

Il progetto Global Kidney Exchange

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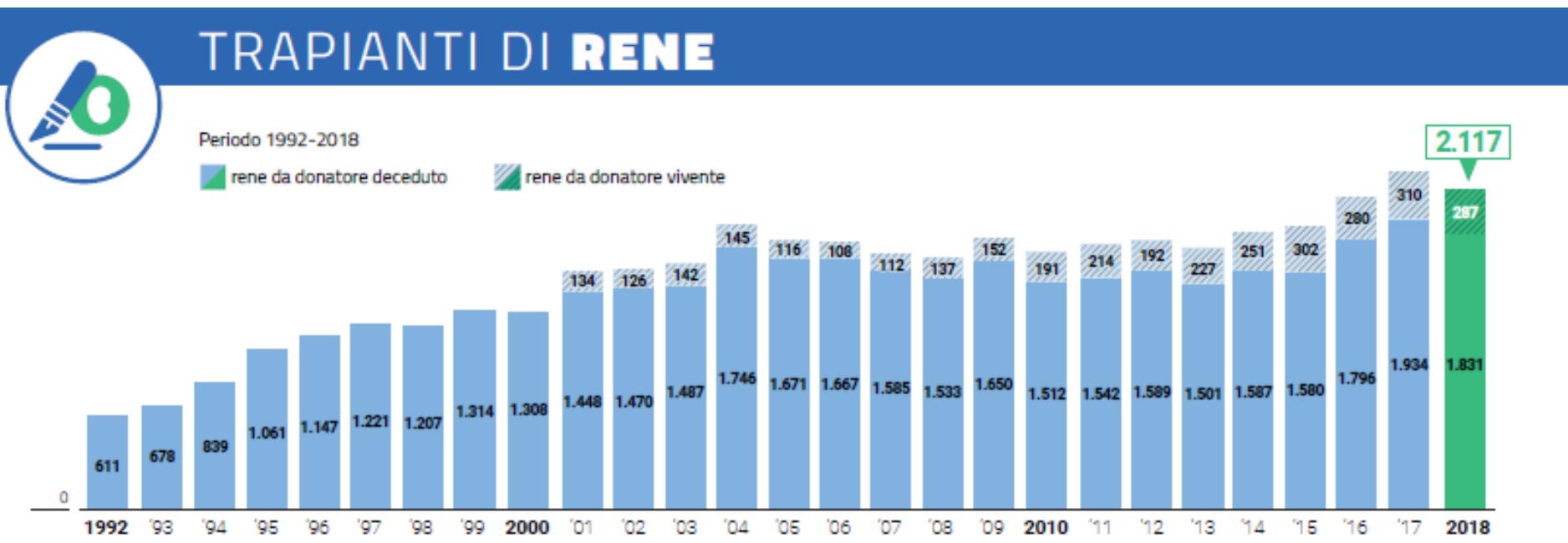
**Fondazione Policlinico Universitario Agostino Gemelli IRCCS
Università Cattolica del Sacro Cuore**

The Global Kidney Exchange

- Il cross-over in Italia
- Il cross-over in EU
- Perché e come GKE

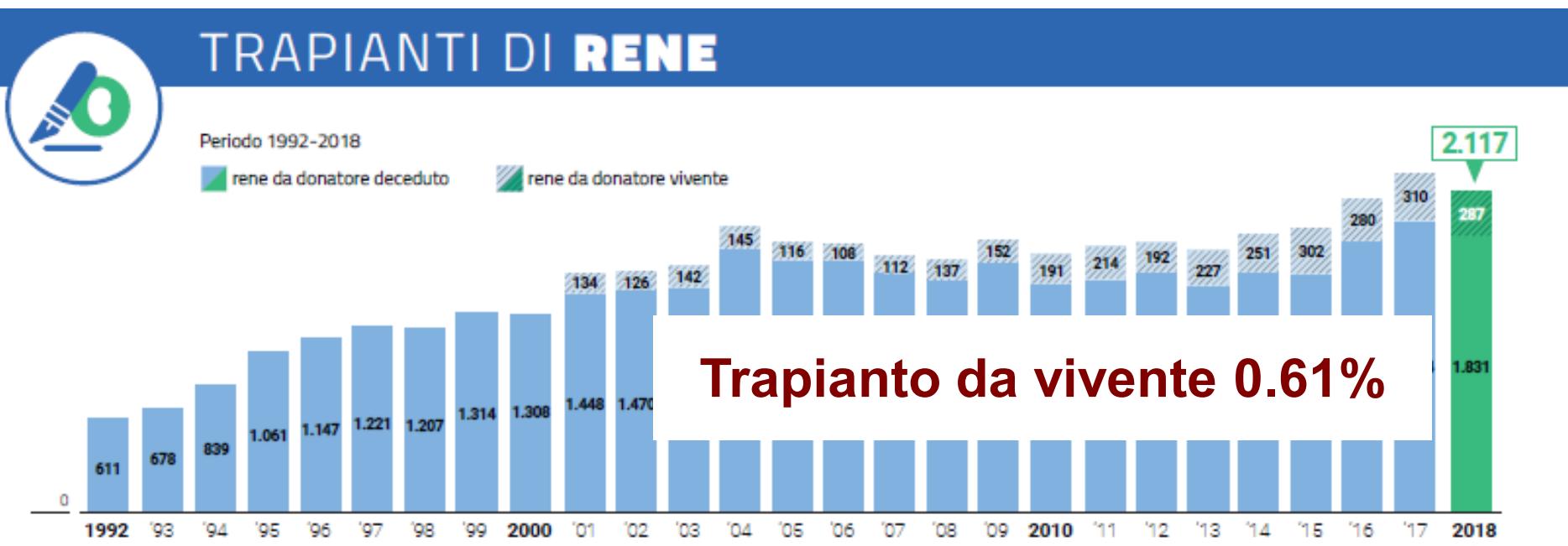
Trattamento dei pazienti con IRC in Italia

- 42.000 in dialisi extracorporea (90.4%)
- 4.500 in trattamento con dialisi peritoneale (9.6%)
- 6.545 in lista d'attesa (14%) per un trapianto di rene
- 2.117 trapiantati nel 2018 (32%)
 - ❖ vivente 287 (13.6%), deceduto 1.831 (86,4%)

