

The top 100 cited cholesterol papers

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Abstract. We have compiled a list of the 100 most cited articles in cholesterol research to assess research trends over the last 10 and 100 years to mark the 200th anniversary of the naming of cholesterol as part of the special issue of *Biomedical Spectroscopy and Imaging*.

Keywords: Cholesterol

1. Introduction

2016 is the 200th anniversary of the naming of cholesterol [1] and as part of the special issue of *Biomedical Spectroscopy and Imaging* to mark this milestone, this article presents an analysis of the most cited articles on cholesterol in an attempt to identify the most widely read and influential articles on the subject and give the authors the recognition they deserve. Such an analysis of cited papers can also identify trends, provide guidance for future research and highlight where there are insufficiencies in the current literature [1,2].

2. Methods and limitations

As with many areas of biomedicine, the field of cholesterol research historically has had a strong divide between biochemical and physiological investigations. As we began the process of selecting the 100-most-cited papers in the field this divide was in clear evidence. Most of the papers fell into one of the following categories:

- (1) Methods for measuring cholesterol
- (2) Cholesterol metabolism/homeostasis
- (3) Cholesterol and disease
- (4) Cholesterol lowering drugs
- (5) Cholesterol biochemistry/biophysics

While the major interest of the journal is in the fifth category we felt it would also be interesting to look at the wider picture to mark this anniversary. Citation data are not readily available for papers published more than 100 years ago and for this reason we focused on the last 100 years and also, for comparison the last 10 years.

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It is important to recognize that any search strategy represents an approximation to the field.

The data used in the tabulation of each originate from the Web of Science Core Collection database which includes but is not limited to all papers indexed by the NIH's Medline database. Two selection filters were used to determine which papers would contribute to an article's metrics. The first requirement was that all papers to be included in the analysis contained the search term "cholesterol" in the title field. Reviews were included in the analysis because, while it is relatively "easy" to write a review, it is very difficult to write a review that is well *cited*. Well-cited reviews tend to be authored by leaders in the field and present conceptual advances or new hypotheses that can be as important as experimental advances.

The second filter is temporal: only papers published and subsequently indexed in Web of Science Core Collection between January 1, 1916 and December 31, 2015 were considered for the 100 year analysis and only papers published and subsequently indexed in Web of Science Core Collection between January 1, 2006 and December 31, 2015 were considered for the 10 year analysis. The queries for the two document sets were conducted on February 2, 2016 and March 29, 2016 respectively.

It is important to recognize that citation scores are, by necessity, close approximations rather than absolute values, the latter not being possible because all citation tools have slightly different variables (e.g. journals indexed, time period covered, data reliability).

3. Results

Table 1
Most-cited papers in cholesterol between January 1, 1916 and December 31, 2015

Rank	Year	Authors	Title	Journal	Times cited
1	1972	Friedewa, WT; Fredrick, DS; Levy, RI	Estimation of concentration of low-density lipoprotein cholesterol in plasma, without use of preparative ultracentrifuge	CLINICAL CHEMISTRY	16,697
2	2001	Cleeman, JI; Grundy, SM; Becker, D; Clark, LT; Cooper, RS; Denke, MA; Howard, WJ; Hunninghake, DB; Illingworth, DR; Luepker, RV; McBride, P; McKenney, JM; Pasternak, RC; Stone, NJ; Van Horn, L; Brewer, HB; Ernst, ND; Gordon, D; Levy, D; Rifkind, B; Rossouw, JE; Savage, P; Haffner, SM; Orloff, DG; Proschan, MA; Schwartz, JS; Sempos, CT; Shero, ST; Murray, EZ	Executive summary of the Third Report of the National Cholesterol Education Program (NCEP) expert panel on detection, evaluation, and treatment of high blood cholesterol in adults (Adult Treatment Panel III)	JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	12,564
3	1994	Pedersen, TR; Kjekshus, J; Berg, K; Haghfelt, T; Faergeman, O; Thorgeirsson, G; Pyorala, K; Miettinen, T; Wilhelmsen, L; Olsson, AG; Wedel, H; Kristianson, K; Thomsen, H; Nordero, E; Thomsen, B; Lyngborg, K; Andersen, GS; Nielsen, F; Talleruphuus, U; McNair, A; Egstrup, K; Simonsen, EH; Simonsen, I; Vejbychristensen, H; Sommer, L; Eidner, PO; Klarholt, E; Henriksen, A;	Randomized trial of cholesterol-lowering in 4444 patients with coronary-heart-disease – The Scandinavian Simvastatin Survival Study (4S)	LANCET	7573

Table 1
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
		Mellemsgaard, K; Launbjerg, J; Freuergaard, P; Nielsen, L; Madsen, EB; Ibsen, H; Andersen, U; Enemark, H; Haarbo, J; Martinsen, B; Dahlstrom, CG; Thyrring, L; Thomassen, K; Jensen, G; Rasmussen, SL; Skov, N; Hansen, KN; Larsen, ML; Haastrup, B; Hjaere, I; Thuroe, A; Leth, A; Munch, M; Worck, R; Nielsen, B; Thorn, AG; Pedersenbjergaard, O; Fournaise, B; Sigurd, B; Enk, B; Nielsen, H; Jacobsen, L; Svendsen, TL; Hoegholm, A; Munter, H; Kaufmann, P; Haunso, S; Grande, P; Eriksen, C; Nielsen, HH; Jurlander, B; Pinborg, T; Pindborg, J; Tost, H; Christiansen, BD; Oppenhagen, M; Egede, F; Hvidt, S; Kjaerby, T; Lemming, L; Klausen, I; Miettinen, TA; Vanhanen, H; Strandberg, TE; Holtta, K; Luomanmaki, H; Pekuri, T; Vuorinen, A; Pasternack, A; Oksa, H; Siitonen, L; Rimpi, R; Kesaniemi, YA; Lilja, M; Korhonen, T; Rantala, A; Rantala, M; Savolainen, M; Ukkola, O; Laine, L; Virkkala, L; Lehto, S; Miettinen, H; Salokannel, A; Raisanen, R; Hognason, J; Kristjansdottir, H; Thorvaldsdottir, G; Sigurdsson, G; Sverrisson, JT; Hansteen, V; Kjelsberg, F; Berget, K; Pettersen, R; Balto, ER; Holm, T; Gundersen, T; Aslaksen, B; Andersen, EH; Torsvik, H; Faber, A; Indrebo, T; Ose, A; Roterud, T; Holstlarsen, L; Waage, K; Holstlarsen, E; Haerem, JW; Aukrust, P; Torp, R; Risberg, K; Mauseth, K; Gerds, E; Nygard, O; Hallaraker, A; Gradek, G; Vangen, EM; Schartumhansen, H; Refsum, AM; Listerud, S; Gundersrud, B; Stene, AM; Klykken, B; Aakervik, O; Loraas, A; Foss, PO; Haga, A; Thoresen, L; Drivenes, A; Lem, P; Gabrielsen, F; Hestad, S; Rode, R; Haug, BK; Skjelvan, G; Eldorsen, E; Ytrearne, K; Rasmussen, K; Myhre, ESP; Neramoen, I; Christiansen, L; Karlsen, AS; Walberg, K; Tjonndal, HA; Kulseng, B; Rokseth, R; Nergard, TV; Roe, MO; Tenstad, O; Lofsnes, IL; Bergsrud, U; Melberg, TH; Vonbrandis, C; Barvik, S; Woie, L;			

Table 1
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Rank	Year	Authors	Title	Journal	Times cited
		Abrahamsen, AM; Aarsland, T; Svanes, H; Noer, G; Nordlie, KE; Hanedalen, AE; Johansen, T; Larsen, CB; Ostholm, E; Overskeid, K; Sandvei, P; Johansen, A; Sognen, E; Aarskog, D; Dale, A; Hegrestad, S; Reikvam, A; Hawkes, L; Hoff, S; Torjussen, T; Norvik, R; Jorgensen, C; Hjermann, I; Leren, P; Narvestad, A; Fausa, D; Gjestvang, FT; Nordland, B; Brunmark, P; Bioklund, H; Bioklund, B; Forsberg, H; Bergstrom, B; Laaksonen, I; Vestermark, MB; Mascher, G; Hammarstrom, E; Trosell, K; Karlsson, L; Hallstrom, L; Stjerna, A; Slette, MK; Diderholm, E; Pberglund, K; Linde, B; Ahlmark, G; Saetre, H; Ahlberg, G; Sundkvist, K; Gustafsson, PE; Gustafsson, E; Norrby, A; Jaup, B; Svensson, L; Wiklund, O; Linden, T; Bergh, CH; Jonsteg, K; Bonnier, B; Lundin, Y; Romanus, K; Ulvenstam, G; Johansson, S; Wallin, I; Dudas, K; Andreasson, M; Torelund, G; Skarfors, E; Ruter, G; Akesson, L; Wagner, F; Ljungdahl, L; Wagner, V; Rasmanis, G; Edhag, O; Vourisalo, D; Hjelmself, H; Wesley, G; Lundkvist, L; Angman, K; Olsson, A; Svenson, O; Kuylensstierna, J; Frisenettefich, K; Bergman, E; Stromblad, H; Jensen, S; Jonsson, E; Levin, C; Odeberg, H; Bengtsson, PO; Holmesson, E; Hedstrand, H; Bojo, L; Oberg, S; Leksell, H; Werner, P; Persson, S; Simonsson, M; Wirenstam, UB; Moberg, B; Ekstrand, AB; Nicol, P; Malmros, B; Saaw, J; Arcini, N; Kobosko, J; Anevik, IG; Gyland, F; Lundh, B; Wennerholm, M; Olsson, C; Kjellberg, J; Fabianson, K; Fraser, T; Bergkvist, I; Bergdahl, B; Fluor, C; Wajerstam, S; Svensson, KA; Ekholm, L; Torebo, E; Ryberg, A; Frisell, JE; Hedman, A; Wallrup, L; Andersen, G; Sandstrom, M; Alberg, K; Fagher, B; Thulin, T; Svenstam, I; Bjurman, A; Skoglund, E; Dahl, G; Kjellstrom, T; Juhlin, P; Sjooboquist, M; Sjogren, A; Loogna, E; Jansson, T; Friden, J;			

