CLAIMS

1. A humanized anti-human PCSK9 antibody or antigen binding fragment thereof selected from the following:

i. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 4, the CDR2 sequence of SEQ ID NO: 6, and the CDR3 sequence of SEQ ID NO: 8; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 24, the CDR2 sequence of SEQ ID NO: 26, and the CDR3 sequence of SEQ ID NO: 28 (Ab1);

ii. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 44, the CDR2 sequence of SEQ ID NO: 46, and the CDR3 sequence of SEQ ID NO: 48; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 64, the CDR2 sequence of SEQ ID NO: 66, and the CDR3 sequence of SEQ ID NO: 68 (Ab2);

iii. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 84, the CDR2 sequence of SEQ ID NO: 86, and the CDR3 sequence of SEQ ID NO: 88; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 104, the CDR2 sequence of SEQ ID NO: 106, and the CDR3 sequence of SEQ ID NO: 108 (Ab3);

iv. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 124, the CDR2 sequence of SEQ ID NO: 126, and the CDR3 sequence of SEQ ID NO: 128; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 144, the CDR2 sequence of SEQ ID NO: 146, and the CDR3 sequence of SEQ ID NO: 148 (Ab4);

v. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 164, the CDR2 sequence of SEQ ID NO: 166, and the CDR3 sequence of SEQ ID NO: 168; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 184, the CDR2 sequence of SEQ ID NO: 186, and the CDR3 sequence of SEQ ID NO: 188 (Ab5);

vi. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 204, the CDR2 sequence of SEQ ID NO: 206, and the CDR3 sequence of SEQ ID NO: 208; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 224, the CDR2 sequence of SEQ ID NO: 226, and the CDR3 sequence of SEQ ID NO: 228 (Ab6);

vii. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 244, the CDR2 sequence of SEQ ID NO: 246, and the CDR3 sequence of SEQ ID NO: 248; and a variable light chain that comprises the CDR1

sequence of SEQ ID NO: 264, the CDR2 sequence of SEQ ID NO: 266, and the CDR3 sequence of SEQ ID NO: 268 (Ab7);

viii. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 284, the CDR2 sequence of SEQ ID NO: 286, and the CDR3 sequence of SEQ ID NO: 288; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 304, the CDR2 sequence of SEQ ID NO: 306, and the CDR3 sequence of SEQ ID NO: 308 (Ab8);

ix. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 324, the CDR2 sequence of SEQ ID NO: 326, and the CDR3 sequence of SEQ ID NO: 328; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 344, the CDR2 sequence of SEQ ID NO: 346, and the CDR3 sequence of SEQ ID NO: 348 (Ab9);

x. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 364, the CDR2 sequence of SEQ ID NO: 366, and the CDR3 sequence of SEQ ID NO: 368; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 384, the CDR2 sequence of SEQ ID NO: 386, and the CDR3 sequence of SEQ ID NO: 388 (Ab10);

xi. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 404, the CDR2 sequence of SEQ ID NO: 406, and the CDR3 sequence of SEQ ID NO: 408; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 424, the CDR2 sequence of SEQ ID NO: 426, and the CDR3 sequence of SEQ ID NO: 428 (Ab11);

xii. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 444, the CDR2 sequence of SEQ ID NO: 446, and the CDR3 sequence of SEQ ID NO: 448; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 464, the CDR2 sequence of SEQ ID NO: 466, and the CDR3 sequence of SEQ ID NO: 468 (Ab12);

xiii. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 484, the CDR2 sequence of SEQ ID NO: 486, and the CDR3 sequence of SEQ ID NO: 488; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 504, the CDR2 sequence of SEQ ID NO: 506, and the CDR3 sequence of SEQ ID NO: 508 (Ab13);

xiv. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 524, the CDR2 sequence of SEQ ID NO: 526, and the CDR3 sequence of SEQ ID NO: 528; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 544, the CDR2 sequence of SEQ ID NO: 546, and the CDR3 sequence of SEQ ID NO: 548 (Ab14);

xv. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 564, the CDR2 sequence of SEQ ID NO: 566, and the CDR3 sequence of SEQ ID NO: 568; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 584, the CDR2 sequence of SEQ ID NO: 586, and the CDR3 sequence of SEQ ID NO: 588 (Ab15);

