currently the treatment of choice for hypercholesterolemia. However, emerging data indicate that more aggressive treatment of hypercholesterolemia is associated with lower risk for CHD events. In addition, a subset of patients are intolerant to, or do not respond adequately to, statin therapy. Thus, novel therapies that can be used alone or in combination with existing agents to more effectively reduce LDL-C may be useful.

It is well established that recycling of the hepatic cell surface low-density lipoprotein receptor (LDLR) plays a critical role in the maintenance of cellular and whole body cholesterol balance by regulating plasma LDL-C levels. More recently it has been shown that proprotein convertase subtilisin/kexin type 9 (PCSK9) plays an important role in the recycling and regulation of LDLR. PCSK9 is a member of the subtilisin family of serine proteases and is expressed predominantly in the liver. Following secretion, it causes post-translational down regulation of hepatic cell surface LDLR by a mechanism that involves direct binding to the LDLR. Down regulation of hepatic LDLR in turn leads to increased levels of circulating LDL-C. Thus PCSK9 may represent a target for inhibition by novel therapeutics in the setting of hypercholesterolemia. Strong rationale for such an approach is available from studies in preclinical models and from findings that humans with PCSK9 loss-of-function mutations have cholesterol levels lower than normal and reduced incidence of CHD.

## SUMMARY

In one aspect, the present invention refers to a use of a monoclonal antibody that specifically binds to PCSK9 comprising a) a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO: 23 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:49; b) a light chain complementarity determining region (CDR) of the CDRL1 sequence in SEQ ID NO:23, a CDRL2 of the CDRL2 sequence in SEQ ID NO:23, and a CDRL3 of the CDRL3 sequence in SEQ ID NO:23; and a heavy chain complementarity determining region (CDR) of the CDRH1 sequence in SEQ ID NO:49, a CDRH2 of the CDRH2 sequence in SEQ ID NO:49, and a CDRH3 of the CDRH3 sequence in SEQ ID NO:49; c) a light chain complementarity determining region (CDR) CDRL1 comprising the amino acid sequence of SEQ ID NO: 158, a CDRL2 comprising the amino acid sequence of SEQ ID NO: 162, a CDRL3 comprising the amino acid sequence of SEQ ID NO: 395; and a heavy chain complementarity determining region (CDR) CDRH1 comprising the amino acid sequence of SEQ ID NO: 368, a CDRH2 comprising the amino acid sequence

of SEQ ID NO: 175, a CDRH3 comprising the amino acid sequence of SEQ ID NO: 180; d) a light chain complementarity determining region (CDR) CDRL1 comprising the amino acid sequence of SEQ ID NO: 305, a CDRL2 comprising the amino acid sequence of SEQ ID NO: 312, a CDRL3 comprising the amino acid sequence of SEQ ID NO: 319; and a heavy chain complementarity determining region (CDR) CDRH1 comprising the amino acid sequence of SEQ ID NO: 308, a CDRH2 comprising the amino acid sequence of SEQ ID NO: 320, a CDRH3 comprising the amino acid sequence of SEQ ID NO: 310; or e) a light chain variable region that comprises the amino acid sequence of SEQ ID NO: 23 and a heavy chain variable region comprises the amino acid sequence of SEQ ID NO:49 in the manufacture of a medicament for lowering serum LDL cholesterol in a patient by at least 15%; and/or treating or preventing a cholesterol related disorder in a patient having an elevated serum LDL cholesterol level; wherein the use comprises that the monoclonal antibody is to be administered to the patient in need thereof at a dose of 70 mg to 450 mg.

Also described herein is a stable formulation comprising at least one monoclonal antibody that specifically binds to PCSK9, wherein PCSK9 comprises the amino acids of SEQ ID NO 1, the monoclonal antibody in an amount of about 40 mg/ml to about 300 mg/ml, and a pharmaceutically acceptable buffer in an amount of about .05 mM to about 40 mM, and a pharmaceutically acceptable surfactant in an amount that is about .01% w/v to about 20% w/v, and at least one pharmaceutically acceptable stabilizer of about 0.5% w/v to about 10% w/v, wherein the stable formulation has a pH of between about 4.0 to about 6.0 is provided. In some examples the above stable formulation comprises a pharmaceutically acceptable buffer chosen from thee group consisting of glutamate, phosphate, phosphate buffered saline, sodium acetate, sodium citrate, and Tris buffer. In particular examples the pharmaceutically acceptable buffer of the above stable formulation is present in an

amount of 10-20 mM. In a particular example the pharmaceutically acceptable buffer is sodium acetate in the amount of 10-20 mM. In some examples, the pharmaceutically acceptable surfactant is present in an amount of about 0.004% w/v to about 0.01% w/v. In particular examples the pharmaceutically acceptable surfactant of the above stable formulation is polysorbate 80 or polysorbate 20. In further examples the pharmaceutically acceptable surfactant is polysorbate 80 0r polysorbate 20 present in an amount of about 0.004% w/v to about 0.01% w/v.

In some examples the pharmaceutically acceptable stabilizer of the above stable formulation is selected from the group consisting of a polyhydroxy hydrocarbon, a disaccharide, a polyol, proline, arginine, lysine, methionine, taurine, and benzyl alcohol. In some examples the pharmaceutically acceptable stabilizer is a polyhydroxy hydrocarbon selected from the group consisting of sorbital, mannitol, and glycerol. In a particular example, the polyhydroxy hydrocarbon of the above stable formulation is sorbital. In some embociments the pharmaceutically acceptable stabilizer is a disaccharide selected from the group consisting of sucrose, maltose, lactose, fructose and trehelose. In some examples disaccharide stabilizer is present in an amount of about 9% w/v. In some examples, said disaccharide is sucrose. In particular examples the sucrose is present in the above stable formulation in an amount of about 9% w/v. In some examples stabilizer is an amino acid selected from the group consistin of proline, arginine, lysine, methionine, and taurine. In a particular example the stabilizer is proline. In a further example the proline is present in the above stable formulation in an amount of between about 2% and 3% w/v. In some examples, the pH of the above stable formulation is between about 5.0 to about 5.5.

In some examples the above stable formulation comprises a monoclonal antibody comprises: a light chain variable region that comprises an amino acid sequence that is at least

90% identical to that of SEQ ID NO: 23 and a heavy chain variable region that comprises and amino acid sequence that is at least 90% identical to that of SEQ ID NO:49; a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO: 12 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:67;a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO: 461 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:459;a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:465 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:463, or a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO: 485 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:483.

In some examples the above stable formulation includes a monoclonal antibody that comprises:a light chain variable region that comprises the amino acid sequence SEQ ID NO: 23 and a heavy chain variable region comprises the amino acid sequence of SEQ ID NO:49; a light chain variable region that comprises the amino acid sequence of SEQ ID NO: 12 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:67;a light chain variable region that comprises the amino acid sequence of SEQ ID NO: 461 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:459;a light chain variable region that comprises the amino acid sequence of SEQ ID NO:465 and a heavy chain variable region that comprises the amino acid of SEQ ID NO:463, or a light chain variable region that comprises the amino acid sequenceof SEQ ID NO: 485 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:483.

In some examples, the above stable formulation comprises the monoclonal antibody 21B12, 31H4, 8A3, 11F1, or 8A1.

In some examples, the above stable formulation comprises a viscosity of 30 cP or less at 25°C. In particular examples, the above stable formulation the monoclonal antibody is present at about 70 mg/ml to about 150 mg/ml and the stable formulation comprises a viscosity of 12 cP or less at 25°C. In some examples the above stable formulation comprises an osmolality of between about 250 mOsmol/kg to about 350 mOsmol/kg. In some examples, the above stable formulation remains stable for at least 3, 6, 12 or 24 months.

In particular examples, the above stable formulation comprises monoclonal antibody having a variable region that is at least 90% identical to that of SEQ ID NO:465 and a heavy chain variable region that is at least 90% identical to that of of SEQ ID NO:463. In some examples the above stable formulation comprises a monoclonal antibody having a light chain variable region comprising the amino acid sequence of SEQ ID NO:465 and a heavy chain variable region comprising the amino acid sequence of SEQ ID NO:463 and whererein the amount of the monoclonal antibody is about 150 mg/ml.

In some examples, the above stable formulation comprises an antibody comprises a light chain variable region that is at least 90% identical to that of SEQ ID NO:23 and a heavy chain variable region that is at least 90% identical to that of of SEQ ID NO:49. In some examples, the above stable formulation comprises a monoclonal antibody having a light chain variable region comprising the amino acid sequence of SEQ ID NO:23 and a heavy chain variable region comprising the amino acid sequence of SEQ ID NO:49 and whererein the amount of the monoclonal antibody is about 120 mg/ml or 140 mg/ml..

