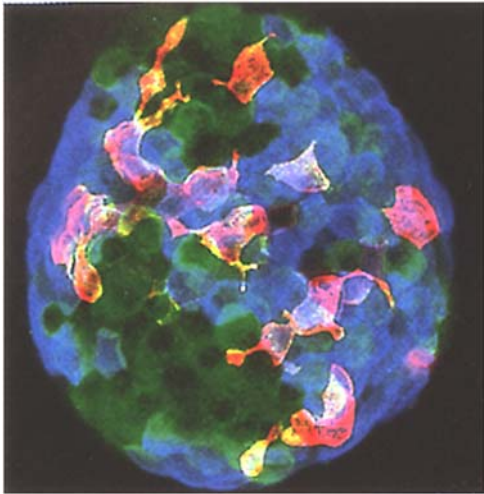


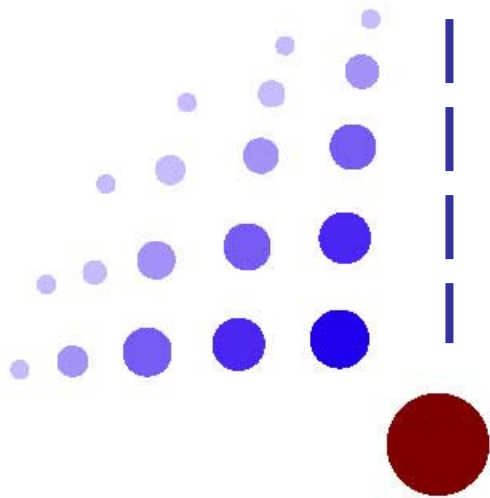
Stem Cell Research at Harvard



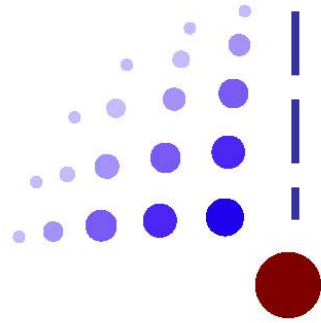
Charles Jennings

**Executive Director
Harvard Stem Cell Institute
charles_jennings@harvard.edu**

AEI, March 9, 2005



Harvard Stem Cell Institute



Harvard Stem Cell Institute

**Basic
science**



**Clinical
treatments**

**Fac of Arts & Sciences
Harvard Medical School
