

TECHNION – FACULTY OF MEDICINE

Date: April 2010

RESUME

1. PERSONAL DETAILS

MICHAEL AVIRAM

Professor, Head of the Lipid Research Laboratory, Technion Faculty of Medicine, Rappaport Institute for Research in the Medical Sciences and Rambam Medical Center, Haifa, Israel

<http://www.aviramlipids.com>

<http://md.technion.ac.il>

<http://www.rambam.org.il>

<http://www.technion.ac.il/~rapinst>

<http://www.bio-rap.com>

Date & Place of Birth: December 7, 1948, Kfar Kish, Israel.
(ID # 00557978-4, SSN - 026586008).

Marital status: Married to Bruria, 3 children (Amitai / Amy -Maya, Yotvat, and Rohtem).

Work Address: Lipid Research Laboratory, Technion Faculty of Medicine,
and Rambam Medical Center, Haifa, Israel 31096

Tel: 972-4-8542970 Fax: 972-4-8542130 E mail: aviram@tx.technion.ac.il

Home address: 57 Svedia St., Haifa, 34980, Israel. (Tel: 972-4-8251369).

2. ACADEMIC DEGREES

1975-1978 **Doctorate Studies**, Clinical Biochemistry, Faculty of Medicine, Technion - Israel
Institute of Technology, Haifa, Israel.

D.Sc. (Supervisor: Nobel Prize Laureate Prof. Avram Hershko).

1973-1975 **Graduate Studies**, Clinical Biochemistry, Faculty of Medicine, Technion -Israel,
Institute of Technology, Haifa, Israel.

M.Sc. (Supervisor: Nobel Prize Laureate Prof. Avram Hershko).

1966-1970 **Undergraduate Studies**, Chemistry, Technion-Israel Institute of Technology,
Haifa, Israel, **B.Sc.**

1978- 1980 **Postdoctoral Fellow:** Arteriosclerosis Center, Massachusetts Institute of
Technology (**M.I.T**), Cambridge, MA, U.S.A.

3. ACADEMIC APPOINTMENTS

- 2008- present **Director**, Legacy Heritage Clinical Research Institute at Rambam (LHCRIR).
- 2007 – present **Bernice R. and Joseph Tanenbaum Chair in Preventive Medicine**.
- 2004 – present **Professor of Biochemistry**, Technion Faculty of Medicine, Haifa, Israel.
- 2008-2009 **Professor (Visiting), Department of Food Science and Human Nutrition, University of Illinois, Urbana - Champaign, U.S.A.** "Paraoxonase regulation by arachidonic acid derived prostaglandins".
- 1991- 2004 **Associate Professor of Biochemistry**, Technion Faculty of Medicine, Haifa.
- 1997-1998 **Professor (Visiting), University of Michigan, Ann Arbor, MI, U.S.A.**
 "Paraoxonase, lipid peroxidation, and macrophage cholesterol accumulation: molecular and cellular biology" (with Prof. Bert La Du).
- 1991-present **Member**, The Rappaport Institute for Research in the Medical Sciences, Haifa.
- 1994-2000 **Deputy Director**, The Rappaport Institute for Research in the Medical Sciences.
- 1987-1988 **Associate Professor (Visiting), Division of Metabolism, Department of Medicine, University of Washington, Seattle, WA, U.S.A.** "Lipase-modified LDL and macrophage cholesterol metabolism" (with Prof. Edwin Bierman and Prof. Alan Chait).
- 1986-1987 **Visiting Scientist, Specialized Center of Research (SCOR) in Atherosclerosis, Department of Medicine, Columbia University, New York, NY, U.S.A.** "Lipoprotein lipids modifications and macrophage cholesterol accumulation". (with Prof. Richard Deckelbaum).
- 1989-1997 **Adjunct Associate Professor**, Department of Food Engineering and Biotechnology, Technion, Haifa, Israel.
- 1985-1989 **Adjunct Assistant Professor**, Department of Food Engineering and Biotechnology, Technion, Haifa, Israel.
- 1984 **Visiting Scientist, Institute of Clinical Medicine, University of Tromso, Tromso, Norway** (3 months) "Dietary fatty acids, lipoproteins, and endothelial cell function". (with Prof. Arne Nordoy).
- 1983 **Visiting Scientist, Institute of Pharmacology, University of Milano, Milano, Italy.** "Plasma lipoproteins and platelet prostaglandins". (with Prof. Cesare Sirtori).
- 1973-1978 **Instructor**, Clinical Biochemistry, Faculty of Medicine Technion - Israel Institute of Technology, Haifa, Israel.
- 1975-1978 **Doctoral Studies**, "Turnover of the enzyme tyrosine-aminotransferase".
 Clinical Biochemistry, Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel. (Supervisor: Nobel Prize Laureate Prof. Avram Hershko).
- 1973-1975 **Graduate Studies**, "Degradation of RNA in cultured hepatoma cells".
 Clinical Biochemistry, Faculty of Medicine, Technion - Israel Institute of Technology, Haifa, Israel. (Supervisor: Nobel Prize Laureate Prof. Avram Hershko).
- 1966-1970 **Undergraduate Studies**, Faculty of Chemistry, Technion - Israel Institute of Technology, Haifa, Israel.

4. PROFESSIONAL EXPERIENCE AND DUTIES

Technion and Rambam Medical Center Activities

- 1980-present Head, Lipid Research Laboratory, Technion Faculty of Medicine, Rappaport Institute for Research in the Medical Sciences, and Rambam Medical Center
- 1984-present Head, Chemistry and Stat Laboratories, Rambam Medical Center
- 2008- present Director, Legacy Heritage Clinical Research Institute at Rambam (LHCRIR).
- 2009- present Member, Rambam Medical Center Executive Management.
- 2008-present Member of the Board, Technion Alumni.
- 2010-2012 Member of the Technion Committee for Academic development.
- 2010-2012 Member of the Technion Senate
- 2001-2010 Director, Department of Laboratory Medicine, Rambam Medical Center.
- 2008–2009 Member, Rambam Medical Center Management.
- 2005-2008 Member of the Technion's Senate Standing Committee and the Elected Senate.
- 2005-2008 Member of the Technion Academic Council for Continuous and External Studies.
- 2004–2006 Member of the Technion's Senate Committee for Research.
- 2006- 2007 Member of the Technion's Senate Harvey Prize Committee.
- 1994-2005 Chief Scientific Advisor, Rambam Medical Center.
- 1993-2001 Member, Committee for Human Resources, Rambam Medical Center.
- 1994-2000 Deputy Director, Rappaport Institute for Research in the Medical Sciences.
- 1994-1997 Head, Committee for Teaching and Curriculum, Technion Faculty of Medicine.
- 1993-1996 Chairman, The Technion Committee for Promotion of Laboratory Technicians.
- 1994-1996 Member, Committee for Graduate Studies, Technion Faculty of Medicine.
- 1993-1994 Deputy Head, Committee for Research, Technion Faculty of Medicine.
- 1993-1994 Deputy Head, Committee for Teaching, Technion Faculty of Medicine.
- 1991-1994 Member, the Secretariat, Board of Medical Research, Israel Ministry of Health.

International and National Activities

- 2008- 2011 Honorary Member of the Editorial Board, International journal of Wine Research.
- 2004-2007 Member of the Scientific Advisory Board, D- CURE, a non-profit Diabetes Research Organization.
- 2004-2007 Member of the Executive Board of Governors, D- CURE, a non-profit Diabetes Research Organization.
- 2006-2007 Israel Science Foundation (ISF) Centers of Excellence Committee.
- 2004-2007 Member, the Editorial Advisory Board, *Drug Design Reviews – Online*.
- 2004-2007 Member, the Editorial Board, *Medicinal Chemistry Reviews*.
- 2004-2007 Member, the Editorial Board, *Israel Medical Association Journal*.
- 2004-2005 Guest Editor for the Paraoxonases Serial Reviews: Free Radical Biology & Medicine.
- 2002-2005 Member, Committee of Process for the assessment of Scientific support for Claims on Food (PASSCLAIM, Group on Diet related atherosclerosis).
- 2001-2002 Member, the Ministry of Health Committee for Continuous Education Reward (Gemul Hishtalmut).
- 2001-2005 Member, the Scientific Advisory Board, Lycopin Fourm. Germany
- 2000-2005 Scientific Advisor, Roche Diagnostics GmbH, Penzberg, Germany.

- 2000-2005 Member, the Scientific Advisory Board (SAB), Molecutec and PharmaVita, Molecular Technology Corporation, New York, NY, USA.
- 2000-2005 Member, the Scientific Advisory Board (SAB), Esperion Therapeutics, Ann Arbor, MI, USA.
- 2000-2005 Member, the Scientific Advisory Board (SAB), BioPreventive, Noninvasive Biomedical Diagnostic Tools, Migdal-Haemek, Israel.
- 2000-2005 Member, the Scientific Advisory Board (SAB), Profile Advanced Technologies (PAT), Jerusalem, Israel.
- 2000-2008 Member, the Editorial Board, *Current Medicinal Chemistry*.
- 1998-2009 Member, the Scientific Advisory Board (SAB) ROLL International, PomWonderful, LA, CA, USA.
- 1996-2007 Member, the Editorial Board, *Czynniki Rzyzka*.
- 1985-1989 Editor-in-Chief, Israel Journal of Clinical Biochemistry and Laboratory Sciences.
- 1981-1993 Member, the Secretariat, Israel Society for Clinical Biochemistry (ISCB).
- 1981-1986 Member, the Secretariat, Israel Biochemical and Microbiological Union (IBMU).
- 1980-1986 Member, the Secretariat, Israel Biochemical Society (IBS).