xvi. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 604, the CDR2 sequence of SEQ ID NO: 606, and the CDR3 sequence of SEQ ID NO: 608; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 624, the CDR2 sequence of SEQ ID NO: 626, and the CDR3 sequence of SEQ ID NO: 628 (Ab16);

xvii. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 644, the CDR2 sequence of SEQ ID NO: 646, and the CDR3 sequence of SEQ ID NO: 648; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 664, the CDR2 sequence of SEQ ID NO: 666, and the CDR3 sequence of SEQ ID NO: 668 (Ab17);

xviii. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 684, the CDR2 sequence of SEQ ID NO: 686, and the CDR3 sequence of SEQ ID NO: 688; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 704, the CDR2 sequence of SEQ ID NO: 706, and the CDR3 sequence of SEQ ID NO: 708 (Ab18);

xix. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 724, the CDR2 sequence of SEQ ID NO: 726, and the CDR3 sequence of SEQ ID NO: 728; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 744, the CDR2 sequence of SEQ ID NO: 746, and the CDR3 sequence of SEQ ID NO: 748 (Ab19);

xx. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 764, the CDR2 sequence of SEQ ID NO: 766, and the CDR3 sequence of SEQ ID NO: 768; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 784, the CDR2 sequence of SEQ ID NO: 786, and the CDR3 sequence of SEQ ID NO: 788 (Ab20);

xxi. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 804, the CDR2 sequence of SEQ ID NO: 806, and the CDR3 sequence of SEQ ID NO: 808; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 824, the CDR2 sequence of SEQ ID NO: 826, and the CDR3 sequence of SEQ ID NO: 828 (Ab21);

xxii. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ

ID NO: 844, the CDR2 sequence of SEQ ID NO: 846, and the CDR3 sequence of SEQ ID NO: 848; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 864, the CDR2 sequence of SEQ ID NO: 866, and the CDR3 sequence of SEQ ID NO: 868 (Ab22);

xxiii. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 884, the CDR2 sequence of SEQ ID NO: 886, and the CDR3 sequence of SEQ ID NO: 888; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 904, the CDR2 sequence of SEQ ID NO: 906, and the CDR3 sequence of SEQ ID NO: 908 (Ab23); and

xxiv. an anti-human PCSK9 antibody or antigen binding fragment thereof comprising a variable heavy chain that comprises the CDR1 sequence of SEQ ID NO: 924, the CDR2 sequence of SEQ ID NO: 926, and the CDR3 sequence of SEQ ID NO: 928; and a variable light chain that comprises the CDR1 sequence of SEQ ID NO: 944, the CDR2 sequence of SEQ ID NO: 946, and the CDR3 sequence of SEQ ID NO: 948 (Ab24).

2. The humanized anti-human PCSK9 antibody or antigen binding fragment thereof of claim 1, wherein the variable heavy chain of the antibody comprises:

i. a sequence at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO: 2, 42, 82, 122, 162, 202, 242, 282, 322, 362, 402, 442, 482, 522, 562, 602, 642, 682, 722, 762, 802, 842, 882, or 922; or

ii. a sequence at least 90% identical to SEQ ID NO: 2, 42, 82, 122, 162, 202, 242, 282, 322, 362, 402, 442, 482, 522, 562, 602, 642, 682, 722, 762, 802, 842, 882, or 922;

and/or the variable light chain of the antibody comprises:

i. a sequence at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO: 22, 62, 102, 142, 182, 222, 262, 302, 342, 382, 422, 462, 502, 542, 582, 622, 662, 702, 742, 782, 822, 862, 902, or 942; or

ii. a sequence at least 90% identical to SEQ ID NO: 22, 62, 102, 142, 182, 222, 262, 302, 342, 382, 422, 462, 502, 542, 582, 622, 662, 702, 742, 782, 822, 862, 902, or 942.

