Células-Tronco:

Promessas e Realidades

da Terapia Celular

Lygia V. Pereira, Ph.D.
Depto. Genética e Biologia Evolutiva
Instituto de Biociências, USP
Lpereira@usp.br


20 µm

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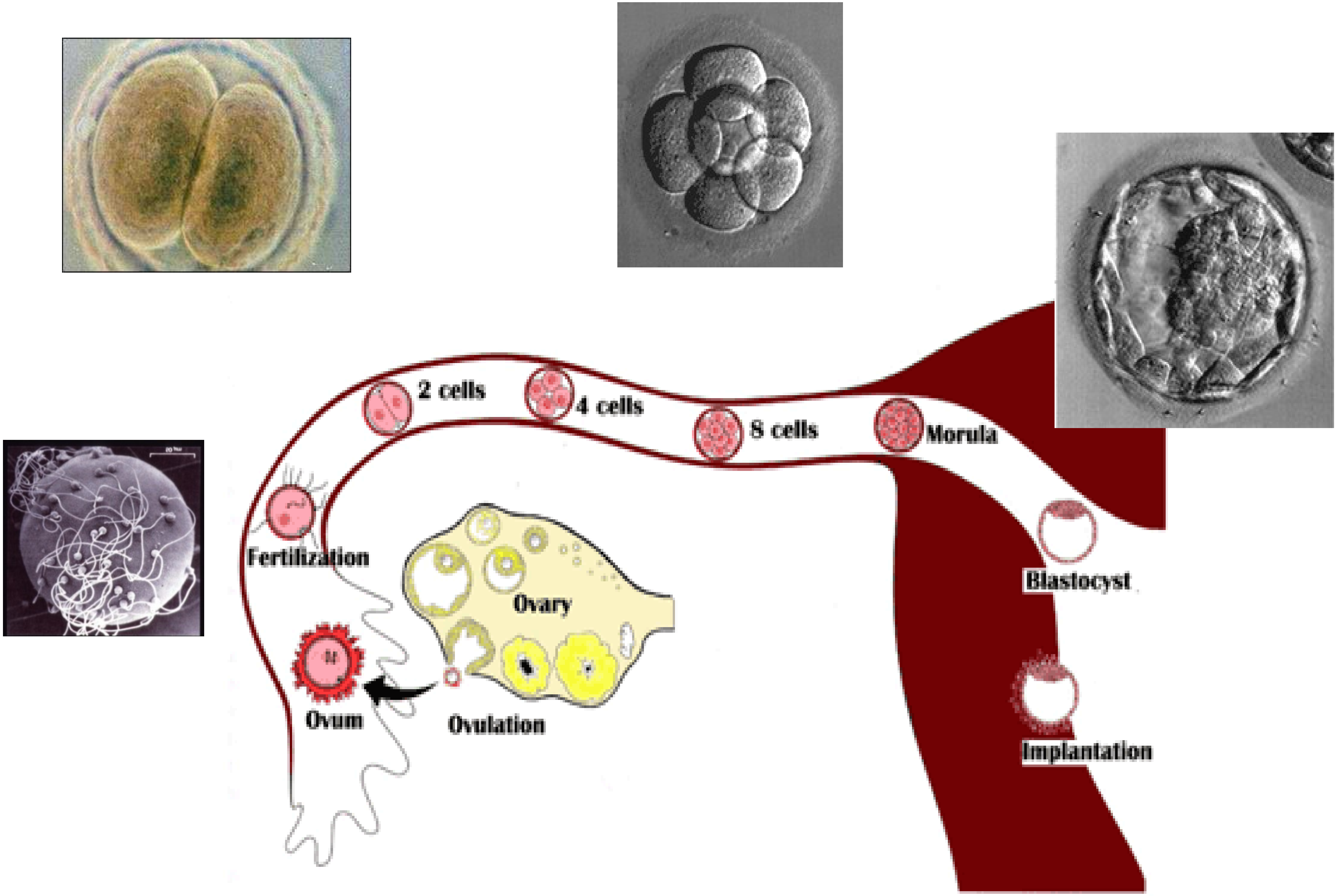
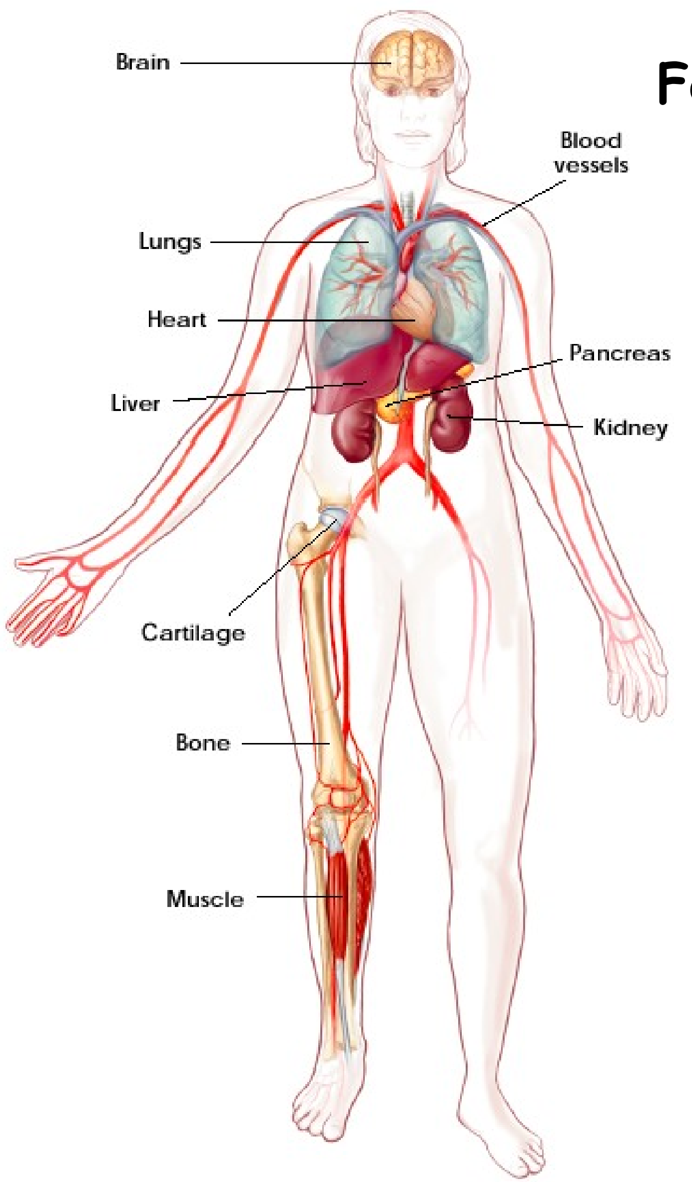

2 cells
4 cells
8 cells
Morula
Fertilization
Ovary
Blastocyst
Ovum
Ovulation
Implantation

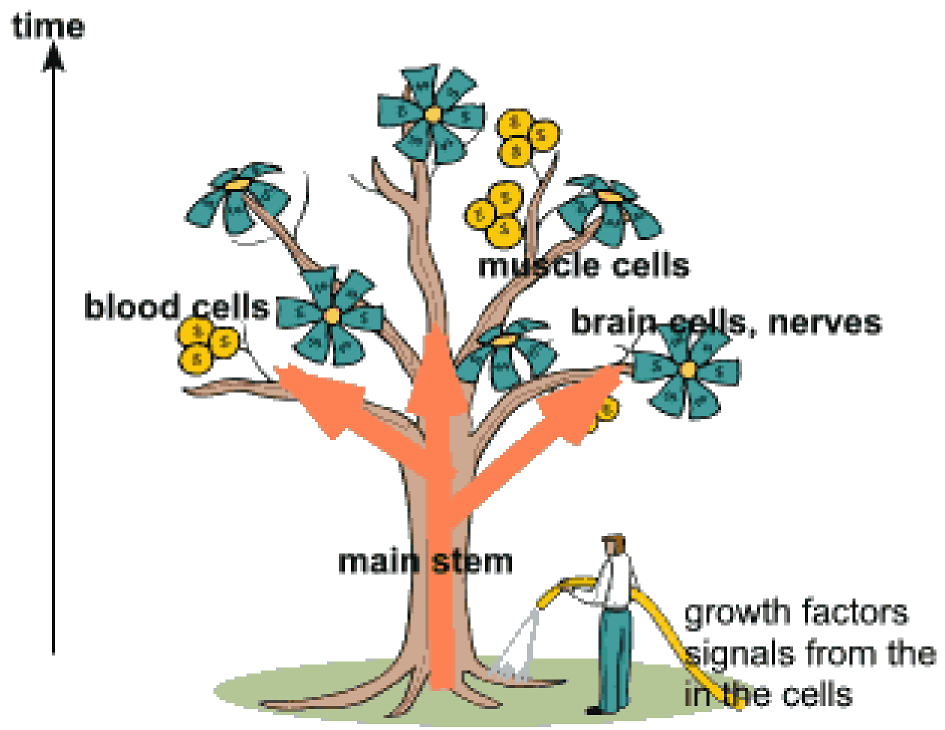


Fontes de tecidos e órgãos para transplante:

- doadores (5-10%);
- órgãos artificiais;
- órgãos de animais (xenotransplante);
- engenharia de tecidos: células-tronco

CÉLULA TRONCO

" Células com capacidade de **AUTO-RENOVAÇÃO** ilimitada/prolongada, capazes de produzir pelo menos um tipo de **DESCENDENTE ALTAMENTE DIFERENCIADO** "



CÉLULAS TRONCO “ADULTAS”

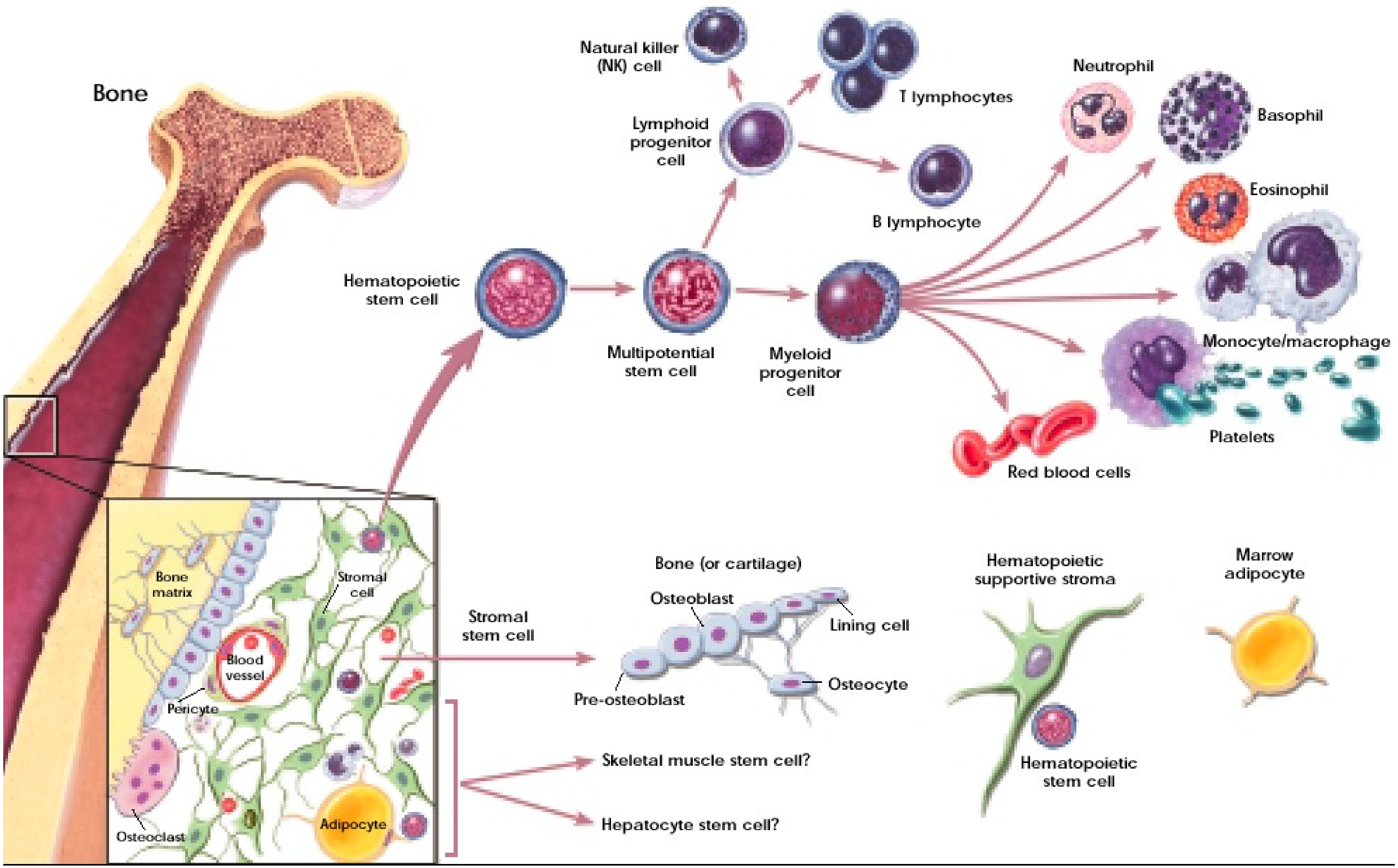
vs.

CÉLULAS TRONCO EMBRIONÁRIAS

CÉLULAS TRONCO "ADULTAS"

CÉLULAS TRONCO EMBRIONÁRIAS

"Adult" SC – BONNE MARROW



Cell, Vol. 105, 369–377, May 4, 2001, Copyright ©2001 by Cell Press

Multi-Organ, Multi-Lineage Engraftment by a Single Bone Marrow-Derived Stem Cell

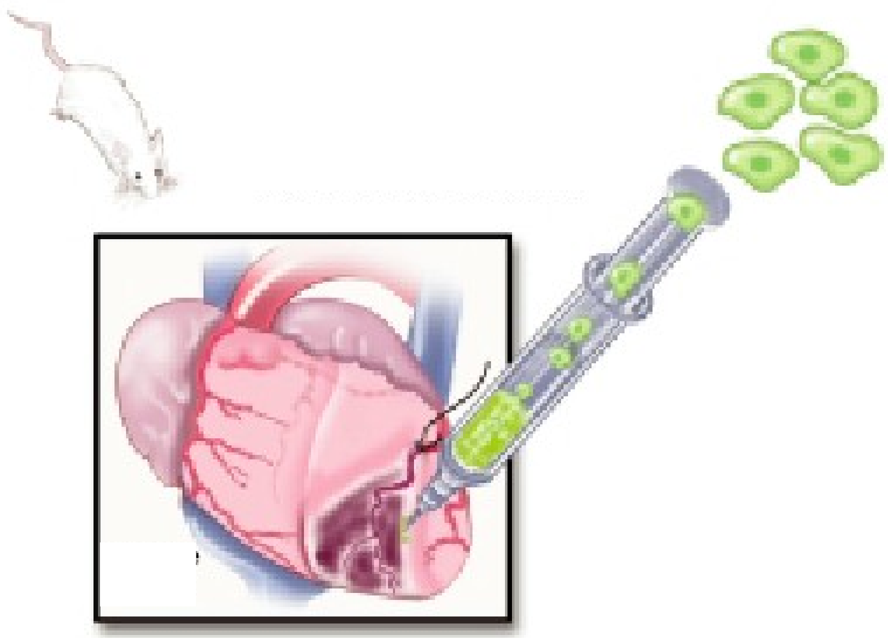
Table 3. Summary of Immunohistochemical Staining

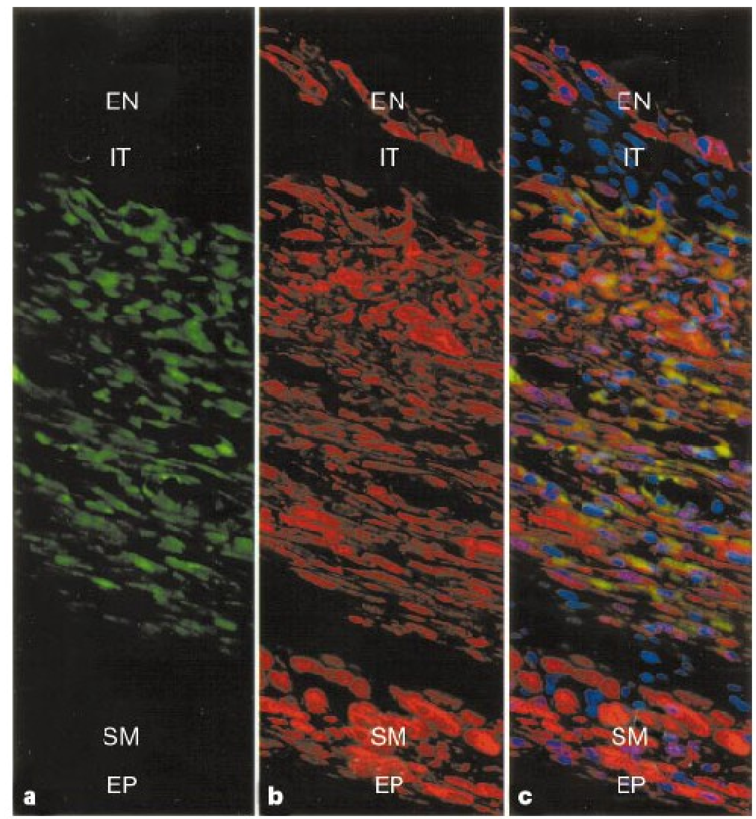
	Anti-Cytokeratin Monoclonal Antibody	
Epithelial Cells of:	AE1/AE3	Cam5.2
Stomach	++	+
Esophagus	+	++
Small intestine	++	++
Large intestine	++	++
Liver		
Cholangiocytes	++	+
Hepatocytes	0	0
Kidney		
Glomeruli	0	0
Tubules	0	+
Lung		
Bronchi	++	+
Pneumocytes	0	++
Skin	+	++

Staining: 0 Absent; + variable; ++ diffuse, strong.

Bone marrow cells regenerate infarcted myocardium

Donald Orlic†, Jan Kajstura*, Stefano Chimenti*, Igor Jakoniuk*, Stacie M. Anderson†, Baosheng Li*, James Pickel‡, Ronald McKay‡, Bernardo Nadal-Ginard*, David M. Bodine†, Annarosa Leri* & Piero Anversa*





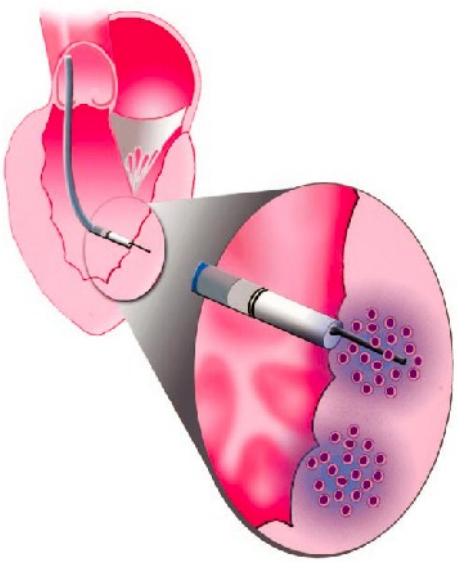
GFP miosina

NATURE | VOL 410 | 5 APRIL 2001

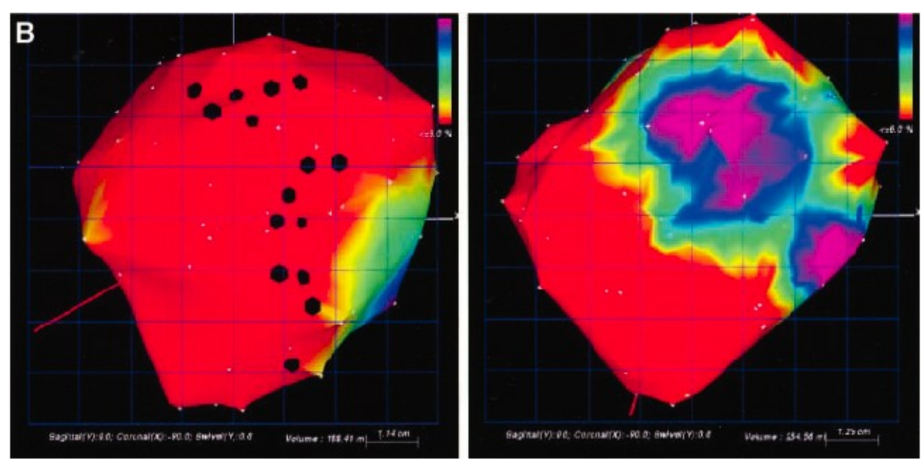
Transendocardial, Autologous Bone Marrow Cell Transplantation for Severe, Chronic Ischemic Heart Failure

Texas Heart Institute at St Luke's Episcopal Hospital, Houston; **Hospital Procardiaco, Rio de Janeiro, Brazil; Federal University, Rio de Janeiro, Brazil; Brazilian Millennium Institute for Tissue Bioengineering.**

Células mononucl. MO



função contrátil



pré **4 meses-pós**

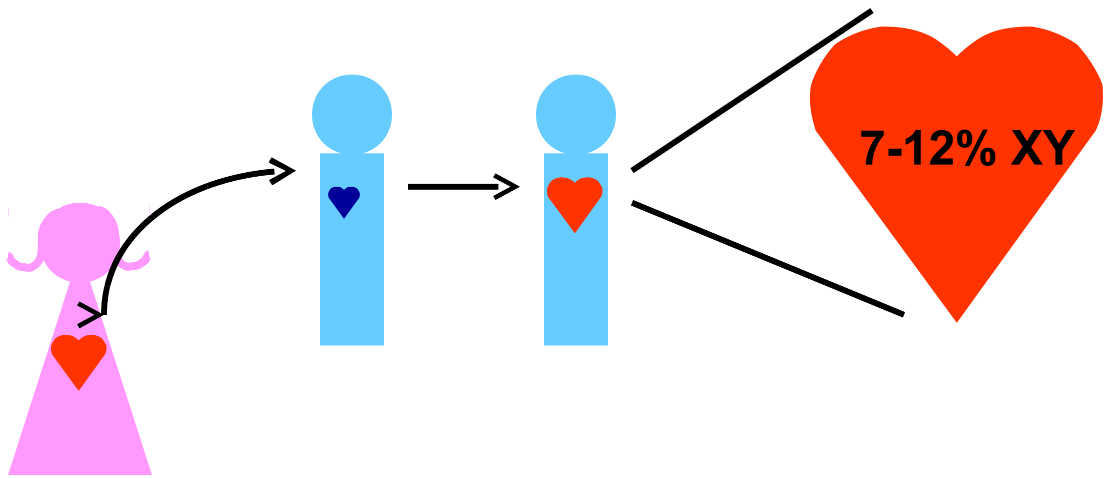
(Circulation. 2003;107:2294-2302.)

The NEW ENGLAND JOURNAL of MEDICINE

◄ Previous Volume 346:5-15 January 3, 2002 Number 1 Next ►

Chimerism of the Transplanted Heart

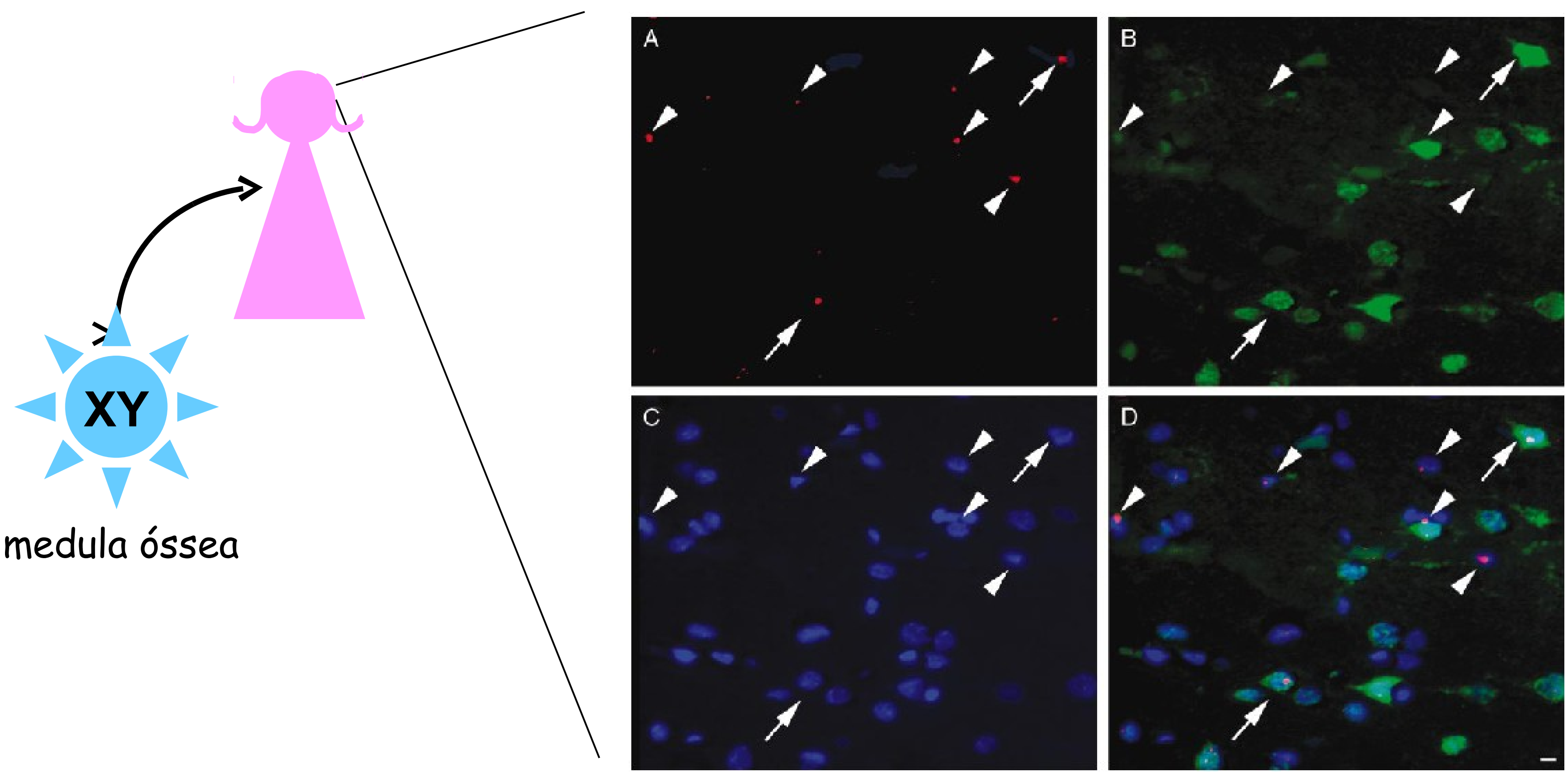
Federico Quaini, M.D., Konrad Urbanek, M.D., Antonio P. Beltrami, M.D., Nicoletta Finato, M.D., Carlo A. Beltrami, M.D., Bernardo Nadal-Ginard, M.D., Ph.D., Jan Kajstura, Ph.D., Annarosa Leri, M.D., and Piero Anversa, M.D.