*** Israel Defense Forces (1970-1973, final rank in the Reserve – Lieutenant Colonel)**

*** REVIEWER FOR ALL MAJOR INTERNATIONAL JOURNALS ON ATHEROSCLEROSIS.**

5. RESEARCH INTERESTS

General Goal: Studies of the Mechanisms involved in Macrophage Cholesterol accumulation and Foam Cell formation under Oxidative Stress during Atherogenesis: Role of Dietary Antioxidants and of Paraoxonases (PONs).

Specific Areas of Research:

1. Lipoproteins Oxidation and Atherosclerosis (1980 – present)

Macrophage – mediated oxidation of LDL and foam cell formation are the hallmark of early atherogenesis. We were the first to demonstrate the role of cellular oxygenases (such as NADPH oxidase) and of antioxidants (such as the glutathione system) in cell - mediated LDL oxidation and in atherosclerotic lesion development.

2. Dietary Antioxidants and Atherosclerosis (1990 – present)

We have provided evidence, for the first time, that the inhibitory effect of some flavonoid antioxidants on macrophage – mediated LDL oxidation (and on atherosclerosis development) is related to the polyphenols interaction with the lipoprotein directly, as well as to their accumulation in arterial macrophages.

3. Paraoxonases, Lipid Peroxidation and Atherosclerosis (1997 – present)

Recently, we provided evidence that HDL-associated Paraoxonase can hydrolyze oxidized lipids in oxidized lipoproteins, macrophages, and in atherosclerotic lesions. Paraoxonase thus may act as a second line of defense against oxidative stress and atherosclerosis development.

6. TEACHING EXPERIENCE

2002-present Technion Permanent (more than ten successive years) Distinguished Lecturer.

BASIC COURSES

Chairing and teaching **Basic Courses** to Medical Students.

1. Chair and lecturer: **Biochemistry** to Medical Students (Course # 274226). Every year since 1993.
2. Chair and lecturer: **Biochemistry - American Program** to Medical Students (Courses # 274126 and # 274303). Since 2006.
3. Chair: **General Biochemistry Laboratory** (Course # 274227). Every year since 1993.
4. Lecturer: **Clinical Biochemistry** to Medical Students (Course # 276310). Every year since 1993.

ELECTIVE COURSES

Chairing and teaching in **Elective Courses** to Medical and Graduate Students:

1. **Lipoproteins and Atherosclerosis** (Course # 277426). Every year since 1988.
2. **Lipids and Lipoprotein Metabolism** (Course # 068318). Every year since 1983.

* **Clinical Biochemistry – Lipids and atherosclerosis** to undergraduate students, Faculty of Life Sciences, Bar Ilan University, Ramat-Gan, Israel (1992-1999).

7. MEMBERSHIP IN PROFESSIONAL SOCIETIES

National

Israel Society for Atherosclerosis.

Israel Society for Diabetes.

Israel Society for Laboratory Medicine (previously - Clinical Biochemistry).

Israel Biochemical Society.

Israel Society for Oxygen and Free Radical Research.

International

American Society for Biochemistry and Molecular Biology (ASBMB).

Academy of Clinical Laboratory, Physicians and Scientists.

American Heart Association, Council on Arteriosclerosis.

American Association for Clinical Chemistry.

American Federation for Clinical Research.

Biochemical Society.

European Society for Clinical Investigation.

European Atherosclerosis Society.
 European Lipoprotein Club.
 International Atherosclerosis Society.
 International Society for the study of Fatty acids and Lipids (ISSFAL).
 International Society for Free Radical Research (ISFRR).
 International Society on Thrombosis and Haemostasis.

8. HONORS

2008 – George A. Miller Visiting Professor, University of Illinois at Urbana Champaign (UIUC).
 2007 – Bernice R. and Joseph Tanenbaum Chair in Preventive Medicine.
 2007 – Hershel Rich Technion Innovation Award.
 2007 – Honorary Member, Romanian Academy / Society for Cell Biology.
 2002 - Technion Permanent (ten successive years) Distinguished Lecturer Award.
 Outstanding teacher, Faculty of Medicine every year since 1993. Muriel and David Jacknow
 Award for Excellence in teaching-2000.
 1998 - Pfizer Lecturer Award, Clinical Research Institute of Montreal, Canada
 (“LDL oxidation and atherosclerosis”).
 1998 - NIH, Office of Alternative Medicine (OAM), Symposium Award
 (“Antioxidants, LDL oxidation and atherosclerosis”).
 1994 - Senior Investigator International Prize for Research on Oxidation of
 Lipoproteins: The ARCOL Prize, Pasture Institute, Lille, France
 ("Macrophage-mediated oxidation of LDL").
 1993 - Server Investigator Award for Research on Antioxidants. European
 Society on Free Radicals Research, Valencia, Spain.
 1987 - Fogarty International Fellowship (Seattle, WA, USA. "Lipids-modified LDL").

9. STUDENTS INSTRUCTION

D.Sc. / Ph. D. Theses

1. Bianca Fuhrman: "Platelet secretory products and macrophage lipoprotein metabolism". 1988-1992.
2. Melia Paizi: "The possible role of fibronectin in plasma cell dyscrasia related problems." 1986-1990 (Co- supervisor with Prof. G. Spira).
3. Qianmei Li: "Macrophage metabolism of the fatty acids in the LDL cholesteryl ester". 1993-1995.
4. Paula Belinky: "Licorice as an inhibitor of LDL oxidation". 1994-1998.
5. Irit Maor: “Relationships between oxidation and aggregation processes in LDL derived from apolipoprotein E-deficient mice during atherogenesis”. 1995-1999.
6. Marielle Kaplan: “Proteoglycans and macrophage uptake of oxidized LDL” 1996-2000.
7. Andrea Szuchman: “Chemical markers for oxidative stress in biological systems”. 2001-2005.
8. Orit Rosenberg (Grinfeld): “Paraoxonase 1 over expression and protection against atherosclerosis” 2003-2006.

9. Maayan Sheiner (Ben-dor): "Paraoxonase 2 regulation in macrophages: signal transduction and transcription factor pathways" 2004-2007.
10. Hagai Tavori : "Paraoxonase protection against oxidative stress". 2007-2010.
11. Adi Haber: "Corrole interactions with lipoproteins and macrophages". 2007 – 2010.

M.Sc. Theses

1. Yaakov Berkovitz: "Platelet adhesion in whole blood". 1979-1981 (Co-supervisors: Profs Marmur and Brook).
2. Idit Bornstein: "Platelet adhesion". 1981-1983 (Co-supervisors: Profs Marmur and Brook).
3. Bianca Fuhrman: "The effect of chylomicrons on platelet function". 1983-1985 (Co-supervisor: Prof. Brook).
4. Nechama Segal: "Surfactants and platelet aggregation". 1984-1986 (Co-supervisors: Profs Marmur and Brook).
5. Edna Hochgraft: "The effect of lovastatin on platelet function, composition and fluidity in hypercholesterolemic patients". 1988-1990 (Co-supervisor: Prof. Cogan).
6. Irit Maor: "Platelet secretory products and macrophage cholesterol metabolism". 1990-1992.
7. Judith Oiknine: "The effect of macrophage activation on the uptake of LDL". 1991-1993.
8. Mira Rosenblat: "Macrophage oxidation of LDL". 1993-1995.
9. Limor Ben Yaish: "The effect of lycopene on macrophage cholesterol metabolism". 1995-1997.
10. Orit Grunfeld: "Paraoxonase and macrophage foam cell formation". 2000-2002.
11. Anat Katzir: "Oxidized LDL and macrophage MAP kinase signal transduction". 2000-2002 (Co-supervisor: Prof. Polack).
12. Maayan Ben-Dor: "Macrophage maturation and foam cell formation". 2002-2004.
13. Michal Efrat : "HDL phospholipids and paraoxonase 1 activities". 2006 – 2008.

Undergraduate Students

1. Nir Lubetchky - "Macrophage lipid peroxidation". 1992-1993.
2. Limor Ben Yaish - "Cell membrane lipid peroxidation in macrophages". 1994-1995.
3. Shlomi Buch - "Antioxidative properties of Licorice against LDL oxidation". 1994-1996.
4. Beha Francis - "Macrophage foam cell formation under oxidative stress". 1999-2000.
5. Ayelet Partush – "Acetyl Choline Esterase hydrolyzes lipid peroxides". 2004-2005.
6. Yasmin Chativ – "Macrophage paraoxonase 2 (PON2) regulation by the urokinase plasminogen activator (uPA) system". 2005-2006.
7. Orly Sapir – "Glucose destabilizes HDL – associated paraoxonase1 (PON1); implications to Diabetes". 2006-2007.

