CURRICULUM VITAE

I. Date of preparation

January, 2007

II. Personal data

Name: Ira Abram Tabas
Birth date: April 22, 1953
Birthplace: Philadelphia, Pennsylvania
Citizenship: USA
Office address: Department of Medicine, PH 8East-105F, Columbia University
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III. Academic training

Undergraduate:	Tufts University (Medford, MA), 1975, B.S.
Graduate:	Washington University (St. Louis, MO), 1981, M.D., Ph.D. (Biochemistry)
Ph.D. Thesis:	"The Processing of Asparagine-Linked Oligosaccharides During Glycoprotein Biosynthesis"; Dr. Stuart Kornfeld, Sponsor
M.D. Licensure:	State of New York (#150522)

IV. Traineeship

Internship/Residency:	Internal Medicine, Columbia-Presbyterian Medical Center, New York, NY (1981-1983)
Clinical Fellowship:	Endocrinology/Metabolism, Columbia-Presbyterian Medical Center, New York, NY (1983-1985)
Research Fellowship:	Laboratory of Dr. Alan Tall, Department of Medicine, Columbia University, New York, NY, 1983-1985

V. Board certification

Internal Medicine, 1985
Endocrinology/Metabolism, 1987

VI. **Professional organizations and societies**

Arteriosclerosis Council (Arteriosclerosis, Thrombosis, and Vascular Biology as Council as of 1997) of the American Heart Association; appointed member of the Membership/ Credentials Committee (1990-1992, 1997-1999) and Program Committee (1992-1994; 2000-2002)
American Society of Biochemists and Molecular Biologists
American Association for the Advancement of Science
American Society for Cell Biology
New York Lipid Club
American Society for Clinical Investigation
Interurban Clinical Club
American Association of Physicians

VII. **Academic appointments**

Assistant Professor of Medicine, Columbia University College of Physicians and Surgeons, New York, NY (1985-1992)
Assistant Professor of Anatomy & Cell Biology, Columbia University College of Physicians and Surgeons, New York, NY (1988-1992)
Associate Professor of Medicine and Anatomy & Cell Biology (**Tenured)**, Columbia University College of Physicians and Surgeons, New York, NY (1992-1997)
Professor of Medicine and Anatomy & Cell Biology (**Tenured)**, Columbia University College of Physicians and Surgeons, New York, NY (1997-present)
Professor of Physiology and Cellular Biophysics (**Tenured**), Columbia University College of Physicians and Surgeons, New York, NY (2004-present)
Vice-Chairman of Research, Department of Medicine, Columbia University (2004-present)

VIII. **Hospital appointments**

Assistant Attending Physician of Medicine, Columbia-Presbyterian Medical Center, New York, NY (1985-1992)
Associate Attending Physician of Medicine, Columbia-Presbyterian Medical Center, New York, NY (1992-present)
Attending Physician of Medicine, Columbia-Presbyterian Medical Center, New York, NY (1997-present)

IX. **Honors**

Phi Beta Kappa, Tufts University, Medford, MA (1974)
Summa cum laude, Tufts University, Medford, MA (1975)
Letter of Commendation, Washington School of medicine, St. Louis, MO (1977)
Mosby Scholarship Book Award, Washington University School of Medicine (1981)
Alpha Omega Alpha, Washington University School of Medicine, St. Louis (1981)
Pfizer Research Award for Young Faculty (1985-1987)]
Silberberg Assistant Professorship of Medicine, Columbia University (1988-1993)
American Heart Association Established Investigator Award (1988-1993)
Doctor Harold and Golden Lamport Research Award (1990)
Elected to the American Society for Clinical Investigation (1992)
Scientific Board of the Stanley J. Sarnoff Endowment for Cardiovascular Science, Inc. (1992-1996)
Editorial Board of *Journal of Biological Chemistry* (1995-2000)
Elected to Interurban Clinical Club (1996-present)
Elected to American Association of Physicians (1998-present)
Deputy Editor, *Journal of Clinical Investigation*, (2002-2007)
American Heart Association/ATVB Council Special Recognition Award (2003)
Named Chair, Department of Medicine (Richard J. Stock Professor of Medicine)
Chairman, 2005 Keystone Symposium on the Cellular Biology of Atherosclerosis
External Advisory Committee, Deuel Research Conferences (2004-2009)
Scientific Board, Kern Lipid Conference (2005-2010)
David Rubinstein Lectureship of the Canadian Lipoprotein Conference (2005)
Closure Lectureship of the 10th Scientific Symposium of the Lilly Foundation entitled "Nutrition, Lipids and Atherosclerosis", El Escorial, Madrid (2006)
Chairman, 2010 Gordon Conference on Lipoprotein Metabolism