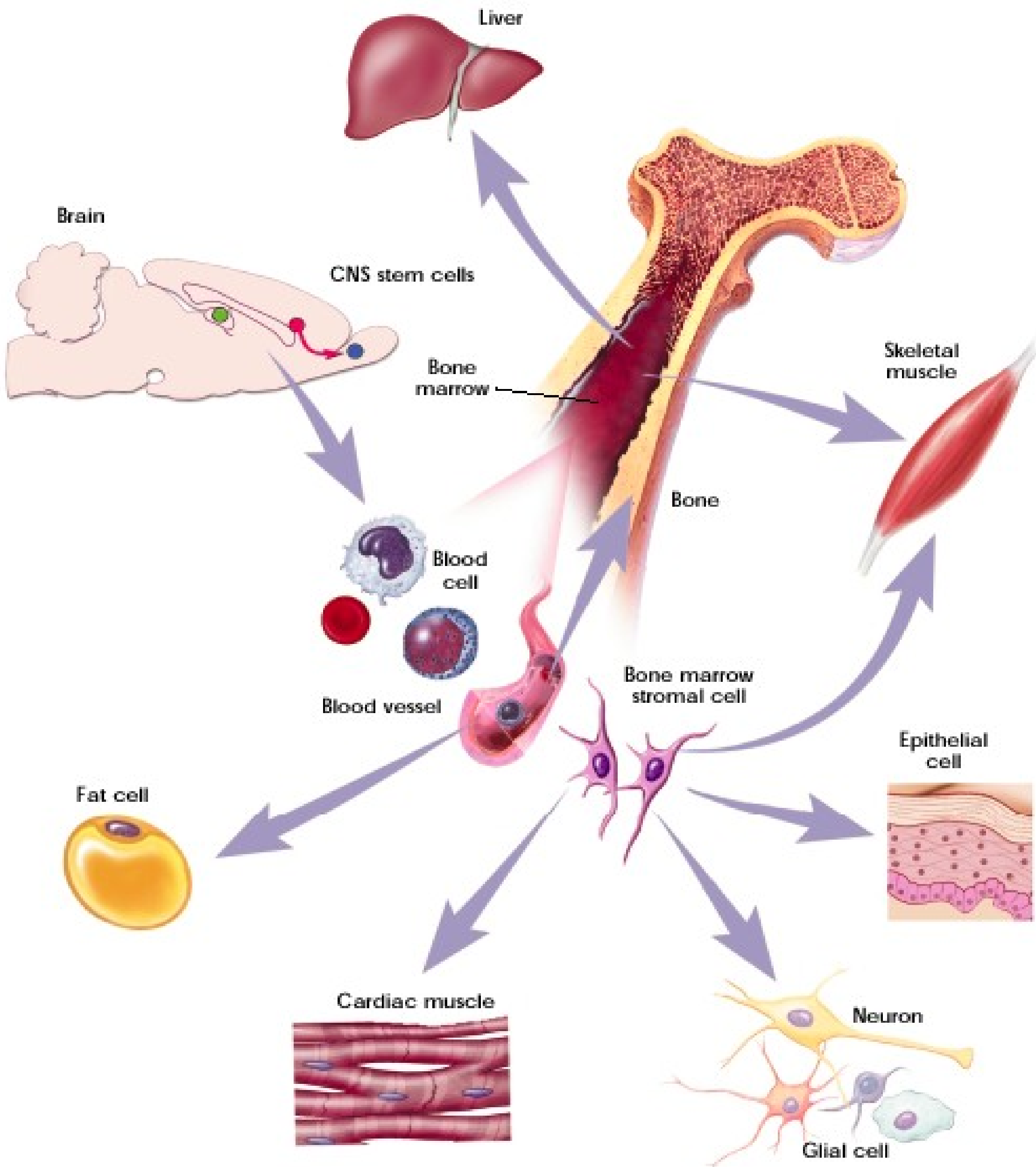
Transplanted bone marrow generates new neurons in human brains

Éva Mezey*†, Sharon Key*, Georgia Vogelsang‡, Ildiko Szalayova§, G. David Lange¶, and Barbara Crain‡

PNAS February 4, 2003



CTs "adultas" – plasticidade/trans-diferenciação



ClinicalTrials.gov - Information on Clinical Trials and Human Research Studies: Trial List - Windows Internet Explorer

http://www.clinicaltrials.gov/ct/action/ChangeQuery

ClinicalTrials.gov

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Search results for *stem cells [ALL-FIELDS] AND stem cells [TREATMENT]* are shown below.

☐ **Include trials that are no longer recruiting patients.** [Search-Within-Results] [Query Details] [Map of locations]

643 studies were found. Here are studies 1 to 50. [Next 50]

1. ☐ **Recruiting** Donor Peripheral Blood Stem Cell Transplant in Treating Patients With Hematologic Cancer or Other Disease
   Conditions: Chronic Myeloproliferative Disorders; Graft Versus Host Disease; Leukemia; Lymphoma; Multiple Myeloma and Plasma Cell Neoplasm; ...
2. ☐ **Recruiting** Autologous Peripheral Stem Cell Transplant in Treating Patients With Non-Hodgkin's Lymphoma or Hodgkin's Lymphoma
   Conditions: Leukemia; Lymphoma
3. ☐ **Recruiting** Melphalan, Yttrium Y 90 Ibritumomab Tiuxetan, and Rituximab Followed by Autologous Stem Cell Transplant in Treating Older Patients With Non-Hodgkin's Lymphoma That Has Relapsed or Not Responded to Previous Treatment
   Condition: Lymphoma
4. ☐ **Recruiting** Melphalan and Autologous Stem Cell Transplant Followed By Bortezomib and Dexamethasone in Treating Patients With Previously Untreated Systemic Amyloidosis
   Condition: Multiple Myeloma and Plasma Cell Neoplasm
5. ☐ **Recruiting** Chemotherapy and Total-Body Irradiation Followed By Autologous Lymphocyte Infusion, Aldesleukin, and Autologous Stem Cell Transplant in Treating Patients With Metastatic Melanoma
   Conditions: Melanoma (Skin); Non-Melanomatous Skin Cancer
6. ☐ **Recruiting** Alemtuzumab, Fludarabine, and Busulfan Followed By Donor Stem Cell Transplant in Treating Young Patients With Hematologic Disorders
   Conditions: Congenital Amegakaryocytic Thrombocytopenia; Diamond-Blackfan Anemia; Leukemia; Severe Congenital Neutropenia
7. ☐ **Recruiting** Donor Peripheral Stem Cell Transplant and Donor Natural Killer Cell Transplant After Total-Body Irradiation, Thiotepa, Fludarabine, and Muromonab-CD3 in Treating Patients With Leukemia or Other Blood Diseases
   Conditions: Graft Versus Host Disease; Leukemia
8. ☐ **Recruiting** Conditioning Regimens and One or Two Autologous Peripheral Stem Cell Transplants in Treating Patients With Germ Cell Tumors
   Conditions: Childhood Extragonadal Malignant Germ Cell Tumor; Childhood Malignant Ovarian Germ Cell Tumor; Childhood Malignant Testicular Germ Cell Tumor; ...
9. ☐ **Recruiting** Donor Stem Cell Transplant in Treating Patients With Hematologic Cancer, Metastatic Kidney Cancer, or Aplastic Anemia
   Conditions: Chronic Myeloproliferative Disorders; Kidney Cancer; Leukemia; Lymphoma; Multiple Myeloma and Plasma Cell Neoplasm; ...
10. ☐ **Recruiting** Chemotherapy Followed by Allogeneic Stem Cell Transplantation in Treating Children With Hematologic Cancer
   Conditions: Leukemia; Lymphoma; Myelodysplastic/Myeloproliferative Diseases

Concluído | Internet | 100%

ClinicalTrials.gov - Information on Clinical Trials and Human Research Studies: Trial List - Windows Internet Explorer

http://www.clinicaltrials.gov/ct/action/ChangeQuery

ClinicalTrials.gov - Information on Clinical Trials and H...

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Search results for *stem cells [ALL-FIELDS] AND stem cells [TREATMENT] AND cardiac [CONDITION]* are shown below.

Include trials that are no longer recruiting patients. Search-Within-Results | Query Details | Map of locations

42 studies were found.

1. Not yet recruiting — Myocardial Regeneration Using Cardiac Stem Cells
   Conditions: Coronary Artery Disease; Congestive Heart Failure
2. Not yet recruiting — Stem Cell Therapy for Vasculogenesis in Patients With Severe Myocardial Ischemia
   Conditions: Myocardial Ischemia; Coronary Heart Disease
3. Recruiting — Intramyocardial Injection of Autologous Aldehyde Dehydrogenase-Bright Stem Cells for Therapeutic Angiogenesis
   Condition: Coronary Artery Disease
4. Not yet recruiting — Stem Cell Study for Patients With Heart Failure
   Conditions: Myocardial Ischemia; Heart Failure; Congestive Heart Failure; Cardiovascular Disease; Low Ejection Fraction
5. Recruiting — Autologous Progenitor Stem Cell Therapy for Congestive Heart Failure Patients Undergoing Coronary Artery Bypass Grafting (CABG) Surgery
   Condition: Heart Failure, Congestive
6. Recruiting — Autologous Stem Cells for Cardiac Angiogenesis
   Condition: Ischemic Cardiomyopathy
7. Not yet recruiting — A Randomized Clinical Trial of Adipose-Derived Stem Cells in the Treatment of Patients With ST-Elevation Myocardial Infarction
   Conditions: Myocardial Infarction; Coronary Arteriosclerosis; Cardiovascular Disease; Coronary Disease
8. Not yet recruiting — Stem Cell Therapy to Improve Myocardial Function in Patients Undergoing Coronary Artery Bypass Grafting (CABG)
   Conditions: Coronary Disease; Myocardial Infarction
9. Recruiting — Combined CABG and Stem-Cell Transplantation for Heart Failure
   Conditions: Heart Failure; Myocardial Infarction; Coronary Artery Disease
10. Recruiting — Congestive Heart Failure Surgical Treatmment With Autologous Stem Cell Therapy
    Condition: Congestive Heart Failure
11. Not yet recruiting — Stem Cell Therapy as Adjunct to Revascularization: STAR
    Conditions: Coronary Artery Bypass Graft; Cardiovascular Surgery; Bone Marrow Cells; Stem Cells; Myocardial Revascularization
12. Recruiting — Autologous Progenitor Stem Cell Therapy for Congestive Heart Failure
    Condition: Heart Failure, Congestive
13. Recruiting — AMORCYTE MYOCARDIAL REPAIR STUDY- A Phase I Trial of Intra-Coronary Infusion of Bone Marrow Derived Autologous CD34+ Selected Cells in Patients With Acute Myocardial Infarction. (AMRS)
    Conditions: Myocardial Infarction; Coronary Artery Disease

Internet | 100%

ClinicalTrials.gov - Information on Clinical Trials and Human Research Studies: Trial List - Windows Internet Explorer

http://www.clinicaltrials.gov/ct/action/ChangeQuery

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Search results for *stem cells [ALL-FIELDS] AND stem cells [TREATMENT] AND diabetes [CONDITION]* are shown below.

Include trials that are no longer recruiting patients. Search-Within-Results | Query Details | Map of locations

4 studies were found.

1. **Recruiting** Safety and Efficacy Study of Autologous Stem Cell Transplantation for Early Onset Type I Diabetes Mellitus
   Condition: Type 1 Diabetes Mellitus
2. **Recruiting** Safety and Feasibility Study of Autologous Progenitor Cell Transplantation in Diabetic Neuropathy
   Condition: Diabetic Neuropathies
3. **Recruiting** Rosiglitazone to Reverse Metabolic Defects in Diabetes
   Conditions: Diabetes Mellitus, Type II; Insulin Resistance
4. **Recruiting** Innovative Strategies For Risk Reduction Following CABG
   Conditions: Coronary Artery Disease; Type II Diabetes Mellitus

Display Selected Studies

ClinicalTrials.gov - Information on Clinical Trials and Human Research Studies: Trial List - Windows Internet Explorer

http://www.clinicaltrials.gov/ct/action/ChangeQuery

ClinicalTrials.gov - Information on Clinical Trials and H...

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Search results for *stem cells [ALL-FIELDS] AND stem cells [TREATMENT] AND liver [CONDITION]* are shown below.

Include trials that are no longer recruiting patients. Search-Within-Results | Query Details | Map of locations

12 studies were found.

1. **Recruiting** Use of Autograft Mesenchymal Stem Cells Differentiated Into Progenitor of Hepatocytes for Treatment of Patients With End-Stage Liver Disease
   Conditions: Liver Failure; Cirrhosis
2. **Recruiting** Stem Cell Transplantation in Patients With Primary Biliary Cirrhosis
   Condition: Primary Biliary Cirrhosis
3. **Recruiting** Mesenchymal Stem Cell Transplantation in Decompensated Cirrhosis
   Condition: Cirrhosis
4. **Recruiting** Peripheral Stem Cell Transplant and White Blood Cell Transfusions in Treating Patients With Refractory Metastatic Solid Tumors
   Condition: Cancer
5. **Recruiting** Defibrotide for the Treatment of Severe Hepatic Veno-Occlusive Disease in Hematopoetic Stem Cell Transplant Patients
   Condition: Severe Hepatic Veno Occlusive Disease
6. **Recruiting** Combination Chemotherapy With or Without Peripheral Stem Cell Transplant in Treating Men With Previously Untreated Germ Cell Cancer
   Conditions: Brain and Central Nervous System Tumors; Mediastinal Cancer; Metastatic Cancer; Testicular Cancer
7. **Recruiting** Safety Study of Autologous Stem Cell in Liver Cirrhosis
   Condition: Liver Cirrhosis
8. **Recruiting** Pediatric Trial Investigating the Incidence & Outcome of Veno-Occlusive Disease With the Prophylactic Use of Defibrotide
   Condition: Hepatic Veno-Occlusive Disease
9. **Recruiting** Genetic Study of Late-Occurring Complications in Childhood Cancer Survivors
   Conditions: Brain and Central Nervous System Tumors; Childhood Extracranial Germ Cell Tumor; Kidney Cancer; Leukemia; Liver Cancer; ...
10. **Recruiting** ABT-751 in Treating Young Patients With Refractory Solid Tumors
    Conditions: Brain and Central Nervous System Tumors; Childhood Extragonadal Malignant Germ Cell Tumor; Childhood Malignant Ovarian Germ Cell Tumor; ...
11. **Not yet recruiting** Trabectedin in Treating Young Patients With Solid Tumors That Have Relapsed or Not Responded to Treatment
    Conditions: Brain and Central Nervous System Tumors; Childhood Extragonadal Malignant Germ Cell Tumor; Childhood Malignant Ovarian Germ Cell Tumor; ...
12. **Recruiting** Talabostat Combined With Temozolomide or Carboplatin in Treating Young Patients With Relapsed or

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http://www.clinicaltrials.gov/ct/action/ChangeQuery

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Query Details

No studies were found for **stem cells [ALL-FIELDS] AND parkinson [CONDITION]**

Modify Your Search

Search `stem cells [ALL-FIELDS] AND parkinson [CONDITION]` Tips

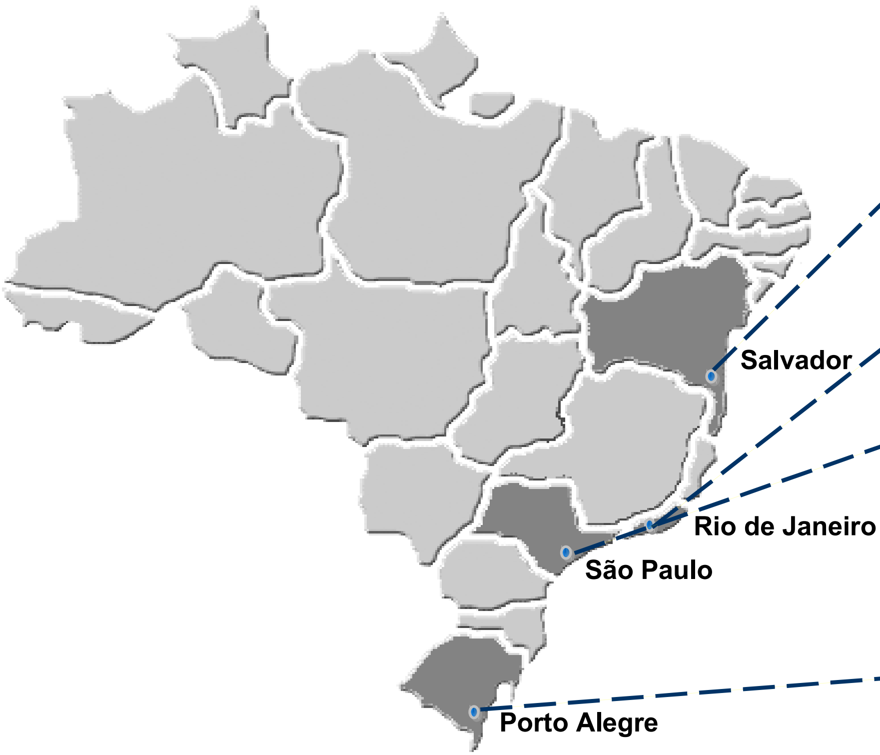
Possibly Relevant MedlinePlus Topics

Stem Cells and Stem Cell Transplantation

Parkinson's Disease

Individual Terms	Count
"stem cells" Also searched: stem cell progenitor cell hematopoietic progenitor cells precursor cell blood cell precursor	1383
"parkinson" [CONDITION] Also searched: parkinson's parkinsonism, primary primary parkinsonism idiopathic parkinsonism paralysis agitans shaking palsy	301
"cells" Also searched: cell cell types cellula	11032
"stem" Also searched: transmission/scanning electron microscopes scanning/transmission electron microscopes	1479

Ensaios Clínicos em Humanos no Brasil



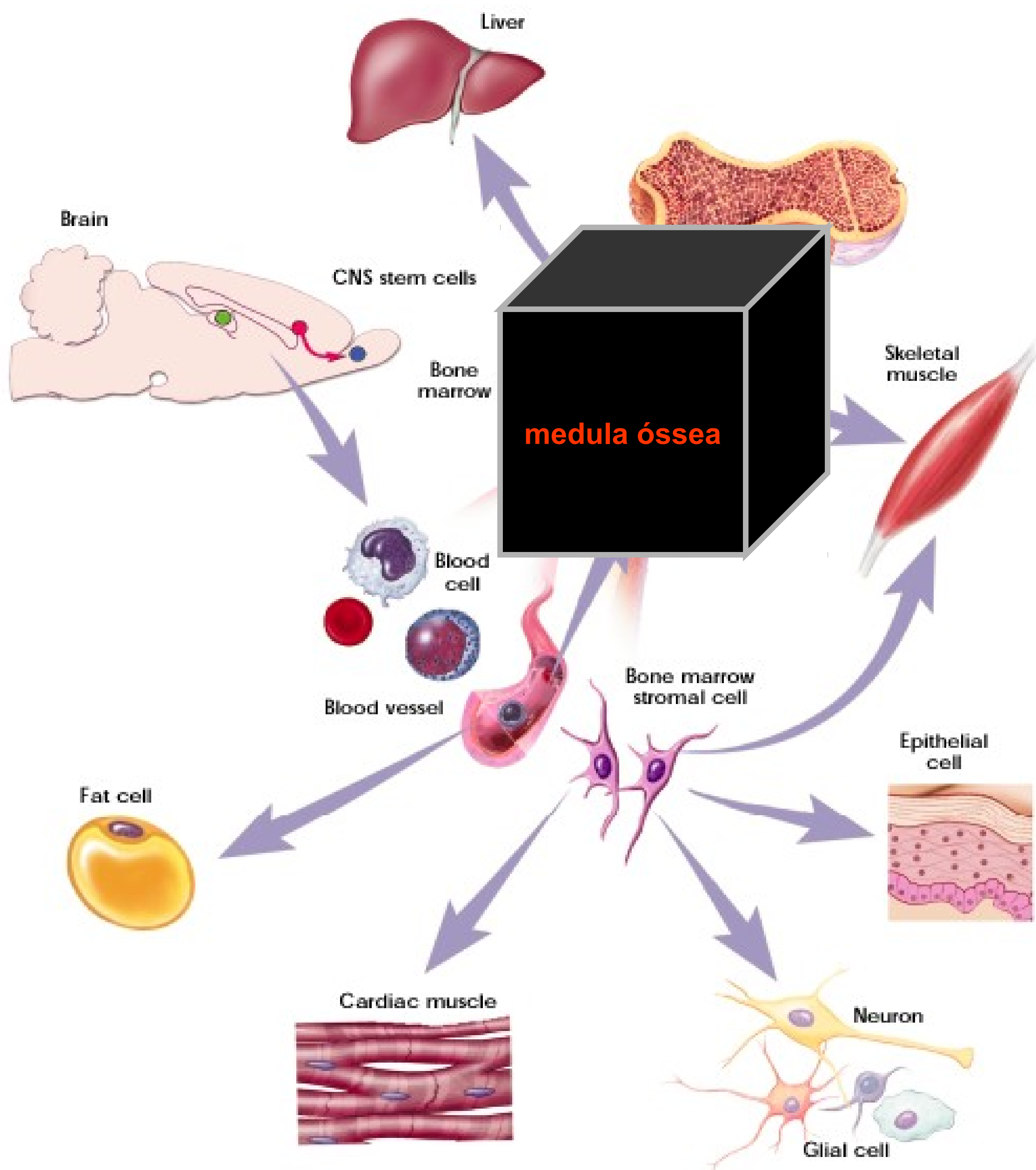
- **Chagas e Hepatite -** FioCruz Salvador

- **Infarto e Derrame-** Pró-cardíaco e UFRJ

- **Doenças Coronarianas -** INCOR-SP
- **Trauma de Medula Espinhal -** FM-USP
- **Diabetes, Lupus, e outras doenças auto-imunes -** USP-RP
- **Insuficiência Vascular Periférica -** SJRP

- **Regeneração Neural -** UFRGS

CTs “adultas” – plasticidade/trans-diferenciação



CÉLULAS TRONCO “ADULTAS”