M.D. Theses

1. Roni Diukman: "The effect of soy protein diet on plasma lipoproteins in rabbits". 1977-1978.
2. David Ron: "HDL in the elderly". 1978-1979.
3. Ema Shilansky: "HDL in atherosclerotic patients". 1978-1979.

4. Michael Lanchet: "HDL in young males after myocardial infarction". 1979-1980.
5. Yitzchak Sarugo: "The effect of HDL on platelet function". 1980-1982.
6. Arthur Veschler: "The effect of carnitine on platelet function and plasma lipoproteins in patients with chronic renal failure on hemodialysis". 1980-1982.
7. Asher Shmulevitz: "Platelets LDL receptor". 1982-1983.
8. Eyal Herzog: "saturated fat rich diet on platelet function". 1982-1984.
9. Ron Hoffman: "Plasma lipoproteins in celiac disease". 1987-1988.
10. Eias Kasem: "Dietary olive oil and LDL oxidation in humans". 1991-1992.
11. Danniell Karter: "Macrophage-lipid peroxidation by PMA". 1994-1996.
12. Lena Koren: "Monocyte-macrophage differentiation under oxidative stress". 1999-2000.
13. Nir Shimoni : "High serum HDL and cardiovascular diseases". 2001-2002.
14. Ayelet Partush : "Oxidized LDL and macrophage foam cell formation". 2005-2006.
15. Rony Oren : "Lysophosphatidylcholine and macrophage –mediated oxidation of LDL". 2006-2007 .

Residents (Basic Science)

1. Gideon Derayfus- Carmel Hospital, Haifa: "The effect of dietary vegetarian proteins on plasma lipoproteins in rabbits". 1979-1980.
2. Ruth Baruch (Gershoni)- Rambam Hospital, Haifa: Plasma lipoprotein pattern in young children 1980-1981.
3. Jacob Baruch-Rambam Hospital, Haifa: Dyslipoproteinemia in primary biliary cirrhosis". 1980-1981.
4. Avi Viener-Rambam Hospital, Haifa: "The effect of plasma lipoproteins on platelet function in hypercholesterolemic patients". 1981-1982.
5. Giora Winterstein- Rambam Hospital, Haifa: "Prostaglandin pathway and platelet function in hypercholesterolemia". 1982-1983.
6. Nassara Chalil- Ziv Hospital, Zefat: "Plasma fatty acid after fat rich meal". 1983-1984.
7. Efrat Wolfvovitz - Rambam Hospital, Haifa, "Macrophage lipid metabolism". 1984-1985.
8. Mondir Boulos - Rambam Hospital, Haifa: "The effect of plasma lipoproteins derived from hypercholesterolemic patients on macrophage cholesterol content". 1985-1986.
9. Lavi Klein-Rambam Hospital, Haifa: "Plasma lipoprotein fluidity in hypercholesterolemic patients". 1987-1988.
10. Ron Hoffman - Rambam Hospital, Haifa: "Anti oxidation properties of hypocholesterolemic drugs". 1990-1991.
11. Rafi Azugi - Ziv Hospital, Zefat: Effect of estrogen on plasma lipoprotein pattern. 1990-1991.
12. Osamah Hussein - Ziv Hospital, Zefat: "The effect of platelet secretory products on macrophage cholesterol metabolism in mouse peritoneum". 1990-1991.
13. Peter Barta - Rambam Hospital, Haifa: "Myocardial infarction and plasma lipid peroxidation". 1993-1994.
14. Yanir Kashif - Naharia Hospital, Naharia: "Xanthelasma and oxidized lipids". 1993-1994.
Sorina Schlesinger - Ziv Hospital, Zefat: "Fluvastatin and LDL oxidation". 1995-1996.
15. Gavriella Friedman-Ziv Hospital, Zefat: "Cholestyramine and LDL oxidation: 1995-1996.
16. Imad Sachnin: "Angiotensin II and macrophage cholesterol metabolism". 1998-1999.

17. Ayelet Raz – “Regression of atherosclerosis in apo E deficient mice by treatment with ACE inhibitors” – 1999-2000.
18. Shadi Hammood: “Effect of ACE inhibitors on oxidative stress and atherosclerosis in E⁰ mice”. 2001-2002.
19. Chitam Hussein – “Paraoxonase 2 in macrophages from hypercholesterolemic patients; effect of statin therapy”. 2003-2004.
20. Alex Strizevski – “Human monocyte-macrophage ACE2 expression in hypertensive patients” 2004-2005.
21. Ronnen Saltz – “Macrophage atherogenicity in diabetes” 2004-2005.
22. Orna Nitzan – “Monocyte-macrophage differentiation under oxidative stress”. 2005-2006.
23. Ido Bogner -"HDL composition affects its biological function and atherosclerosis ". 2006-2007.
25. Wasseem Rock – "HDL-association with paraoxonase under Diabetic oxidative stress". 2007-2008.
26. Riyad Mahameed – " Diabetes and the RAAS (rennin, angiotensin, aldosterone system)". 2008-2009.

Collaborating Senior Physicians

1. Shlomo Keidar, M.D.: “Angiotensin II, LDL oxidation and atherosclerosis”. Rambam Medical Center, Haifa, 1988 - present.
2. Tony Hayek, M.D.: “The atherosclerotic apolipoprotein E-knockout mice as a model to study lipoprotein modifications in atherosclerosis” Rambam Medical Center, Haifa, 1993 - present.
3. Osamah Hussein, M.D.: “Antioxidants against LDL oxidation and atherosclerosis”. Ziv Hospital, Zefat, 1993 - present.
4. Raanan Shamir : “Intestinal paraoxonases”. Rambam Medical Center, Haifa, 2001-2004.
5. Alexandra Lavy, M.D.: “Lipoprotein oxidation in atherosclerotic patients”. Bnei Zion Hospital, Haifa, 1988 - 2000.
6. Yishai Levy, M.D.: “Carotenoids as antiatherogenic agents”, Rambam Medical Center, Haifa, 1988 - 2000.
7. Avishay Elis, M.D.: “The effect of lycopene on macrophage cholesterol metabolism and atherosclerosis”. Meir Medical Center, Kfar-Saba, 1996 - 2001.
8. Hanna Mandel, M.D.: “Peroxisomes and cholesterol metabolism” Rambam Medical Center, Haifa 1991-2000.
9. Reuven Bergman, M.D.: “Xanthelasma, Xanthogranulomatosis and cholesterol metabolism”. Rambam Medical Center, Haifa, 1993 - 2000.
10. Daiana Gaitini, M.D. : Intima-Media Thickness (IMT) in atherosclerotic patients: effect of dietary antioxidants”. Rambam Medical Center, Haifa, 2000-2004.
11. Mazen Elias, M.D. : “ Oxidative stress and antioxidants in cardiovascular patients”.

10. RESEARCH GRANTS

Academic Grants

- 2009-2011 **Israel – Ukraine Ministry of Science and Technology** – “Biomimetic chromatic platforms for analysis of membrane – associated oxidative stress processes and diseases diagnosis” - \$100,000 (together with Prop. Raz Jelinek, Ben Gurion University at Beer Seva).
- 2009-2011 **Rappaport Institute Research Grant** - " Paraoxonases (PONs) and cardiovascular diseases". - \$90,000.
- 2009-2014 **NIH Grant** – "The oxidation hypothesis revisited: Haptoglobin genotype and diabetic atherosclerosis" (Cooperating Investigator. PI - Dr. A. Levy).
- 2007-2009 **Israel Ministry of Science and Technology** – “Natural healthy compounds in strawberries”- NIS100,000 (together with Dr Dai Nir, Volcani Institute).
- 2005-2008 **Rappaport Institute Research Grant** - " Paraoxonases (PONs), Oxidized lipids and foam cell formation". - \$60,000
- 2005-2008 **Israel Ministry of Science and Technology** – “Metabolic networks in pomegranate fruit: an analytical platform for food functionality” - \$200,000 (together with Dr. Holland D., Neve Yaar Research Center and Amir R., MIGAL Research Center).
- 2004-2007 **The Israel Science Foundation (ISF, The Israel Academy of Sciences and Humanities)** – “The search for endogenous substrates of paraoxonase” - \$90,000 (together with Dr J. Vaya., MIGAL Research Center).
- 2004-2006 **D-Cure Diabetes Research Grant** -“Paraoxonase (PON) substrates metabolic pathways under oxidative stress: studies under the diatetic environment” - \$130,000 (together with Dr J. Vaya., MIGAL Research Center).
- 2004-2006 **The Niedersachsischen Ministeriums fur Wissenschaft and Kultur** - “Regulation of urokinase plasminogen activator (uPA) expression in monocytes during their differentiation into macrophages: consequences on atherogenesis in relation to macrophage-foam cell formation and to vascular smooth muscle cells migration and proliferation”. – EU 100,000.
- 2005-2006 **Israel Ministry of Health** – “Paraoxonase in hypercholesterolemic patients” – \$20,000.
- 2004-2007 **The Israel Science Foundation (ISF, The Israel Academy of Sciences and Humanities)** – “Regulation of macrophage atherogenicity by the haptoglobin polymorphism”. - \$200,000 (Cooperating Investigator. PI - Dr. A. Levy).
- 2002-2004 **Rappaport Institute Research Grant** - " Paraoxonases, Oxidized lipids and foam cell formation". - \$75,000.
- 2001-2004 **Michigan Life Science Corridor Grant** -“Can Paraoxonase be used to treat Endotoxemia and Sepsis?” - \$1,740,000 (PI – Dr. Bert La Du Aviram’s part - \$30,000, acting as an advisor to the University of Michigan, Department of Pharmacology Research Team.).
- 2000-2002 **The Niedersachsischen Ministeriums fur Wissenschaft and Kultur** – “Role of angiotensin II in macrophage cholesterol accumulation, foam cell formation and the induction of cytokines, in the progression of atherogenesis”. – DM 200,000.
- 1998-2000 **Rappaport Institute Research Grant** - "Oxidized LDL and foam cell formation". - \$120,000.