X. **Fellowship and grant support**

<u>Past</u>:

Fellowship: NIH training grant (NHLBI)**,** 1983-85, trainee
Pfizer Research Award for Young Faculty, 1985-1987, Principal Investigator, $50,000 per annum
Project of NIH SCOR Grant in Atherosclerosis (NHLBI), 1986-1990, Co-Investigator, $104,000 per annum

Project of NIH SCOR Grant in Atherosclerosis (NHLBI), 1991, Responsible Investigator, $90,000 per annum
Biomedical Research Support Grant (NIH), 1990-1991, Principal Investigator, $5,000
American Heart Association Established Investigatorship Award, 1988-1993, Principal Investigator, $35,000 per annum
New York Heart Association Grant-in-Aid, Principal Investigator, 1992-1995, $42,000 per annum
Research Supplement for Minority Individuals in Postdoctoral Training (Dr. Anselm K. Okwu)
American Heart Association, New York City Affiliate, Participating Laboratory Award (Dr. Yoshimune Shiratori)
Postdoctoral Fellowship Award in Atherosclerosis (Dr. Paul Skiba)
Schering-Plough Research Grant, 1989-1995, Responsible Investigator, $50,000 per annum
Individual National Research Supplement Award for Postdoctoral Training (Dr. G. Andrew Keesler)
Postdoctoral Fellowship Award in Nutrition (Dr. Sudhir Marathe)
NIH R01 grant (NHLBI), Principal Investigator, 1992-1997, $120,000 per annum
Project of NIH SCOR Grant in Atherosclerosis (NHLBI), Responsible Investigator, 1991-1996, $105,000 per annum
Council for Tobacco Research Award, Principal Investigator, 1995-1998, $75,000 per annum
Postdoctoral Fellowship Award in Atherosclerosis (Dr. Wei Tang)
NIH R01 grant (NHLBI), Principal Investigator, 2001-2004, $215,000 per annum
Research grant from Berlex Laboratories, 2003-2004, $100,000 per annum
AHA Heritage Affiliate Postdoctoral Training Grant, 2004-2005 (Dr. Tracie DeVries)
Merck Sponsored Research Project, Principal Investigator, 2004-2006, $100,000 per annum

Present:

NIH P01 grant (NHLBI), Responsible Investigator, 2006-2011, $297,000 per annum
NIH SCOR Grant in Vascular Biology (NHLBI), Responsible Investigator or Project and Pathology Core, 2002-2007, $282,000 per annum
NIH R01 grant (NHLBI), Principal Investigator, 2003-2007, $250,000 per annum
NIH R01 grant (NHLBI), Principal Investigator, 2005-2009, $250,000 per annum
Department of Defense grant, Principle Investigator, 2006-2010, $250,000 per annum
NIH Postdoctoral Fellowship Award (Dr. Tracie DeVries-Seimon)
NIH Postdoctoral Fellowship Award in Atherosclerosis (Dr. Edward Thorp)
AHA Heritage Affiliate Postdoctoral Training Grant, 2005-2007 (Dr. Wahseng Lim)
Boehringer-Ingelheim Sponsored Research Project, Principal Investigator, 2007, $150,000 per annum

XI. **Departmental and university committees**

Faculty advisor for Columbia University College of Physicians and Surgeons medical students (1986-1994)

Member of the Columbia University Research Advisory Committee for first year medical student summer research projects (1990)

Member of the Department of Medicine Resident Selection Committee (1990-present)

Organizer of the Department of Medicine Young Faculty Research Conference (1990-1992)

