SOCIETAT
CATALANA DE
TRASPLANTAMENT

13º CONGRESO BARCELONA

18-20 MARZO 2015

Juan Carlos Izpisúa Belmonte

Medalla de oro FCT2015

La Fundació Catalana de Trasplantament : Medalles

Medalles d'Or


1996: Sir Roy Calne


1996: Thomas Starzl

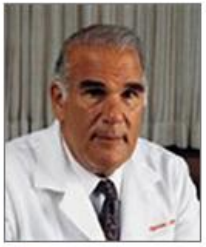

1999: Antonio Caralps


1999: Josep Mª Gil-Vernet


2001: Felix Rapaport


2003: Barry Kahan


2003: David Shuterland


2005: John Najarian


2005: Claudio Porticelli


2007: Carles Margarit

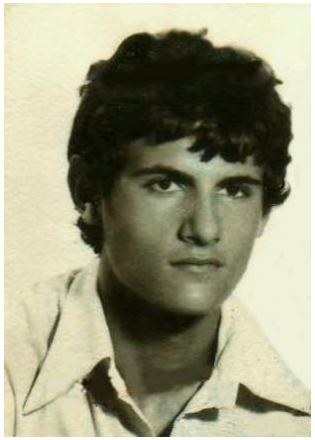

2009: Gerhard Opelz


2011: Kathryn Wood


2013:Francis Delmonico

Juan Carlos Izpisúa-Belmonte

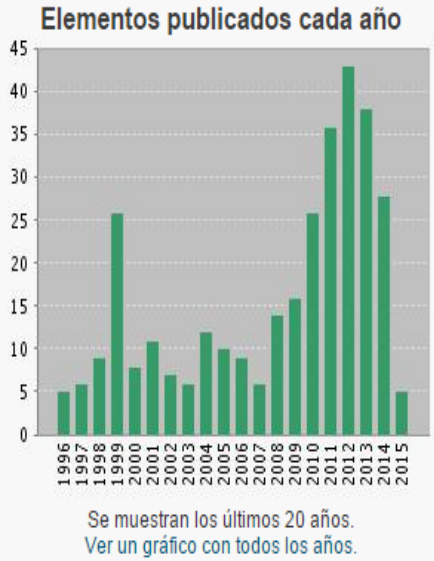
- JC was born in 1960 into a humble family in Hellin (La Mancha)
- The youngest of three brothers
- He studied in a public school until they moved to Benidorm
- He worked in summer time to help his mother
- He finished his scholarship in Altea Institute with different grants
- JC loved football at that time he was admitted to Hercules FC

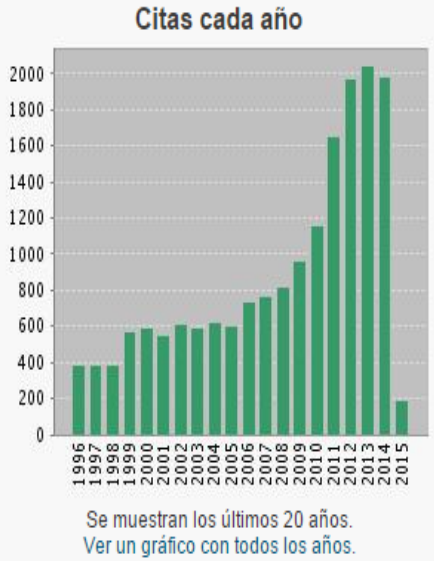


Juan Carlos Izpisúa-Belmonte

- JC wanted to study Medicine in Valencia, but the faculty was closed
- He decide to start Pharmacy – Extraordinary degree award
- Bologna: Ph.D. Graduate Student- Biochemistry and Pharmacology
- 1988-90: Heidelberg: European Molecular Biology Laboratories
- 1990-91: Oxford: Oxford University Oxford, Visiting Fellow.
- 1992-93: LA: University of California (UCLA), Postdoctoral Fellow.
- 2000- Salk Institute – San Diego – Co-Director
- CMRB – Barcelona (2005-2013)

