CLAIMS

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

obtaining the serum sample from the ~~a~~ subject;

preincubating the serum sample with a predetermined amount of abaloparatide for a period of at least 30 minutes;

contacting the preincubated serum sample with a population of rat epithelial cell line UMR-106 cells, wherein contacting comprises incubating the cell or cells with the serum sample for a period of time; ~~cells or a cell, wherein the cell or cells comprise a receptor for abaloparatide;~~

measuring cyclic adenosine monophosphate (cAMP) levels in the serum sample by a competitive immunoassay utilizing an electrochemiluminescent detection method; and

detecting the presence of neutralizing antibodies indicated by reduced cAMP levels relative to a negative control sample which does not include neutralizing antibodies..

~~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.~~

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

38. 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.

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

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

611. The method of claim 1, wherein the predetermined amount of abaloparatide is a concentration of abaloparatide in the serum sample in a range from 100 to 500 pg/mL. ~~at least 100, 200, 300, 400, or 500 pg/mL.~~

712. The method of claim 1, wherein the predetermined amount of abaloparatide ~~analog~~ is ~~about~~ a concentration in the serum sample of 600 pg/mL.

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

814. The method of claim 113, further comprising serum-starving the UMR-106 cell or cells for a period of time prior to the contacting step.

915. The method of claim 814, 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.~~

10~~18~~. The method of claim 1, further comprising discontinuing ~~treatment~~ treating the human subject with abaloparatide 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.~~

11~~20~~. The method of claim 1, further comprising increasing or decreasing a dosage of abaloparatide administered to the human subject treated with abaloparatide when neutralizing antibodies are detected in the serum sample.