

# Human Stem Cell Research at the University of North Texas Health Science Center

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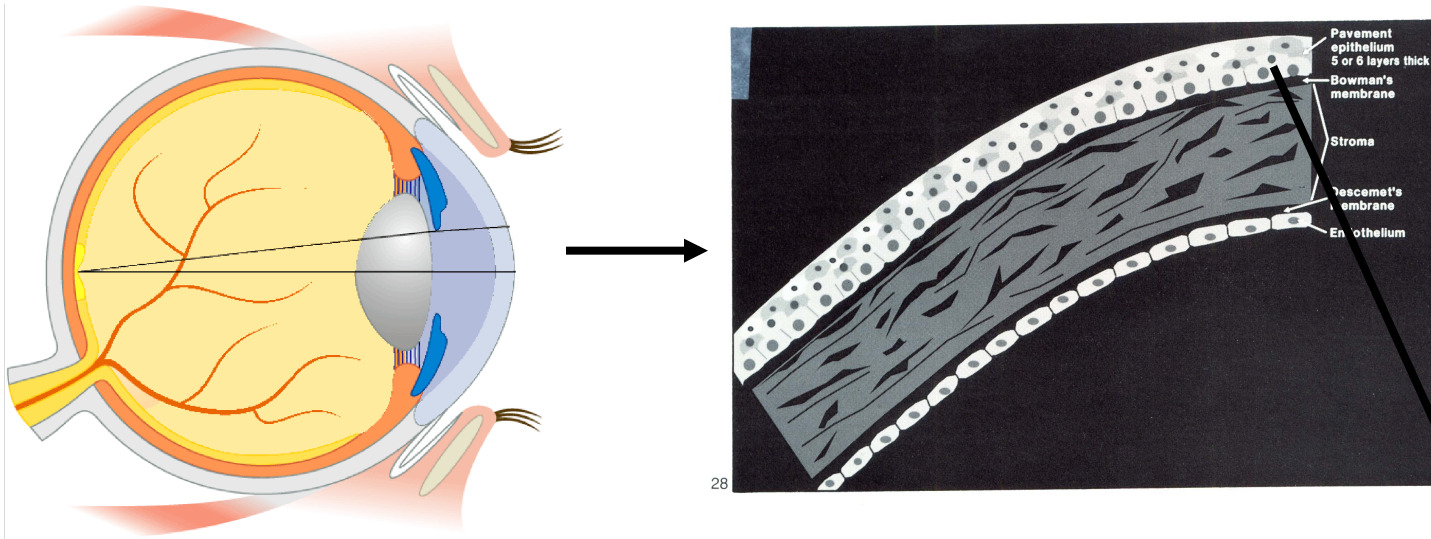
Fort Worth

What kind of human stem cell research is being conducted at your institution?

Adult (4 projects currently)

- Cornea
- Bone

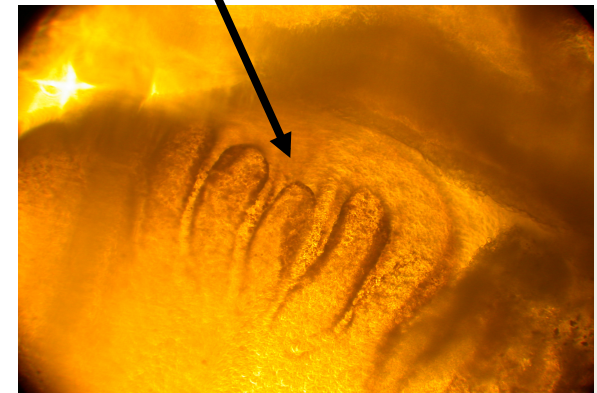
# Restoring Vision – Corneal Grafts



**Source of Adult Stem Cells –**  
**Peripheral Cornea ( Limbus) – Eye Bank Donor Tissue**

**Short term goal –** To develop extended *in vitro* life span of corneal cells and identify targets that control differentiation

