CLAIMS

1. An in vitro method for detecting the presence of neutralizing antibodies to abaloparatide in a sample from a subject treated with abaloparatide, the method comprising:

obtaining the sample from a subject;

contacting the sample with a population of cells or a cell, wherein the cell or cells comprise a receptor for abaloparatide;

measuring cyclic adenosine monophosphate (cAMP) levels; and

detecting the presence of neutralizing antibodies indicated by reduced cAMP levels.

2. The method of claim 1, wherein the measuring cAMP levels is performed by a competitive immunoassay.

3. The method of claim 2, wherein the competitive immunoassay is an electrochemiluminescent detection method.

4. The method of claim 1, wherein the contacting step comprises incubating the cell or cells with the serum sample.

5. The method of claim 1, wherein the method further comprises preincubation of the serum sample with a predetermined amount of abaloparatide prior to the contacting step.

6. The method of claim 5, wherein the preincubation is for a period of at least 30 minutes.

7. The method of claim 1, wherein the cell or cells are lysed prior to the measuring step.

8. The method of claim 1, further comprising incubation of the cell or cells with a cell permeable cAMP-specific phosphodiesterase inhibitor prior to the contacting step.

9. The method of claims 8, wherein the cAMP-specific phosphodiesterase inhibitor is 4-(3-Butoxy-4-methoxybenzyl)-2-imidazolidinone.

10. The method of claim 1, wherein the measuring cAMP levels is performed using the Mesoscale Discovery Multi-Array 96-well cAMP Plate.

11. The method of claim 1, wherein the predetermined amount of abaloparatide is at least 100, 200, 300, 400, or 500 pg/mL.

12. The method of claim 1, wherein the predetermined amount of abaloparatide analog is about 600 pg/mL.

13. The method of claim 1, wherein the cell or cells are rat epithelial cell line UMR-106.

14. The method of claim 13, further comprising serum-starving the UMR-106 cell or cells for a period of time prior to the contacting step.

15. The method of claim 14, wherein the period of time ranges from about 4 hours to about 48 hours, about 4 hours to about 24 hours, about 4 hours to about 16 hours, about 4 hours to about 12 hours, or about 6 hours to about 12 hours.

16. The method of claim 1, wherein the sample is a human sample.

17. The method of claim 16, wherein the human sample is a human serum sample.

18. The method of claim 1, further comprising discontinuing treatment when neutralizing antibodies are detected in the serum sample.

19. A kit for carrying out the method of claim 1, comprising components required to carry out the obtaining, contacting, measuring and detecting steps and instructions for use.

20. The method of claim 1, further comprising increasing or decreasing a dosage of abaloparatide when neutralizing antibodies are detected in the sample.