3. The humanized anti-human PCSK9 antibody or antigen binding fragment thereof of claim 1, wherein the antibody comprises:

i. an Ab1 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:2 and a variable light chain at least 90% identical to SEQ ID NO:22;

ii. an Ab2 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:42 and a variable light chain at least 90% identical to SEQ ID NO:62;

iii. an Ab3 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:82 and a variable light chain at least 90% identical to SEQ ID NO:102;

iv. an Ab4 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:122 and a variable light chain at least 90% identical to SEQ ID NO:142;

v. an Ab5 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:162 and a variable light chain at least 90% identical to SEQ ID NO:182;

vi. an Ab6 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:202 and a variable light chain at least 90% identical to SEQ ID NO:222;

vii. an Ab7 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:242 and a variable light chain at least 90% identical to SEQ ID NO:262;

viii. an Ab8 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:282 and a variable light chain at least 90% identical to SEQ ID NO:302;

ix. an Ab9 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:322 and a variable light chain at least 90% identical to SEQ ID NO:342;

x. an Abl0 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:362 and a variable light chain at least 90% identical to SEQ ID NO:382;

xi. an Ab11 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:402 and a variable light chain at least 90% identical to SEQ ID NO:422;

xii. an Ab12 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:442 and a variable light chain at least 90% identical to SEQ ID NO:462;

xiii. an Ab13 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:482 and a variable light chain at least 90% identical to SEQ ID NO:502;

xiv. an Abl4 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:522 and a variable light chain at least 90% identical to SEQ ID NO:542;

xv. an Ably antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:562 and a variable light chain at least 90% identical to SEQ ID NO:582;

xvi. an Ab16 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:602 and a variable light chain at least 90% identical to SEQ ID NO:622;

xvii. an Abl7 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:642 and a variable light chain at least 90% identical to SEQ ID NO:662;

xviii. an Ab18 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:682 and a variable light chain at least 90% identical to SEQ ID NO:702;

xix. an Ab19 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:722 and a variable light chain at least 90% identical to SEQ ID NO:742;

xx. an Ab20 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:762 and a variable light chain at least 90% identical to SEQ ID NO:782;

xxi. an Ab21 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:802 and a variable light chain at least 90% identical to SEQ ID NO:822;

xxii. an Ab22 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:842 and a variable light chain at least 90% identical to SEQ ID NO:862;

xxiii. an Ab23 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:882 and a variable light chain at least 90% identical to SEQ ID NO:902; or

xxiv. an Ab24 antibody comprising a variable heavy chain at least 90% identical to SEQ ID NO:922 and a variable light chain at least 90% identical to SEQ ID NO:942.

4. The humanized anti-human PCSK9 antibody or antigen binding fragment thereof of claim 1, wherein the antibody comprises:

i. an Ab1 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:1 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:21;

ii. an Ab2 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:41 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:61;

iii. an Ab3 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:81 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:101;

iv. an Ab4 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:121 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:141;

v. an Ab5 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:161 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:181;

vi. an Ab6 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:201 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:221;

vii. an Ab7 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:241 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:261;

viii. an Ab8 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:281 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:301;

ix. an Ab9 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:321 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:341;

x. an Abl0 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:361 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:381;

xi. an Ab11 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:401 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:421;

xii. an Ab12 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:441 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:461;

xiii. an Ab13 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:481 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:501;

xiv. an Abl4 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:521 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:541;

xv. an Ab15 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:561 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:581;

xvi. an Ab16 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:601 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:621;

xvii. an Ab17 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:641 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:661;

xviii. an Ab18 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:681 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:701;

xix. an Ab19 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:721 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:741;

xx. an Ab20 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:761 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:781;

xxi. an Ab21 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:801 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:821;

xxii. an Ab22 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:841 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:861;

xxiii. an Ab23 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:881 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:901; or

xxiv. an Ab24 antibody comprising a heavy chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:921 and a light chain at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO:941.

