

**LAEDC**  
**Annual Economic Forecast**  
*Innovation in Medicine and Health Care Delivery*

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February 19, 2014



**CEDARS-SINAI**

LEADING THE QUEST

[cedars-sinai.edu](http://cedars-sinai.edu)

- **California Institute of Technology**
- **Cedars-Sinai**
- **City of Hope**
- **UCLA**
- **USC**

# **Innovations In Medicine**

# Turning Discovery into Health



## Chemistry

- Cortisone
- Chemotherapy
- ACE inhibitors
- H<sub>2</sub> blockers
- Transplantation

1950-1980's

## Biomechanics

- Pacemakers
- Artificial joints
- Stents
- Cardiovascular surgery
- Minimally invasive surgery

1980-2010's

## "Genotechnology"

- Stem cell & gene Rx
- Nanotechnology
- Proteomics
- Individualized Rx
- Growth factors & antibodies
- Imaging
- Endovascular surgery

2010- ??

# Cardiovascular Disease



## **Heart failure transplant & devices**

**Minimally invasive**, image-guided heart and vascular procedures

**Congenital Heart Disease** lifelong Rx

**Womens Heart Disease** global leader

**Regenerative Medicine Clinic** a *clinical reality*

- Clinical trials & licensed products  
muscular dystrophy, pulmonary hypertension

**Nanotechnology** for therapeutics and diagnostics

**Advanced Clinical Biomarkers**

- facilitate clinical decision-making  
and enabling precision medicine

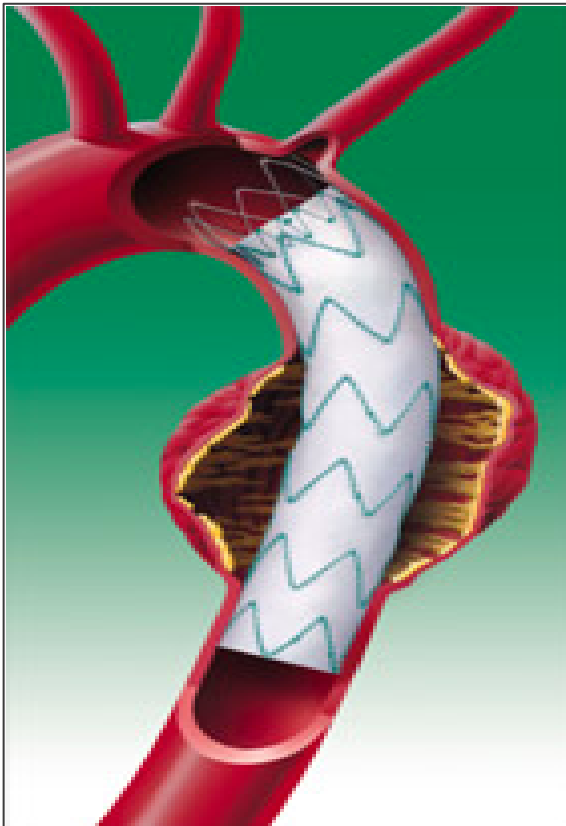
# Early Non-invasive Whole Body Atherosclerosis Detection

- **Unique Approach**

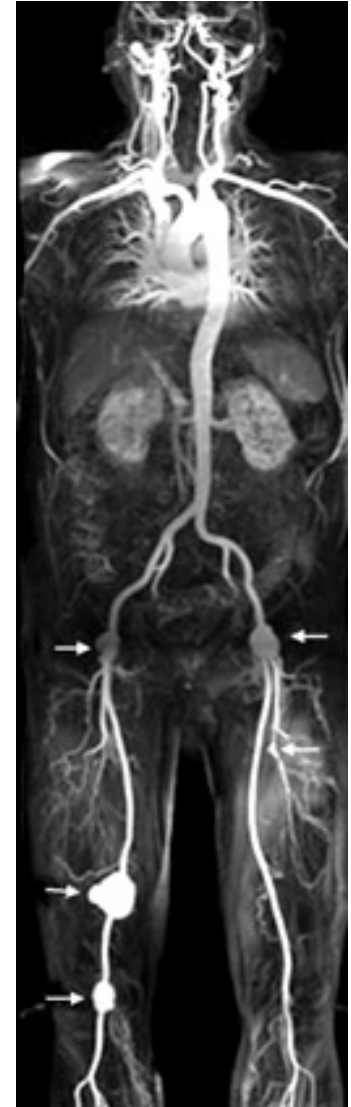
- *Integrate* whole body **MR and PET** images for early detection of atherosclerosis