18 Affiliated Hospitals**

Kennedy School of Government

Harvard Law School

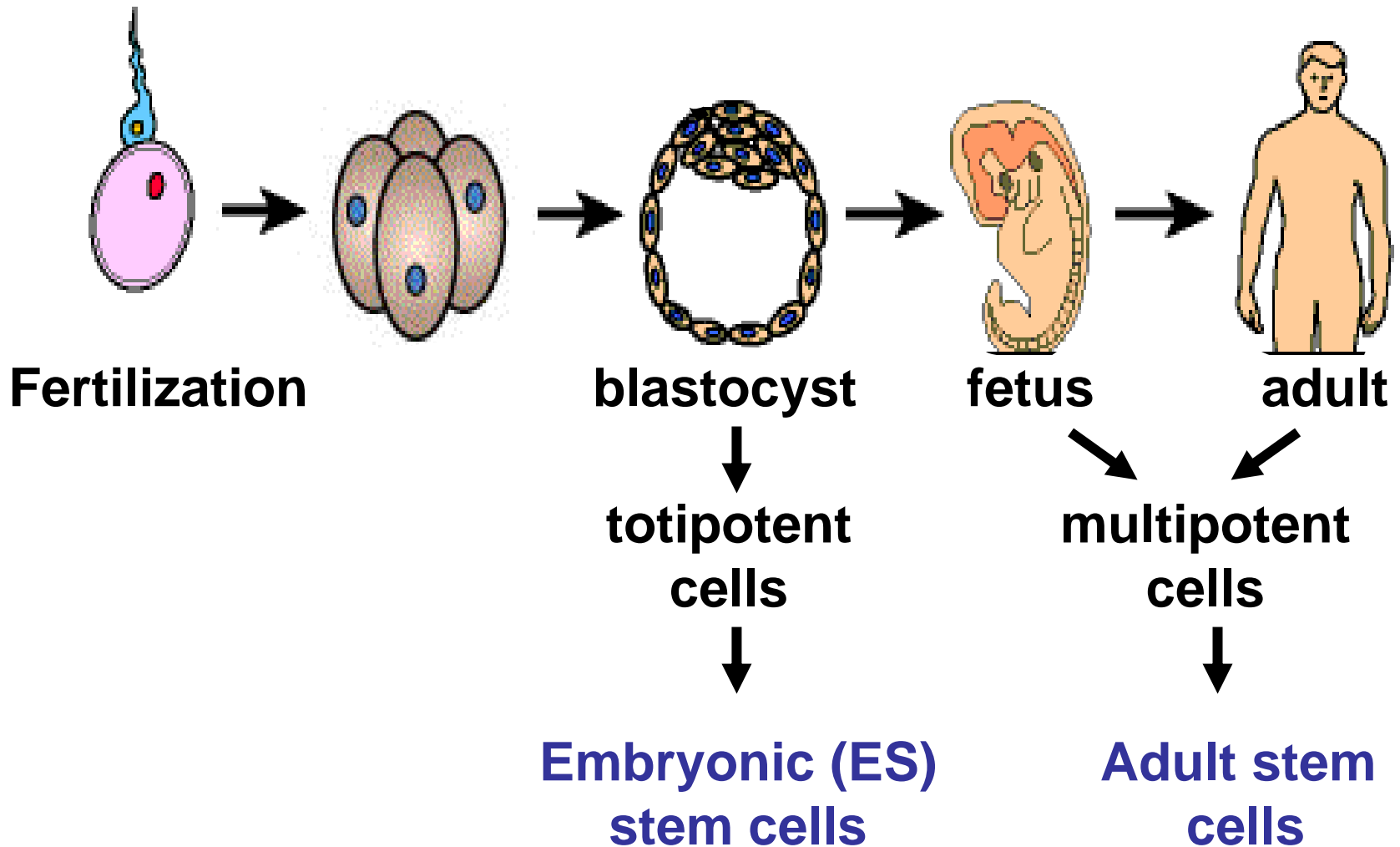
Harvard Divinity School

Harvard Business School

HSCI areas of interest include:

- Basic biology of stem cells
- Diabetes
- Blood diseases
- Neurological diseases
- Cardiovascular
- Reproductive system
- Cancer

Sources of stem cells



Therapeutic Cloning

(aka 'somatic cell nuclear transfer')

