CLAIMS

Claim 1

A pharmaceutical composition for preventing or treating a bone disease, comprising:

an inhibitor of the expression or activity of transmembrane 4 L six family member 19 (TM4SF19) as an active ingredient.

Claim 2

The composition of claim 1, wherein the inhibitor of TM4SF19 expression or activity is one or more selected from the group consisting of an antisense nucleotide, small hairpin RNA (shRNA), small interfering RNA (siRNA), microRNA (miRNA) and a ribozyme, which complementarily bind to mRNA of a TM4SF19 gene.

Claim 3

The composition of claim 1, wherein the inhibitor of the expression or activity of TM4SF19 is one or more selected from the group consisting of a compound, a peptide, a peptide mimetic, an aptamer, a fusion protein and an antibody, which specifically bind to a TM4SF19 protein.

Claim 4

The composition of claim 3, wherein the fusion protein specifically binding to the TM4SF19 protein comprises a TM4SF19 fragment and the immunoglobulin Fc domain.

Claim 5

The composition of claim 4, wherein the TM4SF19 fragment comprises all or a part of the extracellular loop 2 region of TM4SF19.

Claim 6

The composition of claim 1, wherein the bone disease is one or more selected from the group consisting of a metabolic bone disease, an orthopedic bone disease, aplastic bone disease, degenerative bone disease, degenerative arthritis, rheumatoid arthritis, psoriatic arthritis, psoriatic spondylitis, age-related bone loss, osteoporosis, osteogenesis imperfecta, osteomalacia, sarcopenia, fractures, bone defect and hip arthrosis, rickets, Paget's bone disease, periodontal disease, and bone damage caused by the bone metastasis of cancer cells.

Claim 7

A method of screening a drug for treating a bone disease, comprising:

treating a specimen suspected of a bone disease with a candidate for treating a bone disease; and

comparing the mRNA or protein expression level of a TM4SF19 gene with a control.

Claim 8

A fusion protein for inhibiting transmembrane 4 L six family member 19 (TM4SF19) expression or activity, comprising an extracellular loop 2-derived fragment of a TM4SF19 protein and the immunoglobulin Fc domain.

Claim 9

The fusion protein of claim 8, wherein the extracellular loop 2 (EC2)-derived fragment of the TM4SF19 protein corresponds all or a part of EC2.

Claim 10

The fusion protein of claim 8, wherein the amino acid sequence region corresponding to all of EC2 is the region of amino acids 120-169 of a human TM4SF19 protein or the region of amino acids 116-165 of a mouse TM4SF19 protein.

Claim 11

The fusion protein of claim 8, wherein the amino acid sequence region corresponding to a part of EC2 is the region of amino acids 145-169 of a human TM4SF19 protein.

Claim 12

The fusion protein of claim 8, which comprises an amino acid sequence represented by SEQ ID NO: 10, SEQ ID NO: 13, SEQ ID NO: 16, or SEQ ID NO: 19.