

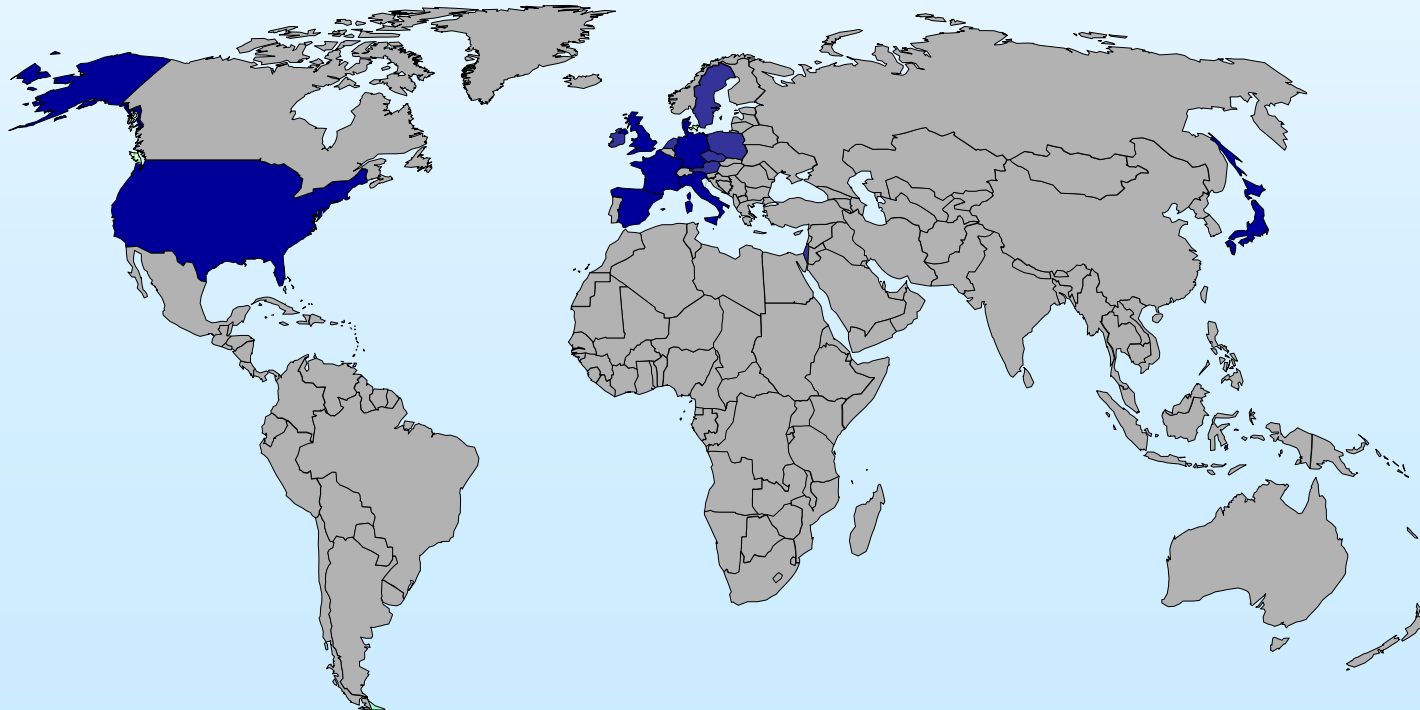
Second BBVA Foundation International Study on Biotechnology

Attitudes to Stem Cell Research and Hybrid Embryos

May , 2008

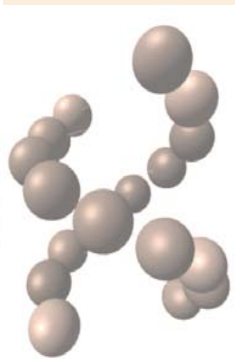
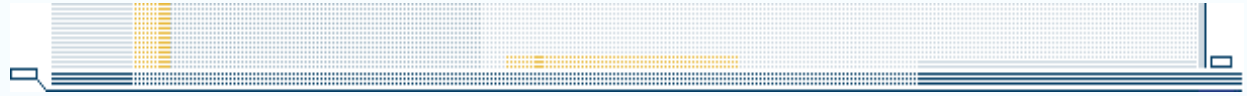
A general population survey on Biotechnology

- ➔ 15 countries in three continents: Austria, Czech Republic, Germany, Denmark, Spain, France, Ireland, Italy, Netherlands, Poland, United Kingdom, Sweden, Israel, Japan, United States
- ➔ 1500 interviews per country (approx. 22,500 interviews in all)
- ➔ The BBVA Foundation conducted the first edition of this study in 2003



General attitudes towards research with embryonic stem cells and hybrid embryos

- Awareness and understanding
- Perception of medical benefits
- Fears and reservations
- Acceptance of the use of embryos to obtain stem cells depending on their origin: spare embryos vs. created embryos
- View of the moral condition of the embryo and acceptance of stem cell research
- Creation of hybrid embryos to obtain stem cells
- Preference for regulatory level (European – national)

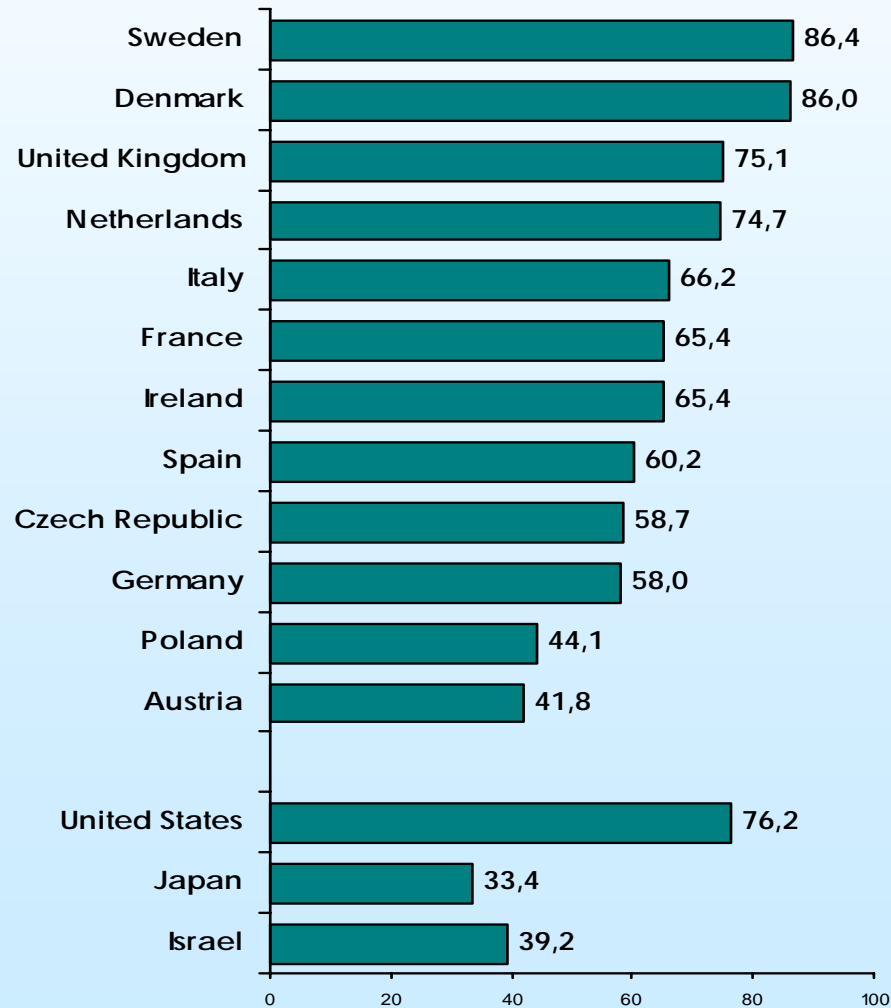


Public understanding of stem cells

Recently information has been appearing about a type of cell called "stem cells". Have you heard or read anything about this kind of cell?

Percentage answering "yes"

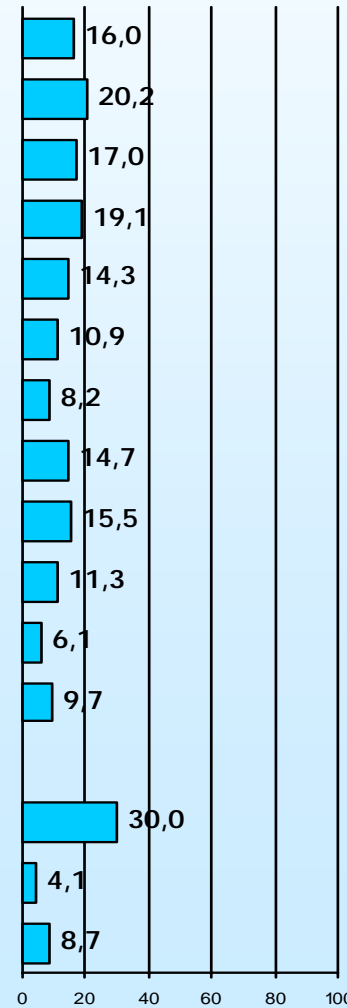
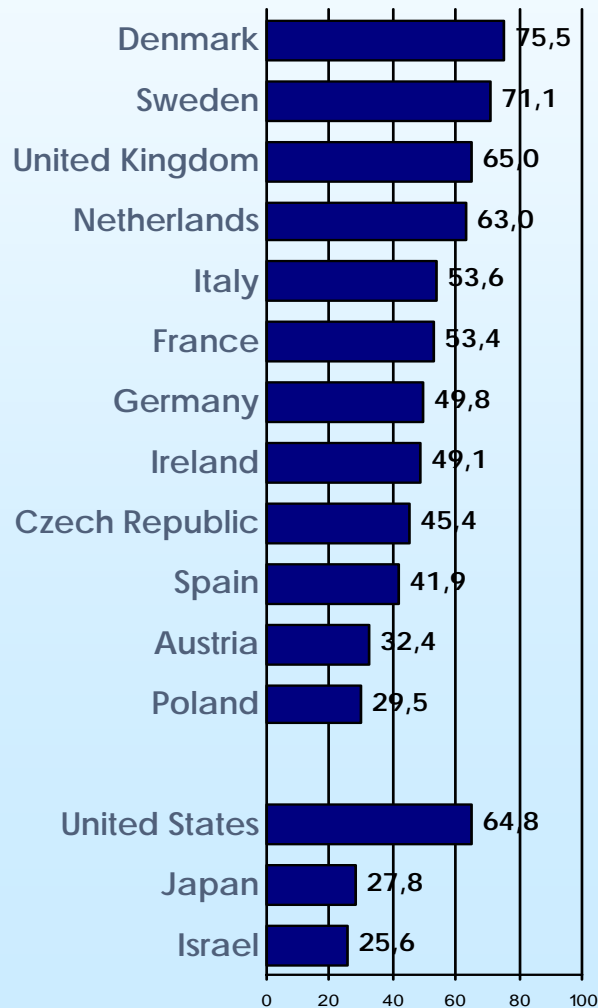
Base: all interviewees



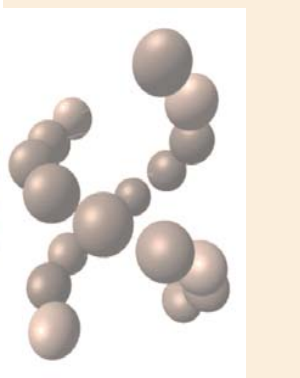
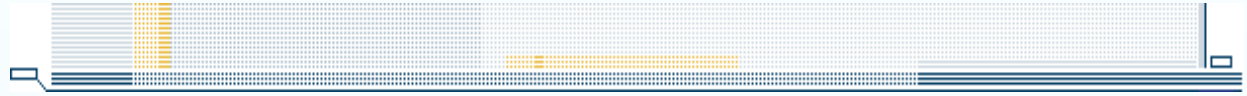
- Awareness varies from one country to another
- Awareness stands in the medium to high range in most societies