Member of Department of Medicine Subcommittee on Research (1991) and Committee for Organizing Departmental Retreat (1995)

Member of Doctoral Program Subcommittee on Nutrition (1991-present)

Co-Director of Basic Research Track of the CPMC Internal Medicine Residency Program (1992-1997),

Scientific Advisory and Executive Committee, Medical Scientist Training (MD-PhD) Program, Columbia University (1993-present)

Member, Curriculum Committee of the College of Physicians & Surgeons (1997-2002)

Co-Associate Director, Medical Scientist Training (MD-PhD) Program, Columbia University (2001-present)

Chairman, Committee on Promotions of the Department of Medicine (1997-2004)

Member of Search Committees for Director of Pathology, St. Luke's Roosevelt Hosp. (1992), Chairperson of the Department of Pharmacology, Columbia University (1994-1995), Chairperson-Division of Cardiology, Columbia University (1999), Director of the Irving Center for Cancer Research (2004), Chairperson-Division of Oncology (2005)

XII. **Teaching experience and responsibilities**

<u>Specific courses</u>:

Medical Student Preceptor (1989, 1991, 1994, 1996), 6 students

Abnormal Human Biology, Atherosclerosis session preceptor (1987-present), 30 students

Cellular Membranes graduate course (Department of Anatomy & Cell Biology), LDL receptor and intracellular cholesterol metabolism sessions (1987-present), 30 students

Pharmacology graduate student course, LDL receptor session (1989-1993), 20 students

Histology medical student course, microcirculation session (1989-1994), 200 students

Advanced pathophysiology course for fourth year medical, atherosclerosis sessions (1990-1996), 40 students

Pathology graduate student course (Molecular Mechanisms of Disease), organizer and lecturer of Atherosclerosis section (1991-present), 15 students

Science Basic to the Practice of Medicine (formerly Biochemistry of Disease) medical student course, Atherosclerosis session (1992-present), 120 students

Pathophysiology course for 2nd-year medical students, Atherosclerosis session (1997-present), 120 students
Molecular and Cellular Biology of Nutrients, Apoptosis section (2001-), 15 students
Molecular and Cellular Cardiology Lecture Series, Transgenic Models section (1998-), 15 fellows

General teaching activities:

Attending on Internal Medicine ward service (1985-present), 2-3 students and 3 housestaff physicians
Attending on Endocrinology ward service (1987-present), 1-2 students and 1 fellow
Attending in Combined Endocrine/Diabetes, Thyroid, and Lipid Clinics (1987-present), 1-2 students and 1-2 clinical fellows

Ph.D. Thesis sponsor:

Lori Bottalico, Department of Anatomy/Cell Biology, Columbia University (1989-1992)
Scott Schissel, Department of Anatomy/Cell Biology, Columbia University (1993-1997)
Andrew Leventhal, Department of Anatomy/Cell Biology, Columbia University (2000-2004)—Winner of the 2004 Samuel W. Rover and Lewis Rover Award for Scholarship and Outstanding Achievement in Anatomy and Cell Biology

Masters thesis sponsor:

Sungtae Lim, Institute of Human Nutrition, Columbia University (1989)
Woan-Chyng Su, Institute of Human Nutrition, Columbia University (1990)

Ph.D. Advisory/Examination committees:

Deborah A. Lazzarino, Department of Anatomy/Cell Biology, Columbia University (Ph.D. advisory committee and examination, 1987-1990)
Shing-Jong Lin, Department of Physiology, Columbia University (Ph.D. examination, 1989)
Maria Davila-Bloom, Institute of Human Nutrition, Columbia University (Ph.D. examination, 1989)
Fan Yuan, Department of Engineering, The City University of New York (Ph.D. examination, 1990-1993)
Lester S. Johnson, Department of Pathology, Columbia University, Ph.D. thesis committee (1990-1993)
Steven Rumsey, Institute of Human Nutrition, Ph.D. thesis committee (1992-1993)
Thomas E. Phalen, Albert Einstein College of Medicine, Ph.D. thesis defense committee (1993)

Sripriya Chari, Integrated Program in Cellular, Molecular, and Biophysical Studies, Qualifying Examination (1993)