Table 1
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
		Nilsson, O; Andersson, PO; Henriksson, C; Ellstrom, J; Brodersson, H; Lundquist, L; Aslund, M; Boman, K; Jansson, JH; Norrfors, B; Hoglund, C; Lundblad, M; Liljefors, I; Wennerstrom, L; Perz, I; Leijd, B; Falkenberg, C; Bergsten, L; Strom, S; Engstrom, AC; Ejdeback, J; Malmberg, K; Hogstrom, S; Stahl, L; Moller, BH; Lycksell, M; Soderstrom, M; Hansson, E; Hallen, C; Stakeborg, H; Borretzen, J; Heden, B; Andersson, K; Johnson, O; Birgander, LS; Elander, B; Lidell, C; Andersson, PE; Marklund, E; Dahlen, M; Rucker, F; Lofqvist, M; Wannberg, B; Lim, BH; Larsson, O; Andersson, G; Hansson, A; Uchto, M; Gowenius, M; Uggeldahl, I; Ursing, D; Hammarlund, P; Nyman, P; Tsuppuka, E; Malmberg, L; Goransson, K; Hasselgren, P; Insberg, CM; Petterson, S; Ahrlin, A; Lovheim, O; Andersson, LO; Grundstrom, I			
4	1974	Allain, CC; Poon, LS; Chan, CSG; Richmond, W; Fu, PC	Enzymatic determination of total serum-cholesterol	CLINICAL CHEMISTRY	5978
5	1989	Steinberg, D; Parthasarathy, S; Carew, TE; Khoo, JC; Witztum, JL	Beyond cholesterol – Modifications of low-density lipoprotein that increase its atherogenicity	NEW ENGLAND JOURNAL OF MEDICINE	5920
6	1996	Sacks, FM; Pfeffer, MA; Moye, LA; Rouleau, JL; Rutherford, JD; Cole, TG; Brown, L; Warnica, JW; Arnold, JMO; Wun, CC; Davis, BR; Braunwald, E	The effect of pravastatin on coronary events after myocardial infarction in patients with average cholesterol levels	NEW ENGLAND JOURNAL OF MEDICINE	4789
7	2002	Collins, R; Armitage, J; Parish, S; Sleight, P; Peto, R	MRC/BHF Heart Protection Study of cholesterol lowering with simvastatin in 20,536 high-risk individuals: A randomised placebo-controlled trial	LANCET	4533
8	1986	Brown, MS; Goldstein, JL	A receptor-mediated pathway for cholesterol homeostasis	SCIENCE	3940
9	1952	Abell, LL; Levy, BB; Brodie, BB; Kendall, FE	A simplified method for the estimation of total cholesterol in serum and demonstration of its specificity	JOURNAL OF BIOLOGICAL CHEMISTRY	3630

Table 1
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
10	1998	Tonkin, A; Aylward, P; Colquhoun, D; Glasziou, P; Harris, P; MacMahon, S; Magnus, P; Newel, D; Nestel, P; Sharpe, N; Hunt, D; Shaw, J; Simes, RJ; Thompson, P; Thomson, A; West, M; White, H; Simes, S; Hague, W; Caleo, S; Hall, J; Martin, A; Mulray, S; Barter, P; Beilin, L; Collins, R; McNeil, J; Meier, P; Willimott, H; Smithers, D; Wallace, P; Sullivan, D; Keech, A	Prevention of cardiovascular events and death with pravastatin in patients with coronary heart disease and a broad range of initial cholesterol levels	NEW ENGLAND JOURNAL OF MEDICINE	3586
11	1998	Downs, JR; Clearfield, M; Weis, S; Whitney, E; Shapiro, DR; Beere, PA; Langendorfer, A; Stein, EA; Kruyer, W; Gotto, AM	Primary prevention of acute coronary events with lovastatin in men and women with average cholesterol levels – Results of AFCAPS/TexCAPS	JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	3383
12	2004	Grundy, SM; Cleeman, JI; Merz, CNB; Brewer, HB; Clark, LT; Hunninghake, DB; Pasternak, RC; Smith, SC; Stone, NJ	Implications of recent clinical trials for the National Cholesterol Education Program Adult Treatment Panel III guidelines	CIRCULATION	3212
13	2005	Baigent, C; Keech, A; Kearney, PM; Blackwell, L; Buck, G; Pollicino, C; Kirby, A; Sourjina, T; Peto, R; Collins, R; Simes, J	Efficacy and safety of cholesterol-lowering treatment: Prospective meta-analysis of data from 90,056 participants in 14 randomised trials of statins	LANCET	3000
14	1988	Mahley, RW	Apolipoprotein-E – Cholesterol transport protein with expanding role in cell biology	SCIENCE	2977
15	1953	Zlatkis, A; Zak, B; Boyle, AJ	A new method for the direct determination of serum cholesterol	JOURNAL OF LABORATORY AND CLINICAL MEDICINE	2590
16	1950	Sperry, WM; Webb, M	A revision of the schoenheimer-sperry method for cholesterol determination	JOURNAL OF BIOLOGICAL CHEMISTRY	2516
17	1968	Glomset, JA	Plasma lecithin – Cholesterol acyltransferase reaction	JOURNAL OF LIPID RESEARCH	2227

Table 1
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
18	1979	Goldstein, JL; Ho, YK; Basu, SK; Brown, MS	Binding-site on macrophages that mediates uptake and degradation of acetylated low-density lipoprotein, producing massive cholesterol deposition	PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA	2110
19	2002	Ridker, PM; Rifai, N; Rose, L; Buring, JE; Cook, NR	Comparison of C-reactive protein and low-density lipoprotein cholesterol levels in the prediction of first cardiovascular events	NEW ENGLAND JOURNAL OF MEDICINE	2060
20	1999	Rubins, HB; Robins, SJ; Collins, D; Fye, CL; Anderson, JW; Elam, MB; Faas, FH; Linares, E; Schaefer, EJ; Schectman, G; Wilt, TJ; Wittes, J	Gemfibrozil for the secondary prevention of coronary heart disease in men with low levels of high-density lipoprotein cholesterol	NEW ENGLAND JOURNAL OF MEDICINE	2055
21	1983	Brown, MS; Goldstein, JL	Lipoprotein metabolism in the macrophage – Implications for cholesterol deposition in atherosclerosis	ANNUAL REVIEW OF BIOCHEMISTRY	2018
22	2003	Sever, PS; Dahlof, B; Poulter, NR; Wedel, H; Beevers, G; Caulfield, M; Collins, R; Kjeldsen, SE; Kristinsson, A; McInnes, GT; Mehlsen, J; Nieminen, M; O'Brien, E; Ostergren, J	Prevention of coronary and stroke events with atorvastatin in hypertensive patients who have average or lower-than-average cholesterol concentrations, in the Anglo-Scandinavian Cardiac Outcomes Trial-Lipid Lowering Arm (ASCOT-LLA): A multicentre randomised controlled trial	LANCET	2003
23	1997	Brown, MS; Goldstein, JL	The SREBP pathway: Regulation of cholesterol metabolism by proteolysis of a membrane-bound transcription factor	CELL	1990
24	2002	Horton, JD; Goldstein, JL; Brown, MS	SREBPs: Activators of the complete program of cholesterol and fatty acid synthesis in the liver	JOURNAL OF CLINICAL INVESTIGATION	1903

Table 1
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
25	1989	Gordon, DJ; Probstfield, JL; Garrison, RJ; Neaton, JD; Castelli, WP; Knoke, JD; Jacobs, DR; Bangdiwala, S; Tyroler, HA	High-density lipoprotein cholesterol and cardiovascular-disease – 4 prospective American-studies	CIRCULATION	1888
26	1971	Kannel, WB; Castelli, WP; Gordon, T; Mcnamara, PM	Serum cholesterol, lipoproteins, and risk of coronary heart disease – Framingham study	ANNALS OF INTERNAL MEDICINE	1884
27	1993	Grundey, SM; Bilheimer, D; Chait, A; Clark, LT; Denke, M; Havel, RJ; Hazzard, WR; Hulley, SB; Hunnigake, DB; Kreisberg, RA; Krisetherton, P; Mckenney, JM; Newman, MA; Schaefer, EJ; Sobel, BE; Somelofski, C; Weinstein, MC; Brewer, HB; Cleeman, JI; Donato, KA; Ernst, N; Hoeg, JM; Rifkind, BM; Rossouw, J; Sempos, CT; Gallivan, JM; Harris, MN; Quintadler, L	Summary of the 2nd report of the national-cholesterol-education-program (NCEP) expert panel on detection, evaluation, and treatment of high blood cholesterol in adults (adult-treatment-panel-II)	JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	1809
28	1982	Warnick, GR; Benderson, J; Albers, JJ	Dextran sulfate-Mg ²⁺ precipitation procedure for quantitation of high-density-lipoprotein cholesterol	CLINICAL CHEMISTRY	1738
29	1986	Castelli, WP; Garrison, RJ; Wilson, PWF; Abbott, RD; Kalousdian, S; Kannel, WB	Incidence of coronary heart-disease and lipoprotein cholesterol levels – The Framingham-study	JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	1715
30	2000	Brown, DA; London, E	Structure and function of sphingolipid- and cholesterol-rich membrane rafts	JOURNAL OF BIOLOGICAL CHEMISTRY	1638
31	2003	Collins, R; Armitage, J; Parish, S; Sleight, P; Peto, R	MRC/BHF Heart Protection Study of cholesterol-lowering with simvastatin in 5963 people with diabetes: A randomised placebo-controlled trial	LANCET	1584
32	1977	Castelli, WP; Doyle, JT; Gordon, T; Hames, CG; Hjortland, MC; Hulley, SB; Kagan, A; Zukel, WJ	HDL cholesterol and other lipids in coronary heart-disease – Cooperative lipoprotein phenotyping study	CIRCULATION	1513

Table 1
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
33	1986	Stamler, J; Wentworth, D; Neaton, JD	Is relationship between serum-cholesterol and risk of premature death from coronary heart-disease continuous and graded – Findings in 356,222 primary screenees of the Multiple Risk Factor Intervention Trial (MRFIT)	JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	1448
34	1980	Alberts, AW; Chen, J; Kuron, G; Hunt, V; Huff, J; Hoffman, C; Rothrock, J; Lopez, M; Joshua, H; Harris, E; Patchett, A; Monaghan, R; Currie, S; Stapley, E; Albersschonberg, G; Hensens, O; Hirshfield, J; Hoogsteen, K; Liesch, J; Springer, J	Mevinolin – A highly potent competitive inhibitor of hydroxymethylglutaryl-coenzyme-A reductase and a cholesterol-lowering agent	PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA-BIOLOGICAL SCIENCES	1337
35	1977	Lopesvirella, MF; Stone, P; Ellis, S; Colwell, JA	Cholesterol determination in high-density lipoproteins separated by 3 different methods	CLINICAL CHEMISTRY	1292
36	1965	Hegsted, DM; Mcgandy, RB; Myers, ML; Stare, FJ	Quantitative effects of dietary fat on serum cholesterol in man	AMERICAN JOURNAL OF CLINICAL NUTRITION	1245
37	1997	Delmas, PD; Bjarnason, NH; Mitlak, BH; Ravoux, AC; Shah, AS; Huster, WJ; Draper, M; Christiansen, C	Effects of raloxifene on bone mineral density, serum cholesterol concentrations, and uterine endometrium in postmenopausal women	NEW ENGLAND JOURNAL OF MEDICINE	1201
38	1978	Warnick, GR; Albers, JJ	Comprehensive evaluation of heparin-manganese precipitation procedure for estimating high-density lipoprotein cholesterol	JOURNAL OF LIPID RESEARCH	1191
39	2010	Baigent, C; Blackwell, L; Emberson, J; Holland, LE; Reith, C; Bhala, N; Peto, R; Barnes, EH; Keech, A; Simes, J; Collins, R	Efficacy and safety of more intensive lowering of LDL cholesterol: A meta-analysis of data from 170,000 participants in 26 randomised trials	LANCET	1180
40	1979	Kannel, WB; Castelli, WP; Gordon, T	Cholesterol in the prediction of atherosclerotic disease – New perspectives based on the framingham study	ANNALS OF INTERNAL MEDICINE	1161