In particular embociments the above stable formulation, comprises (a) a monoclonal antibody in an amount of about 70 mg/ml to about 200 mg/ml, said monoclonal antibody

comprising:a light chain variable region that comprises the amino acid sequence SEQ ID NO: 23 and a heavy chain variable region comprises the amino acid sequence of SEQ ID NO:49; a light chain variable region that comprises the amino acid sequence of SEQ ID NO: 12 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:67;a light chain variable region that comprises the amino acid sequence of SEQ ID NO: 461 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:459;a light chain variable region that comprises the amino acid sequence of SEQ ID NO:465 and a heavy chain variable region that comprises the amino acid of SEQ ID NO:463, ora light chain variable region that comprises the amino acid sequenceof SEQ ID NO: 485 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:483 and about 10 mM sodium acetate; about 9.0% w/v sucrose; about 0.004% to about 0.01% w/v polysorbate 20 or polysorbate 80, anda pH of about 5.2.

In this example the monoclonal antibody may be 21B12, 8A3, 11F1. In particular examples, the monocloncal antibody is 21B12 and is present in the above stabe formulation in an amount of about 140 mg/ml. In further examples the stable formulation of claims comprises about .004% polysorbate 20. In further particular examples the above stable formulation comprises the monocloncal antibody is 8A3 which is present in an amount of about 150 mg/ml.

In furher examples, the above stable formulation comprises the monocloncal antibody is 11F1 in an amount of about 140, 150, 160. 170, 180, 190, 0r 200 mg/ml. In particular examples, the stable formulation comprising 11F1 also comprises about .01% polysorbate 80.

In a further example, the stable formulation, comprises (a) a monoclonal antibody in an amount of about 70 mg/ml to about 200 mg/ml, said monoclonal antibody comprising:a light chain variable region that comprises the amino acid sequence SEQ ID NO: 23 and a

heavy chain variable region comprises the amino acid sequence of SEQ ID NO:49; a light chain variable region that comprises the amino acid sequence of SEQ ID NO: 12 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:67;a light chain variable region that comprises the amino acid sequence of SEQ ID NO: 461 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:459;a light chain variable region that comprises the amino acid sequence of SEQ ID NO:465 and a heavy chain variable region that comprises the amino acid of SEQ ID NO:463, or a light chain variable region that comprises the amino acid sequenceof SEQ ID NO: 485 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:483, and about 10 mM sodium acetate; between about 2.0% to 3.0% w/v proline; about about 0.01% w/v polysorbate 20 or polysorbate 80, anda pH of about 5.0. In some examples, the stable formulation comprises the monocloncal antibody is 21B12, 8A3 or 11F1.

Also described herein is a stable formulation, comprising an anti-PCSK9 monoclonal antibody in an amount of about 70 mg/ml to about 200 mg/ml, said monoclonal antibody comprising: a light chain variable region that comprises the amino acid sequence having at least 90% identity to the sequence of SEQ ID NO: 577 and a heavy chain variable region that comprises the amino acid sequence having at least 90% identity to the sequence of SEQ ID NO: 576; a light chain variable region that comprises the amino acid sequence of SEQ ID NO: 577 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:576 ; a light chain variable region that comprises the amino acid sequence having at least 90% identity to the sequence of SEQ ID NO: 588 and a heavy chain variable region that comprises the amino acid sequence having at least 90% identity to the sequence of SEQ ID NO: 589 or a light chain variable region that comprises the amino acid sequence of SEQ ID NO: 588 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:589; and (b) about 10 mM sodium acetate;(c) about 9.0% w/v sucrose; (d)

about 0.004% to about 0.01% w/v polysorbate 20 or polysorbate 80, and(e) a pH of about 5.2.

Also described herein is a stable formulation, comprising an anti-PCSK9 monoclonal antibody in an amount of about 70 mg/ml to about 200 mg/ml, said monoclonal antibody comprising: a light chain variable region that comprises the amino acid sequence having at least 90% identity to the sequence of SEQ ID NO: 577 and a heavy chain variable region that comprises the amino acid sequence having at least 90% identity to the sequence of SEQ ID NO: 576; a light chain variable region that comprises the amino acid sequence of SEQ ID NO: 577 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:576 ; a light chain variable region that comprises the amino acid sequence having at least 90% identity to the sequence of SEQ ID NO: 588 and a heavy chain variable region that comprises the amino acid sequence having at least 90% identity to the sequence of SEQ ID NO: 589 or a light chain variable region that comprises the amino acid sequence of SEQ ID NO: 588 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:589; and (b) about 10 mM sodium acetate;(c) between about 2.0% to 3.0% w/v proline; (d) about 0.01% w/v polysorbate 20 or polysorbate 80, and (e) a pH of about 5.0.

In some examples, the present disclosure comprises a method of lowering serum LDL cholesterol in a patient comprising administering at least one anti-PCSK9 antibody to the patient in need thereof at a dose of about 10 mg to about 3000 mg, thereby lowering said serum LDL cholesterol level by at least about 15%, as compared to a predose level of serum LDL cholesterol in the patient. In some examples, also described herein is the serum LDL cholesterol level of said patient is lowered by at least about 20%, at least about 25%, at least about 30%, at least about 35%, at least about 40%, at least about 45%, at least about 50%, at least about 55%, at least about 60%, at least about 65%, at least about 70%, at

least about 75%, at least about 80%, at least about 85%, or at least about 90% as compared to a predose level of serum LDL cholesterol in the patient.

In some examples, the anti-PCSK9 antibody is administered to a patient at a dose of about 35 mg to about 3000 mg, of about 35 mg to about 2800 mg, of about 35 mg to about 2500 mg, of about 35 mg to about 2000 mg, of about 35 mg to about 1800 mg, of about 35 mg to about 1400 mg, of about 25 mg to about 1200 mg, of about 35 mg to about 1000 mg, of about 35 mg to about 700 mg, of about 45 mg to about 700 mg, of about 45 mg to about 600 mg, of about 45 mg to about 450 mg, of about 70 mg to about 450 mg, of about 105 mg to about 420 mg, of about 120 mg to about 200 mg, of about 140 mg to about 200 mg, of about 140 mg to about 180 mg, or of about 140 mg to about 170 mg, of about 420 mg to about 3000 mg, of about 700 mg to about 3000 mg, of about 1000 mg to about 3000 mg, of about 1200 to about 3000 mg, of about 1400 mg to about 3000 mg, of about 1800 mg to about 3000 mg, of about 2000 mg to about 3000 mg, of about 2400 mg to about 3000 mg, or about 2800 mg to about 3000 mg. In some examples, the anti-PCSK9 antibody is administered to a patient at a dose of about 35 mg, of about 45 mg, of about 70 mg, of about 105 mg, of about 120 mg of about 140 mg, of about 150 mg, of about 160 mg, of about 170 mg, of about 180 mg, of about 190 mg, of about 200 mg, of about 210 mg, of about 280 mg, of about 360 mg, of about 420 mg, of about 450 mg, of about 600 mg, of about 700 mg, of about 1200 mg, of about 1400 mg, of about 1800 mg, of about 2000 mg, of about 2500 mg, of about 2800 mg, or about 3000 mg.

In some examples the anti-PCSK9 antibody is administered to a patient on a schedule selected from the group consisting of: (1) once a week, (2) once every two weeks, (3) once a month, (4) once every other month, (5) once every three months (6)once every six months and (7) once every twelve months. In some examples the ant-PCSK9 antibody is administered

parenterally. In some examples, the anti-PCSK9 antibody is administered intravenously. In some examples, the anti-PCSK9 antibody is administered subcutaneously.

In some examples the anti-PCSK9 antibody comprises: a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO: 23 and a heavy chain variable region that comprises and amino acid sequence that is at least 90% identical to that of SEQ ID NO:49; a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO: 12 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:67; a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO: 461 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:459; a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:465 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:463; a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO: 485 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:483; or a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO: 582 and a heavy chain variable region that comprises and amino acid sequence that is at least 90% identical to that of SEQ ID NO:583. In some examples the anti-PCSK9 antibody comprises: a light chain variable region that comprises an amino acid sequence, SEQ ID NO: 23, and a heavy chain variable region that comprises and amino acid sequence, SEQ ID NO:49; a light chain variable region that comprises an amino acid sequence, SEQ ID NO: 12, and a heavy chain

variable region that comprises an amino acid sequence, SEQ ID NO:67; a light chain variable region that comprises amino acid sequence SEQ ID NO: 461 and a heavy chain variable region that comprises amino acid sequence SEQ ID NO:459; a light chain variable region that comprises the amino acid sequence of SEQ ID NO:465 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:463; a light chain variable region that comprises the amino acid sequence of SEQ ID NO: 485 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:483; or a light chain variable region that comprises an amino acid sequence, SEQ ID NO: 582, and a heavy chain variable region that comprises and amino acid sequence, SEQ ID NO:583. In some examples the anti-PCSK9 antibody is selected from the group consisting of 21B12, 31H4, 8A3, 11F1 and 8A1.