Juan Carlos Izpisúa-Belmonte (1985-2015)





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Honors and Awards:

198

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2014 Premio La Tribuna of Albacete


FESTIVIDAD DE
SAN ANTONIO
DE PADUA

The Nobel Prize in Physiology or Medicine 2012

Shinya Yamanaka

Joan Bisbal

Scientific Activities

Scientific Journal Editorial Board Member

Advances in Regenerative Biology
American Journal of Stem Cells
BMC Developmental Biology
Cell Discovery
Cell Research
Development
Developmental Biology
Development Genes & Evolution
Development Growth and Differentiation
Elsevier Journals
International Journal of Clinical Cardiology
International Journal of Developmental Biology
ISRN Developmental Biology
Journal of Medical Sciences
Medical Sciences
OA Biotechnology
Protein & Cell
Stem Cell Reports
Stem Cell Research and Therapy
World Research Journal of Developmental Biology
World Research Journal of Stem Cells
World Research Journal of Transactions on Database Systems

Journal Reviews

BioEssays
Biotechnology Journal
Blood
BMC Biology
BMC Cancer
BMC Cell Biology
BMC Developmental Biology
BMC Genomics
Cardiovascular Research
Cell
Cell Metabolism
Cell Proliferation
Cell Reports
Cell Research
Cell Stem Cell
Cellular and Molecular Life Sciences
Current Biology
Current Opinion in Genetics and Development
Cytotherapy
Development
Development, Genes and Evolution
Development, Growth and Differentiation
Developmental Biology
Developmental Cell
Developmental Dynamics
Differentiation
Disease Models & Mechanisms
EMBO
EMBO Journal
EMBO Reports
Encyclopedia of Molecular Cell Biology and Molecular Medicine
Epigenomics
FASEB Journal
Genes & Development
Genome Biology
Heart and Vessels
Human Molecular Genetics
Human Reproduction
International Journal of Biochemistry and Cell Biology
International Journal of Developmental Biology
ISRN Developmental Biology
IUBMB Life
Journal of Cell Biology
Journal of Cell Science
Journal of Clinical Investigation
Journal of Experimental Medicine
Journal of Molecular Medicine
Journal of Neurological Sciences
Journal of Neuroscience
Journal of Tissue Engineering and Regenerative Medicine
Journal of Vascular Research
Journal of Visualized Experiments
Liver International
Mechanisms of Development
Molecular Human Reproduction
Molecular Systems Biology
Molecular Therapy
Nature
Nature Biotechnology
Nature Cell Biology
Nature Communications
Nature Genetics
Nature Medicine
Nature Methods
Nature Protocols
Nature Reviews Cancer
Nature Reviews Genetics
Nature Reviews Molecular Cell Biology
Nature Structural and Molecular Biology
Neuroscience
Oncogene
PLoS Biology
PLoS Genetics
PLoS ONE
PNAS
Science
Science Translational Medicine
Stem Cells
Stem Cells and Development

Patents

- Induced Pluripotent Stem Cells and Methods of Use
- Induced Pluripotent Stem Cell Generation Using Two Factors and p53 Inactivation
- Generation of Genetically Corrected Disease-free Induced Pluripotent Stem Cells
- Generation of Induced Pluripotent Stem Cells from Cord Blood
- Direct Transgeneration of Hematopoietic Progenitor Cells from Mesenchymal Stem Cells
- Induced Pluripotent Stem Cells and Methods of Use
- Robust and Efficient Differentiation of Human Pluripotent Stem Cells to Multipotent Vascular Progenitors
- Progressive Degeneration of Human Neural Stem Cells Caused By Pathogenic LRRK2
- Cord Blood-derived Neurons by Expression of SOX2
- Generation of Vascular Progenitor Cells
- Methods for Reprogramming a Somatic Cell
- Methods for Heart Regeneration
- Activin/BMP-2 Chimeric Ligands Direct Adipose-Derived Stem Cells to Chondrogenic Differentiation