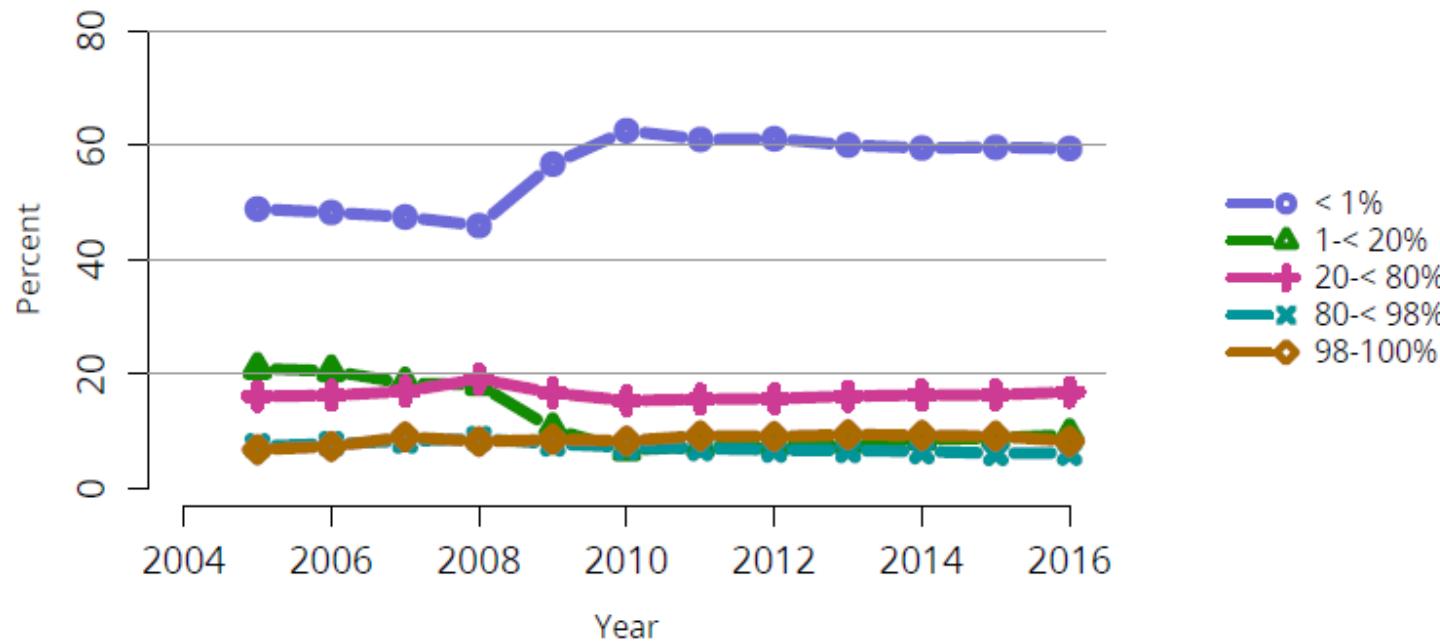


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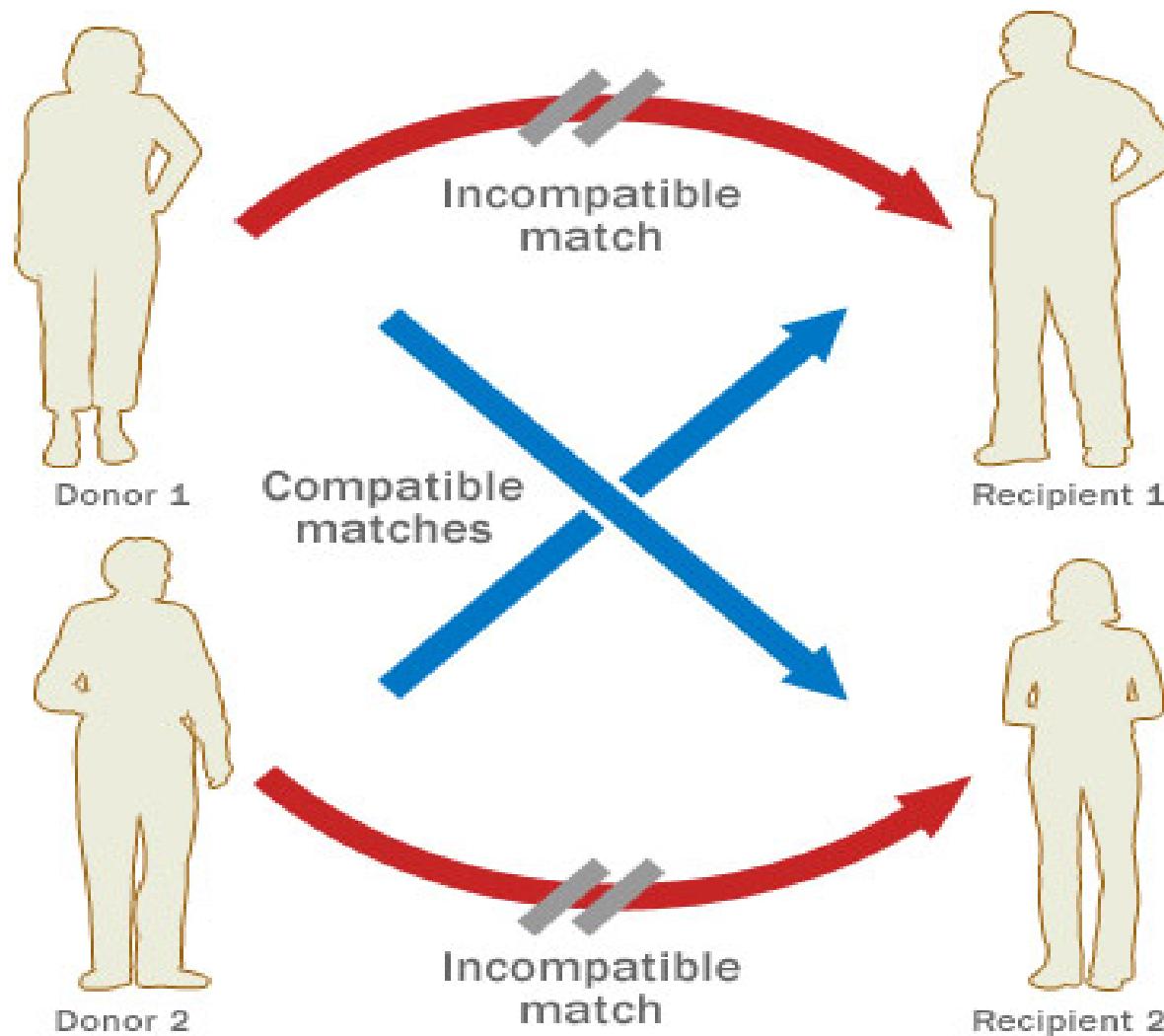