In some exampless, the present disclosure comprises a method of treating or preventing a cholesterol related disorder in a patient having a serum LDL cholesterol level comprising administering at least one anti-PCSK9 antibody to the patient in need thereof at thereof at a dose of about 10 mg to about 3000 mg, thereby treating or preventing the cholesterol related disorder in the patient. In one example, the cholesterol related disorder to be treated or prevented is familial hypercholesterolemia, including heterozygous familial hypercholesterolemia and homozygous familial hypercholesterolemia, non-familial hypercholesterolemia, elevated lipoprotein (a), heart disease, metabolic syndrome, diabetes, coronary heart disease, stroke, cardiovascular disease, Alzheimer's disease, peripheral arterial disease, hyperlipidemia or dyslipidemia. In some examples, the serum LDL cholesterol level of said patient is lowered by at least about 15%, at least about 20%, at least about 25%, at least about 30%, at least about 35%, at least about 40%, at least about 45%, at least about 50%, at least about 55%, at least about 60%, at least about 65%, at least about

70%, at least about 75%, at least about 80%, at least about 85%, or at least about 90% as compared to a predose level of serum LDL cholesterol in said patient.

In some examples, the anti-PCSK9 antibody is administered to a patient at a dose of about 35 mg to about 3000 mg, of about 35 mg to about 2800 mg, of about 35 mg to about 2500 mg, of about 35 mg to about 2000 mg, of about 35 mg to about 1800 mg, of about 35 mg to about 1400 mg, of about 25 mg to about 1200 mg, of about 35 mg to about 1000 mg, of about 35 mg to about 700 mg, of about 45 mg to about 700 mg, of about 45 mg to about 600 mg, of about 45 mg to about 450 mg, of about 70 mg to about 450 mg, of about 105 mg to about 420 mg, of about 120 mg to about 200 mg, of about 140 mg to about 200 mg, of about 140 mg to about 180 mg, or of about 140 mg to about 170 mg, of about 420 mg to about 3000 mg, of about 700 mg to about 3000 mg, of about 1000 mg to about 3000 mg, of about 1200 to about 3000 mg, of about 1400 mg to about 3000 mg, of about 1800 mg to about 3000 mg, of about 2000 mg to about 3000 mg, of about 2400 mg to about 3000 mg, or about 2800 mg to about 3000 mg. In some examples, the anti-PCSK9 antibody is administered to a patient at a dose of about 35 mg, of about 45 mg, of about 70 mg, of about 105 mg, of about 120 mg of about 140 mg, of about 150 mg, of about 160 mg, of about 170 mg, of about 180 mg, of about 190 mg, of about 200 mg, of about 210 mg, of about 280 mg, of about 360 mg, of about 420 mg, of about 450 mg, of about 600 mg, of about 700 mg, of about 1200 mg, of about 1400 mg, of about 1800 mg, of about 2000 mg, of about 2500 mg, of about 2800 mg, or about 3000 mg.

In some examples, the anti-PCSK9 antibody is administered to a patient on a schedule selected from the group consisting of: (1) once a week, (2) once every two weeks, (3) once a month, (4) once every other month, (5) once every three months (6)once every six months and (7) once every twelve months. In some examples, the ant-PCSK9 antibody is administered

parenterally. In some examples, the anti-PCSK9 antibody is administered intravenously. In some examples, the anti-PCSK9 antibody is administered subcutaneously.

In some examples, the anti-PCSK9 antibody comprises: a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO: 23 and a heavy chain variable region that comprises and amino acid sequence that is at least 90% identical to that of SEQ ID NO:49; a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO: 12 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:67; a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO: 461 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:459; a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:465 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:463; a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO: 485 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:483; or a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO: 582 and a heavy chain variable region that comprises and amino acid sequence that is at least 90% identical to that of SEQ ID NO:583. In some examples, the anti-PCSK9 antibody comprises: a light chain variable region that comprises an amino acid sequence, SEQ ID NO: 23, and a heavy chain variable region that comprises and amino acid sequence, SEQ ID NO:49; a light chain variable region that comprises an amino acid sequence, SEQ ID NO: 12, and a heavy chain

variable region that comprises an amino acid sequence, SEQ ID NO:67; a light chain variable region that comprises amino acid sequence SEQ ID NO: 461 and a heavy chain variable region that comprises amino acid sequence SEQ ID NO:459; a light chain variable region that comprises the amino acid sequence of SEQ ID NO:465 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:463; a light chain variable region that comprises the amino acid sequence of SEQ ID NO: 485 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:483; or a light chain variable region that comprises an amino acid sequence, SEQ ID NO: 582, and a heavy chain variable region that comprises and amino acid sequence, SEQ ID NO:583. In some examples, the anti-PCSK9 antibody is selected from the group consisting of 21B12, 31H4, 8A3, 11F1 and 8A1.

In some examples, the anti-PCSK9 antibody is administered to a patient on a schedule selected from the group consisting of: (1) once a week, (2) once every two weeks, (3) once a month, (4) once every other month, (5) once every three months (6) once every six months and (7) once every twelve months. In some examples, the ant-PCSK9 antibody is administered parenterally. In some examples, the anti-PCSK9 antibody is administered intravenously. In some examples, the anti-PCSK9 antibody is administered subcutaneously.

In particular examples, the anti-PCSK9 antibody is 21B12 and 31H4. In some examples the anti-PCSK9 antibody comprises: a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:23 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:49. In some examples the anti-PCSK9 antibody comprises: a light chain variable region that comprises the amino acid sequence of

SEQ ID NO:23 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:49. In some examples, the anti-PCSK9 antibody is 21B12. In a particular example wherein the anti-PCSK9 antibody comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:23 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:49, or comprises a light chain variable region that comprises the amino acid sequence of SEQ ID NO:23 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:49, or is antibody is 21B12, the anti-PCSK9 antibody is administered to a patient at a dose of about 21 mg to about 70 mg subcutaneously once a week, wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 3-10 days; is administered to a patient at a dose of about 21 mg subcutaneously once a week, wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 3-10 days; is administered to a patient at a dose of about 35 mg subcutaneously once a week, wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 3-10 days; is administered to a patient at a dose of about 70 mg subcutaneously once a week, wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 3-10 days; is administered to a patient at a dose of about 70 mg to about 280 mg subcutaneously once every other week, wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 7-14 days; is administered to a patient at a dose of about 70 mg subcutaneously once every other week, wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 7-14 days; is administered to a patient at a dose of about 105 mg subcutaneously once every other week, wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 7-14 days; is administered to a patient at a dose of about 120 mg subcutaneously once every other week, wherein the serum LDL cholesterol level of the patient is lowered at least

about 15-50% for about 7-14 days; is administered to a patient at a dose of about 140 mg subcutaneously once every other week, wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 7-14 days; is administered to a patient at a dose of about 210 mg subcutaneously once every other week, wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 7-14 days; is administered to a patient at a dose of about 280 mg subcutaneously once every other week, wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 7-14 days; is administered to a patient at a dose of about 280 mg to about 420 mg subcutaneously once every four weeks, wherein the serum LDL cholesterol level of the patent is lowered at least about 15-50% for about 21-31 days; is administered to a patient at a dose of about 280 mg subcutaneously once every four weeks, wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 21-31 days; is administered to a patient at a dose of about 350 mg subcutaneously once every four weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 21-31 days; is administered to a patient at a dose of about 420 mg subcutaneously every four weeks, wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 21-31 days.

In another particular example, wherein the anti-PCSK9 antibody comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:23 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:49, or comprises a light chain variable region that comprises the amino acid sequence of SEQ ID NO:23 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:49, or is antibody is 21B12, the anti-PCSK9 antibody is administered to a patient at a dose of about 420 mg to about 3000 mg intraveneously every week, wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 3-10 days, is administered to a patient at a dose of about 700 mg intraveneously every week, wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 3-

10 days; is administered to a patient at a dose of about 1200 mg intraveneously every week, wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 3-10 days; is administered to a patient at a dose of about greater than 1200 mg to about 3000 mg intraveneously every week, wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 3-10 days; is administered to a patient at a dose of about 420 mg to about 3000 mg intraveneously other week, wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 7-14 days; is administered to a patient at a dose of about 700 mg intraveneously every other week, wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 7-14 days; is administered to a patient at a dose of about 1200 mg intraveneously every other week, wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 21-31 days; is administered to a patient at a dose of about greater than 1200 mg to about 3000 mg intraveneously every other week, wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 7-14 days; is administered to a patient at a dose of about 420 mg to about 3000 mg intraveneously four weeks, wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 21-31 days, is administered to a patient at a dose of about 700 mg intraveneously every four weeks, wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 21-31 days; is administered to a patient at a dose of about 1200 mg intraveneously every four weeks, wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 21-31 days; is administered to a patient at a dose of about greater than 1200 mg to about 3000 mg intraveneously every four weeks, wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 21-31 days.