NOVAS FONTES

1989: Sangue do cordão umbilical é fonte de células-tronco hematopoéticas

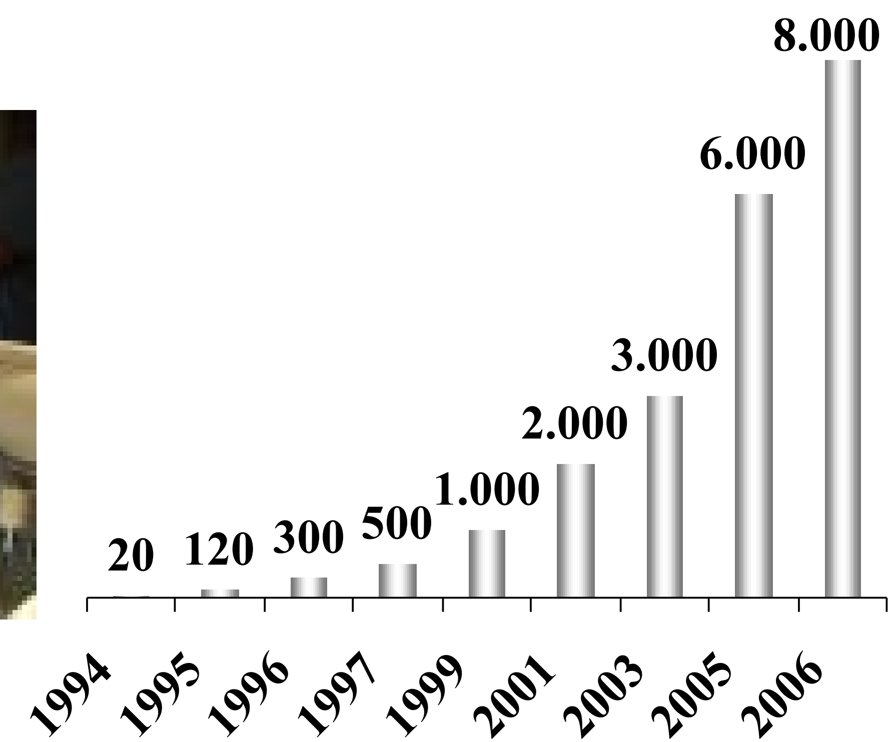
Proc. Natl. Acad. Sci. USA
Vol. 86, pp. 3828–3832, May 1989
Medical Sciences

Human umbilical cord blood as a potential source of transplantable hematopoietic stem/progenitor cells

HAL E. BROXMEYER[*†‡§], GORDON W. DOUGLAS[¶], GIAO HANGOC[*‡], SCOTT COOPER[*‡], JUDITH BARD[||], DENIS ENGLISH[*‡**], MARGARET ARNY[¶], LEWIS THOMAS[||††], AND EDWARD A. BOYSE[||]

Departments of *Medicine (Hematology/Oncology), †Microbiology and Immunology, **Pathology, and the ‡Walther Oncology Center, Indiana University School of Medicine, Indianapolis, IN 46223; ||Memorial Sloan–Kettering Cancer Center, New York, NY 10021; ¶Department of Obstetrics and Gynecology, New York University Medical Center, New York, NY 10016; and ††Cornell University Medical Center, New York, NY 10021

Contributed by Edward A. Boyse, February 9, 1989



CÉLULAS TRONCO “ADULTAS”

NOVAS FONTES

(em desenvolvimento)

Lipoaspirado

Polpa do dente de leite

Líquido amniótico

Placenta

Cordão umblical

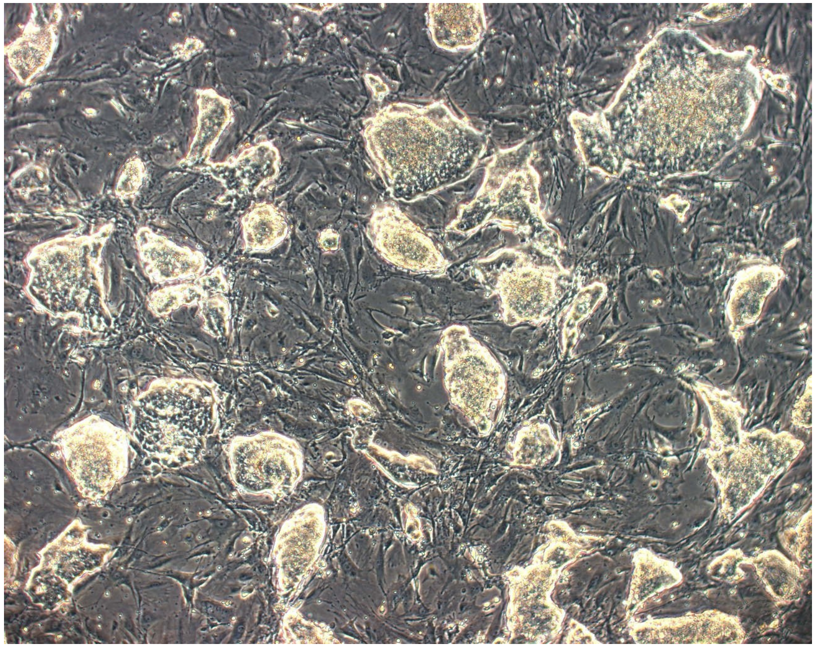
...

CÉLULAS TRONCO "ADULTAS"

CÉLULAS TRONCO EMBRIONÁRIAS

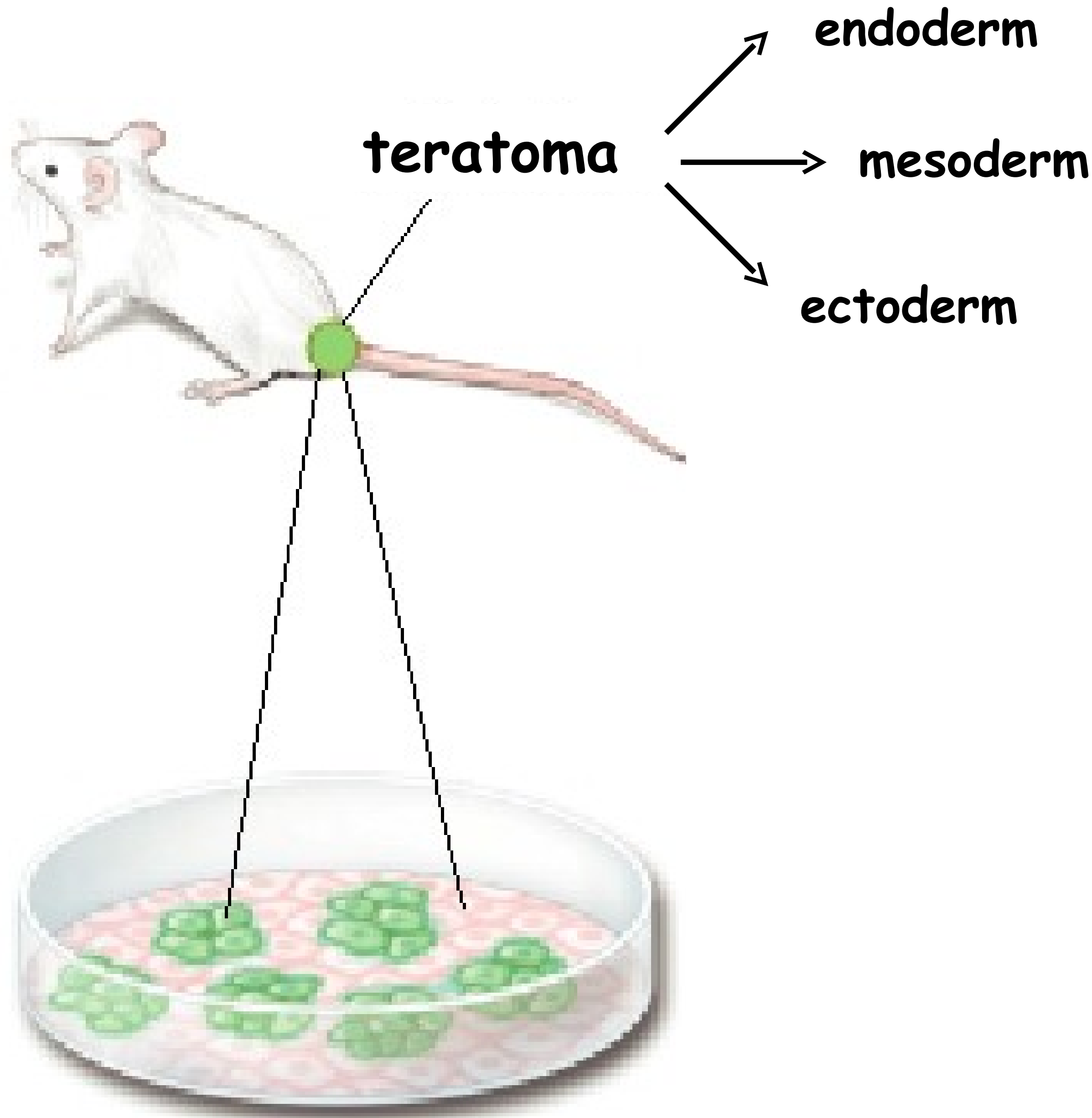
Células-tronco EMBRIONÁRIAS (ES) – 1980's

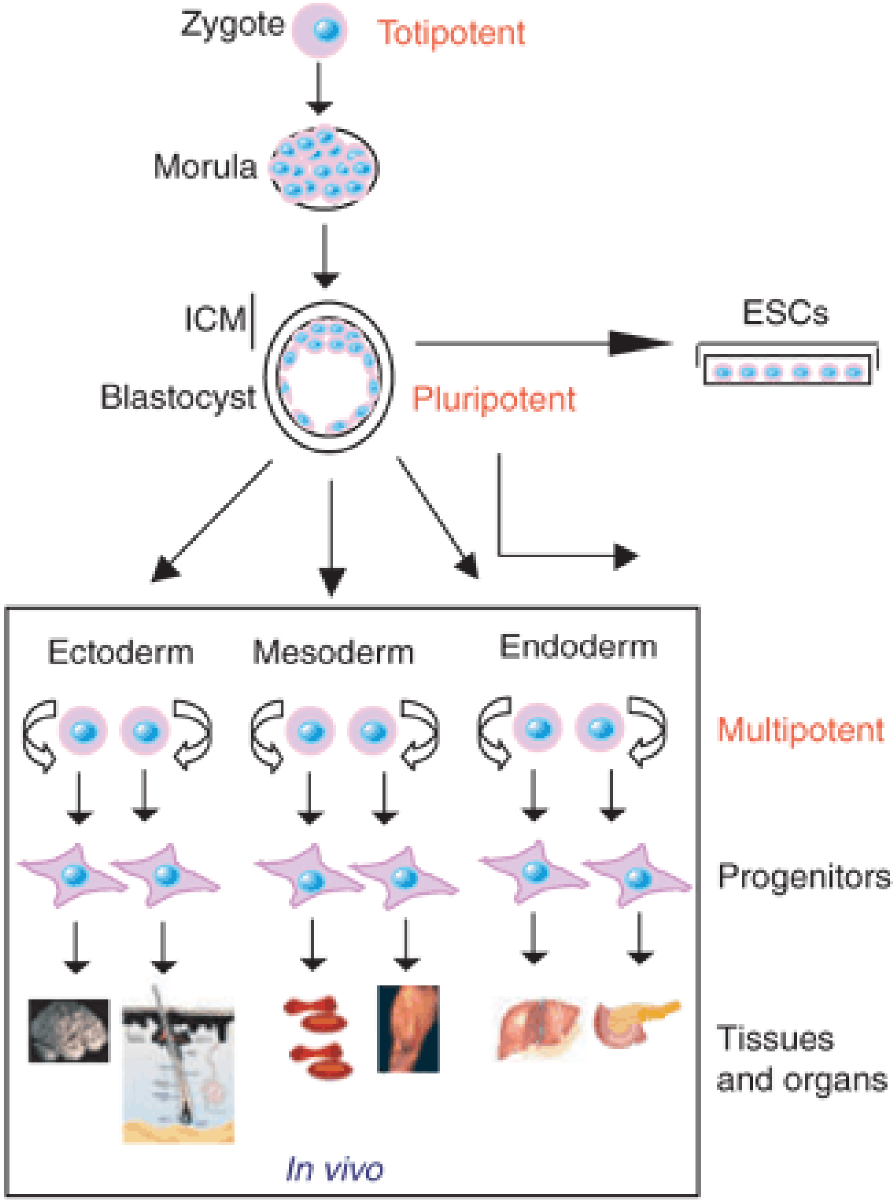
cultura
botão embrionário

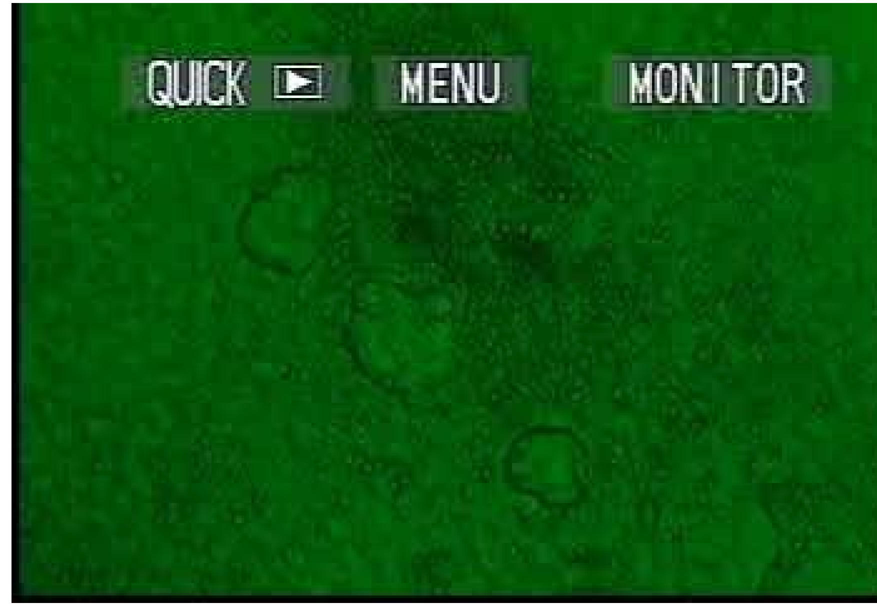


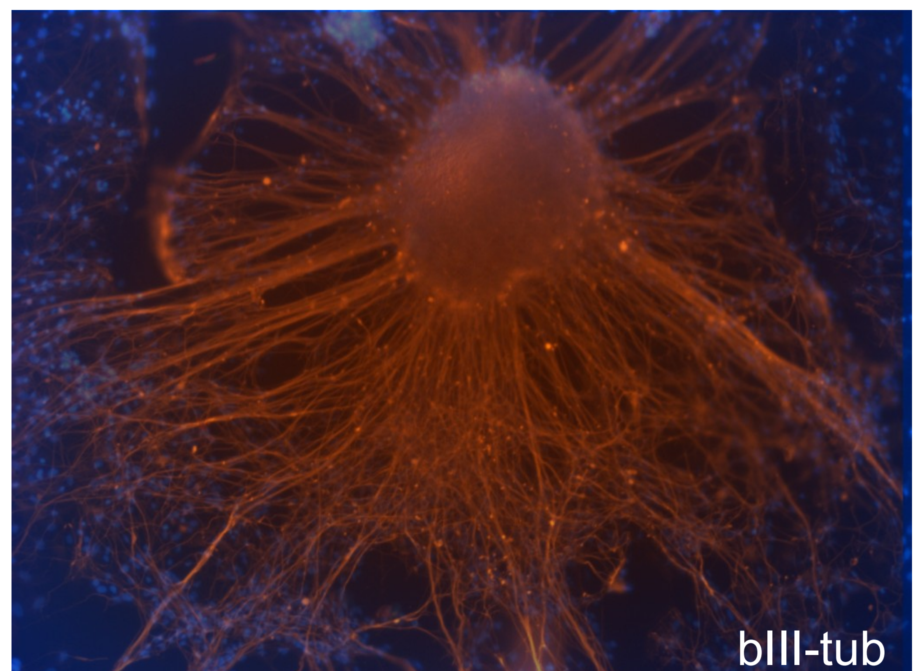
PLURIPOTENTES

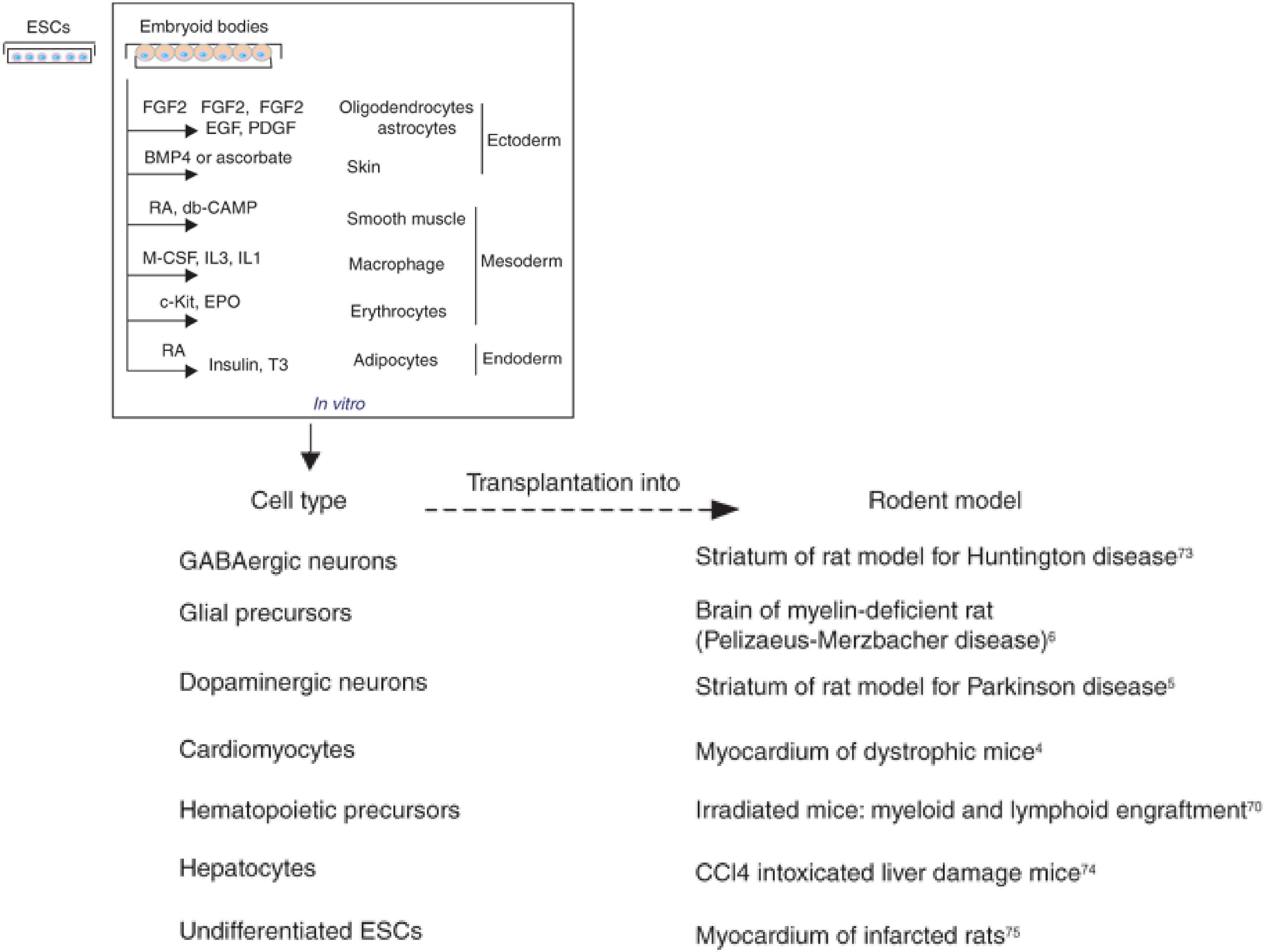
PLURIPOTENCY *in vivo*: Injection into SCID mice




Zygote
Totipotent
Morula
ICM
Blastocyst
Pluripotent
ESCs
Ectoderm
Mesoderm
Endoderm
Multipotent
Progenitors
Tissues
and organs
In vivo


QUICK
MENU
MONITOR


bIII-tub


ESCs
Embryoid bodies
FGF2
FGF2,
FGF2
EGF, PDGF
Oligodendrocytes
astrocytes
Ectoderm
BMP4 or ascorbate
Skin
RA, db-CAMP
Smooth muscle
M-CSF, IL3, IL1
Macrophage
Mesoderm
c-Kit, EPO
Erythrocytes
RA
Insulin, T3
Adipocytes
Endoderm
In vitro
Cell type
Transplantation into
Rodent model
GABAergic neurons
Striatum of rat model for Huntington disease[73]
Glial precursors
Brain of myelin-deficient rat (Pelizaeus-Merzbacher disease)[6]
Dopaminergic neurons
Striatum of rat model for Parkinson disease[5]
Cardiomyocytes
Myocardium of dystrophic mice[4]
Hematopoietic precursors
Irradiated mice: myeloid and lymphoid engraftment[70]
Hepatocytes
CCl4 intoxicated liver damage mice[74]
Undifferentiated ESCs
Myocardium of infarcted rats[75]

“In Vitro Generation of Hematopoietic Stem Cells from an Embryonic Stem Cell Line.”

Palacios et al., PNAS (92), 1995

“Transplanted Embryonic Stem Cells Survive, Differentiate and Promote Recovery in Injured Rat Spinal Cord.”

McDonald et al., Nat. Med. Dec. 1999

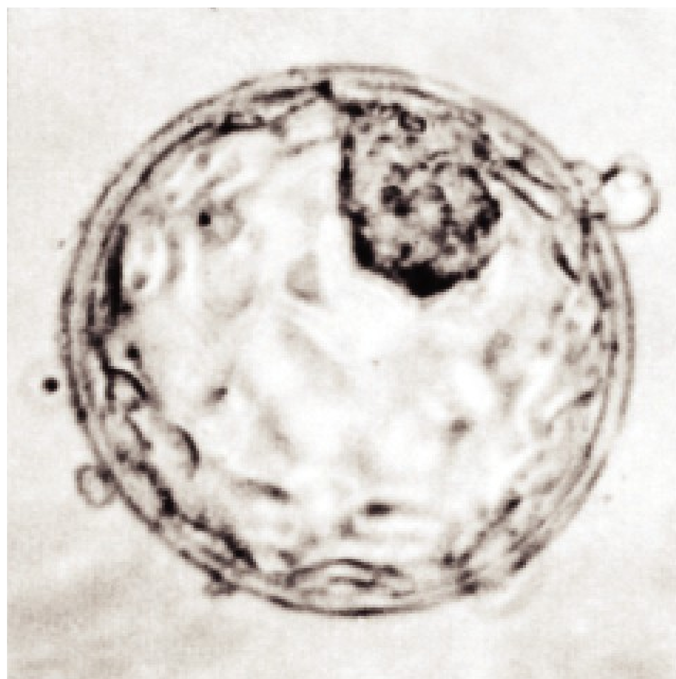
articles

Dopamine neurons derived from embryonic stem cells function in an animal model of Parkinson’s disease

Jong-Hoon Kim[*], Jonathan M. Auerbach[*,†], José A. Rodríguez-Gómez, Iván Velasco, Denise Gavin, Nadya Lumelsky, Sang-Hun Lee[†], John Nguyen[†], Rosario Sánchez-Pernaute[†], Krys Bankiewicz[†] & Ron McKay

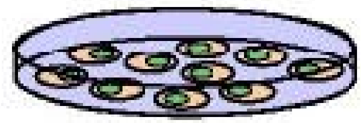
Embryonic Stem Cell Lines Derived from Human Blastocysts

James A. Thomson,* Joseph Itskovitz-Eldor, Sander S. Shapiro, Michelle A. Waknitz, Jennifer J. Swiergiel, Vivienne S. Marshall, Jeffrey M. Jones



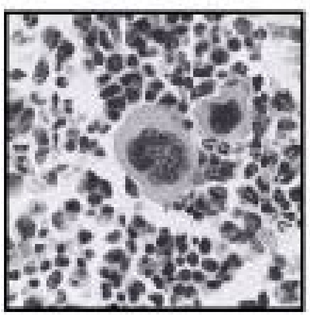
Science vol. 282, 6 Nov., 1998

A Promessa das CT Embrionárias Humanas



Células-Tronco

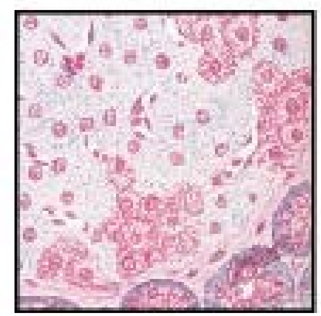
Tecidos/Células para Terapia



Medula Óssea

Neurônios

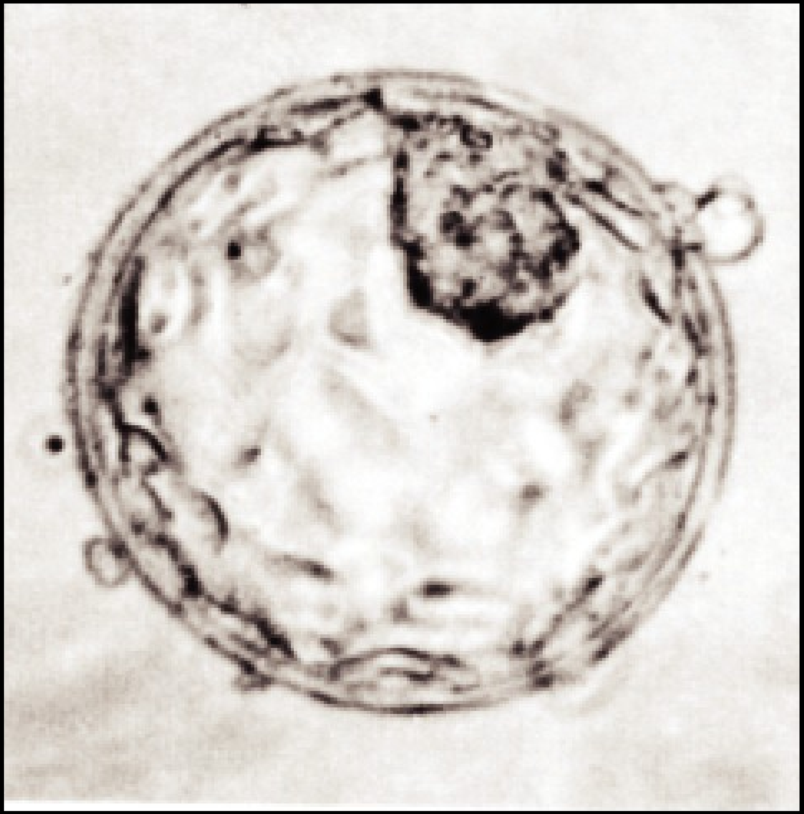
Células do Músculo Cardíaco



Células do Pâncreas

Lei de Biossegurança 2005

embriões FIV > 3 anos




ClinicalTrials.gov - Information on Clinical Trials and Human Research Studies - Microsoft Internet Explorer
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ClinicalTrials.gov provides regularly updated information about federally and privately supported clinical research in human volunteers. ClinicalTrials.gov gives you information about a trial's purpose, who may participate, locations, and phone numbers for more details. The information provided on ClinicalTrials.gov should be used in conjunction with advice from health care professionals. Before searching, you may want to learn more about clinical trials.
INVESTIGATOR NOTE: Investigators wishing to register trials should refer to http://prsinfo.clinicaltrials.gov.
Search Clinical Trials
Example: heart attack, Los Angeles
Search
Tips
Search by Specific Information
Focused Search - search by disease, location, treatment, sponsor...
Browse
Browse by Condition - studies listed by disease or condition
Concluído
Internet

ClinicalTrials.gov - Information on Clinical Trials and Human Research Studies: Search Details - Microsoft Internet Explorer

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Endereço http://www.clinicaltrials.gov/ct/search;jsessionid=F3FAC61990C697C5210009284C9C8BB5?term=embryonic+stem+cells&submit=Search Ir

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stem cells [ALL-FIELDS]	TryIt!
embryonic [ALL-FIELDS]	TryIt!