Table 1
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
41	1995	Fielding, CJ; Fielding, PE	Molecular physiology of reverse cholesterol transport	JOURNAL OF LIPID RESEARCH	1159
42	1968	Admirand, WH; Small, DM	Physicochemical basis of cholesterol gallstone formation in man	JOURNAL OF CLINICAL INVESTIGATION	1114
43	1997	Pyorala, K; Pedersen, TR; Kjekshus, J; Faergeman, O; Olsson, AG; Thorgeirsson, G	Cholesterol lowering with simvastatin improves prognosis of diabetic patients with coronary heart disease – A subgroup analysis of the Scandinavian Simvastatin Survival Study (4S)	DIABETES CARE	1113
44	1985	Yeagle, PL	Cholesterol and the cell-membrane	BIOCHIMICA ET BIOPHYSICA ACTA	1079
45	1976	Basu, SK; Goldstein, JL; Anderson, RGW; Brown, MS	Degradation of cationized low-density lipoprotein and regulation of cholesterol-metabolism in homozygous familial hypercholesterolemia fibroblasts	PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA	1071
46	1934	Schoenheimer, R; Sperry, WM	A micromethod for the determination of free and combined cholesterol	JOURNAL OF BIOLOGICAL CHEMISTRY	1068
47	1995	Treasure, CB; Klein, JL; Weintraub, WS; Talley, JD; Stillabower, ME; Kosinski, AS; Zhang, J; Boccuzzi, SJ; Cedarholm, JC; Alexander, RW	Beneficial-effects of cholesterol-lowering therapy on the coronary endothelium in patients with coronary-artery disease	NEW ENGLAND JOURNAL OF MEDICINE	1010
48	1959	Friedman, M; Rosenman, RH	Association of specific overt behavior pattern with blood and cardiovascular findings – Blood cholesterol level, blood clotting time, incidence of arcus senilis, and clinical coronary artery disease	JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	1008
49	1974	Roschlau, P; Bernt, E; Gruber, W	Enzymatic determination of total cholesterol in serum	ZEITSCHRIFT FUR KLINISCHE CHEMIE UND KLINISCHE BIOCHEMIE	985

Table 1
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
50	1973	Richmond, W	Preparation and properties of a cholesterol oxidase from nocardia sp. and its application to enzymatic assay of total cholesterol in serum	CLINICAL CHEMISTRY	946
51	2003	Mensink, RP; Zock, PL; Kester, ADM; Katan, MB	Effects of dietary fatty acids and carbohydrates on the ratio of serum total to HDL cholesterol and on serum lipids and apolipoproteins: A meta-analysis of 60 controlled trials	AMERICAN JOURNAL OF CLINICAL NUTRITION	937
51	2000	Berge, KE; Tian, H; Graf, GA; Yu, LQ; Grishin, NV; Schultz, J; Kwiterovich, P; Shan, B; Barnes, R; Hobbs, HH	Accumulation of dietary cholesterol in sitosterolemia caused by mutations in adjacent ABC transporters	SCIENCE	937
53	1992	Manninen, V; Tenkanen, L; Koskinen, P; Huttunen, JK; Manttari, M; Heinonen, OP; Frick, MH	Joint effects of serum triglyceride and LDL cholesterol and HDL cholesterol concentrations on coronary heart-disease risk in the Helsinki heart-study – Implications for treatment	CIRCULATION	925
54	1986	Martin, MJ; Browner, WS; Wentworth, D; Hulley, SB; Kuller, LH	Serum-cholesterol, blood-pressure, and mortality – Implications from a cohort of 361,662 men	LANCET	919
55	1998	Peet, DJ; Turley, SD; Ma, WZ; Janowski, BA; Lobaccaro, JMA; Hammer, RE; Mangelsdorf, DJ	Cholesterol and bile acid metabolism are impaired in mice lacking the nuclear oxysterol receptor LXR alpha	CELL	918
56	1973	Rudel, LL; Morris, MD	Determination of cholesterol using ortho-phthalaldehyde	JOURNAL OF LIPID RESEARCH	917
57	1998	Ridker, PM; Rifai, N; Pfeffer, MA; Sacks, FM; Moye, LA; Goldman, S; Flaker, GC; Braunwald, E	Inflammation, pravastatin, and the risk of coronary events after myocardial infarction in patients with average cholesterol levels	CIRCULATION	897
58	2000	Repa, JJ; Turley, SD; Lobaccaro, JMA; Medina, J; Li, L; Lustig, K; Shan, B; Heyman, RA; Dietschy, JM; Mangelsdorf, DJ	Regulation of absorption and ABC1-mediated efflux of cholesterol by RXR heterodimers	SCIENCE	888

Table 1
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
59	1995	Anderson, TJ; Meredith, IT; Yeung, AC; Frei, B; Selwyn, AP; Ganz, P	The effect of cholesterol-lowering and antioxidant therapy on endothelium-dependent coronary vasomotion	NEW ENGLAND JOURNAL OF MEDICINE	883
60	1972	Carlson, LA; Bottiger, LE	Ischemic heart-disease in relation to fasting values of plasma triglycerides and cholesterol – Stockholm prospective study	LANCET	867
61	1991	Stampfer, MJ; Sacks, FM; Salvini, S; Willett, WC; Hennekens, CH	A prospective-study of cholesterol, apolipoproteins, and the risk of myocardial-infarction	NEW ENGLAND JOURNAL OF MEDICINE	865
62	1998	Simons, M; Keller, P; De Strooper, B; Beyreuther, K; Dotti, CG; Simons, K	Cholesterol depletion inhibits the generation of beta-amyloid in hippocampal neurons	PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA	859
63	1999	Brown, MS; Goldstein, JL	A proteolytic pathway that controls the cholesterol content of membranes, cells, and blood	PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA	853
64	1994	Law, MR; Wald, NJ; Thompson, SG	By how much and how quickly does reduction in serum-cholesterol concentration lower risk of ischemic-heart-disease	BRITISH MEDICAL JOURNAL	848
65	1990	Vist, MR; Davis, JH	Phase-equilibria of cholesterol dipalmitoylphosphatidylcholine mixtures – H-2 nuclear magnetic-resonance and differential scanning calorimetry	BIOCHEMISTRY	842
66	2004	Altmann, SW; Davis, HR; Zhu, LJ; Yao, XR; Hoos, LM; Tetzloff, G; Iyer, SPN; Maguire, M; Golovko, A; Zeng, M; Wang, LQ; Murgolo, N; Graziano, MP	Niemann-Pick C1 like 1 protein is critical for intestinal cholesterol absorption	SCIENCE	828
67	1981	Brown, MS; Kovanen, PT; Goldstein, JL	Regulation of plasma-cholesterol by lipoprotein receptors	SCIENCE	825

Table 1
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
68	1990	Mensink, RP; Katan, MB	Effect of dietary trans-fatty-acids on high-density and low-density-lipoprotein cholesterol levels in healthy-subjects	NEW ENGLAND JOURNAL OF MEDICINE	821
69	1976	Brown, MS; Goldstein, JL	Receptor-mediated control of cholesterol-metabolism	SCIENCE	815
70	1997	Carstea, ED; Morris, JA; Coleman, KG; Loftus, SK; Zhang, D; Cummings, C; Gu, J; Rosenfeld, MA; Pavan, WJ; Krizman, DB; Nagle, J; Polymeropoulos, MH; Sturley, SL; Ioannou, YA; Higgins, ME; Comly, M; Cooney, A; Brown, A; Kaneski, CR; BlanchetteMackie, EJ; Dwyer, NK; Neufeld, EB; Chang, TY; Liscum, L; Strauss, JF; Ohno, K; Zeigler, M; Carmi, R; Sokol, J; Markie, D; O'Neill, RR; vanDiggelen, OP; Elleder, M; Patterson, MC; Brady, RO; Vanier, MT; Pentchev, PG; Tagle, DA	Niemann-Pick C1 disease gene: Homology to mediators of cholesterol homeostasis	SCIENCE	797
70	1996	Porter, JA; Young, KE; Beachy, PA	Cholesterol modification of hedgehog signaling proteins in animal development	SCIENCE	797
72	1983	Siedel, J; Hagele, EO; Ziegenhorn, J; Wahlefeld, AW	Reagent for the enzymatic determination of serum total cholesterol with improved lipolytic efficiency	CLINICAL CHEMISTRY	792
73	2003	Law, MR; Wald, NJ; Rudnicka, AR	Quantifying effect of statins on low density lipoprotein cholesterol, ischaemic heart disease, and stroke: Systematic review and meta-analysis	BRITISH MEDICAL JOURNAL	786
74	2001	Chawla, A; Boisvert, WA; Lee, CH; Laffitte, BA; Barak, Y; Joseph, SB; Liao, D; Nagy, L; Edwards, PA; Curtiss, LK; Evans, RM; Tontonoz, P	A PPAR gamma-LXR-ABCA1 pathway in macrophages is involved in cholesterol efflux and atherogenesis	MOLECULAR CELL	785
74	1990	Muldoon, MF; Manuck, SB; Matthews, KA	Lowering cholesterol concentrations and mortality: A quantitative review of primary prevention trials	BRITISH MEDICAL JOURNAL	785
76	1968	Ladbrook, BD; Williams, RM; Chapman, D	Studies on lecithin-cholesterol-water interactions by differential scanning calorimetry and X-ray diffraction	BIOCHIMICA ET BIOPHYSICA ACTA	783

Table 1
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
77	1987	Anderson, KM; Castelli, WP; Levy, D	Cholesterol and mortality – 30 years of follow-up from the framingham-study	JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	781
78	1973	Papahadj, D; Jacobson, K; Nir, S; Isac, T	Phase-transitions in phospholipid vesicles – Fluorescence polarization and permeability measurements concerning effect of temperature and cholesterol	BIOCHIMICA ET BIOPHYSICA ACTA	780
79	1965	Keys, A; Anderson, JT; Grande, F	Serum cholesterol response to changes in diet.4. particular saturated fatty acids in diet	METABOLISM	772
80	2000	Simons, K; Ikonen, E	Cell biology – How cells handle cholesterol	SCIENCE	766
81	2005	Nissen, SE; Tuzcu, EM; Schoenhagen, P; Crowe, T; Sasiela, WJ; Tsai, J; Orazem, J; Magorien, RD; O'Shaughnessy, C; Ganz, P	Statin therapy, LDL cholesterol, C-reactive protein, and coronary artery disease	NEW ENGLAND JOURNAL OF MEDICINE	761
81	1991	Kazlauskas, RJ; Weissfloch, ANE; Rappaport, AT; Cuccia, LA	A rule to predict which enantiomer of a secondary alcohol reacts faster in reactions catalyzed by cholesterol esterase, lipase from <i>pseudomonas-cepacia</i> , and lipase from <i>candida-rugosa</i>	JOURNAL OF ORGANIC CHEMISTRY	761
83	2007	Lewington, S; Whitlock, G; Clarke, R; Sherliker, P; Emberson, J; Halsey, J; Qizilbash, N; Peto, R; Collins, R	Blood cholesterol and vascular mortality by age, sex, and blood pressure: A meta-analysis of individual data from 61 prospective studies with 55,000 vascular deaths	LANCET	758
84	2010	Duewell, P; Kono, H; Rayner, KJ; Sirois, CM; Vladimer, G; Bauernfeind, FG; Abela, GS; Franchi, L; Nunez, G; Schnurr, M; Espevik, T; Lien, E; Fitzgerald, KA; Rock, KL; Moore, KJ; Wright, SD; Hornung, V; Latz, E	NLRP3 inflammasomes are required for atherogenesis and activated by cholesterol crystals	NATURE	757
84	2001	Mauch, DH; Nagler, K; Schumacher, S; Goritz, C; Muller, EC; Otto, A; Pfrieger, FW	CNS synaptogenesis promoted by glia-derived cholesterol	SCIENCE	757
86	2011	Boden, WE; Probstfield, JL; Anderson, T; Chaitman, BR; Desvignes-Nickens, P; Koprowicz, K; McBride, R; Teo, K; Weintraub, W	Niacin in Patients with Low HDL Cholesterol Levels Receiving Intensive Statin Therapy	NEW ENGLAND JOURNAL OF MEDICINE	755

