CURRICULUM VITAE

JOHN J. LEMASTERS

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Nationality: United States

Family: Three children:
Kimberly Anne, born August 22, 1983
James Jay, born January 22, 1987
Robert David, born August 17, 1990

Education:

1969 B.A., Psychology, Yale University

1975 M.D., Johns Hopkins University

1975 Ph.D., Cell Biology & Anatomy, Johns Hopkins University

Professional Experience:

2011 – present	Director, MUSC Advanced Cell Imaging Core
2007 – present	Director, Cell & Molecular Imaging Shared Resource, Hollings Cancer Center
2007 – present	Director, Center for Cell Death, Injury and Regeneration
2006 – present	South Carolina Center of Economic Excellence Endowed Chair in Advanced Cellular Technologies, Departments of Pharmaceutical Sciences and Biochemistry & Molecular Biology, Medical University of South Carolina
2002 – 2006	Professor of Surgery (joint)
1985 - 2006	Professor
1981-1985	Associate Professor
1977-1981	Assistant Professor, Department of Cell Biology & Anatomy, Laboratories for Cell Biology, School of Medicine, University of North Carolina at Chapel Hill
1975-1977	Assistant Professor, Department of Cell Biology, University of Texas Health Science Center at Dallas, Southwestern Medical School
1973	Teaching assistant in neuroanatomy, Department of Cell Biology, University of Texas Health Science Center at Dallas, Southwestern Medical School
1971-1972	Teaching assistant in embryology, gross anatomy, histology and neuroanatomy, Department of Anatomy, School of Medicine, Johns Hopkins University

Honors:

1969	B.A., *cum laude* with Honors in Psychology
1970	ARCS Foundation Scholarship
1970-1971	The Franklin Paine Mall Prize in Anatomy, Johns Hopkins University School of Medicine

1982-1987	Established Investigator of the American Heart Association
1987	Visiting Professor, Division of Gastroenterology and Section of Transplantation Surgery, Mayo Graduate School of Medicine (July 6-8)
2006	GlaxoSmithKline South Carolina Center of Economic Excellence Distinguished Endowed Chair in Advanced Cellular Technologies, Medical University of South Carolina
2007	Association of American Physicians
2009	Thurman Lectureship Award, Bowles Center for Alcohol Studies, University of North Carolina at Chapel Hill
2012	Established Researcher of the Year Award, South Carolina College of Pharmacy
2013	Distinguished Toxicology Scholar Award, Society of Toxicology

Professional Societies:

American Association for the Advancement of Science
American Association for the Study of Liver Diseases
American Association of Anatomists
American Gastroenterological Association
American Heart Association, Council on Circulation
American Physiological Society
American Society for Biochemistry and Molecular Biology
American Society for Cell Biology
Biophysical Society
Electron Microscopy Society of America
Society of Toxicology
Southeastern Microscopy Society
Southeastern Society of Toxicology
The Transplantation Society

Curricula and Training Programs:

Graduate Program in Pharmaceutical and Biomedical Sciences
Graduate Program in Biochemistry & Molecular Biology
Medical Science Training Program (M.D.-Ph.D. Program)
Pharm.D./Ph.D. Program

Research Training Program in Bioenergetics, Oxidative Stress and Metabolic Syndromes
Research Training Program Molecular and Cellular Pathobiology

Editorships

2001 - 2006	Associate Editor, *Gastroenterology*

Editorial Boards:

1990 - 1996	*American Journal of Physiology: Cell Physiology*
1993 - 2001	*Hepatology*
1994 - 1996	*Cell Calcium*
1995 - 1998	*Archives of Biochemistry and Biophysics*
1997 - 2002	*American Journal of Physiology: GI & Liver*
1998 - 2004	*Toxicological Sciences*
2012 -	*Journal of Biological Chemistry*
2012 -	*IntraVital*