Percentage having heard/read something about stem cells and answering "true" to the statement that "Stem cells can be transformed into different types of cells that can then be grown into specialised tissues like muscles or nerves"

Percentage having heard/read something about stem cells and answering "false" to the statement that "Nowadays, stem cells are usually extracted from human embryos without destroying them"



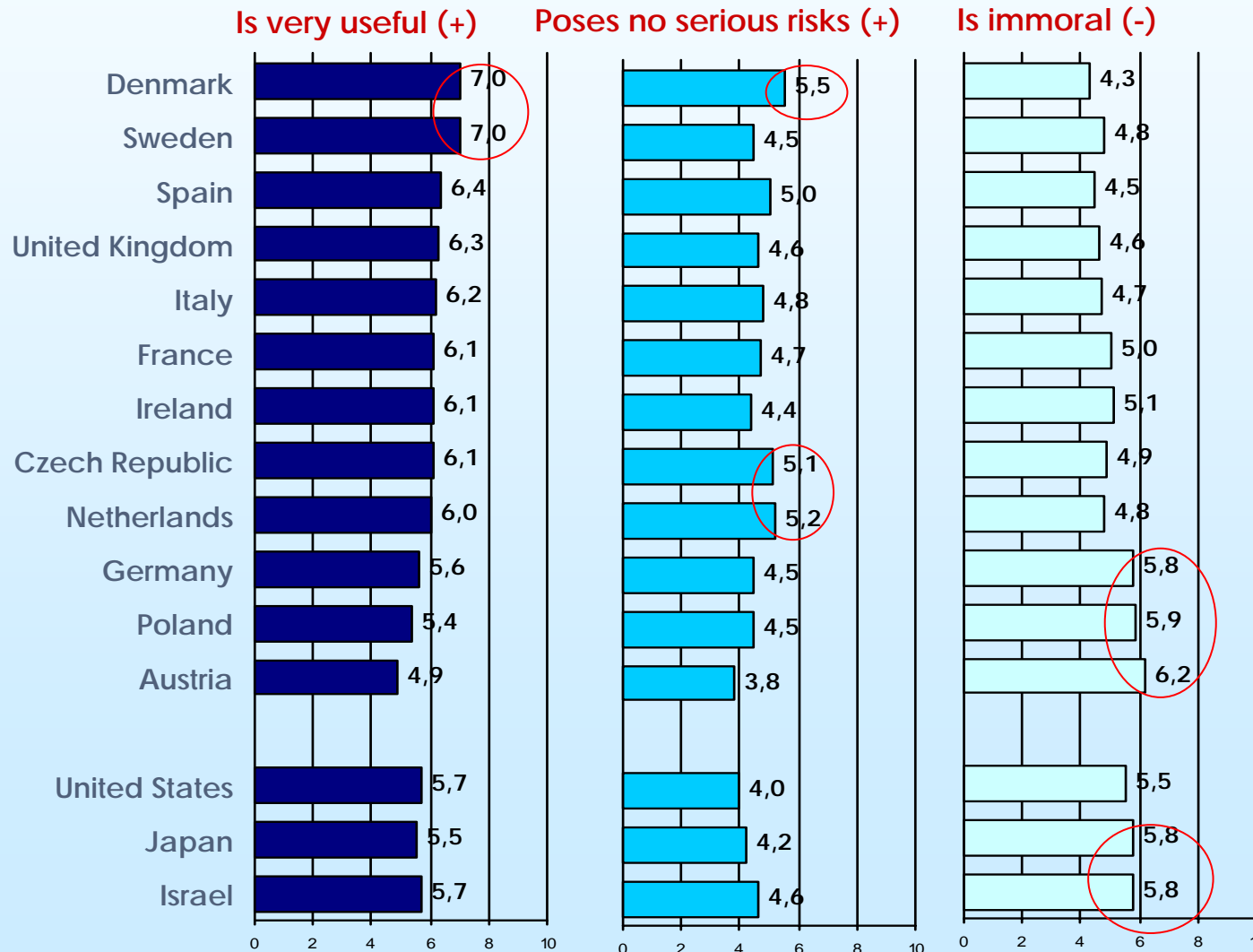
- Fair to good understanding of the properties of embryonic stem cells
- Ignorance about the fact that their extraction involves destroying the embryo



Views about stem cell research

I am going to read you some sentences about research with human embryos that are a few days old to obtain stem cells and I would like you to tell me how much you agree or disagree with each.

Base: All interviewees. Average on a scale from 0 to 10, where 0 means you totally disagree with the statement and 10 means that you totally agree



- Broad consensus on the usefulness of stem cell research, though without dispelling concerns about its risks or morality
- Only a few countries place immorality ahead of usefulness

Can you please tell me how much you agree or disagree with the following statements?

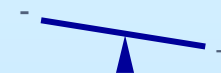
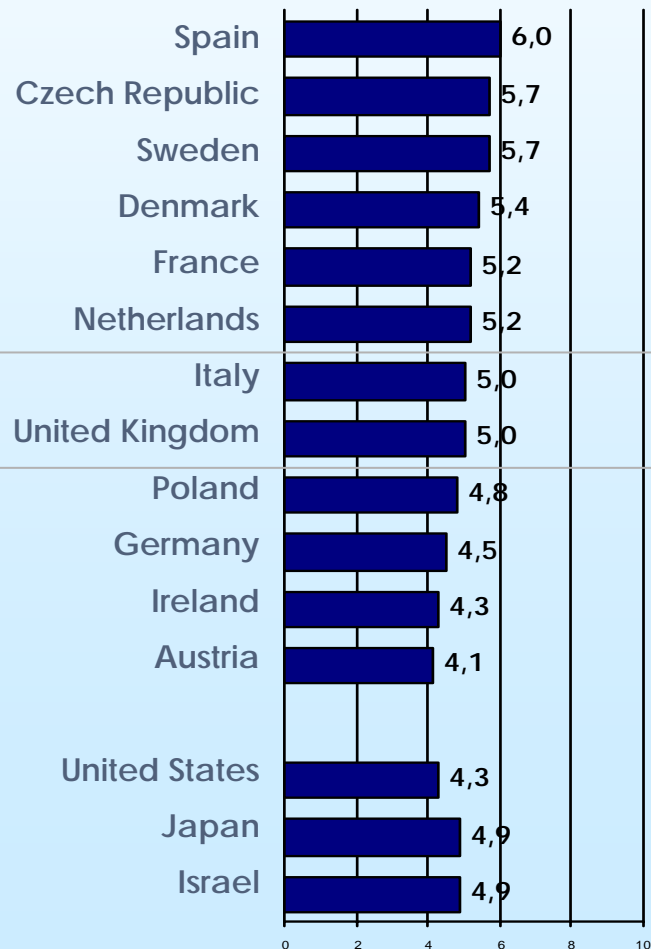
Base: All interviewees. Average on a scale from 0 to 1, where 0 means you totally disagree with the statement and 10 means that you totally agree

The medical benefits for many human beings that can perhaps be obtained in the future thanks to research with embryos that are a few days old are much more important than the embryos' rights

Medical benefits



Embryos' rights

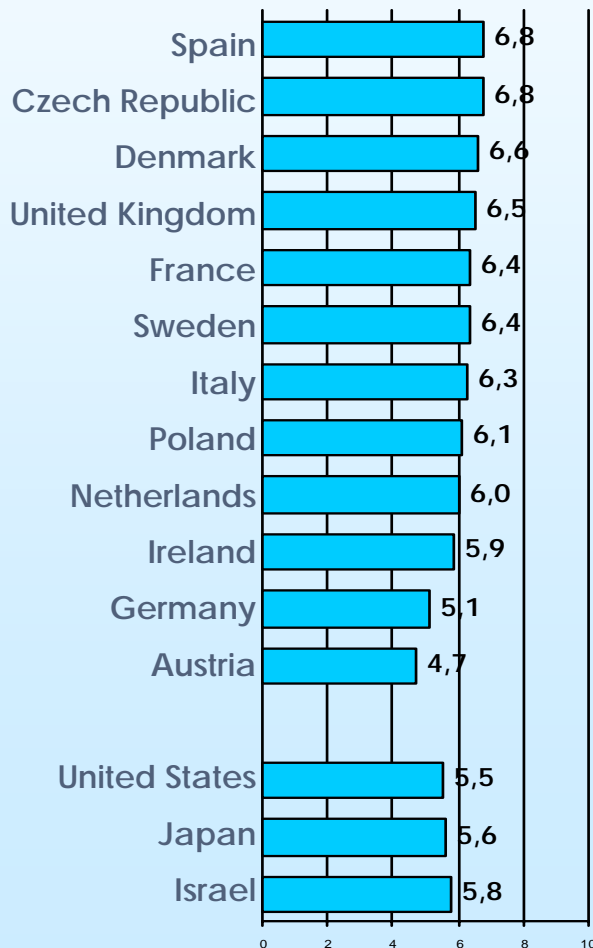


In the trade-off between ends and means, opinions are divided

Can you please tell me how much you agree or disagree with the following statements?

Base: All interviewees. Average on a scale from 0 to 10, where 0 means you totally disagree with the statement and 10 means that you totally agree

Research with stem cells from embryos that are a few days old should be supported as a means of finding effective treatments for diseases such as Parkinson's, Alzheimer's, or diabetes as soon as possible



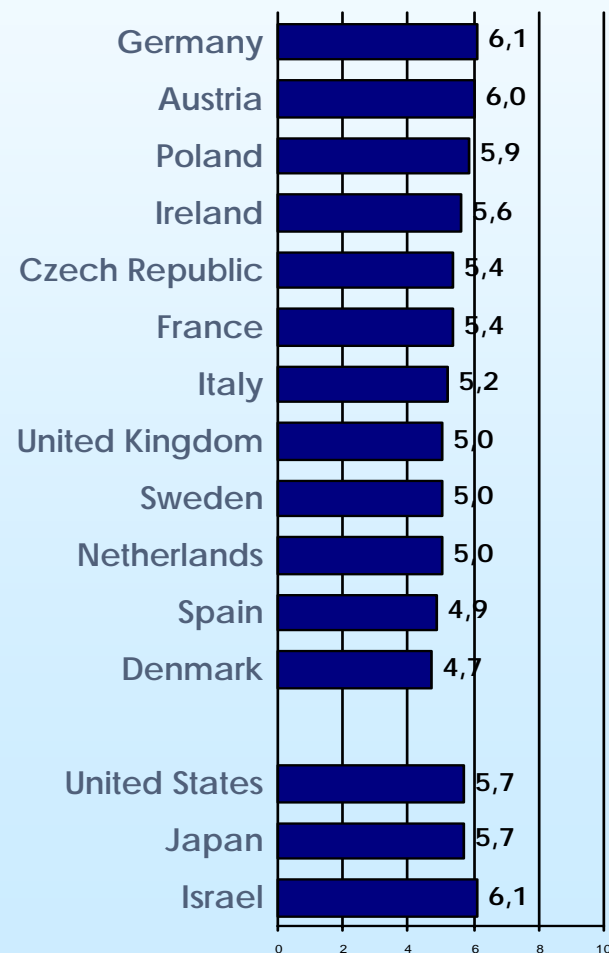
When the medical benefits are spelled out as potential treatments for what citizens consider major diseases



Can you please tell me how much you agree or disagree with the following statements?

