WHAT IS CLAIMED IS:

1. Use of a GDP-bound form of Rab1a ($Rab1a^{GDP}$), one or more expressible nucleic acids encoding $Rab1a^{GDP}$, or a combination thereof, for reducing obesity, or for preventing or treating obesity, in a subject in need thereof, for reducing, preventing or treating at least one of the following conditions in a subject in need thereof: inflammatory response, increased abdominal obesity, high blood pressure, high blood sugar, high serum triglycerides, low serum high-density lipoprotein (HDL), insulin resistance, glucose intolerance, diabetes mellitus, hyper-tension, dyslipidemia, nonalcoholic fatty liver disease (NAFLD), heart failure, atrial fibrillation, musculoskeletal disorders and sleep apnea, or for reducing body weight in a subject.

2. Use of a GDP-bound form of Rab1a ($Rab1a^{GDP}$), one or more expressible nucleic acids encoding $Rab1a^{GDP}$, or a combination thereof, in the manufacture of a medicament for reducing obesity, or for preventing or treating obesity, in a subject in need thereof, in the manufacture of a medicament for reducing, preventing or treating at least one of the following conditions in a subject in need thereof: inflammatory response, increased abdominal obesity, high blood pressure, high blood sugar, high serum triglycerides, low serum high-density lipoprotein (HDL), insulin resistance, glucose intolerance, diabetes mellitus, hyper-tension, dyslipidemia, nonalcoholic fatty liver disease (NAFLD), heart failure, atrial fibrillation, musculoskeletal disorders and sleep apnea, or in the manufacture of a medicament for reducing bodyweight in an overweight subject.

3. The use of claim 1 or 2, wherein the $Rab1a^{GDP}$ is or comprises $Rab1a^{S25N}$, $Rab1a^{N124I}$, $Rab1a^{D41N}$, $Rab1a^{D47N}$, or another dominant negative (DN) GDP-bound form of Rab1a.

4. The use of claim 1 or 2, wherein the $Rab1a^{GDP}$ comprises or consists of the amino acid sequence:

   MSSMNPEYDYLFKLLLIGDSGVGKNCLLLRFADDTYTESYISTIGVDFKIRTIELDGK
   TIKLQIWDTAGQERFRTITSSYYRGAHGIIVVYDVTDQESFNNVKQWLQEIDRYASE
   NVNKLLVGNKCDLTTKKVVDYTTAKEFADSLGIPFLETSAKNATNVEQSFMTMAAE
   IKKRMGPGATAGGAEKSNVKIQSTPVKQSGGGCC

(SEQ ID NO: 6; Human Rab1a^{S25N});

MGDYKDDDDKGGSGGSSMNPEYDYLFKLLLIGDSGVGKSCLLLRFADDTYTESYIS
TIGVDFKIRTIELDGKTIKLQIWDTAGQERFRTITSSYYRGAHGIIVVYDVTDQESFNN
VKQWLQEIDRYASENVNKLLVGIKCDLTTKKVVDYTTAKEFADSLGIPFLETSAKNA
TNVEQSFMTMAAEIKKRMGPGATAGGAEKSNVKIQSTPVKQSGGGCC
(SEQ ID NO: 9; Mouse Rab1^{N124I});

the amino acid sequence of human Rab1a^{D41N}; or

MSSMNPEYDYLFKLLLIGDSGVGKSCLLLRFADDTYTESYISTIGVNFKIRTIELDGKT
IKLQIWDTAGQERFRTITSSYYRGAHGIIVVYDVTDQESFNNVKQWLQEIDRYASEN
VNKLLVGNKCDLTTKKVVDYTTAKEFADSLGIPFLETSAKNATNVEQSFMTMAAEI
KKRMGPGATAGGAEKSNVKIQSTPVKQSGGGCC

(SEQ ID NO: 18; Human Rab1a^{D47N});

or a polypeptide having at least 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, or 99% sequence identity with any of these sequences and preferentially binding GDP.

