eppard PJ, White TC, Sorbet RH, Weiser MG, Cole WJ, Hartnell GF, Hintz RL, **Lanza GM**, Vicini JL, Collier RJ: Effect of exogenous somatotropin on hematological variables of lactating cows and their offspring. *J Dairy Sci* 1997; 80 (8): 1582-1591. PMID: 9276796.
32. **Lanza GM**, Scott MJ, Davison G, Hall CS, Christy DH, Miller JG, Wickline SA: Angiotensin II receptor blockade in Syrian hamster (T0-2) cardiomyopathy does not affect microscopic cardiac material properties: Implications for mechanisms of tissue remodeling. *Cardiovasc Drug Ther* 1997; 11 (4): 521-529. PMID: 9358956.
33. **Lanza GM**, Wallace KD, Fischer SE, Christy DH, Scott MJ, Trousil RL, Cacheris WP, Miller JG, Gaffney PJ, Wickline SA: High frequency ultrasonic detection of thrombi with a targeted contrast system. *Ultrasound Med Biol* 1997; 23 (6): 863-870. PMID: 9300990.
34. **Lanza GM**, Wallace KD, Abendschein DR, Scott MJ, Trousil RL, Miller JG, Gaffney PJ, Wickline SA: Acoustic enhancement of a thrombi using a novel fibrin targeted ultrasonic contrast system. *J Acoust Soc Am* 1997; 10 (4): 391.
35. Hall CS, **Lanza GM**, Rose JH, Kaufmann RJ, Fuhrhop RW, Handley SH, Waters KR, Miller JG, Wickline SA: Experimental determination of phase velocity of perfluorocarbons: Applications to targeted contrast agents. *Proc IEEE Ultrason Symp* 1997; 97CH36118: 1605-1608.
36. **Lanza GM**, Trousil RL, Wallace KD, Rose JH, Hall CS, Scott MJ, Miller JG, Eisenberg PR, Gaffney PJ, Wickline SA: *In vitro* characterization of a novel, tissue-targeted ultrasonic contrast system with acoustic microscopy. *J Acoust Soc Am* 1998; 4 (6): 3665-3672.
37. **Lanza GM**, Lorenz CH, Fischer SE, Scott MJ, Cacheris WP, Kaufman RJ, Gaffney PJ, Wickline SA: Enhanced detection of thrombi with a novel fibrin-targeted magnetic resonance imaging agent. *Acad Radiol* 1998; 5 (Suppl 1): S173-S176. PMID: 9561074.
38. Miller JG, Perez JE, Wickline SA, Baldwin SL, Barzilai B, Davila-Roman V, Fedewa RJ, Finch-Johnston AE, Hall CS, Handley SM, Hockett FD, Holland MR, Kovacs A, **Lanza GM**, Lewis SH: Backscatter imaging and myocardial tissue characterization. *Proc IEEE Ultrason Symp* 1998; 98CH36102: 1373-1383.

39. **Lanza GM**, Berman BE, Taniuchi M: Multifocal coronary thromboembolism from a left ventricular thrombus. (letter) *N Engl J Med* 1999; 341 (14): 1083-1084. PMID: 10507931.
40. Marsh JN, Hall CS, Abendschein DR, Scherrer DE, Scott MJ, Fuhrhop RJ, Gaffney PJ, Wickline SA, **Lanza GM**: Molecular imaging using a site-targeted ultrasound contrast agents. *Proc IEEE Ultrason Symp* 1999; 99CH37027: 1713-1716.
41. Hall CS, Scott MJ, **Lanza GM**, Miller JG, Wickline SA: The extracellular matrix is an important source of ultrasound backscatter from myocardium. *J Acoust Soc Am* 2000; 107 (1): 612-619. PMID: 10641669.
42. Hall CS, **Lanza GM**, Rose JH, Kaufman RJ, Fuhrhop RW, Handley SH, Waters KR, Miller JG, Wickline SA: Experimental determination of phase velocity of perfluorocarbons: Applications to targeted contrast agents. *IEEE Trans Ultrason Ferroelec Freq Contr* 2000; 47 (1): 75-84. PMID: 18238519.
43. **Lanza GM**, Abendschein DR, Hall CS, Marsh JN, Scott MJ, Scherrer DE, Wickline SA: Molecular imaging of stretch-induced tissue factor expression in carotid arteries with intravascular ultrasound. *Invest Radiol* 2000; 35 (4): 227-234. PMID: 10764091.
44. Marsh JN, Hall CS, Scott MJ, Fuhrhop RJ, Gaffney PJ, Wickline SA, **Lanza GM**: Enhancement of ultrasound reflectivity depends on the specific perfluorocarbons utilized to formulate nanoparticle emulsion contrast agents. *Proc Society of Photo-optical Instrumentation Engineers* 2000; 3982: 333-340.
45. Hall CS, Abendschein DR, Scherrer DE, Scott MJ, Marsh JN, Wickline SA, **Lanza GM**: Site-targeted acoustic contrast agent detects molecular expression of tissue factor after balloon angioplasty. *Proc Society of Photo-optical Instrumentation Engineers* 2000; 3982: 325-332.
46. Hall CS, Nguyen CT, Scott MJ, **Lanza GM**, Wickline SA: Delineation of the extracellular determinants of ultrasonic scattering from elastic arteries. *Ultrasound Med Biol* 2000; 26 (4): 613-620. PMID: 10856624.
47. **Lanza GM**, Abendschein DR, Hall CH, Scott MJ, Scherrer DE, Houseman A, Miller JG, Wickline SA: *In vivo* molecular imaging of stretch-induced tissue factor in carotid arteries with ligand-targeted nanoparticles. *J Am Soc Echocardiogr* 2000; 13 (6): 608-614. PMID: 10849515.
48. Anderson SA, Rader RK, Westlin WF, Null C, Jackson D, **Lanza GM**, Wickline SA, Kotyk JJ: Magnetic resonance contrast enhancement of neovascular with  $\alpha_v\beta_3$ -targeted nanoparticles. *Magn Reson Med* 2000; 44 (3): 433-439. PMID: 10975896.
49. Yu X, Song S-K, Chen J, Scott MJ, Fuhrhop RJ, Hall CS, Gaffney PJ, Wickline SA, **Lanza GM**: High-resolution MRI characterization of human thrombus using a novel fibrin-targeted paramagnetic nanoparticle contrast agent. *Magn Reson Med* 2000; 44 (6): 867-872. PMID: 11108623.



50. Hall CS, Marsh JN, Scott MJ, Gaffney PJ, Wickline SA, **Lanza GM**: Time evolution of enhanced ultrasonic reflection using a fibrin-targeted nanoparticulate contrast agent. *J Acoust Soc Am* 2000; 108 (6): 3049-3057. PMID: 11144597.
51. Marsh JN, Hall CS, Scott MJ, Gaffney PJ, Wickline SA, **Lanza GM**: Time-evolution of enhanced ultrasonic reflection using a fibrin-targeted nanoparticulate contrast agent *Proc IEEE Ultrason Symp* 2000; 00CH37121: 1927-1930.
52. **Lanza G**, Hall C, Scott M, Fuhrhop R, Marsh J, Wickline S: Molecular imaging with targeted ultrasound contrast agents. *Proc IEEE Ultrason Symp* 2000; 2: 1917-1926.
53. Ngo FC, Hall CS, Marsh JN, Fuhrhop RW, Allen JS, Brown P, McLean MD, Scott MJ, Wickline SA, **Lanza GM**: Evaluation of liquid perfluorocarbon nanoparticles as a blood pool contrast agent utilizing power Doppler harmonic imaging. *Proc IEEE Ultrason Symp* 2000; 2: 1931-1934.
54. Hall CS, Marsh JN, Scott MJ, Gaffney PJ, Wickline SA, **Lanza GM**: Temperature dependence of ultrasonic enhancement with a site-targeted contrast agent. *J Acous Soc Am* 2001; 110 (3 Pt 1): 1677-1684. PMID: 11572376.
55. Flacke S, Fischer S, Scott MJ, Fuhrhop RJ, Allen J, McLean M, Winter P, Sicard GA, Gaffney PJ, Wickline SA, **Lanza GM**: Novel MRI contrast agent for molecular imaging of fibrin: Implications for detecting vulnerable plaques. *Circulation* 2001; 104 (11): 1280-1285. PMID: 11551880.
56. Handley SM, Ngo F, Hall C, Allen J, McLean M, **Lanza G**, Miller JG, Wickline S: Age at time of infarction differentially affects the remodeling responses in viable cardiac tissue in young versus old rats. *Proc IEEE Ultrason Symp* 2001; 2: 1181-1184.
57. Hughes MS, Marsh JN, Fuhrhop RW, Chinen LK, **Lanza GM**, Wickline SA: Comparison of ultrasound scattering properties of Optison® with a liquid perfluorocarbon nanoparticle contrast agent. *Proc IEEE Ultrason Symp* 2001; 01CH37263: 1675-1678.
58. Takiuchi S, Marsh JN, Hall CS, **Lanza GM**, Wickline SA: Unexpected anisotropic behavior of ultrasound attenuation after collagen cross-linking in porcine tendons. *Proc IEEE Ultrason Symp* 2001; 01CH37263: 1253-1256.
59. Marsh JN, Hall CS, Scott MJ, Fuhrhop RW, Gaffney PJ, Wickline SA, **Lanza GM**: Improvements in the ultrasonic contrast of targeted perfluorocarbon nanoparticles using an acoustic transmission line model. *IEEE Trans Ultrason Ferroelec Freq Contr* 2002; 49 (1): 29-38. PMID: 11833889.
60. **Lanza GM**, Yu X, Winter PM, Abendschein DR, Karukstis KK, Scott MJ, Chinen LK, Fuhrhop RW, Scherrer DE, Wickline SA: Targeted antiproliferative drug delivery to vascular smooth muscle cells with a magnetic resonance imaging

- nanoparticle contrast agent: Implications for rational therapy of restenosis. *Circulation* 2002; 106 (22): 2842-2847. PMID: 12451012.
61. Wickline SA, Hughes M, Ngo FC, Hall CS, Marsh JN, Brown PA, Allen JS, McLean MD, Scott MJ, Fuhrhop RW, **Lanza GM**: Blood contrast enhancement with a novel, non-gaseous nanoparticle contrast agent. *Acad Radiol* 2002; 9 (Suppl 2): S290-S293. PMID: 12188251.
  62. **Lanza GM**, Abendschein DR, Yu X, Winter PM, Karukstis KK, Scott MJ, Fuhrhop RW, Scherrer DE, Wickline SA: Molecular imaging and targeted drug delivery with a novel, ligand-directed paramagnetic nanoparticle technology. *Acad Radiol* 2002; 9 (Suppl 2): S330-S331. PMID: 12188265.
  63. Marsh JN, Hall CS, Wickline SA, **Lanza GM**: Temperature dependence of acoustic impedance for specific fluorocarbon liquids. *J Acoust Soc Am* 2002; 112 (6): 2858-2862. PMID: 12509007.
  64. Wickline SA, **Lanza GM**: Molecular imaging, targeted therapeutics, and nanoscience. *J Cellular Biochemistry* 2002; 87 (Suppl 39): 90-97.
  65. Wickline SA, **Lanza GM**: Nanotechnology for molecular imaging and targeted therapy. *Circulation* 2003; 107 (8): 1092-1095. PMID: 12615782.
  66. Hughes MS, Marsh JN, Woodson AK, Fuhrhop RW, **Lanza GM**, Wickline SA: Comparison of ultrasound scattering behavior of Optison(R) and a liquid perfluorocarbon nanoparticle contrast agent. *Proceedings of IEEE Ultrason Ferroelec Freq Contr* 2002; 02CH37388-2: 1965-1968.
  67. Winter PM, Caruthers SD, Yu X, Song SK, Chen J, Miller B, Bulte JWM, Robertson JD, Gaffney PJ, Wickline SA, **Lanza GM**: Improved molecular imaging contrast agent for detection of human thrombus. *Magn Reson Med* 2003; 50 (2): 411-416. PMID: 12876719.
  68. Winter PM, Caruthers SD, Kassner A, Harris TD, Chinen LK, Allen JS, Lacy EK, Zhang H, Robertson JD, Wickline SA, **Lanza GM**: Molecular imaging of angiogenesis in nascent Vx-2 rabbit tumors using a novel  $\alpha_v\beta_3$ -targeted nanoparticle and 1.5 Tesla magnetic resonance imaging. *Cancer Res* 2003; 63 (18): 5838-5843. PMID: 14522907.
  69. **Lanza GM**, Lamerichs R, Caruthers S, Wickline SA: Molecular imaging in MR with a targeted paramagnetic nanoparticles. *Medica Mundi* 2003; 47 (1): 34-39.
  70. Hughes, MS, **Lanza GM**, Marsh JN, Wickline SA: Targeted ultrasonic contrast agents for molecular imaging and therapy: A brief review. *Medica Mundi* 2003; 47: 66-73.
  71. Winter PM, Morawski AM, Caruthers SD, Fuhrhop RW, Zhang H, Williams TA, Allen JS, Robertson JD, **Lanza GM**, Wickline SA: Molecular imaging of angiogenesis in early-stage atherosclerosis with  $\alpha_v\beta_3$ -integrin-targeted nanoparticles. *Circulation* 2003; 108 (18): 2270-2274. PMID: 14557370.

72. **Lanza GM**, Winter PM, Caruthers SD, Hughes MS, Hall CS, Marsh JN, Scott MJ, Zhang H, Schmieder A, Crowder K, Morawski A, Wickline SA: Molecular imaging and targeted drug delivery: Merging medical paradigms. *Proceedings of IEEE Ultrason Ferroelec Freq Contr* 2003; 03CH37476-1: 526-531.
73. Crowder KC, Hughes MS, Marsh JN, Scott MJ, Fuhrhop RW, **Lanza GM**, Wickline SA: Augmented and selective delivery of liquid perfluorocarbon nanoparticles to melanoma cells with noncavitational ultrasound. *Proc IEEE Ultrason Symp* 2003; 03CH37476-1: 532-535.
74. Hughes MS, Marsh JN, Hall CS, Fuhrhop RW, **Lanza GM**, Wickline SA: Optimization of site-targeted perfluorocarbon nanoparticle contrast in whole blood for molecular imaging applications. *Proc IEEE Ultrason Symp* 2003; 03CH37476-1: 536-539.
75. Morawski AM, Winter PM, Caruthers SD, Williams TA, Allen JS, Fuhrhop RW, **Lanza GM**, Wickline SA: A semi-automated algorithm for quantification of vessel wall angiogenesis associated with early atherosclerosis using magnetic resonance imaging. *Proc IEEE-EMBS* 2003; 03CH37439-1: 743-746.
76. **Lanza GM**, Wickline SA: Targeted ultrasonic contrast agents for molecular imaging and therapy. *Curr Prob Cardiology* 2003; 28 (12): 625-653. PMID: 14691443.
77. Marsh JN, Takiuchi S, Lin SJ, **Lanza GM**, Wickline SA: Ultrasonic delineation of aortic microstructure: The relative contribution of elastin and collagen to aortic elasticity. *J Acoust Soc Am* 2004; 115 (5 Pt 1): 2032-2040. PMID: 15139613.
78. Morawski AM, Winter PM, Crowder KC, Caruthers SD, Fuhrhop RW, Scott MJ, Robertson JD, Abendschein DR, **Lanza GM**, Wickline SA: Targeted nanoparticles for quantitative imaging of sparse molecular epitopes with MRI. *Magn Reson Med* 2004; 51 (3): 480-486. PMID: 15004788.
79. Rogers JH, Caruthers SD, Williams T, Lin SJ, Meyers D, **Lanza GM**, Kovacs S, Lasala JM, Wickline SA: Clinical utility of rapid prescreening magnetic resonance angiography of peripheral vascular disease prior to cardiac catheterization. *J Cardiovasc Magn Reson* 2004; 6 (1): 25-31. PMID: 15054926.
80. Lin SJ, Brown PA, Watkins MP, Williams TA, Lehr KA, Liu W, **Lanza GM**, Wickline SA, Caruthers SD: Quantification of stenotic mitral valve area with magnetic resonance imaging and comparison with Doppler ultrasound. *J Am Coll Cardiol* 2004; 44 (1): 133-137. PMID: 15234421.
81. Marsh JN, Takiuchi S, Lin SJ, **Lanza GM**, Wickline SA: Ultrasonic phenotyping of aortic microstructure: The relative contribution of elastin and collagen to aortic elasticity. *J Acoust Soc Am* 2004; 51: 480-486.
82. Marsh JN, Crowder KC, Hughes MS, Scott MJ, Lacy EK, **Lanza GM**, Wickline SA: *In vitro* acoustic molecular imaging of tissue factor expressed by smooth muscle cells with stable liquid perfluorocarbon nanoparticle contrast agents. *IEEE Ultrason Symp* 2004; 04CH37553-2: 1102-1105.

83. **Lanza GM**, Winter P, Caruthers S, Schmieder A, Crowder K, Morawski A, Zhang H, Scott MJ, Wickline SA: Novel paramagnetic contrast agents for molecular imaging and targeted drug delivery. *Curr Pharm Biotechnol* 2004; 5 (6): 495-507. PMID: 15579039.
84. **Lanza GM**, Winter PM, Caruthers SD, Morawski AM, Schmieder AH, Crowder KC, Wickline SA: MR molecular imaging with nanoparticles: From bench to bedside. *J Nuc Cardiol* 2004; 11 (6): 733-743. PMID: 15592197.
85. Morawski AM, Winter PM, Yu X, Fuhrhop RW, Scott MJ, Hockett F, Robertson JD, Gaffney PJ, **Lanza GM**, Wickline SA: Quantitative “magnetic resonance immunohistochemistry” with ligand-targeted <sup>19</sup>F nanoparticles. *Magn Reson Med* 2004; 52 (6): 1255-1262. PMID: 15562481.
86. Hughes MS, Marsh JN, Allen J, Brown PA, Lacy EK, Scott MJ, **Lanza GM**, Wickline SA, Hall CS: *In vivo* ultrasonic detection of angiogenesis with site-targeted nanoparticle contrast agents using measure-theoretic signal receivers. *IEEE Ultrason Symp* 2004; 04CH37553-2: 1106-1109.
87. Morawski AM, **Lanza GM**, Wickline SA: Targeted contrast agents for magnetic resonance imaging and ultrasound. *Curr Opin Biotechnol* 2005; 16 (1): 89-92. PMID: 15722020.
88. Schmieder AH, Winter PM, Caruthers SD, Harris TD, Williams TA, Allen JS, Lacy EK, Zhang H, Scott MJ, Hu G, Robertson JD, Wickline SA, **Lanza GM**: Molecular MR imaging of melanoma angiogenesis with  $\alpha_v\beta_3$ -targeted paramagnetic nanoparticles. *Magn Reson Med* 2005; 53 (3): 621-627. PMID: 15723405.
89. Winter P, Athey P, Kiefer G, Gulyas G, Frank K, Fuhrhop R, Robertson D, Wickline S, **Lanza G**: Improved paramagnetic chelate for molecular imaging with MRI. *J Magn Magn Mater* 2005; 293: 540-545.
90. Robertson JD, Crane SB, Wickline SA, **Lanza GM**: Characterization and biodistribution of a novel MRI molecular imaging agent by neutron activation analysis. *J Radioanal Nucl Chem* 2005; 263 (2): 511-514.
91. **Lanza GM**, Hughes MS, Marsh JN, Scott MJ, Zhang H, Lacy EK, Allen JS, Wickline SA: Acoustic molecular imaging and targeted drug delivery with perfluorocarbon nanoparticles. *AIP Conf Proc* 2005; 754: 120-123.
92. Hughes M, Marsh JN, Woodson A, Lacy EK, Caradine C, **Lanza GM**, Wickline SA: Characterization of digital waveforms using thermodynamic analogs: Detection of contrast targeted tissue in MDA 435 tumors implanted in athymic mice. *Proc IEEE Ultrason Symp* 2005; 05CH37716-1: 373-376.
93. Winter PM, Shukla HP, Caruthers SD, Scott MJ, Fuhrhop RW, Robertson JD, Gaffney PJ, Wickline SA, **Lanza GM**: Molecular imaging of human thrombus with computed tomography. *Acad Radiol* 2005; 12 (5 Suppl 1): S9-S13.

