What Can We Learn From the Stem Cell Wars?

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Moderated by Michelle McMurry

Sunday, July 9, 2006
THE MODERATOR: Okay. My name is Michelle McMurry and I direct the health biomedical science and society initiative for the Aspen Institute, that’s the health policy arm of the Institute and I want to invite all of you who are attending this conference and enjoying it to remember the dates April 4th through the 7th of 2007, that will be the first Annual Aspen World Biomedical Forum and it will be a -- an Ideas Festival like event, but all focused on global health and global health technologies. So we look forward to seeing you all in April.

I just wanted to take two seconds as well, it’s going to be here in Aspen, yes, taking advantage of the new building, which will be completed by then. I wanted to take a few seconds to thank our sponsors for the health track as well. Booz Allen Hamilton has been great partners in this entire event, and we thank them very much for their support.

All right, so we’re here to talk about the stem cell wars. Those of you who are coming from the Karl Rove session heard him touch upon this this morning. But we really want to make sure we get to the nitty-gritty and save lots of room, of course, for questions. And we should have a vigorous debate with two panelists. We’re very fortunate to have Nigel Cameron to my far right, who’s the president of the Institute for biotechnology and Human Future, the director of the Center for Nanotechnology and Society, and these are both at the Chicago-Kent College of Law. He’s also associate dean of bioethics there.

To his left, is Ezekiel Emanuel, Dr. Ezekiel Emanuel, who is the chair of the Department of Bioethics at the Magnuson Clinical Center at NIH. They’ve both authored books on this topic, and it will be very interesting to see their approach. So I thought we could start it this morning, because there’s a lot of confusion as to different types of stem cells, and just to make sure we’re all on the same page, I ask Zeke to kind of give us an overview of just on the biological level what are we talking about.

MR. EMANUEL: So -- and you frequently hear about embryonic stem cells and those are stem cells harbored from -- harvested from a 14-day embryo, which if you look in the microscope is undifferentiated collection of cells. And the key variable there -- that I’ve said is undifferentiated -- those cells have not gone through a process where they’ve committed themselves to nerve cells or to heart cells or to you know, muscle cells, and that is -- we’ve -- refer to that as -- they’re pluripotent, they can evolve into all these different kinds of cells.

And they’re thought to be the most malleable as it were, pluripotent cells, and that’s why there’s a lot of great interest in them, how they differentiate depends upon which genes gets turned on or turned off that frequently as a result of where they sit in relationship to other cells and signal -- chemical signals that get past between cells. And for many people these are the most important ones. It is a restriction on these cells that was enacted by the President in August of 2001, because of the problem of destroying an embryo to harvest them.

It also should be said that at that time there had been a number of stem cell lines made -- I think the President referred to -- correct me Nigel if I’m wrong 66, I think in his speech, but in fact, many of those were not viable, how many are viable and how many are useful for scientific research is something that’s quite controversial, because at least some of those cells have been overgrown, some of them do not appear to be very useful, you heard Karl Rove today, he said that 22 were in active use, I’ve heard other numbers, so it’s at least the point of -- for which I don’t actually have the facts and I’m not sure.

Now, adult stem cells are a different thing. As you know, all -- except for your neurons, almost all
your cells turn over, so in your gut, for example, there’s a constant sloughing of cells and cells, very small cells down at the bottom of your gut produce the new cells that migrate up, mature, and become the mature gut cells. Those little cells down there are stem cells, and they’re programmed to make gut cells and one of the questions is this, these are stem cells but they’re committed stem cells, that’s committed to making gut cells, intestinal cells.

And a big question is whether we can reprogram those, change which genes are on, change which genes are off, so that they can in fact not only make gut cells, but make blood cells, make lung cells, make heart cells. Now, it appears that that’s possible, and there’s been a lot of scientific progress in reprogramming. How pluripotent, whether they can make all kinds of cells, whether in fact if they evolve to make -- for example, if your gut cells evolve to make heart cells, are they really the same kind of cells, are they the exact same kinds of genes on or off, are they going to function the exact same way over the long period, are questions that remain unknown.

And those -- there’s a lot of excitement about that, harvesting those cells are -- do not contain the same controversial -- controversies because you can get them from a biopsy of muscle or bone marrow and use them, some of you may know people who’ve gone through a bone marrow transplant. And again, part of what they’re extracting out of that are stem cells to remake all the different blood components. So we already have some experience with the fact that these stem cells work, there you’re trying to take a blood stem cell and make it go through all the blood stages, so it’s a little more restricted, you’re not taking -- trying to take say a gut cell and make it -- turn into a heart cell or a muscle stem cell and make it turn into a neuronal stem cell.

Finally, there’s a third kind, which I have to confess, I know least about, which are in the umbilical cord, filled with stem cells that exist from the placenta and get transmitted -- there’s not a perfect seal, as it were between the embryo and the mother, and in the umbilical cord, there are stem cells. Now, we’ve known that those stem cells can be extracted and used for bone marrow transplantation, and a lot of them have been banked ready for that purpose.

Again, I think there’s a question as to how exactly pluripotent there are -- they are and how useful they’re going to be, how much you can change them from their -- any tissue in the body. And I think this issue of pluripotence is a very, very important issue, because what we want to end up being able to use these stem cells for is unknown. Are they going to help in Parkinson’s disease, are they going to help in diabetes, and so the ability to pursue a lot of these areas is important at least at the moment, because we don’t know which one the stem cell is actually going to work best at, and it may turn out that they work in some areas but not in others. Is that helpful?

THE MODERATOR: It’s very helpful and just as a quick follow-up, what -- you mentioned briefly, but what’s thought to be the medical hope of these types of cells, depending on, you know, why are we so interested in stem cells to begin with?

MR. EMANUEL: Right. So the first thing to -- again to say, is that in the area of bone marrow transplant for cancers, we have success, now that’s a very restricted area, because you’re taking bone marrow or blood cells already, and you’re getting them to go through and to mature. Again, that would be like taking the gut stem cell and asking it to produce the guts -- gut cells, that works, because all the machinery are there, some of the genes that, you know, would make it go into a different direction are turned off and the genes that would make it go into a bone marrow -- a blood cell are available and turned on.
So that’s an area that produced a lot of promise in the ’80s and ’90s and has in fact produced cures for a number of cancers, and that’s really the origin of the excitement. Transmit -- we’ve now discussed -- scientists have figured out ways of identifying these stem cells, what molecules they have on their surface, so that we can pull them out, and identify them. Because actually if you look at them under the microscope, they’re the most bland things that are out; they’re just little round cells.

They don’t look like anything, they’re actually -- have been passed over for many, many years, because they look like insignificant cells there, and they’re kind of just hiding away. Now, it’s thought that because they can develop into all these different areas, they could repair and generate cells where the diseases are caused by loss of cells, so we know for example in diabetes, what we have are loss of the Langerhans’ (phonetic) cells that produce insulin; it’s a progressive loss.

So the question is, can we use these stem cells to produce the Langerhans’ cells that will release insulin in response to the fluctuation of glucose in the body, or in the case of Parkinson’s disease, we have a loss of neuronal cells, can we infuse these stem cells and they’ll produce the correct neuronal cells and occupy places. And similarly for lots of other diseases that have been promised. Not all diseases are a result of cell loss, but some important diseases are a result of cell loss, and so the question is -- the hope is that we can take these stem cells, and develop into these very specialized cells.

And I want to emphasize at the moment it’s only a hope. We don’t have any evidence it’s going to work; it could all blow up in our face. Science is like that. If we knew it would work, right it wouldn’t be science, it would be engineering in some sense. We’re at the basic start and how long it will take -- I mean, I tend to be both a pessimist and an optimist out there. Lots of scientists are always hyping, you know, “We’re on the cusp, we’re going to cure this,” and it takes longer.

On the other hand, frequently, we have discoveries that we don’t anticipate that just sort of come out of the blue and so that, you know, unpredictability is all part of science, but I think is important to emphasize, it’s not as if we have a case where this has worked in human beings, so we’re very much at the early basic research stage here.

THE MODERATOR: So for the purposes of our discussion today, we can think about these cells as a possible or a potential source for cellular transplants.

MR. EMANUEL: Right.

THE MODERATOR: So right now we have organ transplants, but we hope some day, perhaps be able to do cellular transplants.

MR. EMANUEL: Correct.

THE MODERATOR: Nigel, I’m going to ask you two questions back to back. First, I want you to kind of run through and explain for us in greater detail what Karl Rove referred to this morning in his discussion in terms of the Administration’s view on stem cell research and I want you to then tell us your own personal view if that varies at all and just kind of explain it for us, then we can get into the debate stage.

MR. CAMERON: Sure. Yeah, thank you. I mean, I think it is -- I do have to pick up Zeke on one
verb he used, because he talked about the administration restricting -- he used the term, “restrict.” And what in fact back in August of 2001 was that the President decided for the first time ever that the U.S. government would fund research on evolving human embryos. And this wasn’t some particular, you know, decision he took of his own volition to restrict his funding to these existing cell lines, this is because of Congressional action over the last 15 years or so, which has in fact prohibited any research being funded on human embryos by the federal government.

