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Intellectual Capital and Voting Booth
Bioethics: A Contemporary Historical
Critique

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Intellectual Capital and Voting Booth Bioethics:

A Contemporary Historical Critique¹

The age that gave birth to bioethics nearly teemed with public intellectuals offering every manner of sometimes incendiary critique of science, medicine, technology and society (Stevens 2003). Do bioethicists today serve the public as did these intellectual predecessors? Considering the sheer tonnage of paper dedicated to the bioethics of biotechnologies, is the public more aware, more educated, more impassioned for the effort? Sun Microsystems cofounder, Bill Joy, implied an answer when in 2000 he mused over unintended consequences of robotics, genetic engineering, and nanotechnology. Why, he wondered, were so many colleagues though aware of the dangers, “strangely silent”? When pressed, they replied in part, that “there are universities filled with bioethicists who study this stuff all day long.” “Your worries and your arguments,” colleagues told Joy, “are already old hat” (Joy 2000). The proliferation of bioethics, it seems, has induced quiescence among those who produce the technologies of bioethical concern – an ironic legacy for the era that seeded bioethics’ flourish. No need to stall, choking on biotechnological controversies – ethics experts will grasp those nettles and so allow production to stay on course. Micro choices bioethicists make concerning where to create, invest, or spend their intellectual capital (to teach, consult, sit on commissions, etc) end up serving – or failing to serve – macro, public functions, e.g. informing the public of ethical quandaries or sustaining intense, policy relevant dialogue. Does the micro-macro dynamic of bioethics foster quiescence

in the public more generally as it seems to among biotech producers more specifically?

To help answer, imagine a world without bioethicists. Imagine that as biotechnology becomes big business citizens are called upon to vote on complicated, highly technical, and controversial ballot initiatives that would divert billions of tax dollars from public services such as education, hospitals, and emergency rooms to speculative lines of research that could offer long-term benefits. Who would be there to help voters understand the impenetrable fine print of the proposed legislation and distinguish it from advertisements representing the perspective of partisans? Who would explain obscure scientific terms, marshal scientific evidence to assess the likelihood of promised cures, encourage examination of possible unintended consequences, and provide tools for an objective analysis? What kind of public policy would emerge in such a world?

Californians, of course, scarcely need imagine. In 2004, we passed Proposition 71 making stem cell research a constitutionally guaranteed right – including the right to create human embryos using cloning technology; and the California Institute of Regenerative Medicine (CIRM) – Prop 71's bureaucratic incarnation – is slated to receive \$3 billion dollars over ten years (\$6 billion total cost to taxpayers including interest) to see that the research gets done. Of the several areas of stem cell research in existence, the initiative prioritized research for which the Bush administration had placed funding restrictions – embryonic stem cell research.² CIRM research will include research cloning, known also as embryonic cloning, therapeutic cloning, cloning for biomedical research, and “somatic cell nuclear transfer.”³ Who helped explain to Californians, in accessible language, what a stem cell is, or clarified the meaning of words like "pluripotent" and "totipotent" and the phrase "somatic cell nuclear transfer"? Who offered

citizens an account of the various sources for and methods of retrieving stem cells, illuminated the ethical controversies surrounding such research, and reported on the success and failure rates of experiments so far? Who opened discussion about connections between stem cell research, cloning, and its function as the technological gateway to inheritable genetic modification? Who helped voters assess the seriousness of the state's budget crisis and consider which research and health care services would not get funding with vanishing state resources? Who helped sort through all the weighty questions surrounding this monumental decision? Well, there was media personality, Ron Reagan. He helped us fantasize about how we can have our own (costless?) personalized cures kit one day; and there were armies of paid signature gatherers who stopped shoppers at supermarkets and malls and told them that their children would be cured of diabetes; and, of course, there were Nobel Laureate science-entrepreneurs with vested commercial interests who saturated radio waves and TV broadcasts asking listeners, simply, to believe. For the vast majority of California voters, bioethicists seemed not to exist.⁴

It is a good idea to reflect on California's world-without-bioethicists because this state's experience with voting booth bioethics is part of a trend. As of this writing, other states that either have tried or are trying to make stem cell research a state concern include Connecticut, Delaware, Florida, Illinois, Maryland, Massachusetts, Pennsylvania, New Jersey, New York, Washington, and Wisconsin (Mansnerus 2005).⁵ With controversial biomedical research being evaluated at the state level, either by legislatures or at the polls, it is clear that the cultural politics surrounding science and medicine has shifted from the earliest days of bioethics' emergence. What is the changed nature of these politics? In these altered environs, where do bioethicists spend their intellectual capital?

