

Nerve Reconstruction:

Improving outcome using allografts and stem cells in motor nerve repair

1. Partial spinal accessory nerve transfer to the long head of the triceps muscle with an interposition nerve graft is an adequate option for restoration of elbow extension, despite the relatively long time required for reinnervation. (This thesis)
2. Ultrasound of the target muscle is a reliable technique to measure functional recovery after peripheral nerve reconstruction and reduces the required sample size in comparative animal studies. (This thesis)
3. Reconstruction of a long motor nerve defect in the rabbit model, using the cold-stored optimized nerve allograft, yields statistically equivalent recovery to the nerve autograft. (This thesis)
4. Using a simple bioreactor, nerve allografts can be homogeneously seeded with mesenchymal stem cells with minimal damage to the cells or allograft. (This thesis)
5. The extracellular matrix of the optimized nerve allograft triggers upregulation of neurotrophic and angiogenic gene expression in undifferentiated mesenchymal stem cells. (This thesis)
6. Elbow flexion without active extension is cosmesis. Elbow flexion with active elbow extension is function. (Oberlin C et al., Nerve transfers in brachial plexus palsies. *Chir Main.* 2009;28(1):1-9)
7. Educators must reflect on the impact of the design of educational programs on residents' personal relationships and wellness. They must consider the roles of the formal, informal, and hidden curricula in educating our medical trainees, to foster healthy and humanistic physicians who will deliver good patient care. (Law M et al., Changes in Personal Relationships During Residency and Their Effects on Resident Wellness: A Qualitative Study. *Acad Med.* 2017 Nov;92(11):1601-1606)
8. Mental practice (visualization), as commonly used by elite athletes, should be used to optimize surgical performance by improving practice of skills, improving confidence and alleviating anxiety. (Cocks M et al., What surgeons can learn from athletes: mental practice in sports and surgery. *J Surg Educ.* 2014 Mar-Apr;71(2):262-9.)
9. The use of nerve transfers transforms the current treatment paradigm in cervical spinal cord injury. (Mackinnon SE et al., The Use of Nerve Transfers to Restore Upper Extremity Function in Cervical Spinal Cord Injury. *PM R.* 2018 Mar 15. pii: S1934-1482(18)30132-1.)
10. Failure should be a motivating force, not an excuse to give up. (Bowers J., We should aim for perfection – and stop fearing failure. *TED@UPS.* 2017 July)
11. The pessimist complains about the wind, the optimist expects it to change, and the realist adjusts the sails. William Arthur Ward (American writer, 1921 – 1994)