94. Winter PM, Athey PS, Keifer GE, Gulyas G, Fuhrhop RW, Robertson JD, Wickline SA, **Lanza GM**: Improved paramagnetic chelate for molecular imaging with MRI. *Acad Radiol* 2005; 12 (5 Suppl 1): S40.
95. Hughes MS, Marsh JN, Hall CS, Fuhrhop RW, Lacy EK, **Lanza GM**, Wickline SA: Acoustic characterization in whole blood and plasma of site-targeted nanoparticle ultrasound contrast agent for molecular imaging. *J Acoust Soc Am* 2005; 117 (2): 964-972.
96. Hughes MS, Marsh JN, Woodson AK, Lacy EK, Caradine C, **Lanza GM**, Wickline SA: Characterization of digital waveforms using thermodynamic analogs: Applications to detection of materials defects. *IEEE Trans Ultrason, Ferroelec, Freq Control* 2005; 52 (9): 1555-1564.
97. Wickline SA, **Lanza GM**: Targeted nanoparticle beacons for quantification of molecular epitopes and drug delivery. *Clinical Cancer Research* 2005; 11:9173S-9174S.
98. Crowder KC, Hughes MS, Marsh JN, Barbieri AM, Fuhrhop RW, **Lanza GM**, Wickline SA: Sonic activation of molecularly-targeted nanoparticles accelerates transmembrane lipid delivery to cancer cells through contact-mediated mechanisms: Implications for enhanced local drug delivery. *Ultrasound Med Biol* 2005; 31 (12): 1693-1700.
99. Cyrus T, Winter PM, Caruthers SD, Wickline SA, **Lanza GM**: Magnetic resonance nanoparticles for cardiovascular molecular imaging and therapy. *Expert Rev Cardiovasc Ther* 2005; 3 (4): 705-715.
100. Marsh JN, Pan A, Hu G, Crowder KC, Scott MJ, Hughes MS, Wickline SA, **Lanza GM**: Fibrin-targeted thrombolytic therapy using acoustically reflective perfluorocarbon nanoparticles. *Proc IEEE Ultrason Symp* 2005; 05CH37116-2: 992-995.
101. Hughes MS, Marsh JN, Arbeit J, Neumann R, Fuhrhop RW, **Lanza GM**, Wickline SA: Ultrasonic molecular imaging of primordial angiogenic vessels in rabbit and mouse models with  $\alpha_v\beta_3$ -integrin targeted nanoparticles using information-theoretic signal detection: Results at high frequency and in the clinical diagnostic frequency range. *Proc IEEE Ultrason Symp* 2005; 05CH37716-1: 617-620.
102. Soman NR, Marsh JN, Hughes MS, **Lanza GM**, Wickline SA: Noncavitational mechanisms of interaction of targeted perfluorocarbon nanoparticles: Implications for drug delivery. *Proc IEEE Ultrason Symp* 2005; 05CH37716-3: 1712-1715.
103. **Lanza GM**, Winter PM, Neubauer AM, Caruthers SD, Hockett FD, Wickline SA:  $^1\text{H}/^{19}\text{F}$  magnetic resonance molecular imaging with perfluorocarbon nanoparticles. *Curr Top Dev Biol* 2005; 70: 57-76.
104. Winter PM, Caruthers SD, Harris TD, Schmieder AH, Abendschein D, Cyrus T, Fuhrhop RW, Dietz EK, Williams TA, Allen JS, Zhang H, Wickline SA, **Lanza**

- GM:** Molecular imaging of  $\alpha_v\beta_3$ -integrin: an opportune biochemical signature for oncologic and cardiovascular diseases. *Acad Radiol* 2005; 12: 43.
105. Caruthers SD, Winter PM, Wickline SA, **Lanza GM:** Targeted magnetic resonance imaging contrast agents. *Methods Mol Med* 2006; 124: 387-400.
  106. Winter PM, Caruthers SD, Wickline SA, **Lanza GM:** Molecular imaging by MRI. *Curr Cardiol Rep* 2006; 8 (1): 65-69.
  107. Wickline SA, **Lanza GM:** Nanotechnology for molecular imaging and targeted drug delivery. *Annals of Oncology* 2006; 17: 30.
  108. Hughes MS, Marsh JN, Zhang H, Woodson AK, Allen JS, Lacy EK, Caradine C, **Lanza GM,** Wickline SA: Characterization of digital waveforms using thermodynamic analogs: Detection of contrast-targeted tissue *in vivo*. *IEEE Trans Ultrason Ferroelectr Freq Contr* 2006; 53 (9): 1609-1616.
  109. Wallace KD, Marsh JN, Baldwin SL, Connolly AM, Keeling R, **Lanza GM,** Wickline SA, Hughes MS: Differentiation of dystrophic and normal skeletal muscle tissues with energy and entropy images acquired *in vivo* from the biceps of MDX and wild-type mice. *Proc IEEE Ultrason Symp* 2006; 06CH37777: 1091-1094.
  110. Wickline SA, Neubauer AM, Winter P, Caruthers S, **Lanza G:** Applications of nanotechnology to atherosclerosis, thrombosis, and vascular biology. *Arterioscler Thromb Vasc Biol* 2006; 26 (3): 435-441.
  111. Caruthers SD, Neubauer AM, Hockett FD, Lamerichs R, Winter PM, Scott MJ, Gaffney PJ, Wickline SA, **Lanza GM:** *In vitro* demonstration using 19F magnetic resonance to augment molecular imaging with paramagnetic perfluorocarbon nanoparticles at 1.5T Tesla. *Invest Radiol* 2006; 41 (3): 305-312.
  112. Soman NR, Marsh JN, Hughes MS, **Lanza GM,** Wickline SA: Acoustic activation of targeted liquid perfluorocarbon nanoparticles does not compromise endothelial integrity. *IEEE Trans Nanobioscience* 2006; 5 (2): 69-75.
  113. Cyrus T, Abendschein DR, Caruthers SD, Harris TD, Glattauer V, Werkmeister JA, Ramshaw JA, Wickline SA, **Lanza GM:** MR three-dimensional molecular imaging of intramural biomarkers with targeted nanoparticles. *J Cardiovasc Magn Reson* 2006; 8 (3): 535-541.
  114. **Lanza GM,** Winter PM, Caruthers SD, Hughes MS, Cyrus T, Marsh JN, Neubauer AM, Partlow KC, Wickline SA: Nanomedicine opportunities for cardiovascular disease with perfluorocarbon nanoparticles. *Nanomedicine* 2006; 1 (3): 321-329.
  115. Winter PM, Neubauer AM, Caruthers SD, Harris TD, Robertson JD, Williams TA, Schmieder AH, Hu G, Allen JS, Lacy EK, Zhang H, Wickline SA, **Lanza GM:** Endothelial  $\alpha_v\beta_3$ -integrin targeted fumagillin nanoparticles inhibit angiogenesis in atherosclerosis. *Arterioscler Thromb Vasc Biol* 2006; 26 (9): 2103-2109.

116. **Lanza GM**, Winter P, Cyrus T, Caruthers S, Marsh J, Hughes M, Wickline S: Nanomedicine opportunities in cardiology. *Ann N Y Acad Sci* 2006; 1080: 451-465. PMID: 17132801.
117. Winter PM, Cai K, Chen J, Adair CR, Kiefer GE, Athey PS, Gaffney PJ, Buff CE, Robertson JD, Caruthers SD, Wickline SA, **Lanza GM**: Targeted PARACEST nanoparticle contrast agent for the detection of fibrin. *Magn Reson Med* 2006; 56 (6): 1384-1388.
118. Caruthers SD, Wickline SA, **Lanza GM**: Nanotechnological applications in medicine. *Curr Opin Biotechnol* 2007; 18 (1): 26-30.
119. Adair C, Woods M, Zhao P, Pasha A, Winter PM, **Lanza GM**, Athey P, Sherry AD, Kiefer GE: Spectral properties of a biofunctional PARACEST europium chelate: An intermediate for targeted imaging applications. *Contrast Media Mol Imaging* 2007; 2 (1): 55-58.
120. Neubauer AM, Caruthers SD, Hockett FD, Cyrus T, Robertson JD, Allen JS, Williams TD, Fuhrhop RW, **Lanza GM**, Wickline SA: Fluorine cardiovascular magnetic resonance angiography *in vivo* at 1.5 T with perfluorocarbon nanoparticle contrast agents. *J Cardiovasc Magn Reson* 2007; 9 (3): 565-573.
121. Winter PM, Cai K, Caruthers SD, Wickline SA, **Lanza GM**: Emerging nanomedicine opportunities with perfluorocarbon nanoparticles. *Expert Rev Med Devices* 2007; 4 (2): 137-145.
122. Hu G, Lijowski M, Zhang H, Partlow KC, Caruthers SD, Kiefer G, Gulyas G, Athey P, Scott MJ, Wickline SA, **Lanza GM**: Imaging of Vx-2 rabbit tumors with  $\alpha_5\beta_1$  integrin-targeted  $^{111}\text{In}$  nanoparticles. *Int J Cancer* 2007; 120 (9): 1951-1957.
123. Marsh JN, Partlow KC, Abendschein DR, Scott MJ, **Lanza GM**, Wickline SA: Molecular imaging with targeted perfluorocarbon nanoparticles: Quantification of the concentration dependence of contrast enhancement for binding to sparse cellular epitopes. *Ultrasound Med Biol* 2007; 33 (6): 950-958.
124. Wickline SA, Neubauer AM, Winter PM, Caruthers SD, **Lanza GM**: Molecular imaging and therapy of atherosclerosis with targeted nanoparticles. *J Magn Reson Imaging* 2007; 25 (4): 667-680.
125. Partlow KC, Chen J, Brant JA, Neubauer AM, Meyerrose TE, Creer MH, Nolte JA, Caruthers SD, **Lanza GM**, Wickline SA:  $^{19}\text{F}$  magnetic resonance imaging for stem/progenitor cell tracking with multiple unique perfluorocarbon nanobeacons. *FASEB J* 2007; 21 (8): 1647-1654.
126. Hughes MS, Marsh JN, Wallace KD, Donahue TA, Connolly AM, **Lanza GM**, Wickline SA: Sensitive ultrasonic detection of dystrophic skeletal muscle in patients with Duchenne muscular dystrophy using an entropy-based signal receiver. *Ultrasound Med Biol* 2007; 33: 1236-1243.
127. Hughes MS, McCarthy JE, Marsh JN, Arbeit JM, Neumann RG, Fuhrhop RW,

- Wallace KD, Znidersic DR, Maurizi BN, Baldwin SL, **Lanza GM**, Wickline SA: Properties of an entropy-based signal receiver with an application to ultrasonic molecular imaging. *J Acous Soc Am* 2007; 121 (6): 3542-3557.
128. Marsh JN, Senpan A, Hu G, Scott MJ, Gaffney PJ, Wickline SA, **Lanza GM**: Fibrin-targeted perfluorocarbon nanoparticles for targeted thrombolysis. *Nanomedicine* 2007; 2 (4): 533-543.
  129. Caruthers SD, Lijowski M, Hu G, Neubauer AM, Scott MJ, Fuhrhop RW, Gaffney PJ, Wickline SA, **Lanza GM**: A fibrin-targeted multi-modality nanoparticle contrast agent for MRI and SPECT. *J Cardiovasc Magn Reson* 2007; 9 (2): 158.
  130. Cyrus T, **Lanza GM**, Wickline SA: Molecular imaging by cardiovascular MR. *J Cardiovasc Magn Reson* 2007; 9 (6): 827-843. PMID: 18066742.
  131. Hughes MS, Marsh JN, Wallace KD, Thomas LJ, **Lanza GM**, Wickline SA, McCarthy JE, Maurizi BN: Qualitative properties of an entropy-based signal detector. *Proceedings IEEE* 2007; 468-471.
  132. Wallace KD, Marsh JN, Baldwin SL, Connolly AM, Keeling R, **Lanza GM**, Wickline SA, Hughes MS: Sensitive ultrasonic delineation of steroid treatment in living dystrophic mice with energy-based and entropy-based radio frequency signal processing. *IEEE Trans Ultrason Ferroelectr Freq Control* 2007; 54 (11): 2291-2299.
  133. Tran TD, Caruthers SD, Hughes M, Cyrus T, Winter PM, Morawski AN, Wickline SA, **Lanza GM**: Clinical applications of perfluorocarbon nanoparticles for molecular imaging and targeted therapeutics. *Int J Nanomedicine* 2007; 2 (4): 515-526.
  134. Partlow KC, Brant JA, Marsh JN, Nolta JA, Hughes MS, **Lanza GM**, Wickline SA: Ultrasound energy rapidly labels stem/progenitor cells with nanoparticle beacons without disrupting membrane integrity. *Proc IEEE Ultrason Symp* 2007; 1768-1771.
  135. Soman NR, Marsh JN, **Lanza GM**, Wickline SA: New mechanisms for nonporative ultrasound stimulation of cargo delivery to cell cytosol with targeted perfluorocarbon nanoparticles. *Nanotechnology* 2008; 19: 185102. PMID: 21494419; PMCID: PMC3074498.
  136. Soman NR, **Lanza GM**, Heuser JM, Schlesinger PH, Wickline SA: Synthesis and characterization of stable fluorocarbon nanostructures as drug delivery vehicles for cytolytic peptides. *Nano Lett* 2008; 8 (4): 1131-1136. PMID: 18302330; PMCID: PMC2710241.
  137. Cyrus T, Zhang H, Allen JS, Williams TA, Hu G, Caruthers SD, Wickline SA, **Lanza GM**: Intramural delivery of rapamycin with  $\alpha_v\beta_3$ -targeted paramagnetic nanoparticles inhibits stenosis after balloon injury. *Arterioscler Thromb Vasc Biol* 2008; 28 (5): 820-826. PMID: 1829395; PMCID: PMC2727458.



138. Hughes M, Caruthers S, Tran T, Marsh J, Wallace K, Cyrus T, Partlow K, Scott M, Lijowski M, Neubauer A, Winter P, Hu G, Zhang H, McCarthy J, Maurizi B, Allen J, Caradine C, Neumann R, Arbeit J, **Lanza G**, Wickline S: Perfluorocarbon nanoparticles for molecular imaging and targeted therapeutics. *Proceedings IEEE* 2008; 96 (3): 397-415.
139. Baldwin SL, Soman NR, **Lanza GM**, Wickline SA: Noncavitational nonporative ultrasound elicits marked *in vivo* augmentation of tumor drug delivery with perfluorocarbon nanoparticles. *Proceedings IEEE* 2008; 96: 566-569.
140. Wallace KD, Marsh JN, Thomas LJ, Neumann RG, Arbeit JM, **Lanza GM**, Wickline SA: Ultrasonic molecular imaging of primordial angiogenic vessels in the papilloma virus transgenic mouse with  $\alpha_v\beta_3$ -integrin targeted nanoparticles using Renyi entropy-based signal detection. *Proceedings IEEE International Ultrasonics Symp* 2008; pp 367-370.
141. Partlow KC, **Lanza GM**, Wickline SA: Exploiting lipid raft transport with membrane targeted nanoparticles: A strategy for cytosolic drug delivery. *Biomaterials* 2008; 29: 3367-3375. PMID: 18485474; PMCID: PMC2688337.
142. Winter PM, Schmieder AH, Caruthers SD, Keene JL, Zhang H, Wickline SA, **Lanza GM**: Minute dosages of  $\alpha_v\beta_3$ -targeted fumagillin nanoparticles impair Vx-2 tumor angiogenesis and development in rabbits. *FASEB J* 2008; 22 (8): 2758-2767. PMID: 18362202; PMCID: PMC2493462.
143. Pan D, Caruthers SD, Hu G, Senpan A, Scott MJ, Gaffney PJ, Wickline SA, **Lanza GM**: Ligand-directed nanobialys as thernostic agent for drug delivery and manganese-based magnetic resonance imaging of vascular targets. *J Am Chem Soc* 2008; 130 (29): 9186-9187. PMID: 18572935; PMCID: PMC2727454.
144. Winter PM, Caruthers SD, Zhang H, Williams TA, Wickline SA, **Lanza GM**: Antiangiogenic synergism of integrin-targeted fumagillin nanoparticles and atorvastatin in atherosclerosis. *J Am Coll Cardiol Img* 2008; 1 (5): 624-634. PMID: 19356492; PMCID: PMC2636718.
145. Neubauer AM, Sim H, Winter PW, Caruthers SD, Williams TA, Robertson JD, Sept D, **Lanza GM**, Wickline SA: Nanoparticle pharmacokinetic profiling *in vivo* using magnetic resonance imaging. *Magn Reson Med* 2008; 60 (6): 1353-1361. PMID: 19025903; PMCID: PMC2597656.
146. Ruiz-Cabello J, Walczak P, Kedziorek DA, Chacko VP, Schmieder AH, Wickline SA, **Lanza GM**, Bulte JWM: *In vivo* "Hot Spot" MR imaging of neural stem cells using fluorinated nanoparticles. *Magn Reson Med* 2008; 60 (6):1506-1511. PMID: 19025893; PMCID: PMC2597664.
147. Waters EA, Chen J, Yang X, Zhang H, Neumann R, Santeford A, Arbeit J, **Lanza GM**, Wickline SA: Detection of targeted perfluorocarbon nanoparticle binding using 19F diffusion weighted MR spectroscopy. *Magn Reson Med* 2008; 60 (5): 1232-1236. PMID: 18956417; PMCID: PMC2703789.
148. Waters EA, Chen J, Allen JS, Zhang H, **Lanza GM**, Wickline SA: Detection and

- quantification of angiogenesis in experimental valve disease with integrin-targeted nanoparticles and 19-fluorine MRI/MRS. *J Cardiovasc Magn Reson* 2008; 10 (1): 43. PMID: 18817557; PMCID: PMC2561020.
149. Neubauer AM, Myerson J, Caruthers SD, Hockett FD, Winter PM, Chen J, Gaffney PJ, Robertson JD, **Lanza GM**, Wickline SA: Gadolinium-modulated <sup>19</sup>F signals from perfluorocarbon nanoparticles as a new strategy for molecular imaging. *Magn Reson Med* 2008; 60 (5): 1066-1072. PMID: 18956457; PMCID: PMC2597646.
150. Schmieder AH, Caruthers SD, Zhang H, Williams TA, Robertson JD, Wickline SA, **Lanza GM**: Three-dimensional MR mapping of angiogenesis with  $\alpha_v\beta_3$ -targeted theranostic nanoparticles in the MDA-MB-435 xenograft mouse model. *FASEB J* 2008; 22: 4179-4189. PMID: 18697838; PMCID: PMC2614609.
151. Wallace K, McCarthy J, Wickerhauser V, Marsh J, **Lanza G**, Wickline S, Hughes M: Real-time Renyi entropy processing for molecular imaging using targeted nanoparticles. *J Acoust Soc Am* 2008; 126(4): 2214.
152. Erpelding TN, Caruthers SD, Wickline SA, **Lanza GM**: Nanotechnology in the diagnosis of atherosclerotic disease. *Expert Opin Med Diagn* 2008; 2 (6): 635-649.
153. Pan D, **Lanza GM**, Wickline SA, Caruthers SD: Nanomedicine: Perspective and promises with ligand-directed molecular imaging. *Eur J Radiol* 2009; 70 (2): 274-285. PMID: 19268515 [PubMed – indexed for MEDLINE].
154. Lijowski M, Caruthers S, Hu G, Zhang H, Scott MJ, Williams T, Erpelding T, Schmieder AH, Kiefer G, Gulyas G, Athey PS, Gaffney PJ, Wickline SA, **Lanza GM**: High sensitivity: High-resolution SPECT CT/MR molecular imaging of angiogenesis in the Vx2 model. *Invest Radiol* 2009; 44 (1): 15-22. PMID: 18836386; PMCID: PMC2703786.
155. Caruthers SD, Tillmann C, Winter PM, Wickline SA, **Lanza GM**: Anti-angiogenic perfluorocarbon nanoparticles for diagnosis and treatment of atherosclerosis. *Wiley Interdiscip Rev: Nanomedicine and Nanobiotechnol* 2009; 1 (3): 311-323. PMID: 20049799 [PubMed - indexed for MEDLINE].
156. Pan D, Pramanik M, Senpan A, Yang X, Song KH, Scott MJ, Zhang H, Gaffney PJ, Wickline SA, Wang LV, **Lanza GM**: Molecular photoacoustic tomography with colloidal nanobeacons. *Angew Chem Int Ed Engl* 2009; 48 (23): 4170-4173. PMID: 19418503; PMCID: PMC2885454.
157. Hughes MS, Marsh JN, Arbeit JM, Neumann RG, Fuhrhop RW, Wallace KD, Thomas LJ, Smith J, Agyem K, **Lanza GM**, Wickline SA, McCarthy JE: Application of Renyi entropy for ultrasonic molecular imaging. *J Acoust Soc Am* 2009; 125 (5): 3141-3145. PMID: 19425656; PMCID: PMC2806440.
158. Pan D, Senpan A, Caruthers SD, Williams TA, Scott MJ, Gaffney PJ, Wickline SA, **Lanza GM**: Sensitive and efficient detection of thrombus with fibrin-

- specific manganese nanocolloids. *Chem Comm* 2009; 14 (22): 3234-3236. PMID: 19587924; PMCID: PMC3065968.
159. Soman NR, Baldwin SL, Hu G, Marsh JN, **Lanza GM**, Heuser JE, Arbeit JM, Wickline SA, Schlessinger PH: Molecularly targeted nanocarriers deliver the cytolytic peptide melitin specifically to tumor cells in mice, reducing tumor growth. *J Clin Invest* 2009; 119 (9): 2830-2842. PMID: 19726870; PMCID: PMC2735896.
  160. Zhou HF, Chan HW, Wickline SA, **Lanza GM**, Pham CTN:  $\alpha_v\beta_3$ -targeted nanotherapy suppresses inflammatory arthritis in mice. *FASEB J* 2009; 23 (9): 2978-2985. PMID: 19376816; PMCID: PMC2735365.
  161. Kaneda MM, Caruthers S, **Lanza GM**, Wickline SA: Perfluorocarbon nanoemulsions for quantitative molecular imaging and targeted therapeutics. *Ann Biomed Eng* 2009; 37 (10): 1922-1933. PMID: 19184435; PMCID: PMC2745515.
  162. Southworth R, Kaneda M, Chen J, Zhang L, Zhang H, Yang X, Razavi R, **Lanza G**, Wickline S: Renal vascular inflammation induced by Western diet in ApoE-null mice quantified by  $^{19}\text{F}$  NMR of VCAM-1 targeted nanobeacons. *Nanomedicine* 2009; 5 (3): 359-367. PMID: 19523428; PMCID: PMC2780462.
  163. Hood JL, Pan H, **Lanza GM**, Wickline SA: Paracrine induction of endothelium by tumor exosomes. *Lab Invest* 2009; 89 (11): 1317-1328. PMID: 19786948; PMCID: PMC3316485.
  164. Pan D, Williams TA, Senpan A, Allen JS, Scott MJ, Gaffney PJ, Wickline SA, **Lanza GM**: Detecting vascular biosignatures with a colloidal, radio-opaque polymeric nanoparticle. *J Am Chem Soc* 2009; 131 (42): 15522-15527. PMID: 19795893; PMCID: PMC282644.
  165. Hughes MS, McCarthy JE, Wickerhauser MV, Marsh JN, Arbeit JM, Fuhrhop RW, Wallace KD, Thomas T, Smith J, Agyem K, **Lanza GM**, Wickline SA: Real-time calculation of a limiting form of the Renyi entropy applied to detection of subtle changes in scattering architecture. *J Acoust Soc Am* 2009; 126 (5): 2350-2358. PMID: 19894818; PMCID: PMC2787067.
  166. Lin WB, Hyeon T, **Lanza GM**, Zhang M, Meade TJ: Magnetic Nanoparticles for Early Detection of Cancer by Magnetic Resonance Imaging. *MRS Bulletin* 2009; 34 (6): 441-448.
  167. Senpan A, Caruthers SD, Rhee I, Mauro NA, Pan D, Hu G, Scott MJ, Fuhrhop RW, Gaffney PJ, Wickline SA, **Lanza GM**: Conquering the dark side: Colloidal iron oxide nanoparticles. *ACS Nano* 2009; 3 (12): 3917-3926. PMID: 19908850; PMCID: PMC2797561.
  168. Pan D, Pramanik M, Senpan A, Ghosh S, Wickline SA, Wang LV, **Lanza GM**: Near infrared photoacoustic detection of sentinel lymph nodes with gold nanobeacons. *Biomaterials* 2010; 31 (14): 4088-4093. PMID: 20172607; PMCID: PMC2874457.