- **Impact**

- Enable precise personalized treatment



Thoracic Endovascular Aortic Repair





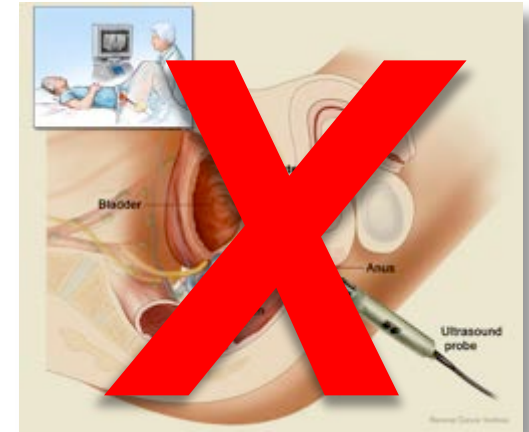
# Early and Sensitive Prostate Cancer Imaging

- **Unique Approach**

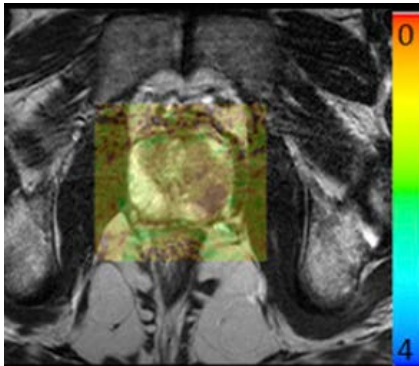
- **PET**: Detection of metabolic abnormalities *before structural changes occur*
- **MRI**: Accurate measurement of tumor size

- **Impact**

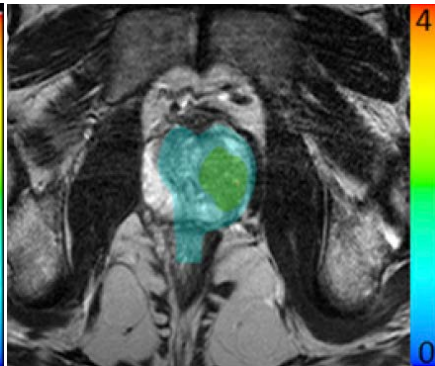
- Early detection, accurate staging
- Personalized Rx selection
- Improved quality of life and survival