5. The use of any one of claims 1-4, wherein the Rab1a^{GDP} is in the form of a fusion protein, wherein the Rab1a^{GDP} is fused or otherwise directly or indirectly linked, optionally via a linker, with a signalling or targeting peptide, a fluorescent peptide or other marker or tracer, or another peptide or non-peptide moiety for targeted delivery, facilitating cell uptake, increasing stability or *in vivo* half-life, or improving another therapeutic, diagnostic, or *in vivo* property of the Rab1a^{GDP}.

6. The use of claim 5, wherein the Rab1a^{GDP} is in the form of a fusion protein, and comprises the amino acid sequence:

MEDAKNIKKGPAPFYPLEDGTAGEQLHKAMKRYALVPGTIAFTDAHIEVNITYAEYF
EMSVRLAEAMKRYGLNTNHRIVVCSENSLQFFMPVLGALFIGVAVAPANDIYNERE
LLNSMNISQPTVVFVSKKGLQKILNVQKKLPIIQKIIIMDSKTDYQGFQSMYTFVTSHL
PPGFNEYDFVPESFDRDKTIALIMNSSGSTGLPKGVALPHRTACVRFSHARDPIFGNQI

IPDTAILSVVPFHHGFGMFTTLGYLICGFRVVLMYRFEEELFLRSLQDYKIQSALLVPT
LFSFFAKSTLIDKYDLSNLHEIASGGAPLSKEVGEAVAKRFHLPGIRQGYGLTETTSAI
LITPEGDDKPGAVGKVVPFFEAKVVDLDTGKTLGVNQRGELCVRGPMIMSGYVNNP
EATNALIDKDGWLHSGDIAYWDEDEHFFIVDRLKSLIKYKGYQVAPAELESILLQHP
NIFDAGVAGLPDDDAGELPAAVVVLEHGKTMTEKEIVDYVASQVTTAKKLRGGVV
FVDEVPKGLTGKLDARKIREILIKAKKGGKSKLMSSMNPEYDYLFKLLLIGDSGVGK
NCLLLRFADDTYTESYISTIGVDFKIRTIELDGKTIKLQIWDTAGQERFRTITSSYYRG
AHGIIVVYDVTDQESFNNVKQWLQEIDRYASENVNKLLVGNKCDLTTKKVVDYTT
AKEFADSLGIPFLETSAKNATNVEQSFMTMAAEIKKRMGPGATAGGAEKSNVKIQST
PVKQSGGGCC

(SEQ ID NO: 21);

or a polypeptide having at least 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, or 99% sequence identity therewith and preferentially binding GDP.

7. The use of claim 1 or 2, wherein the one or more expressible nucleic acids are DNA-based, or RNA-based.

8. The use of claim 7, wherein the one or more expressible nucleic acids transiently express the $Rab1a^{GDP}$ in one or more cells of the subject, or wherein the one or more expressible nucleic acids integrate in the one or more cells genome and express the $Rab1a^{GDP}$ in the one or more cells of the subject.

9. The use of claim 1 or 2, wherein the one or more expressible nucleic acids comprise one or more expression vectors, plasmids, or mRNAs encoding and capable of expressing the $Rab1a^{GDP}$ inside the one or more cells of the subject.