In another particular example wherein the anti-PCSK9 antibody comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:23 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:49 or comprises a light chain variable region that comprises the amino acid sequence of SEQ ID NO:23 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:49 or is antibody is 21B12, the anti-PCSK9 antibody is administered to a patient at a dose of about 21 mg subcutaneously once a week, wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 7-10 days; is administered to a patient at a dose of about 35 mg subcutaneously once a week, wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 7-10 days; is administered to a patient at a dose of about 70 mg subcutaneously once a week, wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 7-10 days; is administered to a patient at a dose of about 70 mg subcutaneously once every other week wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 10-14 days; is administered to a patient at a dose of about 105 mg subcutaneously once every other week, wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 10-14 days; is administered to a patient at a dose of about 120 mg subcutaneously once every other week, wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 10-14 days; is administered to a patient at a dose of about 140 mg subcutaneously once every other week, wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 10-14 days; is administered to a patient at a dose of about 210 mg subcutaneously once every other week, wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 10-14 days; is administered to a patient at a dose of about 280 mg subcutaneously once every other week, wherein the serum LDL

cholesterol level of the patient is lowered at least about 30-50% for about 10-14 days; is administered to a patient at a dose of about 280 mg to about 420 mg subcutaneously once every four weeks, wherein the serum LDL cholesterol level of the patent is lowered at least about 30-50% for about 24-28 days; is administered to a patient at a dose of about 280 mg subcutaneously once every four weeks, wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 24-28 days; is administered to a patient at a dose of about 350 mg subcutaneously once every four weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 24-28 days; is administered to a patient at a dose of about 420 mg subcutaneously every 4 weeks, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 24-28 days.

In another particular example, wherein the anti-PCSK9 antibody comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:23 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:49, or comprises a light chain variable region that comprises the amino acid sequence of SEQ ID NO:23 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:49, or is antibody is 21B12, the anti-PCSK9 antibody is administered to a patient at a dose of about 420 mg to about 3000 mg intraveneously every week, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 7-10 days; is administered to a patient at a dose of about 700 mg intraveneously every week, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 7-10 days; is administered to a patient at a dose of about 1200 mg intraveneously every week, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 7-10 days; is administered to a patient at a dose of about greater than 1200 mg to about 3000 mg intraveneously every week, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 7-10 days; is administered to a patient at a dose of about 420 mg to about

3000 mg intraveneously other week, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 10-14 days; is administered to a patient at a dose of about 700 mg intraveneously every other week, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 10-14 days; is administered to a patient at a dose of about 1200 mg intraveneously every other week, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 10-14 days; is administered to a patient at a dose of about greater than 1200 mg to about 3000 mg intraveneously every other week, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 10-14 days; is administered to a patient at a dose of about 420 mg to about 3000 mg intraveneously four weeks, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 24-28 days, is administered to a patient at a dose of about 700 mg intraveneously every four weeks, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 24-28 days; is administered to a patient at a dose of about 1200 mg intraveneously every four weeks, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 24-28 days; is administered to a patient at a dose of about greater than 1200 mg to about 3000 mg intraveneously every four weeks, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 24-28 days.

In particular examples, the anti-PCSK9 antibody is 8A3, 11F1 and 8A1. In some examples the anti-PCSK9 antibody comprises: a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:465 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:463. In some examples the anti-PCSK9 antibody comprises: a light chain variable region that comprises the amino acid sequence of SEQ ID NO:465 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:463. In some examples the anti-PCSK9 antibody is 11F1. In a particular

example, wherein the anti-PCSK9 antibody comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:465 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:463, or comprises a light chain variable region that comprises the amino acid sequence of SEQ ID NO:465 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:463, or is antibody is 11F1, the anti-PCSK9 antibody is administered to a patient at a dose of about 45 mg subcutaneously once a week wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 3-10 days, is administered to a patient at a dose of about 150 mg subcutaneously once every other week wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 7-14 days; is administered to a patient at a dose of about 150 mg subcutaneously once every four weeks wherein the serum LDL cholesterol level of the patent is lowered at least about 15-50% for about 21-31 days; is administered to a patient at a dose of about greater than 150 mg to about 200 mg subcutaneously once every four weeks, wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 21-31 days; is administered to a patient at a dose of about 170 mg to about 180 mg subcutaneously once every four weeks, wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 21-31 days; is administered to a patient at a dose of about 150 mg to about 170 mg subcutaneously once every four weeks, wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 21-31 days; is administered to a patient at a dose of about 450 mg subcutaneously once every four weeks, wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 21-31 days; is administered to a patient at a dose of about 150 mg subcutaneously once every six weeks wherein the serum LDL cholesterol level of the patent is lowered at least about 15-50% for about 31-42 days; is administered to a patient at a dose of about greater than 150 mg to about

200 mg subcutaneously once every six weeks, wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 31-42 days; is administered to a patient at a dose of about 170 mg to about 180 mg subcutaneously once every six weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 31-42 days; is administered to a patient at a dose of about 150 mg to about 170 mg subcutaneously once every six weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 31-42 days; is administered to a patient at a dose of about 450 mg subcutaneously once every six weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 31-42 days; is administered to a patient at a dose of about 140 mg to about 200 mg subcutaneously every 8 weeks wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 45-56 days; is administered to a patient at a dose of about 170 mg to about 180 mg subcutaneously every 8 weeks wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 45-56 days; is administered to a patient at a dose of about 150 mg to about 170 mg subcutaneously every 8 weeks wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 45-56 days; is administered to a patient at a dose of about 450 mg subcutaneously every 8 weeks wherein the serum LDL cholesterol level of the patient is lowered 15-50% for about 45-56 days; at a dose of about 600 mg subcutaneously once every 8 weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 45-56 days; at a dose of about 700 mg subcutaneously once every 8 weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 45-56 days; at a dose of about 600 mg subcutaneously once every 12 weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 74-84 days; at a dose of about 700 mg subcutaneously once every 12 weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 74-84 days; at a

dose of about 600 mg subcutaneously once every 16 weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 100-112 days; at a dose of about 700 mg subcutaneously once every 16 weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 100 -112 days.

In particular examples wherein the anti-PCSK9 antibody comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:465 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:463 or comprises a light chain variable region that comprises the amino acid sequence of SEQ ID NO:465 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:463 or is antibody is 11F1, the anti-PCSK9 antibody is administered to a patient at a dose of about 45 mg subcutaneously once a week wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 7-10 days, is administered to a patient at a dose of about 150 mg subcutaneously once every other week wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 10-14 days; is administered to a patient at a dose of about 150 mg subcutaneously once every four weeks wherein the serum LDL cholesterol level of the patent is lowered at least about 30-50% for about 24-28 days; is administered to a patient at a dose of about greater than 150 mg to about 200 mg subcutaneously once every four weeks, wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 24-28 days; is administered to a patient at a dose of about 170 mg to about 180 mg subcutaneously once every four weeks, wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 24-28 days; is administered to a patient at a dose of about 150 mg to about 170 mg subcutaneously once every four weeks, wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 24-28 days; is administered to a patient at a dose of about 450 mg subcutaneously once every four

weeks, wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 24-28 days; is administered to a patient at a dose of about 150 mg subcutaneously once every six weeks wherein the serum LDL cholesterol level of the patent is lowered at least about 30-50% for about 40-41 days; is administered to a patient at a dose of about greater than 150 mg to about 200 mg subcutaneously once every six weeks, wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 40-41 days; is administered to a patient at a dose of about 170 mg to about 180 mg subcutaneously once every six weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 40-41 days; is administered to a patient at a dose of about 150 mg to about 170 mg subcutaneously once every six weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 40-41 days; is administered to a patient at a dose of about 450 mg subcutaneously once every six weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 40-41 days; is administered to a patient at a dose of about 140 mg to about 200 mg subcutaneously every 8 weeks wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 50-56 days; is administered to a patient at a dose of about 170 mg to about 180 mg subcutaneously every 8 weeks wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 50-56 days; is administered to a patient at a dose of about 150 mg to about 170 mg subcutaneously every 8 weeks wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 50-56 days; is administered to a patient at a dose of about 450 mg subcutaneously every 8 weeks wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 50-56 days; at a dose of about 600 mg subcutaneously once every 8 weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 50-56 days; at a dose of about 700 mg subcutaneously once every 8 weeks wherein the serum LDL cholesterol level of the patient is

lowered at least about 30-50% for about 50-56 days; at a dose of about 600 mg subcutaneously once every 12 weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 80-84 days; at a dose of about 700 mg subcutaneously once every 12 weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 80-84 days; at a dose of about 600 mg subcutaneously once every 16 weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 105-112 days; at a dose of about 700 mg subcutaneously once every 16 weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 105 - 112 days.