So this was a very significant liberalization of existing practice. And in fact, to be fair, it was heavily criticized by many conservatives. I happened to be at a press conference at the national press club the next morning. And I was one of about 10 people there, and I was the only one. I mean, in fact -- so -- well, actually I think this is a good policy decision. The others were basically attacking the President whom they supported and -- so this -- back in -- pre 9/11, I mean, the biggest issue in American politics for about six or eight months were stem cells; it was quite extraordinary. This is a huge dominant question.

This, of course, has sort of reappeared in a somewhat different form in parallel in the debate about therapeutic cloning, because these two are closely correlated questions, so called therapeutic cloning is producing your embryos using the cloning technique used to produce Dolly the sheep 10 years ago. So you can produce the embryo to order as an exact genetic match, and the theory behind this, which has been much hyped, and I’m sure all of you have read the press reports over the years, and Ron Reagan Jr.’s famous speech at the democratic convention before the last election brought this to the sort of peak of its hype.

The idea that you could basically clone yourself to create an embryo that’s your own twin, and then use it to derive stem cells which would be a genetic match with you, and this was the engine that fired much of this debate over the last few years, and it has been a major political question, because of course it’s been thought by some -- this is a -- an area of political advantage. Now, what is interesting about this whole discussion is the global policy context, in which these decisions are being made, because here in the U.S., I mean, obviously I’m a transplant, I’m originally from the UK, 15 years ago. The U.S. has a way of discussing questions; this country is so big; there’s not a lot of interest in what takes place outside.

And whereas liberal to say they have more interest than conservatives tend to say, my experience is none of them really has that much interest, and outside the borders of the U.S., for example, if you go to Canada, Canada which is now officially pro-gay marriage, perhaps the most liberal major country in the west. If you do therapeutic cloning in Canada, you want to clone the embryos to get these precisely matched stem cells, you do five years jail time. You go to France, France, the most secular major country in the world, no question about that, you get seven years jail time. You go to Germany, just to complete the sort of tour of old Europe, you know. You go to Germany and you get five years, the Germans banned this back in 1990, they know all about unethical science, so --

THE MODERATOR: But Nigel, I’m going to have you wait there for a second, because one -- we’re always told that the UK is a very -- much the leader in stem cell research.

MR. CAMERON: We are. It wasn’t the only reason I fled the country, but they --

(Laughter)

MR. CAMERON: The UK has emerged --
MR. EMANUEL: He fled before Dolly happened I believe.

MR. CAMERON: Well, the -- these problems go back a long way in the UK, and the UK has taken a lead in promoting therapeutic cloning. It is one of I think only two western countries, which actually has a policy position in favor of cloning embryos for research and they have begun to fund the cloning of embryos for this purpose. And the UK essentially doesn’t participate in the sort of conservatism of American policy, which obviously is often religion dominated or the conservatism of continental policy, because most continental countries have taken positions on these issues, which are pretty close to that of the Administration.

And in fact the European commission, which represents, of course now, 25 states almost copied exactly the Bush approach to funding embryo stem cell research, didn’t do it, because they couldn’t finally compromise and they officially have no policy, because they can’t agree. The UK has been in a dominant position, and is pressing ahead -- you know, I refer to it as brave new Britain and it seems to me that they’re now talking about sex selection, you know, for social purposes and so on that -- they’re really on the leading edge of using these technologies with regulated ethical frameworks, basically with very open ended assumptions about what should take place.

Now, to go back to the point that Mr. Rove made this morning, which I think is a very important point about the whole basis for this policy discussion. In the U.S. so much is dominated by abortion; abortion politics rules; in anything vaguely biological. And it goes for a long way from the beltway here, but the closer you get to the beltway, that is how it goes. As it happens in other countries of course, where abortion is a much lesser issue in politics, virtually every other country, these issues present very differently. And the point that Karl Rove made was that you don’t need to take the view that the early embryo is a full human being in whatever sense you want to define a full human being, whether you’re talking about property rights and the vote, or whether you’re simply talking about total equivalent moral status, to say that it would not be a proper thing to fund destructive research that involved destroying embryos, that otherwise could be implanted and could come to life.

All you have to do is say that the embryo in a sense is nothing. And the argument that I’ve made in my testimony to congress and so on and so forth has been, you know, there are many reasons why you might take the view that the early embryo should be accorded what in fact it wasn’t accorded in the report of the Clinton Bioethics Advisory Commission of which Zeke was a member, which was a kind of special status. There were various terms that have been used here in different jurisdictions, but there was a very widespread sense, just until a few years ago, in the sort of mainstream discussions of these issues. The embryo may or may not be alive humanfully, whatever, but has a special, unique status and therefore there should be a very high barrier to any kind of laboratory use of the embryo.

And this was a broad consensus. I mean, -- and in fact back in the mid ’90s, The Washington Post, famously editorialized that to create embryos using in vitro techniques for research would be unconscionable. So there’s been a high barrier, but it doesn’t upon taking the view that the embryo has some kind of full human personhood, which for religious or philosophical reasons you may believe, you may not believe, it’s just that we have to have extraordinarily good reasons to trespass upon the integrity of the members of our own species. Because of course the early embryo in this undifferentiated form, which is so exciting to science, is a member of the human species and therefore, the view some of us take is that, deliberately destroying embryos for research purposes is a huge moral step.
And that’s in -- is the logic behind what the Administration has done and yes, for myself -- I mean, I certainly have friends who think the Administration was too liberal in taking that view, that we could use fund -- the cell lines from existing embryos. I’ve certainly friends who take the view we should enact legislation to prohibit any research of this kind, presently there’s no federal legislation, you can do privately funded research on embryos. My own view is that the Administration took a good decision, a good compromise decision for public policy purposes, privately we may have views that would suggest that this research is problematic or maybe it should be allowed and encouraged.

But because public policy -- particularly appropriations policy has often been used as a way of suggestion what the consensus is on an issue where some people have very strong opinions, and we don’t think there should be public endorsement of a particular act, which nevertheless should not be made illegal, and that I think is the position which is being taken.

THE MODERATOR: Okay, before I ask Zeke respond in kind, I just want to underscore a couple of the points you made just for scientific clarity. So you’re talking about two different types of policy, there’s -- whether or not we outlaw the experimentation, and whether or not we federally or at the state level fund that research and those are two distinct types of issues to discuss. Secondly, you’re talking about different sources of the stem cells. So many of us have heard of in vitro fertilization and those embryos often who are sitting frozen are one source, there are the established lines, because once you have a cell it has to be immortalized that have been made from those sources previously that are now being propagated in the lab. And those are the cell lines that President Bush was speaking of. And then there is the distinct creation de novo of a new embryo to do research. So -- just so everyone can keep those three straight. Now, Zeke, where do you fall on those distinctions and how we should --

MR. EMANUEL: Well, I want to go back to two points that Nigel made. One of the interesting things is we’re sitting in a country right now that has about 400,000 embryos sitting in freezers, which aren’t going to be used for in vitro fertilization that are the extra embryos from in vitro fertilization. So the question -- you know -- and I want to say, we got into that, we have those embryos, because we refuse to discuss in vitro fertilization, and develop policies coherent about them, because of the abortion debate decades ago in the late ‘70s and early ‘80s, and you know, our inability to discuss this rationally I think in the past has left us with 400,000 embryos there.

Now, the fate of those embryos, either we’re going to keep them frozen ad infinitum; that’s a pretty strange idea; we’re going to flush them and just, you know, put them in the incinerator or flush them down the drain as people refer to it although it doesn’t happen that way since it’s biological material. We are going to destroy them in some way eventually, or we’re going to use them for scientific research, which is prohibited now as I understand it by the President. It seems to me --

THE MODERATOR: Well, it’s -- the funding of it is prohibited.

MR. EMANUEL: Right. It seems to me a little disingenuous to say we’ve got this, and it would be better either to destroy them or to keep them frozen ad infinitum, and not to permit research with them that might occur. The second issue I would like to address is I don’t think -- I find it a little difficult to say that on the one hand we’re going to express our views through what we fund and what we don’t fund, but this really is a part of the human species, and we should treat it just like all other parts of the human species, like people. Because either you consider this like a person, in which case you don’t permit private murder, right. It’s not like we say “Well, you know, we’ll let the mafia
murder because it’s not getting federal funds to do it.”

(Laughter)

MR. EMANUEL: If you really consider this part of the human species, using private funds or public funds really shouldn’t make a moral difference to you. I don’t see how the --

(Applause)

MR. EMANUEL: -- what we like to call, “The color of money,” really changes that moral evaluation. If you think this is a person entitled to all the protections and rights of a person, who cares whether it’s the Broad Institute in Boston or whatever other institute is funding it, or the federal government; it shouldn’t make a moral difference. On the other hand, the fact that we’re --

THE MODERATOR: I think you would agree with --

MR. EMANUEL: -- allowing a variegated system suggests we don’t really believe this is a full human being, and that means we need to rethink what is permissible and what isn’t permissible. I think Nigel and I agree we just don’t want anything to happen, right. You don’t -- we don’t want sale of it, you want to restrict the kinds of research you might want to do on it. But I don’t think that we really believe this is the same as a full human being. And I would say that it’s very important to address the religious component here. Now, there are some people from Catholic backgrounds who believe that life begins at conception, I don’t think that’s biologically tenable, we could talk about that if we want to, but interestingly the other Abrahamic religions don’t hold that same view. In Judaism, it doesn’t begin at conception -- 40 days, and it’s a very different view. And to make public policy on the basis of one conception of where -- one conception where conception begins, but --

(Laughter)

MR. EMANUEL: -- one view of where conception begins as if that were true seems to me to be a mistake. And similarly, I understand although I -- you know, I’m not an expert in this, Islamic religion goes even further, you know, we’re talking -- they talk about a 100 days, that’s three months, that’s the first trimester. And I would just emphasize that from a research standpoint, at least at the moment the important window is 7 to 14 days of development. So well within both the Jewish and the Muslim notion.