Possibly Relevant MedlinePlus Topics

Stem Cells and Stem Cell Transplantation

Internet

hES: DESAFIOS

SEGURANÇA

COMPATIBILIDADE

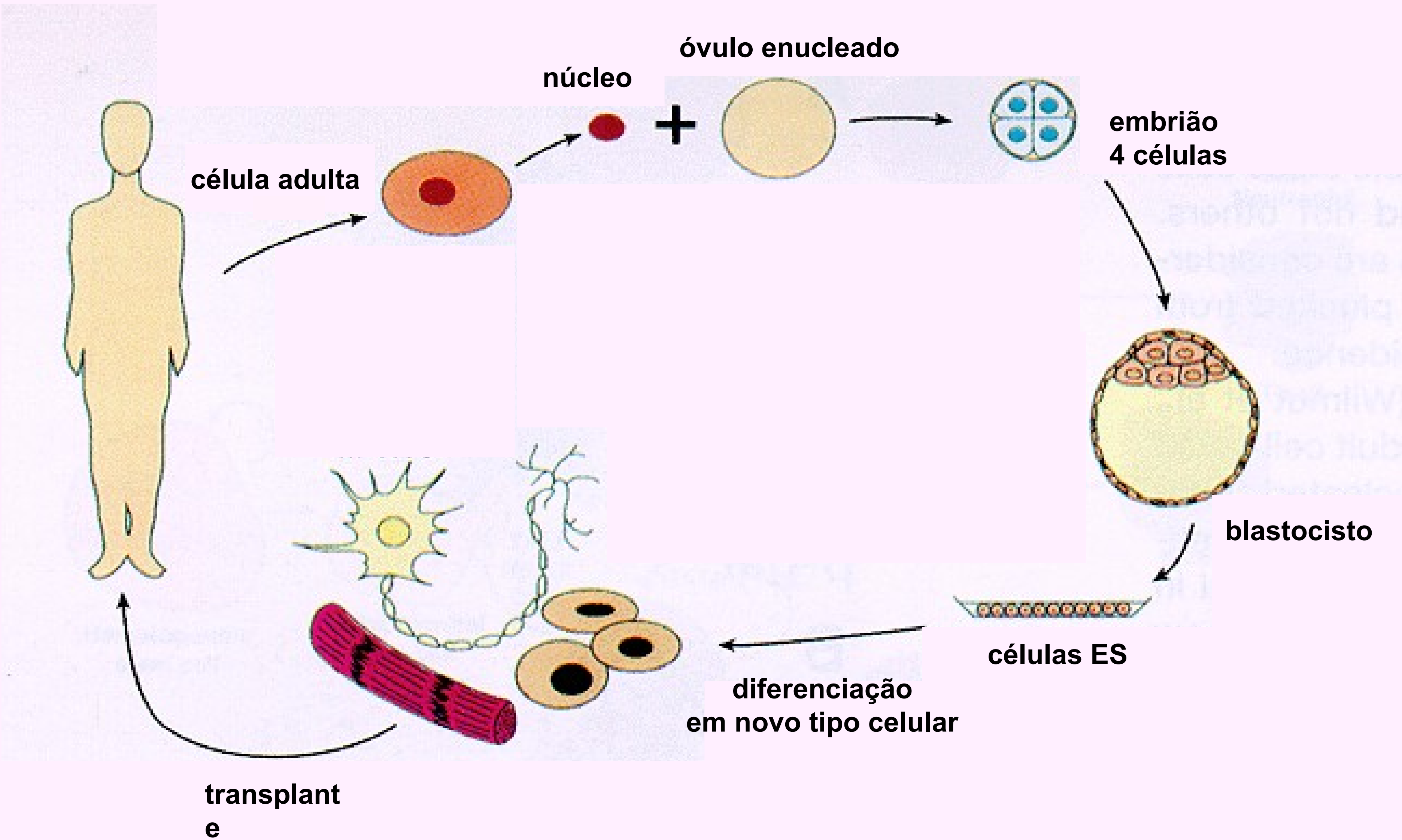
ÉTICA/LEGISLAÇÃO

hES: DESAFIOS

COMPATIBILIDADE

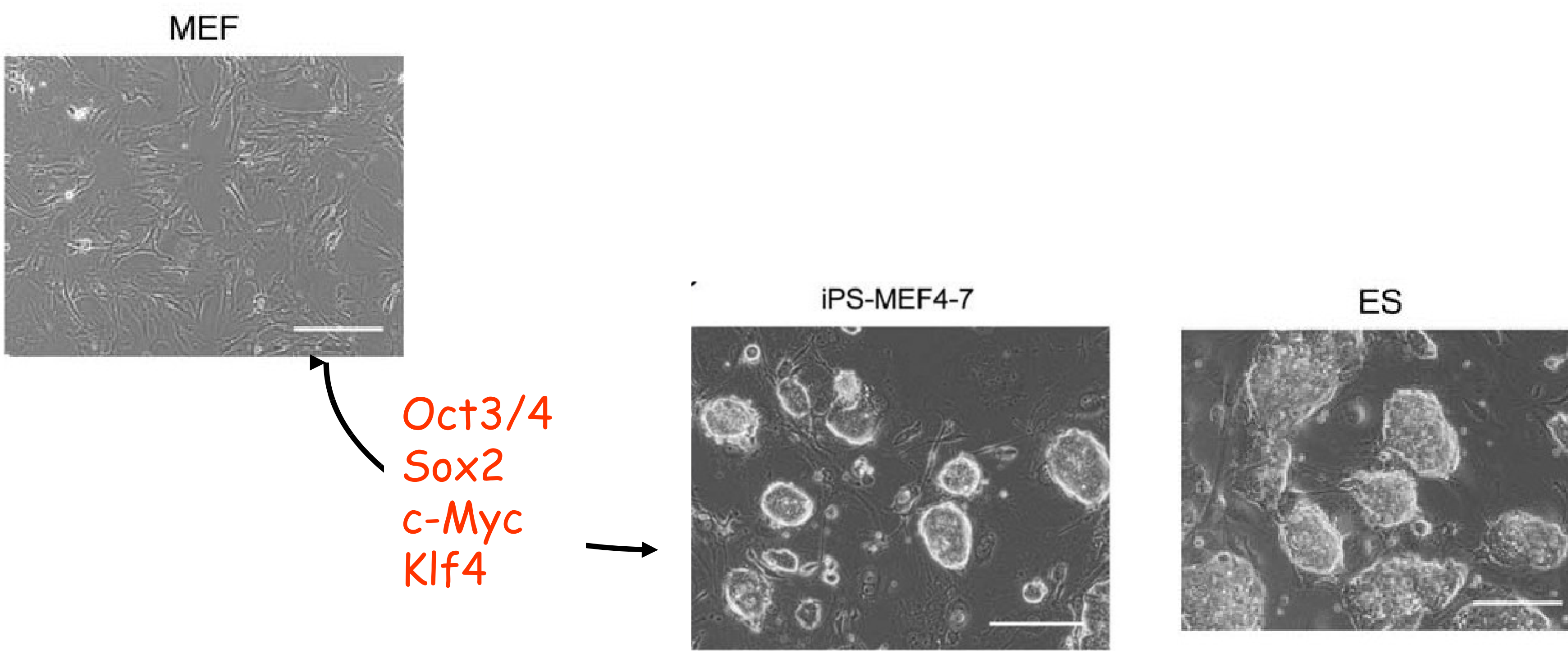
- hES são imunogênicas?
- Trasnferência nuclear/clonagem terapêutica.

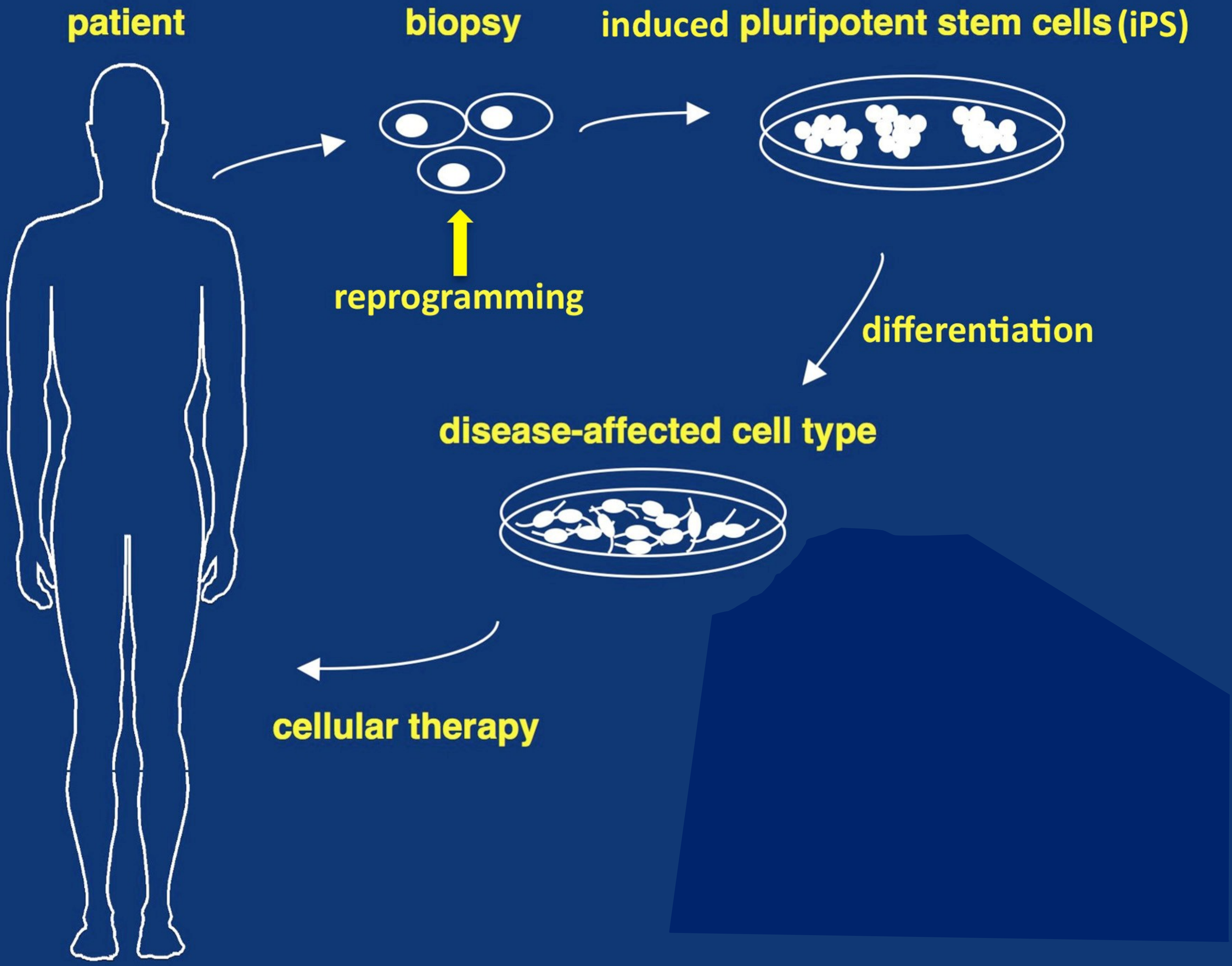
Clonagem terapêutica



Induction of Pluripotent Stem Cells from Mouse Embryonic and Adult Fibroblast Cultures by Defined Factors

Kazutoshi Takahashi[1] and Shinya Yamanaka[1,2,*]
[1] Department of Stem Cell Biology, Institute for Frontier Medical Sciences, Kyoto University, Kyoto 606-8507, Japan
[2] CREST, Japan Science and Technology Agency, Kawaguchi 332-0012, Japan
*Contact: yamanaka@frontier.kyoto-u.ac.jp
DOI 10.1016/j.cell.2006.07.024




patient
biopsy
induced pluripotent stem cells (iPS)
reprogramming
differentiation
disease-affected cell type
cellular therapy

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novocell

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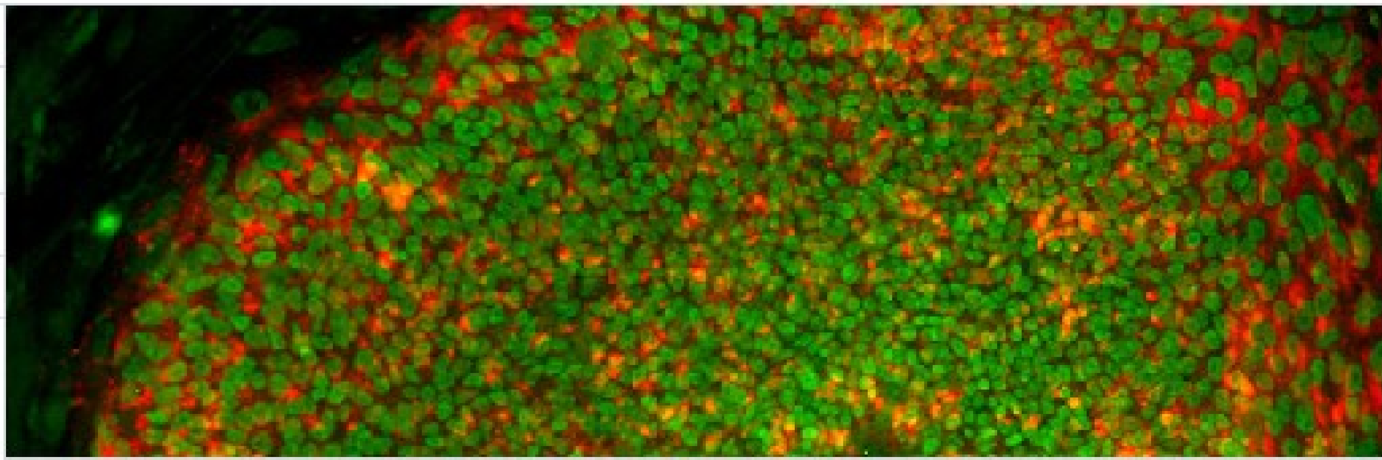
- Cell Encapsulation
- Drug Discovery
- Resources & Links



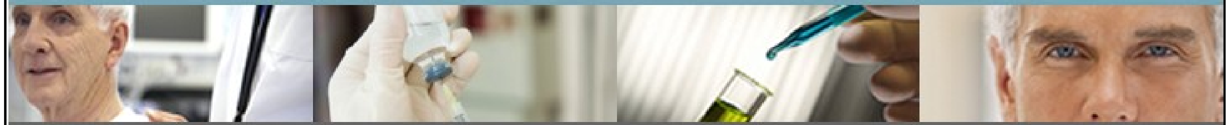
Novocell uses directed differentiation to engineer human embryonic stem cells (hESCs) and generate therapeutic cell types. Novocell is a world leader and the first company to engineer hESCs into definitive endoderm, the gatekeeper cells that differentiate into the pancreas, liver and other cells, tissues and organs.

The company is currently developing insulin-producing cells from hESCs and expects to be able to produce large quantities of safe and functional islet cells to treat insulin-dependent type 1 and type 2 diabetics.

Retinal Pigmented Epithelial Cell Program

Advanced Cell Technology is currently focused on using its proprietary technologies to generate stable cell lines including retinal pigment epithelium (RPE) cells for the treatment of diseases of the eye, including macular degeneration, which represents a $28 billion dollar market. Age-related macular degeneration (AMD) affects more than 30 million people worldwide and is the leading cause of blindness in people over 60 years of age in the United States. AMD is a disorder geron

visionary therapeutics



recent publications

Nature Reviews Cancer
8:167-179, March 2008

Nature Biotechnology
25:1015-1024, Sept. 2007

news

1/23/2009
Geron Receives FDA Clearance to Begin World's First Human Clinical Trial of Embryonic Stem Cell-Based Therapy...more ››

12/8/2008
Geron Presents Interim Clinical Data On Its Telomerase Inhibitor Drug Trial In Patients With Multiple Myeloma...more ››

events

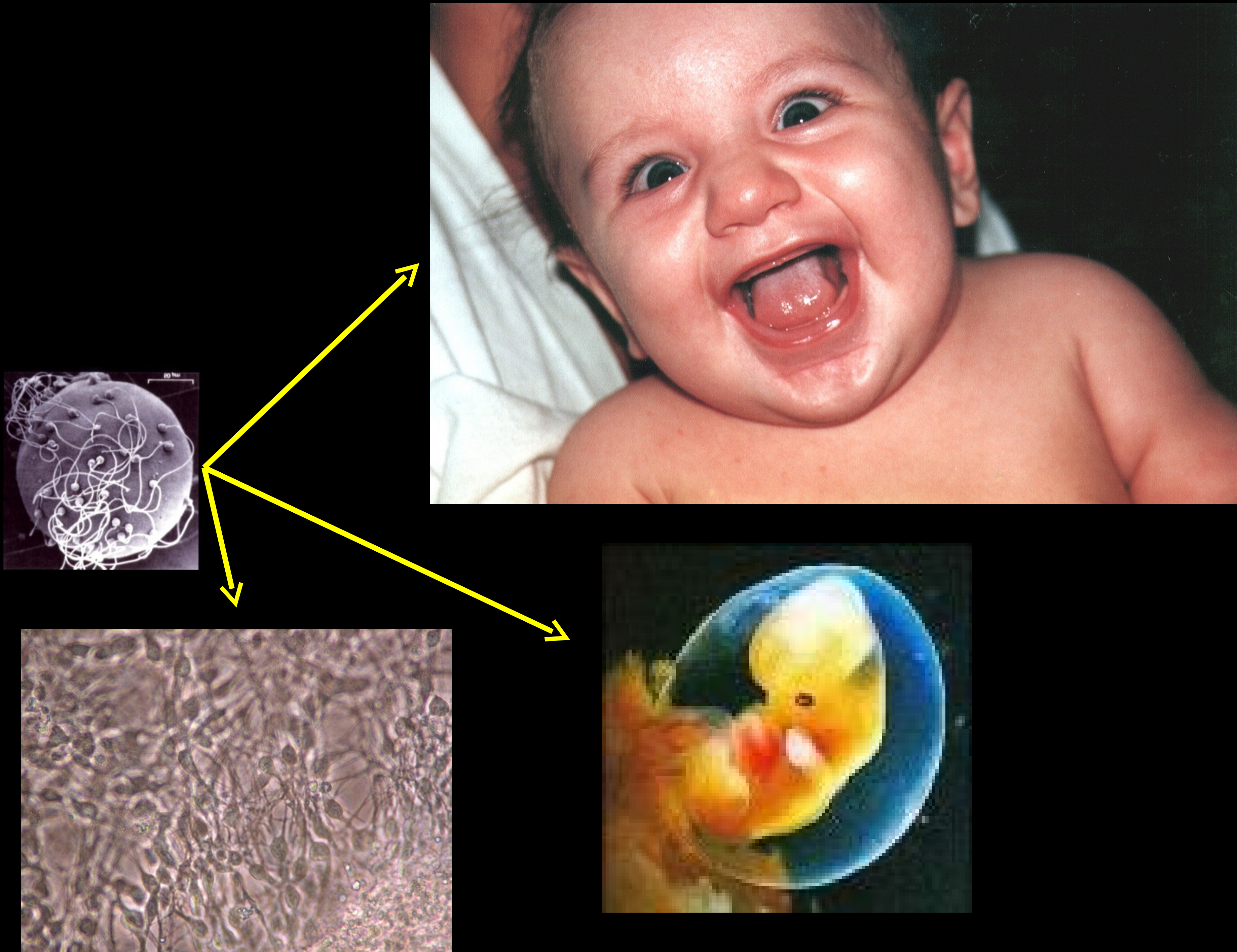
January 23, 2009,
6:00 am PT / 9:00 am ET
Geron Discusses FDA Clearance for World's First Human Clinical Trial of Embryonic Stem Cell-Based Therapy,
Menlo Park, CA
Click here to access the webcast››

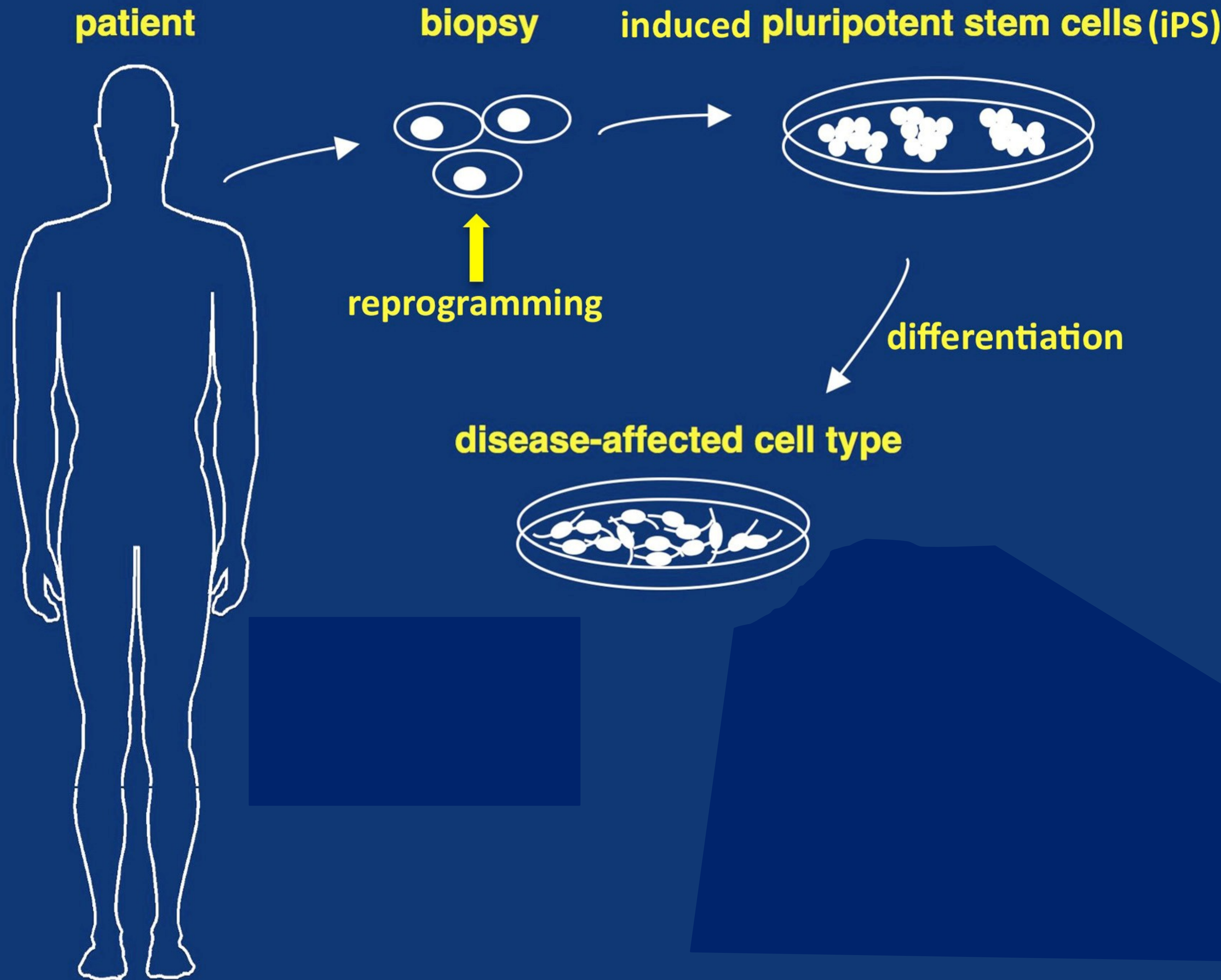
Uncommon Medicine / Unlimited Potential

Geron is developing first-in-class biopharmaceuticals for the treatment of cancer and chronic degenerative diseases, including spinal cord injury, heart failure and diabetes. The company is advancing an anti-cancer drug and a cancer vaccine that target the enzyme telomerase through multiple clinical trials. Geron is also the world leader in the development of human embryonic stem (hESC) cell-based therapeutics. The company has received FDA clearance to begin the world's first human clinical trial of a hESC-based therapy: GRNOPC1 for acute spinal cord injury.