The impulses that led to the emergence of bioethics as a social institution arose in the late 1950s and early 1960s. Part of those impulses were the brewing anxieties among leading geneticists that reached public attention after those scientists aired their hopes and concerns at a number of conferences. Some of these scientists saw themselves, explicitly, as falling within the historic wake of the responsible science movement that had emerged after the atomic detonations at Hiroshima and Nagasaki. Biology, once a docile, descriptive science was, they believed, poised to unveil the mystery of the gene in much the same way that atomic scientists had unleashed the power of the atom. Would the consequences of genetic research be as far reaching, or as troubling, as those from atomic research? They thought so, and thought that people should know as much.

Some geneticists wanted to garner support for their favorite eugenic program. Nobel Laureate Hermann Muller floated his idea of “germinal choice” which would increase opportunities to use artificial insemination with vetted semen. Nobel Laureate Joshua Lederberg urged the merits of “euphenics”, a desire to improve the human race, in part, by regulating brain size. Nobel Laureate Francis Crick proposed a procreation licensing program designed to prevent the “genetically unfavorable” from reproducing. Other geneticists, however, wanted to alert the public about the eugenic proclivities of their colleagues and inform people about the transforming potential of “human engineering.” For Dr. Guido Pontecorvo, for example, “biologists, and in general all scientists...have learned from the experience of nuclear energy and are conscious that it is their duty to inform society of the implications of the advances in their own fields” (Stevens 2003, pp. 12-19). Bioethics’ clarion call – the need to safeguard public interest by providing interdisciplinary ethical examination of scientific and medical

developments – rose, in part, as a response to these and similar concerns over what contemporaries interpreted as an unprecedented “biological revolution.”

Now, forty-plus years later, Nobel Laureates and other distinguished molecular cell biologists again have felt an urgency to reach out to the public. But today the politics of scientific research is laid out on a landscape wholly altered from the postwar era, and scientists traverse the shifting terrain differently from their predecessors. For one thing, as referenced repeatedly in print media, scientists have felt compelled to hit the pavement and take to the states after George W. Bush, motivated by the pro-life sensibility that human embryos should not be sacrificed for research, placed major funding restrictions on embryonic stem cell research in 2001. It is hard to identify a more immediate trigger for targeting a pro-choice, biotech-friendly state like California as a source of research dollars. But other factors (of concern whether pro-life or pro-choice) already had loaded the gun.

In 1980 the U. S. Supreme Court recognized a right to patent genetically engineered living organisms which, as the Court decreed, constituted “compositions of matter” (*Chakrabarty vs. Diamond* 1980). That same year Congress passed legislation allowing universities and their researchers to patent research products funded by the federal government, legitimating the use of public money for private gain.⁶ These twin enabling developments transformed biotechnological research into a multi-billion dollar commercial enterprise. Many scientists morphed into commercial entrepreneurs along the way (Press and Washburn; 2000, Munro 2002). The rails of commerce connecting the university and the business sector came to run in two directions more sleekly than ever before in history. Increasingly, pharmaceutical and chemical companies invest lavish sums directly into university research departments, and scientific researchers stretch one

foot out the ivory tower to start-up their own biotech companies.⁷ For science-entrepreneurs refocusing with an eye toward profit, the blurry line between basic and applied research can become nearly invisible.