5. The humanized anti-human PCSK9 antibody or antigen binding fragment thereof of any one of claims 1-4, wherein the antibody or antigen binding fragment thereof:

i. is selected from the group consisting of scFvs, camelbodies, nanobodies, IgNAR, Fab fragments, Fab' fragments, MetMab like antibodies, monovalent antibody fragments, and F(ab')2 fragments;

ii. substantially or entirely lacks N-glycosylation and/or 0-glycosylation;

iii. comprises a human constant domain;

iv. comprises a human IgGI, IgG2, IgG3, or IgG4 constant domain;

v. comprises an Fc region that has been modified to alter at least one of effector function, half-life, proteolysis, or glycosylation;

vi. comprises an Fc region that contains one or more mutations that alters or eliminates N- and/or O-glycosylation;

vii. is a humanized antibody or antibody fragment;

viii. is directly or indirectly attached to a detectable label or therapeutic agent;

ix. is attached to at least one effector moiety;

x. is attached to at least one effector moiety comprising a chemical linker;

xi. is attached to one or more detectable moieties;

xii. is attached to one or more detectable moieties comprising a fluorescent dye, enzyme, substrate, bioluminescent material, radioactive material, chemiluminescent moiety, or mixtures thereof; and/or

xiii. is attached to one or more functional moieties.

6. The humanized anti-human PCSK9 antibody or antigen binding fragment thereof of any one of claims 1-5, wherein the antibody or antigen binding fragment thereof binds to PCSK9 with a KD that is less than about 100 nM.

7. A composition suitable for therapeutic, prophylaxis, or a diagnostic use comprising a therapeutically, prophylactically or diagnostically effective amount of at least one humanized anti-human PCSK9 antibody or antigen binding fragment thereof according to any one of claims 1-6.

8. The composition of claim 7, which wherein said composition further comprises another active agent selected from the group consisting of the following: statins, ACE inhibitors, angiotensin II receptor blockers (ARBs), antiarrhythmics, antiplatelet drugs, aspirin, beta blockers, amiodarone, digoxin, aspirin, anti-clotting agents, digoxin, diuretics, heart failure drugs, vasodilators, blood thinners, anti-cholesterol drugs, cholestyramine, gemfibrozil, omega-3 polyunsaturated fatty acids, pantethine, anti-hypertensives, antidiabetogenic drugs, meglitinides, sulfonylurea, and thiazolidinediones.

9. The humanized anti-human PCSK9 antibody or antigen binding fragment thereof according to any one of claims 1-6 or a composition according to any one of claims 7-8 for use in:

i. blocking, inhibiting or neutralizing one or more biological effects associated with PCSK9;

ii. treating or preventing a condition associated with elevated serum cholesterol levels in a patient;

iii. treating or preventing elevated serum cholesterol levels in a patient in need thereof or at risk of developing elevated serum cholesterol levels because of an existing condition;

iv. blocking, inhibiting or neutralizing one or more biological effects associated with PCSK9, wherein the condition is selected from the group consisting of hypercholesterolemia, coronary heart disease, hyperlipidemia, hypertriglyceridaemia, sitosterolemia, atherosclerosis, arteriosclerosis metabolic syndrome, acute coronary syndrome, vascular inflammation, xanthoma, diabetes, obesity, hypertension, and angina;

v. treating or preventing a condition associated with elevated serum cholesterol levels in a patient, wherein the condition is selected from the group consisting of hypercholesterolemia, coronary heart disease, hyperlipidemia, hypertriglyceridaemia, sitosterolemia, atherosclerosis, arteriosclerosis metabolic syndrome, acute coronary syndrome, vascular inflammation, xanthoma, diabetes, obesity, hypertension, and angina;

vi. treating or preventing elevated serum cholesterol levels in a patient in need thereof or at risk of developing elevated serum cholesterol levels because of an existing condition;

vii. wherein the condition is selected from the group consisting of hypercholesterolemia, coronary heart disease, hyperlipidemia, hypertriglyceridaemia, sitosterolemia, atherosclerosis, arteriosclerosis metabolic syndrome, acute coronary syndrome, vascular inflammation, xanthoma, diabetes, obesity, hypertension, and angina; and/or

viii. treating or preventing a disorder involving cholesterol or lipid homeostasis or complications associated therewith, wherein the treated condition is selected from hypercholesterolemia, hyperlipidemia, hypertriglyceridaemia, and sitosterolemia;.

10. The humanized anti-human PCSK9 antibody or antigen binding fragment thereof for use according to claim 9, wherein the at least one isolated anti-human PCSK9 antibody or antigen binding fragment thereof inhibits the binding of PCSK9 to LDLR.