NIH Review:
Member - Hepatobiliary Pathophysiology (HBPP) Study Section, 2009-
Member - Alcohol-Toxicology Study Section 4, 1998 - 2002
Site Visitor - Center Grants and Program Projects
Ad Hoc Member - Biophysical Chemistry Study Section and Surgery, Anesthesiology and Trauma Study Section
Special Study Sections

Other Grant Review:
American Heart Association, Research Review Committee, 1996-1997
American Heart Association Mid-Atlantic Affiliate, Research Committee, 2006-2010

National Service:
Councillor-at-Large, American Association for the Study of Liver Diseases, 2003 - 2006

Administration:

2011 -	Director, MUSC Advanced Cell Imaging Core
2008 -	Program Director, Research Training Program in Bioenergetics, Oxidative Stress & Metabolic Syndromes
2007 -	Director, Hollings Cancer Center Cell & Molecular Imaging Shared Resource
2002 - 2006	Program Director, Trauma Training Program
2000 - 2006	Administrative Board for the Program in Molecular and Cellular Biophysics
1998 – 2006	Director, Cell and Molecular Imaging Facility

1989 - 2006	Director, Confocal Imaging Facility
1992 - 2006	Executive Committee, Center for Gastrointestinal Biology and Disease
1989 - 1992	Executive Committee, Curriculum in Toxicology
1983 - 1990	Director, Electron Microscope Laboratories
1977 - 1984	Director of Graduate Studies in Anatomy

Current Research Support:

USPHS 2-R01 DK37034, "Liver Preservation for Transplantation," Principal Investigator (20% effort), May 1, 2008 to April 30, 2014, 3,600,414.

USPHS 1T32 DK083262; “Research Training in Bioenergetics, Oxidative Stress & Metabolic Syndromes,” Program Director (percent effort not applicable), April 1, 2009 to March 31, 2014; 457,855.

USPHS 1P30 CA138313-01; Cell & Molecular Imaging (CMI) Shared Resource, J.J. Lemasters, Scientific Director (10% effort), Medical University of South Carolina Cancer Center Support Grant" (Andrew S. Kraft, Center Director); April 1, 2009 to March 31, 2014; 1,071,250.

USPHS 1 P20 RR024485-01; Cell & Molecular Imaging (CMI) Shared Resource, Cell & Molecular Imaging Core D, Core Leader (5% effort), South Carolina COBRE in Oxidants, Redox Balance and Stress Signaling " (Kenneth D. Tew, Program Director); September 1, 2011 to August 31, 2016; 1,860,288 (153,855 to Core D).

Pending Research Support:

USPHS 1T32 DK083262; “Research Training in Bioenergetics, Oxidative Stress & Metabolic Syndromes,” Program Director (percent effort not applicable), April 1, 2014 to March 31, 2019; 1,153,885.

USPHS 1P30 CA138313-01; Cell & Molecular Imaging (CMI) Shared Resource, J.J. Lemasters, Scientific Director (10% effort), Medical University of South Carolina Cancer Center Support Grant" (Andrew S. Kraft, Center Director); April 1, 2014 to March 31, 2019; 1,071,250.

USPHS 2-R01 DK37034, "Liver Preservation for Transplantation," Principal Investigator (20% effort), April 1, 2014 to March 31, 2019, 2,699,980.

USPHS 1 R01 CA184456, "VDAC Regulation of Warburg Metabolism in Hepatocarcinoma," Co-Investigator (5% effort, E.N. Maldonado, Prinncipal Investigator), April 1, 2014 to March 31, 2019, 1,868,750.

USPHS 1R21 AA022815-01, " Small Molecule Screening Against Ethanol Inhibition of Ureagenesis," Principal Investigator (20% effort), December 1, 2013 to November 30, 2014, 411,125.

USPHS 1S10 OD018113-01, " Confocal/Multiphoton Microscope Upgrade," Principal Investigator (percent effort not applicable), April 1, 2014 to March 31, 2015, 573,229.

Past Research Support:

Proctor & Gamble, " Hair Follicle Bioenergetics," Principal Investigator (5% effort), April 1, 2011 to March 31, 2013, 276,271.