Zhenglun Zhu, Department of Anatomy/Cell Biology, Columbia University (Ph.D. advisory committee and examination, 1991-1993)

Lori Masucci, Institute of Human Nutrition, Ph.D. thesis committee (1993-1996)

Cory Huang, Department of Pathology, Ph.D. thesis committee (1995)

Mingyue Zhou, Institute of Human Nutrition, Ph.D. thesis committee (1995-)

Hong-yuan Yang, Institute of Human Nutrition, Ph.D. thesis committee (1995-)

Donata Paresce, Department of Pathology, Ph.D. thesis committee (1997)

Furcy Paultre, Institute of Human Nutrition, Ph.D. thesis committee (1997-)

Chris William, Integrated Program. Ph.D. qualifying exam (1997)

Nrgo Storey, Department of Biochemistry, Dalhousie University, Ph.D. examination, 1997

Peter Sartipy, Wallenberg Laboratory, University of Gothenburg, Sweden, opponent, 2000

Ying Lui, Institute of Human Nutrition, Ph.D. thesis committee (1999-)

Edward Cha, Department of Microbiology, Ph.D. thesis committee (2000-)

Yu Sun, Institute of Human Nutrition, Ph.D. thesis committee (1997-2002)

XIII. **Other professional activities**

Reviewer of over 3000 manuscripts for *Journal of Clinical Investigation, Journal of Biological Chemistry, Journal of Lipid Research, Arteriosclerosis, and Biochimica Biophysica Acta* (1985-present)

Ad hoc grant reviewer for National Science Foundation (1989-present)

Grader for research abstracts submitted to the American Heart Association Annual Meeting (1990, 1992-1994, 1998)

Sub-group reviewer for American Heart Association Established Investigator and Clinical Scientist Award grants (1991 & 1992)

Member of American Heart Association grant-in-aid study section (1992-1993)

Member Scientific Board of the Stanley J. Sarnoff Endowment for Cardiovascular Science, Inc. (1992-1996)

Vice-chairman of American Heart Association grant-in-aid study section (1994)

Consultant for Merck, Schering-Plough, Warner-Lambert, Berlex, Eli Lilly, Pfizer, Talaria Biotech, ReddyUS, Amersham/GE, and Bristol-Myers-Squibb, Novartis, Sankyo

Institutional representative for the American Society of Clinical Investigation (1998-2000)

Co-Editor of October 2000 and 2001 issues of Current Opinion in Lipidology

Organizer and Chairman, Keystone Conference on the Cellular Biology of Atherosclerosis (2005)

External Advisory Committee, Deuel Research Conferences (2004-2009)

Scientific Board, Kern Lipid Conference (2005-2010)

General Council and Review Panel for Future Leaders Grant Program, The Leadership Council for Improving Cardiovascular Care (2005-)

XIV. **Publications** (* indicates that Dr. Tabas is a senior author [*i.e.*, post-graduate school] *and* had a major role in the publication)

Original, peer-reviewed articles:

1. Tabas, I., Schlesinger, S. and Kornfeld, S. (1978) Processing of high mannose oligosaccharides to form complex type of oligosaccharides on the newly synthesized polypeptides of the vesicular stomatitis virus G protein and the IgG heavy chain. *J. Biol. Chem.* **253**:716-722.

2. Li, E., Tabas, I. and Kornfeld, S. (1978) The synthesis of complex type of oligosaccharides. I. Structure of the lipid-linking oligosaccharide precursor of the complex type oligosaccharides of the vesicular stomatitis virus G. protein. *J. Biol. Chem*. **253**:7762-7770.

3. Kornfeld, S., Li, E. and Tabas, I. (1978) The synthesis of complex type oligosaccharides. II. Characterization of the processing intermediates in the synthesis of the complex oligosaccharide units of the vesicular stomatitis virus G protein. *J. Biol. Chem*. **253**:7771-7778.

4. Tabas, I., and Kornfeld, S. (1978) The synthesis of complex type oligosaccharides. III. Identification of an α-D-mannosidase activity involved in a late stage of processing of complex type oligosaccharides. *J. Biol. Chem*. **253**:7779-7786.

