SPONSOR'S BIOGRAPHICAL SKETCH/BIBLIOGRAPHY.

NAME	POSITION TITLE
Ford, David Alexander	Professor of Biochemistry and Molecular Biology Director, Center for Cardiovascular Research
eRA COMMONS USER NAME (credential, e.g., agency login) FORDDA	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Saint Louis University, St. Louis, MO	B.A.	05/80	Biology
University of Missouri-Columbia, Columbia, MO	Ph.D.	12/84	Physiology
University of Missouri-Columbia, Columbia, MO	Postdoctoral	08/85	Cardiovasc. Pharmacol.
Washington University, St. Louis, MO	Postdoctoral	06/88	Cardiovasc. Biochem.

A. Personal Statement

The long-term goal of this research program is to investigate the role of alterations in lipid metabolism in atherosclerosis. In the proposed studies we will examine the important mechanisms that trans fat feeding leads to atherosclerosis. Over the past years we have spent much of our effort in identifying mechanisms that lipids impact atherosclerosis, which led to the discovery of a new group of lipids, chlorinated lipids. The studies proposed by Ms. Shao will focus on trans fats and their role in cholesterol metabolism and trafficking as a critical mechanism underlying the epidemiological evidence that trans fats increase risk of cardiovascular disease. This is a new area for my laboratory, but also overlaps with our interest in lipid-mediated mechanisms involved in cardiovascular disease. In total, through my research as a graduate student, post-doc, and PI, I have 30 years of experience in cardiovascular physiology and biochemistry. In the past 10 years we have published 31 papers. Fourteen of these publications have focused on the identification of chlorinated lipid species and their biological activities. Initially we discovered that the abundant (in cardiovascular tissues) phospholipid subclass, plasmalogen, is targeted by monocyte-derived reactive chlorinating species (RCS). During these studies we applied bioorganic approaches including synthesis of stable isotope-labeled internal standards, mass spectrometry (ESI-MS and GC-MS) and NMR to identify the products of RCS attack of plasmalogens. Further studies have integrated our bioorganic/mass spectrometry approach to show that these novel chlorinated lipids accumulate in human atherosclerotic tissue and modulate inflammatory pathways in isolated cell and cell culture systems. For the proposed studies we will further exploit these diverse strengths of my research group to gain new insights into the role of trans fats in atherosclerosis and cholesterol metabolism. My laboratory is one of the pioneering laboratories in the field of cardiovascular lipidomics; and we are the laboratory that is defining the role of novel chlorinated lipid species produced as a result of inflammation in the cardiovascular system. Since 2004, I have given 19 invited talks on chlorinated lipids as cardiovascular signaling molecules at national and international scientific meetings and universities. Our most recent *Journal of Lipid Research* paper was highlighted in the ASBMB today newsletter in February 2010. Additionally, chlorinated lipids have been placed on the centerstage by the Lipid Division of the ASBMB in a news article entitled “The unmasking of plasmalogens: Chlorinated lipids” that is published in the March 2010 ASBMB Today newsletter. Through my role as the Director of Saint Louis University’s Center for Cardiovascular Research I have had the opportunity to interact with scientists and the lay public to enhance cardiovascular research and understand the needs and perceptions of the general public. Along with this role as the Director of the Cardiovascular Research Center, I have focused on developing young scientists to expand their research expertise through a rigorous interactive program including a seminar series, an internal works-in-progress series and joint lab meetings of groups with common cardiocentric interests. For example my lab along with weekly internal lab meetings also has weekly joint lab meetings with the Baldan and McHowat labs. My laboratory is energized and extremely well-qualified to identify the mechanisms that trans fats impact cardiovascular disease.