169. Kaneda MM, Sasaki Y, **Lanza GM**, Milbrandt J, Wickline SA: Mechanisms of nucleotide trafficking during siRNA delivery to endothelial cells using perfluorocarbon nanoemulsions. *Biomaterials* 2010; 31 (11): 3079-3086. PMID: 20092889; PMCID: PMC2827659.
170. Pan D, Caruthers SD, Chen J, Winter PM, Senpan A, Schmieder AH, Wickline SA, **Lanza GM**: Nanomedicine strategies for molecular targets with MRI and optical imaging. *Future Med Chem* 2010; 2 (3): 471-490. PMID: 20485473; PMCID: PMC2871711.
171. Sadeghi MM, Glover DK, **Lanza GM**, Fayad ZA, Johnson LL: Imaging atherosclerosis and vulnerable plaque. *J Nucl Med* 2010; 51 (Suppl 1): 51S-65S. PMID: 20395341; PMCID: PMC2911776.
172. Kassner A, Thornhill RE, Liu F, Winter PM, Caruthers SD, Wickline SA, **Lanza GM**: Assessment of tumor angiogenesis: Dynamic contrast-enhanced MRI with paramagnetic nanoparticles compared with Gd-DTPA in a rabbit Vx-2 tumor model. *Contrast Media Mol Imaging* 2010; 5 (3): 155-161. PMID: 20586031.
173. Chen J, **Lanza GM**, Wickline SA: Quantitative magnetic resonance fluorine imaging: Today and tomorrow. *Wiley Interdiscip Rev Nanomed Nanobiotechnol* 2010; 2 (4): 431-440. PMID: 20564465 [PubMed – indexed for MEDLINE].
174. Winter PM, Caruthers SD, Allen JS, Cai K, Williams TA, **Lanza GM**, Wickline SA: Molecular imaging of angiogenic therapy in peripheral vascular disease with  $\alpha_v\beta_3$ -integrin-targeted nanoparticles. *Magn Reson Med* 2010; 64 (2): 369-376. PMID: 20665780; PMCID: PMC2913307.
175. Akers WJ, Zhang Z, Berezin M, Ye Y, Agee A, Guo K, Fuhrhop RW, Wickline SA, **Lanza GM**, Achilefu S: Targeting of  $\alpha_v\beta_3$ -integrins expressed on tumor tissue and neovasculature using fluorescent small molecules and nanoparticles. *Nanomedicine (Lond)* 2010; 5 (5): 715-726. PMID: 20662643; PMCID: PMC2914325.
176. **Lanza GM**, Winter PM, Caruthers SD, Hughes MS, Hu G, Schmieder AH, Wickline SA: Theragnostics for tumor and plaque angiogenesis with perfluorocarbon nanoemulsions. *Angiogenesis* 2010; 13 (2): 189-202. PMID: 20411320; PMCID: PMC3140871.
177. Pan H, Myerson JW, Ivashyna O, Soman NR, Marsh JN, Hood JL, **Lanza GM**, Schlesinger PH, Wickline SA: Lipid membrane editing with peptide cargo linkers in cells and synthetic nanostructures. *FASEB J* 2010; 24 (8): 2928-2937. PMID: 20335225; PMCID: PMC2909291.
178. **Lanza GM**, Caruthers SD, Winter PM, Hughes MS, Schmieder AH, Hu G, Wickline SA: Angiogenesis imaging with vascular-constrained particles: The why and how. *Eur J Nucl Med Mol Imaging* 2010; 37 (Suppl 1): S114-S126. PMID: 20617434 [PubMed – indexed for MEDLINE]
179. Marsh JN, Wallace KD, McCarthy JE, Wickerhauser MV, Maurizi BN, **Lanza**

- GM**, Wickline SA, Hughes MS: Application of a real-time, calculable limiting form of the Renyi entropy for molecular imaging of tumors. *IEEE Trans Ultrason Ferroelectr Freq Control* 2010; 57 (8): 1890-1895. PMID: 20679020; PMCID: PMC3086696.
180. Cai K, Caruthers SD, Huang W, Williams TA, Zhang H, Wickline SA, **Lanza GM**, Winter PM: MR molecular imaging of aortic angiogenesis. *JACC: Cardiovasc Imaging* 2010; 3 (8): 824-832. PMID: 20705262; PMCID: PMC3425389.
181. Zhou H-F, Hu G, Wickline SA, **Lanza GM**, Pham CT: Synergistic effect of antiangiogenic nanotherapy combined with methotrexate in the treatment of experimental inflammatory arthritis. *Nanomedicine* 2010; 5 (7):1065-1074. PMID: 20874021; PMCID: PMC3035945.
182. Caruthers SD, Winter PM, Wickline SA, **Lanza GM**, Keupp J: MR molecular imaging of angiogenesis using targeted perfluorocarbon nanoparticles. *Medica Mundi* 2010; 54 (2): 5-13. PMID: 21966025; PMCID: PMC3184015.
183. Boles KS, Schmieder AH, Koch AW, Carano RAD, Wu Y, Caruthers SD, Tong RK, Stawicki S, Hu G, Scott MJ, Zhang H, Reynolds BA, Wickline SA, **Lanza GM**: MR angiogenesis imaging with Robo4-vs  $\alpha v\beta 3$ -targeted nanoparticles in a B16/F10 mouse melanoma model. *FASEB J* 2010; 24 (11): 4262-4270. PMID: 20585027; PMCID: PMC3066028.
184. **Lanza GM**, Marsh JN, Hu G, Scott MJ, Schmieder AH, Caruthers SD, Pan D, Wickline SA: Rationale for a nanomedicine approach to thrombolytic therapy. *Stroke* 2010; 41 (10 Suppl): S42-44. PMID: 20876503; PMCID: PMC2953722.
185. Pan D, Roessl E, Scholmka JP, Caruthers SD, Senpan A, Scott MJ, Allen JS, Zhang H, Hu G, Gaffney PJ, Choi ET, Rasche V, Wickline SA, Proksa R, **Lanza GM**: Computed Tomography in Color: NanoK-enhanced Spectral CT Molecular Imaging. *Angew Chem Int Ed Engl* 2010; 49 (50): 9635-9639. PMID: 21077082; PMCID: PMC3096064.
186. Pan D, Pramanik M, Senpan A, Wickline SA, Wang LV, **Lanza GM**: A facile synthesis of novel self-assembled gold nanorods designed for near-infrared imaging. *J Nanosci Nanotechnol* 2010; 10 (12): 8118-8123. PMID: 21121304; PMCID: PMC3096062.
187. Winter PM, Caruthers SD, **Lanza GM**, Wickline SA: Quantitative cardiovascular magnetic resonance for molecular imaging. *J Cardiovasc Magn Reson* 2010; 12 (1): 62. PMID: 21047411; PMCID: PMC2987770.
188. Pan H, Ivashyna O, Sinha B, **Lanza GM**, Ratner L, Schlesinger PH, Wickline SA: Post-formulation peptide drug loading of nanostructures for metered control of NF- $\kappa$ B signaling. *Biomaterials* 2011; 32 (1): 231-238; PMID: 20864161; PMCID: PMC2997356.
189. Pham CTN, Mitchell LM, Huang JL, Lubniewski CM, Schall OF, Killgore JK, Pan D, Wickline SA, **Lanza GM**, Hourcade DE: Variable antibody-dependent

- activation of complement by functionalized phospholipid nanoparticle surfaces. *J Biol Chem* 2011; 286 (1): 123-130; PMID: 21047788; PMCID: PMC3012966.
190. Hockett FD, Wallace KD, Schmieder AH, Caruthers SD, Pham CTN, Wickline SA, **Lanza GM**: Simultaneous dual frequency 1H and 19F open coil imaging of arthritic rabbit knee at 3T. *IEEE Trans Med Imaging* 2011; 30 (1): 22-27; PMID: 20699209; PMID: 21097518; PMCID: PMC3047411.
191. Pan D, Pramanik M, Senpan A, Allen JS, Zhang H, Wickline SA, Wang LV, **Lanza GM**: Molecular photoacoustic imaging of angiogenesis with integrin-targeted gold nanobeacons. *FASEB J* 2011; 25 (3): 875-882; PMCID: PMC3042842.
192. Pan H, Soman NR, Schlesinger PH, **Lanza GM**, Wickline SA: Cytolytic peptide nanoparticles (“NanoBees”) for cancer therapy. *Wiley Interdiscip Rev Nanomed Nanobiotechnol* 2011; 3 (3): 318-327. PMID: 21225660 [PubMed – indexed for MEDLINE].
193. Hughes M, Marsh J, **Lanza G**, Wickline S, McCarthy J, Wickerhauser V, Maurizi B, Wallace K: Improved signal processing to detect cancer by ultrasonic molecular imaging of targeted nanoparticles. *JASA* 2011; 129: 3756-3767. PMID: 21682399; PMCID: PMC3143678.
194. Marsh JN, Hu G, Scott MJ, Zhang H, Goette MJ, Gaffney PJ, Caruthers SD, Wickline SA, Abendschein D, **Lanza GM**: A fibrin-specific thrombolytic nanomedicine approach to acute ischemic stroke. *Nanomedicine* 2011; 6 (4): 605-615. PMID: 21506686 [PubMed – indexed for MEDLINE].
195. Akers WJ, Kim C, Berezin M, Guo K, Fuhrhop R, **Lanza GM**, Fischer GM, Daltrozzo E, Zumbusch A, Ca X, Wang LV, Achilefu S: Noninvasive photoacoustic and fluorescence sentinel lymph node identification using dye-loaded perfluorocarbon nanoparticles. *ACS Nano* 2011; 5: 173-182. PMID: 21171567; PMCID: PMC3026895.
196. Hu L, Hockett FD, Chen J, Zhang L, Caruthers SD, **Lanza GM**, Wickline SA: A generalized strategy for designing 19F/1H dual-frequency MRI coil for small animal imaging at 4.7 Tesla. *J Magn Reson Imaging* 2011; 34 (1): 245-252. PMID: 21698714 [PubMed – indexed for MEDLINE]
197. Pan D, Caruthers SD, Senpan A, Yalaz C, Stacy AJ, Hu G, Marsh JN, Gaffney PJ, Wickline SA, **Lanza GM**: Synthesis of NanoQ, a copper-based contrast agent for high-resolution magnetic resonance imaging characterization of human thrombus. *J Am Chem Soc* 2011; 133 (24): 9168-9171. PMID: 21599030; PMCID: PMC3124378.
198. Pan D, Schmieder AH, Wickline SA, **Lanza GM**: Manganese-based MRI contrast agents: past, present, and future. *Tetrahedron* 2011; 67 (44): 8431-8444. PMID: 22043109; PMCID: PMC3203535.
199. Keupp J, Rahmer J, Grasslin I, Mazurkewitz PC, Schaeffter T, **Lanza GM**,

- Wickline SA, Caruthers SD: Simultaneous Dual-Nuclei Imaging for Motion Corrected Detection and Quantification of <sup>19</sup>F Imaging Agents. *Magn Reson Med* 2011; 66 (4): 1116-1122. PMID: 21394779; PMCID: PMC3202693.
200. Pan D, Pramanik M, Wickline SA, **Lanza GM**: Recent advances in colloidal gold nanobeacons for molecular photoacoustic imaging. *Contrast Media Mol Imaging* 2011; 6 (5): 378-388. PMID: 22025338 [PubMed – indexed for MEDLINE].
201. **Lanza GM**: Emerging contrast agents for photoacoustic imaging. *Contrast Media Mol Imaging* 2011; 6 (5): 331. PMID: 22025334 [PubMed – indexed for MEDLINE].
202. Hughes MS, Marsh JN, Agyem KF, McCarty JE, Maurizi BN, Wickerhauser MV, Wallace KD, **Lanza GM**, Wickline SA: Use of smoothing splines for analysis of backscattered ultrasonic waveforms: Application to monitoring of steroid treatment of dystrophic mice. *IEEE Trans Ultrason Ferroelectr Freq Control* 2011; 58 (11): 2361-2369. PMID: 22083769 [PubMed – indexed for MEDLINE]
203. Pan D, Caruthers SD, Senpan A, Schmieder AH, Wickline SA, **Lanza GM**: Revisiting an old friend: Manganese-based MRI contrast agents. *Wiley Interdiscip Rev Nanomed Nanobiotechnol* 2011; 3: 162-173. PMID: 20860051; PMCID: PMC3157601.
204. Hu L, Zhang L, Chen J, **Lanza GM**, Wickline SA: Diffusional mechanisms augment the fluorine MR relaxation in paramagnetic perfluorocarbon nanoparticles that provides a “relaxation switch” for detecting cellular endosomal activation. *J Magn Reson Imaging* 2011; 34 (3): 653-661. PMID: 21761488; PMCID: PMC3197905.
205. Lee SJ, Schlesinger PH, Wickline SA, **Lanza GM**, Baker NA: Interaction of melittin peptides with perfluorocarbon nanoemulsion particles. *J Phys Chem B* 2011; 115: 15271-15279. PMID: 22050303; PMCID: PMC3245340.
206. Myerson J, He L, **Lanza G**, Tollefsen D, Wickline S: Thrombin-inhibiting perfluorocarbon nanoparticles provide a novel strategy for the treatment and magnetic resonance imaging of acute thrombosis. *J Thromb Hemost* 2011; 9 (7): 1292-1300; PMID: 21605330 [PMCID in process].
207. Jang, YJ, Joo, HJ, Yang, JI, Seo, CW, Chung, KY, Lanza, GM, Zhang, H. A human monoclonal antibody F-ab reactive to oxidized LDL and carbamylated LDL recognizes human and mouse atherosclerotic lesions. *Animal Cells Syst* 2011;15:259-267.
208. Cai K, Kiefer GE, Caruthers SD, Wickline SA, **Lanza GM**, Winter PM: Quantification of water exchange kinetics for targeted PARACEST perfluorocarbon nanoparticles. *NMR Biomed* 2012; 25 (2): 279-285. PMID: 21751273. PMCID:PMC3624887.
209. Cyrus T, Wickline SA, **Lanza GM**: Nanotechnology in interventional cardiology. *Wiley Interdiscip Rev Nanomed Nanobiotechnol* 2012; 4 (1): 82-95. PMID: 21748858 [PMCID IN PROCESS]

210. Pan D, Cai X, Yalaz C, Senpan A, Omanakuttan K, Wickline SA, Wang LV, **Lanza GM**: Photoacoustic sentinel lymph node imaging with self-assembled copper neodecanoate nanoparticles. *ACS Nano* 2012; 6 (2): 1260-1267. PMID: 22229462; PMCID: PMC3289744.
211. Pan D, Sanyal N, Schmieder AH, Senpan A, Kim B, Yang X, Hu G, Allen JS, Gross RW, Wickline SA, **Lanza GM**: Antiangiogenic nanotherapy with lipase-labile Sn-2 fumagillin prodrug. *Nanomedicine (Lond)* 2012; 7 (10): 1507-1519. PMID: 22709347; PMCID: PMC3498609.
212. Pan H, Marsh JN, Christenson ET, Soman NR, Ivashyna O, **Lanza GM**, Schlesinger PH, Wickline SA. Postformulation peptide drug loading of nanostructures. *Methods Enzymol* 2012; 508: 17-39. PMID: 22449919 [PMIC in process].
213. Pan D, Schirra CO, Senpan A, Schmieder AH, Allen JS, Roessl E, Thran A, Wickline SA, Proksa R, **Lanza GM**: An early investigation of Ytterbium nanocolloids for selective and quantitative “multicolor” spectral CT imaging. *ACS Nano* 2012; 6 (4): 3364-3370. PMID: 22385324; PMCID:PMC3529639 .
214. Aldrich MB, Marshall MV, Sevick-Muraca EM, **Lanza G**, Kotyk J, Culver J, Wang LV, Uddin J, Crews BC, Marnett LJ, Liao JC, Contag C, Crawford JM, Wang K, Reisdorph B, Appelman H, Turgeon DK, Meyer C, Wang T: Seeing it through: Translational validation of new medical imaging modalities. *Biomed Opt Express* 2012; 3 (4): 764-76. PMID: 22574264; PMCID: PMC3345805.
215. Zhang L, Wang K, Zhao F, Hu W, Chen J, **Lanza GM**, Shen B, Zhang B: Near infrared imaging of EGFR of oral squamous cell carcinoma in mice administered arsenic trioxide. *PLoS One* 2012; 7 (9): e46255. PMID: 23029451; PMCID: PMC3460885.
216. **Lanza GM**: ICAM-1 and Nanomedicine: Nature’s doorway to the extravascular tissue realm. *Arterioscler Thromb Vasc Biol* 2012; 32 (5): 1070-1071. PMID: 22517363 [PubMed – indexed for MEDLINE].
217. Lee SJ, Schlesinger PH, Wickline SA, **Lanza GM**, Baker NA: Simulation of fusion-mediated nanoemulsion interactions with model lipid bilayers. *Soft Matter* 2012; 8 (26): 3024-3035. PMID: 22712024; PMCID: PMC3375911.
218. Zhou HF, Yan H, Senpan A, Wickline SA, Pan D, **Lanza GM**, Pham CTN: Suppression of inflammation in a mouse model of rheumatoid arthritis using targeted lipase-labile fumagillin prodrug nanoparticles. *Biomaterials* 2012; 33 (33): 8632-8640. PMID: 22922023; PMCID:PMC3583210.
219. Pan D, Cai X, Kim B, Stacy AJ, Wang LV, **Lanza GM**: Rapid synthesis of near infrared polymeric micelles for real-time sentinel lymph node Imaging. *Adv Healthc Mater* 2012; 1 (5): 582-589. PMID: 23184793 [PubMed – indexed for MEDLINE].
220. Tomlinson RE, McKenzie JA, Schmieder AH, Wohl GR, **Lanza GM**, Silva MJ:



- Angiogenesis is required for stress fracture healing in rats. *Bone* 2013; 52 (1): 212-219. PMID: 23044046; PMCID:PMC3513671.
221. Pan H, Myerson JW, Hu L, Marsh JN, Hou K, Scott MJ, Allen JS, Hu G, San Roman S, **Lanza GM**, Schreiber RD, Schlesinger PH, Wickline SA: Programmable nanoparticle functionalization for *in vivo* targeting. *FASEB J* 2013; 27 (1): 255-264. PMID: 23047896; PMCID:PMC3528314.
222. Hou KK, Pan H, **Lanza GM**, Wickline SA: Melittin derived peptides for nanoparticle based siRNA transfection. *Biomaterials* 2013; 34 (12): 3110-3119. PMID: 23380356 [PubMed - indexed for MEDLINE].
223. Hu L, Chen J, Yang X, Caruthers SD, **Lanza GM**, Wickline SA: Rapid quantification of oxygen tension in blood flow with a fluorine nanoparticle reporter and a novel blood flow-enhanced-saturation-recovery sequence. *Magn Reson Med* 2013; 70 (1): 176-183. PMID: 22915328 [PubMed – in process].
224. Wu L, Cai X, Nelson K, Xing W, Xia J, Zhang R, Stacy AJ, Luderer M, **Lanza GM**, Wang LV, Shen B, Pan D: A green synthesis of carbonnanoparticle from honey for real-time photoacoustic imaging. *Nano Res* 2013; 6 (5): 312-325. PMID: 23824757 [PubMed].
225. Schmieder AH, Winter PM, Williams TA, Allen JS, Hu G, Zhang H, Caruthers SD, Wickline SA, **Lanza GM**: Molecular MR imaging of neovascular progression in the Vx2 Tumor with  $\alpha_v\beta_3$ -targeted paramagnetic nanoparticles. *Radiology* 2013; 268(2): 470-480. PMID: 23771914 [PubMed – indexed for MEDLINE].
226. Chen J, Pan H, **Lanza GM**, Wickline SA: Perfluorocarbon nanoparticles for physiological and molecular imaging and therapy. *Adv Chronic Kidney Dis* 2013; 20 (6): 466-478. PMID: 24206599 [PubMed – indexed for MEDLINE].
227. Wu L, Luderer M, Yang X, Swain C, Zhang H, Nelson K, Stacy AJ, Shen B, **Lanza GM**, Pan D: Surface passivation of carbon nanoparticles with branched macromolecules influences near infrared bioimaging. *Theranostics* 2013; 3 (9): 677-686. PMID: 24019852 [PubMed – indexed for MEDLINE].
228. Pan D, Kim B, Wang LV, **Lanza GM**: A brief account of nanoparticle contrast agents for photoacoustic imaging. *Wiley Interdiscip Rev Nanomed Nanobiotechnol* 2013; 5 (6): 517-543. PMID: 23983210 [PubMed – indexed for MEDLINE].
229. Cai X, Wu L, Xing W, Xia J, Nie L, Zhang R, **Lanza GM**, Shen B, Pan D, Wang LV: Carbon nanoparticles as a multimodal thermoacoustic and photoacoustic contrast agent. *Progress in Biomedical Optics and Imaging – Proceedings of SPIE* 2013; 8581: 858140.
230. Hu L, Chen J, Yang X, Senpan A, Allen JS, Yanaba N, Caruthers SD, **Lanza GM**, Hammerman MR, Wickline SA: Assessing intrarenal nonperfusion and vascular leakage in acute kidney injury with multinuclear  $^1\text{H}/^{19}\text{F}$  MRI and