Base: All interviewees. Average on a scale from 0 to 10, where 0 means you totally disagree with the statement and 10 means that you totally agree

Research with human embryos that are a few days old is an unacceptable interference into the natural processes of life



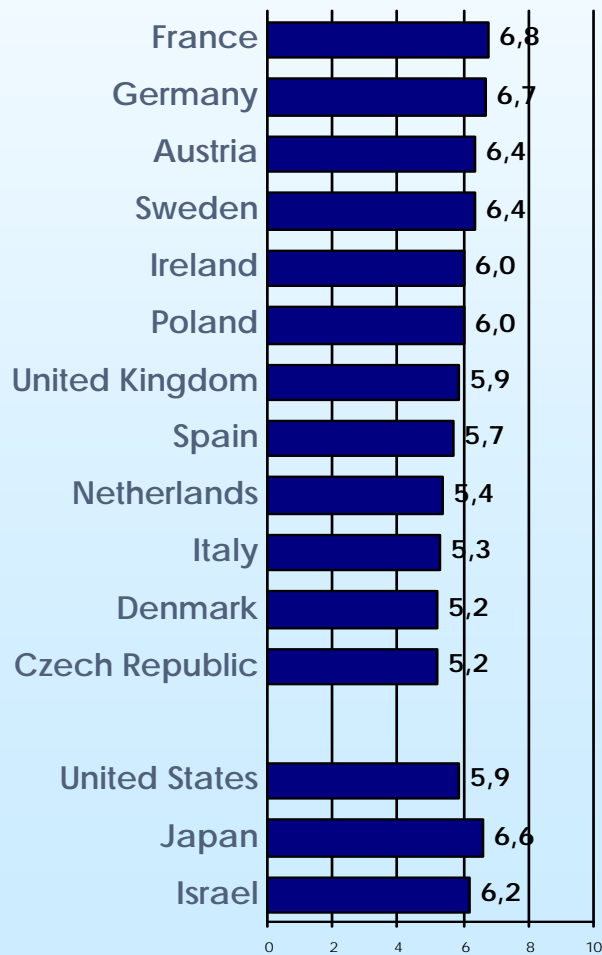
Citizens in most countries express reservations about interfering in natural processes

Feeling that there are some domains which should not be meddled with

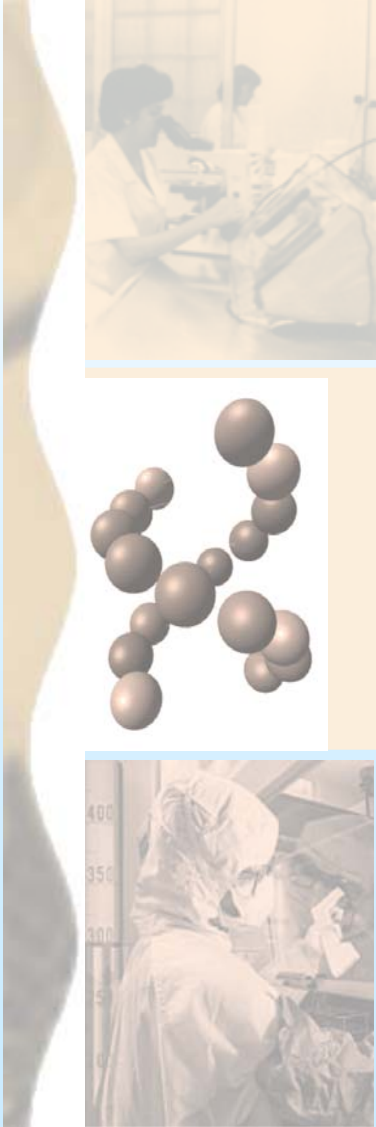
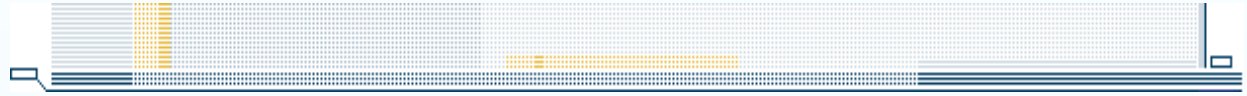
Can you please tell me how much you agree or disagree with the following statements?

Base: All interviewees. Average on a scale from 0 to 10, where 0 means you totally disagree with the statement. and 10 means that you totally agree

Allowing research with embryos that are a few days old in order to obtain stem cells for use in medicine will open the door to other morally reprehensible uses



Widespread concern about opening the door to other, morally reprehensible uses



View of the moral condition of the embryo

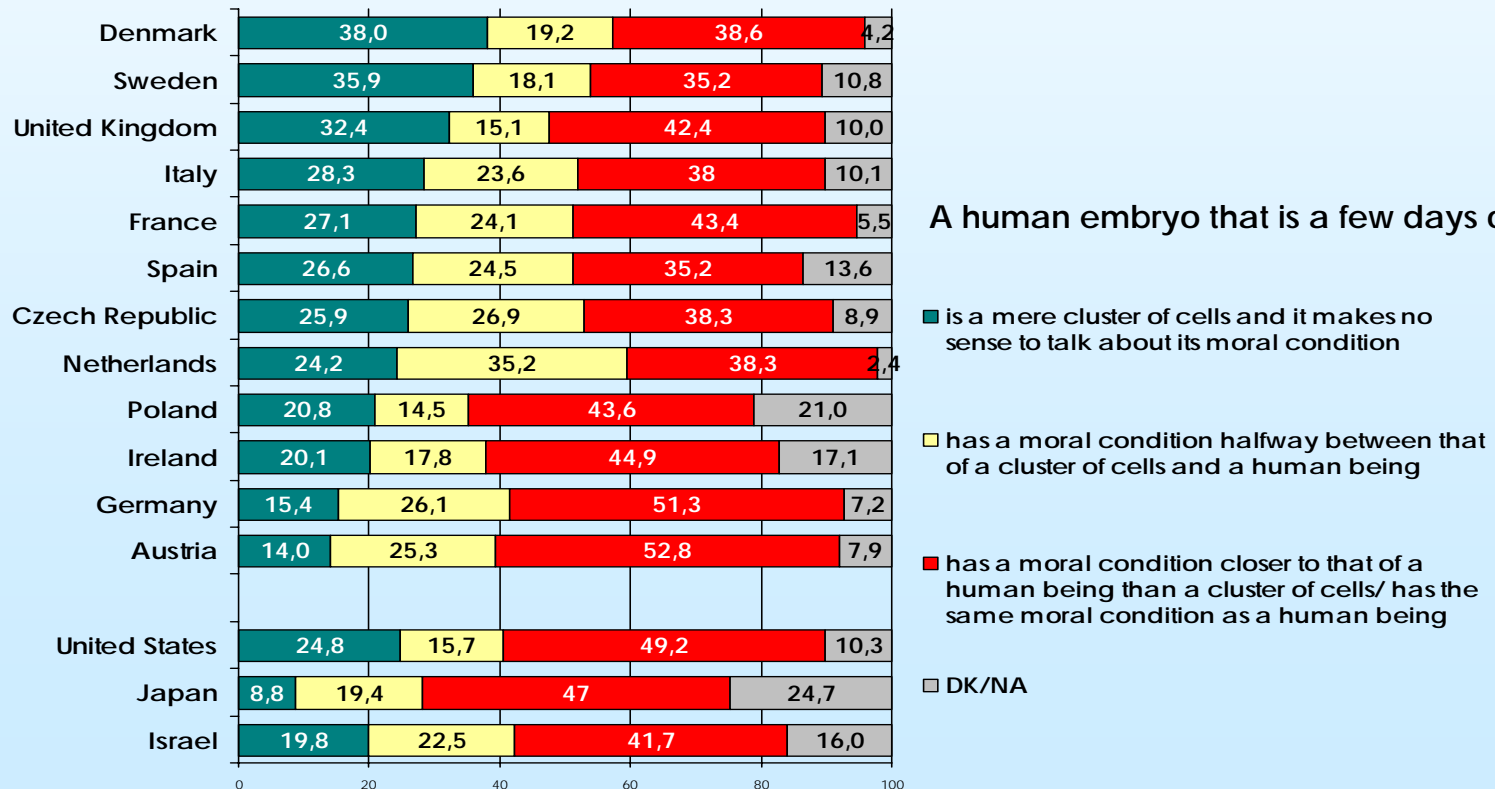
VIEW OF THE MORAL CONDITION OF THE EMBRYO

A dominant view of the moral condition of the few-day-old embryo as close to or the same as that of a human being

In comparative terms.

- The strictly biological view finds widest support in Denmark and Sweden, where opinions are more evenly balanced
- The view of the embryo as close or identical to a human being is held most emphatically in Austria, Germany and the United States

I'd like you to tell me which of the following four phrases you agree with the most. Base: All interviewees

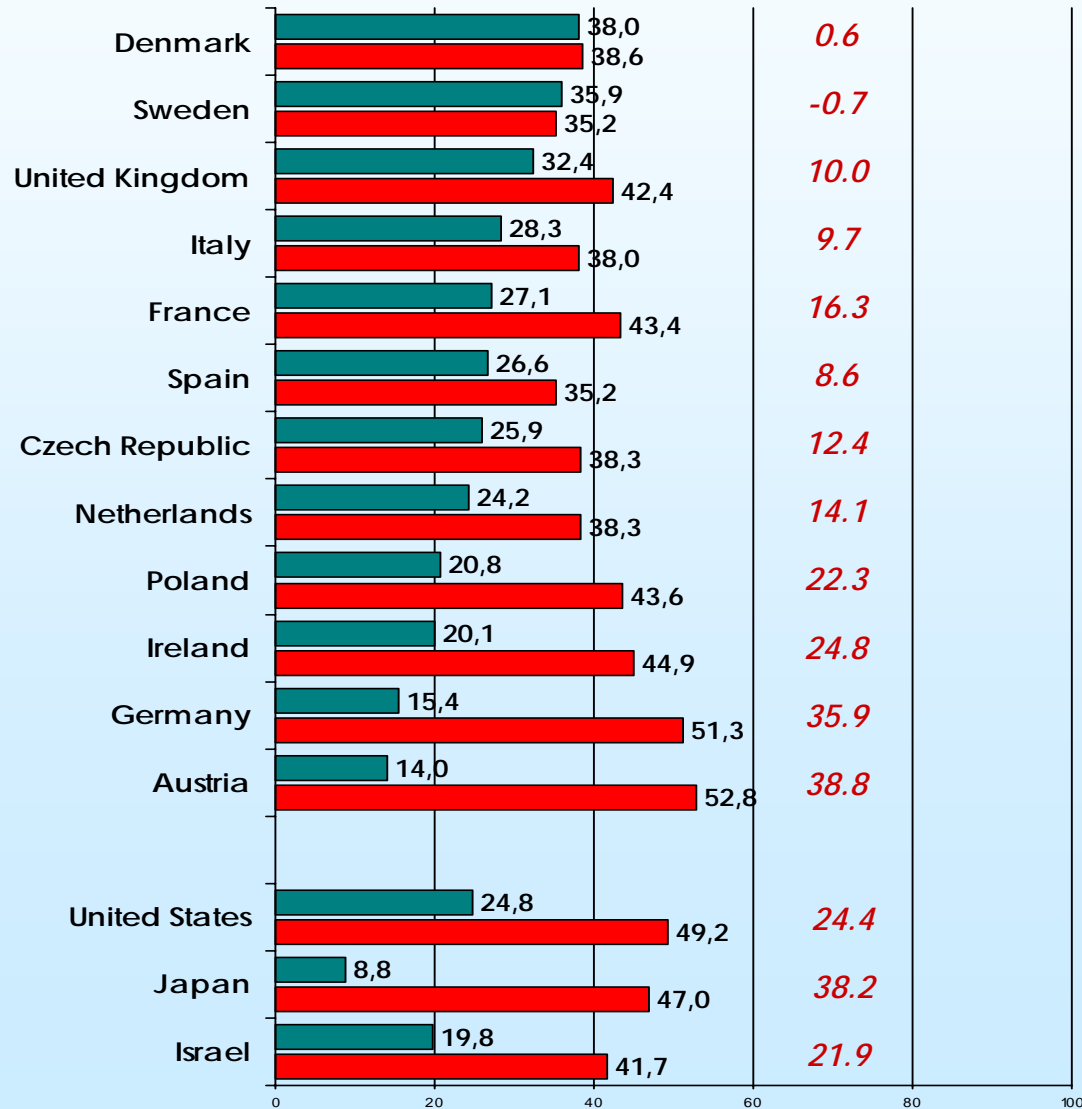


A human embryo that is a few days old

- is a mere cluster of cells and it makes no sense to talk about its moral condition
- has a moral condition halfway between that of a cluster of cells and a human being
- has a moral condition closer to that of a human being than a cluster of cells/ has the same moral condition as a human being
- DK/NA

I'd like you to tell me which of the following four phrases you agree with the most. Base: All interviewees

Difference "a human being" - "a cluster of cells"



A human embryo that is a few days old...