DIFERENCIAÇÃO:

Desenvolvimento Embrionário




patient
biopsy
induced pluripotent stem cells (iPS)
reprogramming
differentiation
disease-affected cell type

A Importância da

Célula-Tronco Embrionária

Para a

Pesquisa Básica

EXPECTATIVA:

Verdades Absolutas

ou Transitórias?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...de uma revolução da medicina. Ao nascer, eles tiveram armazenadas células-tronco, terapia que já está sendo usada para tratar doenças como
DIABETES • INFARTO • DERRAME • ALZHEIMER • PARKINSON • ESCLEROSE MÚLTIPLA
Os gêmeos Adriana e Luigi, de 8 meses, filhos da atriz Luiza Tomé
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A MEDICINA
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MILAGRES
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Vítimas de derrame, esclerose e lesões na medula recuperam parte dos movimentos
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20.08.2006

Celulas superpoderosas

PLAY

Pesquisadores da Universidade de São Paulo (USP) cons… …anço: transformar células-tronco encontradas na gordura hu… …e músculo! O que isso significa e o que a ciência já consegu… …linha de pesquisa?

As células-tronco são superpoderosas. Elas podem se transformar em todos os tipos de células que formam o corpo humano. Já pensou, usar células-tronco para recuperar um… …ão doente? Consertar o pâncreas de um diabético? Regenerar os músculos de uma pessoa com di…

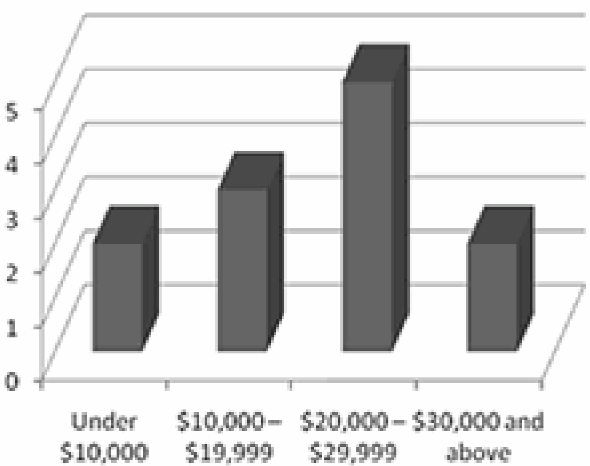
"Hoje existe uma luz no fim do túnel, uma esperança", afirma a geneti… …a Universidade de São Paulo (USP).

Existem células-tronco nos embriões, no cordão umbilical e também no organismo adulto.

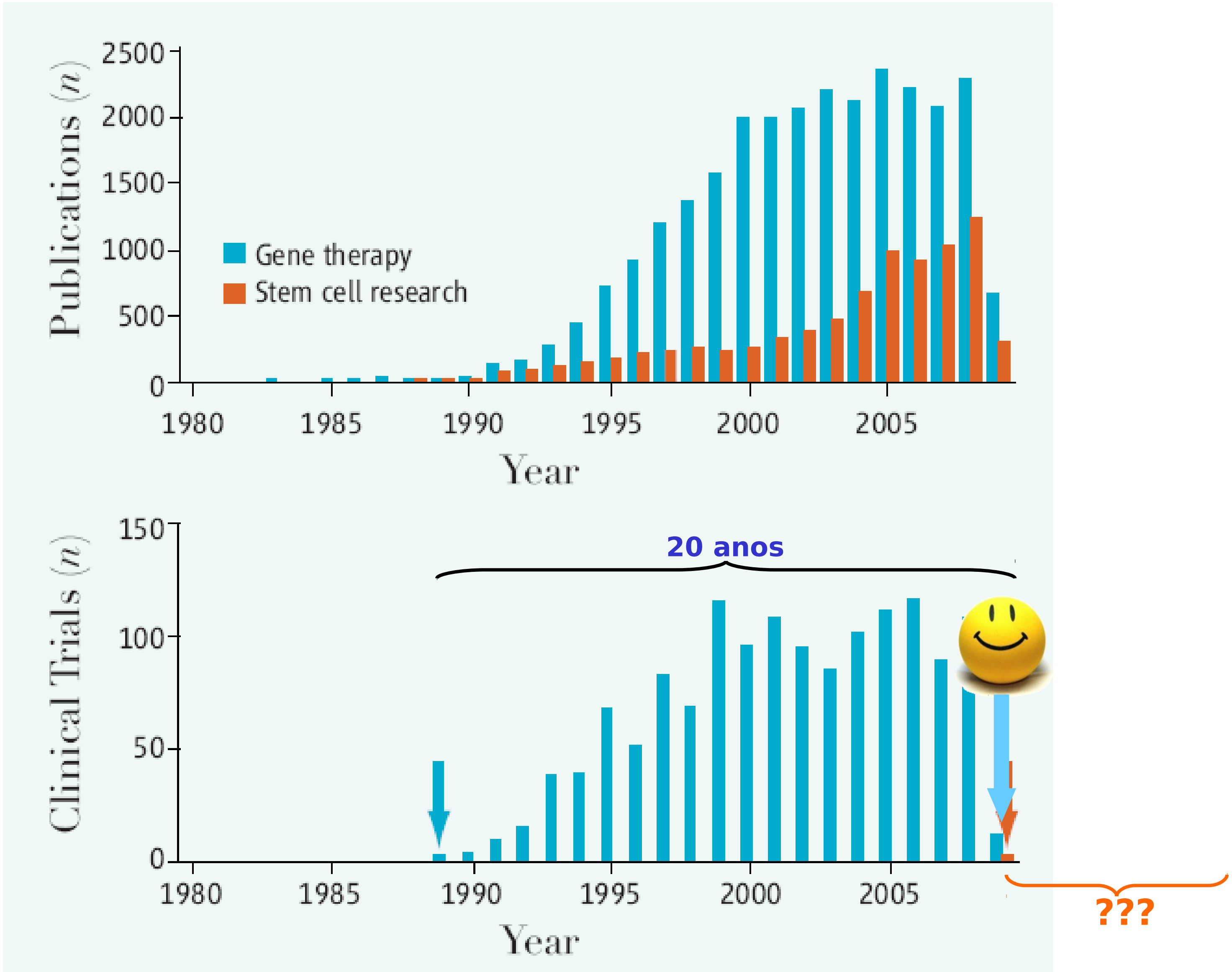
"Cada vez mais vão descobrindo que nos mais diversos tecidos há células-tronco", explica Alysson Muotri, do Instituto Salk, nos Estados Unidos.

Figure 1: Intervention delivery locations

Figure 2: Cell-based intervention costs

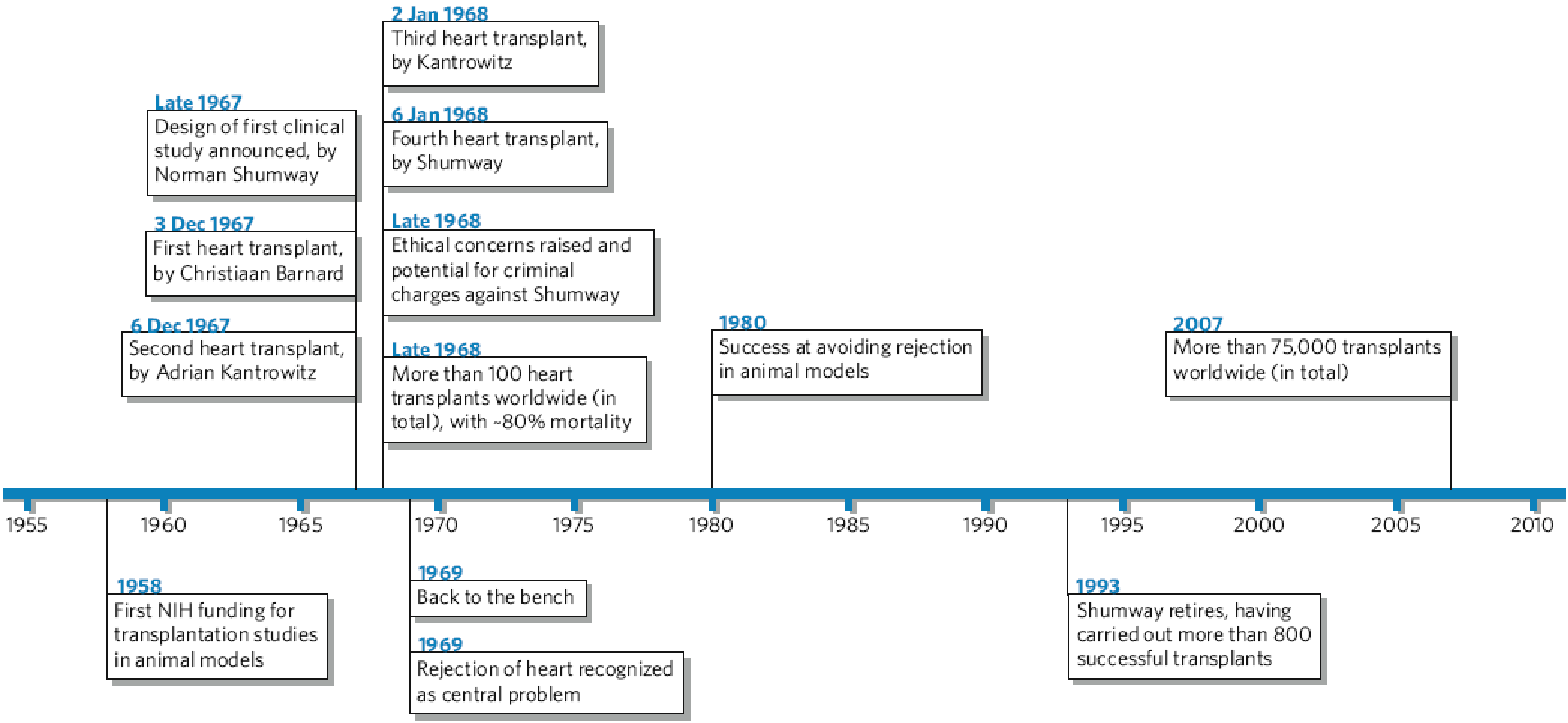


*based on 12 providers indicating intervention cos



SCIENCE VOL 324 8 MAY 2009

Transplante de Coração



Células-Tronco Embrionárias:

Lições de 25 Anos de Pesquisa

POLÊMICA:

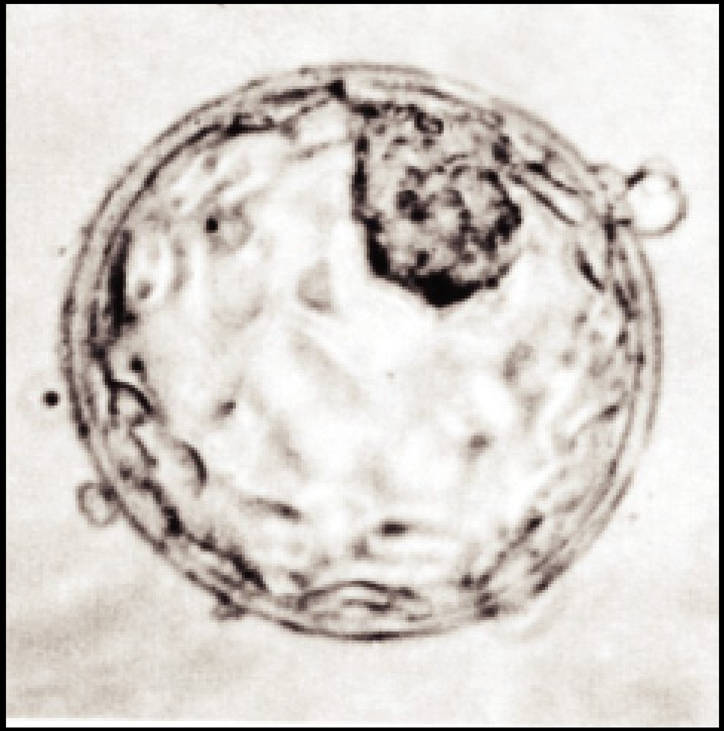
Ser-Humano ou

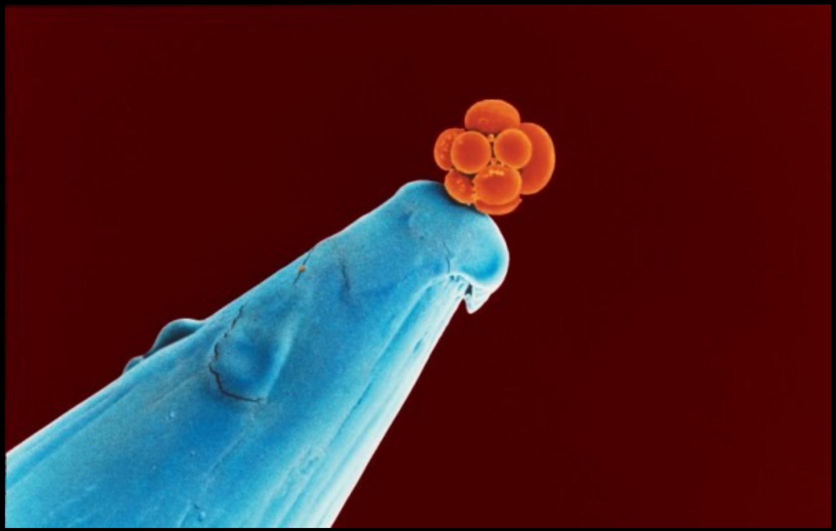
Aglomerado de Células?

Lei de Biossegurança 2005

embriões FIV > 3 anos e congelados < Março 2005;

proíbe clonagem humana.



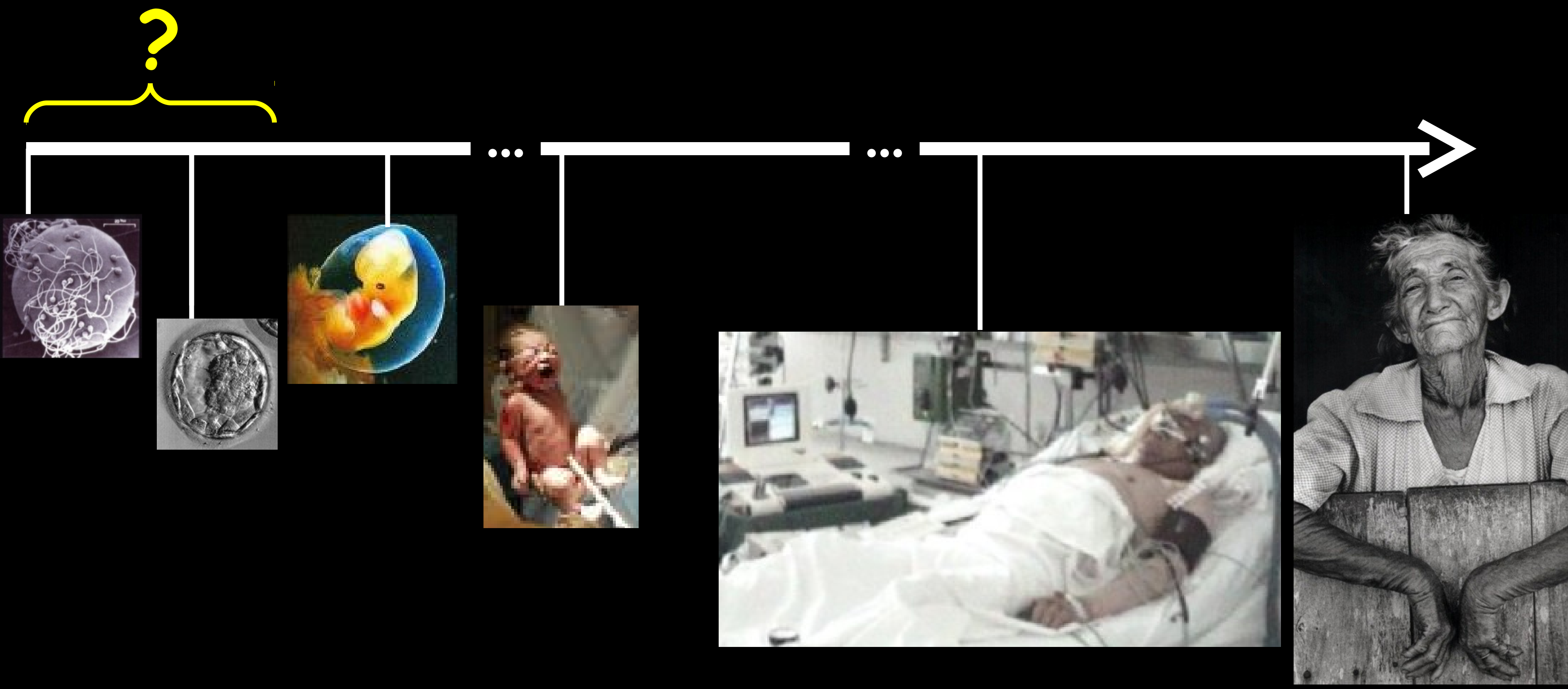


(ADI) Nº 3.510 contra o Art. 5º da Lei de Biossegurança Nº 11.105 de 24 de março de 2005

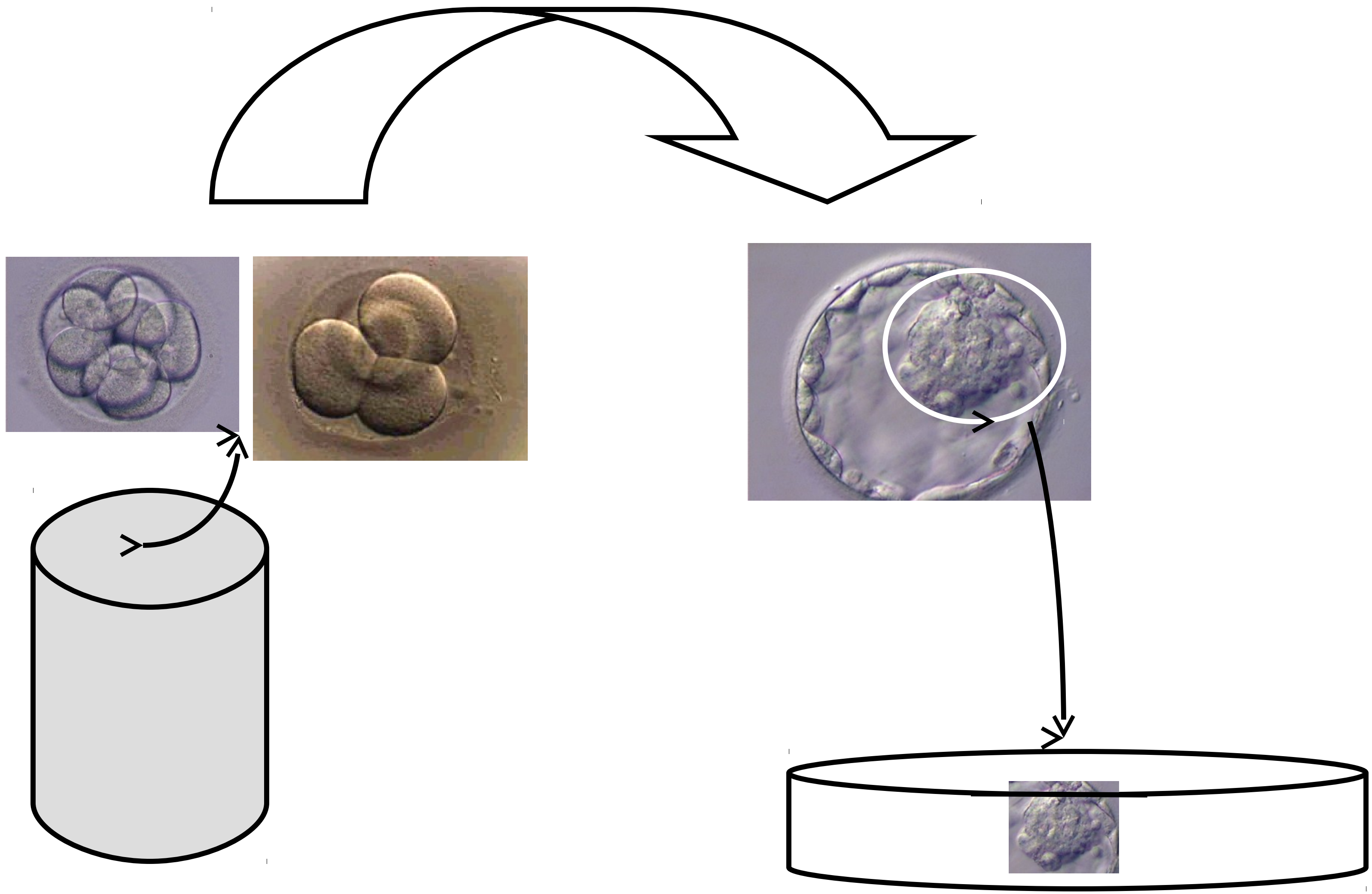
que a vida humana acontece na, e a partir da, fecundação";

a pesquisa com <u>células-tronco adultas</u> é, objetiva e certamente, <u>mais promissora do que a pesquisa com células-tronco embrionárias</u>, até porque com as primeiras, resultados auspiciosos acontecem, do que não se tem registro com as segundas".