Juan Carlos Izpisúa-Belmonte

Research Expertise

- Stem cells biology
- Organ and tissue development and regeneration
- Somatic cell reprograming
- Molecular mechanism of aging
- Gene editing
- ……..
- Translation medicine and research

nature Vol 464|25 March 2010|doi:10.1038/nature08899

LETTERS

Cell Research (2011) 21:1740-1744.

www.nature.com/cr

LETTER TO THE EDITOR

Zebrafish heart regeneration occurs by cardiomyocyte dedifferentiation and proliferation

Chris Jopling[1], Eduard Sleep[1,2]†, Marina Raya[1]†, Mercè Martí[1], Angel Raya[1,2,3]† & Juan Carlos Izpisúa Belmonte[1,2,4]

Efficient correction of hemoglobinopathy-causing mutations by homologous recombination in integration-free patient iPSCs

Cell Research (2011) **21**:1740-1744. doi:10.1038/cr.2011.186; published online 22 November 2011

AGEING

Genetic rejuvenation of old muscle

In advanced age, the stem cells responsible for muscle regeneration switch from reversible quiescence to irreversible senescence. Targeting a driver of senescence revives muscle stem cells and restores regeneration. SEE ARTICLE P.316

LETTER

nature

and an apical ectodermal ridge forms. A limb bud is thus established that can generate the appropriate signals to develop into a complete limb. The additional limbs have reversed polarity. This can be explained by the distribution of cells in the flank with potential polarizing activity. The results suggest that local production of an FGF may initiate limb development.

Introduction

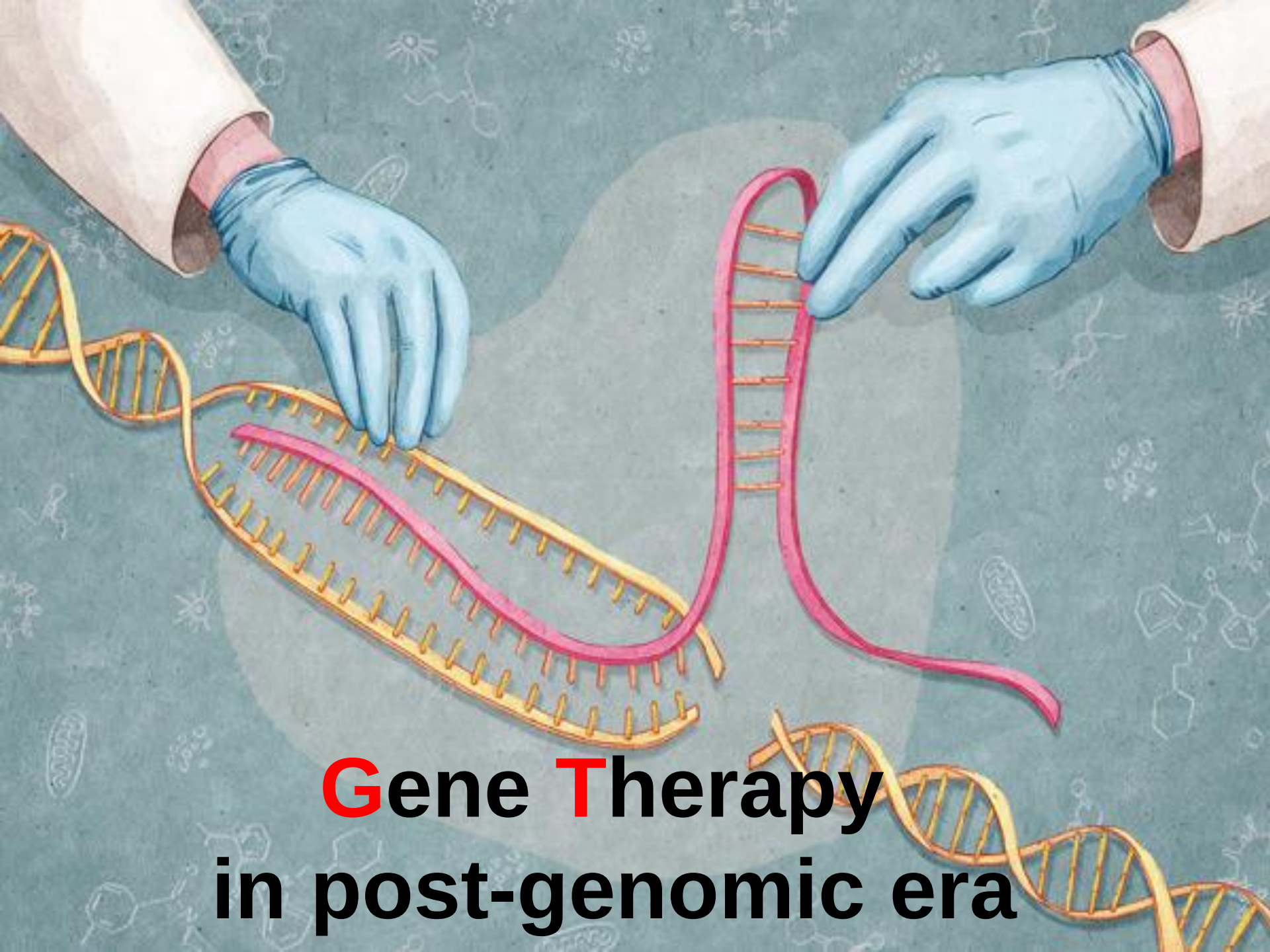
Initiation and control of limb development is a fundamental issue in vertebrate development and evolution. In virtually all vertebrates, two pairs of limb buds form from lateral

