CLAIMS

1. An inhibitor of gremlin-1 activity for use in the treatment of a bone fracture ~~or bone defect~~; wherein the inhibitor is an anti-gremlin-1 antibody or functionally active fragment, variant or derivative thereof; wherein the antibody or functionally active fragment, variant or derivative thereof comprises the sequence of SEQ ID NO: 3 or 4 for HCDR1, the sequence of SEQ ID NO: 5 for HCDR2, the sequence of SEQ ID NO: 6 for HCDR3, the sequence of SEQ ID NO: 7 for LCDR1, the sequence of SEQ ID NO: 8 for LCDR2 and the sequence of SEQ ID NO: 9 for LCDR3.

2. An inhibitor of gremlin-1 activity for use according to claim 1, wherein the functionally active antibody fragment is a Fab, Fab', F(ab')2, Fv or scFv.

3. An inhibitor of gremlin-1 activity for use according to claim 1 or claim 2, wherein the antibody comprises a heavy chain variable region (HCVR) of SEQ ID NO: 10 and/or a light chain variable region (LCVR) of SEQ ID NO: 11.

4. An inhibitor of gremlin-1 activity for use according to claim 1 or claim 2, wherein the antibody comprises the sequence of SEQ ID NO: 3 or 4 for HCDR1, the sequence of SEQ ID NO: 5 for HCDR2, the sequence of SEQ ID NO: 6 for HCDR3, the sequence of SEQ ID NO: 7 for LCDR1, the sequence of SEQ ID NO: 8 for LCDR2 and the sequence of SEQ ID NO: 9 for LCDR3; and wherein the heavy chain variable region comprises a sequence having at least 95% identity to the sequence of SEQ ID NO: 10 and the light chain variable region comprises a sequence having at least 95% identity to the sequence of SEQ ID NO: 11.

5. An inhibitor of gremlin-1 activity for use according to any of claims 1-4, wherein the antibody binds to an epitope on gremlin-1 comprising at least one residue selected from Ile131, Lys147, Lys148, Phe149, Thr150, Thr151, Arg169, Lys174 and Gln175, wherein the residue numbering is according to SEQ ID NO: 1.

6. An inhibitor of gremlin-1 activity for use according to any preceding claim, wherein the bone fracture ~~or bone defect~~ is a delayed-union or non-union fracture.

7. An inhibitor of gremlin-1 activity for use according to any preceding claim, wherein the bone fracture ~~or bone defect~~ is associated with a disease that affects bone integrity.

8. An inhibitor of gremlin-1 activity for use according to claim 7, wherein the disease that affects bone integrity is osteoporosis, osteogenesis imperfecta, diabetes, Paget's disease of bone, rheumatoid arthritis, ankylosing spondylitis, multiple myeloma, primary bone cancer, cancer that metastasises to the bone, diffuse idiopathic skeletal hyperostosis, osteomyelitis, renal disease, Duchenne muscular dystrophy or thalassemia major.

9. Use of an inhibitor of gremlin-1 activity for the manufacture of a medicament for the treatment of a bone fracture ~~or bone defect~~; wherein the inhibitor is an anti-gremlin-1 antibody or functionally active fragment, variant or derivative thereof; wherein the antibody or functionally active fragment, variant or derivative thereof comprises the sequence of SEQ ID NO: 3 or 4 for HCDR1, the sequence of SEQ ID NO: 5 for HCDR2, the sequence of SEQ ID NO: 6 for HCDR3, the sequence of SEQ ID NO: 7 for LCDR1, the sequence of SEQ ID NO: 8 for LCDR2 and the sequence of SEQ ID NO: 9 for LCDR3.

10. Use according to claim 9, wherein wherein the functionally active antibody fragment is a Fab, Fab', F(ab')2, Fv or scFv.

11. Use according to claim 9 or claim 10, wherein the antibody comprises a heavy chain variable region (HCVR) of SEQ ID NO: 10 and/or a light chain variable region (LCVR) of SEQ ID NO: 11.

12. Use according to claim 9 or claim 10, wherein the antibody comprises the sequence of SEQ ID NO: 3 or 4 for HCDR1, the sequence of SEQ ID NO: 5 for HCDR2, the sequence of SEQ ID NO: 6 for HCDR3, the sequence of SEQ ID NO: 7 for LCDR1, the sequence of SEQ ID NO: 8 for LCDR2 and the sequence of SEQ ID NO: 9 for LCDR3; and wherein the heavy chain variable region comprises a sequence having at least 95% identity to the sequence of SEQ ID NO: 10 and the light chain variable region comprises a sequence having at least 95% identity to the sequence of SEQ ID NO: 11.

13. Use according to any one of claims 9-12, wherein the antibody binds to an epitope on gremlin-1 comprising at least one residue selected from Ile131, Lys147, Lys148, Phe149, Thr150, Thr151, Arg169, Lys174 and Gln175, wherein the residue numbering is according to SEQ ID NO: 1.

14. Use according to any preceding claim, wherein the bone fracture ~~or bone defect~~ is a delayed-union or non-union fracture.

15. Use according to any preceding claim, wherein the bone fracture ~~or bone defect~~ is associated with a disease that affects bone integrity.

16. Use according to claim 15, wherein the disease that affects bone integrity is osteoporosis, osteogenesis imperfecta, diabetes, Paget's disease of bone, rheumatoid arthritis, ankylosing spondylitis, multiple myeloma, primary bone cancer, cancer that metastasises to the bone, diffuse idiopathic skeletal hyperostosis, osteomyelitis, renal disease, Duchenne muscular dystrophy or thalassemia major.