And I would also emphasize one other point there. At 7 to 14 days as I think I said at the start, no cellular differentiation has happened; that’s one of the reasons that’s so powerful about these embryonic stem cells and so -- that means there’s no pain sensation there, we’re not talking about something that has a pain reaction, so other notions that we usually consider, there are certainly no brain, no consciousness, no -- none of those things, so I think it’s very important for us to be very clear about how we draw the lines that we’re going to draw here, and even if you permit or want to permit use of embryos, that doesn’t mean you want to permit or endorse anything, I think we can respect embryos and still permit some kind of research --

MR. CAMERON: You began by asking me two questions and I’ve --

MR. EMANUEL: I didn’t ask questions.
MR. CAMERON: You were sort of raising questions to me, and I’ve always forgotten what they were, but I’ll pick up a couple of things here. I mean, I like to know who it is who’s making the case that the early embryo should be treated like a full total 110 percent human being, because I’m not making that case at all in public policy. We may all have private views, religious, philosophical, views about, you know, human life and what it means. But I mean, I have never made a case that -- and I don’t in fact know anybody who’s made a case that the law should treat the early embryo in precisely the same way that treats a born person.

Plainly, we’re talking here about, you know, continuity and discontinuity, we’re talking about analogy, we’re talking about -- nevertheless, membership of the species now, I mean, Zeke said this was some sort of controversial proposal. If you think this is a member of the human species, well, my understanding is that it’s biology one on one, this is a member of the human species.

I mean, just as the -- if you have a chimpanzee embryo, as a member of the chimpanzee species whether that has moral significance of course is something that you can then go on to discuss. But it seems to me what I think is uncontroversial is that the early human embryo is the product obviously of reproductive sex or some other form of artificial creation of the embryo from the gametes and guess what, mammalian species reproduce in this way. And then you have another member of the species there, there’s nothing else that happens to the embryo after the embryo has begun that makes it a member of the human species, it’s -- needs to be unfolded to be differentiated. Well --

THE MODERATOR: Now, Nigel, I’m going to have you wait there for a second, because what -- there’s a difference between being a part of the human species and being a distinct individual freestanding organism.

MR. EMANUEL: That you accord rights to.

THE MODERATOR: No -- even if you don’t accord rights to it --

MR. CAMERON: Well, it’s --

THE MODERATOR: -- so would you consider sperm and egg, just so we know, part of the human species?

MR. CAMERON: Well, obviously, sperm and egg are -- I mean, these are cells which are, you know, cells in this case of a particular species, but I mean, once you have the embryo, you do have a freestanding and quite distinct member of the species.

MR. EMANUEL: But it’s not freestanding sir, it’s in -- it’s usually implanted in a woman --

MR. CAMERON: No, no -- but this --

MR. EMANUEL: It has to be taken care of.

MR. CAMERON: But I mean, you know -- but I mean, my two-year-old granddaughter is not freestanding. I mean, she’s got to be taken care of, I mean, this is a continuity, and I’m not making the claim that we need, imaginatively, to think of the early embryo as a sort of as a voter, you know, or as somebody who’d be invited to Aspen to discuss their ideas.
All I’m saying is this is in fact a member of the human species, which is why you have been saying a few minutes ago, and I’m delighted to hear you say this, “We don’t want anything to be done with these embryos.” We have to have -- you said you don’t want anything done with them, you wouldn’t want them bought and sold, you wouldn’t want any kind of research, these are quotes from you.

MR. EMANUEL: No, no, I didn’t say I didn’t -- wouldn’t want any research done with them --

MR. CAMERON: You said you wouldn’t want any kind of research --

MR. EMANUEL: No, no. No, just --

THE MODERATOR: I think he’s saying that --

MR. EMANUEL: No, just any kind --

THE MODERATOR: Yeah.

MR. CAMERON: Yes, yes --

THE MODERATOR: That you want some limits --

MR. EMANUEL: That doesn’t mean, I don’t want any research.

MR. CAMERON: No, no, I’m not suggest --

(Laughter)

MR. EMANUEL: “Any kind,” is different than, “I don’t want research done with that.”

MR. CAMERON: I’m not suggesting -- I’ve already convinced you of my position, but I’ve -- we got a few more minutes to do that. But I want -- I also want to go back to the in vitro question, because I mean, these 400,000 embryos, they are not there awaiting destruction, they are there, basically in the care -- almost all of them of the couples who produced them. And --

MR. EMANUEL: Wait, wait, it says 400,000 extra ones that we have that aren’t going to be implanted --

MR. CAMERON: Well, no, no. Well, there are 400,000 in freezers and what happens to be --

MR. EMANUEL: They aren’t going to be implanted.

MR. CAMERON: No. It just depends on what is going to happen to them; that is the total embryos that are frozen and they are in the -- I’m sure we have couples in this room -- certainly who -- maybe have children or who yourselves have embryos in freezers. Now, what will happen to these embryos, the evidence is most people do not want them used for research. Many people don’t know what to do with them, because they back themselves into a situation using this technology, they’ve had a baby, and they basically were in a program in which there ware a lot of spare embryos produced.

Interestingly, in the UK, which is, you know, the leading edge regime in all these things, I think the
rule now is you can only do two at a time, and their best practice is one. Because a good practice
doesn’t need the creation of lots of extra embryos, but all the technologies and unregulated
approaches which we have here in U.S. and I agree they would be regulated has lead to this excess of
embryos, but these embryos are not waiting to be destroyed, they’re in the care of the couples who
have produced them, and those couples often don’t know what to do, some of them are being thawed
out, and they’re being implanted and some of them, of course, are now being adopted.

MR. EMANUEL: Oh, please, please.

(Laughter)

MR. EMANUEL: That has not happened -- I mean, you know, that is not what’s happening with
these things. That is -- you know, you have an example of that. We’re talking 400,000, that’s not a
policy approach to adopt them, we don’t have 400,000 women --

MR. CAMERON: I’m not suggesting it’s -- I’m just saying --

MR. EMANUEL: -- rushing to get these embryos.

MR. CAMERON: -- I’m saying Zeke, it is one thing which is happening to some of these embryos.
Now, I’m not saying that there aren’t some available that some couples would want to give to
research, of course that’s true. But it seems to me that we are not here talking about any need to
justify a public policy position in which these embryos are treated as full human persons, and my
point in thanking you for saying that you agree that we shouldn’t do any old research with them to
clarify what you were saying is that these other countries have taken such a draconian approach as
some would say to the cloning question as a means of creating the embryos, because it’s a mass
production technique, and they plainly don’t regard the embryo as just another cell.

If the Canadians and the French and I mean, -- you know, the Norwegians -- the Swiss prepared
ultimately to try you -- and in many cases -- send you to jail for mass producing embryos using
cloning, this is because the human community has a very uneasy view of the early embryo. It’s some
sort of special status. We aren’t quite sure what that status should be. Some people claim this is a
full human person, some claim this is just a cell, it’s just like a gamete, you can do what you like.
There’s been a major center ground view that we have to be very careful what we do with embryos.
And that is the view, which has dominated federal policy here over the last 20 years, and which has
in fact lead to this particular decision on appropriation.

MR. EMANUEL: Okay, so --

THE MODERATOR: Okay. Let’s hold on for one second, because there’s going to be plenty of
time to argue back and forth, so it seems --

MR. EMANUEL: No, no, I wanted to identify an area of agreement, I think, between us, and I think
in general between people, which is on the one hand it’s quite -- I think it’s fair to say, quite clearly
this is not a normal -- this is a human organism, but not fully accorded right -- not accorded the full
rights we accord to other people from birth on or even from the second trimester on, do you agree
with that?

MR. CAMERON: Or from 18 on, yes, sure.
MR. EMANUEL: You agree with that, all right, so it has different moral status than a -- any person in this room, any child and any fetus from the second trimester -- 24 weeks or whatever on -- so we’ve agreed that it’s a different moral status, is that right, and you don’t want -- you wouldn’t want to say that we should accord it the same kind of inviolability that you and I have?

MR. CAMERON: Well --

MR. EMANUEL: And part of what you want to say, and I think part of what I want to say is, we’re having a discussion about what should be permitted with it -- where what we recognize as permitted is broader than what we do with you and I.

MR. CAMERON: Well, I don’t entirely agree with you --

MR. EMANUEL: Okay.

MR. CAMERON: Because I do think that “inviolability,” is an interesting word to introduce here. I do not think we should deliberately destroy embryos, and that of course is the position the administration has taken, we shouldn’t fund people to destroy embryos. What you do with the remnants of embryos that have already been destroyed is a different question. I certainly therefore --

MR. EMANUEL: Whoa, whoa, wait, wait, wait, wait. And the reason for that Nigel that you don’t want to fund people to destroy embryos?

