

BioPAL References



Selected Papers

Blood flow/Microsphere Studies

SWINE

4-[18F]-tetraphenylphosphonium as a PET tracer for myocardial mitochondrial membrane potential.

JACC Cardiovasc Imaging 2012 Mar;5(3):285-92.

Gum GS, Danik SB, Shop TM, Weise S, Takahashi K, Laferrier S, Elmaleh DR, Gewirtz H. Cardiology Division, Department of Medicine, Massachusetts General Hospital, Harvard Medical School, 55 Fruit Street, Boston, MA 02114, USA.

Multiple abnormalities of myocardial insulin signaling in a porcine model of diet-induced obesity.

Am. J. Physiol. Heart Circ. Physiol. February 1, 2010 298:(2) H310-H319.

Lee J, Xu Y, Lu L, Bergman B, Leitner JW, Greyson C., Draznin B, Schwartz GG.

Intravenous infusion of mesenchymal stem cells enhances regional perfusion and improves ventricular function in a porcine model of myocardial infarction.

Basic Res Cardiol. 2008 Nov;103(6):525-36.

Halkos ME, Zhao ZQ, Kerendi F, Wang NP, Jiang R, Schmarkey LS, Martin BJ, Quyyumi AA, Few WL, Kin H, Guyton RA, Vinten-Johansen J.

Cardiothoracic Research Laboratory, Division of Cardiothoracic Surgery, Emory Crawford Long Hospital, 550 Peachtree Street, NE, Atlanta, GA, 30308, USA.

Comparison of Transendocardial and retrograde coronary venous intramyocardial catheter delivery systems in healthy and infarcted pigs.

Catheter Cardiovasc Interv. 2006 Sep;68(3):416-23.

Baklanov DV, Moodie KM, McCarthy FE, Mandrusov E, Chiu J, Aswonge G, Cheng J, Chow M, Simons M, de Muinck ED.

Angiogenesis Research Center, Dartmouth Medical School, Hanover, NH, USA.

Hypercholesterolemia impairs the myocardial angiogenic response in a swine model of chronic ischemia: role of endostatin and oxidative stress.

Ann Thorac Surg. 2006 Feb;81(2):634-41.

Boodhwani M, Nakai Y, Mieno S, Voisine P, Bianchi C, Araujo EG, Feng J, Michael K, Li J, Sellke FW.

Division of Cardiothoracic Surgery, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, Massachusetts, USA.

Contrast-enhanced multidetector computed tomography viability imaging after myocardial infarction: characterization of myocyte death, microvascular obstruction, and chronic scar.

Circulation. 2006 Jan 24;113(3):394-404.

Lardo AC, Cordeiro MA, Silva C, Amado LC, George RT, Saliaris AP, Schuleri KH, Fernandes VR, Zviman M, Nazarian S, Halperin HR, Wu KC, Hare JM, Lima JA.

Division of Cardiology, Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, MD 21205, USA. al@jhmi.edu

Augmentation of tissue perfusion by a novel compression device increases neurologically intact survival in a porcine model of prolonged cardiac arrest.

Resuscitation. 2006 Jan;68(1):109-18. Epub 2005 Dec 2.

Ikeno F, Kaneda H, Hongo Y, Sakanoue Y, Nolasco C, Emami S, Lyons J, Rezaee M.

Division of Cardiovascular Medicine, Stanford University, Palo Alto, CA, USA.

The efficacy of a 'master switch gene' HIF-1alpha in a porcine model of chronic myocardial ischaemia.

Eur Heart J. 2005 Jul;26(13):1327-32. Epub 2005 Apr 8.

Heinl-Green A, Radke PW, Munkonge FM, Frass O, Zhu J, Vincent K, Geddes DM, Alton EW.

Department of Gene Therapy, Faculty of Medicine, The National Heart and Lung Institute, Imperial College London, Manresa Road, London SW3 6LR, UK. a.heinl-green@ic.ac.uk

Effects of intramyocardial pVEGF165 delivery on regional myocardial blood flow: evidence for a spatial 'delivery-efficacy' mismatch.

Gene Ther. 2004 Aug;11(16):1249-55.

Radke PW, Heinl-Green A, Frass OM, Griesenbach U, Ferrari S, Geddes DM, Alton EW.

Department of Gene Therapy, National Heart and Lung Institute, Faculty of Medicine, Imperial College London, UK.