10. The use of claim 9, wherein the one or more expressible nucleic acids comprise a nucleic acid sequence of:

ATGTCCAGCATGAATCCCGAATATGATTATTTATTCAAGTTACTTCTGATTGGCG
ACTCAGGGGTTGGAAAGAATTGCCTTCTTCTTAGGTTTGCAGATGATACATATAC

AGAAAGCTACATCAGCACAATTGGTGTGGATTTCAAAATAAGAACTATAGAGTT
AGACGGGAAAACAATCAAGCTTCAAATATGGGACACAGCAGGCCAGGAAAGAT
TTCGAACAATCACCTCCAGTTATTACAGAGGAGCCCATGGCATCATAGTTGTGTA
TGATGTGACAGATCAGGAGTCCTTCAATAATGTTAAACAGTGGCTGCAGGAAAT
AGATCGTTATGCCAGTGAAAATGTCAACAAATTGTTGGTAGGGAACAAATGTGA
TCTGACCACAAAGAAAGTAGTAGACTACACAACAGCGAAGGAATTTGCTGATTC
CCTTGGAATTCCGTTTTTGGAAACCAGTGCTAAGAATGCAACGAATGTAGAACA
GTCTTTCATGACGATGGCAGCTGAGATTAAAAAGCGAATGGGTCCCGGAGCAAC
AGCTGGTGGTGCTGAGAAGTCCAATGTTAAAATTCAGAGCACTCCAGTCAAGCA
GTCAGGTGGAGGTTGCTGCTAA

(Human Rab1a^{S25N} ORF Codon Sequence, SEQ ID NO: 5);

ATGGGGGACTACAAGGACGACGATGACAAGGGGGGTAGCGGTGGATCCAGCAT
GAATCCCGAATATGATTATTTATTCAAGTTACTTCTGATTGGCGATTCTGGGGTT
GGAAAGTCCTGCCTTCTCCTTAGGTTTGCAGATGATACGTATACGGAAAGCTACA
TCAGCACAATTGGTGTGGATTTCAAGATACGAACTATAGAGTTAGATGGGAAAA
CAATCAAGCTACAGATATGGGACACAGCAGGCCAGGAAAGATTTCGAACAATCA
CTTCCAGTTATTACAGAGGAGCCCATGGCATCATAGTTGTGTATGATGTGACAGA
TCAGGAGTCCTTCAATAACGTTAAACAGTGGCTGCAGGAGATAGATCGCTACGC
CAGTGAAAATGTCAACAAGTTGTTGGTAGGGATCAAATGTGACCTGACCACAAA
GAAAGTAGTAGACTACACAACAGCAAAGGAATTTGCAGATTCCCTTGGAATTCC
ATTTTTGGAAACCAGTGCTAAGAACGCAACGAATGTAGAACAGTCTTTCATGAC
GATGGCAGCTGAGATTAAAAAGCGAATGGGTCCTGGAGCTACAGCTGGTGGTGC
CGAGAAGTCCAATGTTAAAATCCAGAGCACTCCAGTCAAGCAGTCAGGTGGAGG
CTGCTGCTAA

(Mouse Rab1a^{N124I} ORF Codon Seqeunce, SEQ ID NO: 8); or

ATGTCCAGCATGAATCCCGAATATGATTATTTATTCAAGTTACTTCTGATTGGCGACT
CAGGGGTTGGAAAGTCTTGCCTTCTTCTTAGGTTTGCAGATGATACATATACAGAAA
GCTACATCAGCACAATTGGTGTGAACTTCAAAATAAGAACTATAGAGTTAGACGGG
AAAACAATCAAGCTTCAAATATGGGACACAGCAGGCCAGGAAAGATTTCGAACAAT

CACCTCCAGTTATTACAGAGGAGCCCATGGCATCATAGTTGTGTATGATGTGACAGA
TCAGGAGTCCTTCAATAATGTTAAACAGTGGCTGCAGGAAATAGATCGTTATGCCAG
TGAAAATGTCAACAAATTGTTGGTAGGGAACAAATGTGATCTGACCACAAAGAAAG
TAGTAGACTACACAACAGCGAAGGAATTTGCTGATTCCCTTGGAATTCCGTTTTTGG
AAACCAGTGCTAAGAATGCAACGAATGTAGAACAGTCTTTCATGACGATGGCAGCT
GAGATTAAAAAGCGAATGGGTCCCGGAGCAACAGCTGGTGGTGCTGAGAAGTCCAA
TGTTAAAATTCAGAGCACTCCAGTCAAGCAGTCAGGTGGAGGTTGCTGCTAA

(Human Rab1a^{D47N} ORF Codon Sequence, SEQ ID NO: 17);

or a nucleic acid sequence having at least 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, or 99% sequence identity therewith and encoding a Rab1a^{GDP} preferentially binding GDP;

or a nucleic acid sequence equivalent to any of the above sequences due to codon redundancy.