MR. CAMERON: Because it’s -- the embryo is a member of the human species --

MR. EMANUEL: Okay.

MR. CAMERON: And maybe a lowly member of the species, you know, this is the point. We couldn’t have a continuum operating here, you know. I mean, like many do, we have had our kids, we have grandchildren, so --

MR. EMANUEL: Right.

MR. CAMERON: The children get older, you know, where they’re smaller they’re more dependant and so on and so forth, then -- and you have all these debates about --

THE MODERATOR: Okay, I’m really going to stop --

MR. CAMERON: -- that --

(Laughter)

THE MODERATOR: -- you two for one second.

MR. CAMERON: -- well, just one point. If you begin the graph of continuum, you’re going to have to begin a half an inch up, you know, with the embryo in the first place before you go up the graph and already you’ve got a big moral issue here as you got a member of our species. And that’s been the center of issue here --
THE MODERATOR: There are some other things that we still need to cover in the time that we have, okay. Now, Zeke brought up a historical point, which I think could be interesting to discuss here, which is in the 1970s we saw a similar debate when it came to the creation of in vitro fertilization techniques and President Ford took a very similar approach to what President Bush has taken today, which is to kind of hands-off federal research dollars for it, but permitting the science to go ahead.

We’ve had ramifications of that. We have these technologies that we use today that necessarily -- that -- their efficacy and safety has not necessarily been proven in the way we demand for other scientific techniques. Is there anything you feel we could learn from that historical example on how we should be approaching this issue today?

MR. CAMERON: Oh, sure. I mean, one quick lesson is that people on both sides of the abortion debate have got to talk to each other.

MR. EMANUEL: Well --

MR. CAMERON: And one of the interesting proposals in fact that Leon Kass’s commission came up with which didn’t get anywhere a year or two ago, specifically came out of his talking to people on both sides of the abortion debate --

THE MODERATOR: Leon Kass is on the -- leads the President’s --

MR. EMANUEL: Was, was, was --

MR. CAMERON: -- until recently did -- lead the President’s council on bioethics, but I mean, we have to talk about -- and I mean I’d love to get back into discussions about the regulation of the in vitro industry as something which can be done by conscientious people from both sides of the abortion debate, because there’s many -- there are many common concerns that are about the abuse of women --

MR. EMANUEL: Well --

MR. CAMERON: -- record keeping and so on and so forth.

MR. EMANUEL: Right. I mean, I think one of the things we learn from history is that not having regulation frequently ends us up in moral dilemmas and in this case, we do have a lot of questions about the IVF industry, and I think we have 400,000 embryos we don’t know what to do with, we have all these -- we have dilemmas about it, because it has been largely unregulated, and I would say that the main reason we ended up with it unregulated is because we withheld federal funds, and therefore did not -- could not come to an agreement as to how to proceed in a reasonable manner. I would mention -- many of you may or may not know, we do not have a prohibition in the United States about reproductive cloning. No law has passed despite 80 or 90 percent of the American population agreeing we should not have reproductive cloning; that is cloning to create a child.

Why don’t we have a law on that, because people want to -- where there’s widespread agreement on that, cannot be passed through Congress, because people want to attach the therapeutic -- the question of therapeutic cloning and research that we’re discussing now to that bill, and so we
basically have permitted a wild west on that and tried to use other ways of restricting it. It seems to me we should try to find areas of agreement and find areas where our judgment is not operative --

THE MODERATOR: Let's --

MR. CAMERON: I --

MR. EMANUEL: Where we can all agree. And one of the things I want to get back to -- you were talking about a continuum of human development, and I do think it’s a continuum, but you’re trying to suggest that there are no bumps in that continuum --

MR. CAMERON: No, I said “discontinuity and continuity,” that was my phrase.

MR. EMANUEL: Well, let me just talk about a few of the discontinuities, I think --

MR. CAMERON: Huge bumps.

MR. EMANUEL: -- I think that most of us find morally salient -- and I sort of hinted at them before, one is -- when do the brain cells and the early brain structures begin, the sort of neural tube that is the early brain cell, well after the 14 days that we -- that is necessary for the embryo. So we don’t have a brain in this organism, certainly therefore, no consciousness, no sense of pain. Similarly, it takes a long time, interestingly enough, to actually develop all the neuronal connections for a fetus to feel pain somewhere in the past 30 weeks. That it seems to me is another very important breakpoint, when could the fetus feel pain?

The other -- I think very important brain breakpoint is, when could the fetus or the infant, develop consciousness of itself. It seems to them those breakpoints, all of those breakpoints are important breakpoints that are related to our moral values, right. One of the reasons we’re concerned about animals is because they can feel pain, and we have some questions about how we treat animals because of their ability to feel pain. We’re concerned about infants and children because of their consciousness, but it seems to me -- the important point here, I want to make, is that all of these morally relevant disjunctions happen after the 7 to 14 days that are relevant to the research issue --

THE MODERATOR: Well, you guys are not going to agree on the point at which life begins on this stage?

MR. CAMERON: No, no, we’re --

THE MODERATOR: So -- I --

MR. EMANUEL: But wait, wait --

THE MODERATOR: -- but there are a couple of other questions --

MR. EMANUEL: I’m not sure that’s our disagreement. Our disagreement is about moral --

THE MODERATOR: There are a couple of --

MR. EMANUEL: -- values.
THE MODERATOR: There are a couple of other questions that are very salient to this debate as well. At -- we talked about how the scientific promise of these stem cells is right now just a hope; it’s a promise, it’s not a reality. We don’t, in other areas of scientific research, go after in such a narrow targeted way, whether or not to do research in an area based on the political vibes. I mean, we do it based on whether or not it’s scientifically promising. Do either of you think that this very charged debate around stem cell research has, like, placed undue influence on stem cell research as a medical hope?

MR. CAMERON: Yeah, let me make one or two comments. I mean, I think you’re right, I mean, I think we’ve seen an extraordinary sort of sociopolitical phenomenon in the stem cell therapeutic cloning debates over the last -- almost a decade now. And for those who live in California, and who passed Proposition 71, which is a $3 billion bond, specifically to fund all the stuff that the NIH won’t fund -- I mean, you’re going to be paying for a long time for participating in this particular groundswell of political, social cultural hype. What really interests me --

THE MODERATOR: Please finish.

MR. CAMERON: What really interest me is that the -- the corporate dimension of this, in that if you look at sort of, you know, Fortune magazine’s list of the 10 most promising breakthroughs in biotechnology next 10 years, all that kind of thing, you don’t see stem cells there. If you asked how much private investment is being put into embryo stem cell research by private corporations involving therapeutic cloning or involving use of in vitro embryos, it is close to 0.

If the kind of hype that drove the Prop 71 bond, that you know, was attempted to be used at the last election against Republican party on this issue and that has driven the profiling of this question, you say, “stem cells,” you’re in the press, you know, you’re almost in the movies. The hype that’s driven this has been so far removed from the kind of sober scientific results which typically we look for that I think you know, I think honest people on all sides of this debate have been aware of how bizarre some of this is.

And at the same time, what is really interesting, in terms of scientific results, is the so-called adult stem cells, or sort of the non-sexy stem cells. Currently, I think -- in 2005, the Administration funded about $40 million for work on embryo stem cells and $200 million to work on adult stem cells in humans. The adult stem cell work is extraordinary. Now, I was -- just a few months ago at the big Experimental Biology conference, out in -- on San Francisco. In a symposium on the whole stem cell research debate, embryos stem cell researcher, adult stem cell researcher, scientists summing up the arguments, and I was asked to review the ethics and policy issues. Just you know, both sides of the case.

The adult stem cell guy from the Northwestern University in Chicago -- I mean, just extraordinary -- he is sending home people with Crohn’s (phonetic) disease, with Lupus, you know, basically cured. There are about 60 different diseases now for which adult stem cells are being sued in clinical trials around the world. Now, I’m not saying this doesn’t mean you shouldn’t do the other stuff, but it is extraordinary how the focus has been on -- we’ve go to have the embryos, when the actual scientific results are very substantive and are in the uncomplicated area of adult stem cells.

MR. EMANUEL: Well, wait, wait, wait, wait, wait --
THE MODERATOR: I have a feeling you’re going to disagree Zeke on the scientific promise of adult stem cells, so maybe you an walk us through why you think that --

MR. EMANUEL: All right. I’m an oncologist. Many of you will remember the war on cancer was begun 34 years ago, I guess, 1972, Richard Nixon declared the war on cancer. One of the things we know and one of the reasons we have the NIH is you need a lot of basic research before you get to a situation where you can see potential clinical breakthroughs, and then you need development of some clinical breakthroughs usually in partnership with biotech or pharmaceutical industry until you can get a product that works and that is safe enough.

We are at the stage of embryonic stem cells and other stem cell research in the early basic research, we are nowhere near the place of, you know, seeing therapies and much less commercialization, which is exactly why any prudent venture capitalist would not spend a dime on this thing, and why we typically entrust our government to make those kind of early investments. I mentioned cancer, because lots of what we’re -- I believe what we’re -- the reason we’re having so many breakthroughs now in cancer therapies and targeted therapy is because of investments we made 30 years ago. Not the human genome project, it turns out, but investments we made 30 years ago in trying to understand every different alteration in the cell as -- because of cancer.