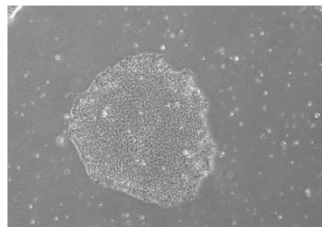
2008: STF - formas de vida humana



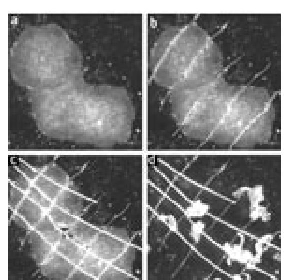
New Lines of Human Embryonic Stem Cells



MECHANICAL / NONE



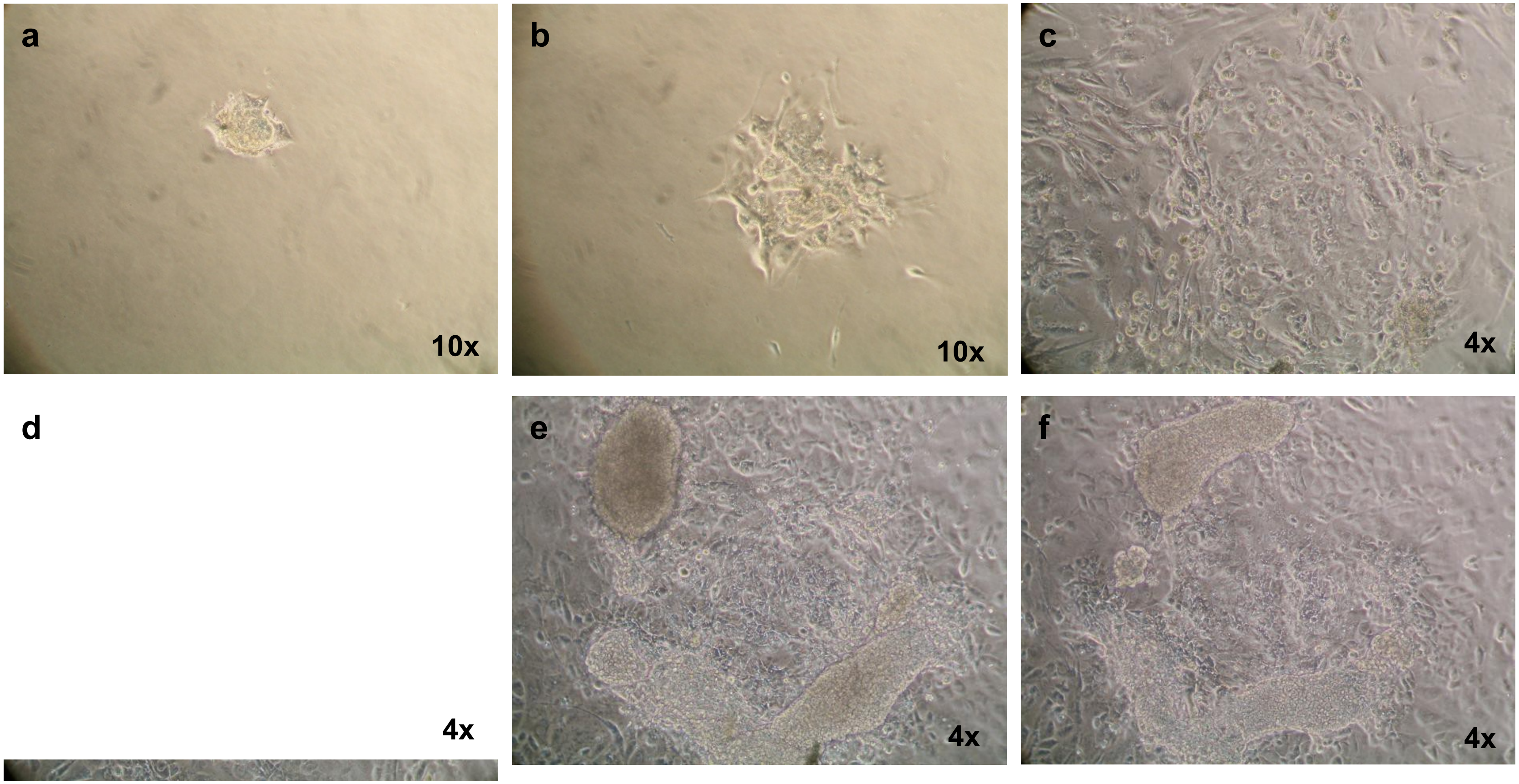
matrigel

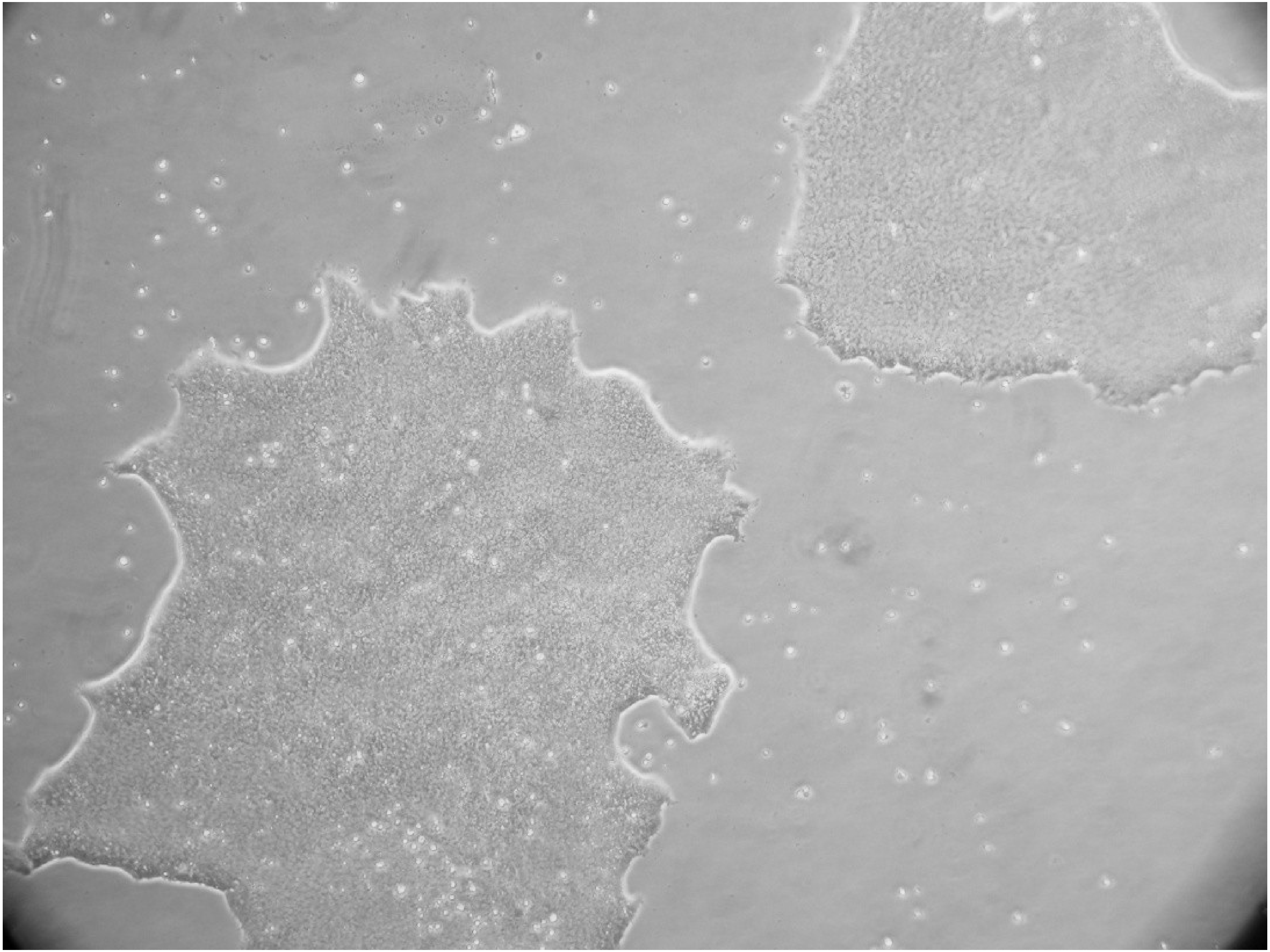


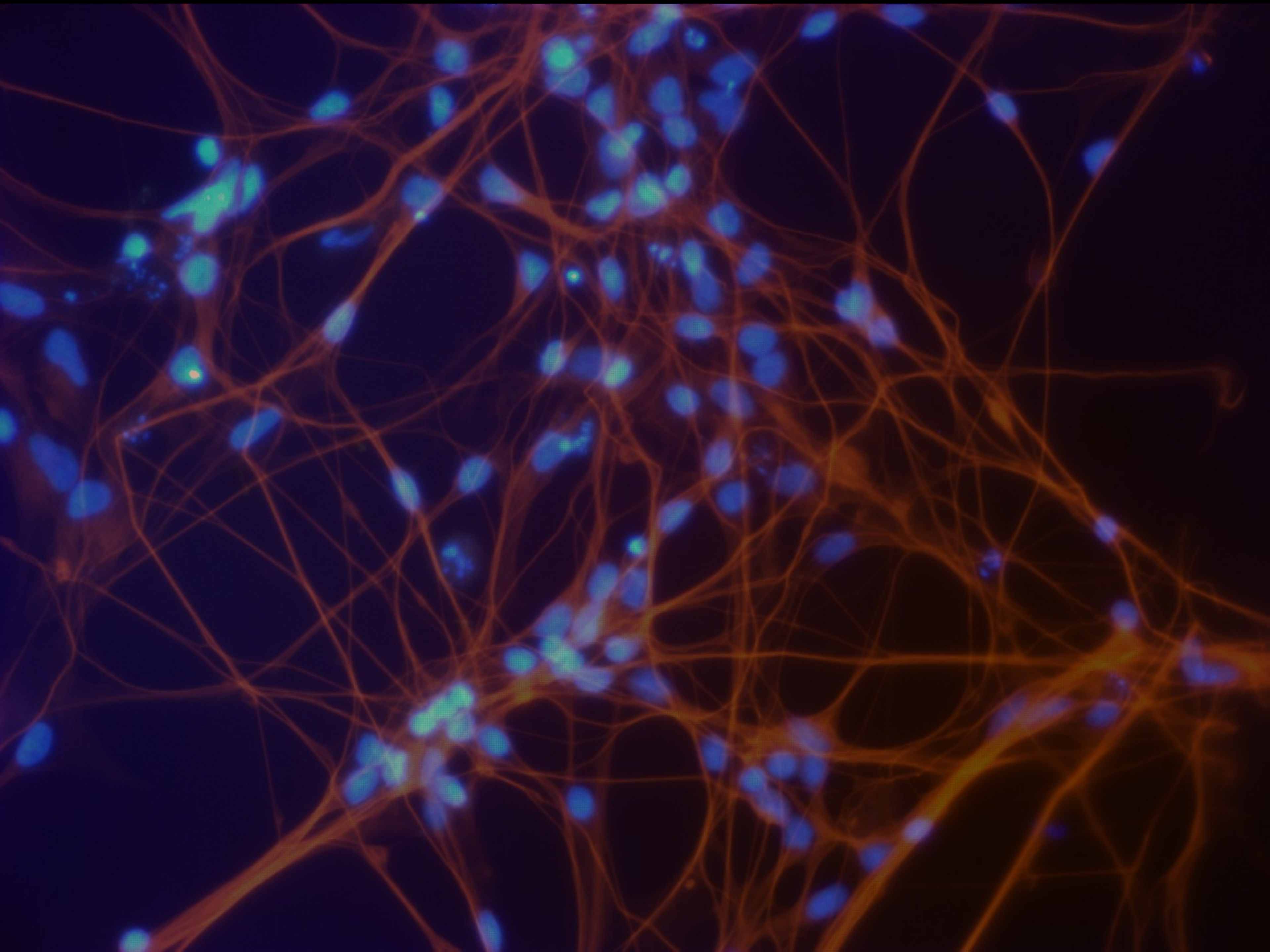
250 embriões >= 8 células (3 – 6 anos)

45 blastocistos

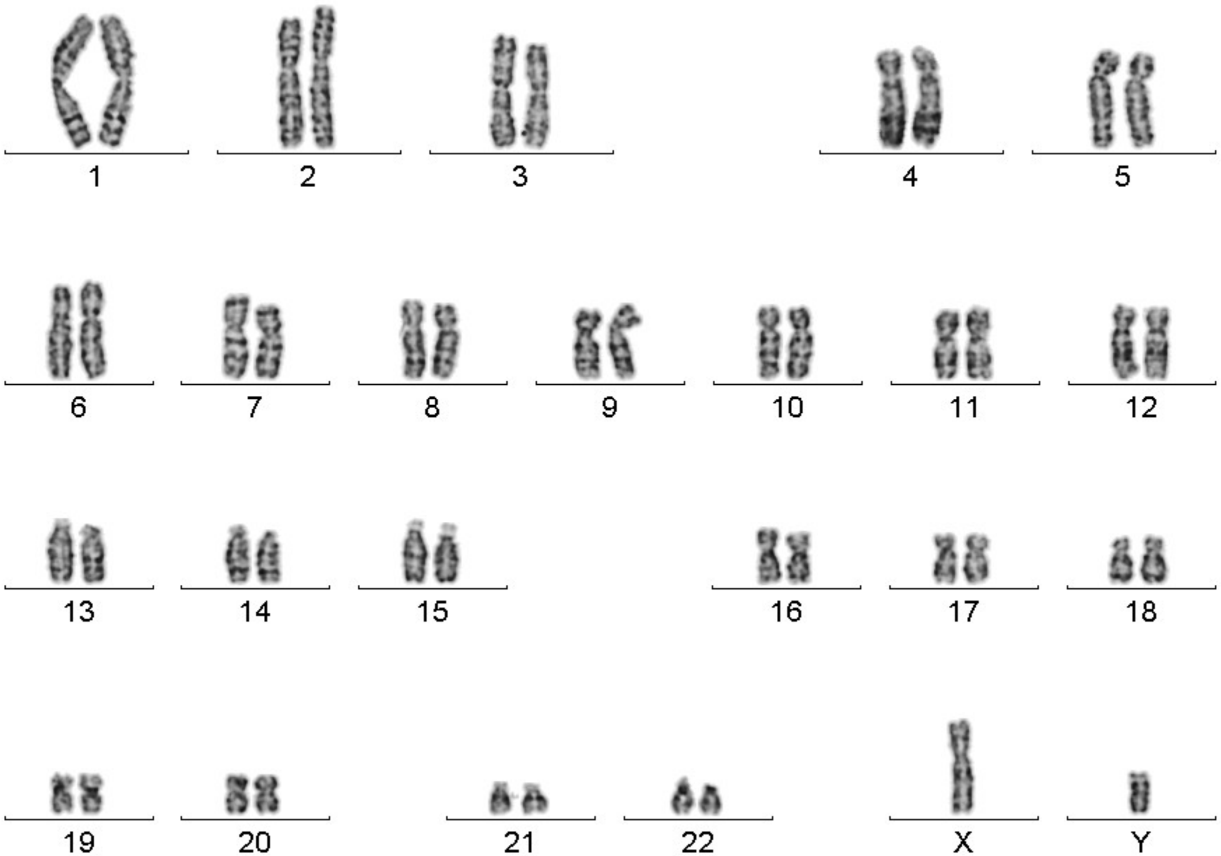
1


a
10x
b
10x
c
4x
d
4x
e
4x
f
4x





Karyotype passage 5: 46,XY



BR-1

2009 - 2012

LaNCE

Laboratório Nacional de
Células-Tronco Embrionárias

Missão: promover pesquisa e terapia baseadas em células-tronco pluripotentes no Brasil.

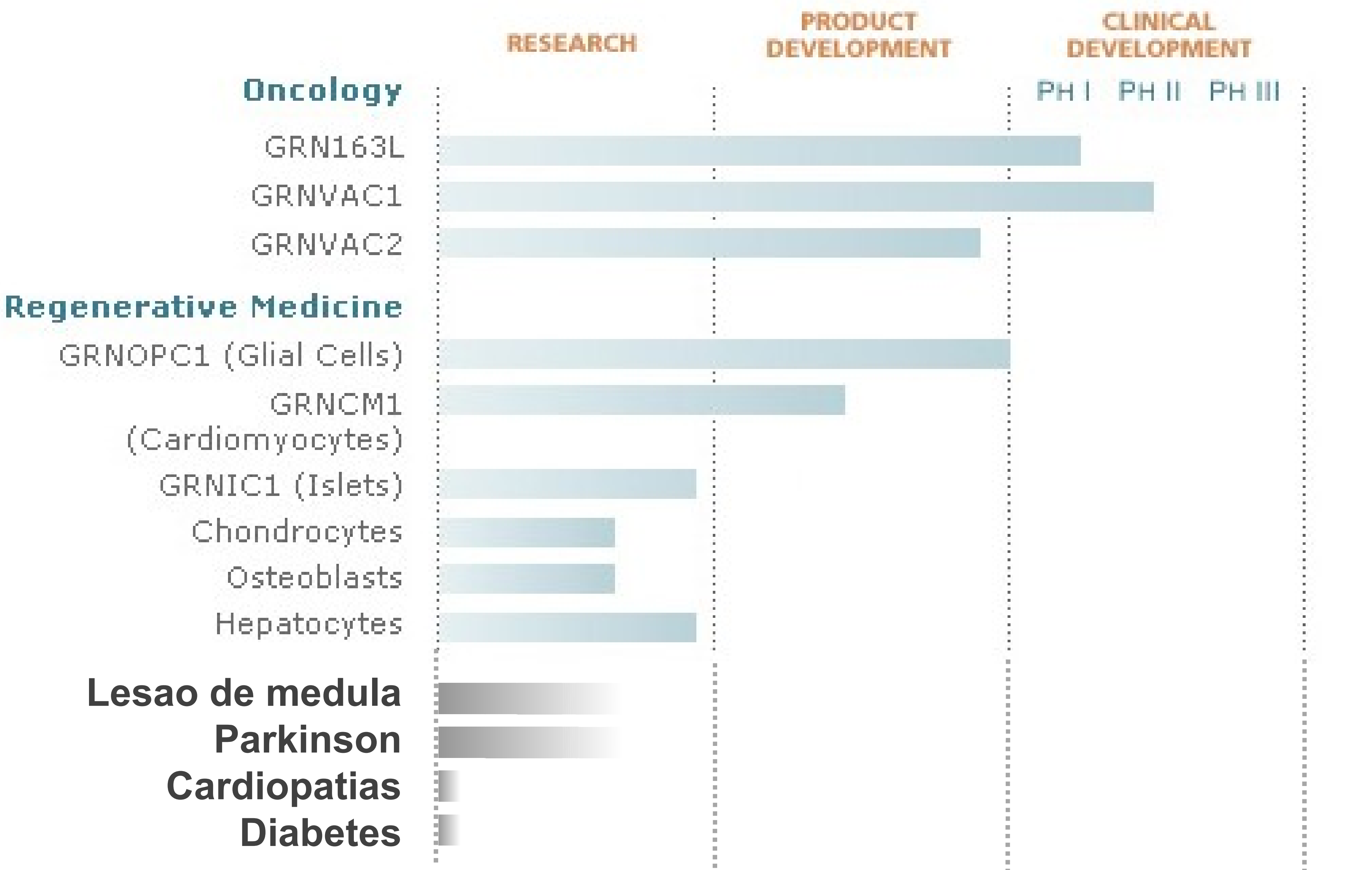
Federal funding : MS + MCT + BNDES – R$ 4.000.000

LaNCE
Laboratório Nacional de Células-Tronco Embrionárias

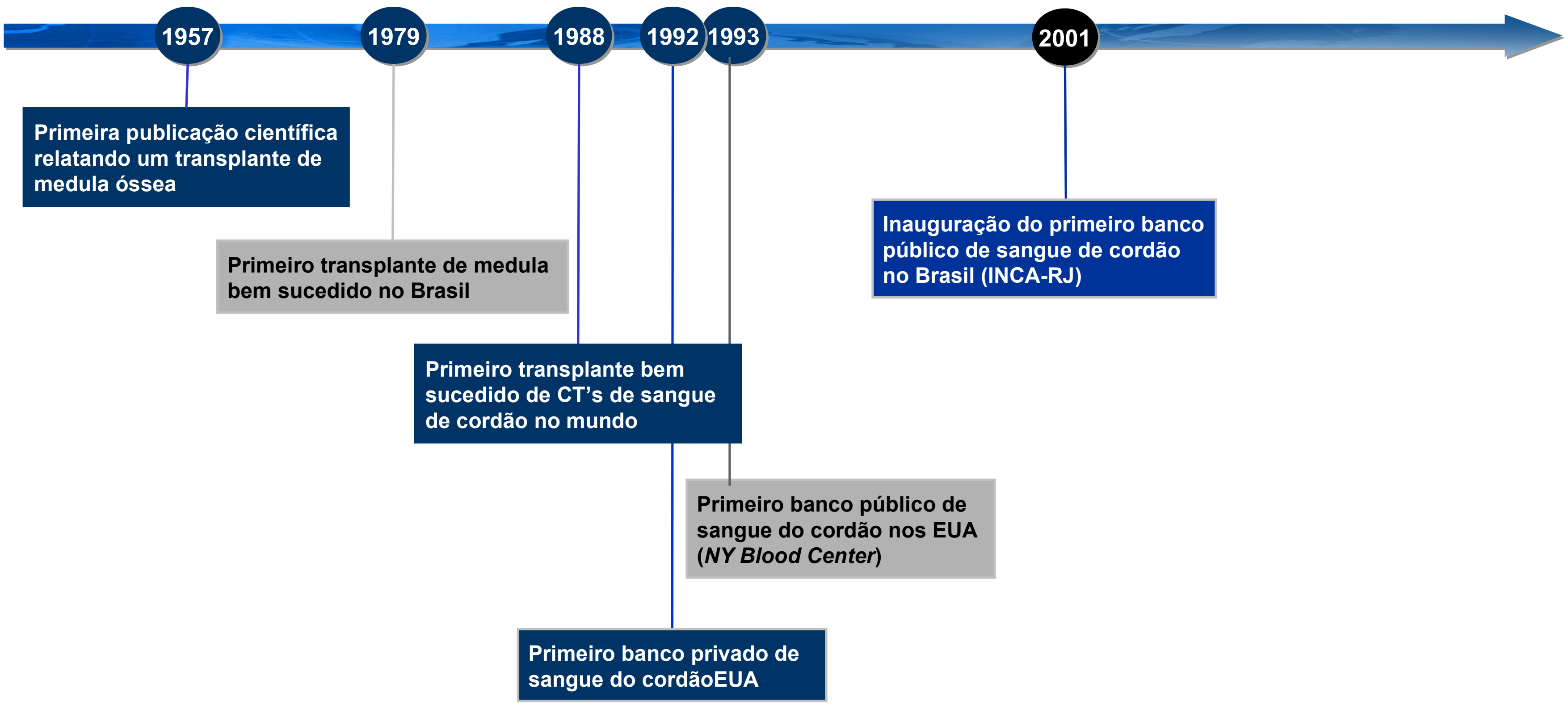
OBJETIVOS

- **Desenvolver novos protocolos/reagentes para otimizar a cultura de CTs pluripotentes;**
- Desenvolver métodos para o cultivo em larga escala de CTs pluripotentes para triagem de novas drogas e terapia celular;
- **Derivar novas linhagens de células hES e hiPS para pesquisa e terapia no Brasil;**
- Controle de qualidade das CTs pluripotentes no Brasil;
- **Estabelecer um Banco National de CTs pluripotentes para a comunidade científica brasileira;**
- Oferecer treinamento em cultivo e caracterização de CTs pluripotentes, e promover intercâmbio científico com instituições estrangeiras;
- **Produzir CTs pluripotentes em larga escala em condições GMP.**

Aplicações Clínicas hES no Brasil



CT de Sangue de Cordão - Histórico



Bancos de SCUP: Público vs. Privado

Banco Público

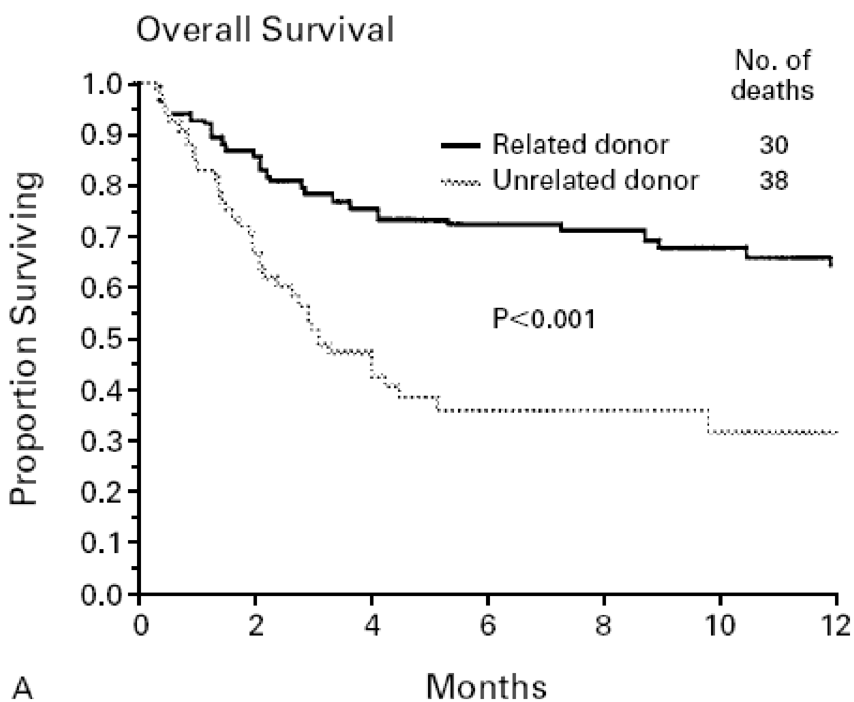
- Instituição pública não lucrativa que se propõe a armazenar CT's para a população em geral
- As CT's doadas tornam-se propriedade do público e não mais do indivíduo
- Chances de se encontrar um doador compatível ~ 0,00000001% : > 250mil amostras para cobertura da diversidade genética do Brasil
- Maior risco de rejeição

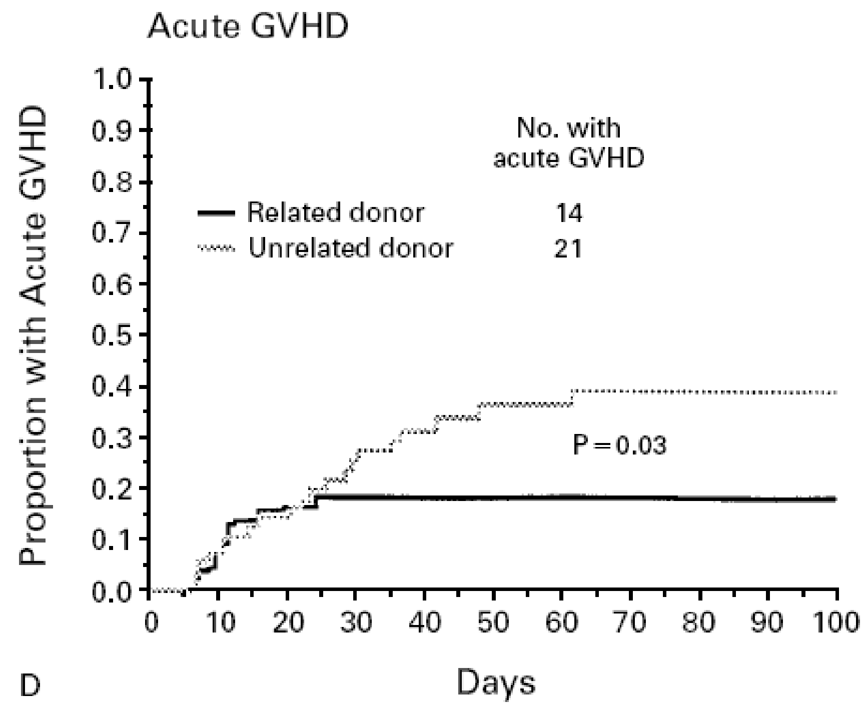
Banco Privado

- Instituição privada cujo objetivo é coletar e armazenar as CT's de clientes particulares para seu uso exclusivo, e eventualmente, para uso de familiares
- As CT's estão disponíveis aos donos sempre que requisitadas
- As chances de compatibilidade para o dono:100%; entre irmãos: 25%
- Uso aparentado: menor risco de rejeição = taxa de sucesso 2 x maior

OUTCOME OF CORD-BLOOD TRANSPLANTATION FROM RELATED AND UNRELATED DONORS

ELIANE GLUCKMAN, M.D., VANDERSON ROCHA, M.D., AGNÈS BOYER-CHAMMARD, M.D., FRANCO LOCATELLI, M.D., WILLIAM ARCESE, M.D., RICARDO PASQUINI, M.D., JUAN ORTEGA, M.D., GÉRARD SOUILLET, M.D., EURIPEDES FERREIRA, M.D., JEAN-PHILIPPE LAPORTE, M.D., MANUEL FERNANDEZ, M.D., AND CLAUDE CHASTANG, M.D., PH.D., FOR THE EUROCORD TRANSPLANT GROUP AND THE EUROPEAN BLOOD AND MARROW TRANSPLANTATION GROUP*





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ORIGINAL ARTICLE

◄ Previous Volume 337:373-381 August 7, 1997 Number 6 Next ►

Outcome of Cord-Blood Transplantation from Related and Unrelated Donors

Eliane Gluckman, M.D., Vanderson Rocha, M.D., Agnès Boyer-Chammard, M.D., Franco Locatelli, M.D., William Arcese, M.D., Ricardo Pasquini, M.D., Juan Ortega, M.D., Gérard Souillet, M.D., Euripedes Ferreira, M.D., Jean-Philippe Laporte, M.D., Manuel Fernandez, M.D., Claude Chastang, M.D., Ph.D., for The Eurocord Transplant Group and the European Blood and Marrow Transplantation Group

Conclusions **Cord blood** is a feasible alternative source of hematopoietic stem cells for pediatric and some adult patients with major hematologic disorders, particularly if the donor and the recipient are related.

