**Limitations of Cell/Tissue Engineering Therapies**

* Please comment on the limitations of cell and tissue engineering therapies. Use your prior experience in the workplace to inform your comments if applicable.
  + Remember that we are interested in your point of view as a creative, thoughtful biomedical engineer.
* Respond to at least two of your classmates.

I see many challenges C/TE must address:

* Difficulties growing cells for a long time.
* Be able to handle a vast range of exerted forces
* One repeated challenge faced by tissue engineering is the need for proper vascular and nerve supply which is a critical requirement for example in dentin/pulp engineering.
* Enduring extreme environments like the high acidity of the intestine.
* Defensive immune response from the receiving host leading to rejection of the cells or tissues.
* Safety and risk concerns like off target tumor formation.
* Delivery through highly protected parts of the human body like the brain-blood-barrier.
* Long life sustainability with self-regenerating and self-repairing capabilities. At the same time, in some situations, they need to be biodegradable after a specific time of exposure.
* Biomaterials to be biocompatible with the environment of intervention.
* Possibility of responding to biochemical signals for reprogramming like turning off growth after complete healing. Ability to monitor progression of regeneration.
* Scientific coordination and infrastructure development are needed to accommodate the research in terms of biological, computational and data resources.
* Manufacturing challenges in material sourcing, standardization and production to large scale.
* Speed during the bioprinting process.
* Clinical trials to design relevant to the drug therapies leading to FDA approval.