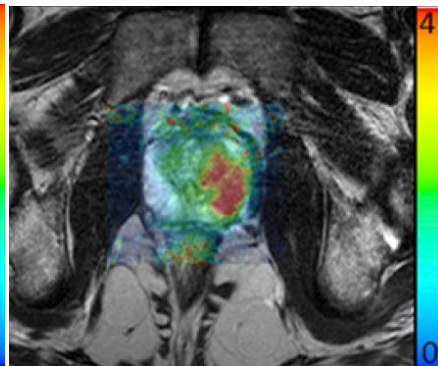
*MRI*



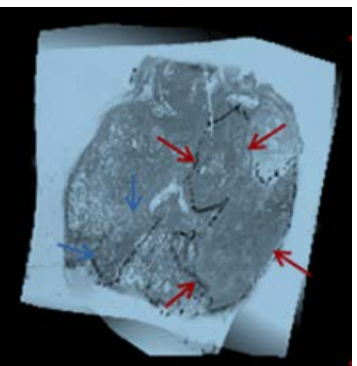
*PET*



*Combined Image*

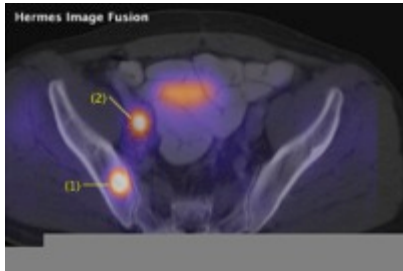


*Histology*

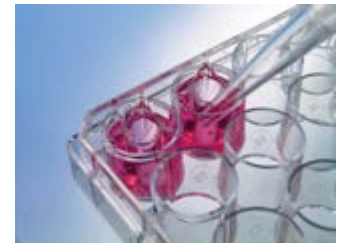
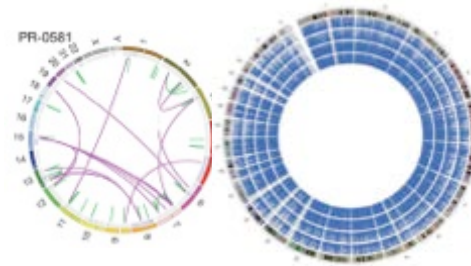
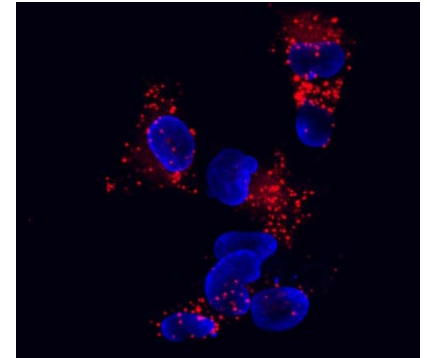


# Personalized Medicine Using Circulating Tumor Cells

Detect Disease



**“Liquid”  
Biopsy**



*Molecular  
analysis*



Risk  
stratification  
& molecular  
tumor board

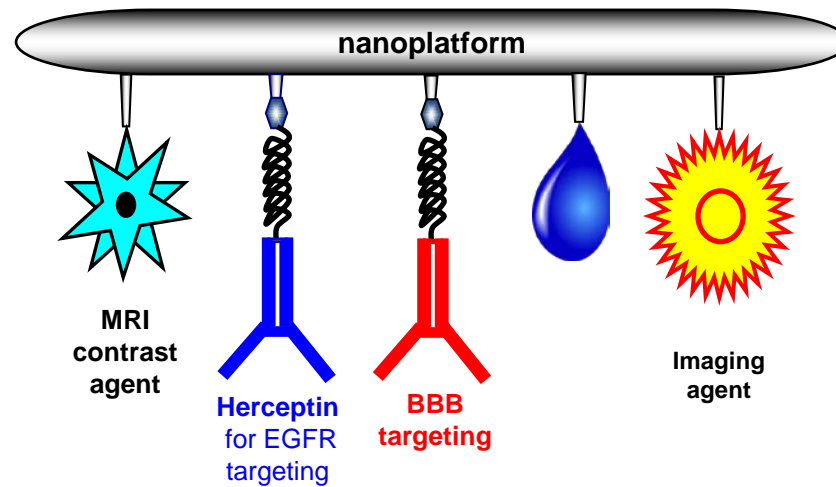


**TREAT !**

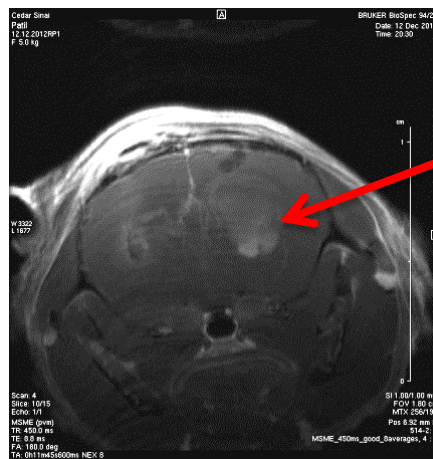




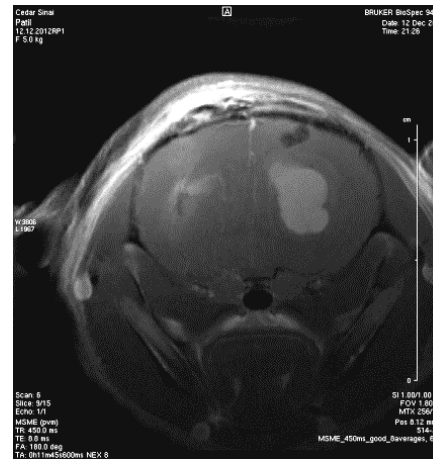
# Nanopolymer Penetrates the Brain and Targets Tumors