region cells, or fibroblasts expressing *Shh* are grafted anteriorly, posterior *Hoxd* genes are activated in anterior mesenchyme to give a mirror-image pattern that precedes the mirror-image duplication of the digits (Izpisúa-Belmonte et al., 1991; Nohno et al., 1991; Riddle et al., 1993).

Although the molecular networks that operate in the limb bud have received much attention, very little is known about how a limb bud is initiated. A recent clue has emerged from work on chimeric mice combining wild-type embryos and pluripotent embryonic stem (ES) cells that constitutively express FGF-4. A dramatic consequence of overexpression of FGF-4 is the development of multiple

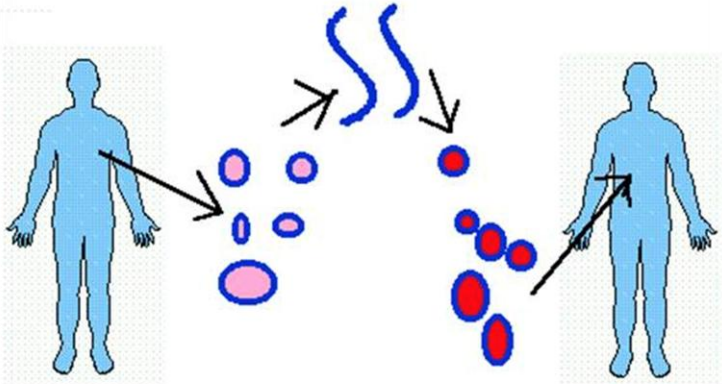
luripotent cells to cells

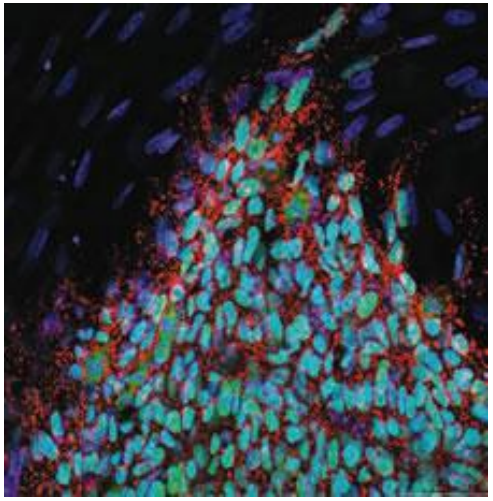
allegos[1], Keiichiro Suzuki[1], Daiji Okamura[1], Min-Zu Wu[1], Ilir Dubova[1], Concepcion Rodriguez Esteban[1], Nuria Montserrat[2,3], Josep M. Campistol[4] and Juan Carlos Izpisua Belmonte[1,2,6]