- is a mere cluster of cells and it makes no sense to talk about its moral condition
- has a moral condition closer to that of a human being than a cluster of cells/ has the same moral condition as a human being

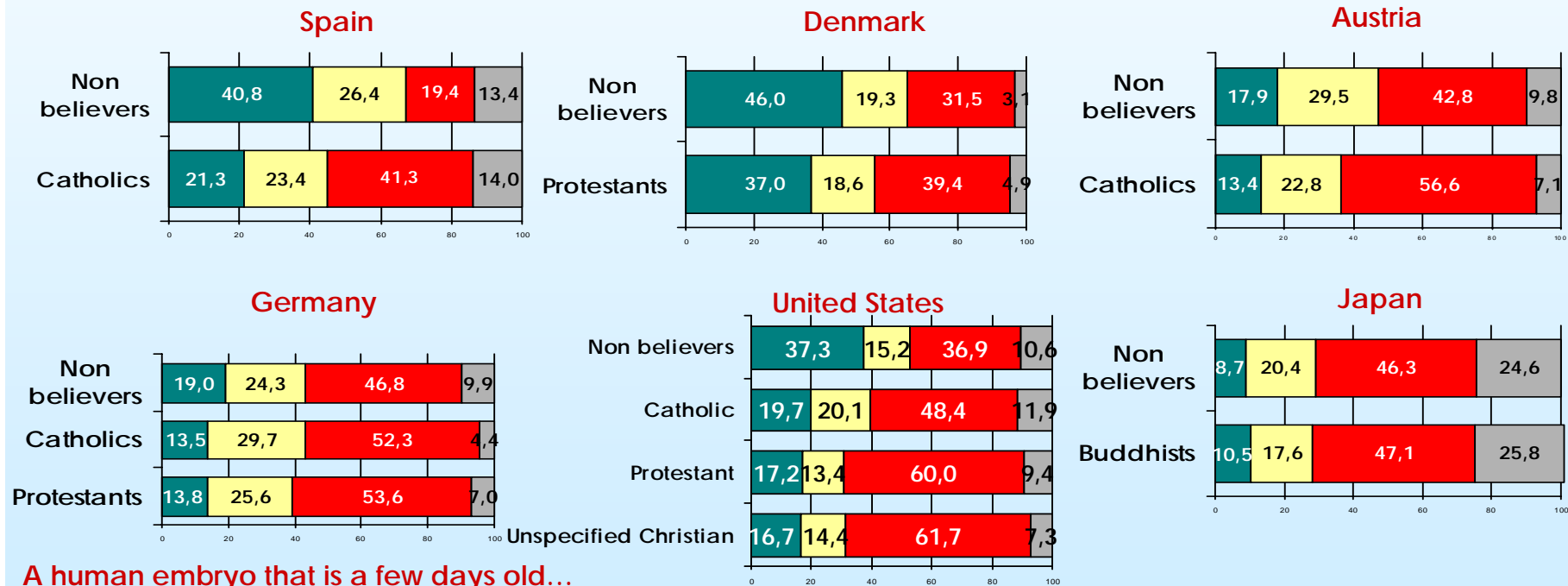
Being a believer or a non believer conditions views about the moral status of the embryo. Non believers have a greater tendency to see the embryo as a cluster of cells with no moral condition

		A human embryo that is a few days old...			
		is a mere cluster of cells and it makes no sense to talk about its moral condition	has a moral condition halfway between that of a cluster of cells and a human being	has a moral condition closer to that of a human being than a cluster of cells/ has the same moral condition as a human being	DK/NA
Spain	Non believer	40.8	26.4	19.4	13.4
	Catholic	21.3	23.4	41.3	14
France	Non believer	32	26.2	36.3	5.5
	Catholic	23.5	23.2	47.8	5.5
Ireland	Non believer	32.2	17.4	29.7	20.7
	Catholic	19.1	18.2	46.4	16.3
Italy	Non believer	36.9	25.3	29.9	7.8
	Catholic	25.9	24.6	40.7	8.7
Austria	Non believer	17.9	29.5	42.8	9.8
	Catholic	13.4	22.8	56.6	7.1
Czech Republic	Non believer	29.6	27.4	34.5	8.6
	Catholic	16.5	27.4	49.4	6.7
Poland	Non believer	43.0	11.4	27.8	17.8
	Catholic	19.3	15.2	44.5	21.1
Denmark	Non believer	46.0	19.3	31.5	3.1
	Protestant	37.0	18.6	39.4	4.9
Sweden	Non believer	42.0	16.9	31.8	9.2
	Protestant	31.4	18.6	37.9	12.1

		A human embryo that is a few days old...			
		is a mere cluster of cells and it makes no sense to talk about its moral condition	has a moral condition halfway between that of a cluster of cells and a human being	has a moral condition closer to that of a human being than a cluster of cells/ has the same moral condition as a human being	DK/NA
Germany	Non believer	19	24.3	46.8	9.9
	Catholic	13.5	29.7	52.3	4.4
	Protestant	13.8	25.6	53.6	7
Netherlands	Non believer	33.2	36.3	28.1	2.4
	Catholic	17.9	36.2	44.1	1.9
	Protestant	8.2	31.7	57.5	2.6
United Kingdom	Non believer	39.5	16.9	35.3	8.3
	Catholic	15.2	14.7	61.4	8.7
	Protestant	28.4	12.9	47.6	11.1
	Unspecified Christian	26.9	11.1	48.5	13.5
United States	Non believer	37.3	15.2	36.9	10.6
	Catholic	19.7	20.1	48.4	11.9
	Protestant	17.2	13.4	60.0	9.4
	Unspecified Christian	16.7	14.4	61.7	7.3
Japan	Non believer	8.7	20.4	46.3	24.6
	Buddhist	10.5	17.6	46.1	25.8
Israel	Non believer	33.1	25.8	24.2	16.8
	Jew	20.1	24.5	41.7	13.7
	Muslim	9.7	13.7	50.9	25.7

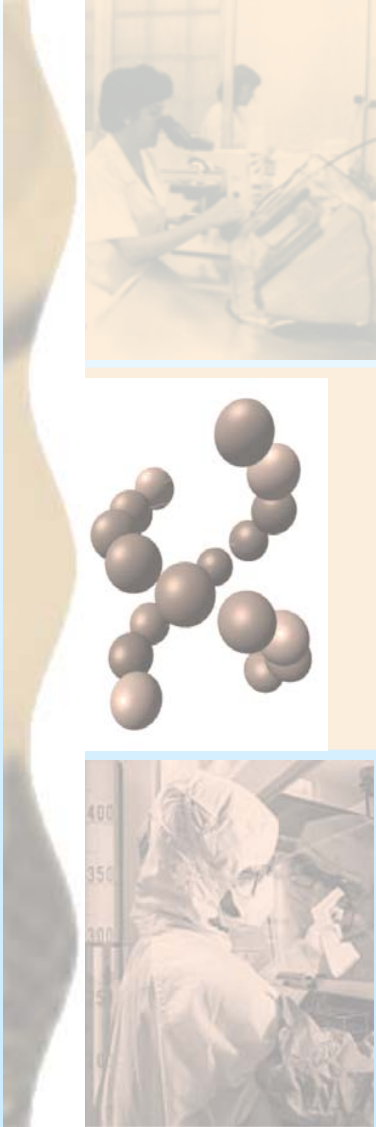
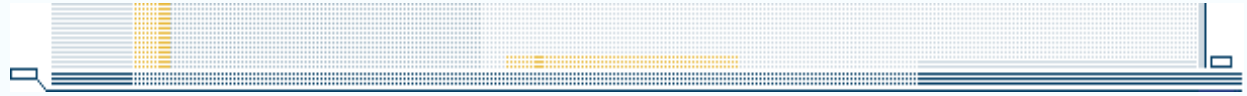
- Being a believer or non believer translates differently in each society
- Differences are more accentuated in Catholic than in Protestant countries
- In Austria and Germany, the strictly biological view finds only minority support, even among non believers
- In Japanese society, being a believer or non believer has no impact on views of the embryo

I'd like you to tell me which of the following four phrases you agree with the most. Base: All interviewees



A human embryo that is a few days old...

- is a mere cluster of cells and it makes no sense to talk about its moral condition
- has a moral condition halfway between that of a cluster of cells and a human being
- has a moral condition closer to that of a human being than a cluster of cells/ has the same moral condition as a human being
- DK/NA



Acceptance of the use of embryos to obtain stem cells depending on their origin

A clear differentiation by scenario

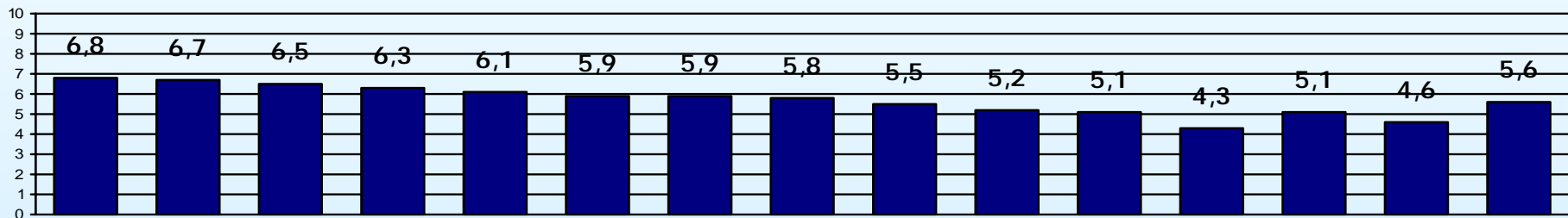
Majority acceptance for research with spare embryos

Division of opinions about research with created embryos though the majority of countries stand in the rejection zone

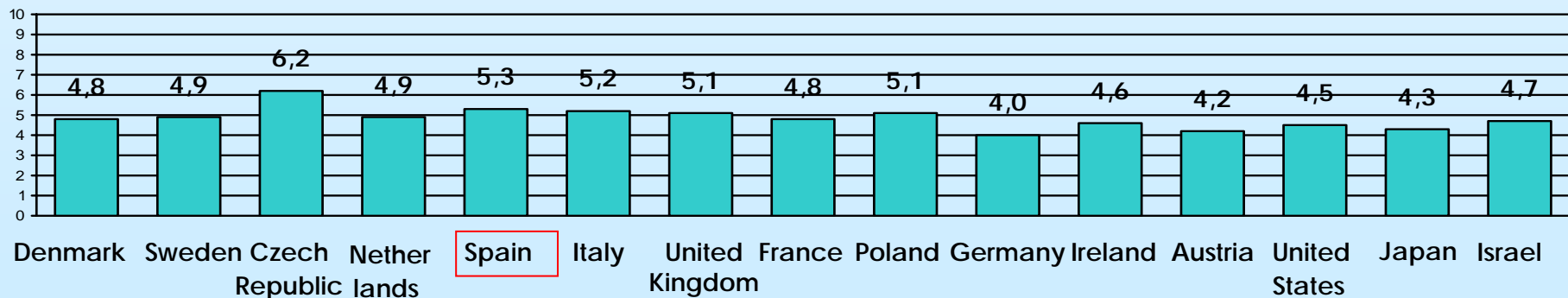
I would like you to tell me how much you agree or disagree with each of the following two statements.