- 1997-2000 **The Israel Science Foundation (ISF , The Israel Academy of Sciences and Humanities)** - "Coronary heart disease: genetic, environmental and behavioral determinants. - \$ 100,000 (PI - Dr. Jeremy Kark).
- 1995-1998 **The Israel Science Foundation (The Israel Academy of Sciences and Humanities)-** "Proteoglycans and macrophage uptake of oxidized LDL- \$ 150,000.
- 1995-1997 **Rappaport Institute Research Grant** - "Oxidized LDL and foam cell formation". - \$120,000.
- 1993-1995 **Israel Ministry of Health** "Macrophage lipids peroxidation " - \$ 35,000.
- 1991-1994 **Rappaport Institute Research Grant-** "Oxidized LDL and foam cell formation". - \$ 120,000.
- 1991-1994 **German (BMFT) - Israel Binational Grant.** "Platelet secretory products and macrophage cholesterol metabolism". - DM 250,000 (Co-PI with Dr. J.G. Brook).
- 1989-1991 **Israel Ministry of Health** - "LDL-platelet interaction" - \$ 25,000.
- 1987-1988 **Fogarty International Fellowship** (Seattle, WA, USA). "Lipids - modified LDL". - \$ 40,000.
- 1984-1987 **GSF, German (BMFT) - Israel Binational Grant.** "Platelet-modified LDL". - DM 200,000 (Co-PI with Dr. J.G. Brook).
- 1983-1985 **Israel Ministry of Health** "Lipoprotein-platelet interactions" - \$ 25,000.
- 1984 **Norway - Israel Fellowship.** "Prostaglandin - lipoprotein interactions".
- 1983 **Italian - Israel Fellowship.** "Platelet prostaglandins and lipoproteins".
- 1981-1983 **Israel Ministry of Health** "Triglyceride and platelet function" - \$20,000.
- 1978-1980 **Israel Ministry of Health** "Lipoprotein abnormality in atherosclerosis" - \$20,000.

Commercial Grants

- 1998-2009 **Roll International Ltd.** – "Nutritional antioxidants, LDL oxidation and atherosclerosis" - \$ 350,000.
- 2007-2009 **ARDOM** (Arava Deromit) R&D - "Marula fruit anti –atherogenesis" - \$35,000.
- 2008 -2009 **Diklayim** (Israeli Dates growers) – "Dates cardiovascular protection" - \$50,000.
- 2007-2008 **Ortho-Clinical Diagnostics (OCDUS) / Johnson & Johnson** – " Development of new serum paraoxonase (PON1) tests for atherosclerosis" - \$156,000 (CO-PI with Dr D. Tawfik).
- 2006-2007 **"Your Energy Systems" / Gerzberg Family Fund** – "Liposomal Glutathione and atherosclerosis"- \$70,000.
- 2006-2007 **Goya Holding S.A. (Genius s.r.l.)** – " Polyphenols enriched olive oil"- \$ 15,000.
- 2001-2005 **Roche Diagnostics GmbH** – "Serum paraoxonase and atherosclerosis" – DM 300,000.
- 2001-2003 **Pharmacia**– "Aldosterone, oxidative stress and atherosclerosis" - \$ 75,000.
- 2000- 2004 **Abramovitz Family Fund** – Nutritional antioxidants and atherosclerosis - \$100,000.
- 1995-2001 **Lycored (Makhteshim)-**"Lycopene and LDL oxidation." \$ 180,000.
- 1998-1999 **Transphyto Ltd.** - "Dietary antioxidants and atherosclerosis" – FF 120,000.
- 1997-1998 **Dalidar Pharma Ltd.** "Ginger-derived polyphenols and atherosclerosis" - \$ 50,000.
- 1995-1997 **Sandoz Pharma AG.** -"HMGCoA reductase inhibitors". - \$ 50,000.
- 1994-1997 **Fertilizers and Chemicals** -"Licorice as an antioxidant". - \$100,000.
- 1991-1993 **Bristol-Myers Squibb Grant.** "Hypocholesterolemic therapy and lipoprotein oxidation". - \$50,000 (Co-PI with Dr. J.G. Brook).

1990– 1992 **Merck, Sharp and Dohme Grant**. "Lipid-modified LDL and hypocholesterolemic drugs". - \$ 80,000 (Co-PI with Dr. J.G. Brook).

Technion Research grants

1994-present Mechanisms of lipoproteins atherogenicity- \$2500-\$5000/year.

11. CONFERENCES - International (as Invited Speaker)

2010

Aviram M. “The paraoxonases (PONs)”. Bert La Du Memorial Lecture. The 4th International Conference on Paraoxonases. September 7-10, **Reus (Catalunya), Spain.**

2009-

Aviram M. “ Paraoxonases (PONs) protection against atherosclerosis development”. 8th Touro University annual research day , March 13. **Valejo, CA, USA.**

Aviram M. “ Dietary antioxidants and paraoxonases (PONs) protection against atherosclerosis development”. April 16, **Nashville, Vanderbilt University , TN, USA.**

Aviram M. “Paraoxonase protection against lipoprotein – mediated macrophage foam cell formation”. Lipid Disorders; the Way Ahead. April 21-22, **Manchester, UK.**

Aviram M. “ Pomegranate cardio protection – the scientific background”. USA Federal Trade Commission (FTC). June 2. **Washington DC, USA.**

Aviram M. “HDL-associated paraoxonase 1 (PON1) hydrolyzing activity protects against oxidative stress and macrophage foam cell formation”.
The XV International symposium on atherosclerosis. June 14-18 , **Boston, MA, USA.**

Aviram M. “HDL – associated paraoxonase 1 (PON1) regulation by oxidative stress and by polyphenolic antioxidants”. Frontiers in cardiovascular science, October 15-18, **Eilat, Israel.**

Aviram M. “Mechanisms of action of dietary polyphenols: the cardiovascular example”. Malta Polyphenols 2009: bridging bioefficacy to innovation & applications, October 29, **Malta.**

Aviram M. “Pomegranate antioxidant polyphenols in human health”. Pomegranate extracts: clinical & nutraceutical applications, October 30, **Malta.**

Aviram M. “Oxidized cholesterol and antioxidants; the paraoxonase1 connection”. S. Neaman Institute and BioNorth initiative on Novel research on cholesterol and cardiovascular diseases, November 25, **Haifa, Israel** (Speaker and Organizer).

2008-

Aviram M. Organizer, Technion Landmarks in Science Nobel Laureates Symposium: Sixty years of Science in the State of Israel. May 19, **Haifa, Israel.**

Aviram M. "Paraoxonases in Diabetes". The 3rd International Conference on Paraoxonases. September 7-10, **Los Angeles, CA, USA.**

2007-

Aviram M. “Pomegranate protects against cardiovascular diseases”. POM Wonderful Research Summit. February 7, **Los Angeles, U.S.A.**

Aviram M. “Dietary antioxidants and paraoxonases against macrophage foam cell formation and atherosclerosis”. From Basic Science to therapeutic applications. June 7-10. **Buckarest, Romania.**

Aviram M. “Oxidative stress markers”, European Atherosclerosis Society (EAS), 76th Annual EAS Congress, June 10-13, 2007, **Helsinki, Finland.**

Aviram M. "Oxidative stress induced atherosclerosis: protective role for antioxidants and for paraoxonases". 3rd International symposium of the collaborative research center (SFB) and 12th NO Forum of the German speaking countries. October 4-6.2007, **Mainz, Germany.**

Aviram M. "Molecular mechanisms for the anti - atherogenicity of pomegranate anti – oxidant polyphenols". Frontiers in cardiovascular science, October 18-21, **Eilat, Israel.**

Aviram M. "Natural antioxidants against atherosclerosis development". The 4th International conference of Nutraceuticals (ICMAN 4), October 21-24. **Tel-Aviv, Israel.**

2006-

Aviram M. “Wine flavonoids, LDL cholesterol oxidation and atherosclerosis” The Universe of Win and Health, March 9-12, **Firenze, Italy.**

Aviram M. “Paraoxonase 1 (PON1) attenuates, macrophage foam cells formation”. Paraoxonases and oxidative stress. University of Mainz, March 13, **Mainz, Germany.**

Aviram M. “Dietary antioxidants protects against cardiovascular diseases: the pomegranate example” International Congress on Thrombosis, May 14-16, **Tel Aviv, Israel.**

Aviram M. "How could the Technion recruite excellent graduate students?". Special meeting of the Technion Senate. May 28, **Haifa, Israel.** Organizer and moderator.