- perfluorocarbon nanoparticles. *Magn Reson Med* 2014; 71 (6): 2186-2196. PMID: 23929727 [PubMed - in process].
231. Schmieder AH, Wang K, Zhang H, Senpan A, Pan D, Keupp J, Caruthers SD, Wickline SA, Shen B, Wagner EM, **Lanza GM**: Characterization of early neovascular response to acute lung ischemia using simultaneous 19F/1H MR molecular imaging. *Angiogenesis* 2014; 17 (1): 51-60. PMID: 23918207 [PubMed – indexed for MEDLINE].
232. Pham CT, Thomas DG, Beiser J, Mitchell LM, Huang JL, Senpan A, Hu G, Gordon M, Baker NA, Pan D, **Lanza GM**, Hourcade DE: Application of a hemolysis assay for analysis of complement activation by perfluorocarbon nanoparticles. *Nanomedicine:Nanotechnology, Biology and Medicine* 2014; 10 (3): 651-660. PMID: 24211337 [PubMed – indexed for MEDLINE].
233. Pan D, Schirra CO, Wickline SA, **Lanza GM**: Multicolor computed tomographic molecular imaging with non-crystalline high-metal-density nanobeacons. *Contrast Media Mol Imaging* 2014; 9 (1): 13-25. PMID: 24470291 [PubMed – indexed for MEDLINE].
234. **Lanza GM**, Pan D: Molecular imaging with computed tomography. *Contrast Media Mol Imaging* 2014; 9 (1): 1-2. PMID: 24470289 [PubMed – indexed for MEDLINE].
235. **Lanza GM**, Moonen C, Baker, JR Jr, Chang E, Cheng Z, Grodzinski P, Ferrara K, Hynynen K, Kelloff G, Lee YE, Patri AK, Sept D, Schnitzer JE, Wood BJ, Zhang M, Zheng G, Farahani K. Opinion: Assessing the barriers to image-guided drug delivery. *Wiley Interdiscip Rev: Nanomed Nanobiotechnol* 2014; 6 (1): 1-14. PMID: 24339356 [PubMed –indexed for MEDLINE].
236. Bibee KP, Cheng YJ, Ching JK, Marsh JN, Li AJ, Keeling RM, Connolly AM, Golumbek PT, Myerson JW, Hu G, Shannon WD, **Lanza GM**, Wehl CC, Wickline SA: Rapamycin nanoparticles target defective autophagy in muscular dystrophy to enhance both strength and cardiac function. *FASEB J* 2014; 28 (5): 2047-2061. PMID: 24500923 [PubMed – indexed for MEDLINE].
237. Pan D, Schmieder AH, Wang K, Yang X, Senpan A, Cui G, Kilgore K, Kim B, Allen JS, Zhang H, Caruthers SD, Shen B, Wickline SA, **Lanza GM**: Anti-angiogenesis therapy in the Vx2 rabbit cancer model with a lipase-cleavable Sn 2 taxane phospholipid prodrug using  $\alpha\beta 3$ -Targeted theranostic nanoparticles. *Theranostics* 2014; 4 (6): 565-578. PMID: 24723979 [PubMed – in process].
238. Jallouk AP, Moley KH, Omurtag K, Hu G, **Lanza GM**, Wickline SA, Hood JL: Nanoparticle incorporation of melittin reduces sperm and vaginal epithelium cytotoxicity. *PLoS One* 2014; 9 (4): e95411. PMID: 24748389 [PubMed – in process].
239. Jamis-Dow CA, Barbier GH, Watkins MP, **Lanza GM**, Caruthers SD, Wickline SA: Bicuspid pulmonic valve and pulmonary artery aneurysm. *Cardiol Res* 2014; 5 (2): 83-84. PMID: 26191115.

240. Zhou HF, Yan H, Hu Y, Springer LE, Yang X, Wickline SA, Pan D, **Lanza GM**, Pham CT: Fumagillin prodrug nanotherapy suppresses macrophage inflammatory response via endothelial nitric oxide. *ACS Nano* 2014; 8 (7): 7305-7317. PMID: 24941020 [PubMed – in process].
241. Tomlinson RE, Schmieder AH, Quirk JD, **Lanza GM**, Silva MJ: Antagonizing the  $\alpha v \beta 3$ -integrin inhibits angiogenesis and impairs woven but not lamellar bone formation induced by mechanical loading. *J Bone Miner Res* 2014; 29 (9): 1970-1980. PMID: 24644077 [PubMed – as supplied by publisher]
242. Bulte JW, Schmieder AH, Keupp J, Caruthers SD, Wickline SA, **Lanza GM**: MR cholangiography demonstrates unsuspected rapid biliary clearance of nanoparticles in rodents: Implications for clinical translation. *Nanomedicine: Nanotechnology, Biology, and Medicine* 2014; 10 (7): 1385-1388. PMID: 24832959 [PubMed – in process].
243. Thomas DG, Chikkagoudar S, Heredia-Langer A, Tardiff MF, Xu Z, Hourcade DE, Pham CT, **Lanza GM**, Weinberger KQ, Baker NA: Physicochemical signatures of nanoparticle-dependent complement activation. *Comput Sci Discov* 2014; 7 (1): 015003. PMID: 25254068 [PubMed]
244. Myerson JW, He L, Allen JS, Williams T, **Lanza G**, Tollefsen D, Carthers S, Wickline S: Thrombin-inhibiting nanoparticles rapidly constitute versatile and detectable anticlotting surfaces. *Nanotechnology* 2014; 25 (39): 395101. PMID: 25200815.
245. Gendelman HE, Balogh LP, Bawa R, Bradbury M, Chang EH, Chiu W, Farokhzad O, Foldvari M, **Lanza G**, Wang K: The 4<sup>th</sup> Annual Meeting of the American Society for Nanomedicine. *Journal of Neuroimmune Pharmacology* 2014; 9 (Suppl 1): S1-S38.
246. Zhang R, Cai X, Yang X, Senpan A, Allen JS, Dan D, **Lanza G**, Wang LV: Photoacoustic molecular imaging of angiogenesis using theranostic  $\alpha v \beta 3$ -targeted copper nanoparticles incorporating sn-2 lipase-labile fumagillin prodrug. *Progress in Biomedical Optics and Imaging – Proceedings of SPIE* 2014; 8943: 89435I.
247. Goette MJ, Keupp J, Rahmer J, **Lanza GM**, Wickline SA, Caruthers SD: Balanced UTE-SSFP for 19F MR imaging of complex spectra. *Magn Reson Med* 2015; 74 (2): 537-543. PMID: 25163853 [PubMed – as supplied by publisher].
248. Goette MJ, Lanza GM, Caruthers SD, Wickline SA: Improved quantitative 19F MR molecular imaging with flip angle calibration and B1-mapping compensation. *J Magn Reson Imaging* 2015; 42 (2): 488-494. PMID: 25425244 [PubMed – as supplied by publisher].
249. Pan D, Kim B, Hu G, Gupta DS, Senpan A, Yang X, Schmieder A, Swain C, Wickline SA, Tomasson MH, **Lanza GM**: A strategy for combating melanoma with oncogenic-c-Myc inhibitors and targeted nanotherapy. *Nanomedicine (Lond)* 2015; 10 (2): 241-251. PMID: 25600969 [PubMed – in process].

250. Zhang R, Pan D, Cai X, Yang X, Senpan A, Allen JS, **Lanza GM**, Wang LV:  $\alpha v\beta 3$ -targeted copper nanoparticles incorporating an Sn 2 lipase-labile fumagillin prodrug for photoacoustic neovascular imaging and treatment. *Theranostics* 2015; 5 (2): 124-133; PMID: 25553103[PubMed – in process].
251. Wagner EM, Jenkins J, Schmieder A, Eldridge L, Zhang Q, Moldobaeva A, Zhang H, Allen JS, Yang X, Mitzner W, Keupp J, Caruthers SD, Wickline SA, **Lanza GM**: Angiogenesis and airway reactivity in asthmatic brown Norway rats. *Angiogenesis* 2015; 18 (1): 1-11; PMID: 25149641 [PubMed – in process].
252. Wang K, Pan D, Schmieder AH, Senpan A, Caruthers SD, Cui G, Allen JS, Zhang H, Shen B, **Lanza GM**: Atherosclerotic neovasculature MR imaging with mixed manganese-gadolinium nanocolloids in hyperlipidemic rabbits. *Nonmedicine* 2015; 11 (3): 569-578. PMID: 25652897; PMCID: PMC4720435.
253. Wang K, Pan D, Schmieder AH, Senpan A, Hourcade DE, Pham CTN, Mitchel LM, Caruthers SD, Cui G, Wickline SA, Shen B, **Lanza GM**: Synergy between surface and core entrapped metals in a mixed manganese-gadolinium nanocolloid affords safer MR imaging of spare biomarkers. *Nanomedicine* 2015; 11 (3): 601-609. PMID: 25652900; PMCID:PMC4389679.
254. Soodgupta D, Pan D, Cui G, Senpan A, Yang X., Lu L, Weilbaecher, KN, Prochownik EV, **Lanza GM**, Tomasson, MH: Small molecule MYC inhibitor conjugated to integrin-targeted nanoparticles extends survival in a mouse model of disseminated multiple myeloma. *Mol Cancer Ther* 2015; 14 (6): 1286-1294. PMID: 25824336.
255. **Lanza GM**: Theranostic agents: From micro to nano in seconds. *Nat Nanotechnol* 2015; 10 (4): 301-302. PMID: 25822930.
256. Palekar RU, Jallouk AP, **Lanza GM**, Pan H, Wickline SA: Molecular imaging of atherosclerosis with nanoparticle-based fluorinated MRI contrast agents. *Nanomedicine (Lond)* 2015; 10 (11): 1817-1832. PMID: 26080701.
257. Schmieder AH, Caruthers SD, Keupp J, Wickline SA, **Lanza GM**: Recent advances in  $^{19}\text{F}$  fluorine magnetic resonance imaging with perfluorocarbon emulsions. *Engineering (Beijing)* 2015; 1: 475-490; PMID: 27110430
258. Pan D, Pham CT, Weilbaecher KN, Tomasson MH, Wickline SA, **Lanza GM**: Contact-facilitated drug delivery with Sn2 lipase labile prodrugs optimize targeted lipid nanoparticle drug delivery. *Wiley Interdiscip Rev Nanomed Nanobiotechnol* 2016; 8 (1):85-106; PMID: 26296541.
259. Esser AK, Schmieder AH, Ross MH, Xiang J, Su X, Cui G, Zhang H, Yang X, Allen JS, Williams T, Wickline SA, Pan D, **Lanza GM**, Weilbaecher KN: Dual-therapy with  $\alpha v\beta 3$ -targeted Sn2 lipase-labile fumagillin-prodrug nanoparticles and zoledronic acid in the Vx2 rabbit tumor model, *Nanomedicine* 2016; 12 (1): 201-211; PMID: 26515754.
260. **Lanza GM**, Tomasson MH: A new class of nanotherapy blockades the genetic

- drive for multiple myeloma progression. *Adjacent Government* 2016; Aug: 70-71.
261. **Lanza G**, Tomasson M: A new nanotherapy for multiple myeloma. *International Innovation* 2016; Published 3/31/2016.
262. **Lanza GM**, Jenkins J, Schmieder AH, Moldobaeva A, Cui G, Zhang H, Yang X, Zhong Q, Keupp J, Sergin I, Paranandi, KS, Eldridge L, Allen JS, Williams T, Scott MJ, Razani B, Wagner EM: Anti-angiogenic nanotherapy inhibits airway remodeling and hyper-responsiveness of dust mite triggered asthma in the Brown Norway Rat. *Theranostics* 2017; 7 (2): 377-389; PMID: 28042341

#### **Abstracts from Technical Meetings:**

1. **Lanza GM**, Washburn KW, Wyatt RD: Interaction of age with PCV and body weight response to dietary aflatoxin. *Poultry Sci* 1977; 56: 1352.
2. **Lanza GM**, Washburn KW, Wyatt RD: Relationship of iron absorption to development of aflatoxin-related anemia. *Poultry Sci* 1978; 57: 1104
3. **Lanza GM**, Washburn KW, Wyatt RD: Initial hematological status and response of broilers to aflatoxin. *Poultry Sci* 1978; 58: 1018.
4. **Lanza GM**, Washburn KW, Wyatt RD: Broiler strain variations in response to aflatoxin fed at different ages. *Poultry Sci* 1979; 58: 1076.
5. **Lanza GM**, Washburn KW, Wyatt RD, Edwards HM Jr: Strain variation on hematological response and iron absorption in chickens fed aflatoxin. *Poultry Sci* 1980; 59: 1566.
6. Brah GS, **Lanza GM**, Potts PL, Washburn KW: Distribution statistics of egg weight and egg deformation. *Poultry Sci* 1980; 59: 1586.
7. **Lanza GM**, Washburn KW, Wyatt RD, Marks HL: Genetic variation of response to aflatoxin in broilers. *Poultry Sci* 1980; 59: 1629.
8. **Lanza GM**, Washburn KW, Wyatt RD: The effect of increased dietary linoleic acid on broiler chick response to aflatoxin. *Poultry Sci* 1981; 60: 1604.
9. Edwards HM Jr, **Lanza G**: Calcium and phosphorus requirement studies with broiler and leghorn type chickens. *Poultry Sci* 1981; 60: 1650.
10. White TC, **Lanza GM**, Dyer SE, Hudson S, Franson SE, Hintz RL, Duque JA, Bussen SC, Leak RK, Metzger LE: Response of lactating dairy cows to intramuscular or subcutaneous injection of sometribove, USAN (recombinant methionyl bovine somatotropin) in a 14-day prolonged release system. Part I. Animal performance and health. *J Dairy Sci* 1988; 71 (Suppl 1): 167.
11. **Lanza GM**, White TC, Dyer SE, Hudson S, Franson SE, Hintz RL, Duque JA, Bussen SC, Leak RK, Metzger LE: Response of lactating dairy cows to intramuscular or subcutaneous injection of sometribove, USAN (recombinant

- methionyl bovine somatotropin) in a 14-day prolonged release system. Part II. Changes in circulating analytes. *J Dairy Sci* 1988; 71 (Suppl1): 195.
12. Vicini JL, De Leon JM, Cole WJ, Eppard PJ, **Lanza GM**, Hudson S, Miller MA: Effect of acute administration of extremely large doses of sometribove, USAN (recombinant methionyl bovine somatotropin), in a prolonged release formulation on milk production and health of dairy cows. *J Dairy Sci* 1988; 71 (Suppl 1): 168.
  13. Torkelson AR, **Lanza GM**, Birmingham BK, Vicini JL, White TC, Dyer SE, Madsen KS, Collier RJ: Concentrations of insulin-like growth factor-I (IGF-I) in bovine milk: effect of herd, stage of lactation and sometribove, USAN (recombinant methionyl bovine somatotropin). *J Dairy Sci* 1988; 71 (Suppl1): 169.
  14. Eppard PJ, **Lanza GM**, Hudson S, Cole WJ, Hintz RL, White TC, Ribelin WE, Hammond BG, Bussen SC, Leak RK, Metzger LE: Response of lactating dairy cows to multiple injections of sometribove, USAN (recombinant methionyl bovine somatotropin) in a prolonged release system. Part I. Production response. *J Dairy Sci* 1988; 71 (Suppl1): 184.
  15. Cole WJ, Eppard PJ, **Lanza GM**, Hintz RL, Madsen KS, Franson SE, White TC, Ribelin WE, Hammond BG, Bussen SC, Leak RK, Metzger LE: Response of lactating dairy cows to multiple injections of sometribove, USAN (recombinant methionyl bovine somatotropin) in a prolonged release system. Part II. Health and reproduction. *J Dairy Sci* 1988; 71 (Suppl1): 184.
  16. **Lanza GM**, Eppard PJ, Miller MA, Franson SE, Ganguli S, Hintz RL, Hammond BG, Bussen SC, Leak RK Metzger LE: Response of lactating dairy cows to multiple injections of sometribove, USAN (recombinant methionyl bovine somatotropin) in a prolonged release system. Part III. Changes in circulating analytes. *J Dairy Sci* 1988; 71 (Suppl 1): 184.
  17. Birmingham BK, White TC, **Lanza GM**, Miller MA, Torkelson AR, Hale MD: Pharmacokinetics of sometribove, USAN (recombinant methionyl bovine somatotropin) and a naturally occurring somatotropin variant in lactating dairy cows. *J Dairy Sci* 1988; 71 (Suppl 1): 194.
  18. Krivi GG, Salsgiver WJ, Staten NR, Hauser SD, Rowold E, Kasser TR, White TC, Eppard PJ, **Lanza GM**, Wood DC: Identification of residues of somatotropin involved in receptor binding and biological activity. The 70th Annual Meeting of the Endocrine Society, 1988; p.85.
  19. **Lanza GM**, Krivi GG, Bentle LA, Eppard PJ, Kung L, Hintz RL, Ryan RL, Miller MA: Comparison of the galactopoietic activity of several recombinant bovine somatotropin variants and pituitary-derived bovine somatotropin. The 70th Annual Meeting of the Endocrine Society, 1988; p 81.
  20. Frazin LT, Vonesh MJ, Khasho F, **Lanza GM**, Chandran KB, Talano JV, McPherson DD: Doppler-guided retrograde catheterization system. *Circulation* 1990; 82 (Suppl III): 67.

21. Frazin L, McPherson DD, Mehlman DJ, Spitzzeri CL, **Lanza GM**, Talano JV: Rotational blood flow in the aorta as detected by esophageal echocardiography. *Clin Res* 1989; 37: 887A.
22. Frazin L, **Lanza G**, Mehlman D, Chandran KB, Vonesh M, Spitzzeri C, McGee S, Talano J, McPherson DD: Rotational blood flow in the thoracic aorta. *Clin Res* 1990; 38: 331A.
23. **Lanza GM**, Zabalgoitia-Reyes M, Frazin L, Mehlman DJ, Vonesh MJ, Spitzzeri CL, Talano JV, McPherson DD: Unsuspected descending aortic anomalies viewed by esophageal echo. *Clin Res* 1989; 37: 882A.
24. **Lanza GM**, Zabalgoitia-Reyes M, Frazin L, Mehlman DJ, Vonesh MJ, Spitzzeri CL, Talano JV, McPherson DD: Plaque characteristics and arterial remodeling of the descending thoracic aorta using transesophageal echo. *Clin Res* 1990; 38: 378A.
25. **Lanza GM**, Alkan MH, Vonesh MJ, Klegerman ME, Frazin LJ, Mehlman DJ, Talano JV, McPherson DD: Development of echogenic liposomes for tissue-specific ultrasonic image enhancement. *J Am Coll Cardiol* 1992; 19: 114A.
26. **Lanza GM**, Wallace KD, Scott MJ, Sheehan CK, Cacheris WP, Christy DH, Sharkey AM, Miller JG, Wickline SA: Initial description and validation of a novel site targeted ultrasonic contrast agent. *Circulation* 1995a; 92 (Suppl 1): I-260.
27. **Lanza GM**, Wallace KD, Abendschein D, Scott MJ, Sheehan CK, Cacheris WP, Sharkey AM, Miller JG, Gaffney PJ, Wickline SA: Specific acoustic enhancement of vascular thrombi *in vivo* with a novel site targeted ultrasonic contrast agent. *Circulation* 1995b; 92 (Suppl 1): I-260.
28. Wallace KD, **Lanza GM**, Scott MJ, Holland MR, Christy DH, Sheehan CK, Cacheris WP, Gaffney PJ, Miller JG, Wickline SA: Intravascular ultrasound detection of thrombi after enhancement with a novel site targeted acoustic contrast agent. *Circulation* 1995; 92 (Suppl 1): I-585.
29. **Lanza GM**, Wallace KD, Eisenberg PR, Scott MJ, Cacheris WP, Christy DH, Sharkey AM, Miller JG, Wickline SA: Novel ultrasonic contrast agent targeted to d-dimer using DD-3B6 Monoclonal F(ab) *in vitro*. *J Am Coll Cardiol* 1996; 27 (Suppl 1): 243A.
30. **Lanza GM**, Wallace KD, Abendschein DR, Trousil RL, Scott MJ, Sheehan CK, Miller JG, Gaffney PJ, Wickline SA: Acoustic enhancement of arterial thrombi *in vivo* following intravenous injection. *Circulation* 1996; 94 (Suppl 1): I-319. 31.
31. **Lanza GM**, Fischer SE, Wallace KD, Christy DH, Scott MJ, Trousil RL, Sheehan CK, Miller JG, Gaffney PJ, Wickline SA: Three dimensional depiction of thrombus topology imaged with intravascular ultrasound after acoustical enhancement with a specific fibrin targeted ultrasonic contrast agent. *Circulation* 1996; 94 (Suppl 1): I-3822.