Preformed Antibodies (C/PRA) in adults waiting for kidney transplant

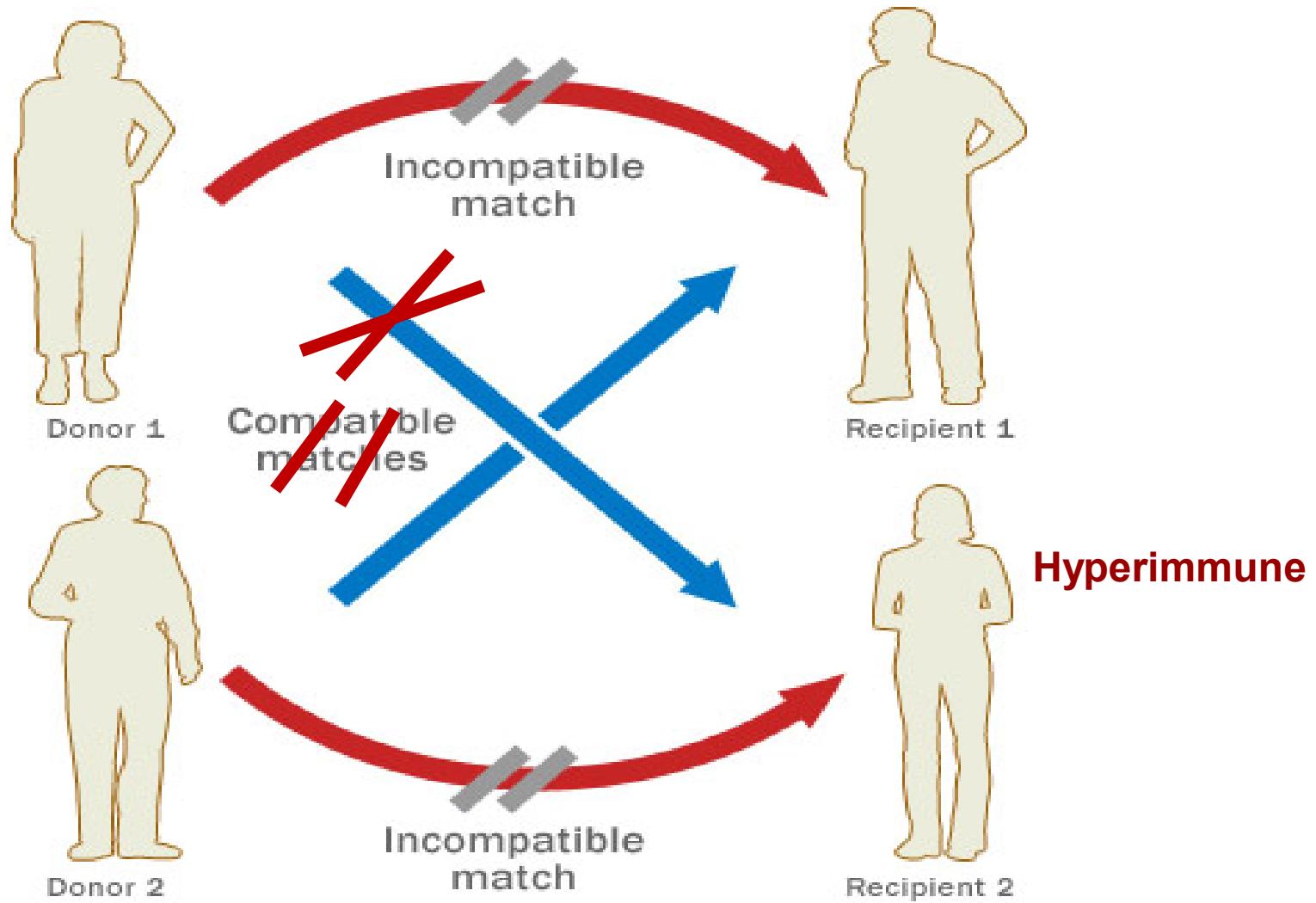


- Previous transplant
- Blood transfusions
- Pregnancy
- Unknown

A Kidney Paired Exchange Donation



A Kidney Paired Exchange Donation



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A Nonsimultaneous, Extended, Altruistic-Donor Chain

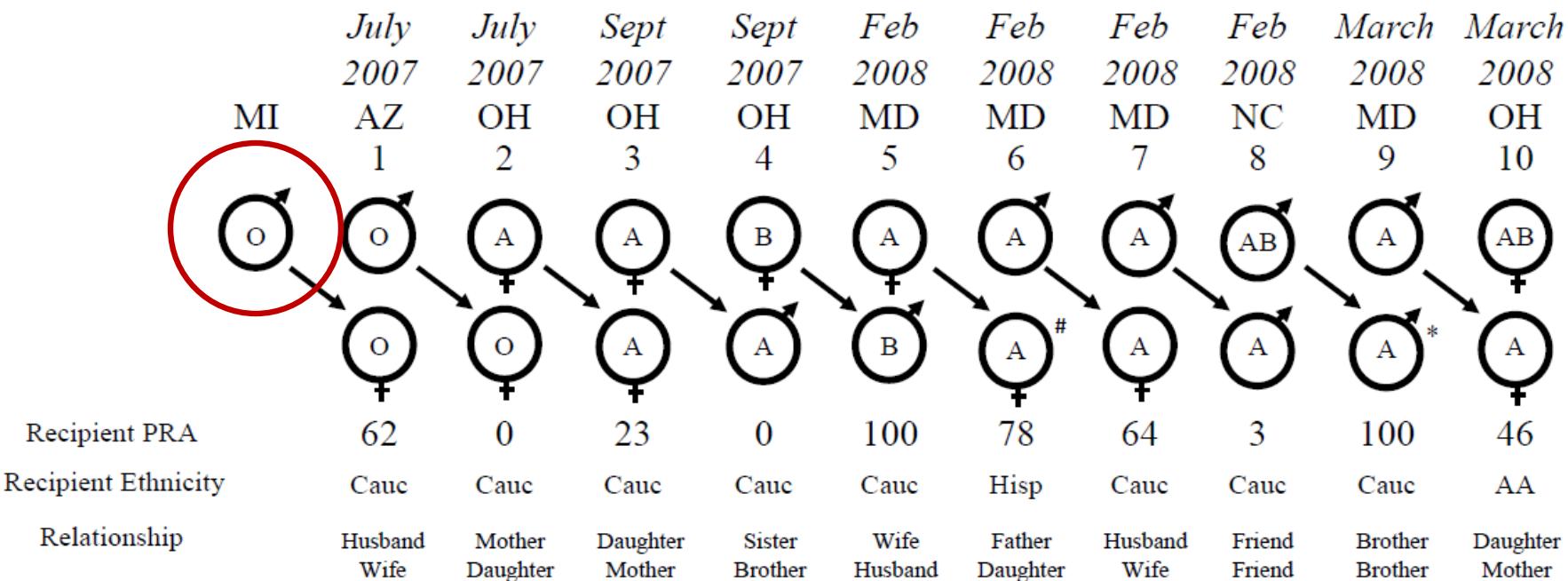
Michael A. Rees, M.D., Ph.D., Jonathan E. Kopke, B.S., Ronald P. Pelletier, M.D.,
Dorry L. Segev, M.D., Matthew E. Rutter, M.D., Alfredo J. Fabrega, M.D.,
Jeffrey Rogers, M.D., Oleh G. Pankewycz, M.D., Janet Hiller, M.S.N.,
Alvin E. Roth, Ph.D., Tuomas Sandholm, Ph.D., M. Utku Ünver, Ph.D.,
and Robert A. Montgomery, M.D., D.Phil.