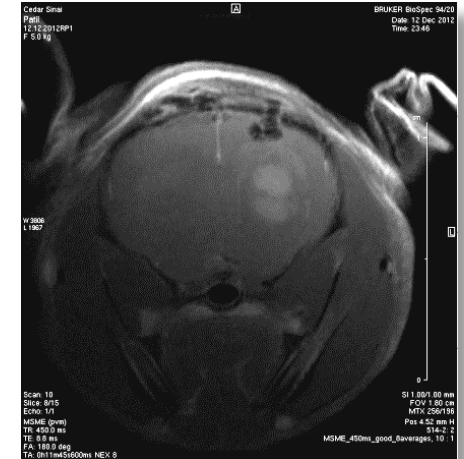
Nano-imaging for detection of **HER2+ breast CA** brain metastases



20 min

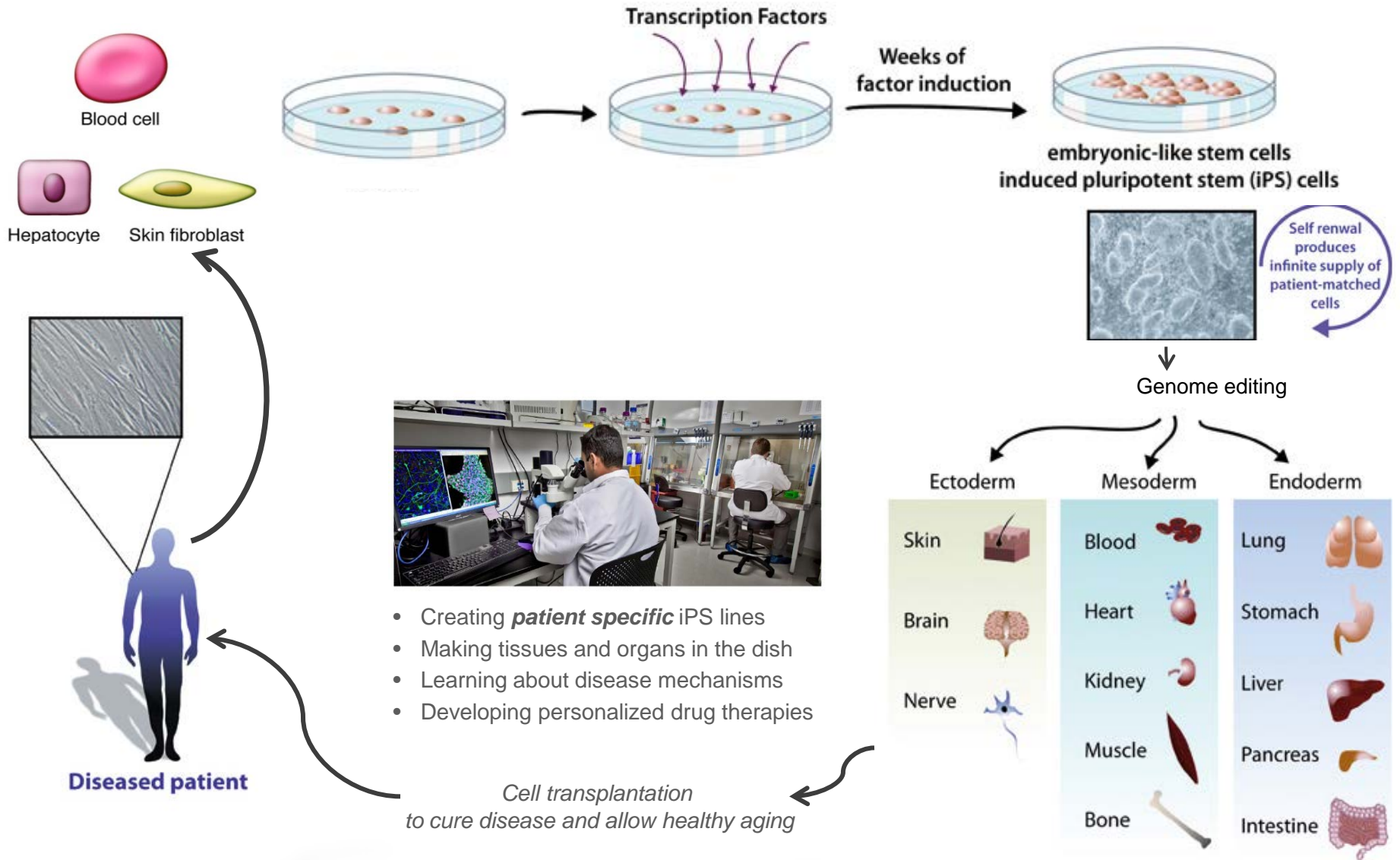


1 hour



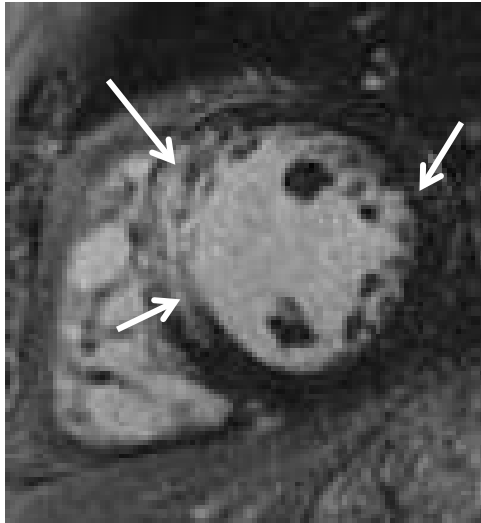
3 hours

# Regenerative Medicine



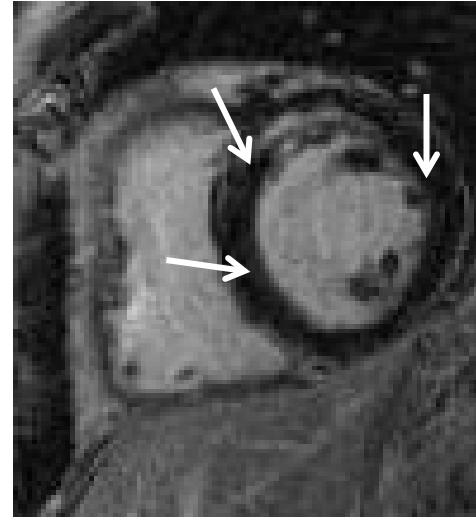
# Heart Regeneration

Control



6 months

Treated

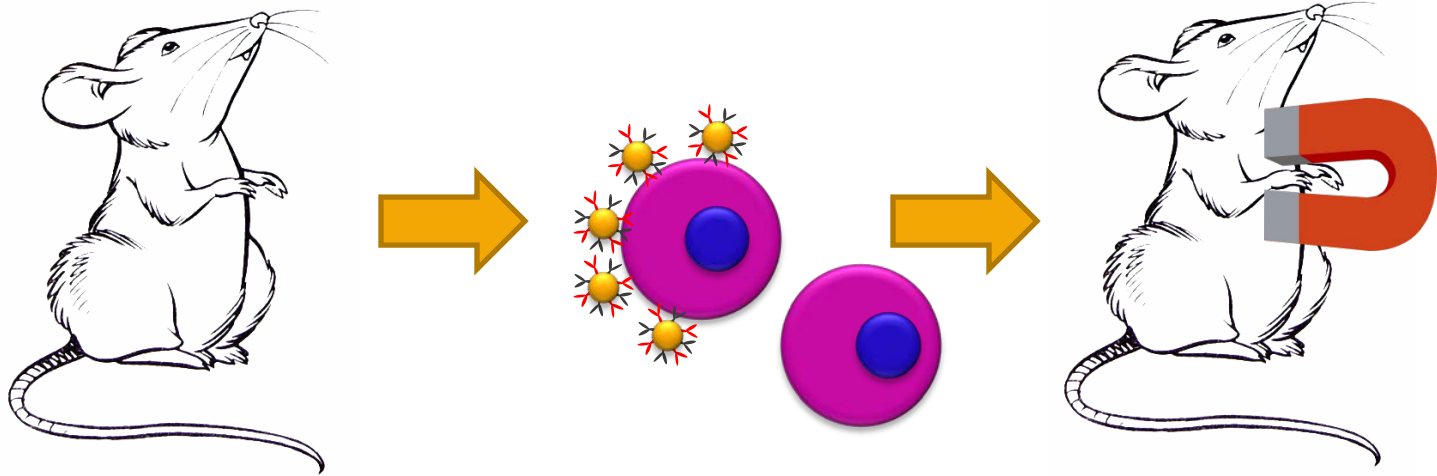