Gene Therapy in post-genomic era

Ex Vivo Gene Therapy

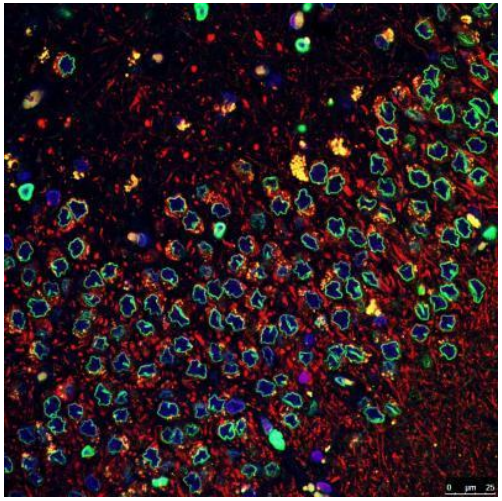




Raya et al. *Nature*, 2009

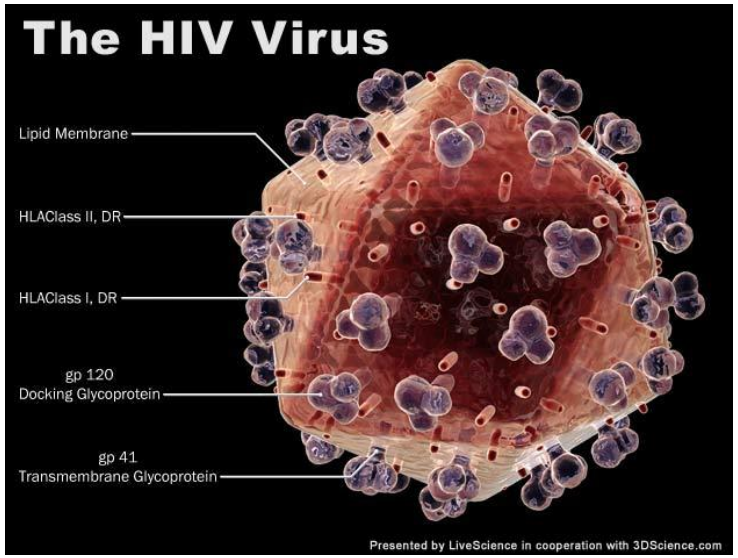
Liu et al. *Nature*, 2011

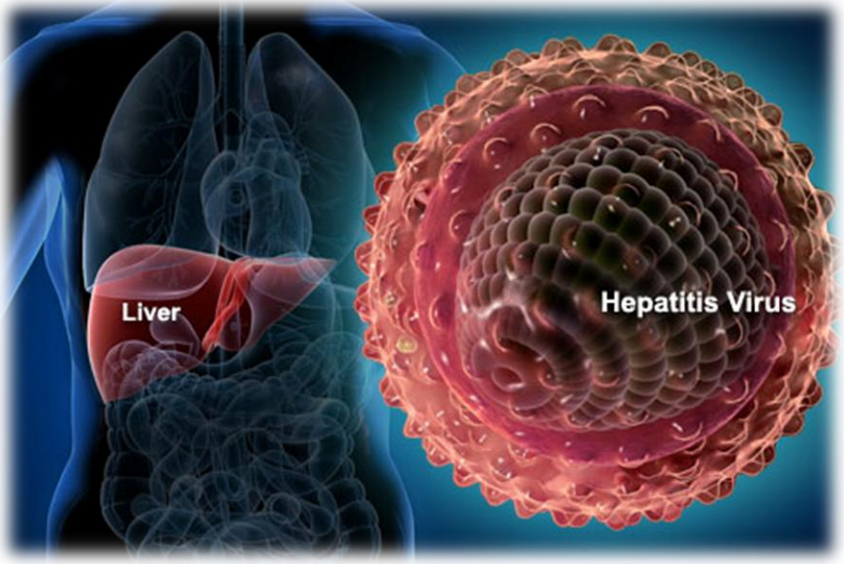
Li et al. *Cell Res*, 2011