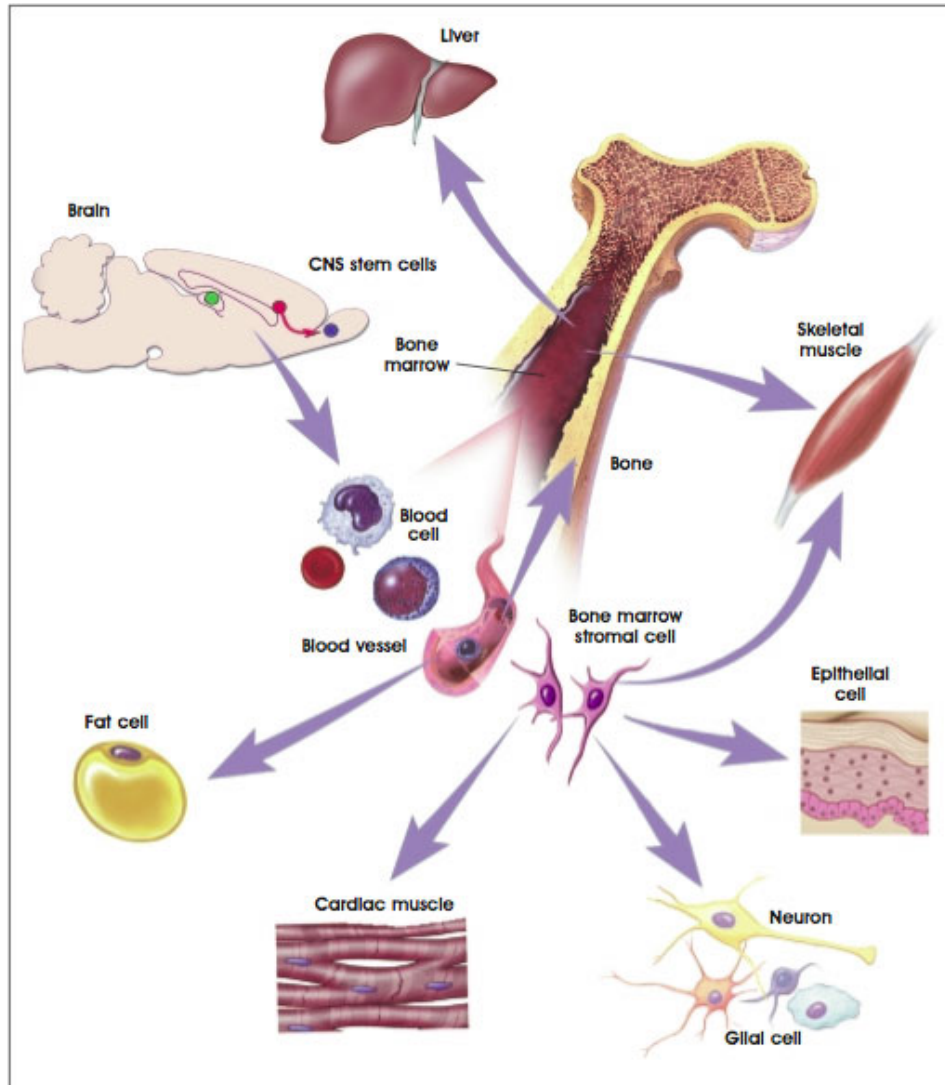
**Long term goal -** To isolate pure stem cells that maintain “stemness” (undifferentiated status) and construct corneal grafts



# Why Cornea?

- **Susceptible to injury - corneal blindness a relatively frequent occurrence**
- **Cornea Grafts conducted early, have been successful**
- **Donor tissue available through an established network of Eye Banks**
- **Cornea is non-vascular – minimal immunosuppression**
- **discrete adult stem cell compartment (Corneal Limbus)**

