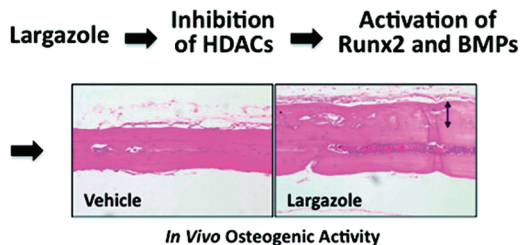


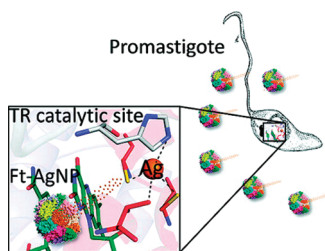
Healing Bone Defects



Natural products continue to serve as an excellent source of drugs. Largazole is a cyclic depsipeptide marine natural product that has received significant interest as a molecular target of histone deacetylases (HDACs). Because of the ability to regulate gene transcription, HDACs are thought to be involved in osteogenesis, the process by which new bone is formed and damaged bone is repaired. Now, Lee et al. (DOI: 10.1021/ml1002794) show that the HDAC inhibitor largazole possesses osteogenic activity.

The researchers showed that largazole accelerated healing of fractured bone in laboratory mice and rabbits. This is the first instance where an HDAC inhibitor has shown *in vivo* osteogenic activity and serves as a proof-of-principle study, which might aid drug discovery efforts.

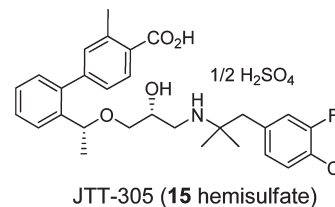
Silver Nanoparticles Targeting *Leishmania*



Leishmaniasis is a disease that afflicts approximately 12 million people globally. The causative parasite, *Leishmania* has a unique redox system in which the trypanothione/trypanothione reductase (TR) couple replaces the more common glutathione/glutathione reductase couple. The TR protects the parasite from oxidative damage induced by hydrogen peroxide produced by host macrophages.

Now, Baiocco et al. (DOI: 10.1021/ml1002629) resolve the X-ray crystal structure of TR in the presence of silver and NADPH. The authors show that silver binds with high affinity at the active site of TR. Furthermore, an Ag(0) nanoparticle drug delivery system appears to be more efficacious against promastigote and amastigote stages of *Leishmania infantum* and previous systems using Sb(III). These principles might assist in further drug discovery efforts geared toward treating leishmaniasis.

Treating Osteoporosis



With aging populations across the world, millions of people are increasingly becoming afflicted with osteoporosis, for which current treatment regimens are inadequate. Short-acting antagonists of calcium-sensing receptor are promising alternatives to parathyroid hormone, which is currently required to be injected in the treatment of osteoporosis.

Now, Shinagawa et al. (DOI: 10.1021/ml100268k) report the discovery of a small molecule with promising calcium-sensing receptor activity. The small molecule described by the authors is currently in phase II clinical trials.