Derivation of Disease Specific Human Embryonic Stem Cell Lines

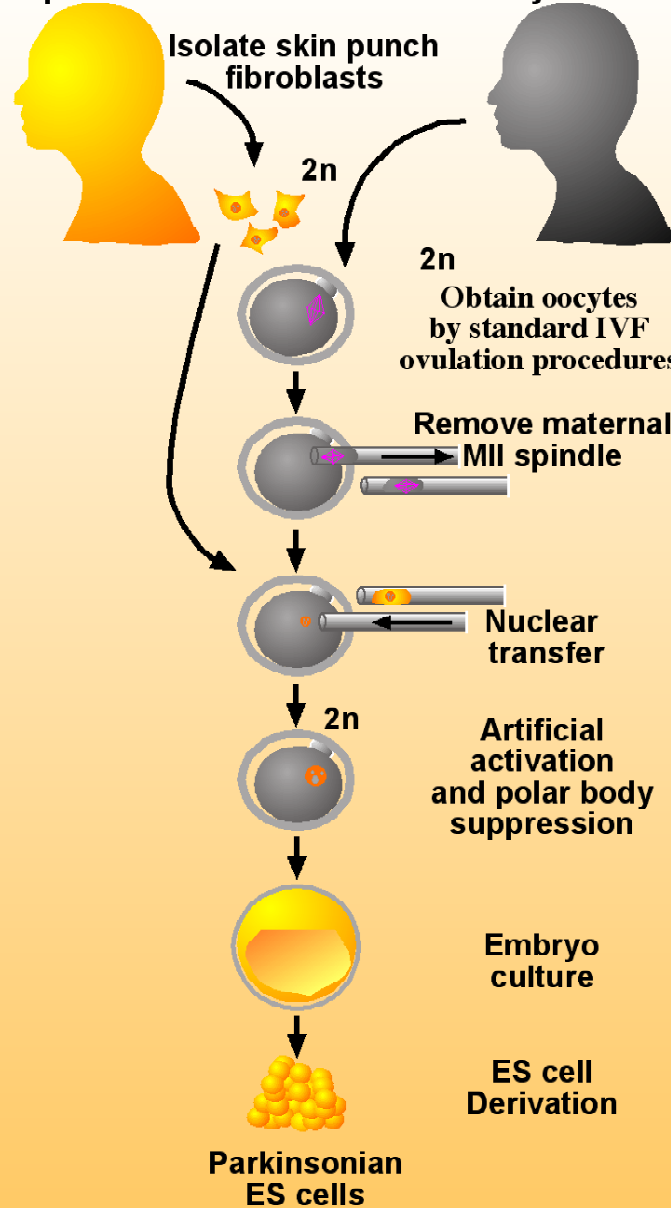


Somatic cell nuclear transfer / cloning

Production of Parkinsonian Human ES Cells by NT

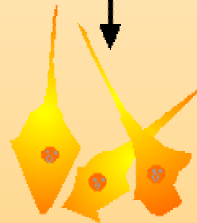
Parkinsonian patient

female oocyte donor



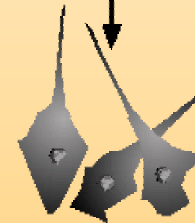
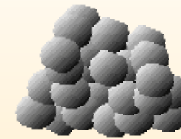
Analysis of Human Parkinsonian ES cells

**Parkinsonian
hES cells**



**Amyloid
inclusion
formation**

**Control
hES cells**



**Gene
Expression**

**Directed
differentiation
protocols**

**Dopaminergic
Neurons**

**Electro-
physiology**

Regulatory issues to address

- Financial compliance with funding restrictions
- Wicell patents – license agreement
- Ethical review
- Legal – varies widely by state

Regulatory review for SCNT

- IRB for donor of nucleus
- IRB for donor of unfertilized egg
- Permission from District Attorney (under MA statute '12J')
- Harvard's stem cell review committee

Legislative situation in MA

- Complex political landscape
- Pro-ESC legislation introduced
- Governor has stated his opposition
- Governor counter-proposal
- Political debate ensues.....
- Funding under discussion (\$100M?) but no bill yet

Sources of funding

- NIH – but severely restricted
- State – has not yet materialized for most states
- Biotech – relatively small
- Big Pharma – not yet major players
- Philanthropic



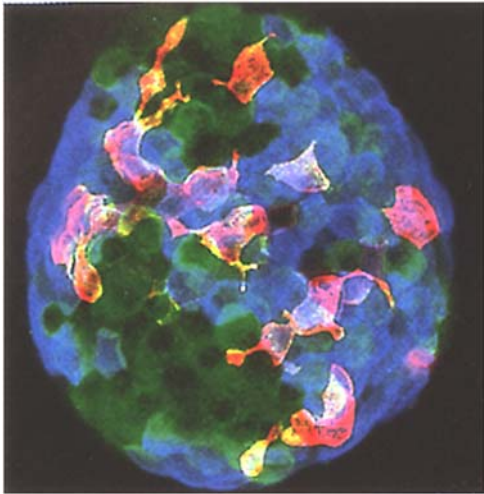


CHRISTOPHER REEVE
1952 ~ 2004

NEASE '04



Stem Cell Research at Harvard



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