Reviewer's report

Title: Characterization of a rat osteotomy model with impaired healing

Version: 1 Date: 24 June 2008

Reviewer: Joseph Lane

Reviewer's report:

The authors have presented an osteotomy model in the rat tibia following an open osteostomy and compared it to a closed tibial fracture. The critical time points extend to 84 days but the biology is more fully tested at 5 and 10 days. The repair is clearly enhanced with the closed fractures at these time points and ultimate union only occurs in 50% by 84 days while the healing is complete in all the closed fractures earlier.

This observation has been noted in several other rodent models where open fractures take longer to heal. Hak used this observation to damage the ends of the bones with burning and obtained a 100% nonunion rate.

I viewing the authors’ rats the osteotomy lacks active biology compared to the closed fractures. These are small animals and the results are very similar to Hak. The authors should review Hak and comment on the similarity.

Often the open fracture results in a double periosteum. This is best seen on micro-CT. Did the authors have cross sectional histology or micro-CT.

Overall this study carefully describes a slowly imperfect healing rodent fracture. It would be an excellent model to test augmenting enhancing agents.