Aviram M. “Atherosclerosis, diabetes and its complications” June 7-10, **Iasi, Romania.**

Aviram M. “HDL-associated paraoxonase 1 (PON1) attenuates lipoprotein oxidation, macrophage foam cells formation and atherosclerosis development” International Symposium on Atherosclerosis, June 18-22, **Rome, Italy.**

Aviram M. “Paraoxonase and macrophage foam cell formation” Second International Conference on Paraoxonases, September 7-10, **Debrecen, Hungary.**

Aviram M. "Pomegranate and Cardiovascular health". 6th International Phytochemical Conference Themes and Topics Phytochemicals: Aging and Health". October 16-17, **Buena Park, CA, USA.**

Aviram M. “Antioxidant properties of olive oil against LDL oxidation and atherosclerosis development”. 28th ESPEN Congress Clinical Nutrition and Metabolism. October 19-22, **Istanbul, Turkey.**

Aviram M. “Nutritional antioxidants protect against atherosclerosis: role for HDL-associated paraoxonase” Fourth international conference on mechanisms of action of nutraceuticals (ICMAN 4), October 29- November 1, **Tel Aviv, Israel.**

Aviram M. “Dietary antioxidants and paraoxonase attenuate macrophage foam cell formation and atherosclerosis development” Nutrition, Lipids and Atherosclerosis. November 17-18, **Madrid, Spain.**

2005-

Aviram M. “Dietary tomato’s lycopene reduces heart diseases” International Conference on Antioxidant and Lycopene, March 16, **London.**

Aviram M. “Macrophage NADPH oxidase and foam cell formation: Anti-atherosclerotic role for dietary antioxidants and for paraoxonase”, Workshop on “new insights in mechanisms of vascular diseases”, May 20-21, **Baveno, Maggiore Lake, Italy.**

Aviram M. “Oxidative stress and cardiovascular diseases: protective role of dietary antioxidants”. Visual Function – Insights from the revolution in biology at the molecular level”. June 14-16, **Tel Aviv, Israel.**

Aviram M. and Fuhrman B. “Pomegranate and CVD: pomegranate juice polyphenolic antioxidants protect against oxidative stress and atherosclerosis development”, Symposium on Human Health effect of Fruits and Vegetables, August 18-20, **Quebec City, Canada.**

2004-

Aviram M. “Paraoxonases protective mechanisms against oxidative stress, macrophage foam cell formation and atherosclerosis development”. The 74th EAS Congress. April 17-20, **Seville, Spain** (Speaker and Organizer).

Aviram M. “Paraoxonase (PON1) protects against lipids peroxidation and attenuates atherosclerosis development”. The First International Meeting on Paraoxonases – Basic and Clinical Directions of Current Research. April 23-24, **Ann Arbor, MI, USA** (Speaker and Organizer).

Aviram M. “HDL-associated paraoxonase1 (PON1) antioxidant and anti-inflammatory properties: PON1 protection against macrophage foam cell formation and atherosclerosis development”. September 2-6, HDL Workshop. **Heraklion, Crete, Greece.**

Aviram M. “Paraoxonases and macrophage foam cells formation”. Frontiers in Cardiovascular Science, October 14-17, **Eilat, Israel.**

Aviram M. “Paraoxonases and diabetes”. The Russell Berrie 1st international Diabetes Symposium. October 17-19, **Jerusalem, Israel.**

Aviram M. “Dietary antioxidants and paraoxonases: protection against cardiovascular diseases”. International Conference on Mechanisms of action of Nutraceuticals (ICMAN). November 12-14, **Waynesville, Haywood County, Western North Carolina, U.S.A.** (Speaker and Organizer).

2003-

Aviram M. “Mediterranean dietary antioxidants inhibit macrophage foam cell formation”. September 20-23, **Cannes, France** (Speaker and Organizer).

Aviram M. “Molecular pharmacology of herbal medicine and botanical products in the treatment of vascular disease: the pomegranate example”. Traditional herb medicines in Atherosclerosis Symposium. September 24-27, **Taipei, Taiwan.**

Aviram M. “Flavonoids-rich nutrients with potent antioxidant activity prevent atherosclerosis development”. The XIIIth International Symposium on Atherosclerosis. September 28- October 2, **Kyoto, Japan** (Speaker and Organizer).

Aviram M. “Paraoxonases protects against oxidative stress and atherosclerosis progression at the humeral and cellular levels”. Frontiers in Cardiovascular Science, October 23-26, **Eilat** (Speaker and Organizer).

2002-

Aviram M. “Oxysterols induce macrophage NADPH oxidase activation”. XIth Biennial Meeting of the Society for Free Radical Research International: Role of free radicals, oxidants and

antioxidants, in molecular and cell biology and life processes: New developments and techniques". July 16-20, **Paris, France**.

Aviram M. 1st Plenary Meeting, EC Concerted Action on Process for the Assessment of Scientific Support for Claims on Foods – PASSCLAIM. September 4-6, **Berlin, Germany**(Advisory Board member).

Aviram M. "Paraoxonase and Atherosclerosis". XIII Lipid-Meeting, Leipzig", September 30th – October 2nd, **Leipzig, Germany**.

Aviram M. "Paraoxonase protects against oxidative stress and atherosclerosis progression". Frontiers in Cardiovascular Science, October 3-6, **Eilat** (Speaker and Organizer).

Aviram M. "Oxidative stress, macrophage foam cell formation and Atherosclerosis". European Community Center of Excellence Workshop on: "Cardiovascular dysfunctions in hyperlipidemia and diabetes". October 9-13, **Buckarest, Romania**.

Aviram M. "Wine flavonoid antioxidant against LDL oxidation". Vinsalude 2002 Chile: Wine and Health International Congress, October 20-23, **Santiago, Chile** (Speaker and Organizer).

Aviram M. "Macrophage, Foam Cell formation and Atherosclerosis under Oxidative Stress: studies in the apolipoprotein E deficient mice". Biocenter Oulu Graduate School Advance Course: From cells to tissues: signaling and mechanisms, December 3, **Oulu, Finland**.

2001-

Aviram M. "New Avenues in Atherosclerosis Research: Genomics and New Therapeutical Perspectives". March 14-15, **Montreal, Canada**.

Aviram M. "Wine polyphenols, LDL oxidation and atherosclerosis", "Conference on Wine and Alcohol in Health and Disease". April 26-29, **Palo Alto, California, USA**.

Aviram M. "Dietary antioxidants and cardiovascular diseases" International Conference on Mechanisms of action of Nutraceuticals (ICMAN). October 10-14, **Dubrovnik, Croatia**.

2000-

Aviram M. "Anti-atherogenicity of the licorice derived isoflavane glabiridin: inhibitory role in LDL oxidation and macrophage foam cell formation". The Oxygen Club of California, 2000 world Congress, March 1-4, **Santa Barbara, California, USA**.

Aviram M. "Role of angiotensin II in lipoprotein oxidation and cholesterol metabolism in the vascular wall". The 15th American Society of Hypertension (ASH) meeting. May 15-19, **New York, NY, USA**.

Aviram M. “Polyphenols inhibit LDL Oxidation and Atherosclerosis”. XXth International Conference on Polyphenols, September 11-15, **Freising, Germany.**

Aviram M. “Antioxidant activity of statins as well as of pomegranate juice”, PTBNM Polish society for atherosclerosis research MEM, October, 23-26 in **Krag Castle, Koszalin, Poland.**

1999-

Aviram M. “Paraoxonase, LDL Oxidation and Macrophage Foam Cell Formation”. The 2nd Rappaport – Mayo Symposium on vascular biology: therapeutic horizons in cardiovascular disease. May 23-27, **Rochester, MN, USA.**

Aviram M. “Review of Human Studies related to vascular function”. ILSI Europe Workshop on Markers of Oxidative Damage and Antioxidant protection. June, 28-30, **Prague, Czech Republic.**

Aviram M. “Functional Ingredients in Wine”. 4th Karlsruhe Nutrition Symposium on Vegetables and Fruit for better Nutrition and Health: Scientific evidence and Practical Experiences. October, 10-12, **Karlsruhe, Germany.**

Aviram M. “Oxidized LDL and Atherosclerosis: Role of Antioxidants and Paraoxonase” 10th International Dresden Symposium on Lipoproteins and Atherosclerosis. December, 9-11, **Dresden, Germany.**

1998-

Aviram M. “LDL oxidation in athpatients and the effect of drug therapy”. The Pfizer Lecture, February 9, **Montreal, Canada.**

