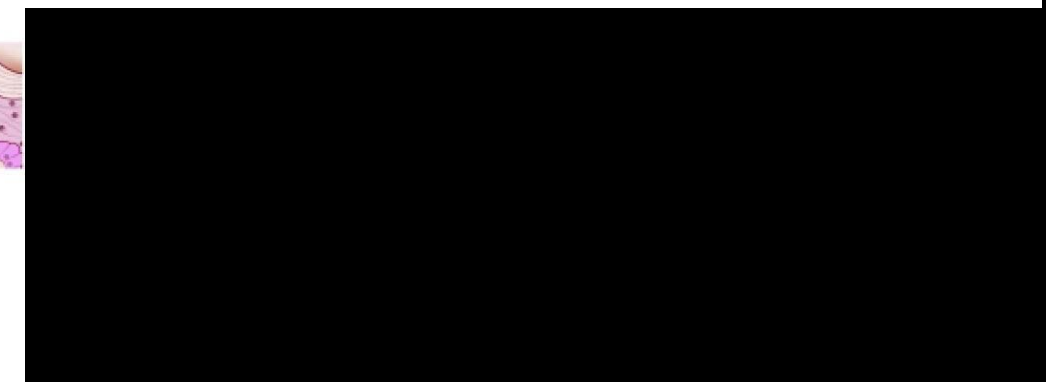
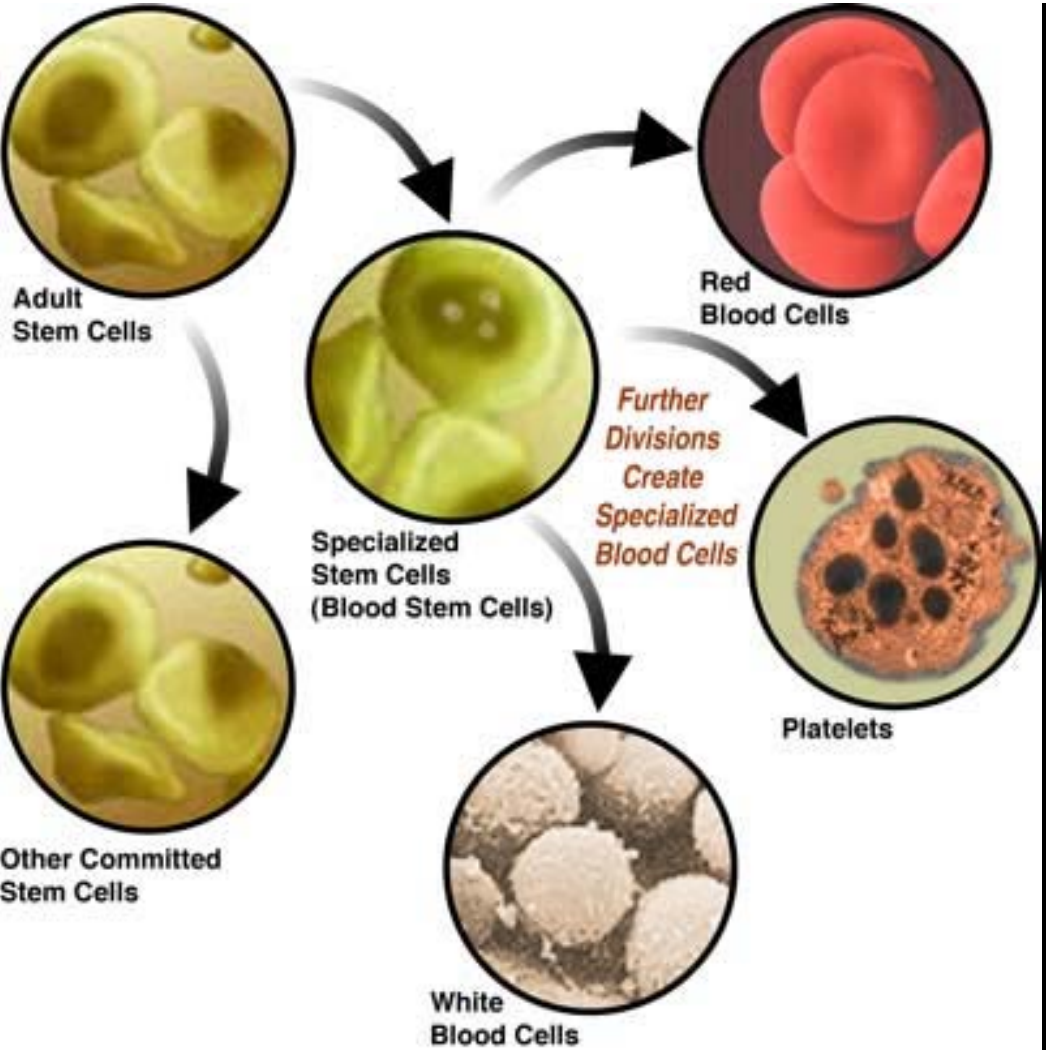
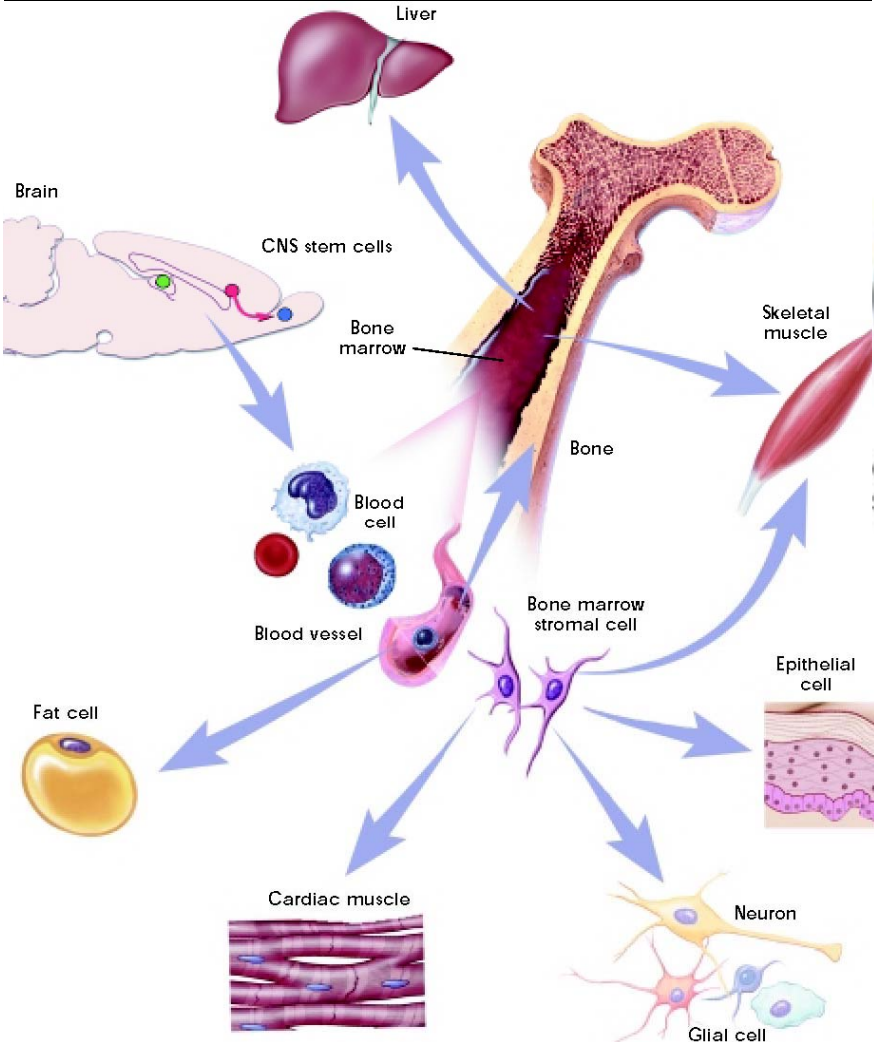