Table 1
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
86	1957	Zak, B	Simple rapid microtechnic for serum total cholesterol	AMERICAN JOURNAL OF CLINICAL PATHOLOGY	755
88	2001	Oliver, WR; Shenk, JL; Snaith, MR; Russell, CS; Plunket, KD; Bodkin, NL; Lewis, MC; Winegar, DA; Sznajdman, ML; Lambert, MH; Xu, HE; Sternbach, DD; Kliewer, SA; Hansen, BC; Willson, TM	A selective peroxisome proliferator-activated receptor delta agonist promotes reverse cholesterol transport	PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA	753
89	1978	Carey, MC	Critical tables for calculating cholesterol saturation of native bile	JOURNAL OF LIPID RESEARCH	750
90	1999	Brown, L; Rosner, B; Willett, WW; Sacks, FM	Cholesterol-lowering effects of dietary fiber: A meta-analysis	AMERICAN JOURNAL OF CLINICAL NUTRITION	737
91	2000	Pearson, TA; Laurora, I; Chu, H; Kafonek, S	The Lipid Treatment Assessment Project (L-TAP) – A multicenter survey to evaluate the percentages of dyslipidemic, patients receiving lipid-lowering therapy and achieving low-density lipoprotein cholesterol goals	ARCHIVES OF INTERNAL MEDICINE	725
92	1953	Pearson, S; Stern, S; Mcgavack, TH	A rapid, accurate method for the determination of total cholesterol in serum	ANALYTICAL CHEMISTRY	724
93	1983	Mahley, RW; Innerarity, TL	Lipoprotein receptors and cholesterol homeostasis	BIOCHIMICA ET BIOPHYSICA ACTA	722
94	2001	Ridker, PM; Stampfer, MJ; Rifai, N	Novel risk factors for systemic atherosclerosis – A comparison of C-reactive protein, fibrinogen, homocysteine, lipoprotein(a), and standard cholesterol screening as predictors of peripheral arterial disease	JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	719
95	1989	Iso, H; Jacobs, DR; Wentworth, D; Neaton, JD; Cohen, JD	Serum-cholesterol levels and 6-year mortality from stroke in 350,977 men screened for the multiple risk factor intervention trial	NEW ENGLAND JOURNAL OF MEDICINE	717

Table 1
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
96	2008	Kathiresan, S; Melander, O; Guiducci, C; Surti, A; Burt, NP; Rieder, MJ; Cooper, GM; Roos, C; Voight, BF; Havulinna, AS; Wahlstrand, B; Hedner, T; Corella, D; Tai, ES; Ordovas, JM; Berglund, G; Vartiainen, E; Jousilahti, P; Hedblad, B; Taskinen, MR; Newton-Cheh, C; Salomaa, V; Peltonen, L; Groop, L; Altshuler, DM; Orho-Melander, M	Six new loci associated with blood low-density lipoprotein cholesterol, high-density lipoprotein cholesterol or triglycerides in humans	NATURE GENETICS	715
97	2011	Baigent, C; Landray, MJ; Reith, C; Emberson, J; Wheeler, DC; Tomson, C; Wanner, C; Krane, V; Cass, A; Craig, J; Neal, B; Jiang, LX; Hooi, LS; Levin, A; Agodoa, L; Gaziano, M; Kasiske, B; Walker, R; Massy, ZA; Feldt-Rasmussen, B; Krairitichai, U; Ophascharoensuk, V; Fellstrom, B; Holdaas, H; Tesar, V; Wiecek, A; Grobbee, D; de Zeeuw, D; Gronhagen-Riska, C; Dasgupta, T; Lewis, D; Herrington, W; Mafham, M; Majoni, W; Wallendszus, K; Grimm, R; Pedersen, T; Tobert, J; Armitage, J; Baxter, A; Bray, C; Chen, YP; Chen, ZM; Hill, M; Knott, C; Parish, S; Simpson, D; Sleight, P; Young, A; Collins, R	The effects of lowering LDL cholesterol with simvastatin plus ezetimibe in patients with chronic kidney disease (Study of Heart and Renal Protection): A randomised placebo-controlled trial	LANCET	711
97	2001	Chinetti, G; Lestavel, S; Bocher, V; Remaley, AT; Neve, B; Torra, IP; Teissier, E; Minnich, A; Jaye, M; Duverger, N; Brewer, HB; Fruchart, JC; Clavey, V; Staels, B	PPAR-alpha and PPAR-gamma activators induce cholesterol removal from human macrophage foam cells through stimulation of the ABCA1 pathway	NATURE MEDICINE	711
99	1960	Burstein, M; Samaille, J	Sur un dosage rapide du cholesterol lie aux alpha-lipoproteines et aux beta-lipoproteines du serum	CLINICA CHIMICA ACTA	706
100	1969	Hinckley, CC	Paramagnetic shifts in solutions of cholesterol and dipyrindine adduct of trisdipivalomethanatoeuropium(III). A shift reagent	JOURNAL OF THE AMERICAN CHEMICAL SOCIETY	700

Table 2
Most-cited papers in cholesterol between January 1, 2006 and December 31, 2015

Rank	Year	Authors	Title	Journal	Times cited
1	2010	Baigent, C; Blackwell, L; Emberson, J; Holland, LE; Reith, C; Bhala, N; Peto, R; Barnes, EH; Keech, A; Simes, J; Collins, R	Efficacy and safety of more intensive lowering of LDL cholesterol: A meta-analysis of data from 170,000 participants in 26 randomised trials	LANCET	1228
2	2011	Boden, WE; Probstfield, JL; Anderson, T; Chaitman, BR; Desvignes-Nickens, P; Koprowicz, K; McBride, R; Teo, K; Weintraub, W	Niacin in Patients with Low HDL Cholesterol Levels Receiving Intensive Statin Therapy	NEW ENGLAND JOURNAL OF MEDICINE	797
3	2010	Duwell, P; Kono, H; Rayner, KJ; Sirois, CM; Vladimer, G; Bauernfeind, FG; Abela, GS; Franchi, L; Nunez, G; Schnurr, M; Espevik, T; Lien, E; Fitzgerald, KA; Rock, KL; Moore, KJ; Wright, SD; Hornung, V; Latz, E	NLRP3 inflammasomes are required for atherogenesis and activated by cholesterol crystals	NATURE	790
4	2007	Lewington, S; Whitlock, G; Clarke, R; Sherliker, P; Emberson, J; Halsey, J; Qizilbash, N; Peto, R; Collins, R	Blood cholesterol and vascular mortality by age, sex, and blood pressure: A meta-analysis of individual data from 61 prospective studies with 55,000 vascular deaths	LANCET	776
5	2011	Baigent, C; Landray, MJ; Reith, C; Emberson, J; Wheeler, DC; Tomson, C; Wanner, C; Krane, V; Cass, A; Craig, J; Neal, B; Jiang, LX; Hooi, LS; Levin, A; Agodoa, L; Gaziano, M; Kasiske, B; Walker, R; Massy, ZA; Feldt-Rasmussen, B; Krairitichai, U; Ophascharoensuk, V; Fellstrom, B; Holdaas, H; Tesar, V; Wiecek, A; Grobbee, D; de Zeeuw, D; Gronhagen-Riska, C; Dasgupta, T; Lewis, D; Herrington, W; Mafham, M; Majoni, W; Wallendszus, K; Grimm, R; Pedersen, T; Tobert, J; Armitage, J; Baxter, A; Bray, C; Chen, YP; Chen, ZM; Hill, M; Knott, C; Parish, S; Simpson, D; Sleight, P; Young, A; Collins, R	The effects of lowering LDL cholesterol with simvastatin plus ezetimibe in patients with chronic kidney disease (Study of Heart and Renal Protection): A randomised placebo-controlled trial	LANCET	739
6	2008	Kathiresan, S; Melander, O; Guiducci, C; Surti, A; Burt, NP; Rieder, MJ; Cooper, GM; Roos, C; Voight, BF; Havulinna, AS; Wahlstrand, B; Hedner, T; Corella, D; Tai, ES; Ordovas, JM; Berglund, G; Vartiainen, E; Jousilahti, P; Hedblad, B; Taskinen, MR; Newton-Cheh, C; Salomaa, V; Peltonen, L; Groop, L; Altshuler, DM; Orho-Melander, M	Six new loci associated with blood low-density lipoprotein cholesterol, high-density lipoprotein cholesterol or triglycerides in humans	NATURE GENETICS	731
7	2007	Barter, P; Gotto, AM; LaRosa, JC; Maroni, J; Szarek, M; Grundy, SM; Kastelein, JJP; Bittner, V; Fruchart, JC	HDL cholesterol, very low levels of LDL cholesterol, and cardiovascular events	NEW ENGLAND JOURNAL OF MEDICINE	710