11. The humanized anti-human PCSK9 antibody or antigen binding fragment thereof for use according to any one of claims 9-10, wherein the said antibody or antigen binding fragment thereof is for use in conjunction with another agent selected from the group consisting of the following: statins, ACE inhibitors, angiotensin II receptor blockers (ARBs), antiarrhythmics, antiplatelet drugs, aspirin, beta blockers, amiodarone, digoxin, aspirin, anti-clotting agents, digoxin, diuretics, heart failure drugs, vasodilators, blood thinners, anti-cholesterol drugs, cholestyramine, gemfibrozil, omega-3 polyunsaturated fatty acids, pantethine, anti-hypertensives, antidiabetogenic drugs, meglitinides, sulfonylurea, and thiazolidinediones.

12. The humanized anti-human PCSK9 antibody or antigen binding fragment thereof for use according to any one of claims 9-11, wherein the antibody or antigen binding fragment thereof or composition inhibits PCSK9 binding to LDLR.

13. Use of the humanized anti-human PCSK9 antibody or antigen binding fragment thereof according to any one of claims 1-6 or a composition according to any one of claims 7-8 in the manufacture of a medicament for the treatment of a disorder associated with elevated serum cholesterol or aberrant lipid homeostasis.

14. Use of the humanized anti-human PCSK9 antibody or antigen binding fragment thereof according to any one of claims 1-6 or a composition according to any one of claims 7-8 in the manufacture of a medicament for the treatment of a disorder selected from hypercholesterolemia, hyperlipidemia, hypertriglyceridemia, sitosterolemia, coronary heart disease, atherosclerosis, arteriosclerosis metabolic syndrome, acute coronary syndrome, vascular inflammation, xanthoma, diabetes, obesity, hypertension, and angina.

15. Use of the humanized anti-human PCSK9 antibody or antigen binding fragment thereof according to any one of claims 13-14, wherein the humanized anti-human PCSK9 antibody or antigen binding fragment thereof inhibits PCSK9 binding to LDLR.

16. Use of the humanized anti-human PCSK9 antibody or antigen binding fragment thereof according to claim 15, wherein the therapeutic regimen further comprises:

i. another agent that elevates the availability of LDLR protein or one which decreases serum cholesterol;

ii. a statin;

iii. atorvastatin, cerivastatin, fluvastatin, lovastatin, mevastatin, pitavastatin, pravastatin, rosuvastatin, simvastatin, or a combination thereof;

iv. an agent that elevates the HDL level, an agent that decreases triglyceride levels, or both;

v. a fibrate;

vi. bezafibrate, ciprofibrate, clofibrate, gemfibrozil, fenofibrate, or mixtures thereof;

vii. a bile sequestering agent;

viii. cholestyramine, colesevelam, colestipol, or mixtures thereof;

ix. an agent that decreases cholesterol absorption in the intestines;

x. ezetimibe;

xi. an agent that inhibits hepatic triglyceride production, inhibits VLDL secretions, or both;

xii. acipimox, Gemfibrozil or nicotinic acid, or a nicotinic acid analog;

xiii. an agent that decreases lipid absorption in the intestines;

xiv. orlistat, lipstatin, or mixtures thereof;

xv. an agent that is an anti-hypertensive, treats angina, or both;

xvi. amlodipine, diuretic, an adrenergic receptor antagonist, a calcium channel blocker, a renin inhibitor, an ACE inhibitor, an angiotensin II receptor antagonist, an aldosterone antagonist, a vasodilator, a nitrate or an alpha-2 agonist;

xvii. a diuretic, bumetanide, thacrynic acid, furosemide, torsemide, a thiazide diuretic, epitizide, hydrochlorothiazide, chlorothiazide, bendroflumethiazide, a thiazide-like diuretic, indapamide, chlorthalidone, metolazone, a potassium-sparing diuretic, amiloride, triamterene, spironolactone, the adrenergic receptor antagonists, beta blockers, atenolol, metoprolol, nadolol, oxprenolol,