Inhibition of the cardiac angiogenic response to exogenous vascular endothelial growth factor.

Surgery. 2004 Aug;136(2):407-15.

Voisine P, Bianchi C, Ruel M, Malik T, Rosinberg A, Feng J, Khan TA, Xu SH, Sandmeyer J, Laham RJ, Sellke FW.

Divisions of Cardiothoracic Surgery and Cardiology, Beth Israel Deaconess Medical Center, Boston, MA 02215, USA.

Inhibition of the cardiac angiogenic response to surgical FGF-2 therapy in a Swine endothelial dysfunction model.

Circulation. 2003 Sep 9;108 Suppl 1:II335-40.

Ruel M, Wu GF, Khan TA, Voisine P, Bianchi C, Li J, Li J, Laham RJ, Sellke FW.

Center for Minimally Invasive Surgery, Harvard Medical School, Boston, MA, USA.

Endogenous myocardial angiogenesis and revascularization using a gastric submucosal patch.

Ann Thorac Surg. 2003 May;75(5):1443-9.

Ruel MA, Sellke FW, Bianchi C, Khan TA, Faro R, Zhang JP, Cohn WE.

Center for Minimally Invasive Surgery, Harvard Medical School, Boston, Massachusetts, USA.

Persistent stunning induces myocardial hibernation and protection: flow/function and metabolic mechanisms.

Circ Res. 2003 Jun 13;92(11):1233-9. Epub 2003 May 15.

Kim SJ, Peppas A, Hong SK, Yang G, Huang Y, Diaz G, Sadoshima J, Vatner DE, Vatner SF.

Cardiovascular Research Institute, Department of Biology and Molecular Medicine, University of Medicine and Dentistry of New Jersey-New Jersey Medical School, PO Box 1709, 185 S Orange Ave (MSB G-609), Newark, NJ 07101-1709, USA. kimso@umdnj.edu

Significant improvement of heart function by cotransplantation of human mesenchymal stem cells and fetal cardiomyocytes in postinfarcted pigs.

Ann Thorac Surg. 2002 Nov;74(5):1568-75.

Comment in: Ann Thorac Surg. 2004 Mar;77(3):1133; author reply 1133-4.

Min JY, Sullivan MF, Yang Y, Zhang JP, Converso KL, Morgan JP, Xiao YF.

Stem Cell Research Laboratory, The Charles A. Dana Research Institute, Boston, Massachusetts, USA.

Effectiveness of transcranial and transthoracic ultrasound and microbubbles in dissolving intravascular thrombi.

J Ultrasound Med. 2001 Dec;20(12):1313-25; quiz 1326.

Porter TR, Kricsfeld D, Lof J, Everbach EC, Xie F.

Department of Internal Medicine, University of Nebraska Medical Center, Omaha 69198-1165, USA.

CANINE

Blood flow to the heart from noncoronary arteries: an intriguing but challenging research field.

Cardiovasc Revasc Med. 2012 Jan;13(1):25-9.

Oiciche M, Fadel E, Kingma JG Jr., Dagenais F, Robillard J, Simard D, Voisine P.

Cardiac Surgery Department, San Bortolo Hospital Vicenza, Italy.

A method for reconstructing the arterial input function during helical CT: Implications for myocardial perfusion distribution imaging.

Radiology May 1, 2010 255:(2) 396-404

George RT, Ichihara T, Lima, JAC, Lardo AC.

Retention and biodistribution of microspheres injected into ischemic myocardium.

J Biomed Mater Res A. 2008 Mar 11. [Epub ahead of print]

Anderl JN, Robey TE, Stayton PS, Murry CE.

Department of Bioengineering, University of Washington, Seattle, Washington 98195.

Effect of coronary stenosis on adjacent bed flow reserve: Assessment of microvascular mechanisms using myocardial contrast echocardiography.

Circulation. 2006 Oct 31;114(18):1940-7.

Pacella JJ, Villanueva FS.

Cardiovascular Institute, Department of Medicine, University of Pittsburgh School of Medicine, Pittsburgh, PA, USA.

Chronic hydrocephalus-induced changes in cerebral blood flow: mediation through cardiac effects.

J Cereb Blood Flow Metab. 2006 Feb 22; [Epub ahead of print]

Dombrowski SM, Schenk S, Leichliter A, Leibson Z, Fukamachi K, Luciano MG.