11. The use of claim 9, wherein the one or more expressible nucleic acids comprise a nucleic acid sequence of:

ATGGAAGACGCCAAAAACATAAAGAAAGGCCCGGCGCCATTCTATCCGCTAGAG
GATGGAACCGCTGGAGAGCAACTGCATAAGGCTATGAAGAGATACGCCCTGGTT
CCTGGAACAATTGCTTTTACAGATGCACATATCGAGGTGAACATCACGTACGCG
GAATACTTCGAAATGTCCGTTCGGTTGGCAGAAGCTATGAAACGATATGGGCTG
AATACAAATCACAGAATCGTCGTATGCAGTGAAAACTCTCTTCAATTCTTTATGC
CGGTGTTGGGCGCGTTATTTATCGGAGTTGCAGTTGCGCCCGCGAACGACATTTA
TAATGAACGTGAATTGCTCAACAGTATGAACATTTCGCAGCCTACCGTAGTGTTT
GTTTCCAAAAAGGGGTTGCAAAAAATTTTGAACGTGCAAAAAAAATTACCAATA
ATCCAGAAAATTATTATCATGGATTCTAAAACGGATTACCAGGGATTTCAGTCGA
TGTACACGTTCGTCACATCTCATCTACCTCCCGGTTTTAATGAATACGATTTTGTA
CCAGAGTCCTTTGATCGTGACAAAACAATTGCACTGATAATGAACTCCTCTGGAT
CTACTGGGTTACCTAAGGGTGTGGCCCTTCCGCATAGAACTGCCTGCGTCAGATT
CTCGCATGCCAGAGATCCTATTTTTGGCAATCAAATCATTCCGGATACTGCGATT
TTAAGTGTTGTTCCATTCCATCACGGTTTTGGAATGTTTACTACACTCGGATATTT

GATATGTGGATTTCGAGTCGTCTTAATGTATAGATTTGAAGAAGAGCTGTTTTTA
CGATCCCTTCAGGATTACAAAATTCAAAGTGCGTTGCTAGTACCAACCCTATTTT
CATTCTTCGCCAAAAGCACTCTGATTGACAAATACGATTTATCTAATTTACACGA
AATTGCTTCTGGGGGCGCACCTCTTTCGAAAGAAGTCGGGGAAGCGGTTGCAAA
ACGCTTCCATCTTCCAGGGATACGACAAGGATATGGGCTCACTGAGACTACATC
AGCTATTCTGATTACACCCGAGGGGGATGATAAACCGGGCGCGGTCGGTAAAGT
TGTTCCATTTTTTGAAGCGAAGGTTGTGGATCTGGATACCGGGAAAACGCTGGGC
GTTAATCAGAGAGGCGAATTATGTGTCAGAGGACCTATGATTATGTCCGGTTATG
TAAACAATCCGGAAGCGACCAACGCCTTGATTGACAAGGATGGATGGCTACATT
CTGGAGACATAGCTTACTGGGACGAAGACGAACACTTCTTCATAGTTGACCGCTT
GAAGTCTTTAATTAAATACAAAGGATACCAGGTGGCCCCCGCTGAATTGGAGTC
GATATTGTTACAACACCCCAACATCTTCGACGCGGGCGTGGCAGGTCTTCCCGAC
GATGACGCCGGTGAACTTCCCGCCGCCGTTGTTGTTTTGGAGCACGGAAAGACG
ATGACGGAAAAAGAGATCGTGGATTACGTCGCCAGTCAAGTAACAACCGCCAAA
AAGTTGCGCGGAGGAGTTGTGTTTGTGGACGAAGTACCGAAAGGTCTTACCGGA
AAACTCGACGCAAGAAAAATCAGAGAGATCCTCATAAAGGCCAAGAAGGGCGG
AAAGTCCAAATTGATGTCCAGCATGAATCCCGAATATGATTATTTATTCAAGTTA
CTTCTGATTGGCGACTCAGGGGTTGGAAAGAATTGCCTTCTTCTTAGGTTTGCAG
ATGATACATATACAGAAAGCTACATCAGCACAATTGGTGTGGATTTCAAAATAA
GAACTATAGAGTTAGACGGGAAAACAATCAAGCTTCAAATATGGGACACAGCAG
GCCAGGAAAGATTTCGAACAATCACCTCCAGTTATTACAGAGGAGCCCATGGCA
TCATAGTTGTGTATGATGTGACAGATCAGGAGTCCTTCAATAATGTTAAACAGTG
GCTGCAGGAAATAGATCGTTATGCCAGTGAAAATGTCAACAAATTGTTGGTAGG
GAACAAATGTGATCTGACCACAAAGAAAGTAGTAGACTACACAACAGCGAAGG
AATTTGCTGATTCCCTTGGAATTCCGTTTTTGGAAACCAGTGCTAAGAATGCAAC
GAATGTAGAACAGTCTTTCATGACGATGGCAGCTGAGATTAAAAAGCGAATGGG
TCCCGGAGCAACAGCTGGTGGTGCTGAGAAGTCCAATGTTAAAATTCAGAGCAC
TCCAGTCAAGCAGTCAGGTGGAGGTTGCTGCTAA