One of the differences between adult stem cells that you’ve mentioned that are being -- in trial and the others is, those are not pluripotent, they are -- you’re taking a stem cell and keeping it along its lines, the key question is could you change a gut or a muscle cell to a different kind of cell, a Langerhans’ cell for diabetes or a neuronal cell for brain tissue or a myocardial cell for the heart. Now, it may be possible and we’re -- again, in adult stem cells we’re at the sort of basic research, people are still trying, there are some very promising things, there’s a colleague of mine at the NIH who thinks he’s got some great stuff where he can change a muscle to something else, but we still don’t have that down, and we do have to do early stage research, I think in both places, because we don’t know where it’s going to lead, it may turn out we can do all of this through adult stem cells, we certainly aren’t there yet.

THE MODERATOR: With that --

MR. CAMERON: Which is why they’re funding it.

THE MODERATOR: With that --

MR. EMANUEL: And --

THE MODERATOR: With that we’re going to ask one last question, but we want to make sure we save time for audience questions, so I’m going to ask you to start coming to the mikes on either side of the room, and I’m going to leave you guys with one last question. Now, Nigel, you mentioned the California initiative that was passed recently to have state funding of the type of research we’ve been discussing today and one of the arguments that was used in that campaign was that we were going to lose the biotechnology arms race if we did not, and this was going to be an economic driver for the state’s economy to invest in this research. How important do you think the economic concerns of the U.S. being the leader -- the leading voice in biotechnology should play in this debate?

MR. CAMERON: I think it’s a very important consideration, I think the evidence is that this is not happening partly because the biotech industry does not regard the stem cell area as a pot of gold.
Now, this is long term basic research, which we’re talking about, and therefore you don’t see, you know, jumbo jets full of scientists, immigrating to other countries to do this kind of thing. A little of this --

THE MODERATOR: Just a few, like pilot planes.

MR. CAMERON: Very little of it is going on in different places; it’s very controversial in all western countries. And there’s some public funding available, and it seems to me a sense of proportion is required in looking at this issue. The Prop 71 and I’m sure people here on both sides of that debate was extraordinarily for the hype that drove 71 through, providing a vast amount of money for what is not particularly expensive research. I mean, this -- you haven’t got to build an accelerator, you know, to do this sort of research. Vast amount of money, and with all sorts of promises and when I was saying earlier -- I wrote a -- an Op-Ed in the San Francisco Chronicle just before the folk which for some reason did not swing the vote. I had my hope it would.

(Laughter)

MR. CAMERON: But you know, my friends were anticipating a 100 to 1 in television, so I mean, that’s the end politically, I mean, that -- it’s over. But -- and I -- one of the points I made was that if you made the kind of promises made by the formal promoters of 71, in an IPO, you go to jail. And you go back and read some of the stuff being said before 71 was passed in the television ads and by the leaders of that campaign, and they were grossly dishonest and enormously hyped in a way that many of those who actually support their position have found very embarrassing. They actually said in the campaign, “We will structure the bond with no capital repayments due for five years, because before five years are up, we will have made bigger savings in California’s healthcare budget than what we require to pay off the bond.” Now, you know, if you believe that, then -- fill in the blanks.

MR. EMANUEL: Well, I would say two things. First, I do agree with Nigel on both sides, the hype has been, I think, very unfortunate. I think -- I agree that a lot of the hype around the California bond and the promises made were very bad, but I also believe that the hype about, you know, life beginning at the moment of conception is also quite destructive of rational discussion here. I would say on the other hand that I think -- I actually would put the economic issue second.

I am a bioethicist and I actually think what’s critical here is to try to understand in a more sober way what the ethical considerations are and I agree a 100 percent, I think, with something Nigel said. Certainly, I believe the sentiment behind this, which is we are -- this is an extraordinarily difficult place to think clearly morally. And I think all of us if we’re honest and we’re not engaged in a sort of ideological battle with other people find a difficult place to discuss and let me say why.

I’ve mentioned to you what I take to be disjunctions that we all find morally relevant; development of brain, development of consciousness, development of sense of pain. We do recognize that there’s something special about an embryo and part of our challenge and I think it was a challenge that -- has been struggling with. I know that when I was on the National Bioethics Advisory Committee, we struggled with it, I know that the Presidents Council on Bioethics struggled with it as well, to try to say what’s special about the embryo, but what’s also different about the embryo then say an infant or a fetus that can feel pain.

And it’s not so easy to say that. And I think what we need to be honest about is to try to resolve that ethical dilemma before the economics. I’m actually not one of these big believers. I think we do
have time to -- in part because I think we’re at the early stages, I wouldn’t expect payoff of this for 15-20 -- payoff, not in terms of money, but payoff in terms of, you know, real therapies for 15 or 20 years from now. We’re going to have to learn how to turn on every gene, how to turn on which genes.

I mean, that’s part of the excitement, I think of the whole area, is to figure out how do you develop from pluripotent cells other cells, how do you turn those genes on and off. But I would actually urge the country that we need an understanding how the embryo is special, but how the embryo is also not clearly, I think a human person accorded the rights that we have, and that is extraordinarily difficult. I’ve been thinking about this for the better part of a decade since I served on the President’s National Bioethics Advisory Commission, and I’m not sure I’m, you know, sufficiently -- I’m certainly sure I’m not as articulate as I would like to be, as articulate as I feel I can be on other moral issues in bioethics, and I suggest -- or I firmly believe that’s true for most people who are really honest about this dilemma.

THE MODERATOR: Now, the discussion about the California debate brought up one more interesting thing that I wanted to touch upon, which was that proposition was backed by most minority groups. The NAACP had signed on to support that initiative, and the reasoning was that if you just did embryonic stem cell research on the existing stem cell lines that President Bush would propose that we focus on, most of those are coming form IVF clinics where it’s a very wealthy small sub segment of the population; mostly white couples, and because these stem cell therapies are like transplants, you’re going to be looking for as much genetic variability in what you have to transplant as possible, and if we stop with those lines, we’re only going to have cells for a very small amount of the population. I just would like to get your --

MR. CAMERON: Well, I never debate science with scientists, but I will say, my own -- I think it’s - - 85 percent of the embryonic stem cell research taking place in the world, is taking place on those cell lines, including many, many jurisdictions in which there are no rules like China and so on, and in Europe obviously there are other rules; and so it -- that does not seem to be playing significantly. And we’re talking about very basic research here, we’re not talking about coming up, you know, with immediate cures.

I mean, obviously, again this is politics and that ballot initiative was very much a message from California to the -- to Bush and the Administration and, you know, there was a whole lot of stuff tied up in the initiative, it didn’t have an awful lot to do with science. And it certainly helped to drive it, but I mean, plainly, it is the case that we’re at the very beginning of this discussion, and if it is the case that we would need additional cell lines to use for particular purposes, that’s another policy issue. Now, the ethical issue -- what interests me is that --

MR. EMANUEL: Wait, wait, wait, wait, wait. That’s an interesting point I would like to just bring up. If we need more, we should begin discussing it, but I’m not sure why we should -- if we think that we might come to an agreement that we should create more lines, because the lines we have are not sufficient, why does that have to wait, it seems to me that’s a question that we could have now.

MR. CAMERON: Well, this is one reason why --MR. EMANUEL: Because --

MR. CAMERON: -- there’s so much interest in these alternative approaches to getting embryonic stem cells without having embryos, because that would solve many of these problems.
MR. EMANUEL: But one of the funny things I don’t understand, Nigel, about this, and maybe you can explain it to me is, if it’s wrong to destroy an embryo, why is it right to participate in the previous destruction of the embryo with using these 66 lines; that seems to me just hypocritical.

MR. CAMERON: Well, I told you, I mean, plenty of conservatives attacked the President for his position, because it was a compromised position, but it was the principle --

MR. EMANUEL: Morally compromised.

MR. CAMERON: It -- no, no, it was a principled compromise, and I think he’d certainly be defended morally, even if one takes Annapolis’ view of the embryo, because we’re talking here --

SPEAKER: (off mike)

SPEAKER: -- ask a question, the audience, please.

THE MODERATOR: Go right ahead.

SPEAKER: In a few minutes, thank you, and there’s a lot of us waiting to ask questions and we’d like a little chance to do that.

SPEAKER: We have a half hour, we have a half --

THE MODERATOR: We have plenty of time, go ahead.

SPEAKER: We do, okay. I’m sorry, I thought we had to end this at 11:45.

THE MODERATOR: No, no, we have another half an hour.

SPEAKER: Okay, well then, excuse me, go ahead.

THE MODERATOR: Go, ask your question.

SPEAKER: All right. I have a daughter by IVF, and what a lot of people may not know is, when you have a child by IVF, you fill out a form and there are a number of options of what you want to do with the embryos. My question is two of those options are that: you want them to be destroyed, or you want them to be frozen, but you give up your rights to them, so that the lab for all intents and purposes can do whatever it wants with them.

Can you agree that as to either or both of that group of embryos, the ones that will be destroyed anyway or the -- for all intents and purposes, will be frozen forever until the freezer fails, that -- as to one or both of those groups, it would be morally and ethically better to have them used for some potentially life-giving purpose and to have them never used and destroyed?

MR. EMANUEL: No.