**D**ilated cardiomyopathy **i**ntervention with  
**A**llogeneic **M**yocardially-regenerative **C**ells

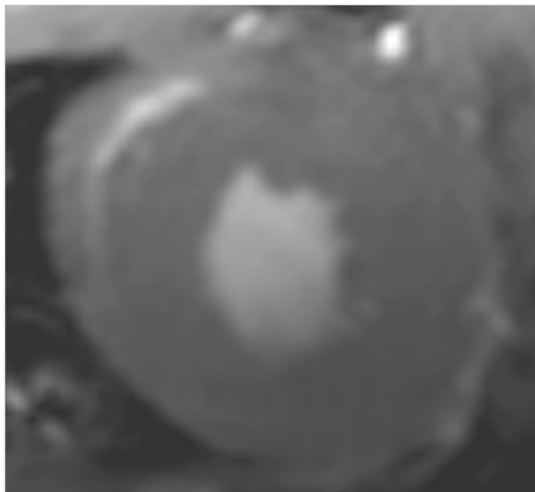
**DYNAMIC**

**A**llogeneic Heart **S**tem Cells to **A**chieve Myocardial  
**R**egeneration  
**ALLSTAR**

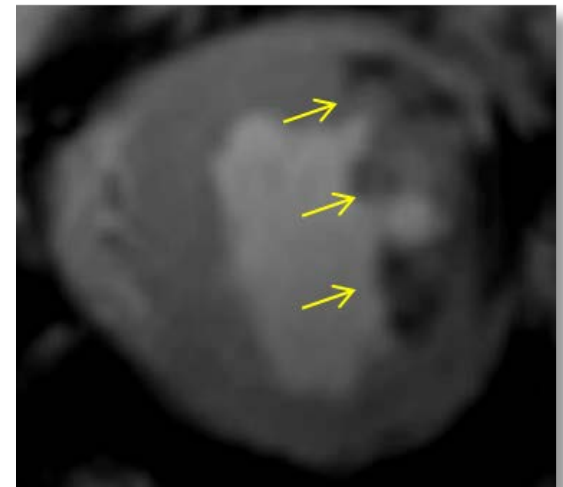
# Nano-Magnetic Iron Cell Engager



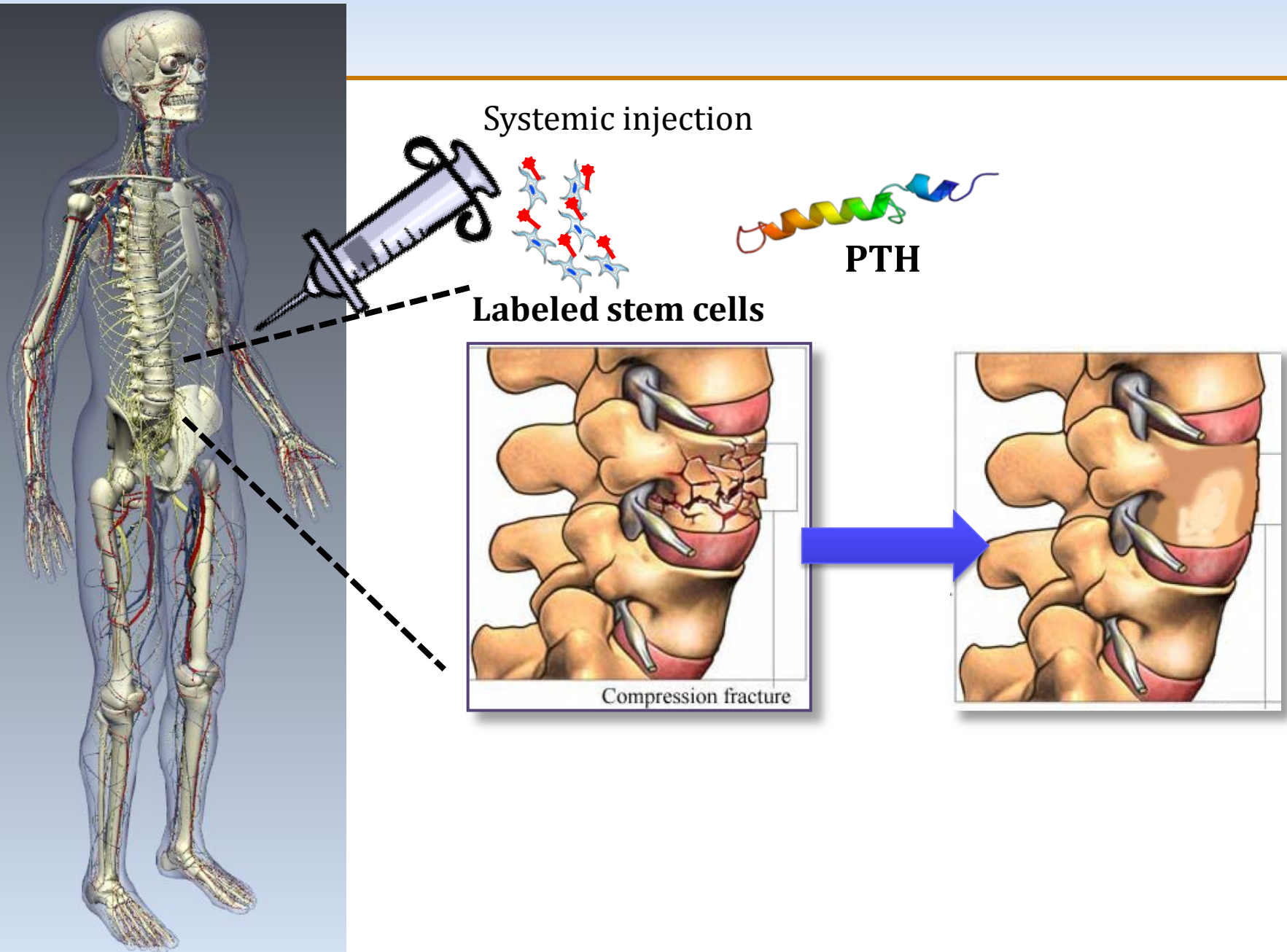
**Control**



**CD34-FH-MLC + MAG**

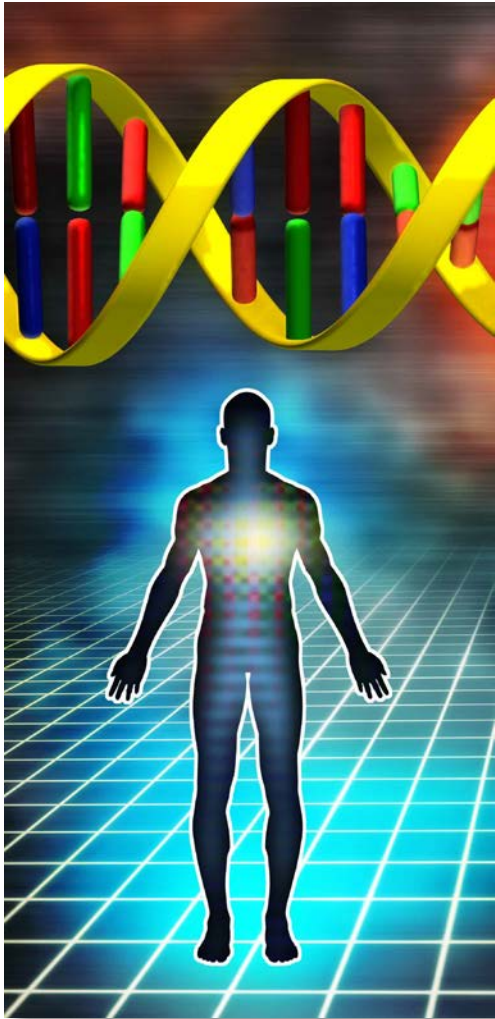