In particular examples wherein the anti-PCSK9 antibody comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:465 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:463 or comprises a light chain variable region that comprises the amino acid sequence of SEQ ID NO:465 and a heavy chain variable region that comprises the amino acid sequence of SEQ ID NO:463 or is antibody is 11F1, the anti-PCSK9 antibody is administered to a patient the anti-PCSK9 antibody is administered to a patient at a dose of about 420 mg to about 3000 mg intraveneously every week, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 7-10 days; is administered to a patient at a dose of about 700 mg intraveneously every week, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 7-10 days; is administered to a patient at a dose of about 1200 mg intraveneously every week, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 7-10 days; is administered to a patient at a dose of about greater than 1200 mg to about 3000 mg intraveneously every week, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 7-10 days; is administered to a patient at a dose of about 420 mg to about 3000 mg intraveneously

other week, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 10-14 days; is administered to a patient at a dose of about 700 mg intraveneously every other week, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 10-14 days; is administered to a patient at a dose of about 1200 mg intraveneously every other week, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 10-14 days; is administered to a patient at a dose of about greater than 1200 mg to about 3000 mg intraveneously every other week, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 10-14 days; is administered to a patient at a dose of about 420 mg to about 3000 mg intraveneously four weeks, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 24-28 days, is administered to a patient at a dose of about 700 mg intraveneously every four weeks, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 24-28 days; is administered to a patient at a dose of about 1200 mg intraveneously every four weeks, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 24-28 days; is administered to a patient at a dose of about greater than 1200 mg to about 3000 mg intraveneously every four weeks, wherein the serum LDL cholesterol level of the patient is lowered 30-50% for about 24-28 days; is administered at a dose of about 1000 mg – 3000 mg intravenously once every 24 weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 150 to 168 days; is administered at a dose of about 1000 mg – 3000 mg intravenously once every 24 weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 160 to 168 days; is administered at a dose of about 1000 mg – 3000 mg intravenously once every 52 weeks wherein the serum LDL cholesterol level of the patient is lowered at least about 15-50% for about 350 to 365 days; is administered at a dose of about 1000 mg – 3000 mg intravenously once every 52 weeks

wherein the serum LDL cholesterol level of the patient is lowered at least about 30-50% for about 360 to 365 days.

In another example, the at least one anti-PCSK9 antibody is administered to the patient before, after or concurrent with at least one other cholesterol-lowering agent. Cholesterol lowering agents include statins, including, atorvastatin, cerivastatin, fluvastatin, lovastatin, mevastatin, pitavastatin, pravastatin, rosuvastatin, simvastatin, nicotinic acid (niacin), slow relese niacin (SLO-NIACIN), laropiprant (CORDAPTIVE), fibric acid (LOPID (Gemfibrozil), TRICOR (fenofibrate)), Bile acid sequestrants, sucha as cholestyramine (QUESTRAN), colesvelam (WELCHOL), COLESTID (colestipol)), cholesterol absorption inhibitor (ZETIA (ezetimibe)), lipid modifying agents, PPAR gamma agonsits, PPAR alpha/gamma agonists, squalene synthase inhibitors, CETP inhibitors, anti-hypertensives, anti-diabetic agents, including sulphonyl ureas, insulin, GLP-1 analogs, DDPIV inhibitors, ApoB modulators, MTP inhibitoris and /or arteriosclerosis obliterans treatments, oncostatin M, estrogen, berbine and therapeutic agents for an immune-related disorder.

In some examples, also described herein is a method of lowering the serum LDL cholesterol level in a patient. The method comprises administering to a patient in need thereof a dose of about 10 mg to about 3000 mg of at least one anti-PCSK9 antibody described herein. In some examples, the dose is about 10 mg to about 70 mg of at least one anti-PCSK9 antibody administered once weekly (QW). In some examples, the dose is about 14 mg to about 45 mg of at least one anti-PCSK9 antibody administered once weekly. In some examples, the dose is about 14 mg to about 35 mg of at least one anti-PCSK9 antibody administered once weekly. In some examples, the dose is about 70 mg to about 420 mg of at least one anti-PCSK9 antibody administered once every 2 weeks (Q2W). In some examples, the dose is about 70 mg to about 350 mg of at least one anti-PCSK9 antibody administered once every 2 weeks (Q2W). In some examples, the dose is about 105 mg to about 350 mg of at least one anti-PCSK9 antibody administered once every 2 weeks (Q2W). In some examples, the dose is about 140 mg to about 280 mg of at least one anti-PCSK9 antibody administered once every 2 weeks (Q2W). In some

examples, the dose is about 250 mg to about 480 mg of at least one anti-PCSK9 antibody administered once every 4 weeks (Q4W). In some examples, the dose is about 280 mg to about 420 mg of at least one anti-PCSK9 antibody administered once every 4 weeks (Q4W). In some examples, the dose is about 350 mg to about 420 mg of at least one anti-PCSK9 antibody administered once every 4 weeks (Q4W). In some examples, the dose is about 420 mg to about 3000 mg of at least one anti-PCSK9 antibody administered once every week (QW). In some examples, the dose is about 1000 mg to about 3000 mg of at least one anti-PCSK9 antibody administered once every week (QW). In some examples, the dose is about 2000 mg to about 3000 mg of at least one anti-PCSK9 antibody administered once every week (QW). In some examples, the dose is about 420 mg to about 3000 mg of at least one anti-PCSK9 antibody administered once every other week (Q2W). In some examples, the dose is about 1000 mg to about 3000 mg of at least one anti-PCSK9 antibody administered once every other week (Q2W). In some examples, the dose is about 2000 mg to about 3000 mg of at least one anti-PCSK9 antibody administered once every other week (Q2W). In some examples, the dose is about 420 mg to about 3000 mg of at least one anti-PCSK9 antibody administered once every month (Q4W). In some examples, the dose is about 1000 mg to about 3000 mg of at least one anti-PCSK9 antibody administered once every month (Q4W). In some examples, the dose is about 2000 mg to about 3000 mg of at least one anti-PCSK9 antibody administered once every month (Q4W). In some examples, the serum LDL cholesterol level is reduced by at least about 15% as compared to a predose serum LDL cholesterol level. In some examples, the serum LDL cholesterol level is reduced by at least about 20%. In some examples, the serum LDL cholesterol level is reduced by at least about 25%. In some examples, the serum LDL cholesterol level is reduced by at least about 30%. In some examples, the serum LDL cholesterol level is reduced by at least about 35%. In some examples, the serum LDL cholesterol level is reduced by at least about 40%. In some examples, the serum LDL cholesterol level is reduced by at least about 45%. In some examples, the serum LDL cholesterol level is reduced by at least about 50%. In some examples, the serum LDL cholesterol level is reduced by at least about 55%. In some examples, the serum LDL cholesterol level is reduced by at least about 60%. In some examples, the serum LDL cholesterol level is reduced by at least about 75%. In some examples, the serum LDL cholesterol level is reduced by at least about 70%. In some examples, the serum LDL cholesterol level is reduced by at least about 75%. In some examples, the serum LDL cholesterol level is reduced by at least about 80%. In some examples, the

serum LDL cholesterol level is reduced by at least about 85%. %. In some examples, the serum LDL cholesterol level is reduced by at least about 90%.