5. Tabas, I. and Kornfeld, S. (1979) Purification and characterization of a rat liver Golgi α-mannosidase capable of processing asparagine-linked oligosaccharides. *J. Biol. Chem*. **254**:11655-11663.

6. Tabas, I., and Kornfeld, S. (1980) Biosynthetic intermediates of ß-D-glucuronidase contain high mannose oligosaccharides with blocked phosphate residues. *J. Biol. Chem.* **255**:6633-6639.

*7. Tabas, I., and Tall, A.R. (1984) Mechanism of the association of HDL with endothelial cells, smooth muscle cells, and fibroblasts. *J. Biol. Chem*. **259**:13897-13905.

*8. Tabas, I., Weiland, D.A. and Tall, A. (1985) Unmodified LDL causes cholesteryl ester accumulation in J774 macrophages. *Proc. Natl. Acad. Sci. USA* **82**:416-420.

*9. Tabas, I., Weiland, D.A. and Tall, A. (1985) Inhibition of acyl coenzyme A:cholesterol acyl transferase in J774 macrophages enhances down-regulation of the low density lipoprotein

(LDL) receptor and 3-hydroxy-3-methylglutaryl-coenzyme A reductase and prevents LDL-induced cholesterol accumulation. *J. Biol. Chem.* **261**:3147-3155.

10. Tall, A.R., Tabas, I. and Williams, K. (1986) Lipoprotein-liposome interactions. *Methods Enzymol.* **128**:647-657.

11. Williams, K.J., Tall, A.R., Tabas, I. and Blum, C. (1986) Recognition of vesicular lipoproteins by the apolipoprotein B, E receptor of cultured fibroblasts. *J. Lipid. Res.* **27**:892-900.

12. Tall, A., Granot, E., Brocia, R., Tabas, I., Hesler, C., Williams, K. and Denke, M. (1986) Accelerated transfer of cholesteryl esters in dyslipidemic plasma: Role of cholesteryl ester transfer protein. *J. Clin. Invest.* **79**:1217-1225.

*13. Tabas, I., Boykow, G.C., Tall A.R. (1986) Foam cell-forming J774 macrophages have markedly elevated LDL-induced acyl coenzyme A:cholesterol acyl transferase activity compared to mouse peritoneal macrophages despite similar LDL receptor activity. *J. Clin. Invest.* **79**:418-426.

14. Granot, E., Tabas, I. and Tall, A.R. (1987) Human plasma cholesteryl ester transfer protein enhances the uptake of HDL cholesteryl esters by cultured hepatoma (HepG2) cells. *J. Biol. Chem.* **262**:3482-3487.

*15. Tabas, I. and Boykow, G.C. (1987) Protein synthesis inhibition in mouse peritoneal macrophages results in increased acyl coenzyme A:cholesterol acyl transferase activity and cholesteryl ester accumulation in the presence of native low density lipoprotein. *J. Biol. Chem.* **262**:12175-12181.

*16. Tabas, I., Rosoff, W.J., and Boykow, G.C. (1988) Acyl coenzyme A:cholesterol acyl transferase in macrophages utilizes a cellular pool of cholesterol oxidase-accessible cholesterol as substrate. *J. Biol. Chem.* **263**:1266-1272.

*17. Khoo, J.C., Miller, E., McLoughlin, P., Tabas, I., and Rosoff, W.J. (1989) Cholesterol esterification as a limiting factor in accumulation of cell cholesterol: a comparison of two J774 macrophage cell lines. *Biochem. Biophys.* Acta **1012**:215-217.

*18. Tabas, I., Feinmark, S., and Beatini, N. (1989) The reactivity of desmosterol and other shellfish and xanthomatosis-associated sterols in the macrophage sterol esterification reaction. *J. Clin. Invest.* **84**:1713-1721.

*19. Tabas, I., Chen, L-L., Clader, J., McPhail, A.T., Burnett, D.A., Bartner, P., Das, P.R. Pramanik, B.N., Puar, M.S., Feinmark, S.J., Zipkin, R.E., Boykow, G., Vita, G., and Tall, A.R. (1990) Rabbit and human liver contain a novel pentacyclic triterpene ester with acyl-CoA:cholesterol acyl transferase-inhibitory activity. *J. Biol. Chem.* **265**:8042-8051.