Prop 71 promoters broadcasted commercials and distributed brochures that never revealed how richly science-entrepreneurs stood to gain from stock options, shares, and biotech patents – even if cures are never found. Television ads featuring Stanford University science-entrepreneur Irving Weissman, for example, introduced him as a cancer researcher and as the “California Scientist of the Year” for 2002.⁸ They failed to mention that he was also a major stock and options holder of Stem Cells, Inc., a biotech company that he had helped start up. The Monday after California’s Governor, Arnold Schwarzenegger, endorsed Prop 71, the volume of trading in Stem Cells, Inc. stock rose sharply; it was the fourth biggest gainer on the NASDAQ -- climbing 51% (Elias 2004; Mecoy 2004). At the time, Weissman owned approximately 1.7 million shares. Another biotech company, Geron, saw its stock go up 16 percent. Science-entrepreneurs also stand to profit through patenting. Besides having their salaries (and laboratories, offices, etc.) funded by Proposition 71, the researchers may fill their pockets by privatizing the income stream coming from patent fees on embryonic stem cell processes, the cells produced, as well as any cures it might yield (Andrews 2004).^{9, 10} In the area of genetic screening, patenting has been a sweet monopoly deal that in some cases has driven up costs for genetic testing prohibitively high for many consumers (Paradise 2004). There is nothing in the text of Prop 71 to prevent this from happening for promised cures derived from stem cell research. Moreover, partisans wrote the initiative to ensure that the state of California would not have discretion on how royalties from patents would be shared.¹¹ For biotech investors, targeting

the state as a source of venture capital would provide a fresh infusion of riskless cash into a market gone bearish after sequencing the human genome brought scant immediate payoff and gene therapy failed to live up to promoters' promises (Tansey 2004; Pollack 2004; "FDA . . . 2005; Begley 2005; Regalado 2005).

Does having conflicts of interest mean that those scientists lose all credibility when asking voters to authorize \$3 billion dollars to fund their favorite research projects? Maybe it does. Sheldon Krimsky reports that, "...most scientists view conflicts of interest as a public perception problem....[I]t is widely believed among members of the scientific community that the 'state of mind' of the scientist is not prone to the same influences that are known to corrupt the behavior of public officials" (Krimsky 2003). Bioethicists could counsel voters on how to think about this and other ethical nettles surrounding policy making for stem cell research. It could be countered, of course, that making policy on issues as complex as stem cell research at the ballot box is a misuse of the initiative process – that consideration of such issues belong in the legislature where the merits of democracy can be balanced against the need for expertise. Why then, it could be argued, should any bioethicist validate such misuse of the democratic process by participating in it? But, if the initiative process is an inappropriate venue for science and medical research policy-making, surely *that* is something to share with those being tasked to become citizen science policymakers.

The commercialization of biotechnological research and the new habit of setting research agenda by fracturing it throughout the states presents bioethicists with an urgent historic challenge and novel options: will they spend their intellectual capital on the one entity who cannot afford to pay for it – the public – and how will they do it? Instead of responding, as a

number did, to journalists seeking snappy sound bites and becoming part of the journalist's "frame," will they pro-actively offer citizens full engagement on crucial issues: sponsor high-profile public debates, write pro-con newspaper columns and op eds, circulate petitions, launch signature drives, call press conferences? (Lakoff 2004) But to address voters credibly in direct and candid ways bioethicists would have to publicly parse the political nature of issues deemed "bioethical," rather than declaring the day's work done after parlaying abstract philosophical principles in the classroom, boardroom, hospital corridor, or professional journal. Moreover, they would, themselves, have to be unfettered by bio-corporate influence and conflicts of interest. As compared to selling intellectual capital to biotech corporations, as many have done, there is little to gain financially by donating it at the town square.¹² And, too, there is the risk that donations of candid critique to the public could leave a bioethicist unmarketable at the corporate exchange where a willingness to create enabling assessments of research agendas is key to fetching top dollar.¹³

Perhaps it is for such reasons that Californians heard so little either from researchers who, in the tradition of the responsible scientist, wanted to educate people about the ethically dicey aspects of their research, or from either of their proxy holders: the truly independent bioethicist or bioethical partisans engaged in critical, public, debate.¹⁴ Instead, frustrated by Bush science and enticed by the opportunity to refresh biotech's flagging commercial prospects, science-entrepreneurs targeted Californians as impressionable and deep-pocketed bioethical decision makers. Relentlessly, voters were inundated with pleas to invest in promises.