1Department of Neurological Surgery, Pediatric and Congenital Neurological Surgery, The Cleveland Clinic Foundation, Cleveland, Ohio, USA.

Transmural distribution of myocardial blood perfusion and phasic coronary blood flow pattern in a canine model of acute ischemia.

Int J Cardiol. 2006 Mar 8;107(3):382-8.

Ootaki Y, Kamohara K, Schenk S, Kopcak MW Jr, Dessoffy R, Schoenhagen P, Fukamachi K.

Department of Biomedical Engineering (ND20), Lerner Research Institute, The Cleveland Clinic Foundation, 9500 Euclid Avenue, OH 44195, USA.

Influence of Acute Renal Failure on Coronary Vasoregulation in Dogs.

J Am Soc Nephrol. 2006 Apr 5; [Epub ahead of print]

Kingma JG Jr, Vincent C, Rouleau JR, Kingma I.

Coronary Physiology Research Group, Institut Universitaire de Cardiologie et Pneumologie, Department of Medicine, Laval University, Quebec City, Quebec, Canada

Cardiovascular effects of the respiratory muscle metaboreflexes in dogs: rest and exercise.

J Appl Physiol. 2003 Sep;95(3):1159-69. Epub 2003 May 16.

Rodman JR, Henderson KS, Smith CA, Dempsey JA.

Department of Population Health Sciences, The University of Wisconsin-Madison, Wisconsin 53726, USA. joshua.r.rodman@dartmouth.edu

CardioClasp: a new passive device to reshape cardiac enlargement.

ASAIO J. 2002 May-Jun;48(3):253-9.

Kashem A, Santamore WP, Hassan S, Crabbe DL, Marculies KB, Melvin DB.

Cardiology Section, Temple University, Philadelphia, Pennsylvania, USA.

Angiotensin-converting enzyme inhibitors improve coronary flow reserve in dilated cardiomyopathy by a bradykinin-mediated, nitric oxide-dependent mechanism.

Circulation. 2002 Jun 11;105(23):2785-90.

Nikolaidis LA, Doverspike A, Huerbin R, Hentosz T, Shannon RP.

Cardiovascular Research Institute, Department of Medicine, Allegheny General Hospital, Pittsburgh, Pa 15212, USA.

Nitric oxide synthase inhibitors decrease coronary sinus-free radical concentration and ameliorate myocardial stunning in an ischemia-reperfusion model.

J Am Coll Cardiol. 2001 Aug;38(2):546-54.

Zhang Y, Bissing JW, Xu L, Ryan AJ, Martin SM, Miller FJ Jr, Kregel KC, Buettner GR, Kerber RE.

Cardiovascular Center, University of Iowa, Iowa City, USA.

RABBIT

pO₂ and regional blood flow in a rabbit model of limb ischemia.

Physiol Meas. 2004 Jun;25(3):659-70.

Grinberg OY, Hou H, Grinberg SA, Moodie KL, Demidenko E, Friedman BJ, Post MJ, Swartz HM.

EPR Center for the Study of Viable Systems, Dartmouth Medical School, Hanover, NH, USA.
oleg.grinberg@dartmouth.edu.

Angiogenic synergism, vascular stability and improvement of hind-limb ischemia by a combination of PDGF-BB and FGF-2.

Nat Med. 2003 May;9(5):604-13. Epub 2003 Mar 31.

Cao R, Brakenhielm E, Pawliuk R, Wariaro D, Post MJ, Wahlberg E, Leboulch P, Cao Y.

Laboratory of Angiogenesis Research, Microbiology and Tumor Biology Center, Karolinska Institutet, Stockholm, Sweden.

RAT

Adipose stromal vascular fraction cell construct sustains coronary microvascular function after acute myocardial infarction.

Jam J Physiol Heart Circ Physiol. 2012 (302):H973-H982.

LeBlanc AJ, Touroo JS, Hoying JB, Williams SK.

Cardiovascular Innovation Institute, Jewish Hospital and University of Louisville, Louisville, Kentucky, USA.

Acute exercise causes an enhancement of tissue renin-angiotensin system in the kidney in rats.

Acta Physiol Scand. 2005 Sep;185(1):79-86.

Maeda S, Iemitsu M, Jesmin S, Miyauchi T.