32. **Lanza GM**, Wallace KD, Scott MJ, Trousil RL, Miller JG, Gaffney PJ, Wickline SA: Development of a site-targeted acoustic contrast agent for improved medical ultrasonic diagnosis. *J Acoust Soc Am* 1996; 100: 2617.
33. **Lanza GM**, Wallace KD, Abendschein DR, Scott MJ, Fuhrhop RH, Trousil RH, Miller JG, Gaffney PJ, Wickline SA: Improved diagnosis of thrombi *in vivo* using a fibrin targeted ultrasonic contrast system. Annual Meeting of the Association of American Physicians, the American Society for Clinical Investigation, and the American Federation for Medical Research: Biomedicine '97 Medical Research from Bench to Bedside, Washington, D.C., USA, April 25-27, 1997. *J Invest Med* 1997; 45: 220A.
34. **Lanza GM**, Lorenz CH, Fischer SE, Scott MJ, Abendschein DR, Cacheris WP, Kaufman RJ, Gaffney PJ, Wickline SA: A novel fibrin targeted magnetic resonance imaging agent. Annual Meeting of the Association of American Physicians, the American Society for Clinical Investigation, and the American Federation for Medical Research: Biomedicine '97 Medical Research from Bench to Bedside, Washington, D.C., USA, April 25-27, 1997. *J Invest Med* 1997; 45: 217A.
35. Wallace KD, **Lanza GM**, Scott MJ, Trousil RL, Abendschein DR, Scott MJ, Miller JG, Gaffney PJ, Wickline SA: An antibody directed, nongaseous, particulate contrast system designed for improving ultrasonic diagnoses. *Ultrasonic Imaging* 1997; 1: 83-84.
36. **Lanza GM**, Wallace KD, Abendschein DR, Scott MJ, Trousil RL, Miller JG, Gaffney PJ, Wickline SA: Improved ultrasonic diagnosis of thrombosis using a novel, targeted contrast system. *Thromb Haemost* 1997; 77 (Supp): 680.
37. **Lanza GM**, Trousil RL, Hall CS, Rose JH, Wallace KD, Miller JG, Gaffney PJ, Wickline SA: A simple theoretical model for the unexpected acoustic enhancement of thrombi effected by a novel, liquid fibrin targeted contrast system. *Circulation* 1997; 95: I-458.
38. **Lanza GM**, Trousil RL, Wallace KD, Abendschein DR, Scott MJ, Miller JG, Gaffney PJ, Wickline SA: *In vivo* efficacy of fibrin targeted perfluorocarbon contrast system following intravenous injection reflects prolonged systemic half-life and persistent acoustic contrast effect. *Circulation* 1997; 95: I-457.
39. **Lanza G**: A novel site-targeted ultrasonic contrast agent with broad biomedical application. May 20, 1997. *Circulation* 1997; 95 (10): 2458.
40. **Lanza GM**, Abendschein DR, Hall CS, Scherrer DK, Scott MJ, Houseman A, Miller JG, Wickline SA: In situ localization of tissue-factor following carotid angioplasty using a ligand-targeted ultrasonic contrast agent and intravascular ultrasound. Feb 1998. *JACC* 1998; 31 (2 Suppl A): 19A.
41. **Lanza GM**, Wallace KD, Trousil RL, Miller JG, Rose JH, Gaffney PJ,



- Abendschein DR, Hall CS, Scott MJ, Lorenz CA, Fuhrhop R, Wickline SA: Targeted acoustic contrast agents: new opportunities for ultrasound in medical diagnosis and therapy. *J Acoust Soc Am* 1998; 103: 3002.
42. Bulte JWM, **Lanza GM**, Fuhrhop R, Kaufman R, Herynek V, Frank JA, Wickline SA: Gd-DTPA Perfluorocarbon Emulsions as Novel Paramagnetic Particulate Contrast Medium: T1 and T2 Relaxometry. *Proc Intl Soc Mag Reson Med* 1998; 209.
  43. Scott MJ, Hall CS, **Lanza GM**, Miller JG, Wickline SA: Identification of the extracellular fibrous matrix as a principal source of ultrasound backscatter from myocardium. *Ultrasonic Imaging* 1998; 20: 38-39.
  44. Anderson SA, Rader RK, Westlin WF, Null C, **Lanza GM**, Wickline SA, Kotyk JJ: Rapid, one-step antibody-targeted magnetic resonance contrast enhancement of neovascular  $\alpha_v\beta_3$  epitopes using a nanoparticulate emulsion. *Proc Intl Soc Mag Reson Med* 1999; p 144.
  45. **Lanza GM**, Abendschein DR, Hall CS, Scherrer DE, Scott MJ, Marsh JN, Miller JG, Wickline SA: *In vivo* molecular imaging of tissue-factor in carotid arteries with a one-step ligand conjugated acoustic nanoparticle. *Circulation* 1999a; 100 (Suppl 1): I-72.
  46. Marsh JN, Hall CS, Scott MJ, Fuhrhop RW, Gaffney PJ, **Lanza GM**, Wickline SA: Design and optimization of site-targeted contrast agents for ultrasound imaging of cross-linked fibrin in thrombosis. *Circulation* 1999b; 100 (Suppl 1): I-72.
  47. **Lanza GM**, Flacke SJ, Fischer SE, Hall CS, Scott MJ, Marsh JN, Gaffney PJ, Wickline SA: Targeted magnetic resonance contrast agent for detection of thrombus. *J Am Coll Cardiol* 2000; 35 (2 Suppl A): 280A-281A.
  48. Marsh JN, Hall CS, Scott MJ, Fuhrhop RW, Gaffney PJ, Wickline SA, **Lanza GM**: Kinetic modeling of ultrasonic contrast enhancement by targeted agents using acoustic microscopy. *J Am Coll Cardiol* 2000; 35 (2 Suppl A): 478A.
  49. Flacke SJ, Fischer SE, Hall CS, Scott MJ, Marsh JN, Gaffney PJ, Wickline SA, **Lanza GM**: Molecular imaging of thrombus with a new targeted magnetic resonance contrast agent. *Intl Soc Magn Reson Med* 2000; 381.
  50. Xin Y, Song S-K, Scott MJ, Fuhrhop RJ, **Lanza GM**, Hall CS, Wickline SA: Molecular characterization of thrombus using bimodal  $^1\text{H}/^{19}\text{F}$  MR imaging with a novel fibrin-targeted nanoparticulate contrast agent. *J Cardiovasc Magn Res* 2000; 465.
  51. **Lanza GM**, Abendschein DR, Hall CS, Yu X, Scott MJ, Scherrer DE, Fuhrhop RJ, Zhu Q, Marsh JN, Wickline SA: Targeted delivery of doxorubicin to vascular smooth muscle cells using a novel, tissue factor-specific acoustic nanoparticle contrast agent. *Circulation* 2000; 102: II-561.
  52. Winter P, Chen J, Song S-K, Fuhrhop R, Wickline S, **Lanza G**: Relaxivities of

- paramagnetic nanoparticle contrast agents for targeted molecular imaging. *Proc Intl Soc Magn Reson Med* 2001; 9: 54.
53. Yu X, Caruthers S, Love S, Scott M, Fuhrhop R, Gaffney P, Wickline S, **Lanza G**: Thrombus detection and contrast enhancement kinetics using a novel fibrin-targeted MR nanoparticle contrast agent. *Proc Intl Soc Magn Reson Med* 2001; 9: 59.
  54. Wickline SA, Zhu Q, Lewis H, Hall C, Allen J, Scott M, **Lanza G**: Angiotensin converting enzyme inhibitor reduces VEGF expression by cardiac myofibroblasts in healing infarct scar tissue and attenuates ventricular remodeling. *JACC* 2001; 37: 337A.
  55. Winter PM, Chen JJ, Song SK, Scott MJ, Fuhrhop RW, Tan J, Gaffney PJ, Sicard GA, Wickline SA, **Lanza GM**, Yu X: High resolution MRI of vulnerable atherosclerotic lesions in excised human carotid arteries using a novel fibrin-targeted paramagnetic nanoparticle contrast agent. *Circulation* 2001; 104: 11.
  56. Yu X, Caruthers SD, Love SM, Scott MJ, Fuhrhop RW, Gaffney PJ, Wickline SA, **Lanza GM**: Rapid and sensitive thrombus detection with a fibrin-targeted nanoparticle MRI contrast agent. *Circulation* 2001; 104:1342.
  57. Hughes MS, Marsh JN, Ngo FC, Fuhrhop RW, Chinen LK, **Lanza GM**, Wickline SA: Comparison of ultrasound scattering properties of Optison® with a liquid perfluorocarbon nanoparticle contrast agent. *IEEE International Ultrasonics Symposium Proceedings* 2001; 01CH37263-2: 1675-1678.
  58. Ngo F, Handley S, Hall C, Allen J, McLean M, **Lanza G**, Miller J, Wickline S: Subject age at time of infarction responses in viable cardiac tissue in young vs. old rats. *IEEE International Ultrasonics Symposium* 2001; p 75.
  59. **Lanza GM**, Abendschein, Scott MJ, Fuhrhop RW, Scherrer DE, Karukstis KK, Wickline SA: Novel tissue factor targeted therapy inhibits vascular smooth muscle cell proliferation. *J Am Coll Cardiol* 2002; 39: 70A.
  60. Caruthers SD, Lin R, Watkins MP, Brown P, Lehr K, McKinney L, **Lanza GM**, Wickline SA: Is magnetic resonance imaging a reliable tool for quantifying aortic valve stenosis? *J Am Coll Cardiol* 2002; 39: 368A.
  61. **Lanza GM**, Abendschein DR, Yu X, Winter PM, Scott MJ, Fuhrhop RW, Scherrer DE, Wickline SA: Magnetic resonance imaging and quantification of targeted drug delivery to vascular cells with paramagnetic perfluorocarbon particles. *J Am Coll Cardiol* 2002; 39: 390A.
  62. **Lanza GM**, Yu X, Winter PM, Abendschein D, Karukstis K, Scott MJ, Fuhrhop RW, Scherrer D, Wickline SA: Nanoparticle emulsions: novel uses as combined MRI contrast agents and targeted drug delivery vehicles for molecular imaging and therapy. *J Cardiovasc Magn Res*, 2002; 4: 72.
  63. Winter PM, Caruthers SD, Fuhrhop RW, Scott MJ, Sicard GA, Gaffney PJ, Yu X,

- Wickline SA, **Lanza GM**: Detection of minute quantities of fibrin on human unstable atheromatous plaques with paramagnetic nanoparticles at 1.5T *in vitro*. *J Cardiovasc Magn Res*, 2002; 4: 66.
64. Winter PM, Caruthers SD, Fuhrhop RW, Scott MJ, Gaffney PJ, Wickline SA, **Lanza GM**: Strategies for optimizing the relaxivity of fibrin-targeted paramagnetic nanoparticles for molecular imaging by MRI. *J Cardiovasc Magn Res* 2002; 4: 67.
  65. Winter PM, Caruthers SD, Schmieder AH, Harris TD, Chinen L, Williams T, Watkins MP, Allen JS, Wickline SA, **Lanza GM**: Molecular imaging of angiogenesis in atherosclerotic rabbits by MRI at 1.5T with  $\alpha_v\beta_3$ -targeted nanoparticles. *Circulation* 2002; 106 (19): 151.
  66. Rogers JH, Caruthers SD, Williams T, Lin SJR, Meyers D, **Lanza GM**, Kovacs S, Lasala JM, Wickline SA: Clinical Utility of Rapid Prescreening Magnetic Resonance Angiography of Peripheral Vascular Disease Prior to Cardiac Catheterization. Presented at SCAI meeting in Boston. *Catheterization and Cardiovascular Interventions* 2003; 59 (1): 94.
  67. Lin SJ, Watkins MP, Williams T, Brown PA, Lehr KA, **Lanza GM**, Wickline SA, Caruthers SD: Quantitative magnetic resonance valve imaging: An accurate tool for evaluating mitral stenosis. *J Amer Coll Cardiol* 2003; 41 (Suppl A): 417A-418A.
  68. Crowder KC, Hughes MS, Marsh JN, Scott MJ, Chinen L, Harris TD, **Lanza GM**, Wickline SA: First experience with noncavitational ultrasound enhancement of selective cellular delivery of liquid perfluorocarbon nanoparticles to angiogenic sites. *J Amer Coll Cardiol*, 2003; 41 (Suppl A): 59A.
  69. Morawski AM, Winter PM, Caruthers SD, Fuhrhop RW, **Lanza GM**, Wickline SA: Picomolar concentrations of targeted ultra-paramagnetic nanoparticles detect microscopic pathology. *J Cardiovasc Magn Reson* 2003; 5: 54.
  70. Winter PM, Caruthers SD, Schmieder AH, Harris TD, Fuhrhop RW, Allen JS, Zhang H, Wickline SA, **Lanza GM**: Molecular imaging of angiogenesis in atherosclerotic rabbits by MRI with an  $\alpha_v\beta_3$ -targeted paramagnetic nanoparticle. *ISMRM* 2003; 162.
  71. Winter PM, Morawski AM, Caruthers SD, Harris TD, Allen JS, Zhang H, Fuhrhop RF, Lacy EK, Williams TA, **Lanza GM**, Wickline SA: Specific molecular imaging of angiogenesis in early atherosclerosis with  $\alpha_v\beta_3$ -integrin targeted paramagnetic nanoparticles. *Mol Imaging* 2003; 2: 280.
  72. Cyrus T, Winter PM, Abendschein D, Caruthers SD, Fuhrhop RF, Allen JS, Scott M, Harris TD, Werkmeister J, Zhang H, Wickline SA, **Lanza GM**: Molecular imaging of  $\alpha_v\beta_3$ -integrin and collagen-III targeted nanoparticles in pig carotids following balloon-inflation injury. *Mol Imaging* 2003; 2: 281.
  73. Morawski AM, Winter PM, Caruthers SD, Abendschein D, Fuhrhop RF, Scott

- MJ, Crowder KC, **Lanza GM**, Wickline SA: Sensitive detection of tissue-factor protein expressed on vascular smooth muscle cells with ligand-targeted paramagnetic nanoparticles at 1.5 Tesla. *Mol Imaging* 2003; 2: 279.
74. Shukla HP, Winter PM, Scott MJ, Fuhrhop RF, Gaffney PJ, Wickline SA, **Lanza GM**: A specific thrombus-targeted molecular imaging agent for computed tomography. *Mol Imaging* 2003; 2 (3): 280.
  75. Winter PM, Morawski AM, Caruthers SD, Harris TD, Allen JS, Zhang H, Fuhrhop RF, Lacy EK, Williams TA, **Lanza GM**, Wickline SA: Specific molecular imaging of vasa vasorum in early atherosclerosis with  $\alpha_v\beta_3$ -integrin targeted nanoparticles. *Circulation* 2003; 108 (Suppl S): 168.
  76. Morawski AM, Winter PM, Abendschein D, Caruthers SD, Fuhrhop RF, Scott MJ, Crowder KC, **Lanza GM**, Wickline SA: Magnetic resonance immunocytochemistry: characterization of tissue-factor expression by smooth muscle cells with targeted paramagnetic nanoparticles. *Circulation* 2003; 108: 139.
  77. Cyrus T, Winter PM, Abendschein D, Caruthers SD, Fuhrhop RF, Allen JS, Scott M, Harris TD, Werkmeister J, Zhang H, Wickline SA, **Lanza GM**: Molecular imaging of  $\alpha_v\beta_3$ -integrin and collagen-III targeted nanoparticles in pig carotids following balloon-inflation injury. *Circulation* 2003; 108 (Suppl S): 169.
  78. Marsh JN, Crowder K, Scott MJ, Lacy EK, Hughes MS, **Lanza GM**, Wickline SA: Quantitative acoustic signatures of “tissue factor” expression by single smooth muscle cells targeted with liquid perfluorocarbon nanoparticles. *Circulation* 2003; 108 (Suppl S): 644.
  79. Bowers GC, Yin L, Schmieder A, Wickline S, **Lanza G**, Cornelius LA: Molecular imaging of murine melanoma using alpha v beta3-directed contrast. *J Invest Dermatol* 2003; 122: A159.
  80. **Lanza GM**, Winter PM, Caruthers SD, Hughes MS, Marsh JN, Yu X, Fuhrhop RW, Zhang H, Allen JS, Scott MJ, Wickline SA: Molecular imaging and targeted drug delivery: A new paradigm in medicine. *Abstr Pap Amer Chem Soc* 2003; 226 (99-PMSE, Part 2): U473.
  81. Morawski AM, Winter PM, Caruthers SD, Fuhrhop FW, Crowder KC, Harris TD, **Lanza GM**, Wickline SA: Detection of angiogenic epitopes at picomolar concentrations with  $\alpha_v\beta_3$ -integrin targeted ultra-paramagnetic nanoparticles in human cancer cells *in vitro*. *Proc Intl Soc Mag Reson Med* 2003; 11: 831.
  82. Winter PM, Caruthers SD, Schmieder AH, Harris TD, Fuhrhop RW, Allen JS, Zhang H, Wickline SA, **Lanza GM**: Molecular imaging of angiogenesis in atherosclerosis rabbits by MRI with an  $\alpha_v\beta_3$ -targeted paramagnetic nanoparticle. *Proc Intl Soc Mag Reson Med* 2003; 11: 162.
  83. Schmieder AH, Caruthers SD, Winter PM, Harris TD, Chinen LK, Williams TA, Watkins MP, Allen JS, Zhang H, Wickline SA, **Lanza GM**: Molecular imaging of tumor angiogenesis in human melanoma xenografts in mice by MRI with  $\alpha_v\beta_3$ -targeted nanoparticles. *Proc Intl Soc Mag Reson Med* 2003; 11: 1227.

84. Williams TA, Allen JS, Winter PM, Watkins MP, **Lanza GM**, Wickline SA, Caruthers SD: Imaging mouse aortic arch and great vessels with 1.5 Tesla clinical scanners and paramagnetic nanoparticle blood pool agents. *Proc Intl Soc Mag Reson Med* 2003; 11: 1651.
85. Winter PM, Caruthers SD, Schmieder AH, Harris TD, Chinen LK, Williams TA, Watkins MP, Allen JS, Zhang H, Wickline SA, **Lanza GM**: Molecular imaging of angiogenesis in Vx-2 rabbit tumors with a novel  $\alpha_v\beta_3$ -targeted paramagnetic nanoparticle at 1.5 T. *Proc Intl Soc Mag Reson Med* 2003; 11: 1226.
86. Morawski AM, Winter PM, Caruthers SD, Williams TA, Allen JS, Fuhrhop RF, **Lanza GM**, Wickline SA: A semi-automated algorithm for quantification of vessel wall angiogenesis associated with early atherosclerosis using magnetic resonance imaging. (Proc 25 Ann Conf) *IEEE EMBS* 2003; 1: 743-746.
87. Winter PM, Caruthers SD, Yu X, Song SK, Chen J, Miller B, Bulte JM, Robertson JD, Gaffney PJ, Wickline SA, **Lanza GM**: Improved molecular imaging contrast agent for detection of human thrombus. *Magn Reson Med* 2003; 50 (2): 411.
88. Crowder KC, Hughes MS, Marsh JN, Scott MJ, Fuhrhop RW, **Lanza GM**, Wickline SA: Augmented and selective delivery of liquid perfluorocarbon nanoparticles to melanoma cells with noncavitational ultrasound. *IEEE Ultrason Symp* 2003; 03CH37476: 532-535.
89. Winter PM, Caruthers SD, Schmieder AH, Allen JS, Fuhrhop RW, Harris TD, Wickline SA, **Lanza GM**: Molecular imaging of angiogenesis associated with atherosclerosis *in vivo* with paramagnetic nanoparticles at 1.5T. *J Cardiovasc Magn Reson* 2003; 5 (1): 4-6.
90. Morawski AM, Winter PM, Caruthers SD, Fuhrhop RW, Wickline SA, **Lanza GM**: Picomolar concentrations of targeted ultraparamagnetic nanoparticles detect microscopic pathology. *J Cardiovasc Magn Reson* 2003; 5 (1): 54-56.
91. Lin SJ, Watkins MP, Williams TA, Brown PA, Lehr KA, **Lanza GM**, Wickline SA, Caruthers SD: Mitral stenosis is accurately quantified with velocity-encoded MRI by the "pressure half-time" method: Comparison with Doppler ultrasound. *J Cardiovasc Magn Reson* 2003; 5 (1): 123-124.
92. Morawski AM, Caruthers SD, Winter PM, Hockett FD, Fuhrhop RW, **Lanza GM**, Wickline SA: Minimum detection limits for  $^{19}\text{F}$  MR molecular imaging with a novel perfluorocarbon nanoparticle agent. *Molecular Imaging* 2004 (abstract 018); 3 (3): 182.
93. Winter PM, Caruthers SD, Wickline SA, **Lanza GM**: Molecular imaging and targeted drug delivery in cardiovascular disease with paramagnetic nanoparticles. *Molecular Imaging* 2004 (abstract 041); 3 (3): 188.
94. Caruthers SD, Lamerichs R, Winter PM, Morawski AM, Hockett FP, Scott MS, Gaffney PJ, Wickline SA, **Lanza GM**: Fluorine spectroscopy and imaging of