# Bone Marrow Derived Adult Stem Cells – Potential Source of Multiple Cell Types

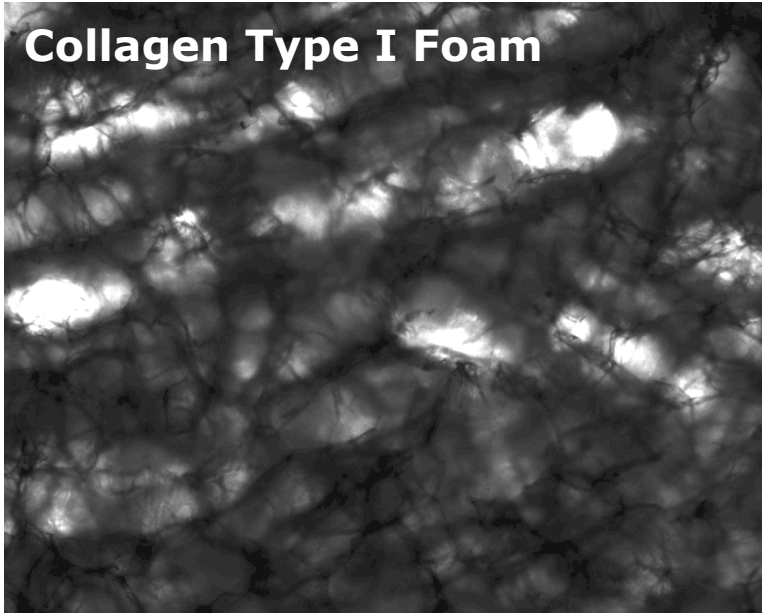


# Why Bone?

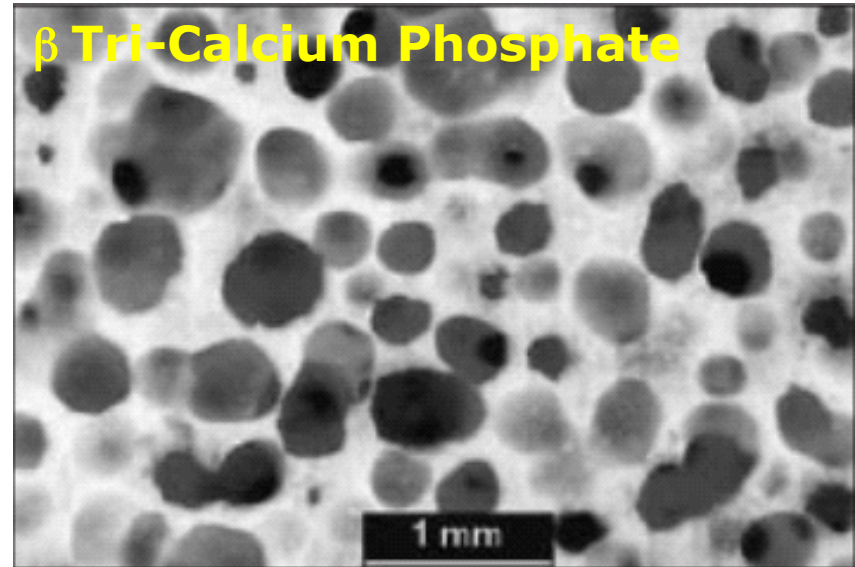
- ◆ **Bone marrow transplantation is an established and successful method of regenerating the immune system – treatment of leukemia**
- ◆ **Bone marrow derived Mesenchymal Stem Cells are a source of several types of cells including bone cells**
- ◆ **The recipient can also be his/her own donor – allografts are very successful in orthopedics – no need for immunosuppression**