A September 2004 edition of *Science* quotes science-entrepreneur Irving Weissman urging modesty when making claims for cures. "Don't expect any cures from this in the next 5

years,” he cautioned.” “Every time a public relations sort of person tries to talk about cures,” he said, “I tell them you can’t say that without qualifications. It’s just not right” (Vogel 2004). But in the more popular media during the campaign, science-entrepreneurs were not selling caution. They saturated air waves with advertisements suggesting that their vanguard of biological research would find cures for just about everything, from cancer to Parkinson’s disease to spinal cord injuries. Weissman himself told television viewers that, “The chances for diseases to be cured by stem cell research are high, but only if we start” (“Stumping. . .” 2004) Advertising told Californians, repeatedly, that over 20 Nobel Laureates backed the initiative. Nobel Laureate Paul Berg, for example, quoted on thousands of glossy color advertising handbills for Prop 71, encouraged citizens to vote for the initiative because it would “energize vitally needed research...for the use of stem cells to cure millions of children and adults....” The YES on 71 campaign featured a “countdown to cures” graphic on its website. “Voting Yes on 71,” the Nobel Laureate endorsed brochures assured, “could save the life of someone you love” (“Support . . .” 2004) But *why* scientists were so optimistic about the promise for cures was harder to discern. Did embryonic stem cells have an encouraging record in animal studies? (In fact, the research was in its infancy and animal studies were showing clearly that embryonic stem cells were causing tumors. None of the cures boasted for stem cells generally was owing to embryonic stem cells specifically – although no high-profile expert sought to publicly correct for voters that widely shared misapprehension.)¹⁵ Had human trials been conducted? (No.) Scientists were not telling us much about any of that. What did bioethicists think? There was scarcely any evidence of their whereabouts at all. With ethics experts pretty much publicly silent on the subject, (in non-professional media venues anyway) perhaps no news was good news. Maybe voters should

foot the bill and follow the Laureates to Lourdes. And so the voters of California did just that.¹⁶

While the campaign was underway, the huckstering effort of science-entrepreneurs betrayed no bioethical concerns regarding how embryonic stem cell research opens the door to human cloning or techno-eugenics.¹⁷ Is it ironic or merely predictable that while we were considering supporting a research agenda that would move us significantly closer to intervening in human evolution in ways reminiscent of those that troubled postwar geneticists, we were hearing less about it? In fact, science-entrepreneurs and Prop 71 backers deftly concealed the fact that questing for cures by cloning embryonic stem cells also carries us to the threshold of human reproductive cloning – and there was scarcely a bioethicist around to put these concerns before the public.¹⁸

Prop 71 advertisements consistently referred generically to “stem cell research” and did not clarify adequately the different sources of stem cells or their track record for realizing cures so far: adult, cord blood, and two sources of embryonic stem cells – from donated surplus embryos created for *in vitro fertilization* (IVF), and from clonal embryos created by scientists in the lab. As far as the text of the actual initiative, only those rare voters who read, extremely carefully, through the eight pages of the proposition’s dense, single-spaced, double-columned, small-type text would have had even a chance at discerning that the bulk of Prop 71 funds designated for actual research would be headed for embryonic stem cell research.¹⁹ The word “embryo” is never used. IVF surplus embryos are referred to as, “surplus products of in vitro fertilization treatments.” Clonal embryos (those to be created by scientists in the lab for the purpose of deriving stem cells) are nowhere visible in the text even as a conceptual entity.²⁰ The initiative nowhere makes reference to research cloning. It refers to the cells it seeks: “pluripotent

stem cells and progenitor stem cells,” and to the technology by which pluripotent cells may be derived: “somatic cell nuclear transfer.”

In the year before Proposition 71 was placed on the ballot, science-entrepreneurs associated with Stanford University, (an institution that stood to be one of Prop 71's major beneficiaries) urged broader use of the abstruse term, “somatic cell nuclear transfer”(SCNT) (Novak 2003; Siegel-Itzkovich 2004). These researchers promulgated this semantic preference despite the fact that scientists in the field more generally were virtually exclusively using the original terminology referencing cloning (Newman 2004). Such linguistic artistry aimed to signify that there was no intent, on the part of the researchers, to implant clonal embryos in order to reproduce human beings – only to derive stem cells from the embryos and then destroy them. The researchers, from Stanford's Institute for Cancer/Stem Cell Biology and Medicine, discouraged continued use of the cloning nomenclature by characterizing such use as inaccurate on the part of the press.²¹ But, in fact, a Medline search conducted in August 2004 revealed that the terms “embryo cloning” and “cloned embryo” were in wide use within the scientific profession itself.²² The text of Proposition 71 mentions cloning only to proclaim that no funds would be spent on human reproductive cloning.²³ The initiative otherwise does such a good job hiding the fact that the embryonic stem cell research prioritized by the proposition involves cloning of any kind, that the proclamation appears as an odd denial of something its authors seem to have no reason to be thinking about.