MR. CAMERON: It is a very, very difficult question, because I think if you -- you know, if you get into this way of looking at it, plainly, there’s an obvious answer, which would be, “yes,” but the more
you think about it, and I mean, you know, I’ve wrestled with this, because I think it’s -- you know, it’s just -- we know we aren’t just here talking about stuff, we’re talking about things we personally believe in, and trying to come to some kind of view when you spend your life having these conversations with people, many of whom have had personal experiences of this kind, one has one’s own children and grandchildren, and so -- I mean, what -- I mean, another way of looking at this situation is, of course, to draw the parallel with people on death row.

Now, the Chinese use death row convicts, execute them specifically in a manner that they can get and sell their organs for transplants. Jack Kevorkian had this great idea for using death row prisoners for medical experiments that would not hurt them, they would not have pain, but they’d be declared off-limits so we could use them for experiments. Now, it’s a distant analogy, because I -- and I -- I’m not saying that this is just the same thing, but there’s a similar logic in the argument there, and I would take the view that because of our respect for the early embryo, even if we don’t know what it is, and a don’t know, is a perfectly good reason for not doing things to the embryo.

We should take the view that the embryo, it -- maybe should die or should be thawed and allowed to die as an appropriate respectful response to our ignorance or our conviction about the nature of the embryo rather than get into this argument about, you know, can’t we get something good out of it, which I could see is a good argument, but I think it doesn’t in fact take into account all of the kind of respect I think we need to have for the embryo.

MR. EMANUEL: Well, I would say that I -- here we may disagree. I mean, I think the analogy with the death row inmates is completely wrong, because you’ve got coercion there, they’re clearly full human beings, and it does seem to me that we don’t treat -- I mean, one of the things to ask is when - - if they destroy the embryo, they put it in an incinerator or something, do we go through a mourning process, do we bury it, we don’t do those things, suggesting that we don’t treat it like a human being and I would agree with you, I do think that good social use can come out while respecting the embryo. I think both -- I think that’s not a contradiction, and that’s a personal standpoint and I agree with you, I think that’s a very reasonable option and especially because as you point out, we’ve got them stored there and you know, no one has any idea what we’re going to be doing with them.

THE MODERATOR: Okay, let’s get to another question. On this side.

MR. LANE: Thank you very much, I’m Neil Lane of Rice University.

THE MODERATOR: Rice --

MR. LANE: This is a great session and I think you ought to take the road on the show, so you know, it’s pedagogically important and also I think it helps -- brings out the issues on all sides of the argument, so thank you for that. I know firsthand that President Clinton was very sensitive to the issues you’re talking about and the tradeoffs, the moral imperatives and so forth, but I want to clarify for the record, but I think you all agree with -- President Clinton actually was willing to allow NIH to support research on stem cells derived from discarded -- from embryos discarded from fertilization clinics, but the Congress blocked it as Nigel pointed out in an amendment to appropriation bill again and again and again.

What President Clinton was not willing to do was to allow federal money to be used to purposely create an embryo that then would be destroyed. And that was a -- that was already an ethical dilemma that many of us couldn’t understand. I was quite willing to go a bit further and allow NIH
to support somatic cell nuclear transfer, essentially therapeutic cloning, but President Clinton made a compromise, and I think it was a reasonable one at the time.

My question though is -- we’ve -- we talked a little bit about therapeutic cloning, which is done -- does not involve full embryos, and the derivation of stem cell lines and their potential, but if it would be appropriate to Madam Chair here, to ask what are the other benefits to somatic cell nuclear transfer, my understanding is there’s much medical information to be learned, we can learn about disease, and we can learn about the effectiveness of various treatments of diseases at that level rather than having to do full human experiments, that’s the -- that’s my question.

THE MODERATOR: Professor Lane, thank you so much for your comments and for the purposes of the audience, can you explain the role that you were playing in the Clinton Administration during this debate?

MR. LANE: Well, I’m sorry, we’re -- during part of the debate, I was the President’s science advisor, during the earlier part of the debate, I was the National Science Foundation, and not directly involved, but this has been a continuous policy discussion in the White House. So when I got to the White House at that point, I became involved.

THE MODERATOR: Thank you.

MR. EMANUEL: One of the great and modest public servants of this country who did a tremendous thing.

(Applause)

MR. EMANUEL: Let me -- I think one of your points Neil -- and I was trying to allude to it. One of the things that is, I think, particularly interesting and particularly important, even if these things never turn out to be therapeutically beneficial, if we find some way, or it turns out that stem cell research doesn’t go the way people think, and you’re going to be able to inject cells for cellular therapy, one of the critical elements I think many scientists believe that we are going to able to understand how genes come on and off to differentiate cells, and that is a critical process, very frequently to disease development and especially many of the genetic disorders that we see are not related to having a gene that has a defective nucleotide there, so you know, like sickle cell -- one of the problems is you’ve got a problem in the gene that causes -- that creates blood hemoglobin.

But a lot of genetic defects are a result of regulatory problems and what turns the genes on and off, and we will learn a lot more about development, and that is often thought to be hugely promising. Again, even if it turns out that the stem cell research doesn’t work for say curing Parkinsonism.

THE MODERATOR: Nigel.

MR. CAMERON: Make a few comments. I mean, first I think -- I’m glad that Neil has put the therapeutic cloning question back on the agenda, because I think that is really what this debate is all about. I think there’s a lot of scope for respectful agreement to disagree about what you do with existing embryos, which will in fact be destroyed. I think it’s a much more complex topic than it may seem to be, but I think there is plainly a -- as our questioner was saying here, plainly, that -- that’s a perfect legitimate moral perspective, and we can agree or disagree about it, that is respectful of the embryo.
I think once you start talking about mass production of embryos using the dolly cloning techniques, therapeutic cloning so called somatic cell nuclear transfer, I think you’re getting into a different kind of discussion altogether, and I think it is very interesting, I mean, I mentioned that Canada and France send you to jail for doing this, as does Germany and Australia. Switzerland, center of the European drug industry -- it’s illegal there, and what is most -- perhaps most interesting and some of you will not find is easy to believe is that one of the triumphs of the Bush Administration or the United Nations General Assembly, which is not typically thought to be a conservative --

MR. EMANUEL: Oh --

MR. CAMERON: -- leaning body, the UNGA, last year endorsed, by a three to one majority, the United Nations Declaration on Human Cloning, which calls for a -- all member states to prohibit all forms of human cloning, which was basically -- ended up being a debate between most of the world and the UK and the People’s Republic of China, who were the two most vigorous opponents of the declaration, but it was the U.S. plus Germany, plus much of the developing world, working together against the commodification of human nature, concerned about women and their oversights, and concerned about the mass production of human embryos for research purposes.

Basically, most of the western world has -- regards therapeutic cloning, as a serious criminal offense. And that has nothing to do with the abortion debate, nothing to do with the Bush Administration. And this UNGA decision, which was almost entirely unreported in the U.S. press, it could’ve been a wonderful headline, you know, “Bush triumph at UNGA,” in fact, was basically ignored, but I think has enormous significance for our building long term alliances in developing practical and pro-technology approaches in these areas, which are also respectful for human dignity.

THE MODERATOR: I think you raised a good point, by talking about the role of international organizations in this, and I would just add that the U.S. played a heavy lobbying role --

MR. CAMERON: Yes.

THE MODERATOR: -- in the generation of that UN resolution. So we have to realize that the superpowers are also superpowers in that sense as well.

MR. CAMERON: Well, it --

MR. EMANUEL: I’m not sure it was a moral debate that we’ve got.

MR. CAMERON: It was my privilege to be on the U.S. delegation to the early big round of this, and so I was able to observe in close quarter some of this discussions; it really interests me. I mean, why -- you see here in the U.S. this is a subset of the abortion debate, it’s very difficult to avoid that way of looking at it, you -- why is it that places like Canada and France and Germany that -- they have strong pro-choice, liberal policies on abortion, decide to send you to jail for doing this. Maybe there’s just more to it than has come up in the American debate.

THE MODERATOR: Okay, let’s get a couple more questions and --

MS. DAWSON: Hi, I’m Julia Dawson (phonetic); I’m a parent. As parents, we’re given the option of purchasing a kit for the purpose of stem cell retrieval from the umbilical cord at the point of
delivery for cryogenic preservation, is this something that’s reasonable for us to be doing, or is this something that we should be doing from all deliveries?

MR. CAMERON: My understanding is that if you are wealthy, go and do it, but that medically, it is probably not worth the investment, if this is a -- and it’s quite an expensive business.

MR. EMANUEL: Yeah, I wouldn’t go out -- I mean, it’s like an insurance -- you know, an insurance -- it’s being sold as an insurance policy for future bone marrow transplant was how it got started. I would -- if you calculate your odds and the amount of money you’re going to spend, it’s probably not wroth it.

MR. CAMERON: So we agree?

MR. EMANUEL: Yeah.

(Laughter)

THE MODERATOR: Wow.

(Applause)

MR. EMANUEL: There are other things we’ve agreed on, Nigel.

THE MODERATOR: I feel like celebrating.

MR. EMANUEL: It’s a tough moral question among others.

THE MODERATOR: Over here.

MR. PEREZ: Hi my name is John Perez (phonetic). This is a question for Dr. Emanuel, more practical than ethical. With respect to allogeneic stem cell transplantations for leukemic patients --

MR. EMANUEL: Yeah.