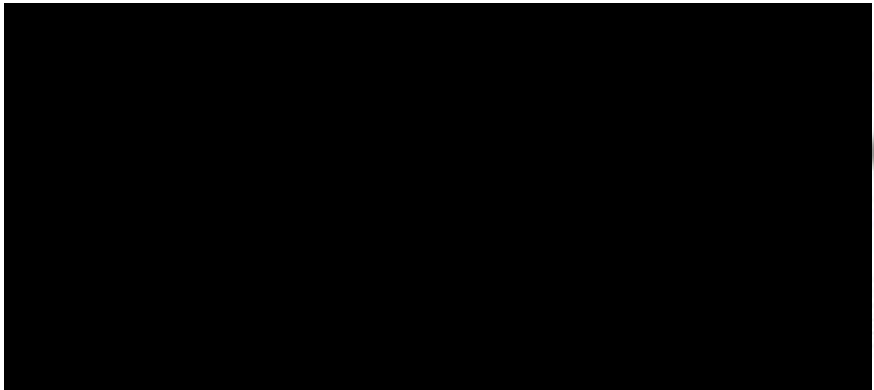
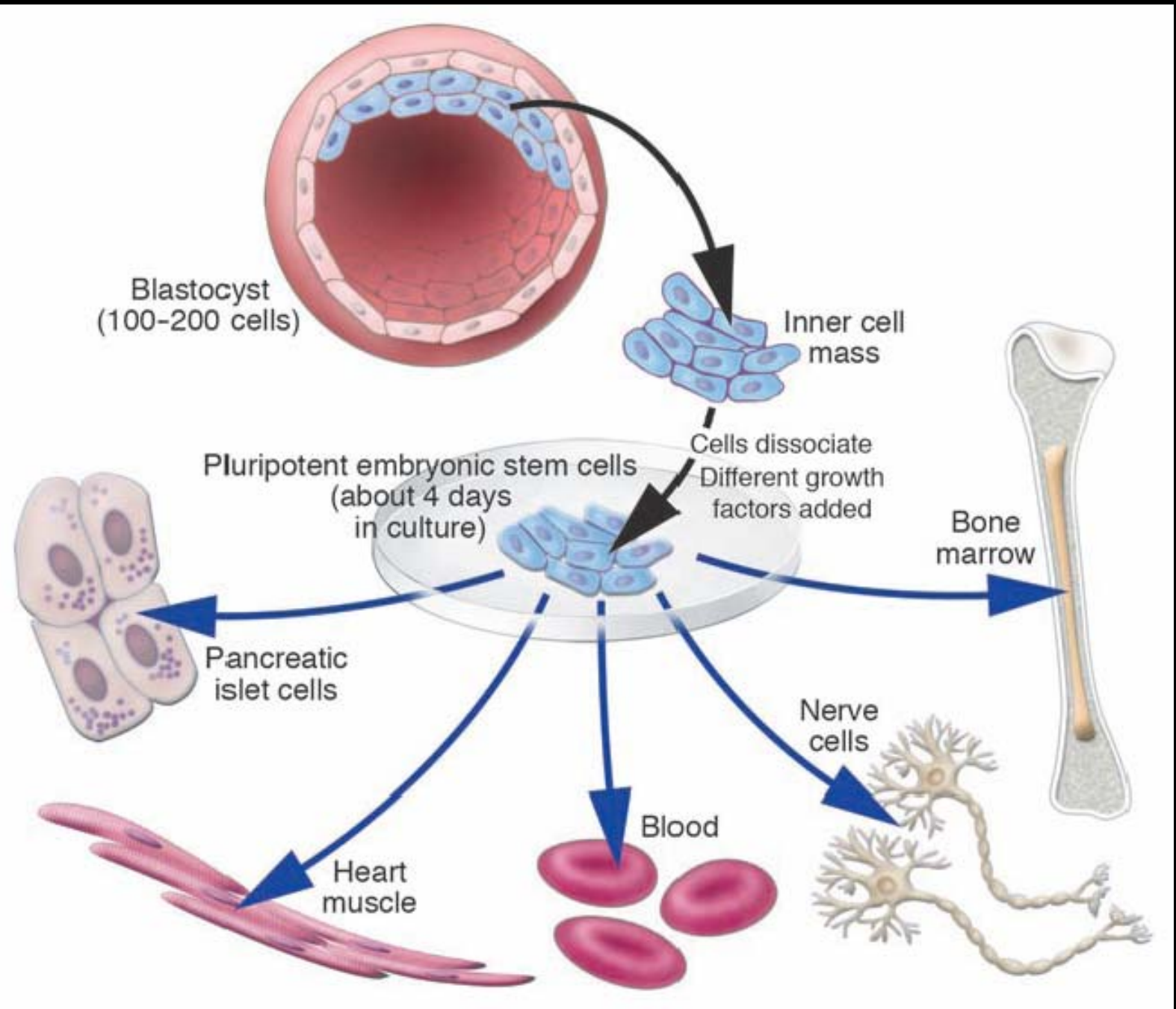