USPHS 1 R01 DK073336, “Mechanisms of I/R Injury to Hepatocytes,” Principal Investigator (15% effort), March 1, 2007 to February 28, 2011, 297,250.

DoD W81XWH-09-1-0484, “Mitochondrial Permeability Transition in Pathogenesis of Hemorrhagic Injury: Targeted Therapy with Minocycline,” Principal Investigator (3.3% effort), July 1, 2010 to December 31, 2011, 100,000.

USPHS 1 R01 DK070844, “Transplantation of Reduced-Size Fatty Livers,” Co-Investigator (Z. Zhong, PI), (2% effort), June 1, 2006 - May 31, 2011, 267,525.

USPHS 1 R01 AA017756, “Mechanisms of In Vivo Ethanol-Induced Mitochondrial Depolarization,” Co-Principal Investigator, (10% effort), July 1, 2009 - June 30, 2011, 250,000.

USPHS 1 R01 CA119079, “Mechanisms of Cell Death after Photodynamic Therapy,” Co-Investigator (Anna-Liisa Nieminen, PI) (2% effort), August 1, 2007 to July 31, 2012, 259,478.

USPHS 1 R01 DK070195, “Mitochondrial Dysfunction and Drug Hepatotoxicity,” Co-Investigator (Hartmut Jaeschke, PI) (10% effort), July 1, 2005 to June 30, 2011, 117,895 (subcontract)

USPHS 1 S1 0RR024582, “Multi-Well Extracellular Flux Analyzer,” Principal Investigator (effort not applicable), April 1, 2008 to March 31, 2009, 301,140.

USPHS 1 R21 AA016011, “Ethanol-Induced VDAC Closure in Hepatocytes,” Co-Investigator (E. Holmuhamedov, PI) (5% effort), July 1, 2006 to June 30, 2008, 15,185 (subcontract).

USPHS 1 S10 RR021082; “Multiphoton Confocal Microscope Upgrades,” Principal Investigator (percent effort not applicable), April 1, 2006 to March 31, 2006; 212,244.

USPHS 2-R01 DK37034 (MERIT Award), "Liver Preservation for Transplantation," Principal Investigator (20% effort), May 1, 1998 to April 30, 2008; $4,588,467.

USPHS 1 P01 DK59340-01; Program Project on “Molecular Pathogenesis of Apoptosis in Liver Cells,” Program Director (25% effort), June 1, 2001 to May 31, 2006; 5,559,341

USPHS R01 AA09156, "Mechanisms of Alcohol-induced Liver Graft Failure," Principal Investigator (5% effort), March 1, 2001 to February 28, 2006; 1,632,325.

USPHS 1-P50-AA11605; Research Component 2. Gene Therapy for Alcoholic Liver Disease, Principal Investigator (5% effort), Alcohol Center on "Molecular and Cellular Pathogenesis in Alcoholism " (Fulton T. Crews, Center Director); December 1, 2002 to November 30, 2007; 666,607.

USPHS 1-P50-AA11605; “Imaging/Pathology Core," Core Director (5% effort), Alcohol Center on "Molecular and Cellular Pathogenesis in Alcoholism " (Fulton T. Crews, Center Director); December 1, 2002 to November 30, 2007; 342,443.

USPHS 5-P30-DK34987, “Imaging/Pathology Core,” Core Director (5% effort), Center for Gastrointestinal Biology and Disease (R.S. Sandler, Center Director), December 1, 2004 to November 30, 2009; 648,118.

USPHS 2T32 GM08450; “Trauma Training Fellowship,” Program Director (percent effort not applicable), July 1, 2004 to June 30, 2009; 1,431,648.

USPHS, “Development of a Model to Predict Drug Hepatotoxicity”, Co-Investigator (3% effort) (K.L.R. Brower, Principal Investigator), September 1, 2004 to August 31, 2006, 18,720.