Table 2
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
8	2008	Kearney, PM; Blackwell, L; Collins, R; Keech, A; Simes, J; Peto, R; Armitage, J; Baigent, C	Efficacy of cholesterol-lowering therapy in 18,686 people with diabetes in 14 randomised trials of statins: A meta-analysis	LANCET	647
9	2011	Khera, AV; Cuchel, M; de la Llera-Moya, M; Rodrigues, A; Burke, MF; Jafri, K; French, BC; Phillips, JA; Mucksavage, ML; Wilensky, RL; Mohler, ER; Rothblat, GH; Rader, DJ	Cholesterol Efflux Capacity, High-Density Lipoprotein Function, and Atherosclerosis	NEW ENGLAND JOURNAL OF MEDICINE	625
10	2012	Voight, BF; Peloso, GM; Orho-Melander, M; Frikke-Schmidt, R; Barbalic, M; Jensen, MK; Hindy, G; Holm, H; Ding, EL; Johnson, T; Schunkert, H; Samani, NJ; Clarke, R; Hopewell, JC; Thompson, JF; Li, MY; Thorleifsson, G; Newton-Cheh, C; Musunuru, K; Pirruccello, JP; Saleheen, D; Chen, L; Stewart, AFR; Schillert, A; Thorsteinsdottir, U; Thorgeirsson, G; Anand, S; Engert, JC; Morgan, T; Spertus, J; Stoll, M; Berger, K; Martinelli, N; Girelli, D; McKeown, PP; Patterson, CC; Epstein, SE; Devaney, J; Burnett, MS; Mooser, V; Ripatti, S; Surakka, I; Nieminen, MS; Sinisalo, J; Lokki, ML; Perola, M; Havulinna, A; de Faire, U; Gigante, B; Ingelsson, E; Zeller, T; Wild, P; de Bakker, PIW; Klungel, OH; Maitland-van der Zee, AH; Peters, BJM; de Boer, A; Grobbee, DE; Kamphuisen, PW; Deneer, VHM; Elbers, CC; Onland-Moret, NC; Hofker, MH; Wijmenga, C; Verschuren, WMM; Boer, JMA; van der Schouw, YT; Rasheed, A; Frossard, P; Demissie, S; Willer, C; Do, R; Ordovas, JM; Abecasis, GR; Boehnke, M; Mohlke, KL; Daly, MJ; Guiducci, C; Burt, NP; Surti, A; Gonzalez, E; Purcell, S; Gabriel, S; Marrugat, J; Peden, J; Erdmann, J; Diemert, P; Willenborg, C; Konig, IR; Fischer, M; Hengstenberg, C; Ziegler, A; Buysschaert, I; Lambrechts, D; Van de Werf, F; Fox, KA; El Mokhtari, NE; Rubin, D; Schrezenmeir, J; Schreiber, S; Schafer, A; Danesh, J; Blankenberg, S; Roberts, R; McPherson, R; Watkins, H; Hall, AS; Overvad, K; Rimm, E; Boerwinkle, E; Tybjaerg-Hansen, A; Cupples, LA; Reilly, MP; Melander, O; Mannucci, PM;	Plasma HDL cholesterol and risk of myocardial infarction: A mendelian randomisation study	LANCET	535

Table 2
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
11	2014	Ardissino, D; Siscovick, D; Elosua, R; Stefansson, K; O'Donnell, CJ; Salomaa, V; Rader, DJ; Peltonen, L; Schwartz, SM; Altshuler, D; Kathiresan, S Stone, NJ; Robinson, JG; Lichtenstein, AH; Merz, CNB; Blum, CB; Eckel, RH; Goldberg, AC; Gordon, D; Levy, D; Lloyd-Jones, DM; McBride, P; Schwartz, JS; Shero, ST; Smith, SC; Watson, K; Wilson, PWF	2013 ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines	CIRCULATION	533
12	2012	Mihaylova, B; Emberson, J; Blackwell, L; Keech, A; Simes, J; Barnes, EH; Voysey, M; Gray, A; Collins, R; Baigent, C; de Lemos, J; Braunwald, E; Blazing, M; Murphy, S; Downs, JR; Gotto, A; Clearfield, M; Holdaas, H; Gordon, D; Davis, B; Koren, M; Dahlof, B; Poulter, N; Sever, P; Knopp, RH; Fellstrom, B; Holdaas, H; Jardine, A; Schmieder, R; Zannad, F; Goldbourt, U; Kaplinsky, E; Colhoun, HM; Betteridge, DJ; Durrington, PN; Hitman, GA; Fuller, J; Neil, A; Wanner, C; Krane, V; Sacks, F; Moye, L; Pfeffer, M; Hawkins, CM; Braunwald, E; Kjekshus, J; Wedel, H; Wikstrand, J; Barter, P; Keech, A; Tavazzi, L; Maggioni, A; Marchioli, R; Tognoni, G; Franzosi, MG; Maggioni, A; Bloomfield, H; Robins, S; Collins, R; Armitage, J; Keech, A; Parish, S; Peto, R; Sleight, P; Pedersen, TR; Ridker, PM; Holman, R; Meade, T; Simes, J; Keech, A; MacMahon, S; Marschner, I; Tonkin, A; Shaw, J; Serruys, PW; Nakamura, H; Knatterud, G; Furberg, C; Byington, R; Macfarlane, P; Cobbe, S; Ford, I; Murphy, M; Blauw, GJ; Packard, C; Shepherd, J; Kjekshus, J; Pedersen, T; Wilhelmsen, L; Braunwald, E; Cannon, C; Murphy, S; Collins, R; Armitage, J; Bowman, L; Parish, S; Peto, R; Sleight, P; Baigent, C; Landray, M; Collins, R; La Rosa, J; Rossouw, J; Probstfield, J; Shepherd, J; Cobbe, S; Macfarlane, P; Ford, I	The effects of lowering LDL cholesterol with statin therapy in people at low risk of vascular disease: Meta-analysis of individual data from 27 randomised trials	LANCET	496

Table 2
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
13	2014	Stone, NJ; Robinson, JG; Lichtenstein, AH; Merz, CNB; Blum, CB; Eckel, RH; Goldberg, AC; Gordon, D; Levy, D; Lloyd-Jones, DM; McBride, P; Schwartz, JS; Shero, ST; Smith, SC; Watson, K; Wilson, PWF	2013 ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines	JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY	475
14	2009	Ridker, PM; Danielson, E; Fonseca, FAH; Genest, J; Gotto, AM; Kastelein, JJP; Koenig, W; Libby, P; Lorenzatti, AJ; MacFadyen, JG; Nordestgaard, BG; Shepherd, J; Willerson, JT; Glynn, RJ	Reduction in C-reactive protein and LDL cholesterol and cardiovascular event rates after initiation of rosuvastatin: A prospective study of the JUPITER trial	LANCET	453
15	2008	Hanson, MA; Cherezov, V; Griffith, MT; Roth, CB; Jaakola, VP; Chien, EYT; Velasquez, J; Kuhn, P; Stevens, RC	A specific cholesterol binding site is established by the 2.8 angstrom structure of the human beta(2)-adrenergic receptor	STRUCTURE	435
16	2010	Rayner, KJ; Suarez, Y; Davalos, A; Parathath, S; Fitzgerald, ML; Tamehiro, N; Fisher, EA; Moore, KJ; Fernandez-Hernando, C	MiR-33 Contributes to the Regulation of Cholesterol Homeostasis	SCIENCE	414
17	2008	Ikonen, E	Cellular cholesterol trafficking and compartmentalization	NATURE REVIEWS MOLECULAR CELL BIOLOGY	377
18	2008	Kathiresan, S; Melander, O; Anevski, D; Guiducci, C; Burt, NP; Roos, C; Hirschhorn, JN; Berglund, G; Hedblad, B; Groop, L; Altshuler, DM; Newton-Cheh, C; Orho-Melander, M	Polymorphisms associated with cholesterol and risk of cardiovascular events	NEW ENGLAND JOURNAL OF MEDICINE	367
19	2007	Nicholls, SJ; Tuzcu, EM; Sipahi, I; Grasso, AW; Schoenhagen, P; Hu, T; Wolski, K; Crowe, T; Desai, MY; Hazen, SL; Kapadia, SR; Nissen, SE	Statins, high-density lipoprotein cholesterol, and regression of coronary atherosclerosis	JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	363
20	2010	Musunuru, K; Strong, A; Frank-Kamenetsky, M; Lee, NE; Ahfeldt, T; Sachs, KV; Li, XY; Li, H; Kuperwasser, N; Ruda, VM; Pirruccello, JP; Muchmore, B; Prokunina-Olsson, L; Hall, JL; Schadt, EE; Morales, CR; Lund-Katz, S; Phillips, MC; Wong, J; Cantley, W; Racie, T; Ejebe, KG;	From noncoding variant to phenotype via SORT1 at the 1p13 cholesterol locus	NATURE	361

Table 2
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
21	2007	Orho-Melander, M; Melander, O; Koteliansky, V; Fitzgerald, K; Krauss, RM; Cowan, CA; Kathiresan, S; Rader, DJ Zidovetzki, R; Levitan, I	Use of cyclodextrins to manipulate plasma membrane cholesterol content: Evidence, misconceptions and control strategies	BIOCHIMICA ET BIOPHYSICA ACTA-BIOMEMBRANES	336
22	2010	Najafi-Shoushtari, SH; Kristo, F; Li, YX; Shioda, T; Cohen, DE; Gerszten, RE; Naar, AM	MicroRNA-33 and the SREBP Host Genes Cooperate to Control Cholesterol Homeostasis	SCIENCE	333
23	2006	Lee, JK; Grace, KA; Taylor, AJ	Effect of a pharmacy care program on medication adherence and persistence, blood pressure, and low-density lipoprotein cholesterol – A randomized controlled trial	JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	328
24	2010	Raal, FJ; Santos, RD; Blom, DJ; Marais, AD; Charng, MJ; Cromwell, WC; Lachmann, RH; Gaudet, D; Tan, JL; Chasan-Taber, S; Tribble, DL; Flaim, JD; Crooke, ST	Mipomersen, an apolipoprotein B synthesis inhibitor, for lowering of LDL cholesterol concentrations in patients with homozygous familial hypercholesterolaemia: A randomised, double-blind, placebo-controlled trial	LANCET	307
25	2011	Chapman, MJ; Ginsberg, HN; Amarenco, P; Andreotti, F; Boren, J; Catapano, AL; Descamps, OS; Fisher, E; Kovanen, PT; Kuivenhoven, JA; Lesnik, P; Masana, L; Nordestgaard, BG; Ray, KK; Reiner, Z; Taskinen, MR; Tokgozoglu, L; Tybjaerg-Hansen, A; Watts, GF	Triglyceride-rich lipoproteins and high-density lipoprotein cholesterol in patients at high risk of cardiovascular disease: Evidence and guidance for management	EUROPEAN HEART JOURNAL	302
26	2008	Frank-Kamenetsky, M; Grefhorst, A; Anderson, NN; Racie, TS; Bramlage, B; Akinc, A; Butler, D; Charisse, K; Dorkin, R; Fan, Y; Gamba-Vitalo, C; Hadwiger, P; Jayaraman, M; John, M; Jayaprakash, KN; Maier, M; Nechev, L; Rajeev, KG; Read, T; Rohl, I; Soutschek, J; Tan, P; Wong, J; Wang, G; Zimmermann, T; de Fougères, A; Vornlocher, HP; Langer, R; Anderson, DG; Manoharan, M; Koteliansky, V; Horton, JD; Fitzgerald, K	Therapeutic RNAi targeting PCSK9 acutely lowers plasma cholesterol in rodents and LDL cholesterol in nonhuman primates	PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA	289