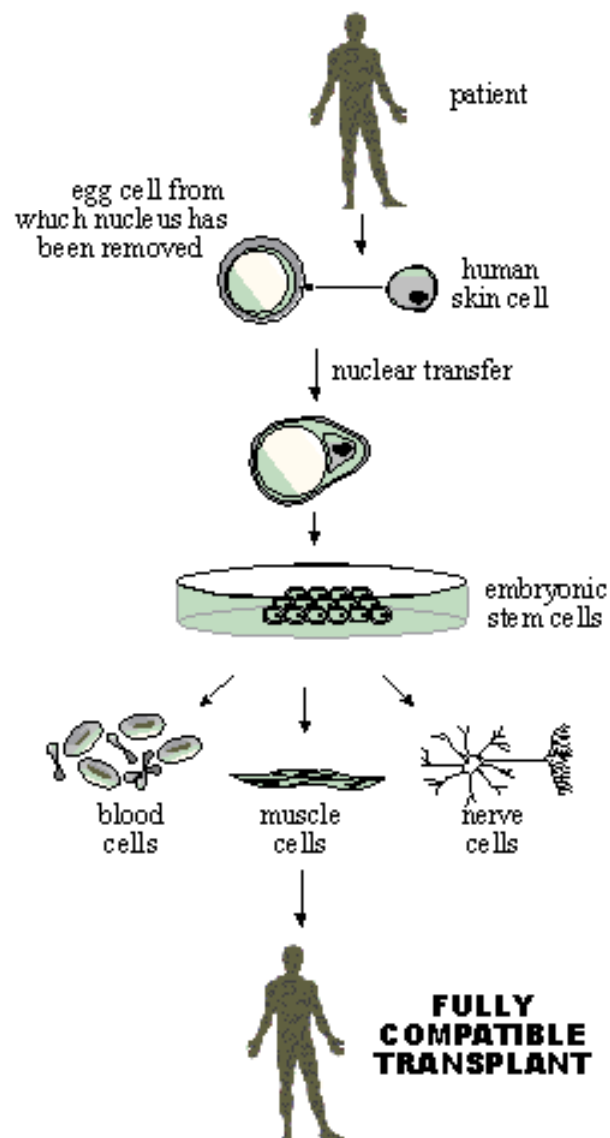
- ❖ **Per quali motivi la ricerca sulle staminali è oggetto di controversie etiche? Ha senso la contrapposizione tra staminali adulte ed embrionali sul piano strettamente empirico?**
- ❖ **Fino a che punto il dibattito bioetico sulle staminali rispetta l'obiettività del dato scientifico, ovvero rispetta la libertà e l'indipendenza della ricerca, senza manipolazione strumentalmente i dati per ragioni ideologico-religiose?**
- ❖ **Quali sono gli argomenti contro la ricerca sugli embrioni umani e le staminali embrionali? In che misura questi argomenti sono davvero validi?**
- ❖ **Quali conseguenze sta avendo l'avversità politico-religiosa in alcuni paesi occidentali nei riguardi della ricerca sugli embrioni e le staminali embrionali?**
- ❖ **Cosa pensano i cittadini?**
- ❖ **Quali sono le conseguenze prevedibili o già verificate delle scelte legislative possibili in materia di ricerca su staminali embrionali?**