Armazenamento Privado de SCUP:

Fatos e Mitos

(1) Seguro de vida para seu filho

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...de uma revolução da medicina. Ao nascer, eles tiveram armazenadas células-tronco, terapia que já está sendo usada para tratar doenças como
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A MEDICINA QUE FAZ MILAGRES
A vida de pacientes cardíacos e com diabetes melhora a cada dia
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Oncologia

Leucemia linfóide aguda
Leucemia mielóide aguda
Linfoma de Burkitt
Leucemia mielóide crônica
Leucemia mielomonocítica
Síndrome mielodisplásica
Neuroblastoma
Linfoma não Hodgkin
Linfoma de Hodgkin
Leucemia mielóide crônica juvenil
Sarcoma de Ewing

Síndromes de falência da medula óssea

Anemia aplástica severa
Anemia de Blackfan-Diamond
Disqueratose congênita
Anemia de Fanconi
Trombocitopenia amegacariocítica
Síndrome de Kostmann

Hemoglobinopatias

Anemia falciforme
B-talassemia (Anemia de Cooley)

Doenças do metabolismo

Adrenoleucodistrofia
Doença de Batten
Doença de Gunther
Síndrome de Hurler
Doença de Krabbe
Doença de Lesh-Nyhan
Síndrome de Maroteaux-Lamy

Imunodeficiências

Imunodeficiência combinada severa
Síndrome de Omenn
Displasia reticular
Síndrome de Wiskott-Aldrich
Doença linfoproliferativa ligada ao X
Deficiência de adesão de leucócitos

"Fonte: National Cord Blood Program"

Armazenamento Privado de SCUP:

Fatos e Mitos

(2) “Inutilidade” do SCUP privado

- **Probabilidade de uso: 1 em 100.000 - 1 em 500 ???**

Biology of Blood and Marrow Transplantation 14:316-322 (2008)

1083-8791/08/1403-0001$32.00/0
doi:10.1016/j.bbmt.2007.12.493

Lifetime Probabilities of Hematopoietic Stem Cell Transplantation in the U.S.

age 40. Among individuals older than 40, incidences are higher for men than for women. The lifetime probabilities of undergoing HSCT range from 0.23% to 0.98% under the various scenarios. We conclude that, given current indications, the lifetime probability of undergoing autologous or allogeneic HSCT is much higher than previously reported by others and could rise even higher with increases in donor availability and HSCT applicability.

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Received July 12, 2007; accepted December 24, 2007

ABSTRACT

Healthcare policies regarding hematopoietic stem cell transplantation (HSCT) must address the need for the procedure as well as the availability of stem cell sources: bone marrow, peripheral blood, or umbilical cord blood (UCB). However, data with respect to the lifetime probability of undergoing HSCT are lacking. This study was undertaken to estimate the latter probability in the United States (U.S.), depending on age, sex, and race. We used data from the Center for International Blood and Marrow Transplant Research, the U.S. Surveillance, Epidemiology and End Results Program, and the U.S. Census Bureau and calculated probabilities as cumulative incidences. Several scenarios were considered: assuming current indications for autologous and allogeneic HSCT, assuming universal donor availability, and assuming broadening of HSCT use in hematologic malignancies. Incidences of diseases treated with HSCT and of HSCTs performed increase with age, rising strongly after age 40. Among individuals older than 40, incidences are higher for men than for women. The lifetime probabilities of undergoing HSCT range from 0.23% to 0.98% under the various scenarios. We conclude that, given current indications, the lifetime probability of undergoing autologous or allogeneic HSCT is much higher than previously reported by others and could rise even higher with increases in donor availability and HSCT applicability.

Cord Blood Registry® Stem Cell Therapy Data

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Use #	Date of Treatment	Recipient Sex/Age (years)	Disease	Recipient Relationship	Volume Without Anticoagulant	Time Stored (months)	Medical Center
1	12/16/93	M / 1	CML	Sibling	105cc	2	University of Minnesota
2	6/9/95	F / 9	MDS	Sibling	168cc	14	University Medical Center, Tucson
3	7/24/96	M / 6	ALL	Sibling	56cc	2	University Medical Center, Tucson
4	1/6/97	M / 3	ANLL	Sibling	106cc	4	Childrens Hospital Los Angeles
5	3/11/98	M / 5	ALL	Sibling	140cc	30	Kaiser Hospital Los Angeles
6	8/19/98	M / 5	AML	Sibling	60cc	1	Lucile Packard Children's Hospital at Stanford
7	10/30/98	F / 4	ANLL	Sibling	71cc	14	University of Michigan, Ann Arbor
8	11/2/99	M / 6	ALL	Sibling	35cc	9	University Medical Center, Tucson
9	11/29/99	F / 3	Beta Thalassemia	Sibling	90cc	6	University Medical Center, Tucson
10	2/7/00	M / 4	Fanconi Anemia	Sibling	27cc	12	University Medical Center, Tucson
11	2/11/00	F / 16	ALL	Sibling	138cc	48	Devos Children's Hospital, Grand Rapids
12	5/12/00	M / 3	ALL	Sibling	55cc	23	Children's Hospital of Wisconsin, Milwaukee
13	7/27/00	F / 2	Hurler Syndrome	Sibling	63cc	3	Children's Medical Center of Dallas
14	5/18/01	F / 43	CML	Mother	61cc	35	MD Anderson Cancer Center, Houston
15	6/1/01	M / 3	ALL	Sibling	72cc	12	University Medical Center, Tucson
16	6/14/01	M / 18	ALL	Sibling	120cc	24	Children's Hospital of Pennsylvania, Philadelphia
17	8/14/01	M / 2	AML	Sibling	79cc	1	City of Hope Hospital, Duarte, CA
18	10/24/01	M / 9	Sickle Cell Anemia	Sibling	98cc	29	University of Michigan, Ann Arbor
19	1/31/02	M / 2	Aplastic Anemia	Autologous	52cc	33	University of Minnesota
20	3/12/02	F / 5	ALL	Sibling	115cc	9	City of Hope Hospital, Duarte, CA
21	3/18/02	F / 4	ALL	Sibling	97cc	5	City of Hope Hospital, Duarte, CA
22	5/10/02	M / 2	Sickle Cell Anemia	Sibling	64cc	3	Medical City Dallas
23	7/12/02	F / 8	ALL	Sibling	76cc	4	Childrens Hospital Los Angeles
24	10/4/02	F / 11	ABL	Sibling	128cc	2	UCLA Medical Center
25	11/14/02	F / 4	ALL	Sibling	127cc	10	Childrens Hospital Los Angeles
26	12/18/02	M / 7	Beta Thalassemia	Sibling	98cc	17	University of Michigan, Ann Arbor
27	9/2/03	F / 6	ALL	Sibling	75cc	35	Vanderbilt Medical Center, Nashville
28	9/30/03	F / 5	ALL	Sibling	93cc	4	Hackensack University Medical Center, NJ
29	3/11/04	M / 3	X-linked Hyper IGM Syndrome	Sibling	89cc	7	Children's Memorial Hospital, Chicago
30	3/29/04	M / 5	ALL	Sibling	41cc	2	Cook Children's Medical Center, Ft. Worth
31	6/29/04	F / 8	ALL	Sibling	57cc	27	University Medical Center, Tucson
32	7/20/04	M / 11	Fanconi's Anemia	Sibling	142cc	15	Childrens Hospital Los Angeles
33	8/24/04	M / 3	ALL	Sibling	77cc	18	Shands Hospital, University of Florida, Gainesville
34	9/2/04	F / 3	Aplastic Anemia	Autologous	40cc	36	Children's Hospital, Seattle
35	12/30/04	M / 2	Aplastic Anemia	Sibling	85cc	7	UC Davis Medical Center, Sacramento
36	2/15/05	F / 5 mo.	Anoxic Brain Injury	Autologous	25cc	5	Duke University
37	4/12/05	F / 1	Traumatic Brain Injury	Autologous	54cc	19	Duke University
38	10/5/05	F / 4 mo.	Beta Thalassemia	Sibling	78cc	44	Children's Hospital of Orange County
39	10/11/05	M / 2	Cerebral Palsy	Autologous	45cc	35	Duke University
40	2/13/06	F / 3	Aplastic Anemia	Autologous	107cc	58	City of Hope Hospital, Duarte, CA
41	2/17/06	M / 2	AML	Sibling	61cc	3	All Children's Hospital, St. Petersburg, FL
42	7/31/06	F / 9	Aplastic Anemia	Autologous	70cc	115	City of Hope Hospital, Duarte, CA
43	8/15/06	M / 5	Aplastic Anemia	Sibling	95cc	24	Children's Hospital of Wisconsin, Milwaukee
44	9/19/06	M / 3	Cerebral Palsy	Autologous	39cc	40	Duke University
45	1/9/07	F / 3	Cerebral Palsy	Autologous	34cc	42	Duke University
Averages					80cc	20	

2007

2009

Use #	Date of Treatment	Recipient Sex/Age (yrs.)	Disease	Recipient Relationship	Volume w/o Anticoagulant	Storage Time (mo.)	Medical Center
99	11/21/08	F / 6	Diabetes Type I	Self	57cc	77	Shands University of Florida, Gainesville, FL
100	12/19/08	M / 2	Wiskott-Aldrich Syndrome	Sibling	63cc	34	Washington Hospital Center, Washington, DC
101	1/6/09	M / 9	Cerebral Palsy	Self	40cc	115	Duke University, Durham, NC
102	1/13/09	M / 3	Cerebral Palsy	Self	33cc	40	Duke University, Durham, NC
103	1/20/09	F / 5	Traumatic Brain Injury	Self	58cc	67	Duke University, Durham, NC
104	1/20/09	M / 4	Cerebral Palsy	Self	47cc	55	Duke University, Durham, NC
105	1/27/09	M / 2	Cerebral Palsy	Self	32cc	27	Duke University, Durham, NC
106	2/17/09	M / 1	Cerebral Palsy	Self	64cc	17	Duke University, Durham, NC
107	2/24/09	F / 1	Cerebral Palsy	Self	54cc	12	Duke University, Durham, NC
108	2/27/09	M / 3	Beta Thalassemia	Sibling	98cc	14	Cook Children's Medical Center, Ft. Worth, TX
109	3/10/09	M / 4	Cerebral Palsy	Self	63cc	52	Duke University, Durham, NC
110	3/24/09	M / 1	Cerebral Palsy	Self	60cc	15	Duke University, Durham, NC
111	3/24/09	F / 2	Cerebral Palsy	Self	20cc	26	Duke University, Durham, NC
112	3/24/09	M / 3	Cerebral Palsy	Self	36cc	38	Duke University, Durham, NC
113	4/7/09	F / 7	Cerebral Palsy	Self	87cc	88	Duke University, Durham, NC
114	4/21/09	M / 2	Cerebral Palsy	Self	76cc	33	Duke University, Durham, NC
115	5/11/09	M / 3 wk.	Autologous Therapy	Self	72cc	<1	University Medical Center, Tucson, AZ
116	5/26/09	F / 1	Cerebral Palsy	Self	22cc	20	Duke University, Durham, NC
117	6/9/09	F / 2	Anoxic Brain Injury	Self	40cc	32	Duke University, Durham, NC
118	6/16/09	F / 10 mo.	Cerebral Palsy	Self	49cc	10	Duke University, Durham, NC
119	6/16/09	F / 3	Cerebral Palsy	Self	85cc	38	Duke University, Durham, NC
120	7/7/09	M / 2	Cerebral Palsy	Self	7cc	31	Duke University, Durham, NC
121	7/7/09	F / 1	Periventricular Leukomalacia	Self	19cc	12	Duke University, Durham, NC
122	7/14/09	M / 1	Cerebral Palsy	Self	59cc	15	Duke University, Durham, NC
123	7/21/09	F / 4	Brain Injury	Self	112cc	49	Duke University, Durham, NC
		Averages			70cc	29	

do

mílias carentes
do.

o

1º transplante:

Local do transplante: H.C. de Porto Alegre (RGS)
Data: 31/08/2005
Paciente: JRDJ - 3 anos
Doença: Leucemia Mielóide Aguda

2º transplante:

Local do transplante: Centro Infantil Boldrini (SP)
Data: 14/11/2006
Paciente: LJN- 9 anos
Doença: Leucemia Linfóide Aguda

3º transplante:

Local do transplante: H.C. de Porto Alegre (RGS)
Data: 21/12/2007
Paciente: KAGE - 1 ano e 5 meses
Doença: Leucemia Mielóide Aguda

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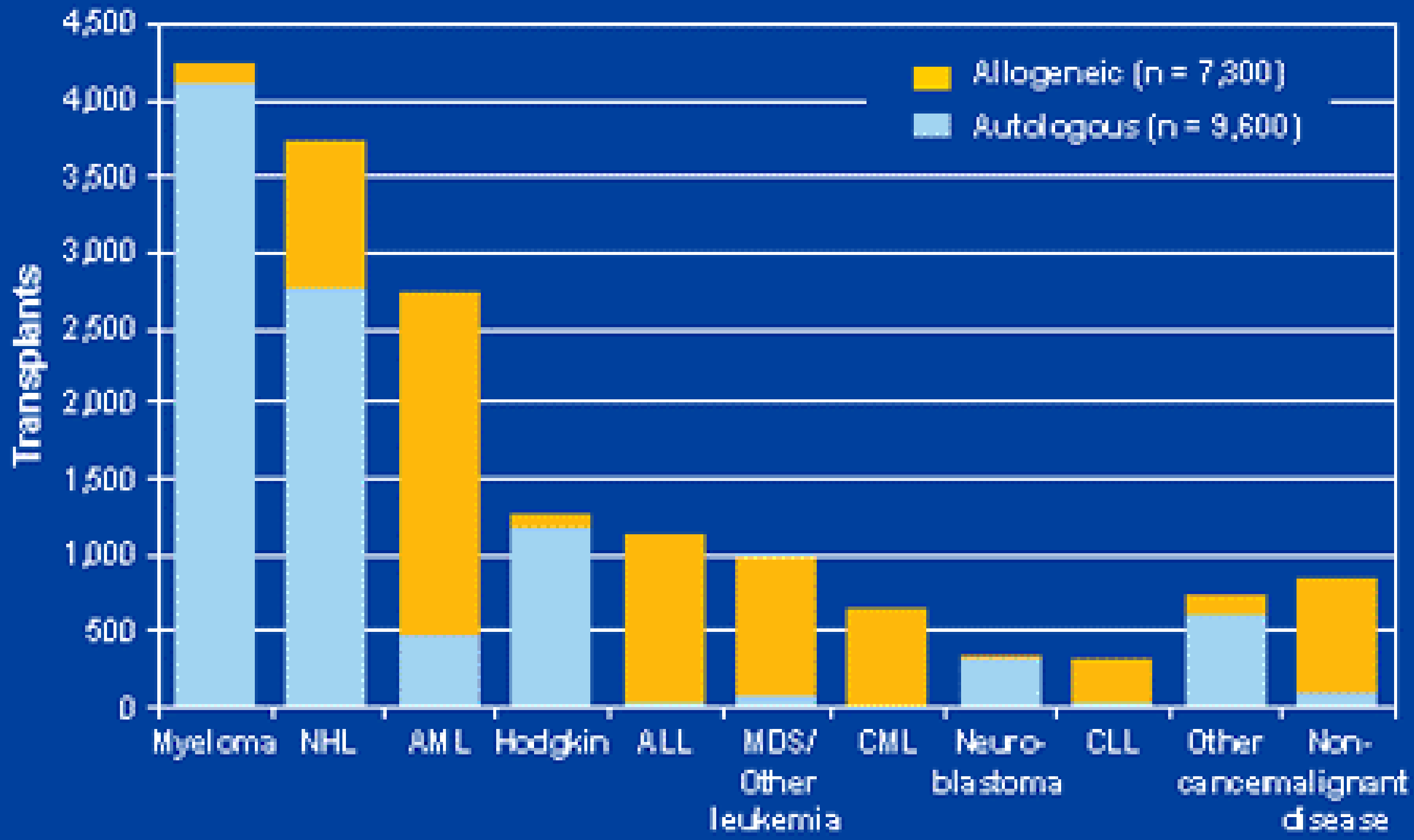
Armazenamento Privado de SCUP:

Fatos e Mitos

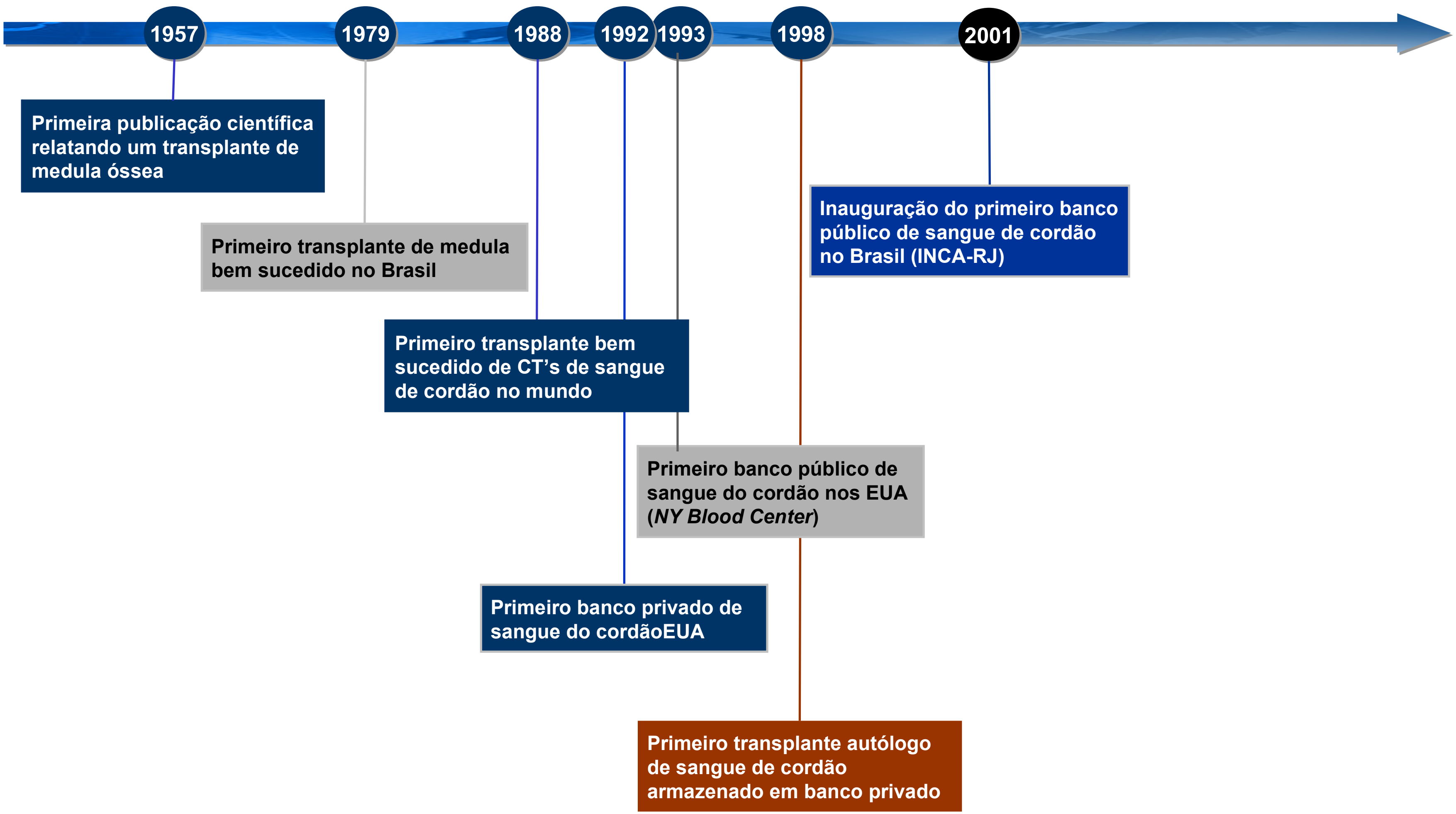
(3) Impossibilidade de uso autólogo do SCUP

- **"O uso autólogo, principalmente no tratamento de leucemia, é inexistente."**

Indications for Hematopoietic Stem Cell Transplants 2003 — North America



CT de Sangue de Cordão - Histórico



Bone Marrow Transplantation, (1999) 24, 1041

http://www.stockton-press.co.uk/bmt

Correspondence

Autologous cord blood transplantation

Placental blood transplantation has been used to restore bone marrow function after intensification chemotherapy for hematological malignancies and other tumors.[1–3] When it was demonstrated that cord blood could be stored for later use, some commercial providers suggested storing cord blood as a form of insurance and tried to sell the idea that should the child develop a cancer some day the placental blood stored would be useful and perhaps lifesaving. There are no risk/benefit studies that can or cannot justify this procedure. Some recent findings showing that leukemic blood cells are present in fetal and neonatal blood of patients diagnosed with leukemia at 10 years are a strong argument against 'insurance storage', at least for future use in future leukemias.[4]

We have an active program of placental blood transfusion and we discussed offering 'insurance storage' to concerned parents. We decided not to, prior to the demonstration that leukemic cells could be present in placental blood. Recently, however, we performed what appears to be the first autologous placental blood transplant, not having found any report of similar cases after literature review.

Five years previously, we had treated a 5-year-old boy for AML. He achieved complete remission and was consolidated with an autologous bone marrow transplant, did well but relapsed 1 year after hematological recovery. He again entered remission with a salvage regimen involving

now in complete remission from her disease, 14 months post transplant, with a normal blood count and a Karnovsky score of 100%.

There are ethical concerns about storing placental blood for personal use. We agree with Gluckman when she states that 'blood and organs are freely donated and there is an implicit agreement within the health care community that they should not be used for profit'.[6,7] New knowledge about the presence of malignant cells in placental blood, years before clinical disease would argue against 'insurance storage'. On the other hand, our case could be used as a strong argument for autologous placental blood storage, and complex ethical questions could be posed. Is it the right of parents, if they can pay for it, to provide placental blood storage for their children? The risk/benefit analysis suggests that storage is not useful when populations are considered, but in individual cases should the parents have the right to decide they want this type of service? We wish to discuss these ethical questions with our colleagues in the bone marrow transplantation community: we feel this is an appropriate forum for discussions, which should be carried out before regulatory agencies with no expertise in the field impose guidelines.