*20. Tabas, I., Lim, S., Xu, X., and Maxfield, F.R. (1990) Endocytosed ß-VLDL and LDL are delivered to different intracellular vesicles in mouse peritoneal macrophages. *J. Cell Biol.* **111**:929-940

21. Hussain, M.M., Maxfield, F.R., Mas-Oliva, J., Tabas, I., Ji, Z-S, Innerarity, T.L., and Mahley, R.W. (1990) Clearance of chylomicron remnants by the low density lipoprotein receptor-related protein/α_2-macroglobulin receptor. *J. Biol. Chem.* **266**:13936-13940.

*22. Xu, X., and Tabas, I. (1991) Lipoproteins activate acyl-CoA:cholesterol acyl transferase only after cholesterol pools are expanded to a critical threshold level. *J. Biol. Chem.* **266**:17040-17048.

*23. Tabas, I., Beatini, N., Clader, J.W., Dugar, S., and Su, W-C. (1991) Identification of a novel triterpene fatty acyl esterifying activity in rabbit and human intestine. *J. Lipid Res.* **32**:1689-1698.

*24. Bottalico, L.A. , Wagner, R.E., Agellon, L.B., Assoian, R.K., and Tabas, I. (1991) Transforming growth factor-ß1 inhibits scavenger receptor activity in THP-1 human macrophages. *J. Biol. Chem.* **266**:22866-22871.

*25. Tabas, I., Myers, J., Innerarity, T.L., Xu, X., Arnold, K., Boyles, J., and Maxfield, F.R. (1991) The influence of particle size and apoprotein E-receptor interactions on the endocytic targeting of ß-VLDL in mouse peritoneal macrophages. *J. Cell Biol.* **115**:1547-1560.

*26. Xu, X., and Tabas I. (1991) Sphingomyelinase enhances low density lipoprotein uptake and ability to induce cholesteryl ester accumulation in macrophages. *J. Biol. Chem.* **266**:24849-24858.

*27. Bottalico, L.A., Kendrick, N.C., Keller, A., Li, Y., & Tabas, I. (1993) Cholesteryl ester loading of mouse peritoneal macrophages is associated with changes in the expression or modification of specific cellular proteins including an increase in an isoform of α-enolase. *Arterio. Thromb.* **13**:264-275.

*28. Bottalico, L.A., Keesler, G.A., Fless, G.M., and Tabas, I. (1993) Cholesterol loading of macrophages leads to marked up-regulation of native lipoprotein(a) and apoprotein(a) internalization and degradation. *J. Biol. Chem.* **268**:8569-8573.

*29. Tabas, I., Li, Y., Brocia, R., Swenson, T.L., and Williams, K.J. (1993) Lipoprotein lipase and sphingomyelinase enhance the association of atherogenic lipoproteins with smooth muscle cells and extracellular matrix: a possible mechanism for low density lipoprotein and lipoprotein(a) retention and macrophage foam cell formation. *J. Biol. Chem.* **268**:20419-20432.

*30. Myers, J.N., Tabas, I. and Maxfield, F.R. (1993) Characterization of widely-distributed endocytic compartments resulting from the endocytosis of ß-VLDL in mouse peritoneal macrophages. *J. Cell Biol.* **123**:1389-1402.

*31. Okwu, A.K., Xu, X., Shiratori, Y., and Tabas, I. (1994) Cellular sphingomyelin content influences the threshold for acyl-CoA:cholesterol acyltransferase stimulation by lipoproteins in macrophages. *J. Lipid Res.* **35:**644-655.

*32. Shiratori, Y., Okwu, A.K., and Tabas, I. (1994) Free cholesterol loading of macrophages stimulates phosphatidylcholine biosynthesis and up-regulation of CTP:phosphocholine cytidylyltransferase. *J. Biol. Chem.* **269**:11337-11348.

*33. Keesler, G.A., Li., Skiba, P.J. Fless, G.M., and Tabas, I. (1994) The macrophage foam cell lipoprotein(a)/apoprotein(a) receptor: cell-surface localization, dependence of induction on new protein synthesis, and ligand specificity. *Arterio. Thromb.* **14**:1337-1345.