SUMMARY

We report a chain of 10 kidney transplantations, initiated in July 2007 by a single altruistic donor (i.e., a donor without a designated recipient) and coordinated over a period of 8 months by two large paired-donation registries. These transplantations involved six transplantation centers in five states. In the case of five of the transplantations, the donors and their coregistered recipients underwent surgery simultaneously. In the other five cases, “bridge donors” continued the chain as many as 5 months after the coregistered recipients in their own pairs had received transplants. This report of a chain of paired kidney donations, in which the transplantations were not necessarily performed simultaneously, illustrates the potential of this strategy.

The First NEAD Chain (Rees, APD)

Non-simultaneous Extended Altruistic Donor Chain

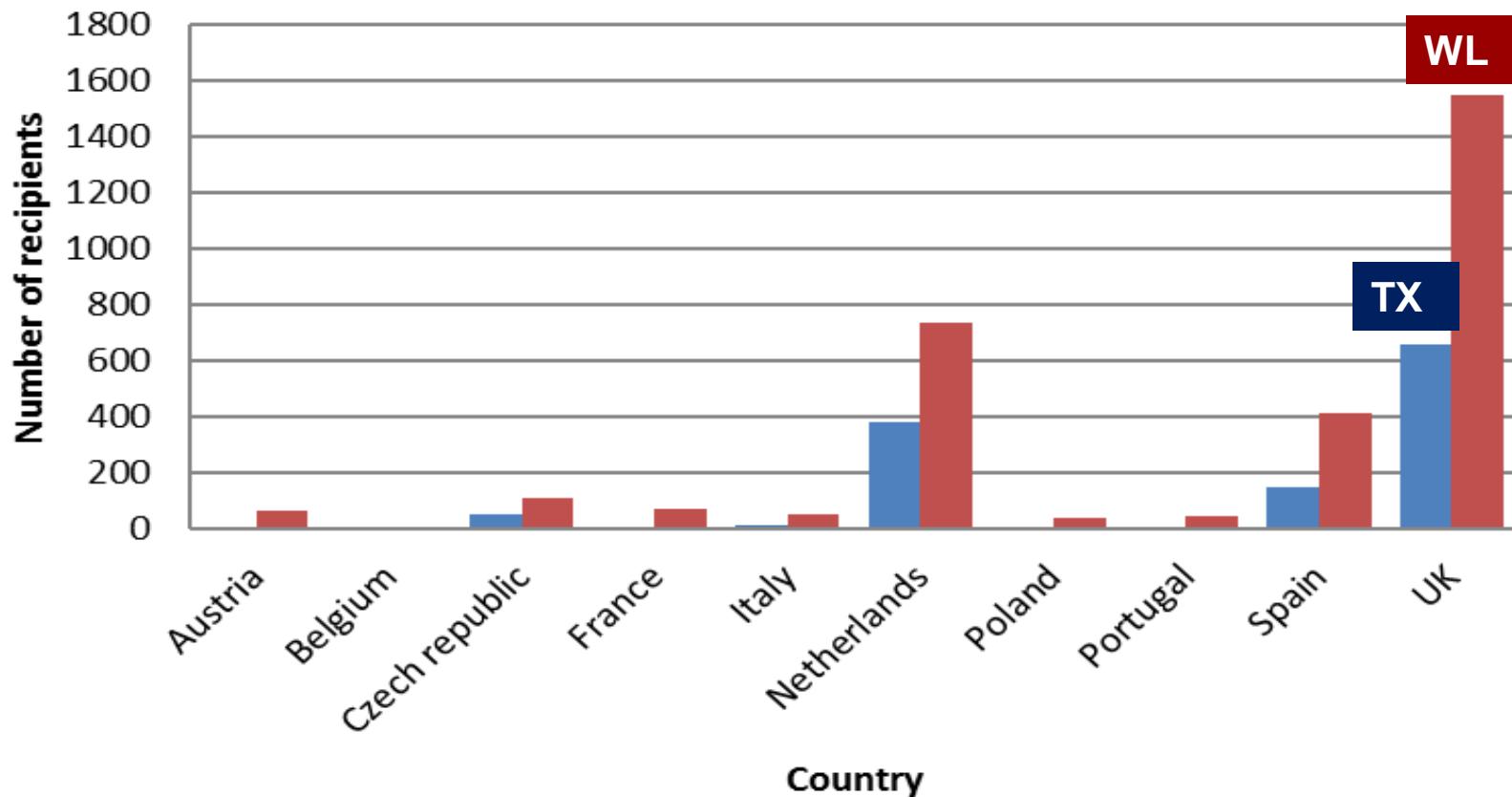


* This recipient required desensitization to Blood Group (AHG Titer of 1/8).