# Porous Scaffolds - Graft Engineering - Stem Cell Delivery

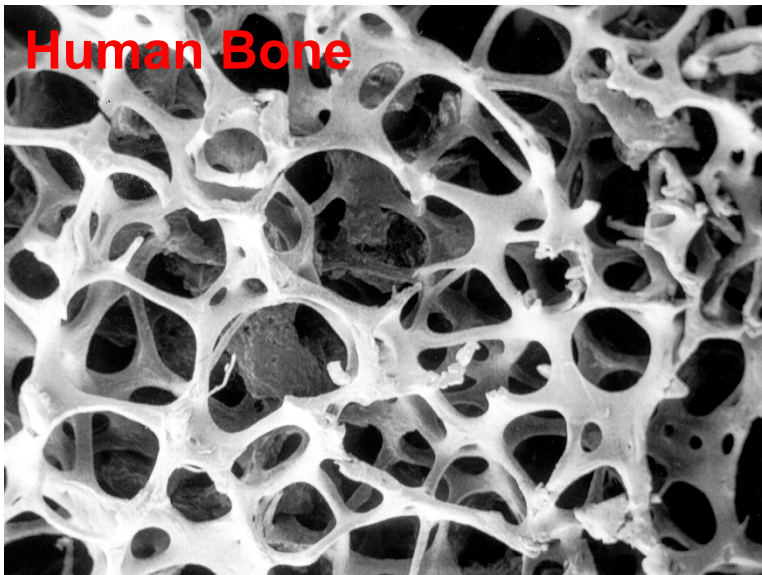
**Collagen Type I Foam**



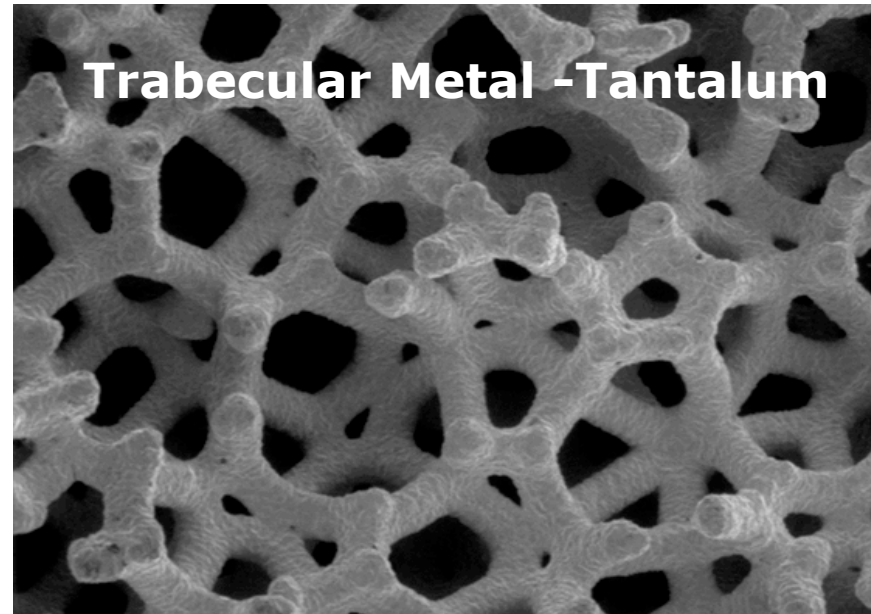
**$\beta$  Tri-Calcium Phosphate**



**Human Bone**



**Trabecular Metal -Tantalum**



## **What is the total amount spent on these human stem cell research projects?**

- The studies are in early stages so the cost of the projects is approximately \$300,000 (including salaries, stipends, consumables and services)

## **How much General Revenue do you spend on all research each fiscal year?**

- Approximately \$2 million

## **How much GR do you spend on human stem cell research each fiscal year?**

- Approximately \$50,000



**What factors would need to be considered to determine how much of the total cost of these human stem cell efforts is spent on actual human stem cell research, and how much of the spending comes from state funds?**

- For UNTHSC, effectively all funding for our human stem cell efforts goes toward support of research
- As estimated, roughly 1/6 of the funding comes from state funds

**If the state is attempting to collect data on what human stem cell research is being funded by the state, do you have recommendations on how to achieve this?**

- Data capture by Coordinating Board
- Offices of Sponsored Projects at each institution