Table 2
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
26	2006	Kalaany, NY; Mangelsdorf, DJ	LXRs and FXR: The Yin and Yang of cholesterol and fat metabolism	ANNUAL REVIEW OF PHYSIOLOGY	289
28	2008	Pandey, AK; Sasseti, CM	Mycobacterial persistence requires the utilization of host cholesterol	PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA	285
28	2007	Wang, X; Collins, HL; Ranalletta, M; Fuki, IV; Billheimer, JT; Rothblat, GH; Tall, AR; Rader, DJ	Macrophage ABCA1 and ABCG1, but not SR-BI, promote macrophage reverse cholesterol transport in vivo	JOURNAL OF CLINICAL INVESTIGATION	285
30	2006	Kotowski, IK; Pertsemlidis, A; Luke, A; Cooper, RS; Vega, GL; Cohen, JC; Hobbs, HH	A spectrum of PCSK9 Alleles contributes to plasma levels of low-density lipoprotein cholesterol	AMERICAN JOURNAL OF HUMAN GENETICS	274
31	2012	Stein, EA; Mellis, S; Yancopoulos, GD; Stahl, N; Logan, D; Smith, WB; Lisbon, E; Gutierrez, M; Webb, C; Wu, R; Du, YL; Kranz, T; Gasparino, E; Swergold, GD	Effect of a Monoclonal Antibody to PCSK9 on LDL Cholesterol	NEW ENGLAND JOURNAL OF MEDICINE	267
32	2009	Zelcer, N; Hong, C; Boyadjian, R; Tontonoz, P	LXR Regulates Cholesterol Uptake Through Idol-Dependent Ubiquitination of the LDL Receptor	SCIENCE	266
32	2007	Lorenzo, C; Williams, K; Hunt, KJ; Haffner, SM	The National Cholesterol Education Program-Adult Treatment Panel III, International Diabetes Federation, and World Health Organization definitions of the metabolic syndrome as predictors of incident cardiovascular disease and diabetes	DIABETES CARE	266
34	2010	Klaassen, CD; Aleksunes, LM	Xenobiotic, Bile Acid, and Cholesterol Transporters: Function and Regulation	PHARMACOLOGICAL REVIEWS	265
35	2011	Carette, JE; Raaben, M; Wong, AC; Herbert, AS; Obernosterer, G; Mulherkar, N; Kuehne, AI; Kranzusch, PJ; Griffin, AM; Ruthel, G; Dal Cin, P; Dye, JM; Whelan, SP; Chandran, K; Brummelkamp, TR	Ebola virus entry requires the cholesterol transporter Niemann-Pick C1	NATURE	259

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36	2006	Cuchel, M; Rader, DJ	Macrophage reverse cholesterol transport – Key to the regression of atherosclerosis?	CIRCULATION	249
37	2012	Stein, EA; Gipe, D; Bergeron, J; Gaudet, D; Weiss, R; Dufour, R; Wu, R; Pordy, R	Effect of a monoclonal antibody to PCSK9, REGN727/SAR236553, to reduce low-density lipoprotein cholesterol in patients with heterozygous familial hypercholesterolaemia on stable statin dose with or without ezetimibe therapy: A phase 2 randomised controlled trial	LANCET	243
38	2010	Rajamaki, K; Lappalainen, J; Oorni, K; Valimaki, E; Matikainen, S; Kovanen, PT; Eklund, KK	Cholesterol Crystals Activate the NLRP3 Inflammasome in Human Macrophages: A Novel Link between Cholesterol Metabolism and Inflammation	PLOS ONE	242
38	2006	Shepherd, J; Breazna, A; Barter, P; LaRosa, J; Carmena, R; Grundy, S; Deedwania, P; Waters, D; Fruchart, JC; Haffner, S; Hsia, J	Effect of lowering LDL cholesterol substantially below currently recommended levels in patients with coronary heart disease and diabetes – The treating to new targets (TNT) study	DIABETES CARE	242
40	2006	Barter, PJ; Ballantyne, CM; Carmena, R; Cabezas, MC; Chapman, MJ; Couture, P; De Graaf, J; Durrington, PN; Faergeman, O; Frohlich, J; Furberg, CD; Gagne, C; Haffner, SM; Humphries, SE; Jungner, I; Krauss, RM; Kwiterovich, P; Marcovina, S; Packard, CJ; Pearson, TA; Reddy, KS; Rosenson, R; Sarrafzadegan, N; Sniderman, AD; Stalenhoef, AF; Stein, E; Talmud, PJ; Tonkin, AM; Walldius, G; Williams, KMS	Apo B versus cholesterol in estimating cardiovascular risk and in guiding therapy: Report of the thirty-person/ten-country panel	JOURNAL OF INTERNAL MEDICINE	238
41	2012	Rosenson, RS; Brewer, HB; Davidson, WS; Fayad, ZA; Fuster, V; Goldstein, J; Hellerstein, M; Jiang, XC; Phillips, MC; Rader, DJ; Remaley, AT; Rothblat, GH; Tall, AR; Yvan-Charvet, L	Cholesterol Efflux and Atheroprotection Advancing the Concept of Reverse Cholesterol Transport	CIRCULATION	236
42	2008	Tall, AR; Yvan-Charvet, L; Terasaka, N; Pagler, T; Wang, N	HDL, ABC transporters, and cholesterol efflux: Implications for the treatment of atherosclerosis	CELL METABOLISM	235

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43	2011	Rayner, KJ; Sheedy, FJ; Esau, CC; Hussain, FN; Temel, RE; Parathath, S; van Gils, JM; Rayner, AJ; Chang, AN; Suarez, Y; Fernandez-Hernando, C; Fisher, EA; Moore, KJ	Antagonism of miR-33 in mice promotes reverse cholesterol transport and regression of atherosclerosis	JOURNAL OF CLINICAL INVESTIGATION	230
44	2006	Gelissen, IC; Harris, M; Rye, KA; Quinn, C; Brown, AJ; Kockx, M; Cartland, S; Packianathan, M; Kritharides, L; Jessup, W	ABCA1 and ABCG1 synergize to mediate cholesterol export to apoA-I	ARTERIOSCLEROSIS THROMBOSIS AND VASCULAR BIOLOGY	227
44	2006	Chang, TY; Chang, CCY; Ohgami, N; Yamauchi, Y	Cholesterol sensing, trafficking, and esterification	ANNUAL REVIEW OF CELL AND DEVELOPMENTAL BIOLOGY	227
46	2008	Tall, AR	Cholesterol efflux pathways and other potential mechanisms involved in the athero-protective effect of high density lipoproteins	JOURNAL OF INTERNAL MEDICINE	221
46	2006	Mari, M; Caballero, F; Colell, A; Morales, A; Caballeria, J; Fernandez, A; Enrich, C; Fernandez-Checa, JC; Garcia-Ruiz, C	Mitochondrial free cholesterol loading sensitizes to TNF- and Fas-mediated steatohepatitis	CELL METABOLISM	221
48	2006	Naik, SU; Wang, X; Da Silva, JS; Jaye, M; Macphee, CH; Reilly, MP; Billheimer, JT; Rothblat, GH; Rader, DJ	Pharmacological activation of liver X receptors promotes reverse cholesterol transport in vivo	CIRCULATION	220
49	2009	Briel, M; Ferreira-Gonzalez, I; You, JJ; Karanicolas, PJ; Akl, EA; Wu, P; Blechacz, B; Bassler, D; Wei, XG; Sharman, A; Whitt, I; da Silva, SA; Khalid, Z; Nordmann, AJ; Zhou, Q; Walter, SD; Vale, N; Bhatnagar, N; O'Regan, C; Mills, EJ; Bucher, HC; Montori, VM; Guyatt, GH	Association between change in high density lipoprotein cholesterol and cardiovascular disease morbidity and mortality: Systematic review and meta-regression analysis	BRITISH MEDICAL JOURNAL	218
50	2007	Akuta, N; Suzuki, F; Kawamura, Y; Yatsuji, H; Sezaki, H; Suzuki, Y; Hosaka, T; Kobayashi, M; Kobayashi, M; Arase, Y; Ikeda, K; Kumada, H	Predictive factors of early and sustained responses to peginterferon plus ribavirin combination therapy in Japanese patients infected with hepatitis C virus genotype 1b: Amino acid substitutions in the core region and low-density lipoprotein cholesterol levels	JOURNAL OF HEPATOLOGY	217

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52	2006	Oram, JF; Vaughan, AM	ATP-binding cassette cholesterol transporters and cardiovascular disease	CIRCULATION RESEARCH	215
53	2008	Frikke-Schmidt, R; Nordestgaard, BG; Stene, MCA; Sethi, AA; Remaley, AT; Schnohr, P; Grande, P; Tybjaerg-Hansen, A	Association of loss-of-function mutations in the ABCA1 gene with high-density lipoprotein cholesterol levels and risk of ischemic heart disease	JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	214
54	2008	Sandhu, MS; Waterworth, DM; Debenham, SL; Wheeler, E; Papadakis, K; Zhao, JH; Song, KJ; Yuan, X; Johnson, T; Ashford, S; Inouye, M; Luben, R; Sims, M; Hadley, D; McArdle, W; Barter, P; Kesaniemi, YA; Mahley, RW; McPherson, R; Grundy, SM; Bingham, SA; Khaw, KT; Loos, RJF; Waeber, G; Barroso, I; Strachan, DP; Deloukas, P; Vollenweider, P; Wareham, NJ; Mooser, V	LDL-cholesterol concentrations: A genome-wide association study	LANCET	210
54	2006	Deedwania, P; Barter, P; Carmena, R; Fruchart, JC; Grundy, SM; Haffner, S; Kastelein, JJP; LaRosa, JC; Schachner, H; Shepherd, J; Waters, DD	Reduction of low-density lipoprotein cholesterol in patients with coronary heart disease and metabolic syndrome: Analysis of the Treating to New Targets study	LANCET	210
56	2011	Griffin, JE; Gawronski, JD; DeJesus, MA; Ioerger, TR; Akerley, BJ; Sasseti, CM	High-Resolution Phenotypic Profiling Defines Genes Essential for Mycobacterial Growth and Cholesterol Catabolism	PLOS PATHOGENS	208
56	2007	Mehta, JL; Sanada, N; Hu, CP; Chen, JW; Dandapat, A; Sugawara, F; Satoh, H; Inoue, K; Kawase, Y; Jishage, K; Suzuki, H; Takeya, M; Schnackenberg, L; Begeer, R; Hermonat, PL; Thomas, M; Sawamura, T	Deletion of LOX-1 reduces atherogenesis in LDLR knockout mice fed high cholesterol diet	CIRCULATION RESEARCH	208
58	2012	Raal, F; Scott, R; Somaratne, R; Bridges, I; Li, G; Wasserman, SM; Stein, EA	Low-Density Lipoprotein Cholesterol-Lowering Effects of AMG 145, a Monoclonal Antibody to	CIRCULATION	206