1 K01 DK62089-01, “Improving Survival for Small-for-Size Liver Grafts," Research Mentor (percent effort not applicable) (Zhi Zhong, Principal Investigator); July 1, 2002 to June 30, 2005; 379,022.

Fresenius GmbH, “Protection by green tea extracts against hemorrhage/resuscitation-induced injury,” Principal Investigator (less than 5% effort), December 1, 2002 to April 30, 2004; 90,000

USPHS 5-P30-DK34987, “Imaging/Pathology Core,” Core Director (5% effort), Center for Gastrointestinal Biology and Disease (R.S. Sandler, Center Director), December 1, 1999 to November 30, 2004; 648,118

USPHS 5-R01 AG07218 (MERIT Award), "Mechanisms of Cell Death in Liver Cells," Co-Principal Investigator (15% effort) (Brian Herman, Principal Investigator), July 1, 1994 to June 30, 2004; 2,400,275.

North Carolina Biotechnology Center Collaborative Funding Assistance Program, “Development of Carolina Rinse Solution,” Principal Investigator, December 1, 1999 to November 30, 2001; 90,000

USPHS 1R13AA/CA13453-01 “Keystone Conference on Mitochondrial Dysfunction in Pathogenesis,” Conference Organizer, December 1, 2001 to November 30, 2002; 30,000.

USPHS 1-R01-AG13637, “Mechanisms of Hypoxic/Reperfusion Injury in Endothelial Cells,” Co-Principal Investigator (B. Herman, Principal Investigator), December 1, 1996 to November 30, 2001, 2001; 1,439,508.

USPHS 1-P50-AA11605; “Imaging/Pathology Core," Core Director, Alcohol Center on "Molecular and Cellular Pathogenesis in Alcoholism " (Fulton T. Crews, Center Director); December 1, 1997 to November 30, 2002; 300,141.

USPHS P01 HL27430; Program project on "Mechanisms of Sudden Cardiac Death" (Leonard Gettes, Program Director); Project 3: "Impulse Propagation at Ischemic Boundaries" (W.E. Cascio, Project Leader), Co-Investigator, December 1, 1997 to November 30, 2002; 54,370.

USPHS 1-S10-RR13689-01A1, “Multiphoton Confocal Microscope,” Principal Investigator, September 1, 2000 to February 31, 2002; 325,985.

USPHS 1 R13 NS40156-01 “Keystone Conference on Mitochondrial Dysfunction in Pathogenesis,” Conference Organizer, June 5, 2000 to May 31,2001; 15,000.

USPHS R01 AA09156, "Mechanisms of Alcohol-induced Liver Graft Failure," Co-Principal Investigator (R.G. Thurman, Principal Investigator), April 1, 1996 to March 31, 2001; 1,272,025.

Office of Naval Research N00014-96-1-0184, “Hormone Regulation of Kupffer Cell Activation after Trauma and Hemorrhage,” Principal Investigator, December 1, 1998 to December 31, 2000, 244,800.

Office of Naval Research N00014-96-1-0283, “Development of a Cardiac Resuscitation Solution,” Principal Investigator, January 1, 1996 to December 31, 1998, 362,538.

Office of Naval Research N00014-96-1-0184, “Hormone Regulation of Kupffer Cell Activation after Trauma and Hemorrhage,” Principal Investigator, December 1, 1995 to November 30, 1998, 378,300.

USPHS 2-R01 DK37034, "Liver Preservation for Transplantation," Principal Investigator, May 1, 1994 to April 30, 1999; 1,505,815.

USPHS P01 HL27430; Program project on "Mechanisms of Sudden Cardiac Death" (Leonard Gettes, Program Director); Project 3: "Impulse Propagation at Ischemic Boundaries" (W.E. Cascio, Project Leader), Co-Investigator, December 1, 1992 to November 30, 1997; 54,370.

USPHS HL48769; "Mechanisms of Reperfusion Injury to Myocytes," Principal Investigator, June 1, 1993 to May 31, 1996; 422,075.