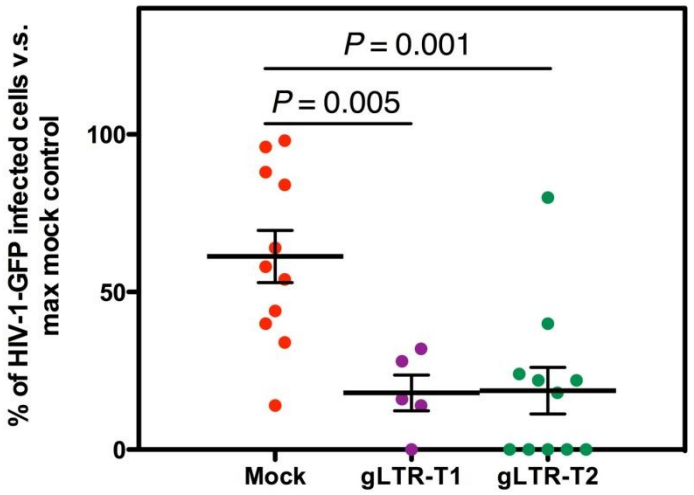
Liu et al. *Nature*, 2012

Gene therapy: Anti-viral

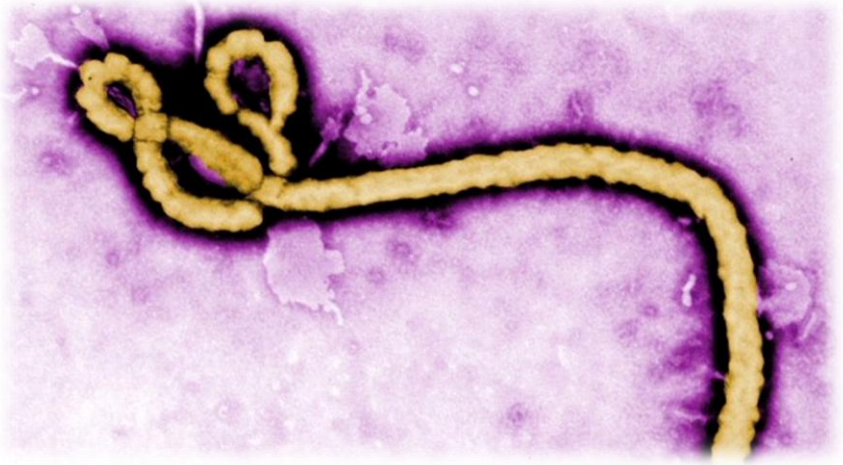


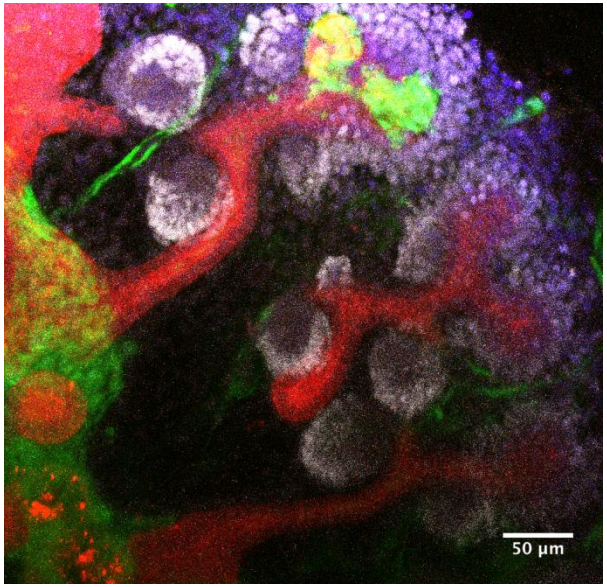


Primary T cells

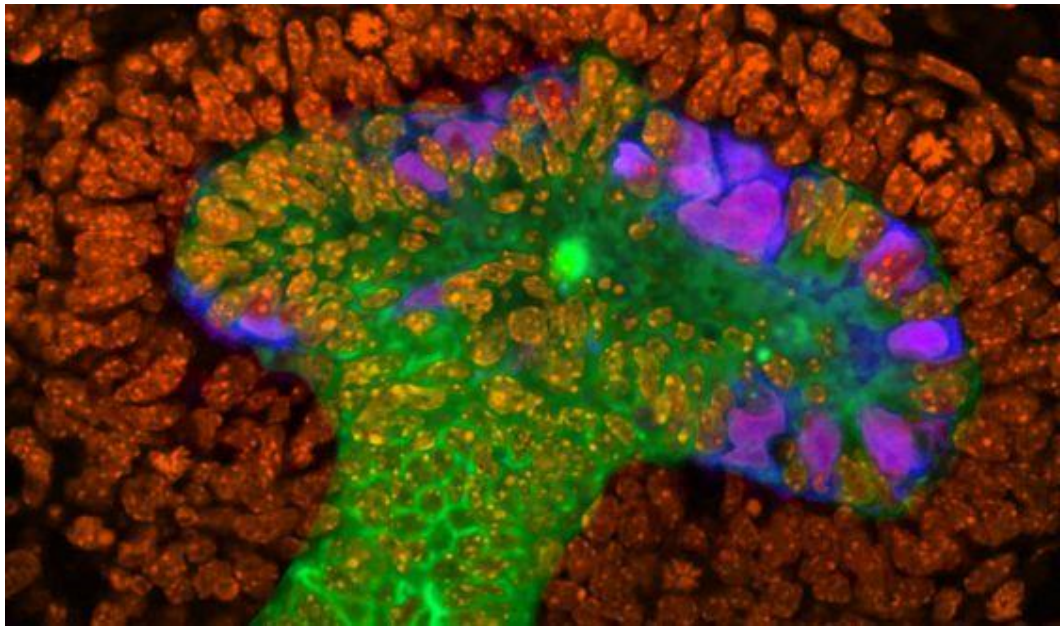


Liao et al, Nature Communications, 2015