MR. PEREZ: Do you see any advances getting into the hospital over the next five years that would either substantially reduce the rate of relapse, or substantially increase the time to progression for those patients.

THE MODERATOR: Zeke, can you start just by explaining --

MR. EMANUEL: Yeah, this is far from the stem cell wars. So “allogeneic,” means you’ve got a bone marrow or -- filled with stem cells from someone else, not yourself. Typically, your -- one of your siblings a brother or a sister, who’s identically matched at immune sites, so that it’s not -- or there’s a lower chance of it being rejected. Sometimes, some of you have heard of these bone marrow registries, you don’t have a perfect match with -- or you don’t have a brother or a sister, and you get someone who’s say -- there are six areas that they measure -- there’s a good match at five of the six or there’s a good match at four of the six, those tend to be fraught with many more problems, because there’s a higher level of rejection, a higher level of what’s called Graft-versus-host disease, which means that the new blood cells that you’re creating attack the body, and that is a very
unpleasant and somewhat ugly problem.

The flip side is, it also -- those cells also tend to attack the cancer, typically the leukemia and so they -- you have -- if you survive it you have a higher cure rate. So you’re asking a technical question. Now, there are advances, you know, the main issue is people are looking for ways of up-regulating the anticancer effect, the anti-leukemic effect while preventing the anti-host effect in the -- all those problems, which are skin problems, diarrheal problems, and other problems and so the ability to finally manipulate the immune system is what people are looking at now.

Our experience before had been pretty blunt, you know, take out all of those cells, that seemed to be a problem, that leads to -- it doesn’t engraft as well and you have what’s called, “bone marrow failure,” where you know, you put in the bone marrow, and it doesn’t work and then you’ve got a person with no bone marrow and no immune system and you know, the prospects are typically bad you either have to immediately try to re-transplant them or they die, so it’s the -- these finer manipulations of the immune system and the development of the bone marrow that people are working on.

Do I see anything in five years, I’m not that sufficiently close to the breakthrough stuff there to be able to tell you, but you know, I think this is an area where we’ve had -- again, 30 years of basic science research and we’re able to do a lot more, but I don’t like to over-promise, and so I tend to be a skeptic of everything that comes through, and I prefer to be surprised rather than to be disappointed.

THE MODERATOR: And just to underscore something that Zeke said, so this functions much more like a kidney transplant.

MR. EMANUEL: Oh, yeah, yeah, this is not stem -- yeah it’s --

THE MODERATOR: It’s coming from an adult donor who’s voluntarily offering.

MR. EMANUEL: Well, it can come from a kid, but yes, it’s -- right, this is not -- doesn’t involve destroying an embryo at all, this involves either taking out a lot of blood and isolating the stem cells or doing a lot of harvesting in your -- the back side, your lower back, for -- in the bone there and pulling out the bone marrow, and again these are already committed to being blood cells, you’re not trying to change a muscle into a blood cell.

THE MODERATOR: Over here.

MS. HILBOLDT: Yes, I’m Lisa Hilboldt (phonetic), there’s research that has been done at Sloan-Kettering on rats and Parkinson’s disease, using nuclear transcription, right. You take a rat, you take a skin cell, you pop out the nucleus, you transplant it into an egg, you put some chemicals on it, you grow fields of dopamine like it’s corn, and they’ve been able to cure Parkinson’s symptoms in rats. When I heard this lecture, the scientist was extremely apologetic to not offend the sensibilities of people on the -- you know, abortion issue. So that’s technically therapeutic cloning --

MR. EMANUEL: Of a rat --

MS. HILBOLDT: -- theoretically, you could do that and grow another rat or another person, so in terms of the laws in Canada and France, have they outlawed therapeutic cloning to grow an identical
human being --

MR. CAMERON: No, no, no --

MS. HILBOLDT: Or have they outlawed nuclear transcription of the kind I’ve just described?

MR. CAMERON: They would send that guy to jail if he did it with a human being in Canada, and in France, and in Germany, and Australia, and Norway and yeah, yeah.

MS. HILBOLDT: But what if that’s a very wrongheaded law and they just didn’t quite understand what they were passing at the time.

MR. CAMERON: I --

(Laughter)

MR. CAMERON: -- yes -- that -- you can -- that is a case you can make. I mean, the only reason I - - you know, as a conservative dare bring in these other jurisdictions into the conversation, which I know is something conservatives are not meant to do, is to make the point this is not the abortion debate. Now, you can have another discussion about whether you think we should in fact use this basically manufacturing technology somatic cell nuclear transfer to produce human embryos for basic research, or of course for so called therapeutic cloning, which is what the Koreans claimed to have done successfully, and of course it was a fraud. Technically, this may well be possible in humans, but it’s just a big moral jump, to begin to do this with our own species, and that’s what all of these pretty liberal nations have said no to, and so --

MR. EMANUEL: Let --

MR. CAMERON: Yeah.

MR. EMANUEL: Let me just say two things. I -- what -- I’d -- I would hate to prejudge the moral debate by trying to use a charged word like, “manufacturing humans.” I think let’s get into the question without trying to prejudge it by using a loaded word. The second thing I would caution and this is again -- just going back to what I just said, I’m an oncologist, we’ve cured cancer in millions of mice, it’s easy to kill, to cure and to do things in lab animals that never make it to human beings, so it’s very exciting, it’s very exciting science, but I would not say, we can cure Parkinson’s because of that.

MS. HILBOLDT: I said symptoms.

MR. EMANUEL: Yeah. I -- all I want to say is don’t get the hopes up too high, because rats -- we’ve learned this in lots of ways are very different than people. Curing a cancer in a rat is not curing cancer in a person, we can often use the same drugs. Sometimes as we learned in England, you know, you can do things in a monkey it makes no difference, you do them in a human and you can have, you know, a immune storm that can virtually kill a person. Just be a little skeptical, that’s all I would suggest about every scientific breakthrough.

THE MODERATOR: And just to underscore Zeke’s point, the gene therapy -- the phrase that we saw not too long ago, which resulted in the death of Jesse Gelsinger is an example of something that
seemed very promising in the lab, but was difficult to make work in humans, thanks.

THE MODERATOR: We have a question over here.

MS. DAY: Hi, I’m Tracy Day (phonetic). And my question is -- I think we all remember the frenzy in the political community, in the religious community when the first test-tube baby was born and yet IVF has become successful and so commonplace that that debate seems to have been muted; not the use of the leftover embryonic cells, but the process of conceiving a child through IVF. My question to you is if embryonic stem cell research is successful, when we see the first successful use, if we do, of these cells to cure Parkinson’s or to, you know, cure diabetes, or replace those cells, will the fundamental political and religious debate change?

MR. EMANUEL: Well, that is a very good question. And it -- I mean, I think it’s probably pretty undeniable it would change, that would be my sort of, you know, looking into the glass darkly that it would be very difficult if it were safe, effective to hold back from exploring in other areas and for trying out things. Whether that would be a good thing, I think is another question, because the reason then is you would have a sort of utilitarian calculation, right.

I would -- what I would have been urging here is to -- let’s not try to go that utilitarian calculation, because after all in lots of other circumstances, we don’t do this right, I mean, you know, the classic example is we don’t carve up Nigel here and take out all his spare organs to save seven or eight other people with his kidneys, his liver or heart, we just don’t do that, even though seven people could live for the cost of one, right?

(Laughter)

MR. EMANUEL: No one would sanction that, not even people in this audience, Nigel.

MR. CAMERON: Now --

(Laughter)

MR. CAMERON: -- remember we’re in Aspen, yes.

MR. EMANUEL: They’re good people. So part of what I’ve been trying to suggest is, I think we need to come to some moral evaluation of the embryo. What I’ve suggested is I think our intuitions are pretty clear already that we don’t treat it the same way in which we treat Nigel for all sorts of reasons. How far we’re willing to go, and whether in fact, manipulation and destruction with -- but only in some circumstances is acceptable. I think -- I mean, my intuition is that most people would -- do find that acceptable for the reasons I’ve kind of suggested. We don’t have memorial services, so we don’t treat these like children, we don’t find it a moral outrage if they get destroyed when a freezer stopped, and they don’t have any of the qualities that we normally associate with higher human functions and valuable human functions.

THE MODERATOR: Nigel, before you respond to that I want you to talk about the flip side, which is early negative results can be discouraging, and you mentioned South Korea before briefly, but could you explain what happened there so --

MR. CAMERON: Yeah, what happened in South Korea was that a doctor called, “Hwang,” who
was a respected scientist got a lot of money and did research and successfully cloned a dog, which you may have recalled seeing called, “Snuppy, the puppy was an amazing technical triumph in itself.

MR. EMANUEL: He’s a veterinarian, you might say -- yeah --

MR. CAMERON: He’s a veterinarian, so it would be a little easier, but then he claimed to have cloned -- not simply cloned embryos successfully, which has been done I think only once elsewhere in the UK on a very small scale, he claimed to be -- done that, but also to do it, but also to do it and get these patient specific cell line, which really are the gold standard in the way the therapeutic cloning model is being used. It’s been found basically all of his research, except for the dog, was made up by him and by others, and he’ll probably spend the rest of his life in jail.