NSF BIR-9216912, "UV/Visible Laser Scanning Confocal Microscope", Principal Investigator, April 1, 1993 to December 31, 1995; 90,503.

USPHS AA09156, "Mechanisms of Alcohol-induced Liver Graft Failure", Co-Principal Investigator (R.G. Thurman, Principal Investigator), July 1, 1992 to June 30, 1995; 407,281.

USPHS DK37034, "Liver Preservation for Transplantation", Principal Investigator, May 1, 1989 to April 30, 1994; 1,350,215.

USPHS AG07218, "Mechanisms of Cell Death in Hepatocytes", Co-Principal Investigator, (Brian Herman, Principal Investigator), July 1, 1990 to June 30, 1994; 1,051,557.

National Foundation for Ileitis and Colitis, "Mediation of extra-intestinal inflammation by normal enteric bacterial cell wall polymers", Co-investigator (S.N. Lichtman, Principal Investigator), July 1, 1991 to June 30, 1993; 184,000

Office of Naval Research N00014-89-J-1433, "Rescue of Injured Myocytes", Principal Investigator, December 1, 1991 to November 30, 1993; 310,000.

Office of Naval Research N00014-89-J-1433, "Rescue of Injured Myocytes", Principal Investigator, December 1, 1988 to November 30, 1991; 412,760.

NSF DIR-8914734, "Laser Scanning Confocal Microscope", Principal Investigator, March 15, 1990 to August 31, 1992; 23,000.

USPHS RR05780, DRR-BRS Shared Instrumentation Grant, "Laser Scanning Confocal Microscope", Principal Investigator, December 1, 1989 to November 30, 1990; 196,000.

North Carolina Biotechnology Center #9010-IDG-1008, "Laser Scanning Confocal Microscope", Principal Investigator, January 1, 1990 to December 31, 1990; 100,000.

USPHS DK08094, Individual National Research Service Award, "Preservation of Nonparenchymal Cells in Liver Storage", Sponsor (Jane C. Caldwell-Kenkel, Awardee), September 1, 1987 to February 28, 1991; 74,254.

USPHS AG07218, "Mechanisms of Cell Death in Hepatocytes", Co-investigator (Brian Herman, Principal Investigator), May 1, 1987 to June 30, 1990; 334,144.

USPHS 5 T32 ESO7126, National Research Service Award, "Plasma Membrane Alterations in Hepatocytes Injury", Sponsor (Kathryn I. Casteel, Awardee), June 30, 1988 to June 30, 1990; 54,608.

NIH Small Instrumentation Grant, University of North Carolina at Chapel Hill, School of Medicine, "Multiparameter Digitized Video Microscope (MDVM)", Principal Investigator, July 1, 1988 to June 30, 1989; 47,347.

USPHS DK37034, "Liver Preservation for Transplantation", Principal Investigator, May 1, 1986 to April 30, 1989; 272,262.

USPHS HL35490, "Chemiosmotic Mechanisms of Heart Mitochondria", Principal Investigator, December 1, 1985 to November 30, 1988; 239,911.

USPHS DK08138, Individual National Research Service Award, "Role of pH in Hypoxic Hepatocellular Injury", Sponsor (Gregory J. Gores, Awardee), January 1, 1988 to October 31, 1988; 27,500.

American Heart Association, North Carolina Affiliate, 1987-88-A-10, "Extracellular and Intracellular pH in Hypoxic Cell Injury", Collaborating Investigator (Gregory J. Gores, Principal Investigator), July 1, 1987 to June 30, 1988; 7,500.

USPHS GM38319, "Conference on Integration of Mitochondrial Function", Program Director, April 1, 1987 to March 31, 1988; 2,500.

American Heart Association, Inc. #82 163, Established Investigator Award, "Oxidative Phosphorylation and Hepatocellular Hypoxia", July 1, 1982 to June 30, 1987; 150,000.