In some examples, also described herein is a method of lowering the serum LDL cholesterol level in a patient, the method comprising administering to a patient in need thereof, a dose of at least one anti-PCSK9 antibody, and wherein the dose of anti-PCSK9 antibody is administered on a schedule selected from the group consisting of: (1) at least about 14 mg every week (QW); (2) at least an amount of about 35 mg every week (QW); (3) at least an amount of about 45 mg every week (QW); (4) at least an amount of about 70 mg every other week (Q2W); (5) at least an amount of about 105 mg every two weeks or every other week (Q2W); (6) at least an amount of about 140 mg every two weeks or every other week (Q2W); (7) at least an amount of about 150 mg every two weeks or every other week (Q2W) (8) at least an amount of about 280 mg every two weeks or every other week (Q2W); and (9) at least an amount of about 150 mg every four weeks (Q4W); (10) at least an amount of about 160 mg every four weeks (Q4W); (11) at least an amount of about 170 mg every four weeks (Q4W); (12) at least an amount of about 180 mg every four weeks (Q4W); (13) at least an amount of about 190 mg every four weeks (Q4W); (14) at least an amount of about 200 mg every four weeks (Q4W); (15) at least an amount of about 280 mg every four weeks (Q4W); (16) at least an amount of about 350 every four weeks (Q4W); (17) at least an amount of about 420 mg every four weeks (Q4W); (18) at least an amount of about 1000 mg every four weeks (Q4W); (19) at least an amount of about 2000 mg every four weeks (Q4W); and (20) at least an amount of about 3000 mg every four weeks (Q4W). In some examples, the serum LDL cholesterol level is reduced by at least about 15% as compared to a predose serum LDL cholesterol level. In some examples, the serum LDL cholesterol level is reduced by at least about 20%. In some examples, the serum LDL cholesterol level is reduced by at least about 25%. In some examples, the serum LDL cholesterol level is reduced by at least about 30%. In some examples, the serum LDL cholesterol level is reduced by at least about 35%. In some examples, the serum LDL cholesterol level is reduced by at least about 40%. In some examples, the serum LDL cholesterol level is reduced by at least about 45%. In some examples, the serum LDL cholesterol level is reduced by at least about 50%. In some examples, the serum LDL cholesterol level is reduced by at least about 55%. In some examples, the serum LDL cholesterol level is reduced by at least about 60%. In some examples, the serum LDL cholesterol level is reduced by at least about 65%. In some examples, the serum LDL cholesterol level is reduced by at least about 70%. In some examples, the serum LDL cholesterol

level is reduced by at least about 75%. In some examples, the serum LDL cholesterol level is reduced by at least about 80%. In some examples, the serum LDL cholesterol level is reduced by at least about 85%. In some examples, the serum LDL cholesterol level is reduced by at least about 90%.

In some examples, also described herein is a method of lowering PCSK9 values in a patient, the method comprising administering to a patient in need thereof, a dose of at least one anti-PCSK9 antibody, and wherein the dose of anti-PCSK9 antibody is administered on a schedule selected from the group consisting of: (1) at least about 14 mg every week (QW); (2) at least an amount of about 35 mg every week (QW); (3) at least an amount of about 45 mg every week (QW); (4) at least an amount of about 70 mg every other week (Q2W); (5) at least an amount of about 105 mg every two weeks (Q2W); (6) at least an amount of about 140 mg every other week (Q2W); (7) at least an amount of about 150 mg every two weeks or every other week (Q2W); (8) at least an amount of about 280 mg every two weeks or every other week (Q2W); (9) at least an amount of about 150 mg every four weeks (Q4W); (10) at least an amount of about 160 mg every four weeks (Q4W); (11) at least an amount of about 170 mg every four weeks (Q4W); (12) at least an amount of about 180 mg every four weeks (Q4W); (13) at least an amount of about 190 mg every four weeks (Q4W); (14) at least an amount of about 200 mg every four weeks (Q4W); (15) at least an amount of about 280 mg every four weeks (Q4W); (16) at least an amount of about 350 every four weeks (Q4W); (17) at least an amount of about 420 mg every four weeks (Q4W); (18) at least an amount of about 1000 mg every four weeks (Q4W); (19) at least an amount of about 2000 mg every four weeks (Q4W); and (20) at least an amount of about 3000 mg every four weeks (Q4W). In some examples, the serum PCSK9 value is reduced by at least about 60% as compared to a predose serum PCSK9 value. In some examples, the serum PCSK9 value is reduced by at least about 65%. In some examples, the serum PCSK9 value is reduced by at least about 70%. In some examples, the serum PCSK9 value is reduced by at least about 75%. In some examples, the serum PCSK9 value is reduced by at least about 80%. In some examples, the serum PCSK9 value is reduced by at least about 85%. In some examples, the serum PCSK9 value is reduced by at least about 90%.

In some examples, also described herein is a method of lowering the total cholesterol level in a patient, the method comprising administering to a patient in need thereof, a dose of at least one anti-PCSK9 antibody, and wherein the dose of anti-PCSK9 antibody is administered on a schedule selected from the group consisting of: (1) at least about 14 mg every week (QW); (2) at least an amount of about 35 mg every week (QW); (3) at least an

amount of about 45 mg every week (QW); (4) at least an amount of about 70 mg every other week (Q2W); (5) at least an amount of about 105 mg every two weeks (Q2W); (6) at least an amount of about 140 mg every other week (Q2W); (7) at least an amount of about 150 mg every two weeks or every other week (Q2W); (8) at least an amount of about 280 mg every two weeks or every other week (Q2W); (9) at least an amount of about 150 mg every four weeks (Q4W); (10) at least an amount of about 160 mg every four weeks (Q4W); (11) at least an amount of about 170 mg every four weeks (Q4W); (12) at least an amount of about 180 mg every four weeks (Q4W); (13) at least an amount of about 190 mg every four weeks (Q4W); (14) at least an amount of about 200 mg every four weeks (Q4W); (15) at least an amount of about 280 mg every four weeks (Q4W); (16) at least an amount of about 350 every four weeks (Q4W); (17) at least an amount of about 420 mg every four weeks (Q4W); (18) at least an amount of about 1000 mg every four weeks (Q4W); (19) at least an amount of about 2000 mg every four weeks (Q4W); and (20) at least an amount of about 3000 mg every four weeks (Q4W). In some examples, the total cholesterol level is reduced by at least about 20% as compared to a predose total cholesterol level. In some examples, the total cholesterol level is reduced by at least about 25%. In some examples, the total cholesterol level is reduced by at least about 30%. In some examples, the total cholesterol level is reduced by at least about 35%. In some examples, the total cholesterol level is reduced by at least about 40%. In some examples, the total cholesterol level is reduced by at least about 45%. In some examples, the total cholesterol level is reduced by at least about 50%. In some examples, the total cholesterol level is reduced by at least about 55%. In some examples, the total cholesterol level is reduced by at least about 60%.

In some examples, also described herein is a method of lowering the non-HDL cholesterol level in a patient, the method comprising administering to a patient in need thereof, a dose of at least one anti-PCSK9 antibody, and wherein the dose of anti-PCSK9 antibody is administered on a schedule selected from the group consisting of: (1) at least about 14 mg every week (QW); (2) at least an amount of about 35 mg every week (QW); (3) at least an amount of about 45 mg every week (QW); (4) at least an amount of about 70 mg every other week (Q2W); (5) at least an amount of about 105 mg every two weeks (Q2W); (6) at least an amount of about 140 mg every other week (Q2W); (7) at least an amount of about 150 mg every two weeks or every other week (Q2W); (8) at least an amount of about 280 mg every two weeks or every other week (Q2W); (9) at least an amount of about 150 mg every four weeks (Q4W); (10) at least an amount of about 160 mg every four weeks (Q4W);

(11) at least an amount of about 170 mg every four weeks (Q4W); (12) at least an amount of about 180 mg every four weeks (Q4W); (13) at least an amount of about 190 mg every four weeks (Q4W); (14) at least an amount of about 200 mg every four weeks (Q4W); (15) at least an amount of about 280 mg every four weeks (Q4W); (16) at least an amount of about 350 every four weeks (Q4W); (17) at least an amount of about 420 mg every four weeks (Q4W); (18) at least an amount of about 1000 mg every four weeks (Q4W); (19) at least an amount of about 2000 mg every four weeks (Q4W); and (20) at least an amount of about 3000 mg every four weeks (Q4W). In some examples, the non-HDL cholesterol level is reduced by at least about 30% as compared to a predose no-HDL cholesterol level. In some examples, the non-HDL cholesterol level is reduced by at least about 35%. In some examples, the non-HDL cholesterol level is reduced by at least about 40%. In some examples, the non-HDL cholesterol level is reduced by at least about 45%. In some examples, the non-HDL cholesterol level is reduced by at least about 50%. In some examples, the non-HDL cholesterol level is reduced by at least about 55%. In some examples, the non-HDL cholesterol level is reduced by at least about 60%. In some examples, the non-HDL cholesterol level is reduced by at least about 65%. In some examples, the non-HDL cholesterol level is reduced by at least about 70%. In some examples, the non-HDL cholesterol level is reduced by at least about 75%. In some examples, the non-HDL cholesterol level is reduced by at least about 80%. In some examples, the non-HDL cholesterol level is reduced by at least about 85%.