(SEQ ID NO: 19, MG-008 ORF DNA Sequence with 5’ Luciferase Tag); or

AUGGAAGACGCCAAAAACAUAAAGAAAGGCCCGGCGCCAUUCUAUCCGCUAG

AGGAUGGAACCGCUGGAGAGCAACUGCAUAAGGCUAUGAAGAGAUACGCCCU
GGUUCCUGGAACAAUUGCUUUUACAGAUGCACAUAUCGAGGUGAACAUCACG
UACGCGGAAUACUUCGAAAUGUCCGUUCGGUUGGCAGAAGCUAUGAAACGAU
AUGGGCUGAAUACAAAUCACAGAAUCGUCGUAUGCAGUGAAAACUCUCUUCA
AUUCUUUAUGCCGGUGUUGGGCGCGUUAUUUAUCGGAGUUGCAGUUGCGCCC
GCGAACGACAUUUAUAAUGAACGUGAAUUGCUCAACAGUAUGAACAUUUCGC
AGCCUACCGUAGUGUUUGUUUCCAAAAAGGGGUUGCAAAAAAUUUUGAACGU
GCAAAAAAAAUUACCAAUAAUCCAGAAAAUUAUUAUCAUGGAUUCUAAAACG
GAUUACCAGGGAUUUCAGUCGAUGUACACGUUCGUCACAUCUCAUCUACCUCC
CGGUUUUAAUGAAUACGAUUUUGUACCAGAGUCCUUUGAUCGUGACAAAACA
AUUGCACUGAUAAUGAACUCCUCUGGAUCUACUGGGUUACCUAAGGGUGUGG
CCCUUCCGCAUAGAACUGCCUGCGUCAGAUUCUCGCAUGCCAGAGAUCCUAUU
UUUGGCAAUCAAAUCAUUCCGGAUACUGCGAUUUUAAGUGUUGUUCCAUUCC
AUCACGGUUUUGGAAUGUUUACUACACUCGGAUAUUUGAUAUGUGGAUUUCG
AGUCGUCUUAAUGUAUAGAUUUGAAGAAGAGCUGUUUUUACGAUCCCUUCAG
GAUUACAAAAUUCAAAGUGCGUUGCUAGUACCAACCCUAUUUUCAUUCUUCG
CCAAAAGCACUCUGAUUGACAAAUACGAUUUAUCUAAUUUACACGAAAUUGC
UUCUGGGGGCGCACCUCUUUCGAAAGAAGUCGGGGAAGCGGUUGCAAAACGC
UUCCAUCUUCCAGGGAUACGACAAGGAUAUGGGCUCACUGAGACUACAUCAG
CUAUUCUGAUUACACCCGAGGGGGAUGAUAAACCGGGCGCGGUCGGUAAAGU
UGUUCCAUUUUUUGAAGCGAAGGUUGUGGAUCUGGAUACCGGGAAAACGCUG
GGCGUUAAUCAGAGAGGCGAAUUAUGUGUCAGAGGACCUAUGAUUAUGUCCG
GUUAUGUAAACAAUCCGGAAGCGACCAACGCCUUGAUUGACAAGGAUGGAUG
GCUACAUUCUGGAGACAUAGCUUACUGGGACGAAGACGAACACUUCUUCAUA
GUUGACCGCUUGAAGUCUUUAAUUAAAUACAAAGGAUACCAGGUGGCCCCCG
CUGAAUUGGAGUCGAUAUUGUUACAACACCCCAACAUCUUCGACGCGGGCGU
GGCAGGUCUUCCCGACGAUGACGCCGGUGAACUUCCCGCCGCCGUUGUUGUUU
UGGAGCACGGAAAGACGAUGACGGAAAAAGAGAUCGUGGAUUACGUCGCCAG
UCAAGUAACAACCGCCAAAAAGUUGCGCGGAGGAGUUGUGUUUGUGGACGAA
GUACCGAAAGGUCUUACCGGAAAACUCGACGCAAGAAAAAUCAGAGAGAUCC
UCAUAAAGGCCAAGAAGGGCGGAAAGUCCAAAUUGAUGUCCAGCAUGAAUCC