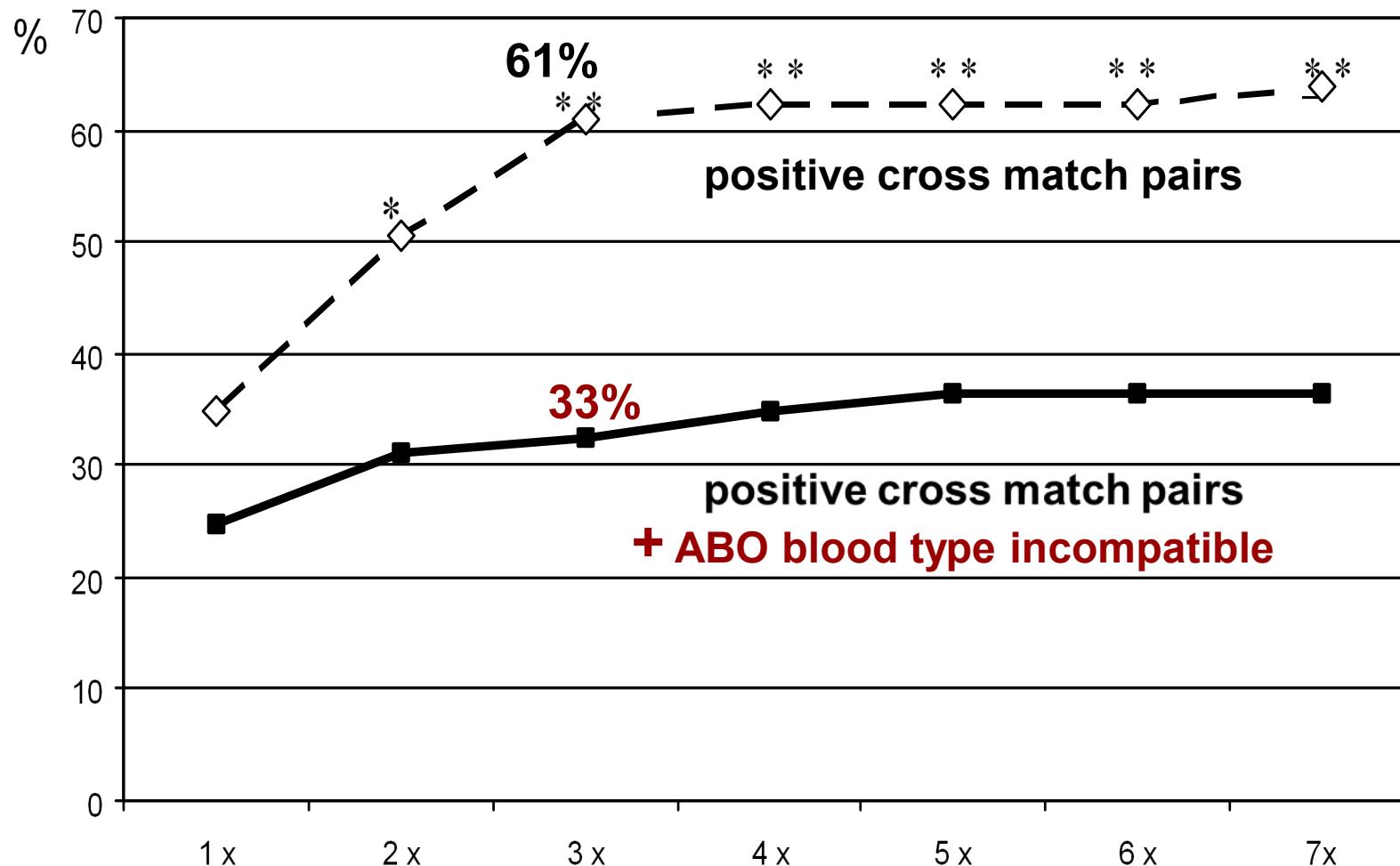
This recipient required desensitization to HLA DSA by T and B cell flow cytometry.

The efficiency of national EU PKE programs is low → 40 - 50% Tx

Number of recipients transplanted (blue) and registered (red) in KEP in total until the end of 2016



The chance of finding a matching couple according the number of attempts



Hurdles, barriers, and successes of a national living donor kidney exchange program

Transplantation, 2008, 86: 1749-53

Il trapianto crossover in Italia

- Commissione ad hoc iniziati nel 2005 e discussi in una “Consensus conference” convocata a Roma, all’Istituto Superiore di Sanità, il 20 settembre 2006.



VERSIONE DEFINITIVA IN VIGORE DAL 20 NOVEMBRE 2006

PROTOCOLLO PER LA REALIZZAZIONE DEL TRAPIANTO DI RENE DA VIVENTE IN MODALITA' INCROCIATA (cross-over)

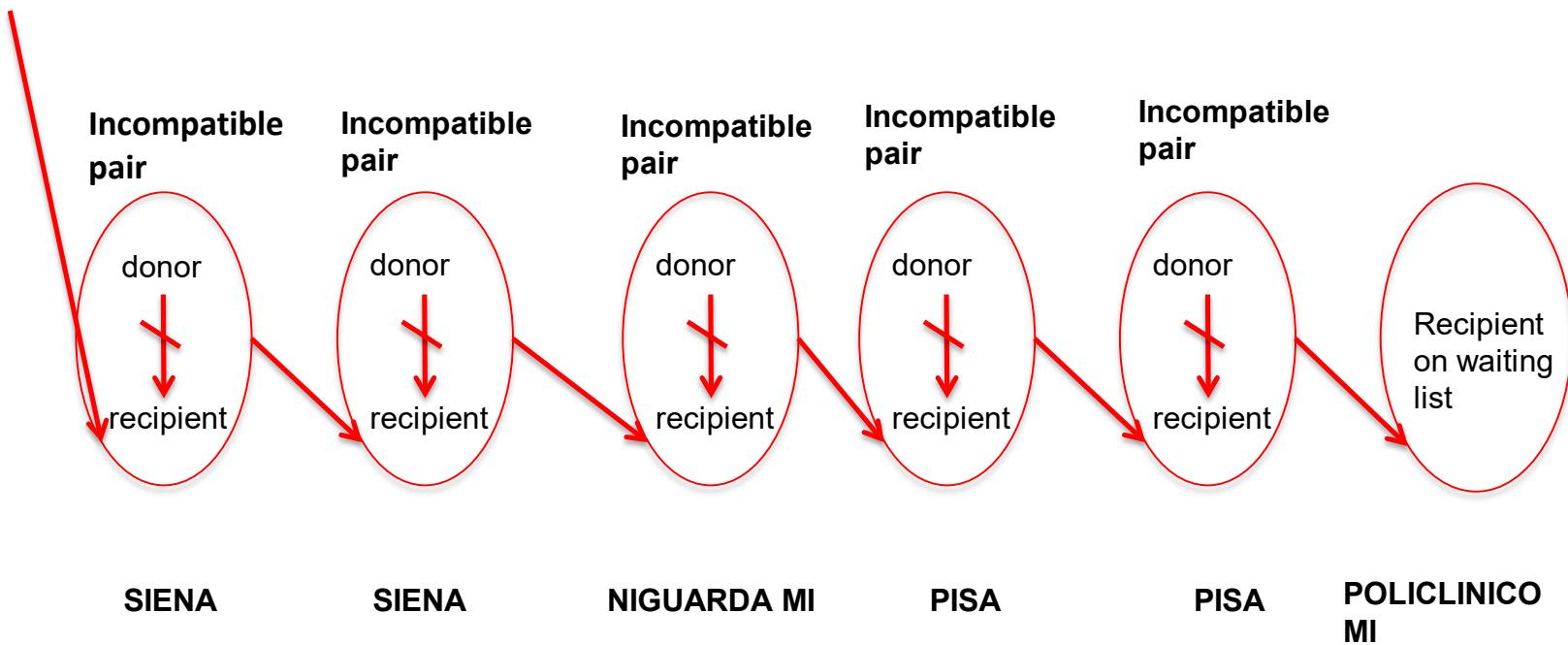
Premesse Etiche

Per “trapianto incrociato di rene da donatore vivente (cross-over)” si intende l’evento in cui il donatore e il ricevente non sono né consanguinei, né emozionalmente relati. Lo si mette in atto qualora una coppia di consanguinei o emozionalmente relati si riveli biologicamente incompatibile a seguire la procedura standard di trapianto da donatore vivente. In tal caso, e in presenza di almeno un’altra coppia in situazione analoga, i donatori e i riceventi, se biologicamente compatibili, si “incrociano”.

20 settembre 2006.