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Cord Blood Registry® Stem Cell Therapy Data

Cbr cord blood registry® The Name to Trust®

Use #	Date of Treatment	Recipient Sex/Age (years)	Disease	Recipient Relationship	Volume Without Anticoagulant	Time Stored (months)	Medical Center
26	12/18/02	M / 7	Beta Thalassemia	Sibling	98cc	17	University of Michigan, Ann Arbor
27	9/2/03	F / 6	ALL	Sibling	75cc	35	Vanderbilt Medical Center, Nashville
28	9/30/03	F / 5	ALL	Sibling	93cc	4	Hackensack University Medical Center, NJ
29	3/11/04	M / 3	X-linked Hyper IGM Syndrome	Sibling	89cc	7	Children's Memorial Hospital, Chicago
30	3/29/04	M / 5	ALL	Sibling	41cc	2	Cook Children's Medical Center, Ft. Worth
31	6/29/04	F / 8	ALL	Sibling	57cc	27	University Medical Center, Tucson
32	7/20/04	M / 11	Fanconi's Anemia	Sibling	142cc	15	Childrens Hospital Los Angeles
33	8/24/04	M / 3	ALL	Sibling	77cc	18	Shands Hospital, University of Florida, Gainesville
34	9/2/04	F / 3	Aplastic Anemia	Autologous	40cc	36	Children's Hospital, Seattle
35	12/30/04	M / 2	Aplastic Anemia	Sibling	85cc	7	UC Davis Medical Center, Sacramento
36	2/15/05	F / 5 mo.	Anoxic Brain Injury	Autologous	25cc	5	Duke University
37	4/12/05	F / 1	Traumatic Brain Injury	Autologous	54cc	19	Duke University
38	10/5/05	F / 4 mo.	Beta Thalassemia	Sibling	78cc	44	Children's Hospital of Orange County
39	10/11/05	M / 2	Cerebral Palsy	Autologous	45cc	35	Duke University
40	2/13/06	F / 3	Aplastic Anemia	Autologous	107cc	58	City of Hope Hospital, Duarte, CA
41	2/17/06	M / 2	AML	Sibling	61cc	3	All Children's Hospital, St. Petersburg, FL
42	7/31/06	F / 9	Aplastic Anemia	Autologous	70cc	115	City of Hope Hospital, Duarte, CA
43	8/15/06	M / 5	Aplastic Anemia	Sibling	95cc	24	Children's Hospital of Wisconsin, Milwaukee
44	9/19/06	M / 3	Cerebral Palsy	Autologous	39cc	40	Duke University
45	1/9/07	F / 3	Cerebral Palsy	Autologous	34cc	42	Duke University
Averages					80cc	20	

Glossary

ABL: Acute Biphenotypic Leukemia
ALL: Acute Lymphocytic Leukemia
AML: Acute Myelogenous Leukemia
ANLL: Acute Nonlymphocytic Leukemia
Autologous: Stem cell therapy using a patient's own stem cells.
CML: Chronic Myelogenous Leukemia
MDS: Myelodysplastic Syndrome

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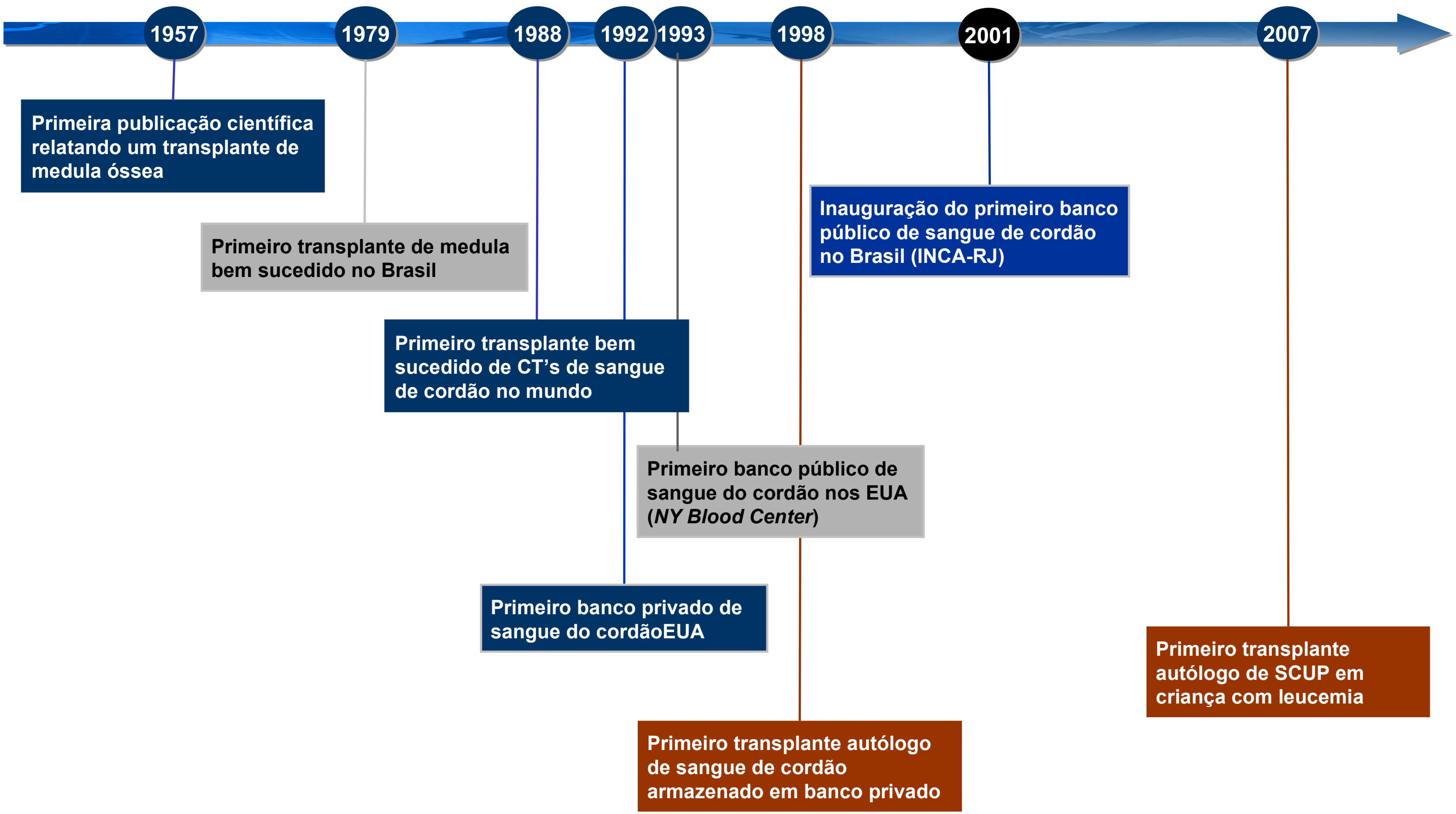
Use #	Date of Treatment	Recipient Sex/Age (yrs.)	Disease	Recipient Relationship	Volume w/o Anticoagulant	Storage Time (mo.)	Medical Center
41	2/17/06	M / 1	AML	Sibling	61cc	3	All Children's Hospital, St. Petersburg, FL
42	7/31/06	F / 9	Aplastic Anemia	Self	70cc	114	City of Hope, Duarte, CA
43	8/15/06	M / 5	Aplastic Anemia	Sibling	95cc	24	Children's Hospital of Wisconsin, Milwaukee, WI
44	9/19/06	M / 3	Cerebral Palsy	Self	39cc	40	Duke University, Durham, NC
45	1/9/07	F / 3	Cerebral Palsy	Self	34cc	42	Duke University, Durham, NC
46	3/1/07	M / 2	Diabetes Type I	Self	170cc	27	Shands Hospital, University of Florida, Gainesville, FL
47	4/20/07	M / 10	Diamond Blackfan Anemia	Sibling	63cc	24	Schneider Children's Hospital, New Hyde Park, NY
48	4/30/07	M / 5	Rare Immune Disorder	Self	83cc	69	Children's Memorial Hospital, Chicago, IL
49	5/3/07	M / 2	AML	Sibling	129cc	1	Westchester Medical Center, Valhalla, NY
50	5/15/07	F / 10 mo.	Cerebral Palsy	Self	23cc	10	Duke University, Durham, NC
51	5/17/07	F / 2	Diabetes Type I	Self	62cc	24	Shands University of Florida, Gainesville, FL
52	7/20/07	M / 7	Diabetes Type I	Self	95cc	95	Shands University of Florida, Gainesville, FL
53	7/24/07	M / 1	Cerebral Palsy	Self	49cc	18	Duke University, Durham, NC
54	8/16/07	F / 2 mo.	Wolman Disease	Sibling	63cc	27	Children's Hospital Los Angeles, Los Angeles, CA
55	8/23/07	M / 2	AML	Sibling	124cc	10	Children's Hospital of Boston, Boston, MA
56	8/28/07	M / 6 mo.	Cerebral Palsy	Self	58cc	6	Duke University, Durham, NC
57	10/9/07	M / 7	ALL	Sibling	92cc	48	Shands University of Florida, Gainesville, FL
58	10/23/07	F / 2	Cerebral Palsy	Self	55cc	32	Duke University, Durham, NC
59	10/23/07	M / 2	Cerebral Palsy	Self	87cc	35	Duke University, Durham, NC
60	12/4/07	M / 1	Cerebral Palsy	Self	27cc	20	Duke University, Durham, NC
61	1/15/08	F / 4	Cerebral Palsy	Self	60cc	51	Duke University, Durham, NC
62	1/22/08	M / 1	Cerebral Palsy	Self	65cc	22	Duke University, Durham, NC
63	2/4/08	M / 1	ALL	Sibling	40cc	3	University Medical Center, Tucson, AZ
64	2/8/08	F / 3	AML	Sibling	79cc	15	All Children's Hospital, St. Petersburg, FL
65	2/8/08	M / 8	Diabetes Type I	Self	98cc	105	Shands University of Florida, Gainesville, FL
66	2/26/08	M / 2	Nonspecific Brain Injury	Self	54cc	34	Duke University, Durham, NC
67	3/18/08	M / 1	Cerebral Palsy	Self	59cc	20	Duke University, Durham, NC
68	3/25/08	M / 3	Cerebral Palsy	Self	14cc	39	Duke University, Durham, NC
69	4/8/08	M / 2	Encephalitis	Self	63cc	24	Duke University, Durham, NC
70	4/15/08	F / 8	Cerebral Palsy	Self	75cc	97	Duke University, Durham, NC
71	5/6/08	F / 5	Cerebral Palsy	Self	35cc	61	Duke University, Durham, NC
72	5/23/08	F / 3	Diabetes Type I	Self	45cc	35	Shands University of Florida, Gainesville, FL
73	5/27/08	F / 2	Cerebral Palsy	Self	39cc	24	Duke University, Durham, NC
74	5/27/08	M / 1	Cerebral Palsy	Self	80cc	23	Duke University, Durham, NC
75	6/3/08	M / 3	Cerebral Palsy	Self	13cc	42	Duke University, Durham, NC
76	6/10/08	F / 3	Cerebral Palsy	Self	110cc	44	Duke University, Durham, NC
77	6/19/08	F / 5	Diabetes Type I	Self	58cc	60	Shands University of Florida, Gainesville, FL
78	6/20/08	F / 2 wk.	Hypoxic-Ischemic Encephalopathy	Self	62cc	<1	Duke University, Durham, NC
79	7/8/08	F / 2	Cerebral Palsy	Self	39cc	33	Duke University, Durham, NC
80	7/8/08	M / 2	Cerebral Palsy	Self	112cc	34	Duke University, Durham, NC
81	7/29/08	F / 3	Cerebral Palsy	Self	58cc	37	Duke University, Durham, NC
82	7/29/08	F / 1	Cerebral Palsy	Self	37cc	18	Duke University, Durham, NC
83	8/12/08	F / 6	ALL	Sibling	88cc	<1	Children's Hospital of Wisconsin, Milwaukee, WI
84	8/19/08	M / 1	Cerebral Palsy	Self	77cc	11	Duke University, Durham, NC
85	8/26/08	F / 4	Cerebral Palsy	Self	25cc	49	Duke University, Durham, NC
86	8/28/08	F / 1	AML	Sibling	118cc	36	UCSF Medical Center, San Francisco, CA
87	9/2/08	M / 2 mo.	Birth-Hypoxia	Self	102cc	2	Duke University, Durham, NC
88	9/9/08	F / 3	Head Injury	Self	26cc	41	Duke University, Durham, NC
89	9/16/08	F / 4	Cerebral Palsy	Self	135cc	58	Duke University, Durham, NC
90	9/23/08	M / 2	Cerebral Palsy	Self	50cc	32	Duke University, Durham, NC
91	9/30/08	F / 1 mo.	Hydrocephalus	Self	48cc	1	Duke University, Durham, NC
92	10/14/08	F / 4 mo.	Hydrocephalus	Self	74cc	4	Duke University, Durham, NC
93	10/15/08	M / 4	AML	Sibling	42cc	1	University Medical Center, Tucson, AZ
94	10/17/08	F / 3	Diabetes Type I	Self	23cc	42	Shands University of Florida, Gainesville, FL
95	10/28/08	F / 7	Cerebral Palsy	Self	79cc	90	Duke University, Durham, NC
96	10/30/08	F / 7	Sickle Cell Anemia	Sibling	81cc	62	Methodist Children's Hospital, San Antonio, TX
97	11/11/08	M / 2	Cerebral Palsy	Self	130cc	32	Duke University, Durham, NC
98	11/11/08	M / 2	Cerebral Palsy	Self	62cc	26	Duke University, Durham, NC

2009

Use #	Date of Treatment	Recipient Sex/Age (yrs.)	Disease	Recipient Relationship	Volume w/o Anticoagulant	Storage Time (mo.)	Medical Center
99	11/21/08	F / 6	Diabetes Type I	Self	57cc	77	Shands University of Florida, Gainesville, FL
100	12/19/08	M / 2	Wiskott-Aldrich Syndrome	Sibling	63cc	34	Washington Hospital Center, Washington, DC
101	1/6/09	M / 9	Cerebral Palsy	Self	40cc	115	Duke University, Durham, NC
102	1/13/09	M / 3	Cerebral Palsy	Self	33cc	40	Duke University, Durham, NC
103	1/20/09	F / 5	Traumatic Brain Injury	Self	58cc	67	Duke University, Durham, NC
104	1/20/09	M / 4	Cerebral Palsy	Self	47cc	55	Duke University, Durham, NC
105	1/27/09	M / 2	Cerebral Palsy	Self	32cc	27	Duke University, Durham, NC
106	2/17/09	M / 1	Cerebral Palsy	Self	64cc	17	Duke University, Durham, NC
107	2/24/09	F / 1	Cerebral Palsy	Self	54cc	12	Duke University, Durham, NC
108	2/27/09	M / 3	Beta Thalassemia	Sibling	98cc	14	Cook Children's Medical Center, Ft. Worth, TX
109	3/10/09	M / 4	Cerebral Palsy	Self	63cc	52	Duke University, Durham, NC
110	3/24/09	M / 1	Cerebral Palsy	Self	60cc	15	Duke University, Durham, NC
111	3/24/09	F / 2	Cerebral Palsy	Self	20cc	26	Duke University, Durham, NC
112	3/24/09	M / 3	Cerebral Palsy	Self	36cc	38	Duke University, Durham, NC
113	4/7/09	F / 7	Cerebral Palsy	Self	87cc	88	Duke University, Durham, NC
114	4/21/09	M / 2	Cerebral Palsy	Self	76cc	33	Duke University, Durham, NC
115	5/11/09	M / 3 wk.	Autologous Therapy	Self	72cc	<1	University Medical Center, Tucson, AZ
116	5/26/09	F / 1	Cerebral Palsy	Self	22cc	20	Duke University, Durham, NC
117	6/9/09	F / 2	Anoxic Brain Injury	Self	40cc	32	Duke University, Durham, NC
118	6/16/09	F / 10 mo.	Cerebral Palsy	Self	49cc	10	Duke University, Durham, NC
119	6/16/09	F / 3	Cerebral Palsy	Self	85cc	38	Duke University, Durham, NC
120	7/7/09	M / 2	Cerebral Palsy	Self	7cc	31	Duke University, Durham, NC
121	7/7/09	F / 1	Periventricular Leukomalacia	Self	19cc	12	Duke University, Durham, NC
122	7/14/09	M / 1	Cerebral Palsy	Self	59cc	15	Duke University, Durham, NC
123	7/21/09	F / 4	Brain Injury	Self	112cc	49	Duke University, Durham, NC
		Averages			70cc	29	

CT de Sangue de Cordão - Histórico



PEDIATRICS®
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First Report of Autologous Cord Blood Transplantation in the Treatment of a Child With Leukemia

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Financial Disclosure: Dr Lampeter works for CorCell Inc, a private cord blood–banking laboratory. The other authors have indicated they have no financial relationships relevant to this article to disclose.

ABSTRACT

We present the case of a 3-year-old girl with acute lymphoblastic leukemia who developed isolated central nervous system relapse while receiving chemotherapy 10 months after diagnosis. The child achieved a second remission on retreatment with systemic and intrathecal chemotherapy. She then underwent myeloablative chemotherapy and radiation therapy followed by infusion of her own umbilical cord blood, which the parents had saved after her delivery. She is now doing well and is in complete remission 20 months after cord blood transplantation. In this first report of autologous cord blood transplantation for treatment of childhood leukemia, we discuss the safety and feasibility of this procedure as well as some of the uncertainties surrounding autologous cord blood collection and usage.

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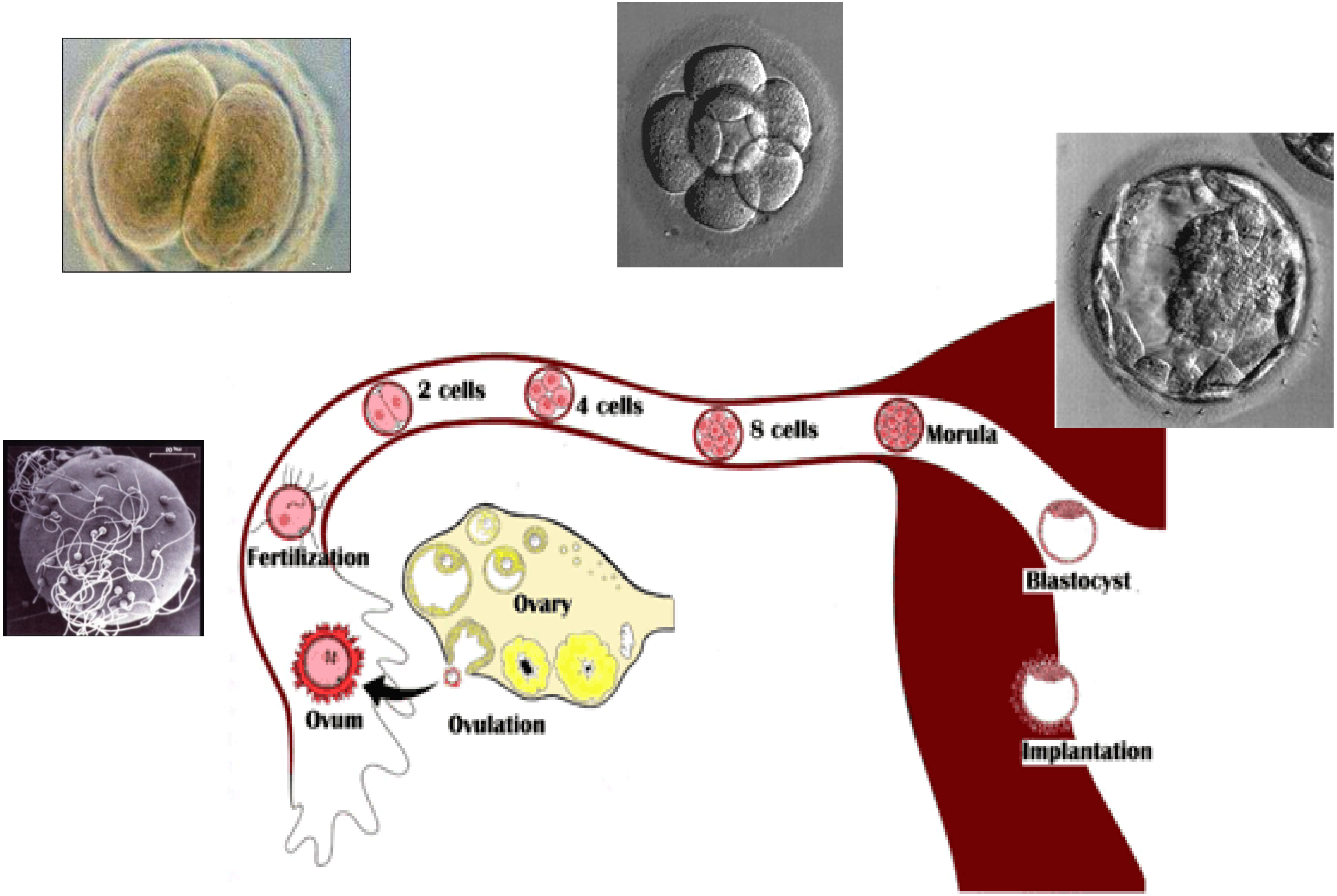
Armazenamento de SCUP


1997: A REVOLUÇÃO DOLLY !



2 cells
4 cells
8 cells
Morula
Fertilization
Ovary
Ovum
Ovulation
Blastocyst
Implantation

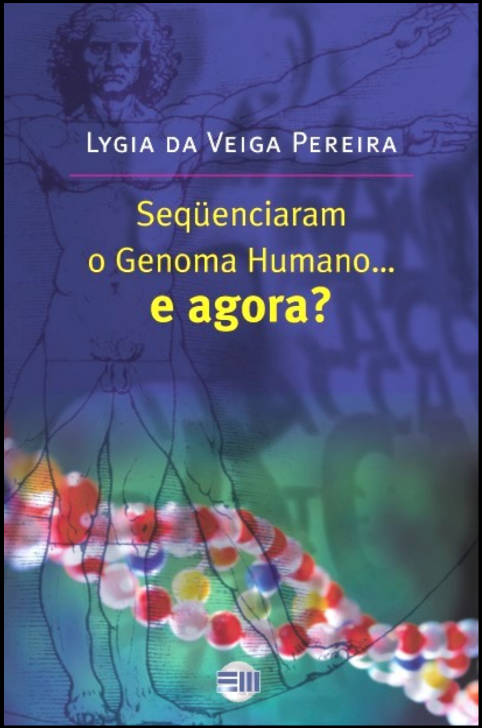
A clonagem pós-Dolly

1997 — 1998 — 2000

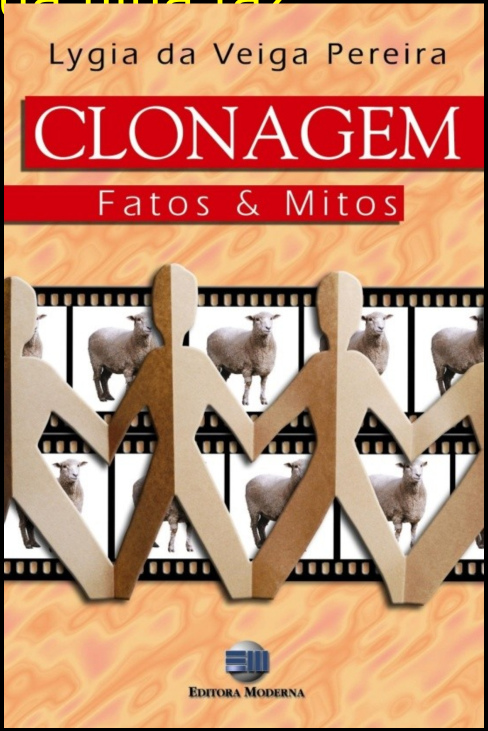
TAXAS DE "SUCESSO" DA CLONAGEM

Célula doadora	Espécie	Oócitos reconstr.	Nascimentos vivos	Obs.
Fetal				
Fibroblasto	Camundongo	3057	5 (0.2%)	
	Bovino	276	4 (1.4%)	1 †
		1896	6 (0.3%)	
	Cabra	285	3 (1.1%)	
	Porco	210	1 (0.5%)	
	Ovelha	417	14 (3.4%)	11 †
Adulta				
Gld. Mamária	Ovelha	227	1 (0.4%)	
Granulosa	Camundongo	2468	31 (1.3%)	
Fibroblasto	Bovino	440	6 (1.4%)	2 †
		664	8 (1.2%)	

DIVULGAÇÃO CIENTÍFICA



"À minha mãe, formada em filosofia, por nunca ter se conformado em não entender o que sua filha faz."



"O Clone"
ONU
Senado

1997

2001

2002