Aviram M. “LDL oxidation and atherosclerosis: antiatherogenicity of antioxidants”. The first regional meeting on medical science-The roles of free radicals in health and disease” March 22-27, **Jerusalem-Amman, Israel-Jordan (Speaker and Organizer).**

Aviram M. “Anti-atherogenicity of antioxidants against LDL oxidation” The Second International Conference on Natural Antioxidants and Anticarcinogens in Nutrition, Health and Disease (NAHD). June 24-27, **Helsinki, Finland.**

Aviram M. “Tomato’s lycopene and β -carotene inhibit LDL oxidation. Nutracon, July 20-22, **San Antonio, Texas.**

Aviram M. “Paraoxonase reduces lipoprotein oxidation: a possible role for its per-like activity”. The European Atherosclerosis Society, 70 EAS Meeting, September 6-9, **Geneva, Switzerland.**

Aviram M. “Human serum paraoxonase, lipoprotein oxidation and atherosclerosis”. The 5th International Union of Biochemistry and Molecular Biology (IUBMB) Conference on the Biochemistry of Health and Diseases. October, 18-22, **Jerusalem, Israel.**

Aviram M. “Dietary antioxidants against LDL oxidation in cardiovascular diseases”. American College for advancement in Medicine, November 20-22, **Phoenix, Arizona.**

1997-

Aviram M. “Macrophage-mediated oxidation of LDL” - The first joint meeting of the Rappaport Institute and the University of Dundee. January 26-28, **Dundee, Scotland, U.K.**

Aviram M. “LDL oxidation by macrophages”. The first international workshop on molecular biology of mononuclear phagocyte differentiation and activation. **Advisory Board Expert.** May 2-3, **Regensburg, Germany.**

Aviram M. “Inhibition of LDL oxidation by macrophage - and by LDL - associated antioxidants” - The 68th meeting of the European Atherosclerosis Society (EAS): Molecular Cell Biology and Atherosclerosis. May 7-10, **Brugge, Belgium.**

Aviram M. “Antiatherogenicity of statin therapy in hypercholesterolemic patients: effects on platelet activation and on LDL oxidation”. The 29th annual meeting of Japan Atherosclerosis Society (JAS). June 5-6, **Tokyo, Japan.**

Aviram M. “Dietary antioxidants and LDL oxidation”. The 2nd world conference of the international society for molecular nutrition and therapy. August 2-4, **Winnipeg, Canada.**

Aviram M. “Lipoprotein oxidation and atherosclerosis”- **Chairman of the workshop.** 11th International Symposium on Atherosclerosis. October 5-9, **Paris, France.**

Aviram M. “Macrophage -mediated oxidation of LDL and atherosclerosis”. The First Rappaport-Mayo Symposium on Vascular Biology. December 1, **Haifa, Israel.**

1996-

Aviram M. “Role of oxidized LDL in the development of atherosclerosis”. The Menarini Series on Cardiovascular Diseases: Advances in Cardiovascular Pathology. January 26-27, **Florence, Italy.**

Aviram M. “Antioxidants against LDL oxidation and Atherosclerosis”. March 1st, **Naarden, The Netherlands.**

Aviram M. “Lycopene and Atherosclerosis”. BioMed, Inaugural Lecture Program, March 2nd, **Birmingham, U.K.**

Aviram M. “Interrelationship among platelet activation, LDL oxidation and foam cell formation in hypercholesterolemic patients: antiatherogenic effects of statin therapy”. Asian-Pacific Congress on Vascular Diseases. March 11-15, **Singapore.**

Aviram M. “Macrophage relevance in the atherome plaque formation. Effects of pravastatin in the inhibition of cellular cholesterol synthesis and increase of LDL receptor activity in macrophages”. International Symposium on Coronary Prevention and Lipid Control: Physiopathology basis and new Therapeutic Consensus. Laboratories Dr. Estevez. S.A., April 19-20, **Barcelona, Spain.**

Aviram M. “Oxidative modification of LDL and Atherosclerosis”. V Simposio International Sorbe, Alimentation, Lipidos Y Atherosclerosis. May 30- June 1, **Madrid, Spain.**

Aviram M. “Macrophage-mediated oxidation of LDL depends on the balance between cellular oxygenases and antioxidants”. 66th Congress of the European Atherosclerosis Society, July 13-17, **Florence, Italy.**

Aviram M. “Interrelationship among platelet activation, LDL oxidation and foam cell formation in hypercholesterolemic patients: antiatherogenic effects of statin therapy” 66th Congress of the European Atherosclerosis Society, July 13-17, **Florence, Italy.**

Aviram M. “LDL enrichment with tomato’s lycopene increases its resistance to oxidation in the atherosclerotic, apolipoprotein E deficient transgenic mice” 11th International symposium on Carotenoids. August 18-23, **Leiden, The Netherlands.**

Aviram M. “Macrophage-mediated oxidation of LDL: role of cellular-and lipoprotein-associated antioxidants”. 2nd International Conference on Lipoprotein Oxidation and Atherosclerosis: Biological and Clinical Aspects. September, 12-14, **Pavia, Italy.**

Aviram M. “Inhibition of LDL oxidation by macrophage-and LDL-associated antioxidants”. **Chairman of the Symposium.** International Symposium on vitamins and antiproliferative agents in prevention of atherosclerosis. The 4th Congress of the Polish Society for Atherosclerosis Research. October 3-6, **Zokopane, Poland.**

Aviram M. “Red wine quercetin inhibits LDL oxidation and aggregation in the atherosclerotic, apolipoprotein E deficient, transgenic mice”. The First Workshop on Wine and Human Health. October 9-11, **Udine, Italy.**

Aviram M. “Macrophage proteoglycans contribute to the binding and uptake of oxidized low density lipoprotein (Ox-LDL). The 69th Scientific Sessions, American Heart Association (AHA), November 10-13, **New Orleans, Louisiana, U.S.A.**

1995-

Aviram M. “Macrophage uptake of oxidized LDL inhibits lysosomal sphingomyelinase, thus causing the accumulation of unesterified cholesterol”. 5th Rappaport Symposium: Modified Lipoproteins, Antioxidants and Atherosclerosis. **Chairman of the Symposium.** May, 8-12, **Shavei Zion, Israel.**

Aviram M. "Oxidative stress affects LDL-platelet interactions and induce foam cell formation". XVth Congress of the International Society on Thrombosis and Haemostasis. June 11-16, Jerusalem, **Israel**.

Aviram M. "Platelet activation, LDL oxidation and foam cell formation". 1st International Meeting on Interventional Cardiology. June 18-23, **Jerusalem, Israel**.

Aviram M. "Platelets and macrophage cholesterol accumulation". 11th IFCC European Congress of Clinical Chemistry. July 2-7, **Tampere, Finland**.

Aviram M. "Oxidized LDL and macrophage accumulation of unesterified cholesterol". Third Scientific Meeting of the Polish Society for Atherosclerosis Research. October 5-8, 1995, **Cracow, Poland**.

Aviram M. "Dietary Antioxidants against LDL oxidation and atherosclerosis". Annual Meeting of the Indian Society for Atherosclerosis Research. December 8-10. **New Delhi, India**.

Aviram M. "Inhibition of LDL oxidation by carotenoids: a comparative study of lycopene and β -carotene". International Conference of Food Factors. December, 10-15. **Hamamatsu, Japan**.

1994-

Aviram M. "Macrophage-mediated modification of LDL and atherosclerosis". IV International Symposium on Lipids and Atherosclerosis. May 5-7. **Madrid, Spain**.

Aviram M. "Oxidized LDL and Atherosclerosis". Senior Investigator Arcol Prize laureate. Hundred years celebration to Pasteur Institute. June 2-4. **Lille, France**.

Aviram M. "LDL lipid modifications increases its Atherogenicity". Second Congress of the Polish Society for Atherosclerosis Research. June 4-7. **Szczecin, Poland**.

Aviram M. "phospholipase-modified LDL and Atherogenesis". 8th International Dresden Lipid Symposium. June 10-12. **Dresden, Germany**.

Aviram M. "Macrophage-mediated Oxidation of LDL and Atherosclerosis". Society for Free Radical Research. September 16-18. **Pavia, Italy**.

1993-

Aviram M. "Dietary olive oil decrease LDL atherogenicity. The VII Creteil Symposium on Nutrition, Lipids and Lipoproteins". February 12. **Paris, France**.