Now, obviously, yes, this was of course not un-useful to those of us who think this technology is not a very good idea, and it caused lot of, you know, anxiety for people who didn’t think it is a good idea, because this is the way in which the media dominated world works. I think on your basic point -- I think it is a very interesting point, because plainly, those of us who are basically pro-technology, but think human dignity issues are very important, are always in danger of being accused of being Luddites, and being opposed to anything which is new and so on and so forth, and sometimes for good reason.

But if we kind of embrace technology appropriately, we have to have some sort of disagreement (phonetic), some sort of sense of where you draw lines, and that lines have to be drawn, and drawn in a way that doesn’t mean they’ll be revised and moved every year or two, and knowing how to draw the line without saying no to everything new is the question, and I do think that the Administration’s decision in 2001 on this stem cell issue was a brilliant example of drawing a line to embrace the technology, but avoided moral offense, and a case study, but you’re right.

And it may well be that in 20 years time, there’ll be a lot less concern about some of these things and as Zeke said that won’t necessarily be good. The real difficulty though of using your argument, which you did not do as a kind of prescriptive way of undermining the legitimacy of moral objections to new technologies and which is often what is done, they said, “Look at the first heart transplant, look at all the objections, look at in vitro,” you know, we shouldn’t ever object to new technologies. I think that’s crazy. And it’s interesting to me that Germany, which has -- I think it has the biggest biotech sector in Europe.

Germany has the most conscientious conservative regime on all of these questions, and in fact turned the Bush Administration’s decision on the funding of embryo stem cells into German federal law under socialist Chancellor Schroeder that Germans are the people who do the technology, but they have a big conscience, because they know they’ve been there and done that. You can’t just trust science and let things run, you have to keep an eye on what’s going on.

MR. EMANUEL: Well, wait, wait, wait, wait, wait, wait, wait.

(Laughter)

MR. EMANUEL: That historical revisionism is a little bothersome.

MS. DAY: Thank you.
MR. EMANUEL: The problem in Germany was not trust science, the problem in Germany was hijacking science for malicious political means, it was a little different than trusting science to do the right thing --

MR. CAMERON: Scientists --

MR. EMANUEL: That’s the first point --

(Applause)

MR. EMANUEL: The second point I want to make is look, I think the Germans are sensitive, and I think the Germans may be even hypersensitive to certain issues, and through a good national debate they have come to their position, and the flip side, the British have had a longstanding -- I mean -- I think one of the admirable things which you may disagree with me about, but the British over 30 years, really since the birth of Louise and IVF have had a very extensive national debate, a lot of national commissions about various new technologies, and the British have had a very extensive I would suggest social consensus that this is permissible --

(Tape interruption)

SPEAKER: -- for the experiment. What sort of protections and concerns should we have about women in these kinds of situations?

MR. EMANUEL: Well, I wouldn’t draw excessive conclusions from a pathological person. I mean, clearly, this guy has got a pathological problem in -- you know, he was willing to lie consistently, he was willing to falsify data consistently, and is it a surprise to you that he’s willing to do other morally egregious things. I think -- you know, using that as an example, is a bad case. And furthermore, I think actually what we’re talking about is not coercing women into giving embryos, we got 400,000 embryos. I think the question is could we use them without coercion.

MR. CAMERON: Well, there are obviously many questions, but I -- I mean, the only case study we have of a sort of enterprise in which therapeutic cloning has been done apparently on a large scale, it was a frog, but it was -- being going on. We only have one example, and that is in Korea and not only were women abused. I mean, laws were broken, lies -- I mean, the whole thing was endemically dishonest. And it was so bad that it actually -- I was able to write an Op-Ed criticizing what had gone on jointly with Tina Stevens, who some of you will know is a radical feminist bioethicist, and you know, the ultimate pro-choice and so on and so -- and we joined hands and commonly denounced what was going on there.

I think the question of where you get the eggs is going to be a vast question, because if you really believe in this therapeutic cloning model, you are going to have to have hundreds of millions of eggs. And -- I mean, there’s presently a market of course now for women’s ovocites and you can get a lot of money if you’re a bright college student, and you’re pretty and SATs are up there and so on, you can get a $50,000 to $100,000, you -- maybe get $10,000 if you are a bit more, you know, average. I mean, for reproductive purposes, which I think is a scandal in the first place, and there’s been no protests about this.

MR. EMANUEL: Oh no that’s not true, there have been protests --
MR. CAMERON: I have yet to see a March in a -- on a -- any organization denouncing this. It goes on, it’s unrestricted in most states and it’s one reason why we’ve got to get some ART regulation in place. But my point is. If you’ve got to use human eggs for this purpose, then that is going to make the therapeutic cloning model impossible, which is a bit like Thomas Okarma from Geron have admitted that, it’s just not going to work.

THE MODERATOR: Okay, we have one last question over here.

MS. MILLER: Thank you. I’ll try and be quick. I know this was -- my name is Linda Miller. I know that this was called, “What can we learn from the wars,” but I think that we’ve focused on war much more than learning a little bit and I have to say that Mr. Rove, I mean, Mr. Cameron. I find -- (Laughter)

MS. MILLER: I find that this has been very glib and that you tend to paint things with a very broad brush that as a consumer trying to learn and sitting in the audience I feel is a little disingenuous. I would love somebody to back up and try and help us understand the difference between human embryonic research, stem cell research, cloning chimeras and chimerism, this stuff we’re reading about now, which is implanting human or allogeneic cells from one species across to another, it’s -- creating tremendous debate.

And I think that somehow to just -- with his broad brush say that embryonic -- human embryonic stem cell research is all of a sudden cloning and to go into it with drama, without focusing or at least for us, what it is that we’re really talking about has confused me, and I really think we could back up a little on this.

THE MODERATOR: I most respectfully disagree, because we did try to start with the science

MS. MILLER: It’s just that --

THE MODERATOR: -- but we could underscore the science a bit more --

MR. EMANUEL: So let’s talk about or at least distinguish two kinds of cloning, okay, maybe that will help. Reproductive cloning and jump in any time you think I’ve make a -- made a mistake that - -

MR. CAMERON: As long as you put quotes around reproductive, because cloning is reproductive.

MR. EMANUEL: Well, cloning for the purposes of creating a baby, which is usually referred to as, “reproductive cloning,” is -- that is a case where I think the purpose of creating the -- of doing the manipulation, taking the nucleus out of one cell and putting it into a ovocite, and then restarting it has not happened, and I think is universally, by the vast majority of populations in all countries, condemned. And I think that there’s no ideological litmus test on that in this country, across the political spectrum everyone condemns that.

What the debate is about is -- so called therapeutic cloning where you would create an embryo to have the exact cell and membrane so it wouldn’t be rejected and would be exactly like the person you’re going to inject the cells into. So what you need is an ovocite, where you can grow it, but a nucleus from the person you’re going to inject into. Okay, is that clear? And -- but you’re not going
to let it develop into a baby, you’re going to terminate that stage at the embryonic stage, 7 to 14 days, take those cells out and then have lots of cells be able to develop from that cell. So that’s the difference.

I don’t like to use the term “therapeutic cloning.” I think it does raise all sorts of false images in people’s minds. Nigel disagrees with me on that. So I do think that’s, you know, how much of a difference you think that is, you know, there are some very good liberals who think there should be -- there’s no moral difference between -- and I think Michael Sandel’s position is that both of those real -- your ethical evaluation has to go between both of those. So I hope that’s at least helpful in this case.

THE MODERATOR: Nigel, did you have anything to add on that?

MR. CAMERON: Yes, briefly, I mean, I’m sorry if I have been glib, this is maybe partly the accent I’m -- you know, I -- I think these are enormously complex questions, and they, you know, they cut right to the heart of our notions of life, death and you know, fear and hope and disease and you know. My father died partly of Alzheimer’s disease and partly of chronic bronchitis. We’ve all had in our family’s experiences of incurable disease.

And we’re all trying to find a way to develop an approach to these new technologies, which will enable our health care to be much more effective in dealing with these intractable problems, which is something -- we can live with, which doesn’t involve our cutting corners and doing things that we find morally reprehensible. And in public policy terms, that will always be a matter of finding a line you can draw, where there’s some kind of compromise, what you allow in law, and then what you will fund within the sphere of what you allow in law.

And I think we’re trying -- we’re wrestling with that question, and I think what is perhaps the most important thing about this conversation and something that I feel like one of the lessons to learn from this discussion today and from the way it is, you know, picked up on the discussion of the last few years, is it is an absolutely crucial discussion.

And I think the more we discuss, the better the civility within which we have the conversation, the better the relationships we have when we break through stereotypes, which is one reason why I bring these international examples, because they break through this whole American abortion, you know, matrix in which we tend to talk about things here, then the better it will be.

And it intrigues me to find -- I mean, to find, you know -- feminists pushing through this law in Canada, which bans therapeutic cloning to find Germany adopting the Bush policy at a time when German-American relations were at a low ebb, in 2002. And at the same time, it’s important for us to be thoroughly pro-science pro-technology, and to be seeking to embrace these new opportunities insofar as we think that they’re appropriate to human dignity.

THE MODERATOR: well, I just want to take an opportunity to thank you both for this vigorous and interesting debate.

(Applause)

THE MODERATOR: If there are additional questions, feel free to storm the stage.