B. Positions and Honors

Positions and Employment

1985 – 1987	Cardiology Fellow, Washington University, St. Louis, Missouri
1986 – 1988	American Heart Association, Missouri Affiliate Fellow
1987 – 1988	Research Fellow, Cardiovascular Biochemistry, Washington University, St. Louis, Missouri
1988 – 1989	Instructor, Cardiovascular Biochemistry, Washington University, St. Louis, Missouri
1989 – 1996	Research Assistant Professor, Bioorganic Chemistry and Molecular Pharmacology, Washington University, St. Louis, Missouri
1996 – 2000	Assistant Professor, Biochemistry and Molec. Biol., St. Louis University, St. Louis, Missouri
2000 – 2005	Associate Professor, Biochemistry and Molec. Biol., St. Louis University, St. Louis, Missouri
2005 – Present	Professor, Biochemistry and Molec. Biol., St. Louis University, St. Louis, Missouri
2008 – Present	Director, Center for Cardiovascular Research, St. Louis University, St. Louis, Missouri

Other Experience and Professional Memberships

1990-Present	American Physiological Society
1993-Present	American Society for Biochemistry and Molecular Biology
1993-1994	Member of American Heart Association Great Plains Regional Peer Review Committee
1994-1997	Member of American Heart Association Section F Peer Review Committee
1995-Present	Recipient of NIH Research Career Development Award
1995-Present	American Heart Association Council Member (Basic Science and Atherosclerosis)
1996-1997	Member of American Heart Association, Missouri Affiliate, Peer Review Committee
1997-Present	American Chemical Society
1997-Present	International Society for Heart Research
1998-2000	Member of American Heart Association, Lipids and Lipoproteins Peer Review Committee
1999-Present	Society for Free Radical Biology and Medicine
2003-Present	American Society for Mass Spectrometry
2004-Present	Associate Editor, Canadian Journal of Physiology and Pharmacology
2011-Present	Editorial board, Journal of Lipid Research

Honors

1986 – 1988	American Heart Association, Missouri Affiliate Fellow
1989 – 1994	Recipient of NIH First Award
1995 – 2000	Recipient of NIH Career Development Award
2003 – 2004	Recipient of AHA Established Investigator Grant

C. Selected Peer-reviewed Publications (selected from over 60 peer-reviewed publications)

Most relevant to the current application

1. Albert, C.J., Crowley, J.R., Hsu, F.F., Thukkani, A.K. and Ford, D.A. Reactive chlorinating species produced by myeloperoxidase target the vinyl ether bond of plasmalogens: Identification of 2-chlorohexadecanal. J. Biol. Chem. 276:23733-23741, 2001.
2. Thukkani, A.K., McHowat, J., Hsu, F.F., Brennan, M.L., Hazen, S.L. and Ford, D.A. Identification of α-chloro fatty aldehydes and unsaturated lysophosphatidylcholine molecular species in human atherosclerotic lesions. Circulation 108:3128-3133, 2003.
3. Thukkani, A.K., Martinson, B.D., Albert, C.J., Vogler, G.A. and Ford, D.A. Neutrophil-mediated accumulation of 2-ClHDA during myocardial infarction: 2-ClHDA-mediated myocardial injury. Am. J. Physiol. 288:H2955-2964, 2005.
4. Anbukumar, D.S., Shornick, L.P., Albert, C.J., Steward, M.M., Zoeller, R.A., Neumann, W.L. and Ford, D.A. Chlorinated lipid species in activated human neutrophils: Lipid metabolites of 2-chlorohexadecanal. J. Lipid Res. 51:1085-1092, 2010. PMCID: PMC2853435
5. Bowden, J.A., Albert, C.J., Barnaby, O.S. and Ford, D.A. Analysis of cholesteryl esters and diacylglycerols using lithiated adducts and electrospray ionization tandem mass spectrometry. Anal. Biochem. (in Press) No PMCID available. NIHMS Citation ID 80449648