Base: All interviewees. Average on a scale from 0 to 10, where 0 means you totally disagree with the statement and 10 means that you totally agree

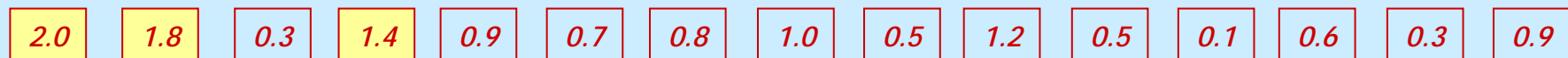
Research with human embryos that are a few days old to obtain stem cells is morally acceptable in the case of embryos left over from fertility treatments, that is, embryos that will never develop



Research with human embryos that are a few days old to obtain stem cells is morally acceptable in the case of embryos that were created specifically for research use



Difference

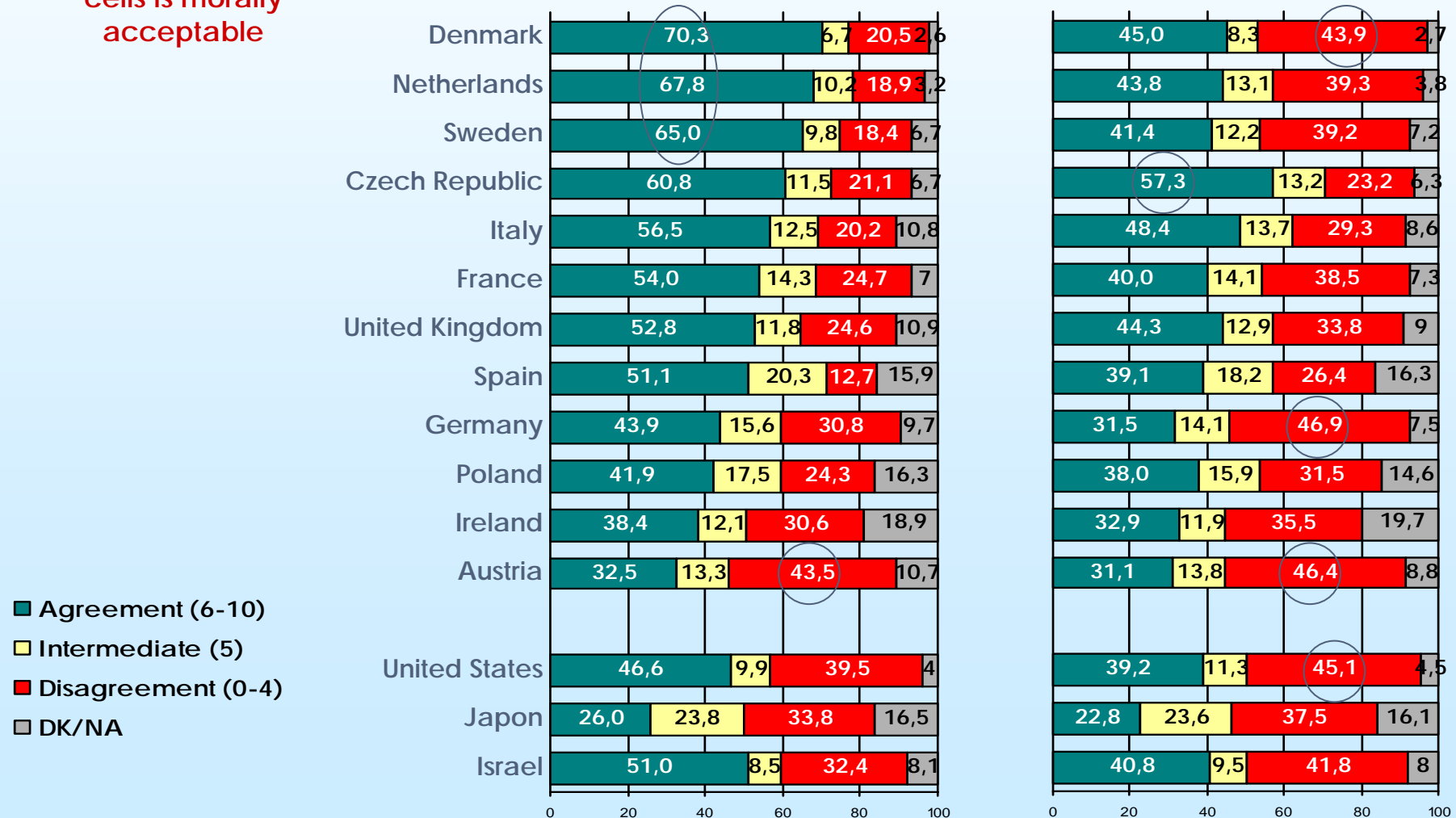


I would like you to tell me how much you agree or disagree with each of the following two statements. Base: All interviewees. Average on a scale from 0 to 10, where 0 means you totally disagree with the statement and 10 means that you totally agree

Research with human embryos that are a few days old to obtain stem cells is morally acceptable

in the case of embryos left over from fertility treatments, that is, embryos that will never develop

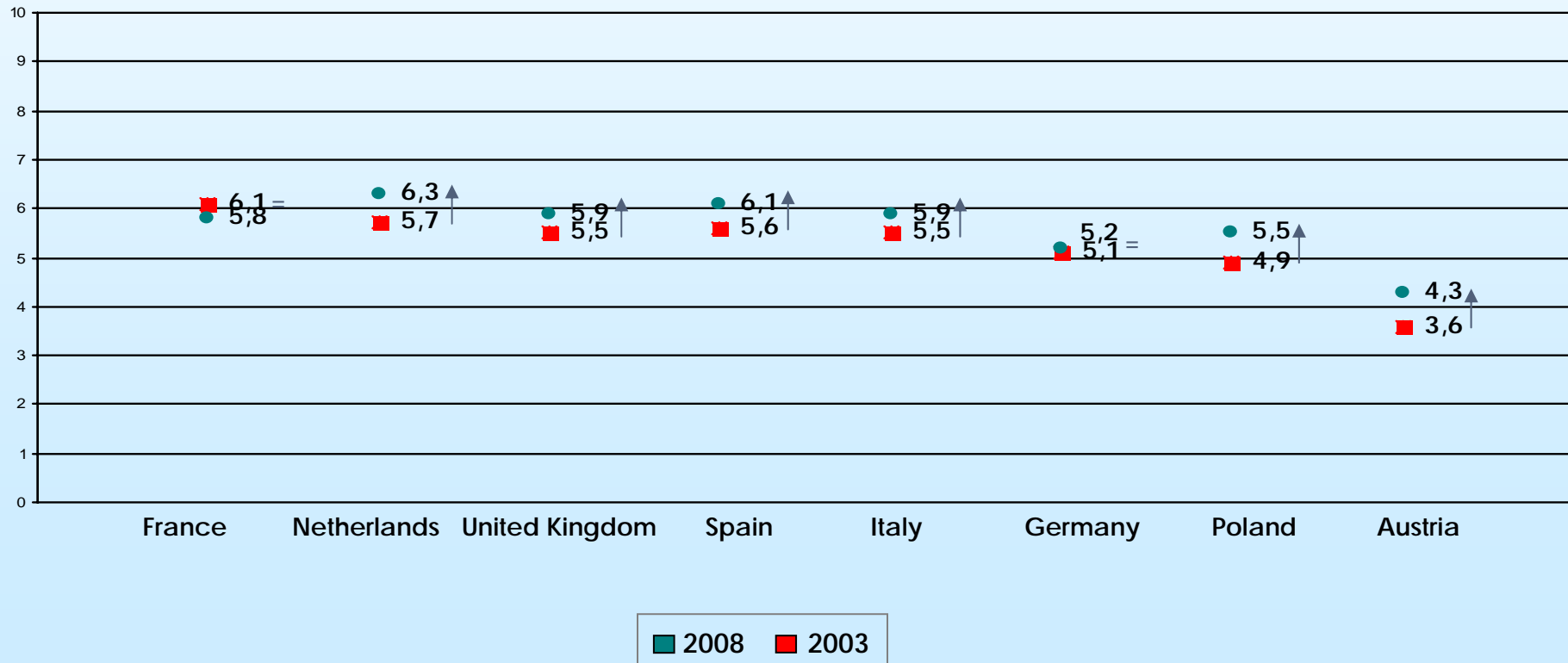
in the case of embryos that were created specifically for research use



Acceptance of the use of spare embryos has grown slightly

I would like you to tell me how much you agree or disagree with each of the following two statements. Base: All interviewees. Average on a scale from 0 to 10, where 0 means you totally disagree with the statement and 10 means that you totally agree