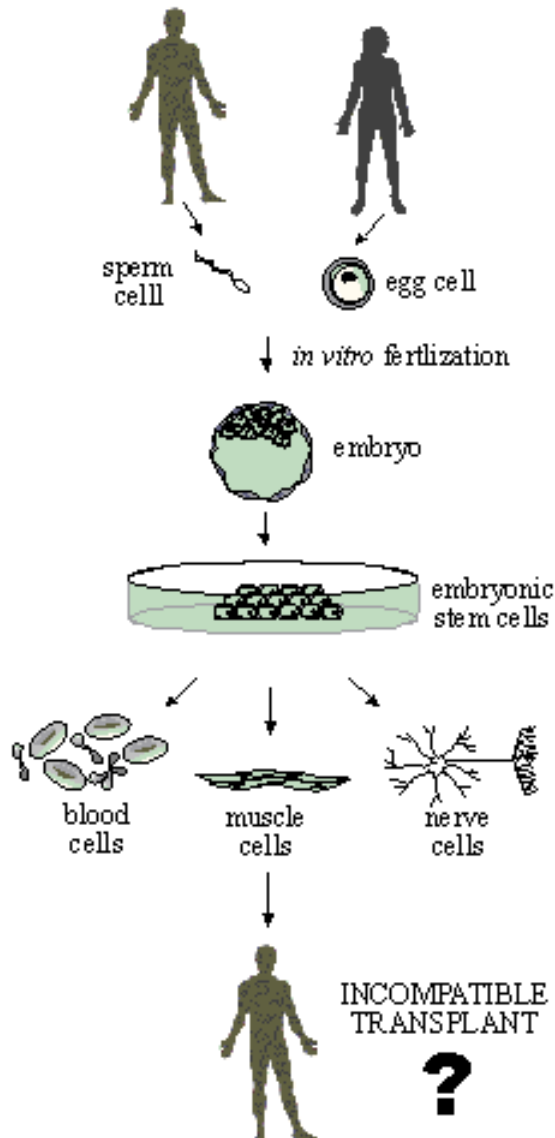


Comparison of Methods for Generation of Human Embryonic Stem Cells

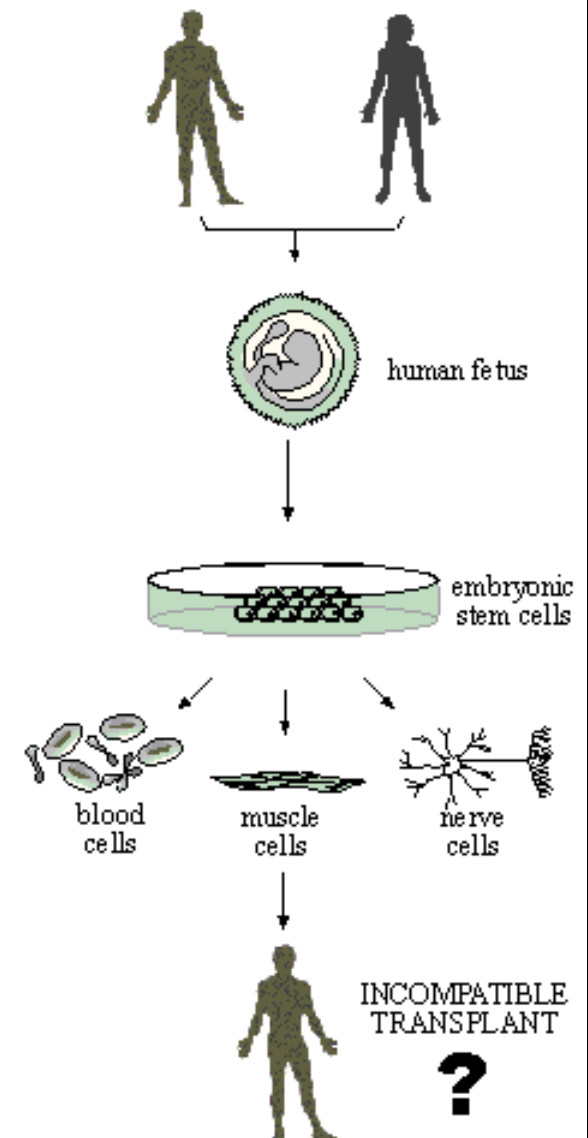
Cell Generation by ACT Nuclear Transfer Technique



Cell Generation from Human Embryos (IVF)

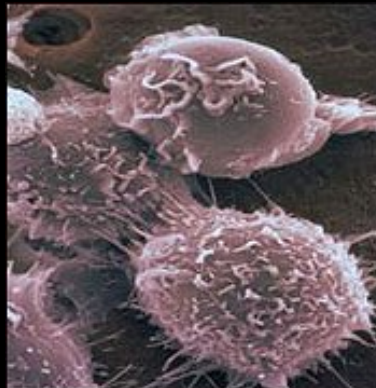


Cell Generation from Human Fetal Tissue



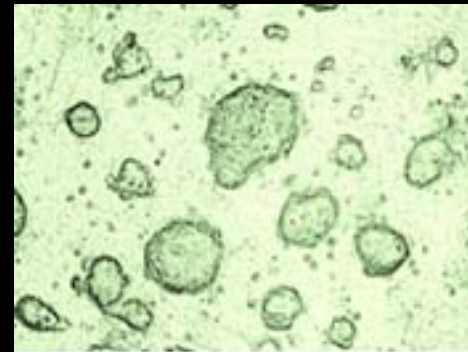
Adult stem cells have now helped patients with at least 65 different human diseases.

D. Prentice, Christian Today, October 2005



Adult stem cells

VS



Embryonic stem cells

By promoting the falsehood that adult stem cell treatments are already in general use for 65 diseases and injuries, Prentice and those who repeat his claims mislead laypeople and cruelly deceive patients.

S. Smith et al., Science 2006; 313: 439

Essay

Reason as Our Guide

Elizabeth Blackburn and Janet Rowley

PLoS Biology | <http://biology.plosjournals.org> April 2004 | Volume 2 | Issue 4 |



When prominent scientists must fear that descriptions of their research will be misrepresented and misused by their government to advance political ends, something is deeply wrong. Leading scientists are routinely called on to volunteer their expertise to the government, through study sections of the National Institutes of Health and advisory panels of the National Academy of Sciences and as advisers to departments ranging from health and human services to defense. It has been the unspoken attitude of the scientific community that it is our duty to serve our government in this manner, independent of our personal political affiliations and those of the current administration. But something has changed. The healthy skepticism of scientists has turned to cynicism. There is a growing sense that scientific research — which, after all, is defined by the quest for truth — is being manipulated for political ends. There is evidence that such manipulation is being achieved through the stacking of the membership of advisory bodies and through the delay and misrepresentation of their reports.

PERSPECTIVE

N ENGL J MED 350:14 WWW.NEJM.ORG APRIL 1, 2004

Bioethics and the Political Distortion of Biomedical Science

Elizabeth Blackburn, Ph.D.

Prof. Angelo Vescovi
Associato Università
degli Studi Milano - Bicocca
Condirettore Istituto di Ricerca
Cellule Staminali DIBIT
Ospedale S. Raffaele - Milano



Referendum sulla Fecondazione Assistita

IO NON VOTO.
PERCHÉ LA RICERCA
DI NUOVE CURE È POSSIBILE
SENZA UTILIZZARE
EMBRIONI UMANI.

COMITATO PER LA LEGGE 40
SCIENZA & VITA
ALLEATI PER IL FUTURO DELL'UOMO

DIFENDI LA LEGGE 40
SCEGLI DI NON VOTARE

NEWS

This Week



PAGE 1724
Nucleosomes
and gene
regulation



1726
Foot-and-
mouth tussle
in Spain

ITALIAN SCIENCE

Abstentions Scuttle Drive to Liberalize Italy's Embryo Laws

An attempt to loosen tight restrictions on in vitro fertilization (IVF) in Italy failed when only 26% of the electorate turned out to vote in a referendum on 12 and 13 June, missing a required 50% quorum. The result was precisely what Catholic Church leaders sought; it means Italy will continue to forbid research using embryos from IVF procedures. Italian scientists are still allowed to work with any imported human embryonic stem (hES) cells—although funding is scarce—but they cannot derive new ones.

