Response to Letter to the Editor, “BET Inhibitor JQ1 Blocks Inflammation and Bone Destruction”

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We thank the authors of the Letter to the Editor (Dr. Hogg, Dr. Johnstone, and Dr. Shortt) for their comments responding to our article titled, “BET Inhibitor JQ1 Blocks Inflammation and Bone Destruction” (Meng et al. 2014). Dr. Shortt recently suggested that N-methyl-2-pyrrolidone (NMP) has bioactive BET-bromodomain inhibitory effects similar to JQ1, but further investigation is required (Shortt et al. 2014). NMP was known as an inert solvent commonly used in many drugs. However, the rediscovery of NMP revealed multiple unprecedented biological effects, such as inhibiting inflammatory cytokines, enhancing BMP-modulated bone regeneration (Miguel et al. 2009), and suppressing RANKL-induced osteoclast differentiation and bone resorption (Ghayor et al. 2011). Combined with previous clinical experience as a solubilizing excipient in dental barrier membranes, these new features may grant NMP even more potential in periodontal regeneration. It is feasible and necessary to further explore the bone-regenerative effects of NMP in a well-designed animal study.

Diverse BET inhibitors are emerging as promising therapeutic agents for cancer and inflammatory diseases. JQ1 has shown extraordinary anticancer effects in preclinical trials (Feng et al. 2014; Tang et al. 2014; Venkataraman et al. 2014) as well as anti-inflammatory effects (Belkina et al., 2013; Khan et al., 2014). Our research proved that systemic application of JQ1 inhibited inflammatory responses and alleviated bone destruction in mice with periodontitis. Molecules such as NMP and JQ1 that suppress inflammation and bone destruction have great value in treating inflammatory bone diseases, such as periodontitis.

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