CGAAUAUGAUUAUUUAUUCAAGUUACUUCUGAUUGGCGACUCAGGGGUUGGA
AAGAAUUGCCUUCUUCUUAGGUUUGCAGAUGAUACAUAUACAGAAAGCUACA
UCAGCACAAUUGGUGUGGAUUUCAAAAUAAGAACUAUAGAGUUAGACGGGAA
AACAAUCAAGCUUCAAAUAUGGGACACAGCAGGCCAGGAAAGAUUUCGAACA
AUCACCUCCAGUUAUUACAGAGGAGCCCAUGGCAUCAUAGUUGUGUAUGAUG
UGACAGAUCAGGAGUCCUUCAAUAAUGUUAAACAGUGGCUGCAGGAAAUAGA
UCGUUAUGCCAGUGAAAAUGUCAACAAAUUGUUGGUAGGGAACAAAUGUGAU
CUGACCACAAAGAAAGUAGUAGACUACACAACAGCGAAGGAAUUUGCUGAUU
CCCUUGGAAUUCCGUUUUUGGAAACCAGUGCUAAGAAUGCAACGAAUGUAGA
ACAGUCUUUCAUGACGAUGGCAGCUGAGAUUAAAAAGCGAAUGGGUCCCGGA
GCAACAGCUGGUGGUGCUGAGAAGUCCAAUGUUAAAAUUCAGAGCACUCCAG
UCAAGCAGUCAGGUGGAGGUUGCUGCUAA

(SEQ ID NO: 20, MG-008 ORF mRNA Sequence with 5’ Luciferase Tag);

or a nucleic acid sequence having at least 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, or 99% sequence identity therewith and encoding a Rab1a^{GDP} preferentially binding GDP;

or a nucleic acid sequence equivalent to any of the above sequences due to codon redundancy.