The Catholic Church campaigned strongly to persuade voters to stay away from the polls. Under Italian law, a referendum is invalid if fewer than half the eligible voters participate. The abrupt fade-out marked the end of a bitterly fought campaign. Referendum opponents accused proponents of overstating the promise of embryo research, comparing it to Nazi experiments. Many scientists and referendum supporters accused the government of dirty tricks and distortions.

Until January, Italy had no laws on IVF treatments or embryo research, enabling the infamous claims of gynecologist Severino Antinori, who said he was trying to create the first cloned human. But a law passed in February 2004 put tight restrictions into effect 6 months ago. It forbids the creation of more than three embryos per IVF attempt, all of which must be implanted in the potential mother, and it outlaws the donation of sperm or eggs. It also imposes a fine of more than \$1 million for any attempt at human cloning. The law was controversial from the start: Members of Parliament offered more than 350 amendments. But none were allowed, and the law passed 277 to 222.

Before the law took effect, Italy's far-left Radical Party collected nearly twice as many signatures as the 500,000 required for a petition to put four parts of the law up for review in a referendum—the ban on embryo



Opposed. On campaign posters, stem cell researcher Angelo Vescovi urged people to abstain from Italy's referendum on IVF techniques, saying "new cures are possible without the use of human embryos."

research; giving legal rights to the human embryo; the ban on gamete donation; and the requirement that only three IVF embryos can be created, all of which must be implanted.

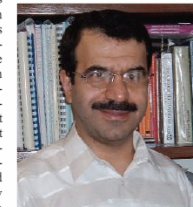
SCIENTIFIC PUBLISHING

Society Bars Papers From Iranian Authors

Six months after scientific societies and publishers won a hard-fought battle with the U.S. government to edit and publish manuscripts from countries under a U.S. trade embargo, the American Institute of Aeronautics and Astronautics (AIAA) has decided to bar such submissions from its journals and conferences. The institute says the ban, which falls hardest on scientists from Iran, is necessary to protect national security. But other scientific associations say the decision is wrong-headed and could actually limit U.S. access to scientific developments in the four

embargoed countries: Iran, Cuba, North Korea, and Sudan.

The policy, adopted last month, states that the institute, "consistent with U.S. laws and policies, shall not knowingly provide products or services to, or engage in formal, technical information exchange with individuals or entities residing in embargoed nations." As a result, AIAA pulled 24 Iranian-authored submissions from its seven journals and cancelled presentations by Iranian researchers scheduled to attend an AIAA-sponsored fluid dynamics conference in Toronto. The conference, held 6 to 9 June, was subsequently exempted from the ban after protests by Iranian attendees who had already finalized their travel plans.



Barred. AIAA pulled Masoud Darbandi's paper from one of its journals.

"I won't vote. Because new cures are possible without the use of human embryos"

Table 1. Differences between human adult stem cells (hASCs) and human embryonic stem cells (hESCs).

hASCs	hESCs
Stem cells from organs are scarce and hard to access and purify	Once derived and propagated, stem cells exhibit prolific cell growth and are abundant
No cell-lines available	Cell-lines available; easy to scale-up using bulk culture protocol
Multipotent; plasticity narrow	Pluripotent; versatile and plasticity wide
Maintenance of normal genetic make-up in vitro not known	Normal karyotype in late passages in 'cut and paste' protocol; changes in karyotype in late passage in high density bulk culture protocol
Telomerase levels low	Telomerase levels high and consistent; unlimited self-renewal of cells
Shortening of chromosome length with ageing	No shortening of chromosome length with serial passaging
Early apoptosis	Late apoptosis
Customizing stem cells/differentiated tissues not possible	Possible via somatic cell nuclear transfer
No risk of teratoma induction after accidental transplantation	Risk of teratoma induction after transplantation if not purified
Epigenetic genomic changes difficult to reverse	Reversible
No ethical issues	Ethical issues limited to some countries and institutions
Applications: transplantation therapy	Applications: (1) transplantation therapy; (2) pharmaceutical screening; (3) gamete and embryo production; (4) studies on human development, congenital anomalies and infant cancers



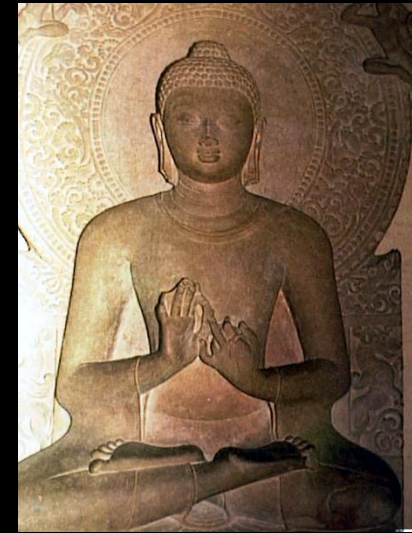
Human Blastocyst



La ricerca sulle cellule staminali è oggetto di controversie etiche perché vi sono visioni religiose/culturali diverse sullo statuto morale dell'embrione umano



tiger team (s10) 268-0102



EMBRYOS AND RELIGIONS



CATTOLICA: Identifica il “momento” della fecondazione con la formazione di una nuova persona, e considera moralmente illecita ogni sperimentazione condotta su embrioni

PROTESTANTI (USA): Le diverse chiese hanno posizioni differenti. I Presbiteriani sono favorevoli alla sperimentazione su embrioni soprannumerari, mentre Metodisti ed Evangelici (New Born) sono contrari.

PROTESTANTI (Anglicani): L’embrione va trattato con rispetto, ma solo dopo l’impianto in utero ha il valore pieno di essere umano.

EBRAICA: Nei primi 40 gg. il feto è “come acqua” per cui è lecita la sperimentazione: è anzi doveroso assecondare l’opera creatrice di Dio allo scopo di guarire malattie e alleviare sofferenze.