Aviram M. "Beyond cholesterol: Modification of lipoproteins and increased atherogenicity". International symposium on Atherosclerosis, Inflammation and Thrombosis". March 21-24, **Florence, Italy.**

Aviram M. and Rosenblat M. "Macrophage-mediated oxidamodification of LDL". Joint Meeting of the German and Societies for Cell Biology (DGX and NVVC), March 28-31. **Munster, Germany.**

Aviram M. "LDL lipids modifications and increased atherogenicity". 62nd European atherosclerosis Society. September 5-9. **Jerusalem, Israel.**

Aviram M. "Antioxidant mediated inhibition of LDL-modifications reduces its atherogenicity". International SFRR symposium on Antioxidants, Inflammation, Cardiovascular and Ophthalmic disease. Server Award. September 30 - October 2. **Valencia, Spain.**

1992-

Aviram M. "Serotonin increased macrophage uptake of oxidized low density lipoprotein". XI International Symposium on Drugs affecting Lipid Metabolism, May 13-16. **Florence, Italy.**

Aviram M. "Increased susceptibility to activation and increased uptake of low density lipoprotein by cholesloaded macrophages". 59 European Atherosclerosis Society Congress. May 17-21. **Nice, France.**

Aviram M. "Lipids and platelet function in the development of atherosclerosis in diabetes". The Second International Symposium on Diabetes and Atherosclerosis, September 5-7. **Carlsbad, Czechoslovakia.**

Aviram M. "Macrophage-mediated LDL oxidation required LDL binding to the LDL receptor". 33rd International conference on the Biochemistry of Lipids (ICBL). September 7-10. **Lyon, France.**

Aviram M. "Phospholipase D-modified low-density lipoprotein is taken up by macrophages at an increased rate: A possible role for phosphatidic acid". 65th Scientific Sessions, American Heart Association (AHA), November 16-19. **New Orleans, LA, U.S.A.**

1991-

Aviram M. "Platelet mediated cholesterol accumulation in macrophages". 9th International Symposium on Atherosclerosis. October 6-11. **Chicago, (Rosemont) IL, U.S.A.**

1990-

Aviram M. "Platelet enhancement of macrophage cholesterol accumulation: a novel mechanism for atherogenesis". 2nd Mediterranean Congress of Angiology. September 16-22. **Antalya, Turkey.**

Aviram M. "Platelet enhancement of macrophage cholesterol accumulation: A novel mechanism for atherogenesis". European Lipoprotein Club Meeting. September 17-20. **Tutzing, Germany.**

Aviram M. "Platelet enhancement of macrophage cholesterol accumulation: A novel mechanism for atherogenesis". 63rd Scientific Sessions, American Heart Association. November 12, 1990, **Dallas, TX, U.S.A.**

1989-

Aviram M. "Lipase modified LDL and macrophage cholesterol accumulation". International Meeting on atherosclerosis (EAS). April 20-22. **Wien, Austria.**

Aviram M. "Macrophage uptake of oxidized LDL is increased by platelet secretory products". European Lipoprotein Meeting September 11-14. **Tutzing, Germany.**

Aviram M. "Lovastatin inhibits LDL oxidation". International symposium on drugs affecting lipid metabolism. November 8-11. **Houston, TX, U.S.A.**

Aviram M. "Macrophage uptake of oxidized LDL is increased by platelet secretory products". 62nd Scientific Sessions of the American Heart Association. November 13-16. **New Orleans, LA, U.S.A.**

1988-

Aviram M. "Lipase-modified LDL results in cholesterol accumulation in macrophages". American Federation for Clinical Research (AFCR), Western Section. February 16-19. **Carmel, CA, U.S.A.**

Aviram M. "Low density lipoprotein triglyceride content determines its interaction with cells". 8th International Symposium on Atherosclerosis. October 9-13. **Rome, Italy.**

Aviram M. "Triglyceride content of LDL affects the interaction of apo B with cells". 61st Scientific Sessions, American Heart Association, November. **Washington, D.C., U.S.A.**

1987-

Aviram M. "Intralipid infusion abolishes the ability of human serum to cholesterol load cultured macrophages". 60th Scientific Sessions, American Heart Association. November 16-19. **Anaheim, CA, U.S.A.**

1985-

Aviram M. "Antithrombotic effect of plasma chylomicrons on endothelial cells: differences between dietary cream and cod liver oil". Seventh International Symposium on Atherosclerosis. October 6-10. **Melbourne, Australia.**

1984-

Aviram M. "Chylomicron atherogenicity: Plasma chylomicrons decrease platelet function". Seventh Annual Conference on Lipoproteins. The European Lipoprotein Club. September 10-13. **Tutzing, Germany.**

1980-

Aviram M. "Low-density lipoprotein receptors on human platelets". American Federation for Clinical Research (AFCR). February 10-15. **Washington D.C. U.S.A.**

PUBLICATIONS

Theses

1. M.Sc. thesis: "Energy requirement for the intracellular breakdown of ribonucleic acid".
2. D.Sc. thesis: "Turnover of tyrosine-aminotransferase in hepatoma tissue culture cells".

Refereed Papers in Professional Journals

1. Tal M., **M. Aviram**, A. Kanarek, and A. Weiss. Polyuridylic acid binding and translating by Escherichia coli ribosomes: stimulation by protein I, inhibition by aurointricarboxylic acid. *Biochim Biophys Acta* **281**: 381-392 (1972).
2. **Aviram M.**, and A. Hershko. Influence of ATP depletion on the degradation of rapidly labeled RNA in cultured hepatoma cells. *Biochem Biophys Res Commun* **65**: 1303-1310 (1975).
3. **Aviram M.**, and A. Hershko. Interconversion of multiple forms of tyrosine aminotransferase in vitro and in vivo in cultured hepatoma cells. *Biochim Biophys Acta* **498**: 83-90 (1977).
4. Rapoport J., **M. Aviram**, C. Chaimovitz, and J.G. Brook. Defective high-density lipoprotein composition in patients on chronic hemodialysis. A possible mechanism for accelerated atherosclerosis. *N Engl J Med* **299**: 1326-1329 (1978).
5. Brook J.G., A. Lavy, **M. Aviram**, and O. Zinder. The concentration of high density lipoprotein in patients with type IV hyperlipoproteinemia and the effect of clofibrate. *Atherosclerosis* **36**: 461-469 (1980).
6. **Aviram M.**, Brook J.G., Lees A.M., and Lees R. S. Low density lipoprotein binding to human platelets: role of charge and of specific amino acids. *Biochem Biophys Res Commun* **99**: 308-318 (1981).
7. Brook J.G., **M. Aviram**, R. Luboshitzky and D. Barzilai. High density lipoprotein and arteriosclerosis. Different patterns in primary hypothyroidism and type IIa hyperlipoproteinemia. *Isr J Med Sci* **17**: 318-322 (1981).
8. **Aviram M.**, and J.G. Brook. The effect of human plasma on platelet function in familial hypercholesterolemia. *Thromb Res* **26**: 101-109 (1982).

9. Brook J.G., **M. Aviram**, A. Viener, E. Shilansky, and W. Markiewicz. High-density lipoprotein subfractions in normolipidemic patients with coronary atherosclerosis. *Circulation* **66**: 923-926 (1982).
10. **Aviram M.**, R. Luboshitzky, and J.G. Brook. Lipid and lipoprotein pattern in thyroid dysfunction and the effect of therapy. *Clin Biochem* **15**: 62-66 (1982).
11. **Aviram M.**, Z. Blumenfeld, J.G. Brook, A. Levy and J. Brandes. High-density lipoprotein and its subfractions in cord blood. *Singapore J Obstet Gynecol* **13**: 107-114 (1982).
12. **Aviram M.**, J.G. Brook, S. Mokady, R. Diukman, B. Fogel and U. Cogan. Changes in rabbits' plasma lipoprotein pattern induced by substituting soybean protein for dietary animal protein. *Nutr Rep Intern* **26**: 569-579 (1982).
13. Brook J.G., **M. Aviram**, M. Oettinger and M. Sharf. The effect of oestrogen implants on high density lipoproteins and its subfractions in women in their pre-mature menopause. *Maturitas* **4**: 257- 265 (1982).
14. Ron D., I. Oren, **M. Aviram**, O.S.Better, and J.G. Brook. Accumulation of lipoprotein remnants in patients with chronic renal failure. *Atherosclerosis* **46**: 67-75 (1983).
15. **Aviram M.**, and J.G. Brook. Platelet interaction with high and low density lipoproteins. *Atherosclerosis* **46**: 259-268 (1983).
16. Brook J.G., G. Winterstein, and **M. Aviram**. Platelet function and lipoprotein levels after plasma-exchange in patients with familial hypercholesterolaemia. *Clin Sci* **64**: 637-642 (1983).
17. **Aviram M.** Plasma lipoprotein separation by discontinuous density gradient ultracentrifugation in hyperlipoproteinemic patients. *Biochem Med* **30**:111-118 (1983).
18. Blumenfeld Z., **M. Aviram**, J.G. Brook, and J.M. Brandes. Changes in lipoproteins and subfractions following oophorectomy and oestrogen replacement in peri-menopausal women. *Maturitas* **5**:77-84 (1983).
19. **Aviram M.**, and J.G. Brook. The effect of blood constituents on platelet function: role of blood cells and plasma lipoproteins. *Artery* **11**: 297-305 (1983).
20. Ron D., **M. Aviram**, and J.G. Brook. High density lipoprotein in octogenarians. *Biochem Med* **30**:253-260 (1983).
21. Markel A., J.G. Brook, Y. Levy, **M. Aviram**, and M.B.H. Youdim. Increased platelet adhesion and aggregation in hypertensive patients: effect of atenolol. *Br J Clin Pharmacol* **16**:663-668 (1983).