Backers of the proposition were so keen on their desire to occlude any connection to cloning that they initiated legal action to muzzle the opposition's reference to it in their Rebuttal as it appeared in the *Official Voters Information Guide*.²⁴ Attorneys for several of the

proposition's chief promoters petitioned the superior court to block information from appearing in the voter guide that they argued was "false and/or misleading." Several areas of contested claims concerned SCNT: 1) that the research constituted human embryo cloning, 2) that to do the research, which required eggs, thousands of women would have to undergo substantial risks associated with taking high dose hormones and egg extraction procedures solely for research purposes,²⁵ and 3) that perfecting research cloning (a.k.a. SCNT, a.k.a. embryo cloning) would, at one and the same time, be perfecting the means for producing cloned human beings.²⁶ (The initiative took pains to reiterate California's ban on human reproductive cloning. But as Prop 71 provided no program to prevent the dissemination of the technology and since there is no Federal ban, the SCNT technology perfected in California could be used to produce a possibly genetically enhanced cloned human in any of the many states without a prohibition.) (Beeson 2004) The court roundly rejected this outrageous partisan effort and, with only slight alteration, all three pieces of information concerning SCNT appeared in the Voter Information Guide.²⁷ Losing this legal battle, however, was no barrier to winning a war fueled by over \$34 million.²⁸

It may be that, offered all the arguments pro and con and a chance to consider them, the public would have chosen to fund bio-technologies that could alter human biological development, including reproductive cloning, inheritable genetic modification, and chimerism²⁹ But hiding the truth that such a technological bundle is tied together by a partisan promise of cures may have resulted in citizens' acceptance of this package without ever recognizing its contents. Countering the cliché that history repeats itself, the chronicles of science and society offer this stark contrast: postwar geneticists fretting over the need to inform the public about highly consequential implications of genetic research on the one hand, and 21st century science-

entrepreneurs bringing legal action to prevent it, on the other.³⁰ How will bioethicists position themselves under the altered light this contrast casts?

At present, professional bioethicists may cash out their intellectual capital at biotech corporations, collect on it as hospital consultants, or hoard it quietly in the ivory tower – but they do not donate much of it to the public, a public now targeted as uninformed bioethical decision-makers. In retrospect, Proposition 71 was for California an historically unprecedented game of Voting Booth Bioethics with a lopsided set of “we’ll- hide, you-see” rules. Commercial biotech did all the hiding: hide the conflicts of interest, hide the early-stage nature of the research, hide the cloning, hide the techno-eugenic threshold, hide the embryo, hide the women needed for eggs. But the hardest thing to find was a bioethicist prepared to help seek. Without having a cent of their own intellectual capital to spend, voters had to do that largely on their own. Even a stacked game should have a set of rules fairer than that.

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Notes

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 2. See, "Voter Information Guide, California General Election, Text of Proposed Laws, Proposition 71," Section C, p. 152.
 3. For a discussion of terminology regarding cloning see (Kass 2002).
 4. The presidential bioethics commissions can be seen as attempts to generate public bioethical discussion of controversial biotechnologies, including stem cell technologies. Arguably, however, the Commissions are less the instrument of effective public dialogue (i.e. a dialogue that reaches/enlightens a broad spectrum of voting Americans) than an administrative process, by and for elites, that functions to move forward controversial technologies – their specific criticisms of biotechnologies notwithstanding. For a consideration of how private bioethics centers may function to advance larger biotechnological agendas in a context outside the stem cell controversy see, (Stevens 2003).
 5. "Confusion in the States Over Stem Cells, Federal Action Expected," *Genetic Crossroads: Newsletter of the Center for Genetics and Society*, March 31, 2005, online at,

<http://www.genetics-and-society.org/r.asp?s=gc20050331&t=http://msnbc.msn.com/id/7253997/>.