ISLAMICA: L’embrione non è umano fino al 40° o 10° giorno (a seconda delle scuole teologiche). La sperimentazione è moralmente lecita e in accordo con la volontà di Dio se l’intento è di promuovere la salute umana.

BUDDHISMO: Se gli embrioni non sono ottenuti mediante aborto la ricerca su cellule staminali è moralmente lecita.


INDUISMO: Il sacrificio è accettabile per il bene della comunità, e la ricerca su embrioni può rientrare in questa categoria.

Perché non sono fondate le critiche delle bioetiche religiose contro la ricerca su embrioni e staminali embrionali

- ✓ Solo dal 1869 per la teologia cattolica l'embrione è degno di tutela dal concepimento, mentre una componente importante del pensiero cattolico è ancora favorevole a una idea di processualità.
- ✓ L'identificazione della persona umana con un genoma è un tesi materialistica e riduzionistica che svilisce la mente o l'anima. In ogni caso per alcuni giorni da un embrione possono derivare più persone, i gemelli, per cui non è ancora stabilita un'individualità.
- ✓ La tesi della "personalità zigotica" non ha basi scientifiche: è biologicamente assodato che non esiste un evento fecondazione o formazione di un genoma completo; si tratta di processi, e che lo zigote e l'embrione ai primi stati possiedono caratteristiche biologiche diverse dall'embrione che ha iniziato a differenziarsi.
- ✓ Se la fecondazione normale e la formazione di un nuovo genoma definissero l'embrione e l'individualità – il che non è – comunque l'attivazione dell'oocita a cui sia stato sostituito il nucleo cellulare e che venisse indirizzato a diventare direttamente una cellula somatica utilizzabile per scopi terapeutici sarebbe moralmente lecita.

Perché anche dal punto di vista dell'etica cristiana la ricerca sugli embrioni soprannumerari è moralmente lecita

- ❖ La ricerca su embrioni soprannumerari o non destinati all'impianto non sopprime alcuna vita: un embrione non può sopravvivere al di fuori dell'utero e se i genitori stabiliscono che non verrà mai impiantato, quell'embrione non ha alcun potenziale di sviluppo.
- ❖ Nessuno ci guadagna se gli embrioni soprannumerari vengono distrutti: non nasce un solo bambino in più. Mentre ci rimettono quei malati le cui sofferenze potrebbero essere alleviate da terapie cellulari derivabili dalle ricerche sulle cellule staminali embrionali.
- ❖ Poiché lo statuto morale e medico-biologico degli embrioni soprannumerari non è quello di esseri umani potenziali, la scelta di utilizzarli per la ricerca è raccomandabile per un'etica del dovere: la donazione di embrioni non più vitali e che andrebbero altrimenti distrutti a beneficio della salute di altre persone può infatti essere considerata una massima universalizzabile.
- ❖ Anche sulla base di una morale ispirata alla carità, dovrebbe essere desiderabile una ricerca che potrà alleviare delle sofferenze.
- ❖ Per una maggiore giustizia nella distribuzione delle risorse e delle opportunità, dovrebbe essere auspicabile una ricerca sugli embrioni finanziata pubblicamente, per meglio garantire l'accesso alle ricadute applicative, senza discriminazioni di censo.