Center for Tsukuba Advanced Research Alliance (TARA), University of Tsukuba, Tsukuba, Ibaraki, Japan. smaeda@tara.tsukuba.ac.jp.

Endothelin receptor antagonist reverses decreased NO system in the kidney in vivo during exercise.

Am J Physiol Endocrinol Metab. 2004 Apr;286(4):E609-14. Epub 2003 Dec 9.

Maeda S, Miyauchi T, Iemitsu M, Tanabe T, Goto K, Yamaguchi I, Matsuda M.

Center for Tsukuba Advanced Research Alliance, Institute of Health and Sport Sciences, University of Tsukuba, Tsukuba, Ibaraki 305-8577, Japan. smaeda@tara.tsukuba.ac.jp

Angiogenic signal triggered by ischemic stress induces myocardial repair in rat during chronic infarction.

J Mol Cell Cardiol. 2004 Apr;36(4):547-59.

Comment in: J Mol Cell Cardiol. 2004 Jul;37(1):1-3.

Fukuda S, Kaga S, Sasaki H, Zhan L, Zhu L, Otani H, Kalfin R, Das DK, Maulik N.

Molecular Cardiology Laboratory, University of Connecticut Medical School, Farmington, Connecticut 06030, USA.

Bradycardia induces angiogenesis, increases coronary reserve, and preserves function of the postinfarcted heart.

Circulation. 2004 Aug 17;110(7):796-802. Epub 2004 Aug 9.

Lei L, Zhou R, Zheng W, Christensen LP, Weiss RM, Tomanek RJ.

Department of Anatomy and Cell Biology, University of Iowa Carver College of Medicine, Iowa City, IA 52242, USA.

Anti-inflammatory effects of angiotensin II AT1 receptor antagonism prevent stress-induced gastric injury.

Am J Physiol Gastrointest Liver Physiol. 2003 Aug;285(2):G414-23. Epub 2003 Apr 9.

Bregonzio C, Armando I, Ando H, Jezova M, Baiardi G, Saavedra JM.

Section on Pharmacology, National Institute of Mental Health, National Institute of Health, Department of Health and Human Services, Bethesda, MD 20892, USA.

BregonzC@intra.nimh.nih.gov

Enhanced myocardial angiogenesis by gene transfer with transplanted cells.

Circulation. 2001 Sep 18;104(12 Suppl 1):I218-22.

Yau TM, Fung K, Weisel RD, Fujii T, Mickle DA, Li RK.

Division of Cardiovascular Surgery, Toronto General Hospital, University Health Network,

Department of Surgery, University of Toronto, Toronto, Ontario, Canada. terry.yau@utoronto.ca

MOUSE

Endothelial nitric oxide synthase is protective in the initiation of caerulein-induced acute pancreatitis in mice.

Am J Physiol Gastrointest Liver Physiol. 2004 Jul;287(1):G80-7. Epub 2004 Feb 12.

DiMagno MJ, Williams JA, Hao Y, Ernst SA, Owyang C.

Department of Internal Medicine, Division of Gastroenterology, The University of Michigan Medical School, 1500 E. Medical Center Drive, 3912 Taubman Center, Ann Arbor, MI 48109-0362, USA. mdimagno@umich.edu

Portosystemic shunting and persistent fetal vascular structures in aryl hydrocarbon receptor-deficient mice.

Proc Natl Acad Sci U S A. 2000 Sep 12;97(19):10442-7.

Lahvis GP, Lindell SL, Thomas RS, McCuskey RS, Murphy C, Glover E, Bentz M, Southard J, Bradfield CA.

McArdle Laboratory for Cancer Research, University of Wisconsin Medical School, Madison, WI 53706, USA.

EQUINE

Intrapulmonary arteriovenous shunts of >15 microm in diameter probably do not contribute to arterial hypoxemia in maximally exercising Thoroughbred horses.

J Appl Physiol. 2005 Jul;99(1):224-9. Epub 2005 Mar 17.

Manohar M, Goetz TE.

Department of Veterinary Biosciences, College of Veterinary Medicine, University of Illinois at Urbana-Champaign, Urbana, IL 61802, USA. mmanohar@uiuc.edu

PRIMATE

A comparison of two progestins on myocardial ischemia-reperfusion injury in ovariectomized monkeys receiving estrogen therapy.

Coron Artery Dis. 2005 Aug;16(5):301-8.