In some examples, also described herein is a method of lowering ApoB levels in a patient, the method comprising administering to a patient in need thereof, a dose of at least one anti-PCSK9 antibody, and wherein the dose of anti-PCSK9 antibody is administered on a schedule selected from the group consisting of: (1) at least about 14 mg every week (QW); (2) at least an amount of about 35 mg every week (QW); (3) at least an amount of about 45 mg every week (QW); (4) at least an amount of about 70 mg every other week (Q2W); (5) at least an amount of about 105 mg every two weeks (Q2W); (6) at least an amount of about 140 mg every other week (Q2W); (7) at least an amount of about 150 mg every two weeks or every other week (Q2W); (8) at least an amount of about 280 mg every two weeks or every other week (Q2W); (9) at least an amount of about 150 mg every four weeks (Q4W); (10) at least an amount of about 160 mg every four weeks (Q4W); (11) at least an amount of about 170 mg every four weeks (Q4W); (12) at least an amount of about 180 mg every four weeks (Q4W); (13) at least an amount of about 190 mg every four weeks (Q4W); (14) at least an amount of about 200 mg every four weeks (Q4W); (15) at least an amount of about 280 mg

every four weeks (Q4W); (16) at least an amount of about 350 every four weeks (Q4W); (17) at least an amount of about 420 mg every four weeks (Q4W). In some examples, the ApoB level is reduced by at least about 20% as compared to a predose ApoB level. In some examples, the ApoB level is reduced by at least about 25%. In some examples, the ApoB level is reduced by at least about 30%. In some examples, the ApoB level is reduced by at least about 35%. In some examples, the ApoB level is reduced by at least about 40%. In some examples, the ApoB level is reduced by at least about 45%. In some examples, the ApoB level is reduced by at least about 50%. In some examples, the ApoB level is reduced by at least about 55%. In some examples, the ApoB level is reduced by at least about 60%. In some examples, the ApoB level is reduced by at least about 65%. In some examples, the ApoB level is reduced by at least about 70%. In some examples, the ApoB level is reduced by at least about 75%.

In some examples, also described herein is a method of lowering Lipoprotein A ("Lp(a)") levels in a patient, the method comprising administering to a patient in need thereof, a dose of at least one anti-PCSK9 antibody, and wherein the dose of anti-PCSK9 antibody is administered on a schedule selected from the group consisting of: (1) at least about 14 mg every week (QW); (2) at least an amount of about 35 mg every week (QW); (3) at least an amount of about 45 mg every week (QW); (4) at least an amount of about 70 mg every other week (Q2W); (5) at least an amount of about 105 mg every two weeks (Q2W); (6) at least an amount of about 140 mg every other week (Q2W); (7) at least an amount of about 150 mg every two weeks or every other week (Q2W); (8) at least an amount of about 280 mg every two weeks or every other week (Q2W); (9) at least an amount of about 150 mg every four weeks (Q4W); (10) at least an amount of about 160 mg every four weeks (Q4W); (11) at least an amount of about 170 mg every four weeks (Q4W); (12) at least an amount of about 180 mg every four weeks (Q4W); (13) at least an amount of about 190 mg every four weeks (Q4W); (14) at least an amount of about 200 mg every four weeks (Q4W); (15) at least an amount of about 280 mg every four weeks (Q4W); (16) at least an amount of about 350 every four weeks (Q4W); (17) at least an amount of about 420 mg every four weeks (Q4W); (18) at least an amount of about 1000 mg every four weeks (Q4W); (19) at least an amount of about 2000 mg every four weeks (Q4W); and (20) at least an amount of about 3000 mg every four weeks (Q4W). In some examples, the Lp(a) level is reduced by at least about 10% as compared to a predose Lp(a) level. In some examples, the Lp(a) level is reduced by at least about 15%. In some examples, the Lp(a) level is reduced by at least about 20%. In some examples,

the Lp(a) level is reduced by at least about 25%. In some examples, the Lp(a) level is reduced by at least about 30%. In some examples, the Lp(a) level is reduced by at least about 35%. In some examples, the Lp(a) level is reduced by at least about 40%. In some examples, the Lp(a) level is reduced by at least about 45%. In some examples, the Lp(a) level is reduced by at least about 50%. In some examples, the Lp(a) level is reduced by at least about 55%. In some examples, the Lp(a) level is reduced by at least about 60%. In some examples, the Lp(a) level is reduced by at least about 65%.

In some examples, the present disclosure comprises a method for treating or preventing a cholesterol related disorder in a patient, the method comprising administering to a patient in need thereof a dose of about 10 mg to about 3000 mg of at least one anti-PCSK9 antibody described herein. In some examples, the dose is about 10 mg to about 70 mg of at least one anti-PCSK9 antibody administered once weekly (QW). In some examples, the dose is about 14 mg to about 45 mg of at least one anti-PCSK9 antibody administered once weekly. In some examples, the dose is about 14 mg to about 35 mg of at least one anti-PCSK9 antibody administered once weekly. In some examples, the dose is about 70 mg to about 420 mg of at least one anti-PCSK9 antibody administered once every two weeks (Q2W). In some examples, the dose is about 70 mg to about 350 mg of at least one anti-PCSK9 antibody administered once every two weeks (Q2W). In some examples, the dose is about 105 mg to about 350 mg of at least one anti-PCSK9 antibody administered once every two weeks (Q2W). In some examples, the dose is about 140 mg to about 280 mg of at least one anti-PCSK9 antibody administered once every two weeks (Q2W). In some examples, the dose is about 150 mg to about 280 mg of at least one anti-PCSK9 antibody administered once every two weeks (Q2W). In some examples, the dose is about 150 mg to about 200 mg of at least one anti-PCSK9 antibody administered once every two weeks (Q2W). In some examples, the dose is about 150 mg to about 480 mg of at least one anti-PCSK9 antibody administered once every four weeks (Q4W). In some examples, the dose is about 150 mg to about 200 mg of at least one anti-PCSK9 antibody administered once every four weeks (Q4W). In some examples, the dose is about 200 mg to about 480 mg of at least one anti-PCSK9 antibody administered once every four weeks (Q4W). In some examples, the dose is about 250 mg to about 480 mg of at least one anti-PCSK9 antibody administered once every four weeks (Q4W). In some examples, the dose is about 280 mg to about 420 mg of at least one anti-PCSK9 antibody administered once every four weeks (Q4W). In some examples, the dose is about 350 mg to about 420 mg of at least one anti-PCSK9 antibody administered once every four weeks. In some examples, the dose is

about 1000 mg every four weeks (Q4W). In some examples, the dose is about about 2000 mg every four weeks (Q4W). In some examples, the dose is about 3000 mg every four weeks (Q4W). In some examples, the serum LDL cholesterol level is reduced by at least about 15% as compared to a predose serum LDL cholesterol level. In some examples, the serum LDL cholesterol level is reduced by at least about 20%. In some examples, the serum LDL cholesterol level is reduced by at least about 25%. weeks (Q4W). In some examples, the serum LDL cholesterol level is reduced by at least about 30%. In some examples, the serum LDL cholesterol level is reduced by at least about 35%. In some examples, the serum LDL cholesterol level is reduced by at least about 40%. In some examples, the serum LDL cholesterol level is reduced by at least about 45%. In some examples, the serum LDL cholesterol level is reduced by at least about 50%. In some examples, the serum LDL cholesterol level is reduced by at least about 55%. In some examples, the serum LDL cholesterol level is reduced by at least about 60%. In some examples, the serum LDL cholesterol level is reduced by at least about 65%. In some examples, the serum LDL cholesterol level is reduced by at least about 70%. In some examples, the serum LDL cholesterol level is reduced by at least about 75%. In some examples, the serum LDL cholesterol level is reduced by at least about 80%. In some examples, the serum LDL cholesterol level is reduced by at least about 85%. In some examples, the serum LDL cholesterol level is reduced by at least about 90%. In some examples, the cholesterol related disorder is heterozygous familial hypercholesterolemia, homozygous familial hypercholesterolemia, non-familial hypercholesterolemia, hyperlipidemia or dyslipidemia.