USPHS AM-30874, "Cytoskeleton in Hypoxic Hepatocellular Injury", Principal Investigator, February 1, 1983 to April 30, 1986; 170,701.

American Heart Association, North Carolina Affiliate, Inc. "ATP Stoichiometry of Site 1", Collaborating Investigator (Jo A. Freedman, Principal Investigator), July 1, 1985 to September 30 1985; 7,500.

USPHS GM-28999, "Rate Control and Thermodynamics of Ox Phos", Principal Investigator, April 1, 1981 to March 21, 1984; 136,842.

NSF PCM 8018441, "Intermediate High Voltage Analytical Electron Microscope", Faculty Associate, March 15, 1981 - August 31, 1982; 70,000.

USPHS AA-04853, "Intralobular Metabolic Heterogeneity and Liver Injury", Co-Investigator, September 29, 1980 to August 31, 1982; 96,197.

American Heart Association, Inc. #79 1013, "The Outer Membrane in Mitochondrial Volume Control", Principal Investigator, July 1, 1979 to June 30, 1982; 66,000.

North Carolina Heart Association, Inc. #1978-79-A-16, "Metabolic Determinants of Mitochondrial Structure", Principal Investigator, October 1, 1978-September 30, 1979; 5,000.

USPHS Cancer Center Grant CA-17065, University of Texas Health Science Center at Dallas, "Ecto-Enzymes and Extracellular Nucleotide Metabolism in Normal and Transformed Cells", Principal Investigator, June 1, 1976 - May 31, 1977; 4,000.

USPHS Cancer Center Grant CA-17065, University of Texas Health Science Center at Dallas, "Biochemical and Histochemical Studies of Ecto-ATPase in Normal and Transformed Cells", Principal Investigator, November 15, 1975 - May 31, 1976; 4,000.

USPHS General Research Support Grant RR-05426, University of Texas Health Science Center at Dallas. "Luminescence Studies of Mitochondrial ATP Synthesis", Principal Investigator, July 1, 1975 - March 31, 1977; 4,000.

PATENTS:

1. Lemasters, J.J. and R.G. Thurman. Rinse solution for organs and tissues. Patent 5,145,771, issued 8 September 1992.

2. Thurman, R.G. and J.J. Lemasters (1989) Calcium channel blockers to improve preservation of organs stored for transplantation. Patent 5,484,789, issued 16 January 1996.

3. Lemasters, J.J. and R.G. Thurman (1991) Pentoxifylline for prevention of graft failure from storage injury. Patent pending.

4. Lemasters, J.J. and R.G. Thurman (1993). Rinse solution for organs and tissues. Patent 6,080,730, issued 27 June 2000.

5. Lemasters, J.J. (1997) Device to improve Z-axis resolution in confocal microscopy. Patent 6,545,789, 8 April 2003.

BOOKS:

1. Lemasters, J.J., C.R. Hackenbrock, R.G. Thurman and H.V. Westerhoff, Eds. (1988) *Integration of Mitochondrial Function*, Plenum, New York, 642 pages.

2. Herman, B. and J.J. Lemasters, Eds. (1993) *Optical Microscopy: Emerging Methods and Applications*, Academic Press, New York, 441 pages.

3. Lemasters, J.J. and C. Oliver, Eds. (1995) *Cell Biology of Trauma*, CRC Press, Boca Raton, 384 pages.

4. Lemasters, J.J. and A.-L. Nieminen, Eds. (2001) *Mitochondria in Pathogenesis*, Kluwer Academic/Plenum Publishers, New York, 529 pages.

PAPERS:

1. Hackenbrock, C.R., T.G. Rehn, J.L. Gamble, E.C. Weinbach and J.J. Lemasters (1971) Ultrastructural transformation in the mitochondrion: its relationship to the energy state of the mitochondrion and the energy state of the cell. In *Energy Transduction in Respiration and Photosynthesis*, E. Quagliariello, S. Papa and C.S. Rossi, Eds., Adriatica Editrice, Bari, Italy, pp. 285-305.