*34. Skiba, P.J., Keesler, G.A., and Tabas, I. (1994) Interferon-gamma down-regulates the foam cell lipoprotein(a)/apoprotein(a) receptor activity. *J. Biol. Chem.* **269**:23059-23067.

*35. Tabas, I., Zha, X., Myers, J.N., and Maxfield, F.R. (1994) The actin cytoskeleton is important for the stimulation of acyl-coenzyme A:cholesterol *O*-acyltransferase activity by ß-VLDL and acetyl-LDL in macrophages. *J. Biol. Chem.* **269**:22547-22556.

36. Granot, E., Schwiegelshohn, B., Tabas, I., Gorecki, M., Vogel, T., Carpenter, Y.A., and Deckelbaum, R.J. (1994) Effects of particle size on cell uptake of model triglyceride-rich particles with and without apoprotein E. *Biochemistry* **33**:15190-15197.

*37. Schissel, S.L., Beatini, N., Zha, X., Maxfield, F.R., and Tabas, I. (1995) Effect and cellular site of action of cysteine protease inhibitors on the cholesterol esterification pathway in macrophages and Chinese hamster ovary cells. *Biochemistry* **34**:10463-10473.

*38. Shiratori, Y., Houweling, M., Zha, X., and Tabas, I. (1995) Stimulation of CTP:phosphocholine cytidylyltransferase by free cholesterol loading of macrophages involves signaling through protein dephosphorylation. *J. Biol. Chem*. **270**:29894-29903.

39. Wang, N., Tabas, I., Winchester, R., Ravalli, S., Rabbani, L.E., and Tall, A. (1996) Interleukin-8 is induced by cholesterol loading of macrophages and expressed in macrophage foam cells in human atheroma. *J. Biol. Chem.* **271**:8837-8842.

*40. Skiba, P.J., Zha, X., Maxfield, F.R., Schissel, S.L., and Tabas, I. (1996) The distal pathway of lipoprotein-induced cholesterol esterification, but not sphingomyelinase-induced cholesterol esterification, is energy-dependent. *J. Biol. Chem.* **271**:13392-13400.

*41. Schissel, S.L., Schuchman, E.H., Williams, K.J., and Tabas, I. (1996) Zn^{2+}-stimulated sphingomyelinase is secreted by macrophages and other cell types and is a product of the acid sphingomyelinase gene. *J. Biol. Chem.* **271**:18431-18436.

*42. Schissel, S.L., Tweedie-Hardman, J., Rapp, J.H., Graham, G., Williams, K.J., and Tabas, I. (1996) Rabbit aorta and human atherosclerotic lesions hydrolyze the sphingomyelin of retained low-density lipoprotein. Proposed role for arterial-wall sphingomyelinase in subendothelial retention and aggregation of atherogenic lipoproteins. *J. Clin. Invest.* **98**:1455-1464.

*43. Tabas, I., Marathe, S., Keesler, G.A., Beatini, N., and Shiratori, Y. (1996) Evidence that the initial up-regulation of phosphatidylcholine biosynthesis in free cholesterol-loaded macrophages is an adaptive response that prevents cholesterol-induced cellular necrosis. Proposed role of an eventual failure of this response in foam cell necrosis in advanced atherosclerosis. *J. Biol. Chem.* **271**:22773-22781.

*44. Keesler, G.A., Gabel, B., Koschinsky, M., and Tabas, I. (1996) The binding activity of the macrophage lipoprotein(a)/apoprotein(a) receptor is up-regulated by cholesterol via a post-translational mechanism and recognizes distinct kringle domains on apoprotein(a). *J. Biol. Chem.* **271**:32096-32104.

*45. Tang, W., Keesler, G.A., and Tabas, I. (1997) The structure of the gene for murine CTP:phosphocholine cytidylyltransferase (*Ctpct*). Relationship of exon structure to functional domains and identification of transcriptional start sites and potential upstream regulatory elements. *J. Biol. Chem*. **272**:13146-13151.