7-9 APRIL, 2015 – FIRST ALTRUISTIC DONATION IN ITALY

Altruistic
donor



First Altruistic Donation in Italy

7-9 April, 2015



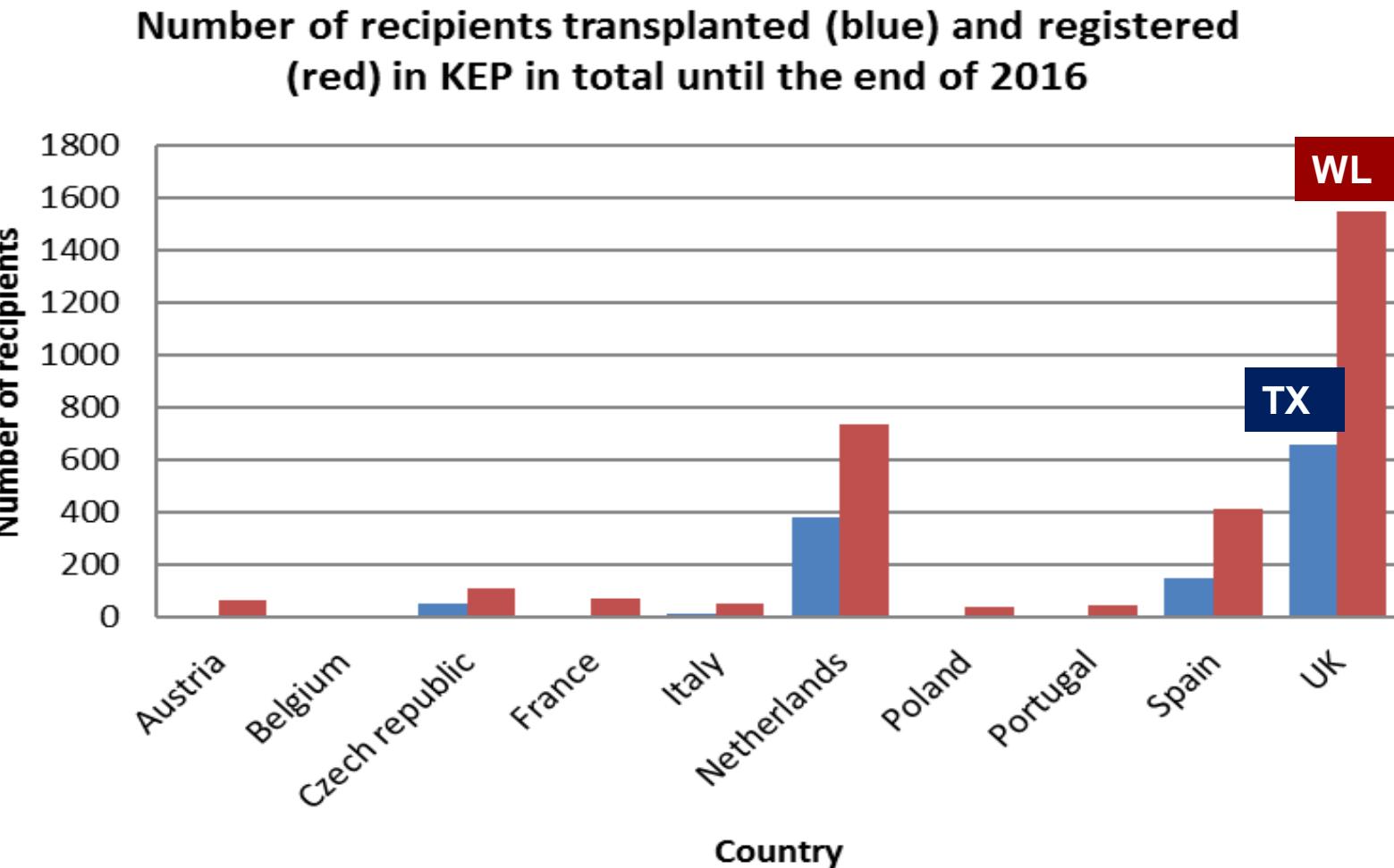
TRAPIANTI ESEGUITI NEL PROGRAMMA CROSSOVER DAL 2015 AL 2018*

Programmi	# Coppie Utilizzate	Trapianti eseguiti
Cross-Over Nazionale	4	4
Donatori Samaritani (7)	18	25
Cross-Over Internazionale	1	1
Cross-Over Donatore Deceduto	7	11
TOTALE	30	41

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The efficiency of national EU PKE programs is low → 40 - 50% Tx



Translation of an article published in the Spanish newspaper *El Mundo* on 10 October 2012



Date: 10/10/2012 Section: NATIONAL Page: 16

Spain creates the first transplant alliance with France and Italy

According to the Memorandum of Understanding signed in Rome on 1 October 2012, to which *El Mundo* was given access, ‘the aim is to establish formal cooperation between the agencies of southern and western Europe’. ‘Italy, Spain and France’, the document also states, ‘share a common vision regarding emerging bioethical issues and have systems regulated at national level using similar organisational models’.

10 ottobre 2012

- international paired exchange living kidney programme

5 partner countries:

- France, Italy, Portugal, Spain, 4 EU Member States
- Switzerland
- 1 observer: Czech Republic
- Covers a population of almost 202 million inhabitants
- 380 organ transplant programmes (145 kidney, 76 liver, 66 heart, 35 lung, 45 pancreas and 13 small bowel)

In 2013:

5274 deceased organ donors

14573 organs transplanted

45.1% of EU total transplanted pts

EDIZIONI LOCALI ▾ CORRIERE TV ARCHIVIO TROVOCASA TROVLAVORO SERVIZI

[f](#) [t](#) [e](#) [m](#)

Trapianto di rene incrociato tra Italia e Spagna: le tappe del «crossover»

Salvati due pazienti, uno a Pisa e l'altro a Barcellona. Nella catena internazionale sono state coinvolte due coppie donatore-ricevente non compatibili