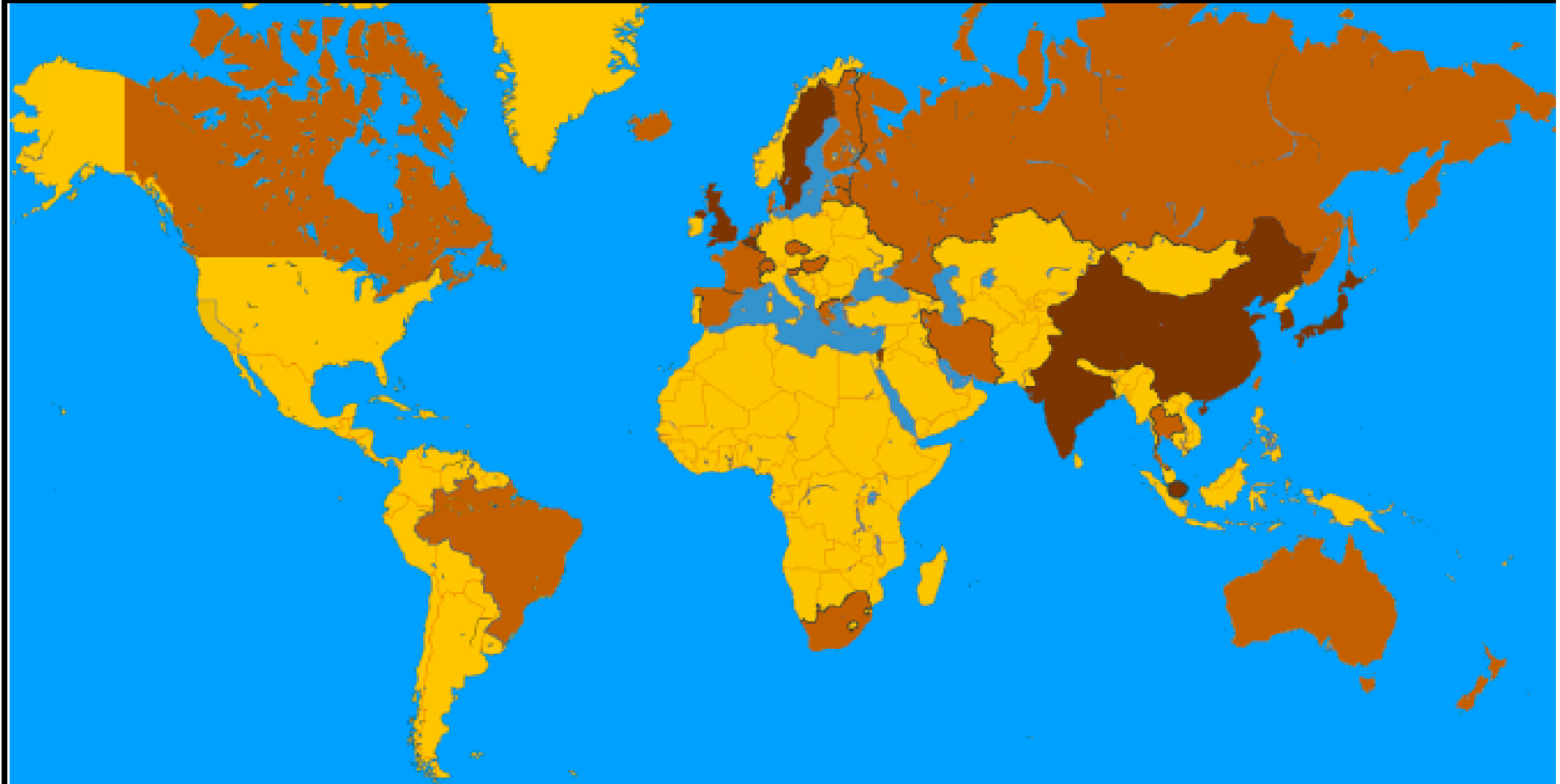
Stem cells rise in the East

As China pours research funds into regenerative medicine, its scientists are starting to explore the field's technical and ethical frontiers. Carina Dennis visits

NATURE | VOL 419 | 26 SEPTEMBER 2002 | www.nature.com/nature



Huizhen Sheng (left) has trained a large team of young researchers to work on embryonic stem cells.



Countries colored in brown have a permissive or flexible policy on human embryonic stem cell research. All have banned human reproductive cloning. These countries represent about 3.4 billion people, more than half the world's population. "Permissive" (countries in dark brown) means that various embryonic stem cell derivation techniques are permitted, including SCNT. "Flexible" (countries in light brown) means that stem cells may be derived from human embryos donated by fertility clinics only, excluding SCNT. Countries in yellow have either a restrictive policy or no established policy.



Two Views on Genetic Research

	March 2002
<i>Scientific experiments on human cloning</i>	%
Favor	17
Oppose	77
Don't know	6
	100
<i>Govt funding for stem cell research*</i>	
Should fund	50
Should not	35
Depends (Vol)	5
Don't know	10
	100
<i>Which is more important*</i>	
Conducting research toward medical cures	47
Not destroying human embryos	39
Don't know	14
	100

*Based on those who have heard at least a little about this issue.

Federal Funding for Stem Cell Research

	Should %	Should not %	Depends/ DK/Ref %
All following issue*	50	35	15=100
White (Total)	50	35	15=100
White Evangelical	33	47	20=100
High**	19	58	23=100
Low**	49	35	16=100
White Mainline	59	27	14=100
High	51	29	20=100
Low	65	26	9=100
White Catholic	51	33	16=100
High	44	36	20=100
Low	57	32	11=100
Black (Total)	48	37	15=100
High	39	48	13=100
Low	61	22	17=100
Hispanic (Total)	49	39	12=100
High	40	44	16=100
Low	62	32	6=100
Secular***	64	23	13=100

*Analysis based on those who have heard at least a little about the stem cell debate in Washington.

**Groups are divided into "high" and "low" levels of religious commitment based on how often individuals pray, attend religious services, and the importance of religion in their lives.

***Seculars include atheists, agnostics and those with no religious preference who rarely, if ever, attend religious services.

Public Makes Distinctions on Genetic Research

April 9, 2002



THE HARRIS POLL #33

July 25, 2001

	All Adults %	Seen, Heard, Read Anything about Use of Stem Cell Research in Medical Research		Religion				Party Identification		
		Yes %	No/ Not Sure %	Catholic %	Protestant %	Other Christian %	Born-Again Christian %	Republican %	Democrat %	Independent %
Should be allowed	61	63	56	61	58	59	50	49	68	68
Should not be allowed	21	22	20	24	25	21	29	33	16	15
Not sure/Refused	18	16	23	15	17	20	21	18	16	17



THE HARRIS POLL #33

July 25, 2001

		All Adults			Those Who Have Seen, Heard, or about Stem Cell Research		
		Tend to Agree	Tend to Disagree	Not Sure/ Refused	Tend to Agree	Tend to Disagree	Not Sure/ Refused
As long as the parents of the embryo give their permission, and the embryo would otherwise be destroyed, stem cell research should be allowed	%	72	21	7	72	20	8
If most scientists believe that stem cell research will greatly increase our ability to prevent or treat serious diseases we should trust them and let them do it	%	63	29	7	62	31	7
Using cells from human embryos for research comes too close to allowing scientists to play God	%	40	53	7	38	54	8
Allowing any medical research using stem cells from human embryos should be forbidden because it is unethical and immoral	%	32	60	8	29	64	8



College Grads Strongly Back Stem Cell Funding

	<u>Should</u>	<u>Should not</u>	<u>Depends/ DK/Ref</u>
	%	%	%
Total	50	35	15=100
College grad	64	25	11=100
Some college	51	33	16=100
H.S. grad	41	43	16=100
Less than H.S.	35	46	19=100
Conservative	38	45	17=100
Moderate	55	31	14=100
Liberal	69	22	9=100

Analysis based on those who have heard at least a little about the stem cell debate in Washington.

Religion Behind Opposition, Education Behind Support

<i>Biggest influence on attitudes</i>	<u>Total</u>	<i>Government funding for stem cell research</i>	
		<u>Favor</u>	<u>Oppose</u>
	%	%	%
Seen/Read in media	36	42	29
Education	21	28	12
Religious beliefs	19	5	37
Personal experience	8	10	4
Friends and family	3	4	3
Something else	11	10	12
Don't know	2	1	3
	100	100	100

Analysis based on those who have heard at least a little about the stem cell debate in Washington.