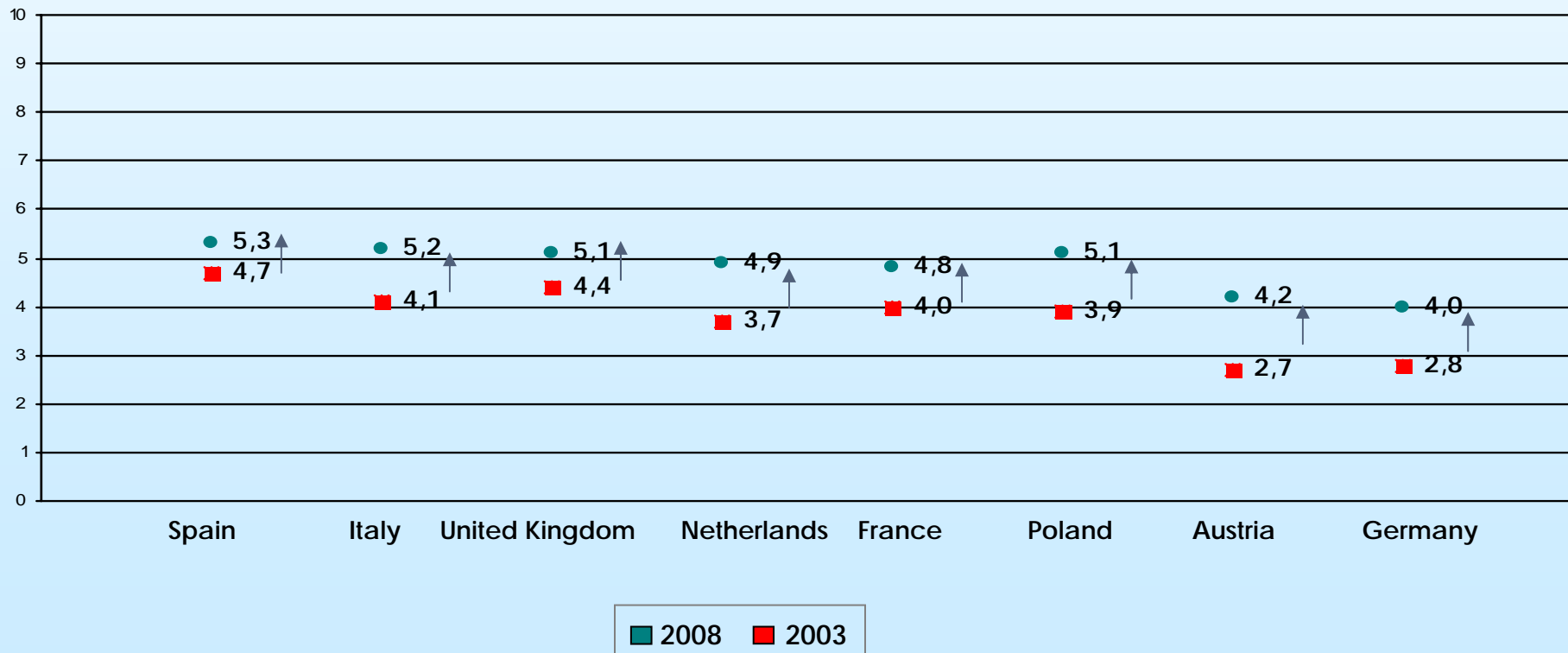
Research with human embryos that are a few days old to obtain stem cells is morally acceptable in the case of embryos left over from fertility treatments, that is, embryos that will never develop



Although the majority opinion remains against in many countries, average agreement with the use of created embryos has advanced to a significant extent
The result is a narrowing of the acceptance gap between the two scenarios

I would like you to tell me how much you agree or disagree with each of the following two statements. Base: All interviewees. Average on a scale from 0 to 10, where 0 means you totally disagree with the statement and 10 means that you totally agree

Research with human embryos that are a few days old to obtain stem cells is morally acceptable in the case of embryos that were created specifically for research use

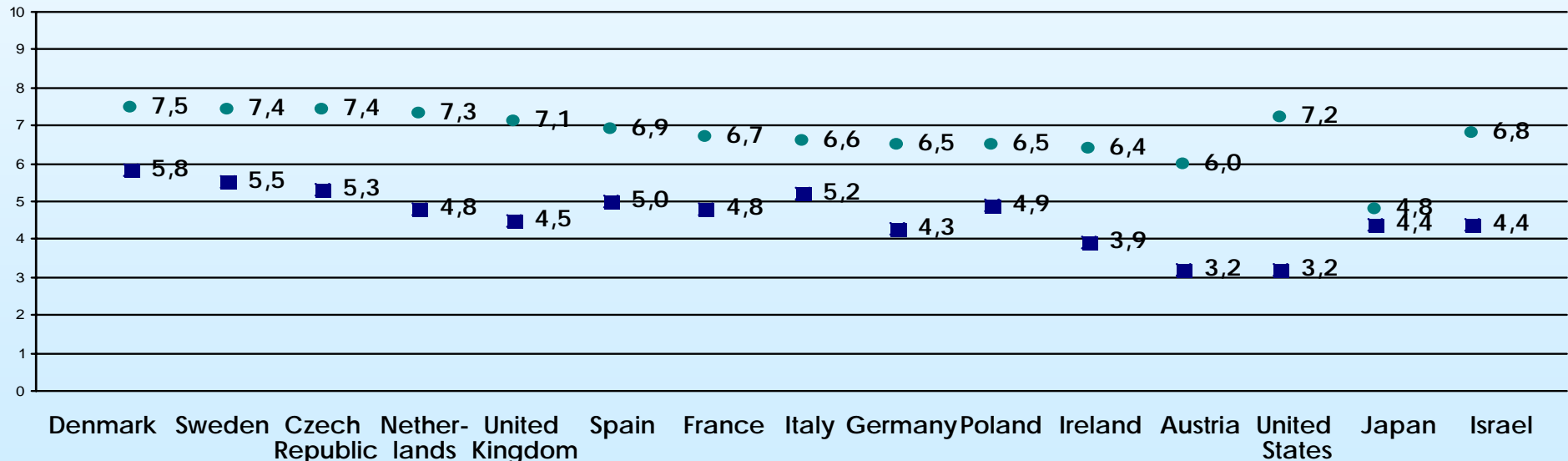


ACCEPTANCE OF THE USE OF SPARE EMBRYOS ACCORDING TO VIEWS OF THE EMBRYO

Views of the moral condition of the embryo exert a clear influence on the acceptance or otherwise of its research use

I would like you to tell me how much you agree or disagree with each of the following two statements. Base: All interviewees. Average on a scale from 0 to 10, where 0 means you totally disagree with the statement and 10 means that you totally agree

Research with human embryos that are a few days old to obtain stem cells is morally acceptable in the case of embryos left over from fertility treatments, that is, embryos that will never develop. According to views of the moral condition of the embryo



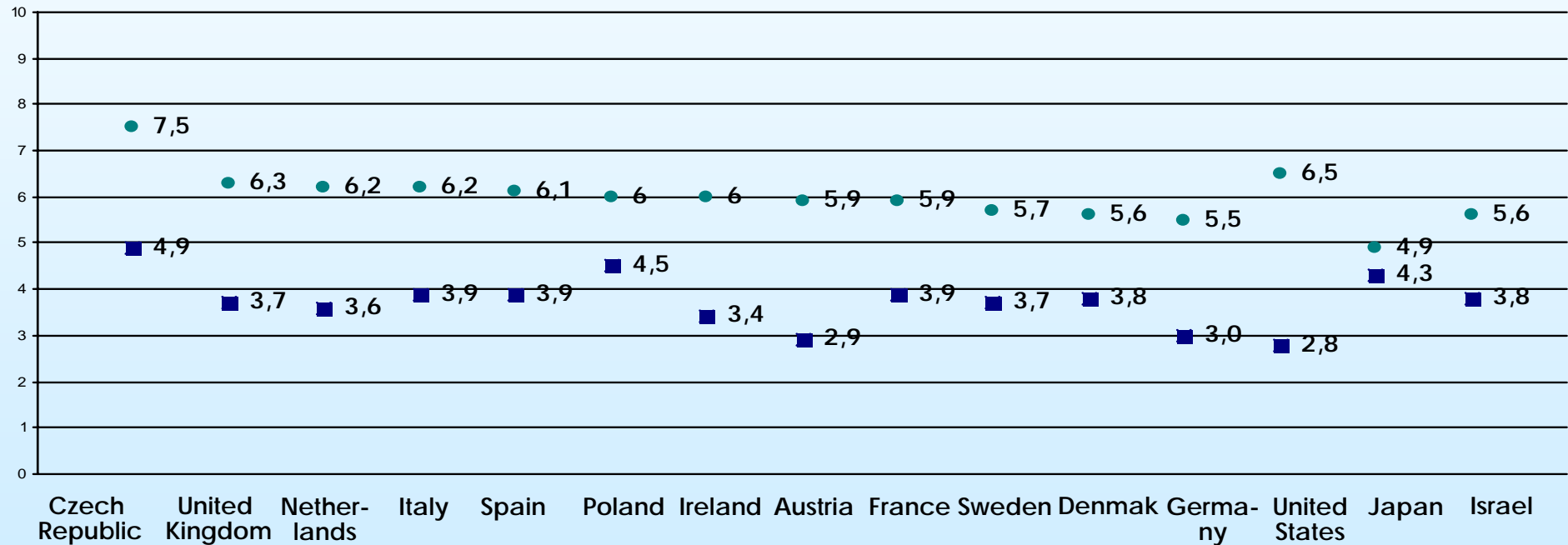
Views of the moral condition of the embryo

- Answer that a human embryo that is a few days old is a mere cluster of cells and it makes no sense to talk about its moral condition
- Answer that a human embryo that is a few days old has the same moral condition as a human being

ACCEPTANCE OF THE USE OF CREATED EMBRYOS ACCORDING TO VIEWS OF THE EMBRYO

I would like you to tell me how much you agree or disagree with each of the following two statements. Base: All interviewees. Average on a scale from 0 to 10, where 0 means you totally disagree with the statement and 10 means that you totally agree

Research with human embryos that are a few days old to obtain stem cells is morally acceptable in the case of embryos that were created specifically for research use. According to views of the moral condition of the embryo



Views of the moral condition of the embryo

- Answer that a human embryo that is a few days old is a mere cluster of cells and it makes no sense to talk about its moral condition
- Answer that a human embryo that is a few days old has the same moral condition as a human being

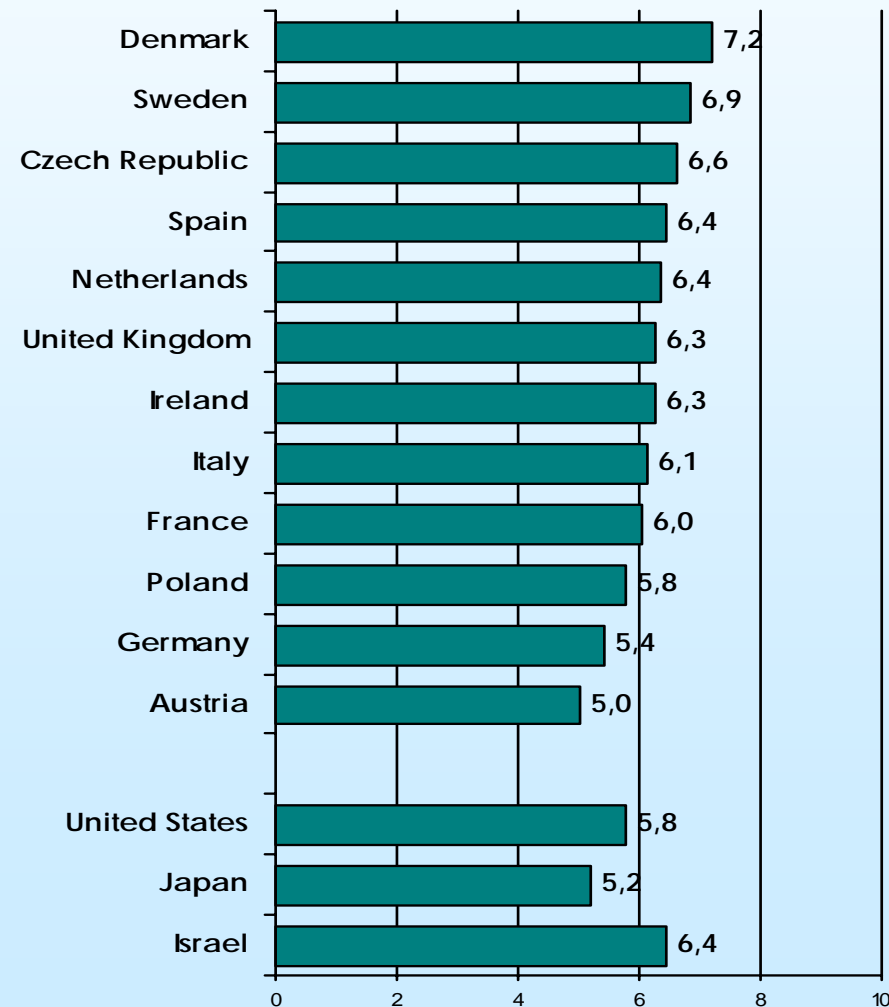
SCENARIO OF NON DESTRUCTION OF THE EMBRYO

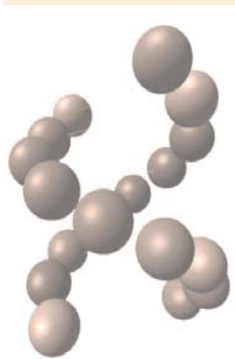
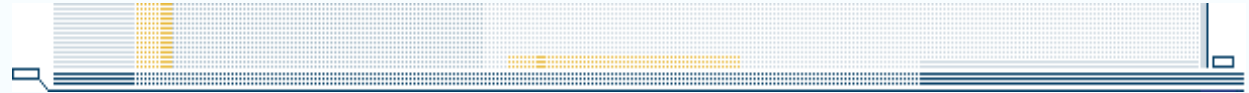
Scientists are looking into the possibility of obtaining stem cells from embryos left over from fertility treatments using techniques that neither damage nor destroy the embryo. To what extent do you think obtaining stem cells from embryos by means of techniques that neither damage nor destroy them is morally acceptable or not?