- unstable atherosclerotic plaque with fibrin-targeted nanoparticles using fast balanced techniques at 1.5T. *Proc Intl Soc Mag Reson Med* 2004; 11: 283.
95. Winter PM, Morawski AM, Caruthers SD, Harris TD, Williams TA, Allen JS, Zhang H, Wickline SA, **Lanza GM**:  $\alpha_v\beta_3$ -targeted perfluorocarbon nanoparticles provide molecular imaging of angiogenesis and effective targeted drug delivery. *Proc Intl Soc Mag Reson Med* 2004; 11: 284.
  96. Kassner A, Caruthers SD, Allen JS, Williams TA, Winter PM, Zhang Z, Roberts TP, **Lanza GM**: Assessment of angiogenesis: Dynamic contrast-enhanced MRI with non-targeted ultraparamagnetic nanoparticles compared to Gd-DTPA in rabbit vx2 tumor model. *Proc Intl Soc Mag Reson Med* 2004; 11: 1703.
  97. Winter PM, Morawski AM, Caruthers SD, Harris TD, Fuhrhop RW, Zhang HY, Allen JS, Lacy EK, Williams TA, Wickline SA, **Lanza GM**: Paramagnetic  $\alpha_v\beta_3$ -integrin-targeted fumagillin nanoparticles for combined molecular imaging and antiangiogenic therapy in atherosclerosis *Circulation* 2004; 110 (Suppl S): 306.
  98. Winter PM, Shukla HP, Caruthers SD, Scott MJ, Fuhrhop RW, Robertson JD, Gaffney PJ, Wickline SA, **Lanza GM**: Molecular imaging of human thrombus with computed tomography. *J Amer Coll Cardiol* 2004; 43 (5) (Suppl A): 10A.
  99. Winter PM, Morawski AM, Caruthers SD, Harris TD, Fuhrhop RW, Zhang H, Allen JS, Lacy EK, Williams TA, Wickline SA, **Lanza GM**: Antiangiogenic therapy of early atherosclerosis with paramagnetic  $\alpha_v\beta_3$ -integrin targeted fumagillin nanoparticles. *J Amer Coll Cardiol* 2004; 43 (5) (Suppl A): 322A.
  100. Winter PM, Shukla HP, Caruthers SD, Scott MJ, Fuhrhop RW, Robertson JD, Gaffney PJ, Wickline SA, **Lanza GM**: Molecular imaging of human thrombus with computed tomography. *Academic Radiology* 2005; 12 (5 Supplement): S9-S13.
  101. Winter PM, Athey PS, Kiefer GE, Gulyas G, Fuhrhop RW, Robertson JD, Wickline SA, **Lanza GM**: Improved paramagnetic chelate for molecular imaging with MRI. *Academic Radiology* 2005; 12 (5 Supplement): S40-S41.
  102. Winter PM, Caruthers SD, Harris TD, Schmieder AH, Abendschein D, Cyrus T, Fuhrhop RF, Dietz EK, Williams TA, Allen JS, Zhang H, Wickline SA, **Lanza GM**: Molecular imaging of  $\alpha_v\beta_3$ -integrin: an opportune biochemical signature for oncologic and cardiovascular diseases. *Academic Radiology* 2005; 12 (5 Supplement): S43.
  103. **Lanza GM**, Hughes MS, Marsh JN, Scott MJ, Zhang H, Lacy EK, Allen JS, Wickline SA: Acoustic molecular imaging and targeted drug delivery with perfluorocarbon nanoparticles. *AIP Conf Proc* 2005; 754: 120.
  104. **Lanza G**: Nanotechnology for molecular imaging. *Med Phys* 2005; 32: 2130.

105. Wickline SA, **Lanza GM**: Targeted nanoparticle beacons for quantification of molecular epitopes and drug delivery. *Clin Cancer Res* 2005; 11(Part 2 Suppl. S): 9173S-9174S.
106. Cyrus T, Caruthers SD, Allen JS, Williams TD, Fuhrhop R, Harris TD, Wickline SA, **Lanza GM**: Intramural delivery of rapamycin with  $\alpha_v\beta_3$ -integrin-targeted paramagnetic nanoparticles inhibits stenosis following angioplasty. *Circulation* 2005; 112 (Suppl 2): 168.
107. Winter PM, Neubauer AM, Caruthers SD, Fuhrhop RW, Allen JS, Williams TA, Harris TD, Wickline SA, **Lanza GM**: Magnetic resonance molecular imaging predicts the effectiveness of targeted drug delivery in atherosclerosis. *Circulation* 2005; 112 (Suppl S): U287-U287.
108. Winter PM, Caruthers SD, Williams TA, Lacy EK, Allen JS, Harris TD, Wickline SA, **Lanza GM**: Magnetic resonance molecular imaging of angiogenic response to L-arginine therapy in peripheral vascular disease with  $\alpha_v\beta_3$ -targeted nanoparticles. *Circulation* 2005; 112 (Suppl S): U327-U327.
109. **Lanza GM**, Caruthers SD, Winter PM, Hughes M, Marsh J, Hu G, Lijowski M, Fuhrhop R, Wickline SA: Formulation development of perfluorocarbon nanoparticles for molecular imaging and therapy. *Mol Imaging* 2005 (abstract 066); 4 (3): 226.
110. Cyrus T, Caruthers S, Allen J, Williams T, Fuhrhop R, Harris T, Wickline S, **Lanza G**: Combined MR molecular imaging and treatment of restenosis with  $\alpha_v\beta_3$ -integrin-targeted rapamycin nanoparticles. *Mol Imaging* 2005 (abstract 080); 4 (3): 230.
111. Marsh J, Pan A, Hu G, Crowder K, Scott M, Hughes M, Wickline S, **Lanza G**: Application of fibrin-targeted, acoustically reflective perfluorocarbon nanoparticles for thrombolytic therapy. *Mol Imaging* 2005 (abstract 132); 4 (3): 246.
112. Crowder K, Fuhrhop R, **Lanza G**, Wickline S: Therapeutic nanoparticle contrast agents utilize cellular lipid transport mechanisms for drug delivery. *Mol Imaging* 2005 (abstract 137); 4 (3): 248.
113. Hughes M, Marsh J, Arbeit J, Neumann R, Fuhrhop R, **Lanza G**, Wickline S: Ultrasonic molecular imaging of angiogenic vessels in the papilloma virus transgenic mouse with targeted nanoparticles using information-theoretic signal receivers. *Mol Imaging* 2005 (abstract 220); 4 (3): 275.
114. Hu G, Lijowski M, Scott M, Caruthers S, Fuhrhop R, Kiefer G, Gulyas G, Harris T, Wickline S, **Lanza G**:  $\alpha_v\beta_3$ -targeted In-111 nanoparticles detect tumor-induced angiogenesis in the Vx-2 rabbit. *Mol Imaging* 2005 (abstract 247); 4 (3): 283.
115. Winter P, Caruthers S, Williams T, Lacy E, Allen S, Harris T, Wickline S, **Lanza G**: Magnetic resonance molecular imaging with  $\alpha_v\beta_3$ -targeted nanoparticles detects angiogenic response to L-Arginine therapy in peripheral vascular disease.

- Mol Imaging* 2005 (abstract 299); 4 (3): 300.
116. Hughes M, Marsh J, Woodson A, Scott M, Fuhrhop R, Hall C, Savery D, Wickline S, **Lanza G**: Enhanced ultrasonic molecular imaging of angiogenesis with targeted nanoparticles and information-theoretic Complexity-based signal receivers in the VxVX-2 rabbit model. *Mol Imaging* 2005 (abstract 330); 4 (3): 311.
  117. Winter P, Neubauer A, Caruthers S, Fuhrhop R, Allen S, Williams T, Harris T, Wickline S, **Lanza G**: Prediction of targeted drug delivery efficacy in atherosclerosis with magnetic resonance imaging. *Mol Imaging* 2005 (abstract 419); 4 (3): 340.
  118. Hughes M, Marsh J, Woodson A, Lacey E, Caradine C, **Lanza G**, Wickline S: Characterization of digital waveforms using thermodynamic signal receivers: Detection of contrast targeted tissue in MDA 435 tumors implanted in athymic nude mice. *Mol Imaging* 2005 (abstract 474); 4 (3): 357.
  119. Caruthers SD, Neubauer AM, Hockett F, Lamerichs R, Winter PM, Scott M, Gaffney P, Wickline SA, **Lanza GM**: <sup>19</sup>F imaging and spectroscopy enhances molecular imaging with paramagnetic perfluorocarbon nanoparticles at 1.5T. *Mol Imaging* 2005 (abstract 600); 4 (3): 396.
  120. Winter PM, Morawski AM, Caruthers SD, Harris TD, Hu G, Fuhrhop RW, Zhang H, Allen JS, Lacy EK, Williams TA, Wickline SA, **Lanza GM**: Persistent anti-angiogenic effectiveness in early atherosclerosis following a single  $\alpha_v\beta_3$ -targeted administration of fumagillin paramagnetic nanoparticles at 1.5T. *Proc Intl Soc Mag Reson Med* 2005; 13: 169.
  121. Morawski AM, Caruthers SD, Hockett FD, Wickline SA, **Lanza GM**: Fluorine coronary MR-angiography with nanoparticle contrast agents at 1.5T. *Proc Intl Soc Mag Reson Med* 2005; 13: 2705.
  122. Hughes M, Marsh JN, Woodson AK, Lacey EK, Caradine C, **Lanza GM**, Wickline SA: Characterization of digital waveforms using thermodynamic analogs: Detection of contrast targeted tissue in MDA 435 tumors implanted in athymic mice. *Proc IEEE Ultrason Symp* 2005; pp 373-376.
  123. Winter PM, Morawski AM, Caruthers SD, Harris TD, Hu G, Fuhrhop RW, Zhang H, Allen JS, Lacy EK, Williams TA, Wickline SA, **Lanza GM**: Serial quantitation of targeted fumagillin therapy using  $\alpha_v\beta_3$ -targeted paramagnetic nanoparticles in early atherosclerosis at 1.5T. *J Cardiovasc Magn Reson* 2005; 7 (1): 3.
  124. Winter PM, Morawski AM, Caruthers SD, Harris TD, Hu G, Fuhrhop RW, Zhang H, Allen JS, Lacy EK, Williams TA, Wickline SA, **Lanza GM**: Persistent antiangiogenic therapy with  $\alpha_v\beta_3$ -targeted fumagillin nanoparticles in early atherosclerosis. *J Amer Coll Cardiol* 2005; 45 (Suppl A): 435A.
  125. Morawski AM, Caruthers SD, Hockett FD, Fuhrhop RW, **Lanza GM**, Wickline SA: Magnetic resonance coronary angiography with a fluorinated nanoparticle



- contrast agent. *J Amer Coll Cardiol* 2005; 45 (Suppl A): 298A.
126. Crowder K, Brant J, Chen JJ, Neubauer A, Meyerrose T, Nolta J, Caruthers S, **Lanza G**, Wickline S: Unique perfluorocarbon nanobeacons improve stem/progenitor cell tracking with MRI. *FASEB J* 2006; 20 (4): A633.
  127. Wickline SA, **Lanza GM**: Nanotechnology for molecular imaging and targeted drug delivery. *Ann Oncol* 2006; 17 (Suppl 3): 30.
  128. Soman NR, Marsh JN, Hughes MS, **Lanza GM**, Wickline SA: Acoustic activation of targeted liquid perfluorocarbon nanoparticles does not compromise endothelial integrity. *IEEE Trans on NanoBioscience* 2006; 5 (2): 69-75.
  129. Soman NR, Marsh JN, Hughes MS, **Lanza GM**, Wickline SA: Ultrasound enhances cellular lipid trafficking: Implications for lipid therapy. *IEEE Ultrasonics Symp* 2006; pp 1730-1733.
  130. Wallace KD, Hughes MS, Marsh JN, Crowder KC, Zhang H, Wickline SA, **Lanza GM**: Molecular imaging and therapy with perfluorocarbon-based site targeted contrast nanoparticles. *J Acoust Soc Am* 2006; 119: 3438.
  131. Winter PM, Caruthers SD, Neubauer AM, Allen JS, Fuhrhop RW, Williams TA, Harris TD, Wickline SA, **Lanza GM**: Magnetic resonance molecular imaging for prediction of targeted drug delivery efficacy in atherosclerosis. *J Cardiovasc Magn Reson* 2006 (abstract 172); 8 (1): 66-67.
  132. Waters EA, Chen J, **Lanza GM**, Wickline SA: Characterization of angiogenesis in the cholesterol-fed rabbit aortic valve with MR fluorine spectroscopy of integrin-targeted perfluorocarbon nanoparticles. *J Cardiovasc Magn Reson* 2006 (abstract 174); 8 (1): 68-69.
  133. Winter PM, Caruthers SD, Allen JS, Williams TA, Lacy EK, Harris TD, Wickline SA, **Lanza GM**: Detection of angiogenesis with magnetic resonance molecular imaging in peripheral vascular disease. *J Cardiovasc Magn Reson* 2006 (abstract 191); 8 (1): 85.
  134. Tran TD, Ricci J, Beardslee MA, Caruthers S, Watkins M, Wickline SA, **Lanza GM**: Aortic stiffness of normal-sized aortas in patients with bicuspid aortic valves by MR flow mapping. *J Cardiovasc Magn Reson* 2006 (abstract 375); 8 (1): 169-170.
  135. Neubauer AM, Winter PM, Caruthers SD, Fuhrhop RW, Williams TA, Allen JS, **Lanza GM**, Wickline SA: New pharmacokinetic approaches for quantifying binding of  $\alpha_v\beta_3$ -integrin targeted nanoparticles to atherosclerotic vasa vasorum. *J Cardiovasc Magn Reson* 2006; 8 (1): 192-193.
  136. Neubauer AM, Caruthers SD, Williams TD, Hockett F, Cyrus T, Allen JS, **Lanza GM**, SA Wickline: Fluorine MR angiography with intravenously delivered nanoparticle emulsions at 1.5 T. *Proc Intl Soc Mag Reson Med* 2006; 14: 185.

137. Chen J, Crowder K, Brant J, Neubauer AM, Caruthers S, **Lanza GM**, Wickline SA: Labeling and imaging stem/progenitor cells with multiple unique nanoparticulate fluorine markers: The potential for multispectral stem cell detection with <sup>19</sup>F MRI. *Proc Intl Soc Mag Reson Med* 2006; 14: 187.
138. Neubauer AM, Crowder K, Caruthers SD, Brant J, Hockett F, Nolta J, **Lanza GM**, Wickline SA, Chen J: Unique and rapid <sup>19</sup>F imaging of stem cells labeled with perfluorocarbon nanoparticles at 11.7T and 1.5T. *Proc Intl Soc Mag Reson Med* 2006; 14: 354.
139. Chen J, Crowder K, Brant J, **Lanza GM**, Wickline SA: Fluorine diffusion measurements confirm intracellular labeling of perfluorocarbon nanoparticles in therapeutic stem/progenitor cells as tracking agents. *Proc Intl Soc Mag Reson Med* 2006; 14: 359.
140. Winter PM, Caruthers SD, Williams TA, Allen JS, Harris TD, Wickline SA, **Lanza GM**: Molecular imaging and targeted anti-angiogenic therapy in cancer with  $\alpha_{\text{nu}}\beta_3$ -targeted nanoparticles. *Proc Intl Soc Mag Reson Med* 2006; 14: 471.
141. Waters EA, Allen JS, Zhang H, **Lanza GM**, Wickline SA, Chen J: Methods for specific detection of plaque angiogenesis in the cholesterol-fed apolipoprotein-E deficient mouse with MR fluorine spectroscopy of integrin-targeted perfluorocarbon. *Proc Intl Soc Mag Reson Med* 2006; 14: 558.
142. Winter PM, Caruthers SD, Allen JS, Williams TA, Harris TD, Wickline SA, **Lanza GM**: Molecular imaging of angiogenic therapy in peripheral vascular disease with  $\alpha_{\text{nu}}\beta_3$ -targeted nanoparticles. *Proc Intl Soc Mag Reson Med* 2006; 14: 562.
143. Caruthers SD, Neubauer AM, Hockett FD, Lamerichs R, Winter PM, Scott MJ, Gaffney PJ, Wickline SA, **Lanza GM**: <sup>19</sup>F MR techniques augment quantitative molecular imaging with paramagnetic perfluorocarbon nanoparticles at 1.5T. *Proc Intl Soc Mag Reson Med* 2006; 14: 1834.
144. Venkataramani D, Chen J, Neubauer AM, Crowder K, Brant J, **Lanza GM**, Wickline SA: Does endocytosis of perfluorocarbon nanoparticles by progenitor/stem cells after <sup>19</sup>F relaxation at 11.7T? *Proc Intl Soc Mag Reson Med* 2006; 14: 1890.
145. Cyrus T, Caruthers SD, Allen JS, Williams TA, Fuhrhop RW, Harris TD, Wickline SA, **Lanza GM**:  $\alpha_{\text{nu}}\beta_3$  integrin-targeted paramagnetic nanoparticles deliver rapamycin into the vascular wall and inhibit stenosis following balloon injury. *Circulation* 2006; 114 (Suppl S): 217.
146. Neubauer AM, Partlow KC, Caruthers SD, Brant J, Hockett FD, Chen J, Nolta J, **Lanza GM**, Wickline SA: Endothelial stem cell detection *in vivo* with unique perfluorocarbon nanoparticle labels using fluorine (<sup>19</sup>F) MRI at 1.5 T. *Circulation* 2006; 114 (Suppl. S): 251.
147. Marsh JN, Partlow KC, Scott MJ, Abendschein DR, Hughes MS, **Lanza GM**, Wickline SA: Ultrasound detection of molecular epitopes critical for thrombosis

- and restenosis with tissue factor-targeted perfluorocarbon nanoparticles. *Circulation* 2006; 114 (Suppl. S): 337-338.
148. Tran TD, Beardslee MA, Caruthers S, Ricci J, Wickline SA, **Lanza GM**: Aortic characterization in patients with congenital bicuspid aortic valves using MR flow mapping. *Circulation* 2006; 114 (Suppl. S): 779-779.
  149. Hughes MS, Marsh JN, McCarthy JE, Arbeit RN, Fuhrhop R, **Lanza G**, Wickline S: Combined use of  $\alpha_v\beta_3$ -targeted nanoparticles and entropy-based signal detectors for ultrasound molecular imaging of angiogenesis in the papilloma virus transgenic mouse. *Circulation* 2006; 114 (Suppl. S): abstract 2148.
  150. Neumann R, Olson K, **Lanza G**, Wickline S, Arbeit J: Targeted nanoparticle imaging of angiogenic endothelial activation in premalignant neoplasia and established epithelial cancers. *J Am Coll Surg* 2006; 203(Suppl. S): S83-S83.
  151. Zhang H, Allen JS, Fuhrhop RW, Wickline SA, **Lanza GM**, Cyrus T: Intramural delivery of rapamycin with molecularly targeted nanoparticles inhibits stenosis without delaying endothelial healing after angioplasty. *Arterioscler Thromb Vasc Biol* 2007; 27 (6): E107-E107.
  152. Brant JA, Myerson JW, Capoccia BJ, Chen J, Partlow KC, Lanza GM, Link DC, Wickline SA. Monocyte labeling and tracking with perfluorocarbon nanobeacons for therapeutic angiogenesis in mouse hind limb ischemia. *Circulation* 2007;116 (16):773 (Abstract 3423).
  153. Partlow KC, Brant JA, Marsh JN, Nolta JA, Hughes MS, **Lanza GM**, Wickline SA: Ultrasound energy markedly and rapidly effects stem/progenitor cell labeling with nanoparticle beacons for molecular imaging and cell tracking *FASEB J* 2007; 21: A379-A379.
  154. Soman NR, **Lanza GM**, Schlesinger PH, Wickline SA: Novel approach for specific delivery of cytolytic peptides (melittin) to cancer cells using molecularly targeted perfluorocarbon nanoparticles *FASEB J* 2007; 21: A31-A31.
  155. Zhang H, Cyrus T, Allen JS, Fuhrhop RW, Wickline SA, **Lanza GM**: Intramural  $\alpha_v\beta_3$  - targeted rapamycin nanoparticles after angioplasty reduces stenosis without delaying intimal healing. *FASEB J* 2007; 21: A803-A803.
  156. Winter PM, Caruthers SD, Allen JS, Williams TA, Zhang HY, Wickline SA, **Lanza GM**: Combination therapy of targeted anti-angiogenic drug delivery and oral statin against atherosclerosis. *J Am Coll Cardiol* 2007; 49 (Suppl. A): 151A-151A.
  157. Cyrus T, Zhang HY, Allen JS, Fuhrhop RW, Wickline SA, **Lanza GM**: Vascular stenosis response to balloon-injury is inhibited following local intramural delivery of rapamycin with  $\alpha_v\beta_3$ -integrin-targeted perfluorocarbon nanoparticles *J Am Coll Cardiol* 2007; 49 (Suppl. A): 418A-419A.

