The Aevo System™ utilizes Low-Intensity Pulsed Ultrasound (LIPUS) therapy to stimulate alveolar bone remodeling and accelerate orthodontic tooth movement.

The mechanism of action of LIPUS on alveolar bone remodelling [1-8] is to stimulate the osteoblast [9-14] and osteoclasts cells [15-22] independently. When LIPUS is applied to the bone cells, the mechanical stimuli are received by the cell receptors like integrins [23-28] and GPCR (G protein coupled receptors) [29-34] to activate different signaling pathways in the cells. The activation of these receptors begins the cell signaling cascade leading the nucleus of the cell to increase gene expression [35-42] which in turn leads to increased protein expression [43-47]. For osteoclasts, it increases RANKL (receptor activator of nuclear factor kappa B ligand) protein expression to accelerates bone resorption [48-53]. For osteoblasts, it increases bone forming proteins Runx2 (runt related transcription factor 2) [39, 54-56], OPG (osteoprotegrin) [53, 57-63] , OCN (osteocalcin) [42, 64- 66], and ALP (alkaline phosphatase) [65-73] .

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*: Study used the actual or a prototype of the Aevo System