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McGonigle/Rosenbaum Award

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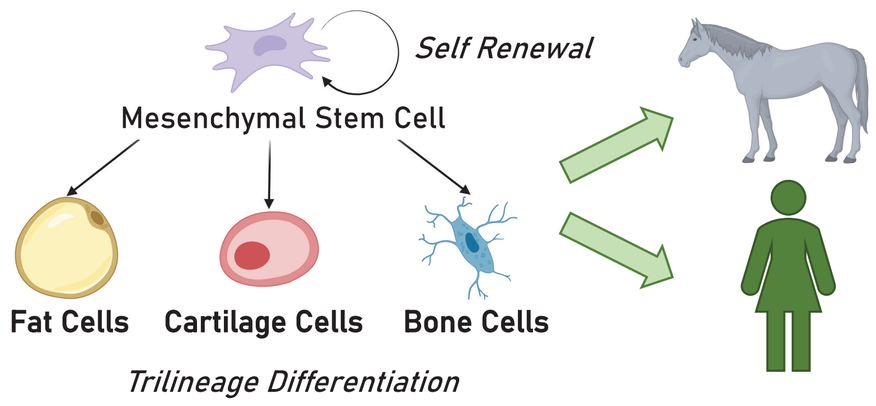
MSC Homing to Equine Hoof Injury Inflammatory Signals After Intravascular Administration

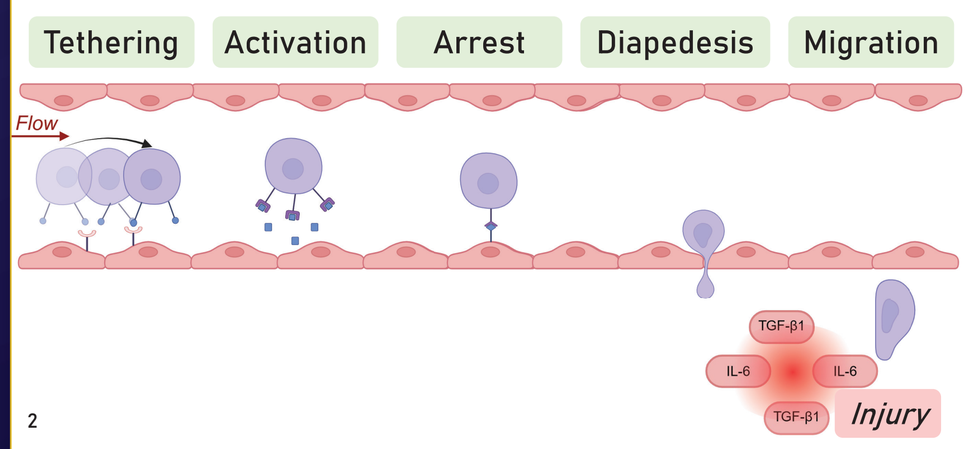
Using ex vivo assays and in vivo models, I investigate how distinct injury inflammatory signals attract mesenchymal stem cells to wounds after intravascular administration.

Mesenchymal Stem Cells (MSC) are multipotent cells found in all people + animals



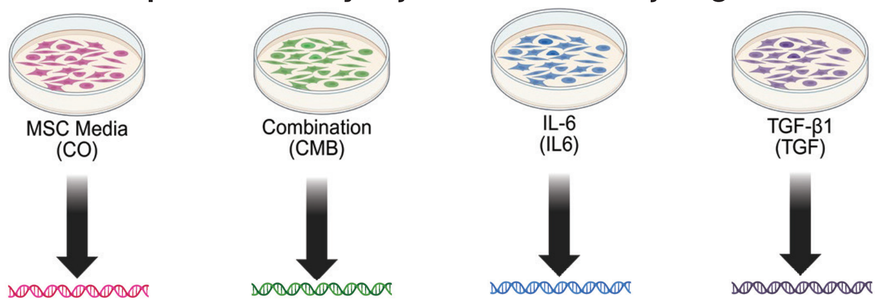
1

To support healing, MSCs must 'home' to an injury



2

MSCs home by altering their gene expression in response to injury inflammatory signals

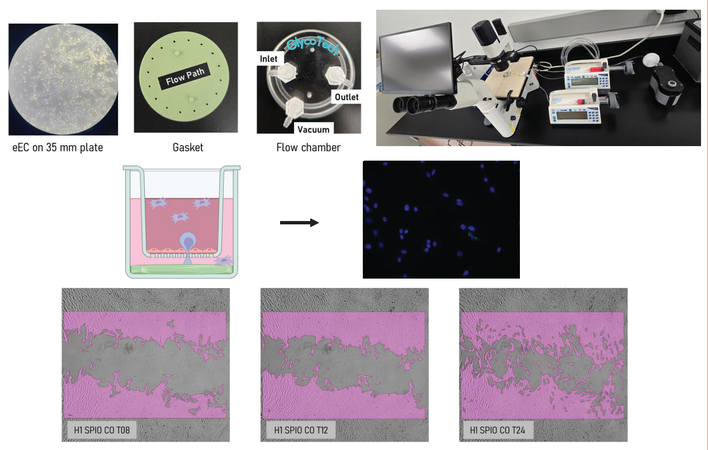


- Baseline gene expression
- Supports TGF Signal Pathways
- Supports MSC Activation
- Promotes Tethering + Arrest

3

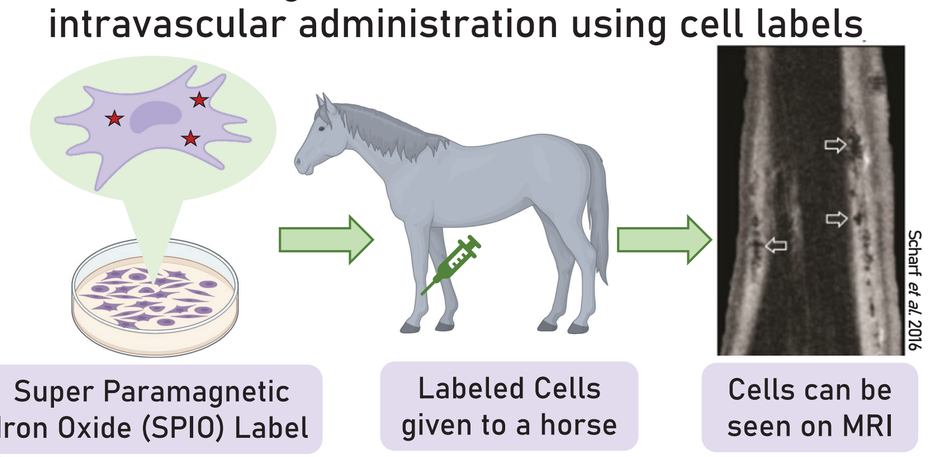
MSC homing can be modeled in the lab to mimic intravascular administration

- Flow Chamber Assay
- Transwell Assay
- ECM Migration Assay



4

MSC homing can be observed in vivo after intravascular administration using cell labels



- Super Paramagnetic Iron Oxide (SPIO) Label
- Labeled Cells given to a horse
- Cells can be seen on MRI

5

Tackling translational research questions about MSC Homing

- What stages of the MSC homing cascade can be improved?
- When, relative to initial injury, should MSC be administered?
- How do in vivo tracking labels impact homing?



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