In some examples, the present disclosure comprises a method of treating or preventing a cholesterol related disorder in a patient, the method comprising administering to a patient in need thereof, a dose of at least one anti-PCSK9 antibody, and wherein the dose of anti-PCSK9 antibody is administered on a schedule selected from the group consisting of: (1) at least about 14 mg every week (QW); (2) at least an amount of about 35 mg every week (QW); (3) at least an amount of about 45 mg every week (QW); (4) at least an amount of about 70 mg every other week (Q2W); (5) at least an amount of about 105 mg every two weeks (Q2W); (6) at least an amount of about 140 mg every other week (Q2W); (7) at least an amount of about 150 mg every two weeks or every other week (Q2W); (8) at least an amount of about 280 mg every two weeks or every other week (Q2W); (9) at least an amount of about 150 mg every four weeks (Q4W); (10) at least an amount of about 160 mg every four weeks (Q4W); (11) at least an amount of about 170 mg every four weeks (Q4W); (12) at least an

amount of about 180 mg every four weeks (Q4W); (13) at least an amount of about 190 mg every four weeks (Q4W); (14) at least an amount of about 200 mg every four weeks (Q4W); (15) at least an amount of about 280 mg every four weeks (Q4W); (16) at least an amount of about 350 every four weeks (Q4W); (17) at least an amount of about 420 mg every four weeks (Q4W); (18) at least an amount of about 1000 mg every four weeks (Q4W); (19) at least an amount of about 2000 mg every four weeks (Q4W); and (20) at least an amount of about 3000 mg every four weeks (Q4W). In some examples, the serum LDL cholesterol level is reduced by at least about 15% as compared to a predose serum LDL cholesterol level. In some examples, the serum LDL cholesterol level is reduced by at least about 20%.. In some examples, the serum LDL cholesterol level is reduced by at least about 25%. In some examples, the serum LDL cholesterol level is reduced by at least about 30%. In some examples, the serum LDL cholesterol level is reduced by at least about 35%. In some examples, the serum LDL cholesterol level is reduced by at least about 40%. In some examples, the serum LDL cholesterol level is reduced by at least about 45%. In some examples, the serum LDL cholesterol level is reduced by at least about 50%. In some examples, the serum LDL cholesterol level is reduced by at least about 55%. In some examples, the serum LDL cholesterol level is reduced by at least about 60%. In some examples, the serum LDL cholesterol level is reduced by at least about 65%. In some examples, the serum LDL cholesterol level is reduced by at least about 70%. In some examples, the serum LDL cholesterol level is reduced by at least about 75%. In some examples, the serum LDL cholesterol level is reduced by at least about 80%. In some examples, the serum LDL cholesterol level is reduced by at least about 85%. In some examples, the serum LDL cholesterol level is reduced by at least about 90%.

In some examples, the anti-PCSK9 antibody is 21B12, 26H5, 31H4, 8A3, 11F1 and/or 8A1.

In some examples, the cholesterol related disorder is heterozygous familial hypercholesterolemia, homozygous familial hypercholesterolemia, non-familial hypercholesterolemia, hyperlipidemia or dyslipidemia.

In some exampless, the present disclosure comprises pharmaceutical formulations comprising at least one anti-PCSK9 antibody selected from the group consisting of 21B12, 26H5, 31H4, 8A3, 11F1 and 8A1.

CLAIMS

1. Use of a monoclonal antibody that specifically binds to PCSK9 comprising

a) a light chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO: 23 and a heavy chain variable region that comprises an amino acid sequence that is at least 90% identical to that of SEQ ID NO:49;

b) a light chain complementarity determining region (CDR) of the CDRL1 sequence in SEQ ID NO:23, a CDRL2 of the CDRL2 sequence in SEQ ID NO:23, and a CDRL3 of the CDRL3 sequence in SEQ ID NO:23; and

a heavy chain complementarity determining region (CDR) of the CDRH1 sequence in SEQ ID NO:49, a CDRH2 of the CDRH2 sequence in SEQ ID NO:49, and a CDRH3 of the CDRH3 sequence in SEQ ID NO:49;

c) a light chain complementarity determining region (CDR) CDRL1 comprising the amino acid sequence of SEQ ID NO: 158, a CDRL2 comprising the amino acid sequence of SEQ ID NO: 162, a CDRL3 comprising the amino acid sequence of SEQ ID NO: 395; and

a heavy chain complementarity determining region (CDR) CDRH1 comprising the amino acid sequence of SEQ ID NO: 368, a CDRH2 comprising the amino acid sequence of SEQ ID NO: 175, a CDRH3 comprising the amino acid sequence of SEQ ID NO: 180;

d) a light chain complementarity determining region (CDR) CDRL1 comprising the amino acid sequence of SEQ ID NO: 305, a CDRL2 comprising the amino acid sequence of SEQ ID NO: 312, a CDRL3 comprising the amino acid sequence of SEQ ID NO: 319; and

a heavy chain complementarity determining region (CDR) CDRH1 comprising the amino acid sequence of SEQ ID NO: 308, a CDRH2 comprising the amino acid sequence of SEQ ID NO: 320, a CDRH3 comprising the amino acid sequence of SEQ ID NO: 310;

or

e) a light chain variable region that comprises the amino acid sequence of SEQ ID NO: 23 and a heavy chain variable region comprises the amino acid sequence of SEQ ID NO:49

in the manufacture of a medicament for

(i) lowering serum LDL cholesterol in a patient by at least 15%; and/or

(ii) treating or preventing a cholesterol related disorder in a patient having an elevated serum LDL cholesterol level;

wherein the use comprises that the monoclonal antibody is to be administered to the patient in need thereof at a dose of 70 mg to 450 mg.

2. The use of claim 1(ii), wherein the cholesterol related disorder is selected from the group consisting of familial hypercholesterolemia including heterozygous familial hypercholesterolemia and homozygous familial hypercholesterolemia, non-familial hypercholesterolemia, elevated lipoprotein (a), heart disease, metabolic syndrome, diabetes, coronary heart disease, stroke, cardiovascular disease, Alzheimer's disease, peripheral arterial disease, hyperlipidemia and dyslipidemia.

3. The use of claims 1 or 2, wherein the serum LDL cholesterol level of said patient is lowered by an amount selected from the group consisting of a) at least 30%, b) at least 40%, c) at least 50%, and d) at least 60%.

4. The use of claims 1 or 2, wherein the monoclonal antibody is to be administered to a patient at a dose selected from the group consisting of: a) 70 mg to 450 mg, b) 140 mg to 200 mg, c) 140 mg to 180 mg, d) 140 mg to 170 mg, e) 140 mg, f) 150 mg, g) 420 mg, h) 450 mg.

5. The use of any one of claims 1-4, wherein the monoclonal antibody is to be administered to a patient on a schedule selected from the group consisting of: (1) once a week, (2) once every two weeks, (3) once a month, (4) once every other month, (5) once every three months (6) once every six months and (7) once every twelve months.

6. The use of any one of claims 1-5, wherein the monoclonal antibody is to be administered to a patient on a schedule selected from the group consisting of:

(a) 70 mg to 420 mg to be administered once every 2 weeks (Q2W);

(b) 140 mg to 280 mg to be administered once every two weeks (Q2W);

(c) at least an amount of 140 mg every two weeks or every other week (Q2W);

(d) 280 mg to 420 mg to be administered once every 4 weeks (Q4W); and

(e) up to 420 mg every two weeks (Q2W); and

(f) at least an amount of 420 mg every four weeks (Q4W).

7. The use of any one of claims 1-6, wherein the administration comprises that the monoclonal antibody is to be administered parenterally, optionally wherein the administration comprises that the monoclonal antibody is to be administered intravenously or subcutaneously.

8. The use of claim 1, wherein the monoclonal antibody is to be administered to a patient:

(a) at a dose of 105 mg to 280 mg subcutaneously once every two weeks, and wherein the serum LDL cholesterol level of the patient is lowered at least 30 -50% for 7-14 days, optionally wherein the dose is 140 mg;

(b) at a dose of 280 to 450 mg subcutaneously once every month, and wherein the serum LDL cholesterol level of the patient is lowered at least 30 -50% for 21 to 31 days, optionally wherein the dose is 420 mg.

9. The use of any one of claims 1-8, wherein the monoclonal antibody is to be administered to the patient before, after or with at least one other cholesterol-lowering agent.

10. The use of claim 9, wherein the at least one other cholesterol lowering agent is selected from the group consisting of: statins, including, atorvastatin, cerivastatin, fluvastatin, lovastatin, mevastatin, pitavastatin, pravastatin, rosuvastatin, simvastatin, Nicotinic acid, Fibric acid, Bile acid sequestrants, Cholesterol absorption inhibitor, lipid modifying agents, PPAR gamma agonists, PPAR alpha/gamma agonists, squalene synthase inhibitors, CETP inhibitors, anti-hypertensives, anti-diabetic agents, including sulphonyl ureas, insulin, GLP-1 analogs, DDPIV inhibitors, ApoB modulators, MTP inhibitors and /or arteriosclerosis obliterans treatments, oncostatin M, estrogen, berberine and a therapeutic agent for an immune-related disorder.