Towards Improved Bone Regeneration  
(C. A. Knuth)

1. Mesenchymal stem cells (MSCs) isolated from younger patients have enhanced proliferative and differentiation potential compared to MSCs isolated from older patients. (this thesis)

2. Varied differentiation potential between MSC donors greatly influences in vivo bone formation. (this thesis)

3. Hypertrophy associated collagen type X, found within the extracellular matrix of chondrogenically differentiated MSCs, is important for tissue engineered endochondral ossification. (this thesis)

4. Overall chondrogenic potential of an MSC donor will influence in vivo bone formation. (this thesis)

5. One week of chondrogenic priming of MSC pellets, in combination with fibrin, is sufficient for endochondral bone formation to occur in vivo. (this thesis)

6. Utilizing decellularised matrices derived from chondrogenic donors, shown to induce bone formation in vivo, presents a promising solution to donor variation. (Bourgine, PE. PNAS, 2014)

7. Donor MSC within these endochondral constructs could directly contribute to future bone formation. (Bahney C.S., J Bone Miner Res. 2014)

8. Determining how a fully functional immune system affects tissue engineered bone formation could further improve graft construction and clinical translation potential. (Kiernan, CH. Tissue Engineering Part B, 2018)

9. Research is to see what everybody has seen, and to think what nobody else has thought. (Albert Szent-Györgyi)

10. If you find from your own experience that something is a fact and it contradicts what some authority has written down, then you must abandon the authority and base your reasoning on your own findings. (Leonardo Da Vinci)

11. The value of an education … is not the learning of many facts, but the training of the mind to think… (Albert Einstein)