158. Neumann RG, Kim JT, **Lanza GM**, Wickline SA, Arbeit JM: Low-dose anti-angiogenic targeted nanoparticle therapy of premalignant epithelial neoplasia. *Ann Surg Oncol* 2007; 14 (Suppl. S): 15-15.
159. Wallace KD, Marsh JN, Baldwin SL, Connolly AM, Keeling R, **Lanza GM**, Wickline SA, Hughes MS: Sensitive ultrasonic delineation of steroid treatment in living dystrophic mice with energy-based and entropy-based radio frequency signal processing. *IEEE Trans Ultrason Ferroelectr Freq Cont* 2007; 54 (11): 2291-2299.
160. Waters EA, Yang X, **Lanza GM**, Wickline SA, Chen J: The role of <sup>19</sup>F diffusion weighted spectroscopy for specific and sensitive detection of molecularly targeted perfluorocarbon. *Proc Intl Soc Mag Reson Med* 2007; 15: 857.
161. Myerson JW, Yang X, Neubauer AM, Waters EA, **Lanza GM**, Wickline SA, Chen J: *In vivo* characterization of the pharmacokinetics of perfluorocarbon nanoparticles in a mouse model using <sup>19</sup>F MRS. *Proc Intl Soc Mag Reson Med* 2007; 15: 1186.
162. Schmieder AH, Williams TA, Allen JS, Hu G, Zhang H, Caruthers SD, Wickline SA, **Lanza GM**: High-resolution 3D MRI mapping of tumor angiogenesis using a5B1-targeted perfluorocarbon nanoparticles. *Proc Intl Soc Mag Reson Med* 2007; 15: 1187.
163. Ruiz-Cabello J, Walczak P, Chacko VP, Kedziorek DA, Schmieder AH, Wickline SA, **Lanza G**, Bulte JW: Efficiency of cell labeling with different perfluoro-15-crown-5 ether nanoparticles for <sup>19</sup>F MRI. *Proc Intl Soc Mag Reson Med* 2007; 15: 1197.
164. Ruiz-Cabello J, Walczak P, Chaco VP, Kedziorek DA, Schmieder AH, Wickline SA, **Lanza GM**, Bulte JW: *In vivo* cell tracking <sup>19</sup>F MRI using perfluorocrown ether nanoparticles. *Proc Intl Soc Mag Reson Med* 2007; 15: 1214.
165. Waters EA, Chen J, **Lanza GM**, Wickline SA: Detection of inflammatory components of incipient aortic valve disease in the cholesterol-fed rabbit with <sup>19</sup>F magnetic resonance spectroscopy of  $\alpha_v\beta_3$ -integrin perfluorocarbon nanoparticles. *J Cardiovasc Magn Reson* 2007; 9 (2) 107.
166. Winter P, Cai K, Chen J, Kiefer G, Adar C, Athey P, Gaffney PJ, Caruthers S, Wickline S, **Lanza G**: Activatable targeted MRI contrast agent for molecular imaging of fibrin. *J Cardiovasc Magn Reson* 2007; 9 (2): 133.
167. Winter P, Caruthers S, Fuhrhop R, Allen J, Williams T, Harris T, Wickline S, **Lanza G**: Serial delivery and assessment of targeted anti-angiogenic therapy against atherosclerosis. *J Cardiovasc Magn Reson* 2007; 9 (2): 350.
168. Neubauer AM, Winter P, Caruthers S, Chen J, Hockett F, **Lanza G**, Wickline S: Design of an activatable nanoparticulate contrast agent with a unique fluorine signal for cardiovascular molecular imaging. *J Cardiovasc Magn Reson* 2007; 9 (2): 366.

169. Caruthers SD, Schmieder AH, Williams TA, Allen JS, Zhang H, Winter PM, Wickline SA, **Lanza GM**: 3D molecular imaging of the "angiogenic switch" differentiates neovascular development in animal models of cancer. *FASEB J* 2008; 22: 470.412.
170. Caruthers SD, Schmieder A, Winter P, Williams TA, Allen JS, Hu G, Zhang H, Wickline S, **Lanza G**: Is 3D MR molecular imaging of neovasculature prognostic of tumor response to antiangiogenic therapy? *FASEB J* 2008; 22: 898.840.
171. Keene J, Schmieder A, Williams T, Allen J, Scott M, Caruthers S, Wickline S, **Lanza G**: 3D MR neovascular mapping of rabbit Vx2 tumor response to Avastin (bevacizumab). *FASEB J* 2008; 22: 898.842.
172. Kaneda MM, Southworth R, Zhang L, Zhang H, Chen J, **Lanza GM**, Wickline SA: Detection and quantification of endothelial VCAM-1 expression using 19F magnetic resonance spectroscopy and imaging. *FASEB J* 2008; 22: 902.17.
173. Kaneda MM, Mildbrandt JD, **Lanza GM**, Wickline SA: Synthetic nanoparticle vehicles deliver siRNA to vascular endothelial cells for VCAM-1 knockdown. *FASEB J* 2008; 22: 902.18.
174. Soman N, **Lanza G**, Schlesinger P, Wickline S: Cytolytic peptides on nanoparticle carriers induce dramatic melanoma tumor shrinkage *in vivo* by apoptosis. *FASEB J* 2008; 22: 1136.15.
175. Kaneda MM, Southworth R, Chen J, Zhang L, Zhang H, **Lanza GM**, Wickline SA: Molecular imaging of occult kidney inflammation in ApoE<sup>-/-</sup> mice using 19F MRI nanobeacons for VCAM-1. *Circulation* 2008; 118: S336.
176. Waters EA, Chen J, Allen JS, Zhang H, Fuhrhop R, **Lanza GM**, Wickline SA: Cell-specific delivery and monitoring of antiangiogenic therapy in experimental aortic valve disease with theranostic integrin-targeted 19F nanobeacons (abstract 3657). *Circulation* 2008; 118: S460.
177. Sim H, Neubauer A, Caruthers S, **Lanza G**, Wickline S, Sept D: New pharmacokinetic models for quantitative molecular imaging of plaque angiogenesis with integrin-targeted nanoparticles (abstract 2238). *Circulation* 2008; 118: S691a.
178. Pan D, Proksa R, Caruthers SD, Roessl E, Scott MJ, Schlomka JP, Senpan A, Gaffney PJ, Wickline SA, **Lanza GM**: Fibrin-specific spectral CT molecular imaging detects ruptured plaque without calcium interference (abstract 2798). *Circulation* 2008; 118: S777.
179. Cai K, Huang W, Williams TA, Caruthers SD, Zhang H, **Lanza G**, Wickline SA, Winter PM: Early detection of arteriopathy in metabolic syndrome by MR molecular imaging with targeted nanobeacons (abstract 5760). *Circulation* 2008; 118: S996-S997.

180. Cai K, Huang W, Williams TA, Zhang H, Caruthers SD, **Lanza GM**, Wickline SA, Winter PM: 3T MR molecular imaging of benfluorex treatment of metabolic syndrome with  $\alpha_v\beta_3$ -integrin targeted nanoparticles (abstract 5765). *Circulation* 2008; 118: S998.
181. Waters EA, Chen J, Allen JS, Zhang H, Fuhrhop R, **Lanza GM**, Wickline SA: Molecular imaging for early detection of inflammation in valve disease (abstract 6152). *Circulation* 2008; 118: S1072a.
182. Schmieder AH, Williams TA, Allen JS, Hu G, Zhang H, Caruthers SD, Wickline SA, **Lanza GM**: Time-Resolved Molecular Imaging of the “Angiogenic Switch” in Animal Models of Cancer. *Proc Intl Soc Mag Reson Med* 2008; 16: 14.
183. Keupp J, Rahmer J, Waters EA, Caruthers SD, **Lanza GM**, Wickline SA: *In vivo* quantification of <sup>19</sup>F molecular imaging agents with improved accuracy and sensitivity using motion correcting, simultaneous <sup>19</sup>F/<sup>1</sup>H radial MRI. *Proc Intl Soc Mag Reson Med* 2008; 16: 17.
184. Keupp J, Caruthers SD, Burdinski D, Langereis S, Pikkemaat JA, Lamerichs R, Gruell H, Wickline SA, **Lanza GM**, Winter PM: Simultaneous <sup>19</sup>F and <sup>1</sup>H-CEST technique for improved accuracy and efficiency in quantitative CEST measurements. *Proc Intl Soc Mag Reson*, 2008; 16: 637.
185. Schmieder AH, Winter PM, Williams TA, Allen JS, Hu G, Zhang H, Caruthers SD, Wickline SA, **Lanza GM**: MR molecular imaging of neovasculature may predict response to antiangiogenic therapy in animal cancer models. *Proc Intl Soc Mag Reson*, 2008; 16: 799.
186. Waters EA, Fuhrhop RW, Allen JS, **Lanza GM**, Wickline SA: <sup>19</sup>F MRS allows quantitative evaluation of anti-angiogenic therapy delivered with targeted perfluorocarbon nanoparticles. *Proc Intl Soc Mag Reson*, 2008; 16: 802.
187. Winter PM, Caruthers SD, Schmieder AH, Williams TA, Riley D, McGhee W, Wickline SA, **Lanza GM**: Improved molecular imaging of sparse neovascular biomarkers with a novel lipophilic Gd-DOTA chelate on targeted nanoparticles. *Proc Intl Soc Mag Reson*, 2008; 16: 1647.
188. Cai K, Williams TA, Caruthers SD, **Lanza GM**, Wickline SA, Winter PM: Molecular imaging of benfluorex treatment in diabetic rats with  $\alpha_v\beta_3$ -integrin targeted nanoparticles. *Proc Intl Soc Mag Reson*, 2008; 16: 1654.
189. Zhang L, Chen J, Gibson A, Holland MR, **Lanza GM**, Wickline SA: Myofiber developmental plasticity in fetal hearts delineated with diffusion tensor MRI. *Proc Intl Soc Mag Reson*, 2008; 16: 2942.
190. Caruthers SD, Senpan A, Pan D, Scott MJ, Gaffney PJ, Stehning C, Keupp J, Winter PM, Wickline SA, **Lanza GM**: A novel targeted iron oxide nanocolloid agent for T1 and T2\* imaging of fibrin using conventional MR techniques. *Proc Intl Soc Mag Reson* 2008; 16: 3202.

191. Caruthers SD, Senpan A, Pan D, Scott M, Gaffney P, Wickline S, **Lanza G**: A novel targeted iron oxide nanocolloid agent for rapid detection of fibrin clots via T1 and T2 weighted MRI. *J Cardiovasc Magn Reson* 2008; 10 (Suppl 1): A384.
192. Hughes MS, Caruthers S, Tran T, Marsh J, Wallace K, Cyrus T, Partlow K, Scott M, Lijowski M, Neubauer A, Winter P, Hu G, Zhang H, McCarthy J, Maurizi B, Allen J, Caradine C, Neumann R, Arbeit J, **Lanza G**, Wickline S: Perfluorocarbon nanoparticles for molecular imaging and targeted therapeutics. *Proc IEEE Ultrason Symp* 2008; 96 (3): 397-415.
193. Keupp J, Caruthers SD, Rahmer J, Williams TA, Wickline SA, **Lanza GM**: Fluorine-19 MR Molecular Imaging of Angiogenesis on Vx-2 Tumors in Rabbits using  $\alpha_v\beta_3$ -Targeted Nanoparticles. *Proc Intl Soc Mag Reson*, 2009; 17: 223.
194. Rahmer J, Keupp J, Caruthers SD, Lips O, Williams TA, Wickline SA, **Lanza GM**: Dual Resolution Simultaneous  $^{19}\text{F}/^1\text{H}$  *In Vivo* Imaging of Targeted Nanoparticles. *Proc Intl Soc Mag Reson Med* 2009; 17: 612.
195. Sun P, Zhang H, Wang Q, **Lanza GM**, Song SK, Wickline SA, Chen J: Diffusion MRI of choroid melanoma tumor in mouse eye. *Proc Intl Soc Mag Reson*, 2009; 17: 2327.
196. Cai K, Kiefer G, Caruthers SD, Wickline SA, **Lanza GM**, Winter P: Quantitative Molecular Imaging of Thrombi with Fibrin-Targeted PARACEST Perfluorocarbon Nanoparticles. *Proc Intl Soc Mag Reson* 2009; 17: 3167.
197. Rahmer J, Keupp J, Caruthers SD, Lips O, Williams TA, Wickline SA, **Lanza GM**:  $^{19}\text{F}/^1\text{H}$  Simultaneous 3D Radial Imaging of Atherosclerotic Rabbits Using Self-Navigated Respiratory Motion Compensation. *Proc Intl Soc Mag Reson Med* 2009; 17: 4611.
198. Pan H, Myerson J, Schlesinger P, **Lanza G**, Wickline SA: Biocompatible peptide-nanoparticle constructs for molecular imaging and therapy. *FASEB J* 2009; 23: 682.3.
199. Pan D, Senpan A, Caruthers SD, Williams TA, Scott MJ, Gaffney PJ, Wickline SA, **Lanza GM**. Abstract 333: Thrombus-specific Manganese Nanocolloids for MR Molecular Imaging of Ruptured Plaque. *Circulation* 2009; 120: S322.
200. Zhang L, Bibee K, Zhang H, Chen J, Allen J, **Lanza GM**, Wickline SA: Abstract 589: Quantitative molecular imaging of atherosclerotic aortic endothelial dysfunction with perfluorocarbon (19F) nanoparticle magnetic resonance imaging and spectroscopy. *Circulation* 2009; 120: S366.
201. Pan D, Roessl E, Proksa R, Schlomka JP, Caruthers SD, Scott MJ, SenPan A, Gaffney PJ, Wickline SA, **Lanza GM**: Abstract 594: Multicolored (Spectral) CT Molecular Imaging of Ruptured Plaque. *Circulation* 2009; 120: S367.
202. Wickline SA, Zhang H, Chen J, Zhang L, Bibee K, Allen J, **Lanza GM**: Abstract

- 4874: Vascular endothelial barrier compromise in advanced atherosclerosis: Novel *in vivo* animal models and nanoparticle characterization methods. *Circulation* 2009; 120: S1010.
203. Arbeit JM, Santeford AC, Oladipupo SS, Kaneda MM, **Lanza GM**, Wickline SA: Abstract 4951: A genetic model of vascular inflammation: Switchable expression of hypoxia inducible factor 1 alpha (HIF1a) produces multistage targetable endothelial activation. *Circulation* 2009; 120: S1028-1029.
  204. Kaneda MM, **Lanza GM**, Wickline SA: Abstract 4957: Robust transfection of vascular endothelium for siRNA knockdown of vascular cell adhesion molecule-1 through a novel nanoparticle-lipid raft pathway. *Circulation* 2009; 120: S1030
  205. Marsh J, Hu G, Wallace KD, Hockett FD, Abendschein DR, Gaffney PJ, Wickline SA, **Lanza GM**: Abstract 5580: Nanolytic approach to prompt revascularization in acute ischemic stroke. *Circulation* 2009; 120: S1121.
  206. Cai K, Zhang L, Myerson J, Huang W, Caruthers S, **Lanza G**, Wickline S, Winter P: Dual PARACEST and 19F MR molecular imaging of fibrin clots with targeted perfluorocarbon nanoparticles. *Journal of Cardiovascular Magnetic Resonance* 2009; 11 (Suppl 1): T6.
  207. Hughes MS, Marsh JN, Arbeit JM, Fuhrhop RW, Wallace KD, Thomas T, Smith J, Agyem K, **Lanza GM**, Wickline SA, McCarthy JE, Wickerhauser MV: Real-time calculation of a limiting form of the Renyi entropy for detection of subtle changes in scattering architecture. *IEEE Intl Ultrasonics Symp* 2009; pp 369-372.
  208. Cheng YJ, Marsh JN, Wallace KD, Zhang L, **Lanza GM**, Wickline SA, Hughes MS: Shannon entropy: A specular echo-insensitive imaging metric showing myocardial anisotropy. *IEEE Intl Ultrasonics Symp* 2009; pp 373-376.
  209. Wallace KD, Hoffmeister BK, Thomas LJ, Kaste SC, **Lanza GM**, Wickline SA: Ultrasonic characterization of backscatter from human cancellous bone with a renyi entropy metric: Correlation with x-ray bone mineral density. *IEEE Intl Ultrasonics Symp* 2009; pp 542-545.
  210. Pan D, Roessl E, Proksa R; Schlomka JP, Senpan, A, Caruthers, SD, Scott MJ, Choi ET, Gaffney PJ, Wickline SA, Lanza GM. Ligand-directed bismuth nanobeacons for X-ray K-edge-based molecular imaging. *JACS* 2009;237:Abstract 264-COLL.
  211. Myerson JW, Kaneda MM, **Lanza GM**, Wickline SA: Fluorine magnetic resonance assessment of siRNA delivery to endothelial cells via perfluorocarbon nanoparticles. *FASEB J* 2010; 24: 755.4.
  212. Hughes MS, marsh JN, Wallace KD, **Lanza GM**, Wickline SA, McCarty JE, Wickerhauser MV, Maurizi BN: An application of smoothing splines for molecular imaging of tumors using an improved calculation of a limiting form of Renyi entropy. *IEEE Ultrasonics Symp* 2010; pp 45-48.
  213. Marsh JN, Wallace KD, **Lanza GM**, Wickline SA, Hughes MS, McCarthy JE,



- Wickerhauser MV: Application of a limiting form of Renyi entropy for molecular imaging of tumors using a clinically relevant protocol. *IEEE Ultrasonics Symp* 2010; pp 53-56.
214. Lamerichs RM, Yildirim M, Nederveen AJ, Stoker J, **Lanza GM**, Wickline SA, Caruthers SD: *In vivo* 3D 19F fast spectroscopic imaging (F-UTSI) of angiogenesis on Vx2 tumors in rabbits using targeted perfluorocarbon emulsions. *Proc Intl Soc Mag Reson* 2010; 18: 457.
  215. Keupp J, Wickline SA, **Lanza GM**, Caruthers SD: Hadamard-type pulse-phase encoding for imaging of multi-resonant fluorine-19 nanoparticles in targeted molecular MRI. *Proc Intl Soc Mag Reson* 2010; 18: 982.
  216. Hu L, Zhang L, Chen J, **Lanza GM**, Wickline SA: Optimization of 19F MR quantification of administrated PFC nanoparticle *in vivo*: Mathematical simulation and experimental validation: *Proc Intl Soc Mag Reson Med* 2010; 18: 1917.
  217. Caruthers SD, Senpan A, Pan D, Hu G, Wickline SA, **Lanza GM**: Improving T1-weighted “hot spot” imaging with colloidal iron oxide nanoparticles. *Proc Intl Soc Mag Reson* 2010; 18: 1920.
  218. Keupp J, Wickline SA, **Lanza GM**, Caruthers SD: Target-binding of perfluorocarbon nanoparticles alters optimal imaging parameters using 19F molecular MRI: A study using fast *in vitro* screening and *in vivo* tumor models. *Proc Intl Soc Mag Reson* 2010; 18: 1929.
  219. Zhang L, Zhang H, Bibee K, Allen S, Chen J, **Lanza GM**, Wickline SA: Quantitative molecular imaging of atherosclerotic endothelial dysfunction with perfluorocarbon (19F) nanoparticle magnetic resonance imaging and spectroscopy. *Proc Intl Soc Mag Reson Med* 2010; 18: 1934.
  220. Hu L, Hockett FD, Chen J, **Lanza GM**, Wickline SA: Single-input double-tuned birdcage coil with identical B1 field profile for 1H and 19F imaging. *Proc Intl Soc Mag Reson Med* 2010; 18: 1502.
  221. Myerson JW, Kaneda M, **Lanza GM**, Wickline SA: 19F magnetic resonance quantification of SiRNA delivery via perfluorocarbon nanoparticle emulsions (Abstract No. 997). *Proc Intl Soc Mag Reson Med* 2010: 18.
  222. Pan D, Schmieder AH, Senpan A, Caruthers SD, Wickline SA, **Lanza GM**: High-resolution MR angiogenesis mapping with integrin-targeted ultralow gadolinium-manganese nanocolloids. *Proc Intl Soc Mag Reson Med* 2010; 18: 3748.
  223. Zhang L, Zhang H, **Lanza GM**, Wickline SA, Chen J: Myofiber developmental plasticity in fetal and adult pig hearts delineated with diffusion tensor MRI. *Proc Intl Soc Mag Reson Med* 2010; 18: 3593.
  224. Caruthers S, Keupp J, Rahmer J, **Lanza G**, Wickline S: Multi-resolution

- simultaneous 19F/1H 3D radial imaging for self-navigated respiratory motion-corrected and quantitative imaging. *J Cardiovasc Magn Reson* 2010; 12 (Suppl 1): O56.
225. Caruthers S, Senpan A, Pan D, Hu G, Wickline S, **Lanza G**: CION v2.0: A better way to T1 enhancement with iron oxides: *J Cardiovasc Magn Reson* 2010; 12 (Suppl 1): O57.
226. Myerson J, Kaneda M, **Lanza G**, Wickline S: 19F MRS assessment of siRNA delivery to vascular cells via perfluorocarbon nanoparticles. *J Cardiovasc Magn Reson* 2010; 12 (Suppl 1): P103.
227. Zhang L, Zhang H, Bibee K, Allen J, Chen J, **Lanza G**, Wickline S: Quantitative molecular imaging of atherosclerotic endothelial dysfunction with perfluorocarbon (19F) nanoparticle magnetic resonance imaging and spectroscopy. *J Cardiovasc Magn Reson* 2010; 12 (Suppl 1): P120.
228. Pan H, Ivashyna O, Hood JL, Christenson E, **Lanza GM**, Schlesinger PH, Wickline SA: Structural modifications to convert melittin from a cytolytic peptide to a stable cargo linker. *Biophys J* 2010; 98 (3): 0.
229. Pan H, **Lanza GM**, Wickline SA: Regulation of vascular endothelial signaling with therapeutic nanoparticles that target the NF-KB pathway. *FASEB J* 2010; 24: 956.3.
230. Pan D, Roessl E, Schirra CO, Thran A, Schlomka JP, Caruthers SD, Scott MJ, Senpan A, Gaffney PJ, Wickline SA, Proksa R, **Lanza GM**. Spectral CT imaging of coronary ruptured plaque: a step closer to the clinic. *Circulation* 2010; 122 (Suppl S): A18741.
231. Pan D, Caruthers SD, Senpan A, Scott MJ, Gaffney PJ, Wickline, SA, **Lanza GM**. Molecular imaging of vulnerable plaque with thrombus-specific NanoQ copper nanocolloids. *Circulation*. 2011;124(Suppl S):Abstract A16389.
232. Perino MG, Jenkins J, **Lanza GM**, Wagner, EM. AvB3 integrin and airway angiogenesis. *FASEB J* 2011; 25: Ascession No. WOS:000310708403647
233. Hu L, Chen J, Caruthers SD, **Lanza GM**, Wickline SA: A novel fluorine relaxation switch for tracking the binding and intracellular processing of molecularly targeted nanoparticle contrast agents. *Proc Intl Soc Mag Reson Med* 2011; 19: 316.
234. Hu L, Chen J, Caruthers SD, **Lanza GM**, Wickline SA: Rapid *in vivo* quantification of oxygen concentration in blood flow with a fluorine nanoparticle reporter and a novel blood enhanced saturation recovery (BESR) sequence. *Proc Intl Soc Mag Reson Med* 2011; 19: 476.
235. Hu, LZ, Yang X, Chen J, Caruthers SD, **Lanza GM**, Wickline SA. Non-invasive evaluation of regional kidney oxygen tension (pO2) with circulating perfluorocarbon (PFC) nanoparticles and F-19 MRI. *Circulation* 2011;124 (Suppl S); Abstract A11328.