Suparto IH, Koudy Williams J, Fox JL, Vinten-Johansen J.

Primate Research Center, Bogor Agriculture University, Indonesia.

VALIDATION STUDIES

Comparison of neutron activated and radiolabeled microsphere methods for measurement of transmural myocardial blood flow in dogs.

J Thromb Thrombolysis. 2005 Jun; 19(3):201-8.

Kingma JG Jr, Simard D, Rouleau JR.

Institut Universitaire de Cardiologie et Pneumologie, Department of Medicine, Laval University, Quebec City, Quebec, G1K 7P4. john.kingma@med.ulaval.ca

Stable labeled microspheres to measure perfusion: validation of a neutron activation assay technique.

Am J Physiol Heart Circ Physiol. 2001 Jan; 280(1): H108-16.

Reinhardt CP, Dalhberg S, Tries MA, Marcel R, Leppo JA.

Myocardial Isotope Research Laboratory and Division of Cardiology, Department of Radiology and Medicine, University of Massachusetts Medical Center, Worcester, Massachusetts 01606, USA. BioPAL@mx1.pair.com

Validation of real-time continuous perfusion measurement.

Med Biol Eng Comput. 2000 May;38(3):319-25.

Martin GT, Bowman HF.

Thermal Technologies, Inc. Cambridge, MA, USA. gmartin@thermaltechinc.com

Labeled Protein/Molecule Studies

Evaluation of high-pressure retrograde coronary venous delivery of FGF-2 protein.

Catheter Cardiovasc Interv. 2004 Mar;61(3):422-8.

Fearon WF, Ikeno F, Bailey LR, Hiatt BL, Herity NA, Carter AJ, Fitzgerald PJ, Rezaee M, Yeung AC, Yock PG.

Division of Cardiovascular Medicine, Stanford University Medical Center, Stanford, California 94305, USA. wfearon@stanford.edu

Hepatocyte asialoglycoprotein receptor assay using stable isotopes and neutron activation analysis

Clin Chem. 2000 Sep;46(9):1519-21.

Groman EV, Reinhardt CP.

BioPAL, 10 New Bond St., Worcester, MA 01606.

Cell Tracking

A quantitative, randomized study evaluating three methods of mesenchymal stem cell delivery following myocardial infarction.

Eur Heart J. 2006 Mar 1; [Epub ahead of print]

Freyman T, Polin G, Osman H, Crary J, Lu M, Cheng L, Palasis M, Wilensky RL.

Boston Scientific Corporation, Natick, MA, USA.

Safety and feasibility of percutaneous autologous skeletal myoblast transplantation in the coil-infarcted swine myocardium.

Dib N, Campbell A, Jacoby DB, Zawadzka A, Ratliff J, Miedzybrocki BM, Gahremanpour A, Diethrich EB, Opie SR.

J Pharmacol Toxicol Methods. 2006 Feb 1; [Epub ahead of print]

Arizona Heart Institute, Phoenix, AZ, USA; Arizona State University, Tempe, AZ, USA.

Injection Monitoring Technology

Method to quantify tail vein injection technique in small animals.

Contemp Top Lab Anim Sci. 2004 Jan;43(1):35-8.

Groman EV, Reinhardt CP.

BioPhysics Assay Laboratory (BioPAL), Inc., 80 Webster Street, Worcester, Massachusetts 01603, USA.

Incomplete retention after direct myocardial injection.

Catheter Cardiovasc Interv. 2002 Mar;55(3):392-7.

Grossman PM, Han Z, Palasis M, Barry JJ, Lederman RJ.

Division of Cardiology, Department of Internal Medicine, University of Michigan Health System, Ann Arbor, Michigan, USA.

Renal Technology

Neutron-activation analysis: a novel method for the assay of iohexol.

J Lab Clin Med. 2003 Feb;141(2):106-9.

Albert DA, Cohen AJ, Mandelbrot DA, Reinhardt CP, Dickson EW.

Division of Renal Medicine, Department of Medicine, University of Massachusetts Medical School, Worcester, MA 01655, USA.

MRI Technology

Drug elimination kinetics following subconjunctival injection using dynamic contrast-enhanced magnetic resonance imaging.

Pharmaceutical Research 2007.

Kim SH, Csaky KG, Wang NS, Lutz RJ.

National Eye Institute, NIH, Bethesda MD, USA.