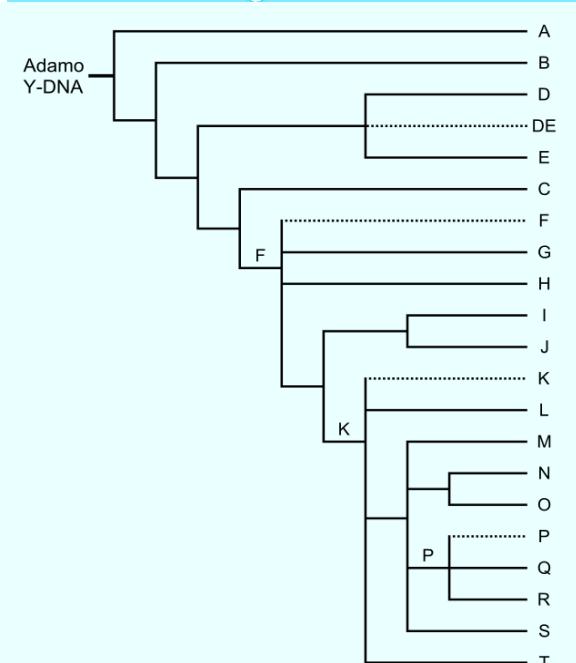
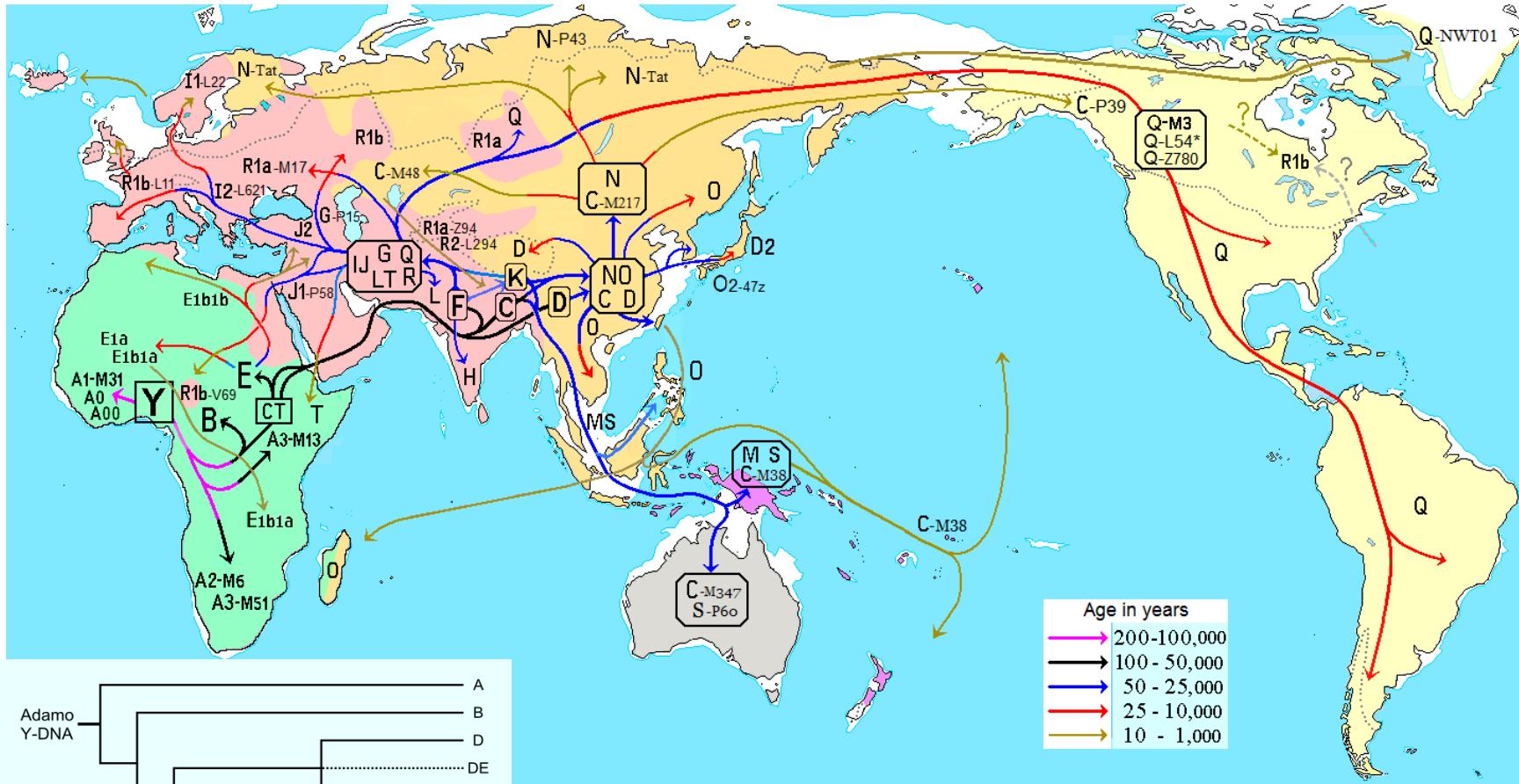
di Redazione Salute

19 luglio 2018



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Adamo A1 Y chromosome aplootype mutations during migrations