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59	2011	Nicholls, SJ; Brewer, HB; Kastelein, JJP; Krueger, KA; Wang, MD; Shao, MY; Hu, B; McErlean, E; Nissen, SE	Effects of the CETP Inhibitor Evacetrapib Administered as Monotherapy or in Combination with Statins on HDL and LDL Cholesterol A Randomized Controlled Trial	JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	204
60	2008	Miller, M; Cannon, CP; Murphy, SA; Qin, J; Ray, KK; Braunwald, E	Impact of triglyceride levels beyond low-density lipoprotein cholesterol after acute coronary syndrome in the PROVE IT-TIMI 22 trial	JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY	203
61	2012	Sainz, B; Barretto, N; Martin, DN; Hiraga, N; Imamura, M; Hussain, S; Marsh, KA; Yu, XM; Chayama, K; Alrfai, WA; Uprichard, SL	Identification of the Niemann-Pick C1-like 1 cholesterol absorption receptor as a new hepatitis C virus entry factor	NATURE MEDICINE	201
62	2010	Armitage, J; Bowman, L; Wallendszus, K; Bulbulia, R; Rahimi, K; Haynes, R; Parish, S; Peto, R; Collins, R; Meade, T; Sleight, P; Collins, R; Armitage, J; Bowman, L; Parish, S; Peto, R; Barton, J; Bray, C; Wincott, E; Dayanandan, R; Clarke, R; Graham, I; Simpson, D; Warlow, C; Wilken, D; Tobert, J; Mushner, T; Doll, R; Wilhelmsen, L; Fox, K; Hill, C; Sandercock, P; Webster, J; Henderson, J; Nixon, A; Lackie, S; Thompson, J; Brown, M; Blackwood, S; Morgan, M; Rhoden, W; Saeed, B; Houghton, M; Nicholson, A; Simpson, C; Hoburn, B; Cooper, I; Gallivan, A; Pickerell, E; Hancock, J; Watkinson, J; Ryder, B; Jones, S; Burbridge, W; Kitchen, M; Leary, HO; Verow, C; Meynell, L; Rollinson, L; Bain, S; Jones, A; Jewkes, C; Russon, C; Bateson, M; Gill, P; Nicol, J; Bayly, G;	Intensive lowering of LDL cholesterol with 80 mg versus 20 mg simvastatin daily in 12,064 survivors of myocardial infarction: A double-blind randomised trial	LANCET	199

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63	2007	Bogers, RP; Bemelmans, WJE; Hoogenveen, RT; Boshuizen, HC; Woodward, M; Knekt, P; van Dam, RM; Hu, FB; Visscher, TLS; Menotti, A; Thorpe, RJ; Jamrozik, K; Calling, S; Strand, BH; Shipley, MJ	Association of overweight with increased risk of coronary heart disease partly independent of blood pressure and cholesterol levels – A meta-analysis of 21 cohort studies including more than 300,000 persons	ARCHIVES OF INTERNAL MEDICINE	199
65	2009	Kwon, HJ; Abi-Mosleh, L; Wang, ML; Deisenhofer, J; Goldstein, JL; Brown, MS; Infante, RE	Structure of N-Terminal Domain of NPC1 Reveals Distinct Subdomains for Binding and Transfer of Cholesterol	CELL	197
66	2009	Demonty, I; Ras, RT; van der Kniap, HCM; Duchateau, GSMJF; Meijer, L; Zock, PL; Geleijnse, JM; Trautwein, EA	Continuous Dose-Response Relationship of the LDL-Cholesterol-Lowering Effect of Phytosterol Intake	JOURNAL OF NUTRITION	194

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66	2006	Portincasa, P; Moschetta, A; Palasciano, G	Cholesterol gallstone disease	LANCET	194
69	2007	Zhang, YY; Guo, KY; LeBlanc, RE; Loh, D; Schwartz, GJ; Yu, YH	Increasing dietary leucine intake reduces diet-induced obesity and improves glucose and cholesterol metabolism in mice via multimechanisms	DIABETES	185
69	2006	Li, YC; Park, MJ; Ye, SK; Kim, CW; Kim, YN	Elevated levels of cholesterol-rich lipid rafts in cancer cells are correlated with apoptosis sensitivity induced by cholesterol-depleting agents	AMERICAN JOURNAL OF PATHOLOGY	185
71	2009	Rader, DJ; Alexander, ET; Weibel, GL; Billheimer, J; Rothblat, GH	The role of reverse cholesterol transport in animals and humans and relationship to atherosclerosis	JOURNAL OF LIPID RESEARCH	183
72	2007	Liu, Q; Zerbinatti, CV; Zhang, J; Hoe, HS; Wang, B; Cole, SL; Herz, J; Muglia, L; Bu, GJ	Amyloid precursor protein regulates brain apolipoprotein e and cholesterol metabolism through lipoprotein receptor LRP1	NEURON	182
73	2006	Matsuura, F; Wang, N; Chen, WG; Jiang, XC; Tall, AR	HDL from CETP-deficient subjects shows enhanced ability to promote cholesterol efflux from macrophages in an apoE- and ABCG1-dependent pathway	JOURNAL OF CLINICAL INVESTIGATION	180
74	2009	Brown, MS; Goldstein, JL	Cholesterol feedback: From Schoenheimer's bottle to Scap's MELADL	JOURNAL OF LIPID RESEARCH	179
74	2007	Temel, RE; Tang, WQ; Ma, YY; Rudel, LL; Willingham, MC; Ioannou, YA; Davies, JP; Nilsson, LM; Yu, LQ	Hepatic Niemann-Pick C1-like 1 regulates biliary cholesterol concentration and is a target of ezetimibe	JOURNAL OF CLINICAL INVESTIGATION	179

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76	2011	Di Paolo, G; Kim, TW	Linking lipids to Alzheimer's disease: Cholesterol and beyond	NATURE REVIEWS NEUROSCIENCE	178
78	2010	Yvan-Charvet, L; Wang, N; Tall, AR	Role of HDL, ABCA1, and ABCG1 Transporters in Cholesterol Efflux and Immune Responses	ARTERIOSCLEROSIS AND VASCULAR BIOLOGY	177
78	2009	Rog, T; Pasenkiewicz-Gierula, M; Vattulainen, I; Karttunen, M	Ordering effects of cholesterol and its analogues	BIOCHIMICA ET BIOPHYSICA ACTA-BIOMEMBRANES	177
80	2008	van der Steeg, WA; Holme, I; Boekholdt, SM; Larsen, ML; Lindahl, C; Stroes, ESG; Tikkanen, MJ; Wareham, NJ; Faergeman, O; Olsson, AG; Pedersen, TR; Khaw, KT; Kastelein, JJP	High-density lipoprotein cholesterol, high-density lipoprotein particle size, and apolipoprotein A-I: Significance for cardiovascular risk – The IDEAL and EPIC-Norfolk studies	JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY	174
81	2009	Chan, JCY; Piper, DE; Cao, QO; Liu, DM; King, C; Wang, W; Tang, J; Liu, Q; Higbee, J; Xia, Z; Di, YM; Shetterly, S; Arimura, Z; Salomonis, H; Romanow, WG; Thibault, ST; Zhang, R; Cao, P; Yang, XP; Yu, T; Lu, M; Retter, MW; Kwon, G; Henne, K; Pan, O; Tsai, MM; Fuchslocher, B; Yang, E; Zhou, L; Lee, KJ; Daris, M; Sheng, J; Wang, Y; Shen, WD; Yeh, WC; Emery, M; Walker, NPC; Shan, B; Schwarz, M; Jackson, SM	A proprotein convertase subtilisin/kexin type 9 neutralizing antibody reduces serum cholesterol in mice and nonhuman primates	PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA	171
82	2011	Farzadfar, F; Finucane, MM; Danaei, G; Pelizzari, PM; Cowan, MJ; Paciorek, CJ; Singh, GM; Lin, JK; Stevens, GA; Riley, LM; Ezzati, M	National, regional, and global trends in serum total cholesterol since 1980: Systematic analysis of health examination surveys and epidemiological studies with 321 country-years and 3.0 million participants	LANCET	170
83	2012	Sullivan, D; Olsson, AG; Scott, R; Kim, JB; Xue, A; GebSKI, V; Wasserman, SM;	Effect of a Monoclonal Antibody to PCSK9 on	JAMA-JOURNAL OF THE	168

Table 2
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
		Stein, EA	Low-Density Lipoprotein Cholesterol Levels in Statin-Intolerant Patients The GAUSS Randomized Trial	AMERICAN MEDICAL ASSOCIATION	
84	2006	Oksman, M; Livonen, H; Hoguey, E; Amtul, Z; Penke, B; Leenders, I; Broersen, L; Lutjohann, D; Hartmann, T; Tanila, H	Impact of different saturated fatty acid, polyunsaturated fatty acid and cholesterol containing diets on beta-amyloid accumulation in APP/PS1 transgenic mice	NEUROBIOLOGY OF DISEASE	165
85	2007	Kapadia, SB; Barth, H; Baumert, T; McKeating, JA; Chisari, FV	Initiation of hepatitis C virus infection is dependent on cholesterol and cooperativity between CD81 and scavenger receptor B type I	JOURNAL OF VIROLOGY	162
86	2007	Buch, S; Schafmayer, C; Volzke, H; Becker, C; Franke, A; von Eller-Eberstein, H; Kluck, C; Bassmann, I; Brosch, M; Lammert, F; Miquel, JF; Nervi, F; Wittig, M; Roskopf, D; Timm, B; Holl, C; Seeger, M; ElSharawy, A; Lu, T; Egberts, J; Fandrich, F; Folsch, UR; Krawczak, M; Schreiber, S; Nurnberg, P; Tepel, J; Hampe, J	A genome-wide association scan identifies the hepatic cholesterol transporter ABCG8 as a susceptibility factor for human gallstone disease	NATURE GENETICS	161
87	2008	Yvan-Charvet, L; Welch, C; Pagler, TA; Ranalletta, M; Lamkanfi, M; Han, S; Ishibashi, M; Li, R; Wang, N; Tall, AR	Increased Inflammatory Gene Expression in ABC Transporter-Deficient Macrophages Free Cholesterol Accumulation, Increased Signaling via Toll-Like Receptors, and Neutrophil Infiltration of Atherosclerotic Lesions	CIRCULATION	160
87	2008	Infante, RE; Wang, ML; Radhakrishnan, A; Kwon, HJ; Brown, MS; Goldstein, JL	NPC2 facilitates bidirectional transfer of cholesterol between NPC1 and lipid bilayers, a step in cholesterol egress from lysosomes	PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA	160
87	2008	Anstey, KJ; Lipnicki, DM; Low, LF	Cholesterol as a risk factor for dementia and cognitive decline: A systematic review of prospective studies with meta-analysis	AMERICAN JOURNAL OF GERIATRIC PSYCHIATRY	160
90	2008	Zhu, X; Lee, JY; Timmins, JM; Brown, JM; Boudyguina, E; Mulya, A;	Increased cellular free cholesterol in	JOURNAL OF BIOLOGICAL	156