2. Hackenbrock, C.R., T.G. Rehn, E.C. Weinbach and J.J. Lemasters (1971) Oxidative phosphorylation and ultrastructural transformation in mitochondria in the intact ascites tumor cell. *J. Cell Biol*. **51**, 123-137.

3. Lemasters, J.J. and C.R. Hackenbrock (1973) Adenosine triphosphate: continuous measurement in mitochondrial suspensions by firefly luciferase luminescence. *Biochem. Biophys. Res. Commun.* **55**, 1262-1270.

4. Lemasters, J.J. and C.R. Hackenbrock (1976) Continuous measurement and rapid kinetics of ATP synthesis in rat liver mitochondria, mitoplasts and inner membrane vesicles determined by firefly luciferase luminescence. *Eur. J. Biochem.* **67**, 1-10.

5. Lemasters, J.J. and C.R. Hackenbrock (1977) Kinetics of product inhibition during firefly luciferase luminescence. *Biochemistry* **16**, 445-447.

6. Lemasters, J.J. and C.R. Hackenbrock (1978) Firefly luciferase assay for ATP production by mitochondria. In *Methods in Enzymology, Bioluminescence and Chemiluminescence, Vol. LVII*, M.A. DeLuca, Ed., Academic Press, New York, pp. 36-50.

7. Lemasters, J.J. (1978) Possible role of the mitochondrial outer membrane as an oncotic regulator of mitochondrial volume. *FEBS Lett.* **88**, 10-14.

8. Hackenbrock, C.R., M. Höchli, J.J. Lemasters and H. Schneider (1979) Electron microscopy of the diffusion of integral proteins in the mitochondrial inner membrane. *37th Ann. Proc. Electron Microscopy Soc. Amer.*, pp. 244-247.

9. Lemasters, J.J. and A.E. Sowers (1979) Phosphate dependence and atractyloside inhibition of mitochondrial oxidative phosphorylation. The ADP-ATP carrier is rate-limiting. *J. Biol. Chem.* **254**, 1248-1251.

10. Lemasters, J.J. and C.R. Hackenbrock (1979) Continuous measurement of adenosine triphosphate with firefly luciferase luminescence. In *Methods of Enzymology. Biomembranes: Part D - Bioenergetics. Vol. LVI*, S. Fleischer and L. Packer, Eds., Academic Press, New York, pp. 530-544.

11. Hackenbrock, C.R., H. Schneider, J.J. Lemasters and M. Höchli (1980) Relationships between bilayer lipid, motional freedom of oxidoreductase components, and electron transfer in the mitochondrial inner membrane. In *Alcohol and Aldehyde Metabolizing System IV*, R.G. Thurman, Ed., Plenum Press, New York, pp. 245-263 [Adv. Exp. Med. Biol. **132**, 245-263].

12. Hackenbrock, C.R., H. Schneider, J.J. Lemasters and M. Höchli (1980) Diffusional activity of redox components related to electron transfer in the mitochondrial energy transducing membrane. *EBEC Short Reports* **1**, 23-24.

13. Lemasters, J.J. (1980) Kinetic control and thermodynamics of oxidative phosphorylation. *EBEC Short Reports* **1**, 219-220.

14. Schneider, H., J.J. Lemasters, M. Höchli and C.R. Hackenbrock (1980) Fusion of liposomes with mitochondrial inner membranes. *Proc. Natl. Acad. Sci. U.S.A.* **77**, 442-446.

15. Lemasters, J.J., M. Höchli, H. Schneider and C.R. Hackenbrock (1980) Mitochondrial membranes - the relation of structure to function. *J. Natl. Reyes Syndrome Fdn*. **1**, 1-17.

16. Lemasters, J.J. (1980) Near thermodynamics equilibrium of oxidative phosphorylation by inverted inner membrane vesicles of rat liver mitochondria. *FEBS Lett.* **110**, 96-100.

