Notes on Neuroengineering

Introduction

Neuroengineering is a biomedical engineering field that provides a systematic framework for understanding complex processes in the brain [1]. Research in neuroengineering could allow for novel technologies that interface with the brain [2, 3]. Neural engineering encompasses neural regrowth and repair [4, 5]. Neural growth is influenced by genetic factors [5] which may be useful to study for neural enhancement research.

References

1. Edelman, B. J., Johnson, N., Sohrabpour, A., Tong, S., Thakor, N., & He, B. (2015). Systems neuroengineering: understanding and interacting with the brain. Engineering, 1(3), 292-308.
2. Chiappalone, M., Cota, V. R., Carè, M., Di Florio, M., Beaubois, R., Buccelli, S., ... & Levi, T. (2022). Neuromorphic-based neuroprostheses for brain rewiring: state-of-the-art and perspectives in neuroengineering. Brain sciences, 12(11), 1578.
3. Won, S. M., Cai, L., Gutruf, P., & Rogers, J. A. (2023). Wireless and battery-free technologies for neuroengineering. Nature Biomedical Engineering, 7(4), 405-423.
4. Schmidt CE, Leach JB. Neural tissue engineering: strategies for repair and regeneration. Annu Rev Biomed Eng. 2003;5:293-347. doi:10.1146/annurev.bioeng.5.011303.120731
5. Li Y, Ma Z, Ren Y, et al. Tissue Engineering Strategies for Peripheral Nerve Regeneration. Front Neurol. 2021;12:768267. Published 2021 Nov 16. doi:10.3389/fneur.2021.768267
6. Seidlitz J, Mallard TT, Vogel JW, et al. The molecular genetic landscape of human brain size variation. Cell Rep. 2023;42(11):113439. doi:10.1016/j.celrep.2023.113439