Genetic genealogy of Europe

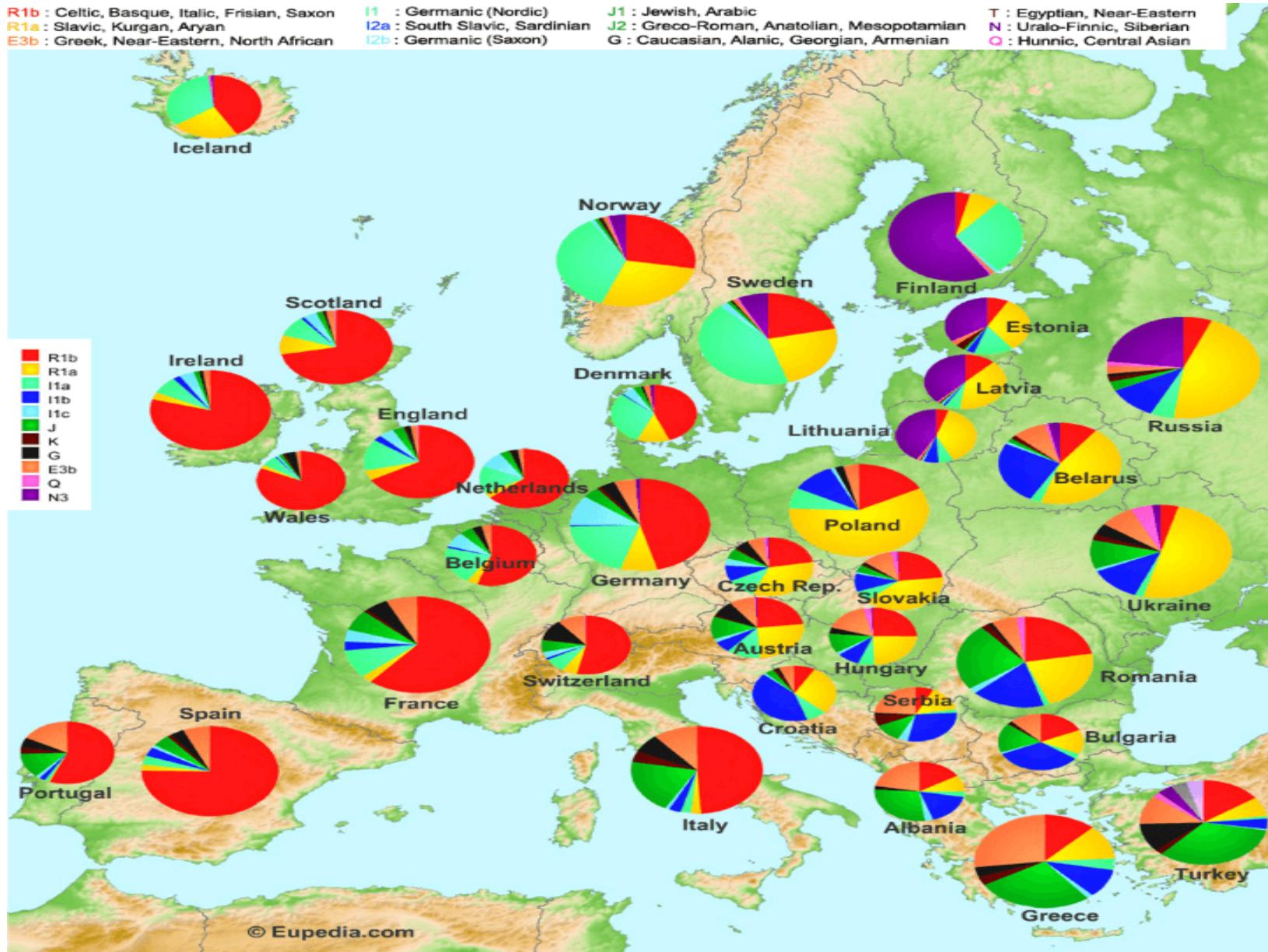
Human Y-chromosome DNA haplogroups

R1b : Celtic, Basque, Italic, Frisian, Saxon
R1a : Slavic, Kurgan, Aryan
E3b : Greek, Near-Eastern, North African

I1 : Germanic (Nordic)
I2a : South Slavic, Sardinian
I2b : Germanic (Saxon)

J1 : Jewish, Arabic
J2 : Greco-Roman, Anatolian, Mesopotamian
G : Caucasian, Alanic, Georgian, Armenian

T : Egyptian, Near-Eastern
N : Uralo-Finnic, Siberian
Q : Hunnic, Central Asian



Languages in Europe: cluster of linguistic strains



The efficiency of national Paired Kidney Exchange

is limited by small pools of pts
with genetic homogeneity

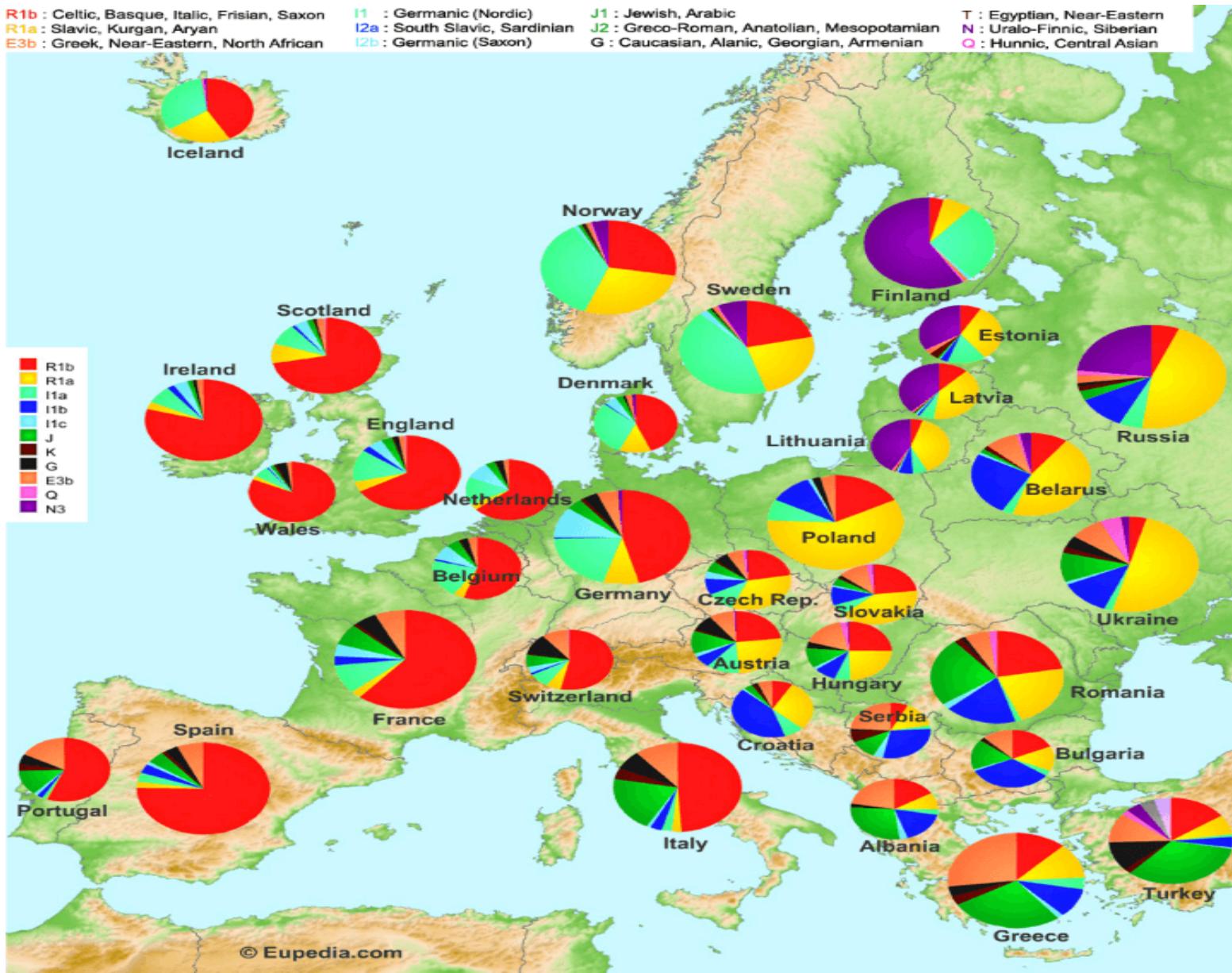


National
International
Global

Genetic genealogy of Europe

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International / Global Paired Kidney Exchange

- Increase variety of HLA genes
- Increase pool of couples
- Increase efficiency PKE

International / Global Paired Kidney Exchange

- EU / US / Japan / South Corea / UE
High Income Countries HIC
- International cooperation agreements
- Financial agreements by NHI / Private
Insurances

Governance of the Global Paired Kidney Exchange

We are asking the **WHO**

to take the **GOVERNANCE** of this project

within a no profit Foundation

Ideal successful GKE program

Large donors & recipients pool

- + **Flexible organization**
 - National, International, Intercontinental
 - Simultaneous or Non-simultaneous KTx
 - Transporting kidneys or traveling donor/recipient
- + **Flexible offers**
 - PKE
 - Altruistic Unspecified PKE
 - Non-simultaneous Extended Altruistic Donor (NEAD) Chain
- + **Fair allocation algorythms**
- = **High rate of Transplants in hyperimmunized couples**