17. Schneider, H., J.J. Lemasters, M. Höchli and C.R. Hackenbrock (1980) Liposome-mitochondrial inner membrane fusion: lateral diffusion of integral electron transfer components. *J. Biol. Chem.* **255**, 3748-3756.

18. Ji, S., J.J. Lemasters and R.G. Thurman (1980) A non-invasive method to study metabolic events within sublobular regions of hemoglobin-free perfused liver. *FEBS Lett.* **113**, 37-41.

19. Lemasters, J.J. and C.R. Hackenbrock (1980) The energized state of rat liver mitochondria: ATP equivalence, uncoupler sensitivity and decay kinetics. *J. Biol. Chem*. **255**. 5674-5680.

20. Ji, S., J.J. Lemasters and R.G. Thurman (1980) Ethanol-induced changes in the intralobular oxygen gradient of perfused rat liver. *Pharmacol. Biochem. Behav.* **13** (Suppl. 1), 41-45.

21. Ji. S., J.J. Lemasters and R.G. Thurman (1981) A fluorometric method to measure sublobular rates of mixed-function oxidation in the hemoglobin-free perfused rat liver. *Molec. Pharmacol*. **19**, 513-516.

22. Lemasters, J.J., S. Ji, and R.G. Thurman (1981) Centrilobular injury following low flow hypoxia in isolated, perfused rat liver. *Science* **213**, 661-663.

23. Lemasters, J.J. (1981) Dynamic measurement of ATP with firefly luciferase bioluminescence. In *Bioluminescence and Chemiluminescence*, M. DeLuca and W.D. McElroy, Eds., Academic Press, New York, pp. 197-202.

24. Lemasters, J.J. (1981) Phosphate potential amplification. *Trends Biochem. Sci*. **6**(11), X.

25. Lemasters, J.J. and W.H. Billica (1981) Non-equilibrium thermodynamics of oxidative phosphorylation by inverted inner membrane vesicles of rat liver mitochondria. *J. Biol. Chem.* **256**, 12949-12597.

26. Thurman, R.G., S.A. Belinsky, F.C. Kauffman, S. Ji and J.J. Lemasters (1982) Factors regulating the mixed-function oxidation of 7-ethoxycoumarin in periportal and pericentral regions of the perfused rat liver. In *Microsomes, Drug Oxidations and Drug Toxicity*, R. Sato and R. Kato, Eds., Wiley Interscience, New York, pp. 431-432.

27. Thurman, R.G., S. Ji and J.J. Lemasters (1982) Oxygen gradients in alcohol-induced liver injury. *Brit. J. Alcohol and Alcoholism* **17**, 6-15.

28. Schneider, H., J.J. Lemasters and C.R. Hackenbrock (1982) Lateral diffusion of ubiquinone in mitochondrial electron transfer. In *Function of Quinones in Energy Conserving Systems*, B.L. Trumpower, Ed., Academic Press, New York, pp. 125-139.

29. Kashiwagi, T., S. Ji, J.J. Lemasters and R.G. Thurman (1982) Rates of alcohol dehydrogenase-dependent ethanol metabolism in periportal and pericentral regions of the perfused rat liver. *Molec. Pharmacol*. **21**, 438-443.

30. Grunwald, R. and J.J. Lemasters (1982) Rate-limitation of oxidative phosphorylation. *EBEC Short Reports* **2**, 269-270.

31. Ji, S., J.J. Lemasters, V. Christenson and R.G. Thurman (1982) Periportal and pericentral pyridine nucleotide fluorescence from the surface of the perfused liver: evaluation of the hypothesis that chronic treatment with ethanol produces pericentral hypoxia. *Proc. Natl. Acad. Sci. U.S.A.* **79**, 5415-5419.

32. Schneider, H., J.J. Lemasters and C.R. Hackenbrock (1982) Lateral diffusion of ubiquinone during electron transfer in phospholipid-and ubiquinone-enriched mitochondrial membranes. *J. Biol. Chem*. **257**, 10789-10793.

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