Base: All interviewees. Average on a scale from 0 to 10, where 0 means it is totally unacceptable and 10 that it is totally acceptable

In the case of a possible technique that neither damages nor destroys the embryo

ACCEPTANCE GROWS

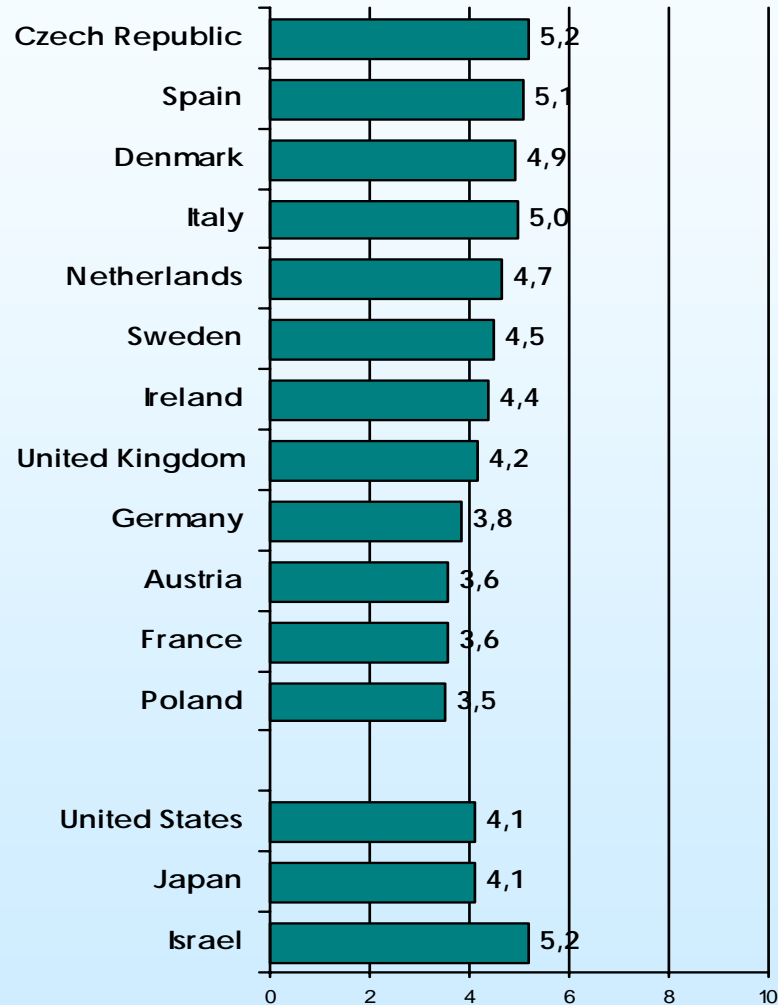




Creation of hybrid embryos

To what extent do you think it is morally acceptable or not to create hybrid embryos a few days old to obtain stem cells that would be used solely and exclusively for research purposes, that is, they would not develop beyond these first few days and the stem cells obtained from them would not be implanted in patients?

Base: All interviewees. Average on a scale from 0 to 10, where 0 means it is totally unacceptable and 10 that it is totally acceptable

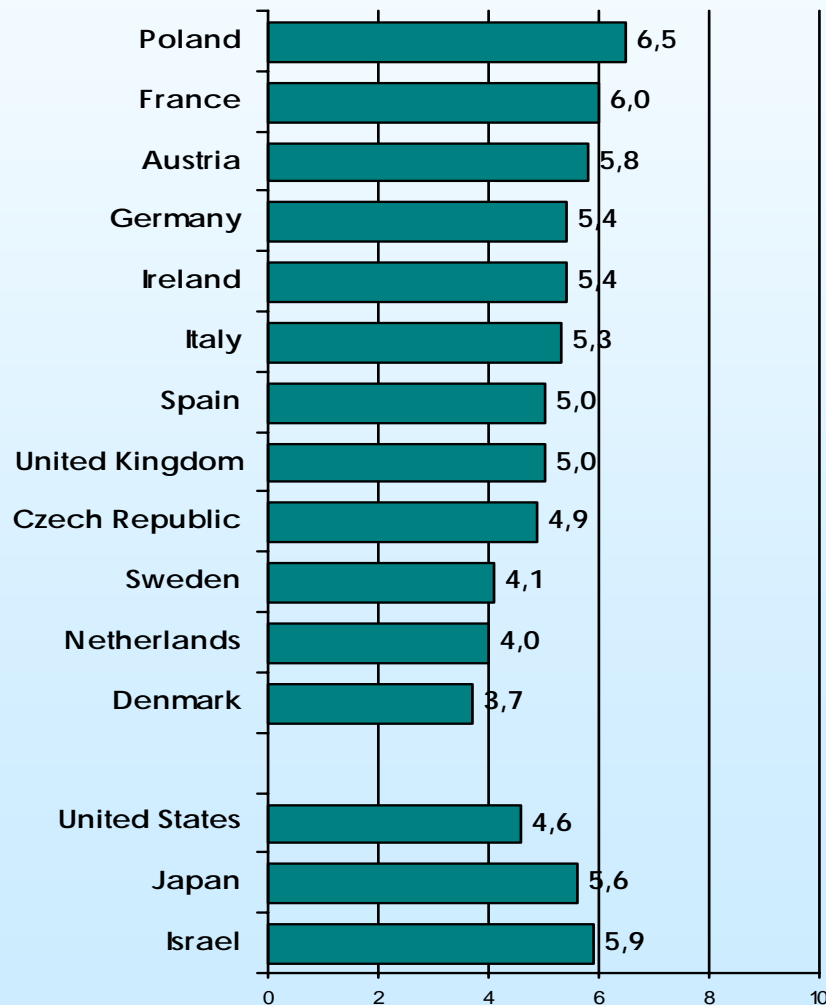


The dominant attitude is one of rejection in most societies

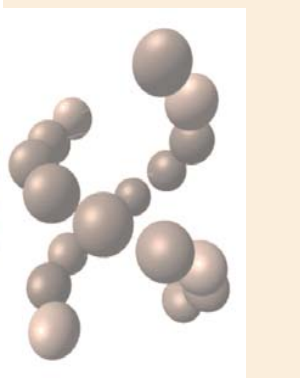
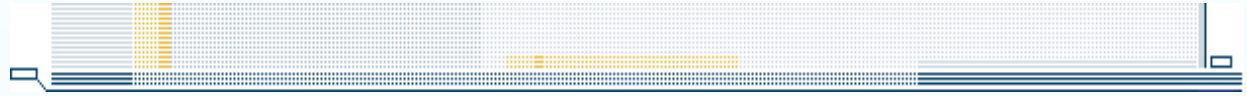
Before the question, interviewees were given a short presentation on its characteristics: "Recently, British scientists have sought permission from their government to create what are known as hybrid embryos, that is, embryos resulting from the union of biological material from two different species (human, animal). Specifically, the nucleus is extracted from the egg of an animal (a rabbit, a cow) and replaced by the nucleus of an adult human cell. The stem cells obtained from this hybrid embryo that is a few days old will be practically 100% human. These stem cells could only be used to advance biomedical research. They would never be used in patients and nor would the hybrid embryos be allowed to develop beyond this preliminary stage"

FEARS ABOUT THE CREATION OF HYBRID EMBRYOS

Can you please tell me how much you agree or disagree with the statement I am about to read to you? "If we allow the creation of hybrid embryos a few days old for the purposes of research, we will end up creating some sort of monster like in the Frankenstein book or movie" Base: All interviewees. Average on a scale from 0 to 10, where 0 means you totally disagree with the statement and 10 means that you totally agree



- Predominant in most countries is the fear that this technique could get out of control and lend itself to dangerous uses
- In some countries (Denmark, Netherlands, Sweden) rejection appears to have less to do with such fears and possibly more to do with perceptions that it is interfering in nature



Preference for regulatory level

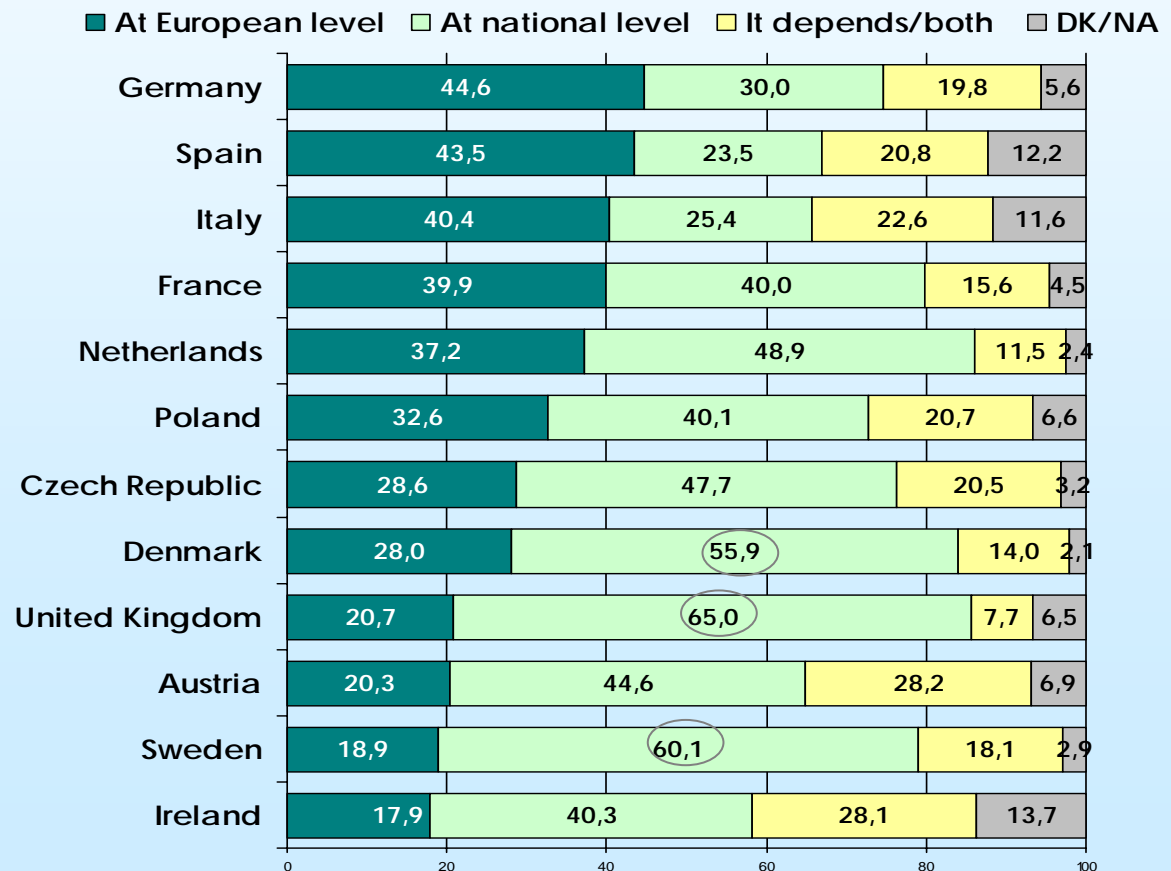
PREFERRED REGULATORY LEVEL IN GENERAL CASES

In general, what do you think is the better solution, for laws and regulations to be decided at national level, that is, for them to be the responsibility of each individual member country, or for them to be decided at European level, that is, for them to be the responsibility of the European Union?