pindolol, propranolol, timolol, the alpha blockers, doxazosin, phentolamine, indoramin, phenoxybenzamine, prazosin, terazosin, tolazoline, mixed alpha + beta blockers, bucindolol, carvedilol, labetalol, calcium channel blockers, dihydropyridines, amlodipine, felodipine, isradipine, lercanidipine, nicardipine, nifedipine, nimodipine, nitrendipine, non¬dihydropyridines, diltiazem verapamil, renin inhibitors, Aliskiren, ACE inhibitors, captopril, enalapril, fosinopril, lisinopril, perindopril, quinapril, ramipril, trandolapril, benazepril, angiotensin II receptor antagonists, candesartan, eprosartan, irbesartan, losartan, olmesartan, telmisartan, valsartan, aldosterone antagonists, eplerenone, spironolactone, a vasodilator, sodium nitroprusside, Alpha-2 agonists, Clonidine, Guanabenz, Methyldopa, Moxonidine, Guanethidine, Reserpine, nitrate, nitroglycerin (glyceryl trinitrate), pentaerythritol tetranitrate, isosorbide dinitrate or isosorbide mononitrate;

xviii. an agent that inhibits inflammation; and/or

xix. a cyclooxygenase type 1 inhibitor, a cyclooxygenase type 2 inhibitor, a small molecule modulator of p38-MAPK, a small molecule modulator of intracellular molecules involved in inflammation pathways, or mixtures thereof.

17. Use of the humanized anti-human PCSK9 antibody or antigen binding fragment thereof according to any one of claims 9-16, wherein the humanized anti-human PCSK9 antibody or antigen binding fragment thereof or composition containing and the at least one other agent are to be administered concurrently, or the humanized anti-human PCSK9 antibody or antigen binding fragment thereof or composition containing are to be administered before the at least one other agent, or the humanized anti-human PCSK9 antibody or antigen binding fragment thereof or composition containing are to be administered after the at least one other agent, wherein the humanized anti-human PCSK9 antibody or antigen binding fragment thereof or composition containing and the at least one other agent are to be administered by the same or different routes of administration.

18. Use of the humanized anti-human PCSK9 antibody or antigen binding fragment thereof according to any one of claims 9-17, that is used to treat or prevent a disease or the complications of a disease or condition selected from hypercholesterolemia, heart disease, metabolic syndrome, diabetes, coronary heart disease, stroke, cardiovascular diseases, Alzheimer's disease, dyslipidemias, elevated total serum cholesterol, elevated LDL, elevated triglycerides, elevated VLDL, low HDL, metabolic syndrome, diabetes mellitus, familial combined hyperlipidemia, familial hypertriglyceridemia, familial hypercholesterolemias, including heterozygous hypercholesterolemia, homozygous hypercholesterolemia, familial defective apoplipoprotein B-100; polygenic hypercholesterolemia; remnant removal disease, hepatic lipase deficiency; dyslipidemia secondary to any of the following: dietary indiscretion, hypothyroidism, drugs including estrogen and progestin therapy, beta-blockers, and thiazide diuretics; nephrotic syndrome, chronic renal failure, Cushing's syndrome, primary biliary cirrhosis, glycogen storage diseases, hepatoma, cholestasis, acromegaly, insulinoma, isolated growth hormone deficiency, and alcohol-induced hypertriglyceridemia. atherosclerotic diseases such as coronary heart disease, coronary artery disease, peripheral arterial disease, stroke (ischaemic and hemorrhagic), angina pectoris, cerebrovascular disease and acute coronary syndrome, myocardial infarction, reducing the risk of: nonfatal heart attacks, fatal and non-fatal strokes, certain types of heart surgery, hospitalization for heart failure, chest pain in patients with heart disease, and/or cardiovascular events because of

established heart disease such as prior heart attack, prior heart surgery, and/or chest pain with evidence of clogged arteries, or the risk of recurrent cardiovascular events.

19. An isolated nucleic acid or nucleic acids which encodes and when expressed in a suitable host cell result in the expression of the humanized anti-human PCSK9 antibody or antigen binding fragment thereof or the variable heavy chain and variable light chain thereof according to any one of claims 1-6.