12. A polypeptide comprising the amino acid sequence:

MSSMNPEYDYLFKLLLIGDSGVGKNCLLLRFADDTYTESYISTIGVDFKIRTIELD
GKTIKLQIWDTAGQERFRTITSSYYRGAHGIIVVYDVTDQESFNNVKQWLQEIDR
YASENVNKLLVGNKCDLTTKKVVDYTTAKEFADSLGIPFLETSAKNATNVEQSF
MTMAAEIKKRMGPGATAGGAEKSNVKIQSTPVKQSGGGCC
(SEQ ID NO: 6; Human Rab1a^{S25N});

MGDYKDDDDKGGSGGSSMNPEYDYLFKLLLIGDSGVGKSCLLLRFADDTYTES
YISTIGVDFKIRTIELDGKTIKLQIWDTAGQERFRTITSSYYRGAHGIIVVYDVTDQ
ESFNNVKQWLQEIDRYASENVNKLLVGIKCDLTTKKVVDYTTAKEFADSLGIPFL
ETSAKNATNVEQSFMTMAAEIKKRMGPGATAGGAEKSNVKIQSTPVKQSGGGC
C

(SEQ ID NO: 9; Mouse Rab1^{N124I});

the amino acid sequence of human Rab1a^{D41N}; or

MSSMNPEYDYLFKLLLIGDSGVGKSCLLLRFADDTYTESYISTIGVNFKIRTIELD
GKTIKLQIWDTAGQERFRTITSSYYRGAHGIIVVYDVTDQESFNNVKQWLQEIDR
YASENVNKLLVGNKCDLTTKKVVDYTTAKEFADSLGIPFLETSAKNATNVEQSF
MTMAAEIKKRMGPGATAGGAEKSNVKIQSTPVKQSGGGCC

(SEQ ID NO: 18; Human Rab1a^{D47N});

or a polypeptide having at least 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, or 99% sequence identity with any of these sequences and preferentially binding GDP;

for use in reducing obesity, or for preventing or treating obesity, in a subject in need thereof; or for use in reducing bodyweight in an overweight subject.

13. The polypeptide of claim 12, wherein the obesity is accompanied by at least one of the following conditions: inflammatory response, increased abdominal obesity, high blood pressure, high blood sugar, high serum triglycerides, low serum high-density lipoprotein (HDL), insulin resistance, glucose intolerance, diabetes mellitus, hyper-tension, dyslipidemia, nonalcoholic fatty liver disease (NAFLD), heart failure, atrial fibrillation, musculoskeletal disorders and sleep apnea.

14. A pharmaceutical composition comprising

a GDP-bound form of Rab1a (Rab1a^{GDP}), one or more expressible nucleic acids encoding Rab1a^{GDP}, or a combination thereof; and

another anti-obesity agent.

15. Use of Rab1 encapsulated lipid nanoparticles for reducing, treating or preventing obesity in a subject in need thereof, for reducing body weight in an overweight subject, or for reducing, preventing or treating at least one of the following conditions in a subject in need thereof:

inflammatory response, increased abdominal obesity, high blood pressure, high blood sugar, high serum triglycerides, low serum high-density lipoprotein (HDL), insulin resistance, glucose intolerance, diabetes mellitus, hyper-tension, dyslipidemia, nonalcoholic fatty liver disease (NAFLD), heart failure, atrial fibrillation, musculoskeletal disorders, and sleep apnea.

16. Use of Rab1 encapsulated lipid nanoparticles in the manufacture of a medicament for reducing, treating or preventing obesity in a subject in need thereof, or in the manufacture of a medicament for reducing body weight in an overweight subject.

17. The use of any one of claims 15-16, wherein the Rab1 encapsulated lipid nanoparticles are for administration at 0.005-0.5 mg/kg.

18. The use of claim 17, wherein the Rab1 encapsulated lipid nanoparticles are for administration at 0.3, 0.4, or 0.5 mg/kg.

19. The use of claim 17 or 18, wherein the Rab1 encapsulated lipid nanoparticles are for administration via intravenous injection.

20. A pharmaceutical composition comprising:

    Rab1 encapsulated lipid nanoparticles and another anti-obesity agent.