Table 2
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
		Gebre, AK; Willingham, MC; Hiltbold, EM; Mishra, N; Maeda, N; Parks, JS	macrophage-specific Abca1 knock-out mice enhances pro-inflammatory response of macrophages	CHEMISTRY	
90	2006	Vaughan, AM; Oram, JF	ABCA1 and ABCG1 or ABCG4 act sequentially to remove cellular cholesterol and generate cholesterol-rich HDL	JOURNAL OF LIPID RESEARCH	156
90	2006	Jessup, W; Gelissen, IC; Gaus, K; Kritharides, L	Roles of ATP binding cassette transporters A1 and G1, scavenger receptor BI and membrane lipid domains in cholesterol export from macrophages	CURRENT OPINION IN LIPIDOLOGY	156
93	2009	Waters, DD; Brotons, C; Chiang, CW; Ferrieres, J; Foody, J; Jukema, JW; Santos, RD; Verdejo, J; Messig, M; McPherson, R; Seung, KB; Tarasenko, L	Lipid Treatment Assessment Project 2 A Multinational Survey to Evaluate the Proportion of Patients Achieving Low-Density Lipoprotein Cholesterol Goals	CIRCULATION	155
94	2006	Martins, IJ; Hone, E; Foster, JK; Sunram-Lea, SI; Gnjec, A; Fuller, SJ; Nolan, D; Gandy, SE; Martins, RN	Apolipoprotein E, cholesterol metabolism, diabetes, and the convergence of risk factors for Alzheimer's disease and cardiovascular disease	MOLECULAR PSYCHIATRY	154
95	2006	Yang, FJ; Vought, BW; Satterlee, JS; Walker, AK; Sun, ZYJ; Watts, JL; DeBeaumont, R; Saito, RM; Hyberts, SG; Yang, S; Macol, C; Iyer, L; Tjian, R; van den Heuvel, S; Hart, AC; Wagner, G; Naar, AM	An ARC/Mediator subunit required for SREBP control of cholesterol and lipid homeostasis	NATURE	152
96	2008	Degoma, EM; Degoma, RL; Rader, DJ	Beyond high-density lipoprotein cholesterol levels – Evaluating high-density lipoprotein function as influenced by novel therapeutic approaches	JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY	151
96	2007	Bradley, MN; Hong, C; Chen, MY; Joseph, SB; Wilpitz, DC; Wang, XP; Lusis, AJ; Collins, A; Hseuh, WA; Collins, JL; Tangirala, RK; Tontonoz, P	Ligand activation of LXR beta reverses atherosclerosis and cellular cholesterol overload in mice lacking LXR alpha and apoE	JOURNAL OF CLINICAL INVESTIGATION	151
96	2006	Ajayaghosh, A; Vijayakumar, C; Varghese, R; George, SJ	Cholesterol-aided supramolecular control over chromophore packing: Twisted and coiled helices	ANGEWANDTE CHEMIE-INTERNATIONAL EDITION	151

Table 2
(Continued)

Rank	Year	Authors	Title	Journal	Times cited
99	2008	Erlund, I; Koli, R; Alfthan, G; Marniemi, J; Puukka, P; Mustonen, P; Mattila, P; Jula, A	with distinct optical, chiroptical, and morphological features Favorable effects of berry consumption on platelet function, blood pressure, and HDL cholesterol	AMERICAN JOURNAL OF CLINICAL NUTRITION	150
99	2007	Kodama, S; Tanaka, S; Saito, K; Shu, M; Sone, Y; Onitake, F; Suzuki, E; Shimano, H; Yamamoto, S; Kondo, K; Ohashi, Y; Yamada, N; Sone, H	Effect of aerobic exercise training on serum levels of high-density lipoprotein cholesterol – A meta-analysis	ARCHIVES OF INTERNAL MEDICINE	150

Table 3
Journal/study-type cross tabulation 1916–2015

Journal	Cholesterol and disease	Cholesterol metabolism/homeostasis	Cholesterol lowering drugs	Methods for measuring cholesterol	Cholesterol biochemistry/biophysics	Total articles
NEW ENGLAND JOURNAL OF MEDICINE	9	3	7			19
LANCET	7		7			14
SCIENCE	1	11				12
JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	6		3	2		11
PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA	1	5				6
CIRCULATION	4		2			6
CLINICAL CHEMISTRY				6		6
BRITISH MEDICAL JOURNAL	2		3			5
JOURNAL OF LIPID RESEARCH		1		3	1	5
BIOCHIMICA ET BIOPHYSICA ACTA		2			2	4
JOURNAL OF BIOLOGICAL CHEMISTRY				3	1	4
AMERICAN JOURNAL OF CLINICAL NUTRITION		3				3
ANNUAL REVIEW OF BIOCHEMISTRY	1	1				2
NATURE MEDICINE		1	1			2
NATURE	1	1				2
DIABETES CARE	1		1			2

Table 3
(Continued)

Journal	Cholesterol and disease	Cholesterol metabolism/homeostasis	Cholesterol lowering drugs	Methods for measuring cholesterol	Cholesterol biochemistry/biophysics	Total articles
CELL		2				2
ANNALS OF INTERNAL MEDICINE	2					2
MOLECULAR CELL	1	1				2
JOURNAL OF CLINICAL INVESTIGATION	1	1				2
ARCHIVES OF INTERNAL MEDICINE			1			1
METABOLISM		1				1
CLINICA CHIMICA ACTA				1		1
NATURE GENETICS		1				1
JOURNAL OF LABORATORY AND CLINICAL MEDICINE				1		1
ANALYTICAL CHEMISTRY				1		1
BIOCHEMISTRY					1	1
PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA-BIOLOGICAL SCIENCES			1			1
JOURNAL OF ORGANIC CHEMISTRY					1	1
ZEITSCHRIFT FUR KLINISCHE CHEMIE UND KLINISCHE BIOCHEMIE				1		1
JOURNAL OF THE AMERICAN CHEMICAL SOCIETY					1	1
AMERICAN JOURNAL OF CLINICAL PATHOLOGY				1		1

This table shows the frequency distribution of the 100 most-cited papers of the last century by both research category (enumerated in the column headers) and journal (identified in the table rows). Each article was assigned one or two research categories.

Table 4
Journal/study-type cross tabulation 2006–2015

Journal	Cholesterol meta- bolism/homeo- stasis	Cholesterol and disease	Cholesterol lowering drugs	Cholesterol biochem- istry/biophysics	Total articles
LANCET	2	10	9		21
CIRCULATION	4	6	3		13
JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	1	3	5		9
JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY	3	2	3		8
NEW ENGLAND JOURNAL OF MEDICINE	3	2	2		7
JOURNAL OF CLINICAL INVESTIGATION	4	1	1		6
PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA	3		2		5
CIRCULATION RESEARCH	2	2			4
NATURE	3	1			4
CELL METABOLISM	2	2			4
JOURNAL OF LIPID RESEARCH	3	1			4
NATURE GENETICS	2	1			3
JOURNAL OF INTERNAL MEDICINE	1	2			3
DIABETES CARE		2	1		3
SCIENCE	3				3
MOLECULAR PSYCHIATRY	1		1		2
ARTERIOSCLEROSIS THROMBOSIS AND VASCULAR BIOLOGY	2				2
BIOCHIMICA ET BIOPHYSICA ACTA-BIOMEMBRANES			1	1	2
ARCHIVES OF INTERNAL MEDICINE	1	1			2
EUROPEAN HEART JOURNAL		1	1		2
JOURNAL OF HEPATOLOGY	1			1	2
CURRENT OPINION IN LIPIDOLOGY	1				1
AMERICAN JOURNAL OF HUMAN GENETICS	1				1
DIABETES	1				1
AMERICAN JOURNAL OF CLINICAL NUTRITION	1				1

Table 4
(Continued)

Journal	Cholesterol metabolism/homeostasis	Cholesterol and disease	Cholesterol lowering drugs	Cholesterol biochemistry/biophysics	Total articles
PLOS ONE	1				1
NATURE MEDICINE	1				1
ANGEWANDTE CHEMIE-INTERNATIONAL EDITION				1	1
NATURE REVIEWS MOLECULAR CELL BIOLOGY	1				1
HEPATOLOGY	1				1
NEUROBIOLOGY OF DISEASE	1				1
JOURNAL OF BIOLOGICAL CHEMISTRY	1				1
ANNUAL REVIEW OF CELL AND DEVELOPMENTAL BIOLOGY	1				1
NATURE REVIEWS NEUROSCIENCE		1			1
AMERICAN JOURNAL OF GERIATRIC PSYCHIATRY		1			1
NEURON	1				1
ANNUAL REVIEW OF PHYSIOLOGY	1				1
PHARMACOLOGICAL REVIEWS	1				1
BRITISH MEDICAL JOURNAL		1			1
PLOS PATHOGENS	1				1
STRUCTURE				1	1
JOURNAL OF VIROLOGY	1				1
JOURNAL OF NUTRITION			1		1
CELL				1	1
AMERICAN JOURNAL OF PATHOLOGY			1		1

This table shows the frequency distribution of the 100 most-cited papers of the last decade by both research category (enumerated in the column headers) and journal (identified in the table rows). Each article was assigned one or two research categories.

4. Discussion

It is interesting to see the preponderance of different sub-disciplines in cholesterol research represented in Tables 1 and 2. In particular, the most cited articles over last 10 years shows a shift away from articles describing methods for the measurement of cholesterol towards (increasingly molecular) studies describing cholesterol metabolism/homeostasis, the role of cholesterol in diseases, and cholesterol-lowering drugs, compared with the most cited articles from the last 100 years. We hypothesize that the complete lack of the cholesterol measurement category in the top-100 list of the last decade, as can be seen in Table 4, indicates that while incremental improvements in this area have continued over the

last ten years, there has been nothing which one could easily classify as a “quantum leap” producing a highly-cited landmark paper. By contrast, the papers cited in Table 2 suggest that the last 10 years have witnessed the advent of studies describing the role of cholesterol in non-cardiovascular diseases such as cancer (the second reference numbered 69) and Alzheimer’s (the second reference numbered 76 and 94). When comparing Tables 3 and 4, another salient feature is the dominance one observes in the most recent period of cardiovascular journals. By comparing the top-10 journals based on number of papers in each of the top-100 articles lists in Tables 3 and 4, one can observe past dominance of journals of a more general nature such as *Clinical Chemistry*, *British Medical Journal*, and *Science* being displaced through the introduction of the *Journal of the American College of Cardiology* and *Circulation Research* into the top ten. Also of note is that *Circulation* rose in the ranking from #6 to #2 when considering the most-cited papers of the last decade instead of the last century.

Some of the names in Table 1 will be clearly recognized by the majority of cholesterol research investigators as being “superstars”. For example the team of Michael S. Brown and Joseph L. Goldstein, who were awarded the 1985 Nobel prize for Physiology or Medicine 1985 for their work on the regulation of cholesterol metabolism, are jointly authors of nine papers in the most cited articles of the last century (Table 1, numbers 8, 18, 21, 23, 24, 45, 63, 67 and 69) and three from the most cited of the last 10 years (Table 2, numbers 65, 74 and the second reference numbered 87). Other names, especially in Table 2 are “rising stars” who, in the last decade, have made significant contributions to the cholesterol research literature.

Acknowledgements

The authors would like to thank the referees for their insightful comments.

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- [2] J.S. Kreutzer, A.A. Agyemang, D. Weedon, N. Zasler, M. Oliver, A.A. Sorensen and S. van Wijngaarden, The top 100 cited neurorehabilitation papers, *NeuroRehabilitation* **40** (2016), 2, Forthcoming.