20. The nucleic acid or nucleic acids of claim 19, wherein said nucleic acid or nucleic acids which encode said humanized anti-human PCSK9 antibody or antigen binding fragment thereof comprise a sequence at least 90, 95, 96, 97, 98, 99 or 100% identical to SEQ ID NO: 12, SEQ ID NO: 32; SEQ ID NO: 52, SEQ ID NO: 72; SEQ ID NO: 92, SEQ ID NO: 112; SEQ ID NO: 132, SEQ ID NO: 152; SEQ ID NO: 172, SEQ ID NO: 192; SEQ ID NO: 212, SEQ ID NO: 232, SEQ ID NO: 252, SEQ ID NO: 272; SEQ ID NO: 292, SEQ ID NO: 312; SEQ ID NO: 332, SEQ ID NO: 352; SEQ ID NO: 372, SEQ ID NO: 392; SEQ ID NO: 412, SEQ ID NO: 432; SEQ ID NO: 452, SEQ ID NO: 472; SEQ ID NO: 492, SEQ ID NO: 512, SEQ ID NO: 532, SEQ ID NO: 552, SEQ ID NO: 572, SEQ ID NO: 592, SEQ ID NO: 612, SEQ ID NO: 632, SEQ ID NO: 652, SEQ ID NO: 672; SEQ ID NO: 692; SEQ ID NO: 712; SEQ ID NO: 732; SEQ ID NO: 752; SEQ ID NO: 772; SEQ ID NO: 792; SEQ ID NO: 812; SEQ ID NO: 832; SEQ ID NO: 852; SEQ ID NO: 872; SEQ ID NO: 892; SEQ ID NO: 912; SEQ ID NO: 932; SEQ ID NO: 952; or a codon degenerate thereof.

21. A vector or vectors comprising the nucleic acid sequence or sequences of any of claims 19-20.

22. A host cell comprising nucleic acid sequence or sequences of any of claims 19-20 or a vector or vectors according to claim 21.

23. The host cell of claim 22, wherein said host cell is a mammalian, bacterial, fungal, yeast, avian, insect cell, a filamentous fungus, a yeast, Pichia pastoris, Pichia finlandica, Pichia trehalophila, Pichia koclamae, Pichia membranaefaciens, Pichia minuta (Ogataea minuta, Pichia lindneri), Pichia opuntiae, Pichia thermotolerans, Pichia salictaria, Pichia guercuum, Pichia pijperi, Pichia stiptis, Pichia methanolica, a Pichia sp., Saccharomyces cerevisiae, a Saccharomyces sp., Hansenula polymorpha, a Kluyveromyces sp., Kluyveromyces lactis, Candida albicans, Aspergillus nidulans, Aspergillus niger, Aspergillus oryzae, Trichoderma reesei, Chrysosporium lucknowense, a Fusarium sp., Fusarium gramineum, Fusarium venenatum, Physcomitrella patens and Neurospora crassa, a Saccharomyces sp., Hansenula polymorpha, a Kluyveromyces sp., Candida albicans, a Aspergillus sp., Trichoderma reesei, Chrysosporium lucknowense, a Fusarium sp., Neurospora crassa, a mammalian cell, CHO, COS, BHK, myeloma, monkey kidney CV1 line transformed by SV40 (COS-7, ATCC CRL 1651), human embryonic kidney line (293 or 293 cells subcloned for growth in suspension culture), mouse sertoli cell, human lung cell, human liver cell, or a mouse mammary tumor cell.

24. A method of making the humanized anti-human PCSK9 antibody or antigen binding fragment thereof according to any one of claims 1-6, by expressing nucleic acids which encodes said humanized anti-human PCSK9 antibody or antigen binding fragment thereof in a recombinant host cell.