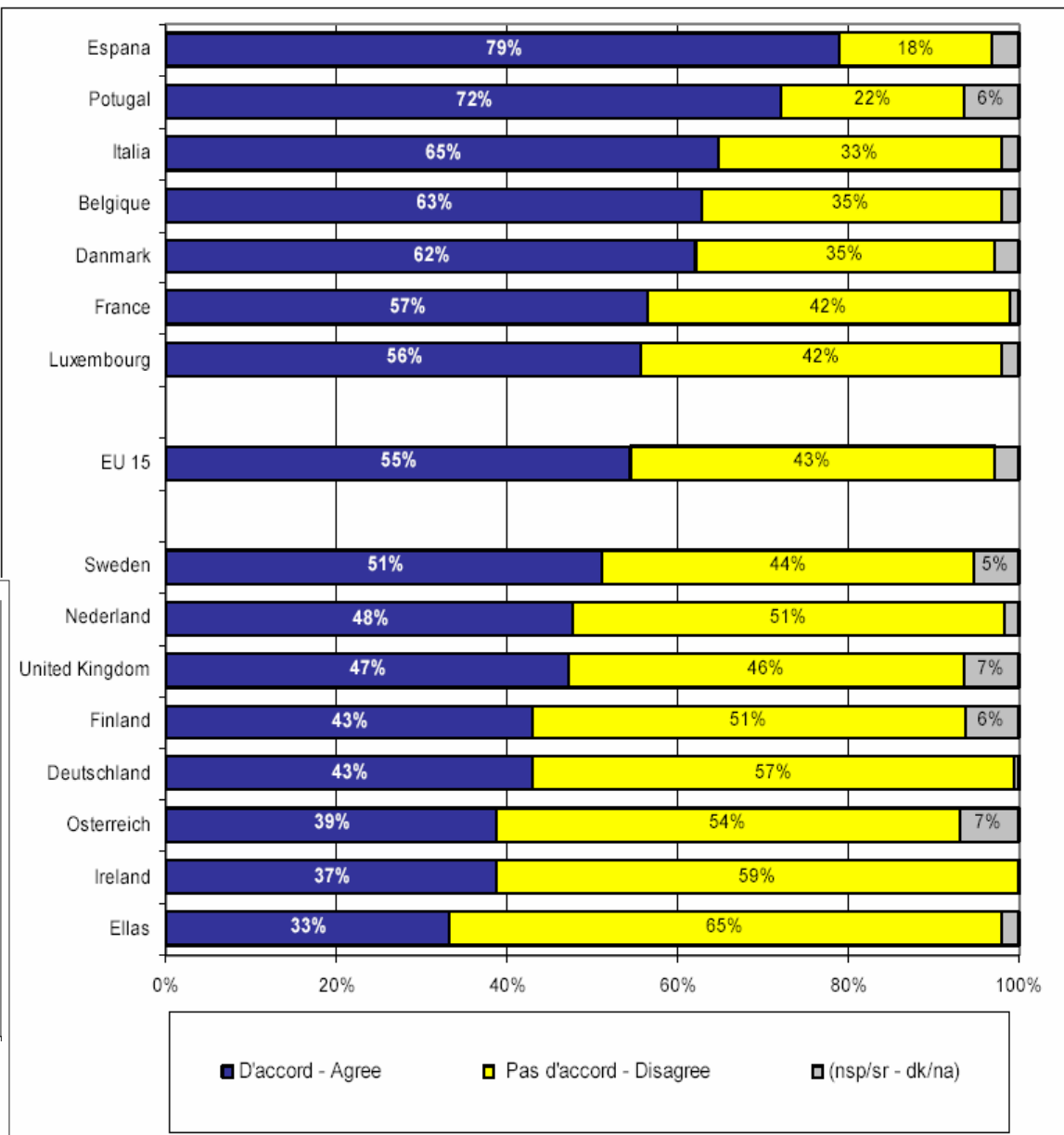
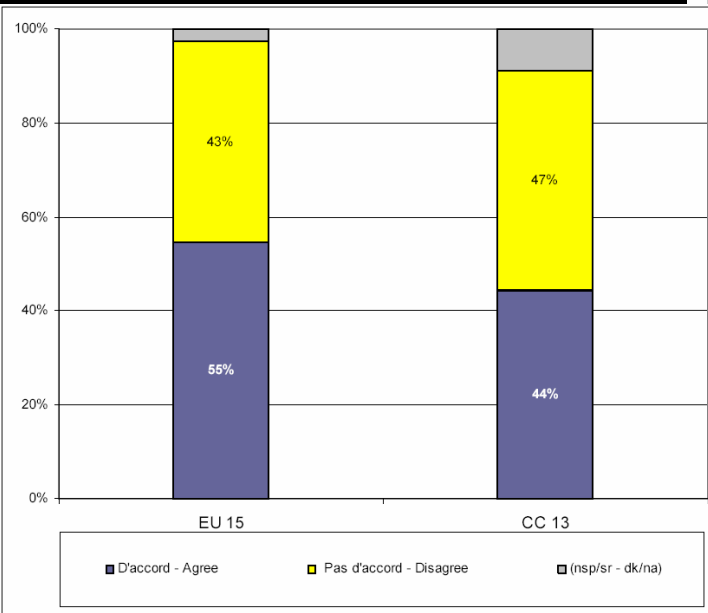
the acceptance of therapeutic and reproductive
CLONING
 by the public

Public opinion survey in 30 European countries
 Survey Conducted by EOS Gallup Europe



Q8b Tell me if you absolutely agree, rather agree, rather disagree or absolutely disagree with...

The therapeutic cloning, meaning the identical reproduction of human cells



■ D'accord - Agree ■ Pas d'accord - Disagree ■ (nsp/sr - dk/na)

*In ogni caso per lei si tratta di un'applicazione
MORALMENTE ACCETTABILE:*

	Si	No	Non sa	Non risponde	Totale
a) Modificare i geni di verdura/frutta per renderla più resistente ai parassiti	43,4	47,9	8,6	0,0	100,0
b) Introdurre geni umani negli animali per produrre organi da trapiantare, come per esempio geni nei maiali per i trapianti di cuore.	43,5	48,8	6,9	0,7	100,0
c) Utilizzare cellule di embrioni umani nel tentativo di curare malattie come Alzheimer o Parkinson.	68,0	23,3	8,2	0,5	100,0
d) Ricominciare alla tecnica della clonazione per avere figli.	19,4	75,1	5,1	0,4	100,0