Additional recent publications of importance to the field

1. Thukkani, A.K., Hsu, F.F., Crowley, J.R., Wysolmerski, R.B., Albert, C.J. and Ford, D.A. Reactive chlorinating species produced during neutrophil activation target tissue plasmalogens: Production of the chemoattractant, 2-chlorohexadecanal. J. Biol. Chem. 277:3842-3849, 2002.
2. Thukkani, A.K., Albert, C.J., Wildsmith, K.R., Messner, M.C., Martinson, B.D., Hsu, F.F. and Ford, D.A. Myeloperoxidase-derived reactive chlorinating species from human monocytes target plasmalogens in low density lipoprotein. J. Biol. Chem. 278:36365-36372, 2003.
3. Hsu, F.F., Turk, J., Thukkani, A.K., Messner, M.C., Wildsmith, K.R. and Ford, D.A. Characterization of alkylacyl, alk-1-enylacyl and lyso subclasses of glycerophosphocholine by tandem quadrupole mass spectrometry with ESI. J. Mass Spectrom. 38:752-763, 2003.
4. Wildsmith, K.R., Albert, C.J., Anbukumar, D.S. and Ford, D.A. Metabolism of myeloperoxidase-derived 2-chlorohexadecanal. J. Biol. Chem. 281:16849-16860, 2006.
5. Albert, C.J., Anbukumar, D.S., Monda, J.K., Eckelkamp, J.T. and Ford, D.A. Myocardial lipidomics: Developments in myocardial nuclear lipidomics. Front. Biosci. 12:2750-2760, 2007. PMCID: PMC2717739
6. Messner, M.C., Albert, C.J., McHowat, J. and Ford, D.A. Identification of lysophosphatidylcholine chlorohydrin in human atherosclerotic lesions. Lipids 43:243-249, 2008. PMCID: PMC2741177
7. Messner, M.C., Albert, C.J. and Ford, D.A. 2-Chlorohexadecanal and 2-chlorohexadecanoic acid induce COX-2 expression in human coronary artery endothelial cells. Lipids 43:581-588, 2008. PMCID: PMC2752647
8. Albert, C.J., Anbukumar, D.S., Messner, M.C. and Ford, D.A. Chromatographic methods for the analyses of 2-halofatty aldehydes and chlorohydrin molecular species of lysophosphatidylcholine. J Chromatogr B Analyt Technol Biomed Life Sci. 877:2768-2777, 2009. PMCID: PMC2723174
9. Lankalapalli, R.S., Eckelkamp, J.T., Sircar, D, Ford, D.A., Subbaiah, P.V., Bittman, R Synthesis and antioxidant properties of an unnatural plasmalogen analogue bearing a trans O-vinyl ether linkage. Org Lett 11:2784-2787, 2009. PMCID: PMC2741175
10. Brahmbhatt, V.V., Albert, C.J., Anbukumar, D.S., Cunningham, B.A., Neumann, W.L., Ford, D.A. ω-Oxidation of α-chlorinated fatty acids: Identification of α-chlorinated dicarboxylic acids. *J Biol Chem* 285:41255-69, 2010. PMCID: PMC3009851

D. Research Support

Ongoing Research Support

RO1 HL74214 Ford (PI) 7/1/04-11/30/14
NIH/NHLBI
Plasmalogen-derived bioactive lipids in atherosclerosis

The long term goal of this project is to determine the role of plasmalogen-derived lipid catabolites as mediators of atherosclerosis. There is no overlap with the current proposal.
Role: PI

R21 HL098907 Ford (PI) 5/1/10-2/28/12
NIH/NHLBI
Serum chlorinated lipids as predictors of cardiovascular risk in lupus

The major goal of this proposal is to demonstrate that human serum levels of ☐lpha chlorinated fatty acids and alpha chlorinated fatty alcohols predict cardiovascular risk and progression in subjects with lupus. We will use previously collected human serum samples from the Northwestern University SOLVABLE study to test this hypothesis. There is no overlap with the current proposal.
Role: PI

Completed Research Support

R33 HL089094 Ellsworth (PI) 8/3/07-6/30/10
NIH/NHLBI
Microvascular O_2 delivery: Impact on erythrocyte-released ATP

The goal of this proposal is to apply a systems biology approach to show that erythrocytes are critical sensors regulating microvascular tone in response to oxygen tension. There is no overlap with the current proposal.
Role: Co-PI

R21 HL088073 Ford (PI) 4/1/08-3/31/11
NIH/NHLBI
Novel MPO-derived plasma lipids as predictors of major adverse coronary events

The major goal of this proposal is to demonstrate that human plasma levels of ☐lpha chlorinated fatty acids and alpha chlorinated fatty alcohols predict increased risk of major adverse coronary events in patients with coronary artery disease. We will use previously collected human plasma samples to test this hypothesis. There is no overlap with the current proposal.
Role: PI