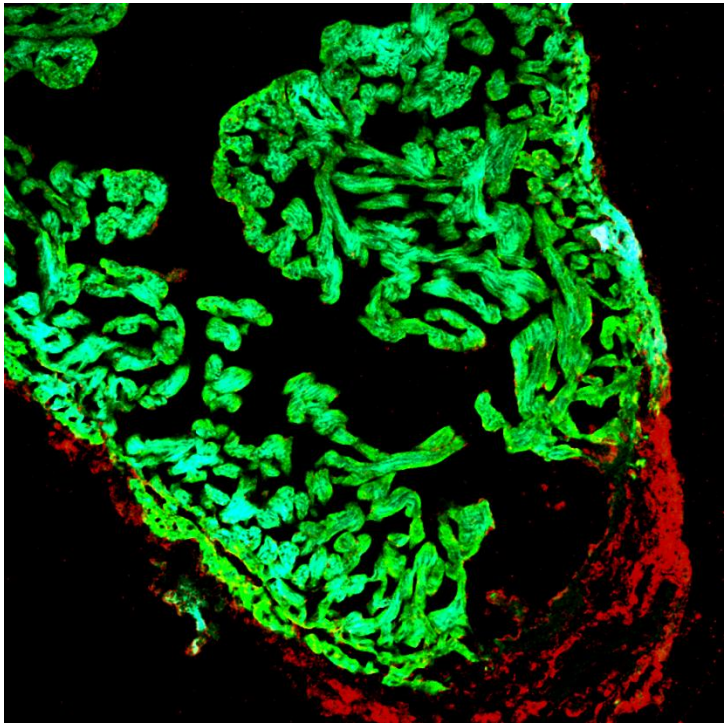




The injured kidney: inducing tissue repair by reprogramming

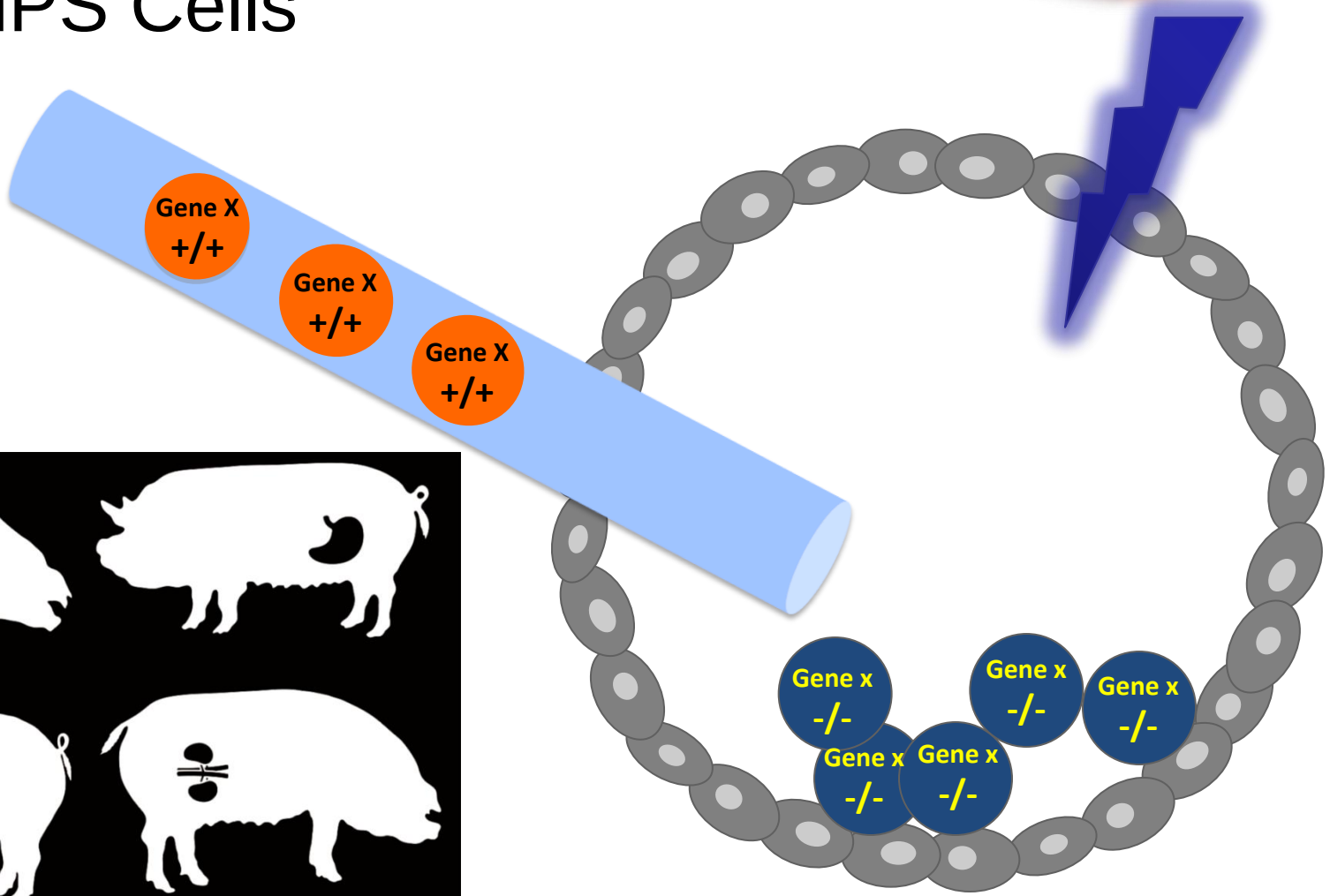


Mini-Kidney



Gene editing *in vitro*

Human iPS Cells



Juan Carlos Izpisúa-Belmonte

Summary

- **JC is an extraordinary researcher**
- **Very – very hard worker**
- **Incredible science producer**
- **One of the key persons in iPS**
- **Organ development and regeneration**
- **Future of organ transplantation**

Presentación programa científico

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