Base: All interviewees in Europe

In most European countries, the general preference is for laws and regulations to be decided nationally. This is especially the case in the United Kingdom, Sweden and Denmark

The exceptions: Germany, Italy and Spain, whose citizens would rather laws and regulations were decided in Europe, and France, where opinions are more divided



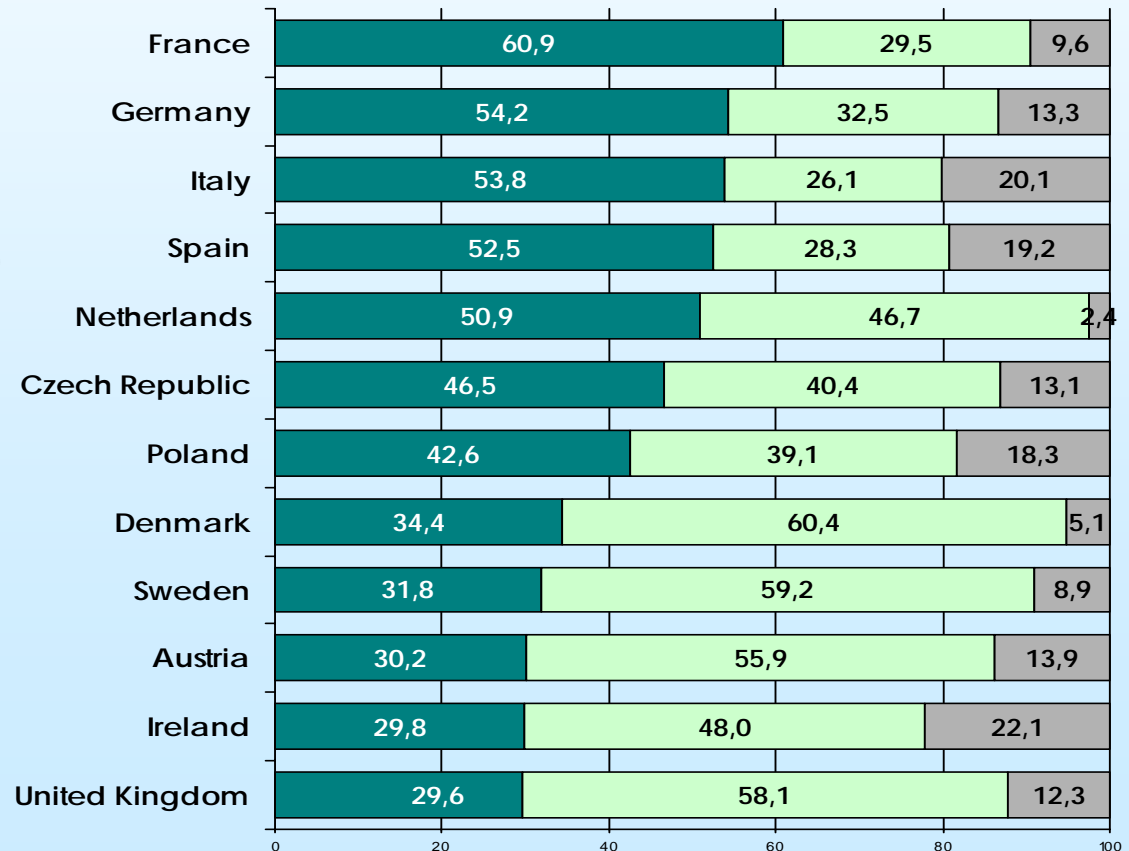
In this specific case, preferences for a given regulatory level are linked to general preferences for one or other level of decision, i.e., the fact the matter in hand is stem cell research does not substantially alter citizens' opinions

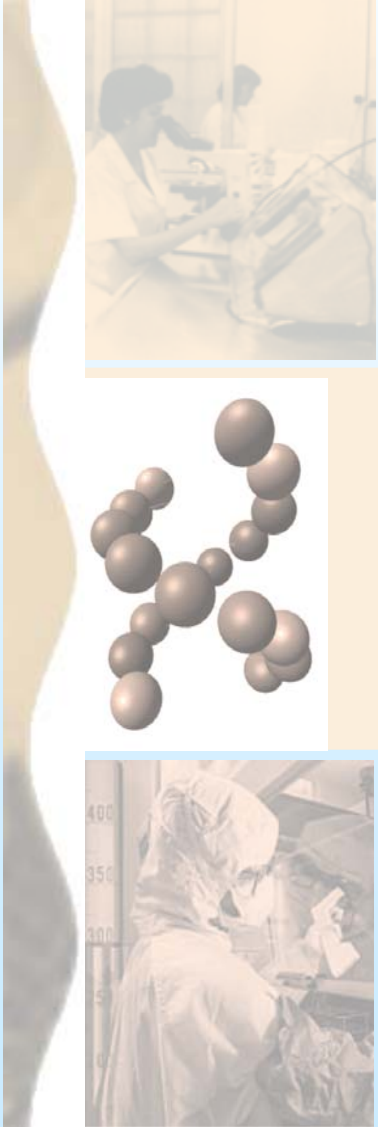
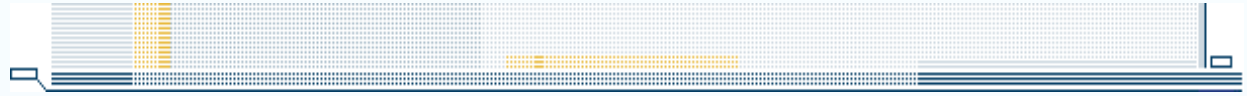
- Clear preference for European legislation: France, Germany, Italy and Spain
- Clear preference for national legislation: Denmark, Sweden, Austria, United Kingdom and Ireland

At present, European Union countries have different laws and regulations concerning research with embryos. In your opinion, who should regulate research with embryos that are a few days old?

Base: All interviewees in Europe

- The European Union
- The (NATIONALITY) government
- DK/NA





Synthesis

Research with embryos to obtain stem cells

Ends

General and specific medical benefits



- A clear perception of usefulness
- Specific medical benefits activate approval



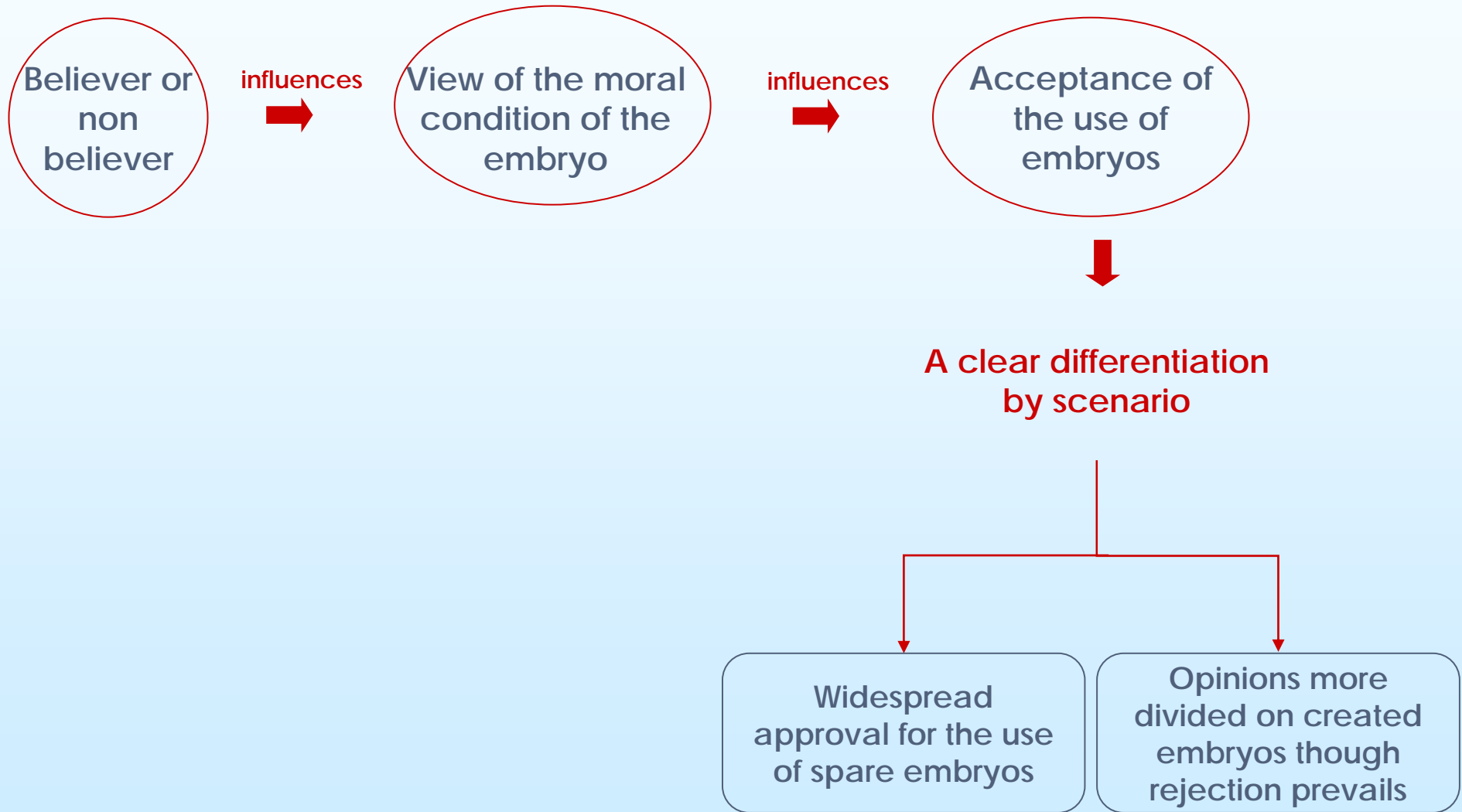
Countries exhibit very different reactions in this trade-off between ends and means

Means

Use of embryos / embryos' rights



- Moral reservations
- Idea of natural-anti natural (domains which should not be meddled with)



Map of countries regarding research with embryos to obtain stem cells



TECHNICAL NOTE

Universe: in each country, general population aged 18 and over.

Method: administered face-to-face survey in the interviewee's home.

Sample size and distribution: 1,500 cases in each of the 15 countries. Multistage sample distribution stratified by region (NUTS classification or equivalent)/size of habitat, with primary units selected at random. Selection of individual respondents by the last birthday rule.

Sampling error: the sampling error estimated is $\pm 2.6\%$, for a confidence level of 95.5% and in the worst-case scenario ($p=q=0.5$).

Survey coordinated by TNS-Opinión. The fieldwork was conducted between April and June 2007 and January and February 2008.