46. Zha, X., Tabas, I., Leopold, P.L., Jones, N.L., and Maxfield, F.R. (1997) Evidence for prolonged cell-surface contact of acetyl-LDL before entry into macrophages. *Arterio. Thromb. Vasc. Biol.* **17**:1421-1431.

*47. Schissel. S.L., Jiang, X.C., Tweedie-Hardman, J., Jeong, T.S., Camejo, E.H., Najib, J., Rapp, J.H., Williams, K.J., and Tabas, I. (1998) Secretory sphingomyelinase, a product of the acid sphingomyelinase gene, can hydrolyze atherogenic lipoproteins at neutral pH. Implications for atherosclerotic lesion development. *J. Biol. Chem.* **273**:2738-2746.

48. Zha, X., Pierini, L.M., Leopold, P.L., Skiba, P.J., Tabas, I., and Maxfield, F.R. (1998) Sphingomyelinase treatment induces ATP-independent endocytosis. *J. Cell Biol.* **140**:39-47.

*49. Marathe, S., Schissel, S.L., Yellin, M.J., Beatini, N., Mintzer, R., Williams, K.J., and Tabas, I. (1998) Human vascular endothelial cells are a rich and regulatable source of secretory sphingomyelinase. Implications for early atherogenesis and ceramide-mediated cell signaling. *J. Biol. Chem.* **273**:4081-4088.

50. Jeong, T.S., Schissel, S.L., Tabas, I., Pownall, H.J., Tall, A.R., Jiang, X.C. (1998) Increased sphingomyelin content of plasma lipoproteins in apolipoprotein E knockout-out mice reflects combined production and catabolic defects and enhances reactivity with mammalian sphingomyelinase. *J. Clin. Invest.* **101**:905-912.

*51. Khelef, N., Buton, X., Beatini, N., Wang, H., Meiner, V., Chang, T-Y., Farese, R.V., Jr., Maxfield, F.R., and Tabas, I. (1998) Immunolocalization of ACAT in macrophages. *J. Biol. Chem.* **273**:11218-11224.

*52. Schissel, S.L., Keesler, G.A., Schuchman, E.H., Williams, K.J., and Tabas. I. (1998) The cellular trafficking and zinc-dependency of secretory and lysosomal sphingomyelinase, two products of the acid sphingomyelinase gene. *J. Biol. Chem.* **273**:18250-18259.

53. Mazany, K., Peng, T., Tabas, I, and Williams, K.J. (1998) Human chondroitin 6-sulfotransferase: cloning, gene structure, and chromosomal localization. *Biochim. Biophys. Acta.* **1407**:92-97.

54. Mukherjee, S., Zha, X., Tabas, I., Maxfield, F.R. (1998) Cholesterol distribution in living cells: fluorescence imaging using dehydroergosterol as a fluorescent cholesterol analog. *Biophysical Journal* **75**:1915-1925.

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XV. **Patents and Invention Reports**

U.S. Patent: "Triterpene Derivatives Cholesterol Acyltransferase Inhibitors and Methods of Using Same"; Ira Tabas, Inventor; January 22, 1991; Patent Number 4, 987,151.

U.S. Patent: "Methods for Treating Conditions with Elevated Levels of Zinc Sphingomyelinase", Ira Tabas, Scott Schissel, and Kevin J. Williams, Inventors. November 23, 1999; Patent Numbers 5,989,803 and 6,613,322.

U.S. Patent: "Human Genetic Clone Encoding Human Chondroitin 6-Sulfotransferase", Kevin J. Williams and Ira Tabas, Inventors. October 10, 1997. Patent Number 6,399,358.

Pending U.S. Patent: "Methods for Identifying Compounds Useful For Preventing Acute Clinical Vascular Events In A Subject".

Pending U.S. Patent: "The use of very low-dose amphipathic amines or others inhibitors of the npc1 pathway to induce ABCA1-mediated macrophage cholesterol efflux, reverse cholesterol transport, and regression of atherosclerotic vascular disease".

Patent Application: "Prevention of Acute Cardiovascular Clinical Events Through Adiponectin and Adiponectin Signaling".

Patent Application: "Phagocyte Enhancement Therapy for Atherosclerosis".