22. **Aviram M.**, and J.G. Brook. Characterization of the effect of plasma lipoproteins on platelet function in vitro. *Haemostasis* **13**:344-350 (1983).
23. Mokady S., U.Cogan, G. Dreifus, **M. Aviram** and J.G. Brook. Plasma lipids and lipoproteins in normo-and hyperlipidemic rabbits fed plant protein diets. *Nutr Res* **4**:897-902 (1984).
24. Baruch Y., J.G. Brook, S. Eidelman, and **M. Aviram**. Increased concentration of high density lipoprotein in plasma and decreased platelet aggregation in primary biliary cirrhosis. *Atherosclerosis* **53**:151- 162 (1984).
25. Viener A., J.G. Brook, and **M. Aviram**. Abnormal plasma lipoprotein composition in hypercholesterolaemic patients induces platelet activation. *Eur J Clin invest* **14**: 207-213 (1984).
26. Shmulewitz A., J.G. Brook, and **M. Aviram**. Native and modified low-density-lipoprotein interaction with human platelets in normal and homozygous familial-hypercholesterolaemic subjects. *Biochem J* **224**: 13-20 (1984).
27. **Aviram M.**, and J.G. Brook. Selective release from platelet granules induced by plasma lipoproteins. *Biochem Med* **32**: 30-33 (1984).
28. Levy Y., **M. Aviram**, G. Spira, I. Tatarsky, J.G. Brook, and A. Carter. Plasma cholesterol concentration and extra lipid band in monoclonal gammopathies. *Postgrad Med J* **60**:449-453 (1984).
29. Haim S., J.G. Brook, A. Gilhar, R. Friedman-Birnbaum, A. Markel, **M. Aviram**, A. Marmur, and M.B.H. Youdim. Platelet function in Behçet's disease. *J Dermatol* **11**:117-120 (1984).
30. Weschler A., **M. Aviram**, M. Levin, O.S. Better, and J.G. Brook. High dose of L-carnitine increases platelet aggregation and plasma triglyceride levels in uremic patients on hemodialysis. *Nephron* **38**: 120-124 (1984).
31. Berkovitch Y., A. Marmur, J.G. Brook, and **M. Aviram**. Platelet adhesion determination in whole blood using a simple stagnation flow method. *Ann Biomed Eng* **12**:335-346 (1984).
32. **Aviram M.**, B. Fuhrman, and J.G. Brook. Chylomicrons from patients with type V hyperlipoproteinemia inhibit platelet function. *Atherosclerosis* **56**: 157-167 (1985).
33. **Aviram M.**, G. Winterstein, and J.G. Brook. Differential effect of platelet inhibitors in normal and in hypercholesterolaemic subjects. *Br J Clin Pharmacol* **19**: 715-719 (1985).
34. **Aviram M.**, R.J. Deckelbaum, and J.G. Brook. Platelet function in a case with abetalipoproteinemia. *Atherosclerosis* **57**:313-323 (1985).

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Appendix

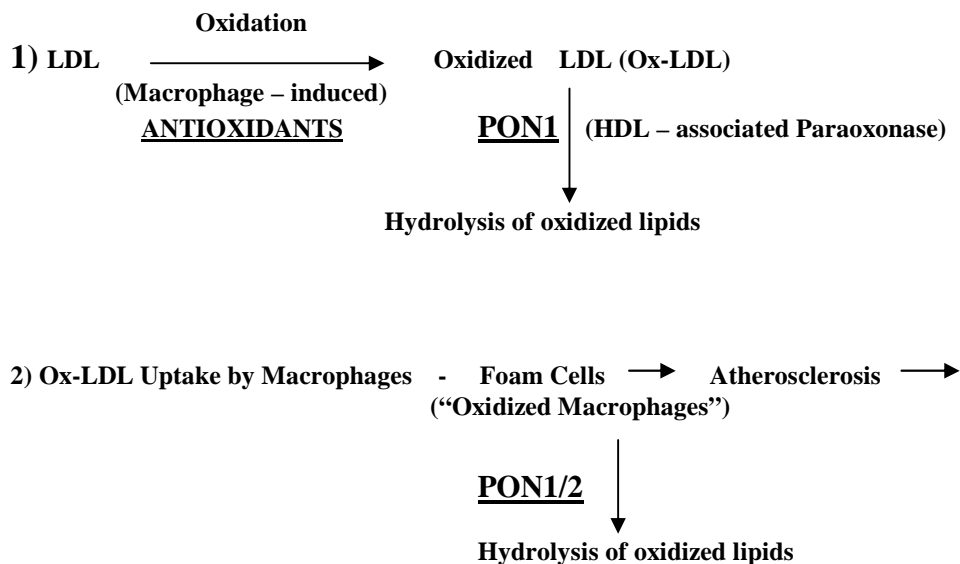
2010

Research Accomplishments

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Objective

Revealing the mechanisms behind Macrophage Cholesterol accumulation and Foam Cell formation under Oxidative Stress during Atherogenesis: Role of Dietary Antioxidants and of Paraoxonases (PONs).



Specific Research Areas

* 12,700 Citations of ~ 400 articles

1. Lipoproteins Oxidation and Atherosclerosis (1980 – present)

Oxidative stress is thought to play a key role in the development of atherosclerosis, the major cause of morbidity and mortality in the world. We have shown in atherosclerotic mice and in humans that LDL oxidation, as well as additional lipoprotein modifications contribute to enhanced atherogenicity of LDL. Studies on the mechanisms of oxidized LDL (Ox-LDL) retention to extracellular matrix (ECM) proteoglycans as related to the lipoprotein uptake by the macrophage scavenger receptors, leading to cellular accumulation of cholesterol and oxysterols, are carried out in our laboratory. **Macrophage – mediated oxidation of LDL** and foam cell formation are the hallmark of early atherogenesis, and we have demonstrated the role of cellular oxygenases and oxidases (NADPH oxidase), as well as that of macrophage antioxidants (such as the glutathione system), in LDL oxidation. We have demonstrated that under oxidative stress, not only the lipoproteins are oxidized, but also the cellular lipids. We showed the presence of Ox-LDL and that of **lipid peroxidized macrophages** in the atherosclerotic lesion, and demonstrated that these oxidized cells are able to oxidize LDL even in the absence of transition metal ions. Finally, we have shown **increased LDL oxidation in patients** with increased risk for atherosclerosis development (hypercholesterolemia, hypertension, diabetes, chronic renal failure). Drug therapy in these patients (hypocholesterolemic “statins”, ACE inhibitors, Insulin) reduced the patient’s increased LDL oxidation and atherogenic characteristics.

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2. **Aviram M.**, E.L., Bierman, and A. Chait. Modification of low density lipoprotein by lipoprotein lipase or hepatic lipase induces enhanced uptake and cholesterol accumulation in cells. **J. Biol. Chem.** 263:15416-15422 (1988).
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2. Dietary Antioxidants and Atherosclerosis (1990 – present)

Dietary antioxidants that inhibit LDL oxidation can attenuate atherosclerosis development, and we have demonstrated indeed such properties for vitamin E, carotenoids (lycopene, β -carotene), but mainly for polyphenolic flavonoids, such as those found in **pomegranate** (punicalagin, an hydrolyzable tannins), **wine** (quercetin flavonol and resveratrol), **licorice** (glabridin isoflavan), and **olive oil** (oleuropein phenolic). We have provided evidence that the inhibitory effect of some flavonoids on LDL oxidation (and on atherosclerosis development) is related to their interaction with the lipoprotein directly, as well as to their accumulation in arterial macrophages and subsequent inhibition of cellular oxygenases and oxidases.

Representative Publications:

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14. Fuhrman B, Volkova N, **Aviram M.** Pomegranate juice polyphenols increase recombinant paraoxonase-1 binding to high-density lipoprotein: Studies in vitro and in diabetic patients. **Nutrition** 26(4):359-366 (2010)

3. Paraoxonase ,Lipids Peroxidation and Atherosclerosis (1997 – present)

Under excess oxidative stress, antioxidants capability to block the formation of Ox-LDL and cellular oxidized lipids formation may not be sufficient. We have recently demonstrated that **HDL - associated Paraoxonase (PON1)** can hydrolyze oxidized lipids in oxidized lipoproteins, macrophages, and in atherosclerotic lesion, and thus may act as a second line of defense against oxidative stress. Combination of potent antioxidants (some unique flavonoids) together with paraoxonase was shown in our laboratory to attenuate atherogenesis, secondary to reduced oxidative stress and to decreased macrophage uptake of oxidized lipoproteins via the scavenger receptors.

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12. Shamir R, Hartman C, Karry R , Pavlotzki E, Eliakim R, Lachter J, Swissa A, and **Aviram M.** Paraoxonases (PONs) 1, 2, and 3 are expressed in human and mouse gastrointestinal tract and in Caco-2 cell line: selective secretion of PON1 and PON2. **Free Radic Biol Med** 39:336- 344 (2005).
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