# Stem Cells for Vertebral Fracture Repair





# Turning Discovery into Health



## Imagine the Future . . .

- **Genome sequences of our “healthy” patients in the *medical record***
- ***Stem cell* biobanks**
- **Genetic *risk profiling* for common disease prevention and lifestyle modifications, determine *best drug, optimal dose, and transfusion safety.***
- ***Noninvasive* surgery**
- **New targeted therapies through *collaborations with industry* and other affiliations**

# **Innovations In Care Delivery**




## Sample Screenshot

BestPractice Advisory - Doe, Jonathan

▼ **Choosing Wisely (1 Advisory)**

**i Don't use benzodiazepines or other sedative-hypnotics in older adults as first choice for insomnia, agitation or delirium.**  
(American Geriatrics Society) [1,2,3](#)

[Choosing Wisely: American Geriatrics Society](#)

Acknowledge reason:    

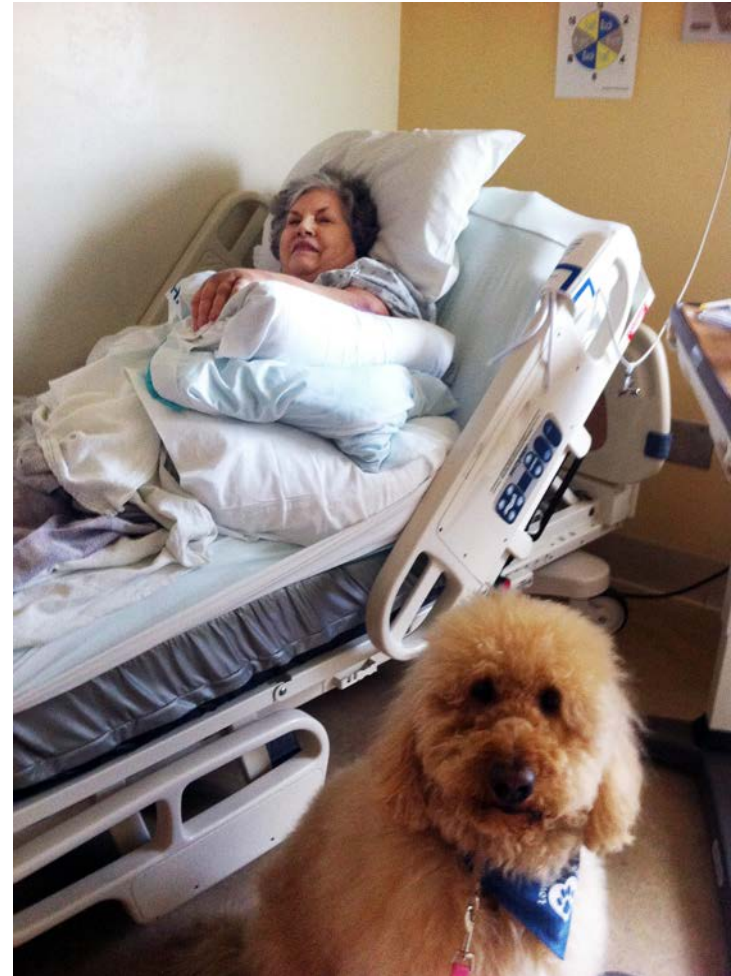
Failed non-drug options and first-line d... Withdrawal / delirium tremens Seizure disorder

Severe / refractory GAD Periprocedural anesthesia End-of-life care

Rapid eye movement sleep disorders Other (please specify)

**Accept** **Cancel**

## Images





## Images





# Turning Discovery into Health