236. Cyrus T, Pan D, Yang X, Scott MJ, Schmieder AH, Wickline SA, **Lanza GM**. A nanomedicine approach to restenosis promoting endothelial healing with targeted delivery of a new lipase-labile, Myc-Max antagonist prodrug. *Circulation* 2011; 124 (Suppl S) Abstract A10285.
237. Keupp J, Schmieder AH, Williams TA, Allen JS, Wickline SA, **Lanza GM**, Caruthers SD: Ultra-short echo time 19F/1H imaging of gadolinium-free perfluoro-carbon nanoparticles: A robust method for *in vivo* angiogenesis imaging. *Proc Intl Soc Mag Reson Med* 2011; 19: 1654.
238. Caruthers SD, Pan D, Senpan A, Schmieder AH, Gaffney PJ, Wickline SA, **Lanza GM**: Copper nanoparticles for T1-weighted MR molecular imaging. *Proc Intl Soc Mag Reson Med* 2011; 19: 1694.
239. Keupp J, Wickline SA, **Lanza GM**, Caruthers SD: Ultra-short echo time balanced SSFP for highly sensitive detection and quantification of multi-resonant 19F imaging agents for targeted molecular MRI. *Proc Intl Soc Mag Reson Med* 2011; 19: 2828.
240. Cheng Y-J, Chen, J, Caruthers SD, **Lanza GM**, Wickline SA. Calcium-dependent changes in myocardial sheet mechanics reveal reversible diastolic dysfunction in aged duchenne muscular dystrophy (MDX) Mice. *Circulation*. 2011;124 (Suppl S). Abstract A9821.
241. Pan D, Wang K, Schmieder, AH, Caruthers SD, Senpan, A, Wickline SA, Shen B, **Lanza GM**. T1-Weighted MR imaging of aortic angiogenesis in rabbits with an ultralow new low gadolinium. *Circulation* 2011; 124 (Suppl S): A17074.
242. Cheng YJ, Lang D, Caruthers SD, **Lanza G**, Efimov I, Chen J, Wickline SA: Regional expression of myocardial sheet dysfunction in dystrophin-deficient cardiomyopathy elucidated with diffusion tensor MRI and optical calcium imaging. *J Cardiovasc Magn Reson* 2012; 14 (Suppl 1): O31.
243. Pan D, Caruthers SD, Senpan A, Schmieder AH, Williams TA, Scott MJ, Gaffney PJ, Wickline SA, **Lanza G**: Thrombus-specific manganese-based “nanobialys” for MR molecular imaging of ruptured plaque. *J Cardiovasc Magn Reson* 2012; 14 (Suppl 1): P136.
244. Pan D, Caruthers SD, Senpan A, Scott MJ, Schmieder AH, Gaffney PJ, Wickline SA, **Lanza G**: Copper nanocolloids: A new thrombus molecular imaging approach to ruptured plaque. *J Cardiovasc Magn Reson* 2012; 14 (Suppl 1): O42.
245. Myerson JW, Allen JS, Williams TA, He L, Tollefsen DM, **Lanza G**, Caruthers SD, Wickline SA: PPACK and bivalirudin nanoparticles enable simultaneous imaging and potent inhibition of acute clotting. *J Cardiovasc Magn Reson* 2012; 14 (Suppl 1): O41.
246. Goette MJ, Schmieder AH, Williams TA, Allen JS, Keupp J, **Lanza G**, Wickline SA, Caruthers SD: *In vivo* quantitative imaging of angiogenesis-targeted PFOB

- nanoparticles in a hypercholesterol rabbit model using 19F-MRI with ultra-short echo time balanced SSFP. *J Cardiovasc Magn Reson* 2012; 14 (Suppl 1): M8-9.
247. Wang K, Pan D, Schmieder AH, Zhang H, Senpan A, Williams TA, Hu G, Caruthers SD, Wickline SA, Shen B, **Lanza G**: Probing atherosclerotic angiogenesis with new manganese-based nanocolloid for T1-weighted MRI. *J Cardiovasc Magn Reson* 2012; 14 (Suppl 1): O11.
  248. Hu L, Chen J, Yang X, Caruthers SD, **Lanza GM**, Wickline SA: Evaluating endothelial damage in acute kidney injury with perfluorocarbon (PFC) nanoparticles (NP) and 19F MRI. *Proc Intl Soc Mag Reson Med* 2012; 20: 338.
  249. Pan D, Senpan A, Schmieder A, Wickline S, Caruthers S, **Lanza GM**: The irons in your fire: Iron oxide particles and paramagnetic nanoparticles. *Proc Intl Soc Mag Reson Med* 2012; 20:
  250. Myerson JW, He L, Allen SJ, Williams TA, Tollefsen DM, **Lanza GM**, Caruthers SD, Wickline SA: Thrombin-inhibiting perfluorocarbon nanoparticles manifest versatile inhibition and contrast for thrombosis. *Proc Intl Soc Mag Reson Med* 2012; 20: 1624.
  251. Chen J, Zhang H, **Lanza GM**, Wickline SA Postnatal formation of myocardial laminar-sheet architecture in new born pig hearts. *Circulation* 2012;126 (Suppl S): Abstract 19328.
  252. Hu, L, Myerson JW, Chen JJ, Caruthers SD, **Lanza GM**, Wickline, SA. Thrombin-inhibiting perfluorocarbon nanoparticles reduce intrarenal coagulation in acute kidney injury and provide image-based readouts (19F MRI) of renal endothelial disruption. *Circulation* 2012; 126 (Suppl S) Abstract 16488.
  253. Goette MJ, **Lanza GM**, Wickline SA, Caruthers SD: Quantitative molecular imaging of fluorinated agents: 19F flip angle calibration using 1H power settings. *Proc Intl Soc Mag Reson Med* 2012; 20: 1655.
  254. Schirra, CO, Pan D, Roessl, E, Senpan, A, Schmirder, AH, Scott, M; Allen JS, Thran, A, Gaffney, PJ, Proksa, R, **Lanza GM**. Optimized Ruptured Plaque Detection with Ytterbium Nanocolloids and Spectral CT. *Circulation* 2012; 126(Suppl S); Abstract 13493
  255. Myerson JW, He L, Allen JS, Williams TA, Tollefsen DM, **Lanza GM**, Caruthers, SD, Wickline, SA. Bivalirudin emulsions demonstrate efficacy of a nanoparticle strategy for inhibition and imaging of thrombosis. *FASEB J* 2012; 26: Abstract. Ascession No WOS:000310711305847.
  256. Cui G, Akers W, Scott M, Allen J, Prasad SM, Silvestry SC, Tia Y-C, Achilefu SA, Ewald GA, **Lanza GM**. Noninvasive diagnosis of ventricular assist device thrombosis using fibrin-specific nuclear imaging. *Circulation* 2013;128 (Suppl S) Meeting Abstract: 12153.
  257. Soodgupta D, Pan D, Hu G, Senpan A, Yang X, Weilbaecher KN, Prochownik EV, **Lanza GM**, Tomasson MH. Preclinical development of a nanomedicine

- approach for multiple myeloma targeting the Myc oncoprotein. *Blood* 2013 122:4228.
258. Palekar RU, Chen J, Vemuri C, Myerson JW, Yang X, Zhang H, **Lanza GM**, Wickline SA: Anti-thrombin nanoparticles preserve renal function after acute ischemic injury. International Society on Thrombosis and Haemostasis/Scientific and Standardization Committee Conference 2014. 12 (Suppl 1): 84-84. Meeting Abstract: VB02.
259. Soodgupta, D, Pan, D, Cui, G, Senpan, A, Yang, X, Wickline, SA, Prochownik EV, Weilbaecher KN, Tomasson MH, **Lanza, GM**. VLA-4 targeted nanoparticles deliver a cMYC-MAX prodrug antagonist extends survival a metastatic myeloma mouse model. *Cancer Res.* 2014;74: Abstract 5381. DOI: 10.1158/1538-7445.AM2014-5381
260. Cui G, Akers W, Scott MJ, Allen JS, Schmieder AH, Silvestry SC, Itoh A, Paranandi K, Tia Y-C, Achilefu S, Ewald GA, **Lanza GM**. Could early direct detection of left ventricular assist device thrombus reduce thrombotic complications *Circulation.* 2014;130:A18776
261. Schmieder AH, Pan D, Schirra C, Cui G, Senpan A, Yang X, Scott MJ, Allen JS, Zhang H, Wang A, Caruthers SD, Roessl E, Proksa R, **Lanza GM**. Targeted Spectral Computed Tomography Molecular Imaging of Arterial Thrombus in Rabbits. *Circulation.* 2014;130:A19030
262. Schmieder AH, Zhang H, Allen JS, Keupp J, Wagner EM, **Lanza GM**. Targeted Molecular Imaging with 19F/1H MRI of Antiangiogenic Therapy in a Translatable Preclinical Asthma Model. ISMRM 23rd Annual Meeting June 2015; Toronto, Ontario, Canada
263. Gupta DS, Pan D, Hu G, Senpan A, Yang X, Prochownik EV, **Lanza GM**, Tomasson MH. VLA-4 targeted nanoparticles carrying a novel anti-Myc prodrug prolongs survival in a mouse model of multiple myeloma. DOI: 10.1158/1557-3265.HEMMAL14-B46 AACR Special Conference on Hematologic Malignancies: Translating Discoveries to Novel Therapies; September 20-23, 2014; Philadelphia, PA
264. Nassif M, Cui G, Akers WJ, Scott MJ, Itoh A, Paranandi K, Achilefu S, Ewald GA, **Lanza GM**. An early survey of the incidence and distribution of LVAD thrombus using a high-avidity Tc-99m fibrin probe *Circulation.* 2015; 132:A12486
265. Ross MH, Esser AK, Schmieder AH, Cui G, Yang X, Su X, Pan D, **Lanza GM**, Weilbaecher KN. Integrin  $\alpha v \beta 3$ -targeted lipase-labile docetaxel-prodrug micelles preferentially treat breast cancer bone metastases AACR 107th Annual Meeting 2016; April 16-20, 2016; New Orleans, LA. DOI: 10.1158/1538-7445.AM2016-2198 Published July 2016

## Chapters:

1. **Lanza GM**, Wallace KD, Miller JG, Wickline SA: Development of a novel site targeted ultrasonic contrast agent. In: *Advances in Echo Imaging Using Contrast Enhancement*. N.C. Nanda, R. Schlieff, and G.G. Goldberg, editors. Kluwer Academic Publishers, Norwell, MA. 1997, pp. 655-667.
2. Wickline SA, Miller J, **Lanza G**: Quantitative ultrasonic tissue characterization with intravascular and transcutaneous ultrasound. In: *Non-invasive Imaging of Atherosclerosis*. M. Mercuri, D.D. McPherson, H. Bassiouny, S. Glagov, editors. Kluwer Academic Publishers, Norwell, MA. 1998, pp 169-188.
3. **Lanza GM**, Wickline SA: Targeted ultrasonic contrast agents for molecular imaging and therapy. In: *Progress in Cardiovascular Diseases*. M. Lesch and E H. Sonnenblick, editors. W. B. Saunders, Philadelphia, PA. 2000; 44:13-31.
4. **Lanza GM**, Caruthers SD, Wickline SA: Molecular Imaging. In: *Cardiovascular Magnetic Resonance: Established and Emerging Applications*. A. Lardo, AZ Fayad, A.N. Chronos, V Fuster, editors. Martin Dunitz: London, 2003; pp. 501-516.
5. Winter PM, Caruthers SD, Wickline SA, **Lanza GM**: Nanotechnologies for cellular and molecular imaging by MRI: Techniques, Tools, Applications, and Impact. In: *Nanofabrication Towards Biomedical Applications*. CSSR Kumar, J Hormes, C Leuschner (Eds.) Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, 2005; 227-249.
6. **Lanza GM**, Winter PM, Neubauer AM, Caruthers SD, Hockett F, Wickline SA: <sup>1</sup>H/<sup>19</sup>F magnetic resonance molecular imaging with perfluorocarbon nanoparticles. In: *Current Topics in Developmental Biology, "In Vivo Cellular and Molecular Imaging*. Eric T. Ahrens, editor. Vol 70, 2005.
7. Tillman C, Winter PW, Wickline SA, **Lanza GM**: Nanoparticle formulations for cardiac magnetic resonance imaging. *Expert Review of Cardiovascular Therapy* 2005; 3(4): 705-715.
8. Morawski AM, **Lanza GM**, Wickline SA: Targeted contrast agents for magnetic resonance imaging and ultrasound. *Curr Opin Biotechnol* 2005; 16: 89-92.
9. Caruthers SD, Winter Pm, Wickline SA, **Lanza GM**: Targeted MRI Contrast Agents. In: *Magnetic Resonance Imaging: Methods in Molecular Medicine* 2005; 124: 387-400.
10. Caruthers SD, Winter PM, Wickline SA, **Lanza GM**: Targeted Magnetic Resonance Imaging Contrast Agents, In "Magnetic Resonance Imaging: Methods and Biologic Applications" (PV Prasad, Ed.), Totowa, NJ: Humana Press Inc., 2005, pp. 387-400.

11. **Lanza GM**, Winter PM, Neubauer AM, Crowder KC, Caruthers SD, Wickline SA: Atherosclerosis imaging with nanoparticles. In: Cardiovascular Molecular Imaging". Sinusas and Groppler, 2005.
12. Winter PM, Caruthers SD, Wickline SA, **Lanza GM**: Nanotechnologies for cellular and molecular imaging by MRI, In "Nanofabrication Towards Biomedical Applications: Techniques, Tools, Applications and Impact. C Kumar, J Hormes, C Leuschner, Eds., Weinheim: Wiley-VCH, 2005, pp. 227-250.
13. Caruthers SD, Wickline SA, **Lanza GM**: Targeted nanoparticles for molecular imaging and therapy: A multimodality approach to molecular medicine. In: Advances in Healthcare Technology. G Spekowius, T Wendler, Eds. Springer: Dordrecht, The Netherlands, 2006; 6: 305-322.
14. **Lanza GM**, Winter PM, Hughes MS, Caruthers SD, Marsh JN, Morawski AM, Schmieder AH, Scott MJ, Fuhrhop RW, Zhang H, Hu G, Lacy EK, Allen JS, Wickline SA: Molecular imaging and therapy: New paradigms for 21<sup>st</sup> century medicine In Polymeric Drug Delivery I: Particulate Drug Carriers ACS Symposium Series 2006; 923: 295-311, 2006.
15. Cyrus T, Winter PM, Caruthers SD, Wickline SA, **Lanza GM**: Nanoparticles for magnetic resonance imaging of tumors. In Nanomaterials for Cancer Therapy and Diagnosis (Series: Nanotechnologies for Life Sciences, Volume 6). Editor: Challa S.S.R. Kumar. Wiley-VCH Verlag GmbH. 121-146, 2007.
16. Winter PM, Caruthers SD, **Lanza GM**, Wickline SA: Diagnostic and therapeutic perfluorocarbon nanoparticles. Wiley-VCH Verlag GmbH & Co. KGaA 2007; pp 365-380.
17. Wickline SA, Neubauer AM, Winter P, Caruthers S, **Lanza G**: Targeted nanoparticle contrast agents for vascular molecular imaging and therapy. In: The Vulnerable Plaque, 2<sup>nd</sup> ed; R Waksman, PW Serruys, J Schaar, Eds. Informa Healthcare: Abindon, UK. 2007, pp 289-302.
18. Neubauer AM, Winter P, Caruthers S, **Lanza GM**, Wickline SA: Magnetic resonance molecular imaging and targeted therapeutics. In: Contemporary Cardiology: Cardiovascular magnetic resonance imaging. Kwong RY, ed. Humana Press; 639-662, 2007.
19. Wallace KD, Hughes, MS, Marsh JN, Caruthers SD, **Lanza GM**, Wickline SA: From *in vivo* ultrasound and MRI imaging to therapy: Contrast agents based on target-specific nanoparticles. In: Nanotechnology: Nanomedicine. V Vogel, Ed. Weinheim, Germany: Wiley-VCH; 2009; 5: 19-50.
20. Wickline SA, Mason RP, Caruthers SD, Chen J, Winter PM. Hughes MS, **Lanza GM**: Fluorocarbon Agents for Quantitative Multimodal Molecular Imaging and Targeted Therapeutics. In Molecular Imaging: Principles and Practice. Weissleder R, Ross BD, Rehemtulla A, Gambhir SS, Eds. McGraw-Hill: 2010.
21. Caruthers SD, **Lanza GM**, Wickline S: Theragnostic Nanoparticles with the Power to Diagnose, Treat, and Monitor Diseases. In Bionanotechnology II:

- Global Prospects, ed. Reisner D., CRC Press, Taylor & Francis Group 2011; pp 89-102.
22. **Lanza GM**, Winter PM, Caruthers SD, Hughes MS, Hu G, Pan D, Schmieder AH, Pham C, Wickline S: Perfluorocarbon nanoparticles: A theranostic platform technology. In: *Nanopharmaceutics: The potential application of nanomaterials* Singapore, ed. Liang XJ. World Scientific Publishing Co 2013; pp 293-345
  23. **Lanza GM**, Winter PM, Neubauer AM, Crowder KC, Caruthers SD, Wickline SA: Atherosclerosis imaging with nanoparticles. Gropler RJ, Glover DK, Sinusas AJ, Taegtmeyer H. (Eds), In *Cardiovascular Molecular Imaging*, Informa Healthcare, New York, NY 2007: 215-224.
  24. Pan D, **Lanza GM**: Recent advances in contrast agents for magnetic resonance imaging. CMR Book Chapter 2012 Textbook of CMR-2nd Edition-Schattauer-Publishers
  25. **Lanza GM**, Caruthers SD, Schmieder AH, Pan D, Hu G, Zhang H, Senpan A, Allen JS, Williams T, Scott MJ, Wickline SA: Chapter 5. Perfluorocarbon Nanoparticles: A Theranostic Technology for MR Imaging In *Nanotechnology in Modern Medical Imaging and Interventions* Yang X Ed, Nova Science Publishers 2013: 87-118.
  26. **Lanza GM**, Winter PM, Caruthers SD, Schmieder AH, Wickline SA: Perfluorocarbon nanoparticles: Translating bench opportunities to the clinic. In *Drug Delivery Applications of Noninvasive Imaging: Validation from Biodistribution to Sites of Action*, Chun Li and Me Tian Eds. Wiley 2013: 296-307.
  27. Erpelding TN, Maslov K, Appleton C, Margenthaler JA, Pashley MD, Zou J, Culver JP, Akers WK, Achilefu S, Pan D, **Lanza GM**, Wang LV: Clinical translation of photoacoustic tomography, Chapter 5. In *Translational Research in Biophotonics: Four National Case Studies*. RJ Nordstrom Editor. SPIE Press, Bellingham, WA 2014: 83-157.
  29. Pan D, Schmieder AH, SenPan A, Yang X, Wickline SA, Roessl E, Proksa R, Schirra CO, **Lanza GM**: Molecular imaging with spectral CT nanoprobe. In *Design and applications of nanoparticles in biomedical imaging*. Bulte JWM, Modo MMJ (eds). Springer International Publishing Switzerland 2017: 385-402; DOI 10.1007/978-3-319-42169-8\_18.
  28. Hu L, Keupp J, Caruthers SD, Goette MJ, **Lanza GM**, Wickline SA. Advanced detection techniques and hardware – simultaneous  $^{19}\text{F}/^1\text{H}$  MRI. Chapter 10. In  *$^{19}\text{F}$  MRI*. Ulrich Floegel and Eric Ahrens. Pan Stanford Singapore. (In Press).
  30. Hourcade DE, Pham CTN, **Lanza GM**. Complement Activation: Challenges to Nanomedicine Development. *Handbook of Clinical Nanomedicine: Immune Effects of Biopharmaceuticals and Nanomedicines*, Vol 3, Raj Bawa, Janos Szebeni, Thomas J. Webster and Gerald F. Audette, eds., Pan Stanford Publishing Pte. Ltd 2017. Chapter 9.