25. The method of claim 24, wherein the host cell is selected from a bacteria, yeast, fungi, insect cell, plant cell, avian cell, mammalian cell, yeast, filamentous fungus, polyploid yeast,

polyploid filamentous fungus, Pichia pastoris, Pichia finlandica, Pichia trehalophila, Pichia koclamae, Pichia membranaefaciens, Pichia minuta (Ogataea minuta, Pichia lindneri), Pichia opuntiae, Pichia thermotolerans, Pichia salictaria, Pichia guercuum, Pichia pijperi, Pichia stiptis, Pichia methanolica, Pichia sp., Saccharomyces cerevisiae, Saccharomyces sp., Hansenula polymorpha, Kluyveromyces sp., Kluyveromyces lactis, Candida albicans, Aspergillus nidulans, Aspergillus niger, Aspergillus oryzae, Trichoderma reesei, Chrysosporium lucknowense, Fusarium sp., Fusarium gramineum, Fusarium venenatum, Physcomitrella patens and Neurospora crassa. Pichia sp., any Saccharomyces sp., Hansenula polymorpha, Aspergillus sp., a mammalian cell, CHO, COS, BHK, myeloma, monkey kidney CV 1 line transformed by SV40 (COS-7, ATCC CRL 1651), human embryonic kidney line (293 or 293 cells subcloned for growth in suspension culture), mouse sertoli cell, human lung cell, human liver cell, or mouse mammary tumor cell.

26. The method of claim 25, wherein the recombinant host cell is a polyploid yeast culture that stably expresses and secretes into the culture medium at least 10-25 mg/liter of said humanized anti-human PCSK9 antibody or antigen binding fragment thereof.

27. The method of claim 26, wherein said polyploid yeast is made by a method that comprises:

i. introducing at least one expression vector containing one or more heterologous polynucleotides encoding said antibody operably linked to a promoter and a signal sequence into a haploid yeast cell;

ii. producing by mating or spheroplast fusion a polyploidal yeast from said first and/or second haploid yeast cell;

iii. selecting polyploidal yeast cells that stably express said antibody; and

iv. producing stable polyploidal yeast cultures from said polyploidal yeast cells that stably express said antibody into the culture medium.

28. The method of claim 27, wherein said yeast cell is of the genus Pichia.

29. Use of the humanized anti-human PCSK9 antibody or antigen binding fragment thereof according to any of claims 1-6 in the manufacture of a medicament for treating or preventing elevated serum cholesterol levels in a patient in need thereof or at risk of developing elevated serum cholesterol levels because of an existing condition.

30. The use of claim 29, wherein the humanized anti-human PCSK9 antibody or antigen binding fragment thereof:

i. are to be administered by a route selected from buccal, epicutaneous, epidural, inhalation, intraarterial, intracardial, intracerebroventricular, intradermal, intramuscular, intranasal, intraocular, intraperitoneal, intraspinal, intrathecal, intravenous, oral, parenteral, rectally via an enema or suppository, subcutaneous, subdermal, sublingual, transdermal, and transmucosal;

ii. are to be administered by a route selected from subcutaneous, intravenous, intraarterial, intracardial, intracerebroventricular, intramuscular, intraperitoneal, intraspinal, intrathecal, and parenteral; or

iii. is contained in a powder, liquid, gel, drop, or other dosage form.

31. A composition containing the humanized anti-human PCSK9 antibody or antigen binding fragment thereof according to any one of claims 1-6, which is suitable for administration by a means selected from buccal, epicutaneous, epidural, inhalation, intraarterial, intracardial, intracerebroventricular, intradeimal, intramuscular, intranasal, intraocular, intraperitoneal, intraspinal, intrathecal, intravenous, oral, parenteral, rectally via an enema or suppository, subcutaneous, subdermal, sublingual, transdermal, and transmucosal.

32. The composition of claim 31, wherein the composition:

i. is suitable for administration by a means selected from subcutaneous, intravenous, intraarterial, intracardial, intracerebroventricular, intramuscular, intraperitoneal, intraspinal, intrathecal, and parenteral; and/or

ii. which comprises a powder, liquid, gel, drop, liposomal, or other dosage form.

33. A method of using the humanized anti-human PCSK9 antibody or antigen binding fragment thereof according to any one of claims 1-6 to isolate, detect or purify PCSK9 in a sample.

34. A method of using the humanized anti-human PCSK9 antibody or antigen binding fragment thereof according to any one of claims 1-6 to detect the levels of PCSK9 in vivo or ex vivo.

35. The method of claim 34, which is used to assess whether a patient should be administered the humanized anti-PCSK9 antibody or antigen binding fragment thereof or another therapy/ and/or is used to assess the efficacy of a treatment method the objective of which is to reduce cholesterol or alter lipid levels.