6. For the Bayh-Dole legislation see, Government Patent Policy Act of 1980, Pub. L. No. 96-517, 94 Stat.3019.

7. From 1980-81, DuPont invested 23 million in Harvard Medical School (12 year contract), Monsanto invested 4 million in Rockefeller University (5 year contract), Monsanto invested 4 million in Washington University Medical School (5 year contract), Allied Chemical Corp invested 2.5 million in UC Davis (5 year contract), Celanese invested 1.1 million in Yale University (3 year contract) (Wright 1986).

8. See, "Stumping for Stem Cells," October 18, 2004 online at www.foxnews.com/story/0,2933,135697,00.html.

9. See, "Live Forever: Stem Cell Science Drives Ethical Controversy," *Pharmaceutical Business Review*, April 11, 2005, online at: www.pharmaceutical-business-review.com/article_feature.asp?guid=C75FB80A-75D3-4948-8854-2B50AB8742BF

10. Most royalties, at least early on, will come from other researchers (ultimately, from taxpayers, who have to repay Prop 71). One researcher could use Proposition 71 funds to develop and patent a process or a cell line that will be useful to other stem cell researchers. These other researchers may then include line items in budgets in their own Proposition 71 grant proposals, thus indirectly enriching the first researcher. This creates a churning of Proposition 71 funds within the research community before any cure is ever created.

11. See section B(h), "Patent Royalties and License Revenues Paid to the State of California," in "Text of Proposed Laws, Proposition 71," Voter Information Guide, California General Election, November 2, 2004, p.149.

12. This discussion does not mean to suggest that all bioethicists have financial ties to biotech commercial interests. Rather, the intention is to indicate that those bioethicists most inclined to speak out in favor of pursuing research agendas despite unresolved controversy about those agendas seem to have such ties. (Elliot 2001, 2003; Stolberg 2001; Brower 1999).

13. For a cautionary tale see, (Gilbert 2001).

14. See www.allianceagainstprop71.org for a list of pro-choice signatories on a website declaration against the proposition that included some scientists and bioethicists. Unfortunately, this effort to blip the media radar screen, initiated by a small group of pro-choice feminists (including myself) was unsustainable due, in part, to lack of funds and to the unwillingness of most journalists at the time to valorize any criticism of the proposition other than that which denounced the destruction of human embryos for research. This journalistic bias buttressed the uninformed but oft-encountered default position of many liberals: 'if Bush is for it, I'm against it.' An important early exception to this journalistic bias was, (Woodward 2004).

15. See citations listed on, "Fact Sheet on Embryonic Stem Cells," online at: www.allianceagainstprop71.org.

16. Proposition 71 passed in California's November 2004 election by a margin of 59% to

39%.

17. On techno-eugenics see (Hayes 2000). Stuart Newman discusses cloning, stem cell research, embryo gene modification, and chimerism (Newman 2003).

18. In California newspapers, a notable exception was the jointly authored op ed, (Cameron and Lahl 2004), which explicitly discussed Prop 71 as an initiative about human cloning. David Winickoff (Winickoff 2004) penned an op ed which referenced the connection to cloning. To my knowledge, no other bioethicist clarified in a California newspaper that Prop 71 had implications for human cloning. None discussed how somatic cell nuclear transfer, (also known as human embryonic cloning or research cloning) was the gateway technology to inheritable genetic modification. (Although he did not reference cloning or inheritable genetic modification, Daniel Callahan (Callahan 2004) offered Californians an op ed critical of Prop 71.

19. “In order to ensure that institute funding does not duplicate or supplant existing funding, a high priority shall be placed on funding pluripotent stem cell and progenitor cell research that cannot, or is unlikely to, receive timely or sufficient federal funding, unencumbered by limitation that would impede the research. In this regard other research categories funded by the National Institutes of Health shall not be funded by the institute.”(*Official . . .* 2004, p. 152). See also, “Pluripotent stem cells may be derived from somatic cell nuclear transfer or from surplus products of in vitro fertilization treatment when such products are donated under appropriate informed consent procedures. Progenitor cells are multipotent or precursor cells that are partially differentiated, but retain the ability to divide and give rise to differentiated cells.” (*Official . . .* 2004, p. 147). (Note that it is highly unlikely that the average reader could have had even an inkling that these passages were making any reference at all to anything involving an embryo or

cloning.)

20. Pun acknowledged if not intended.

21. “Clearly, what will occur at Stanford’s Institute for Cancer/Stem Cell Biology and Medicine does not involve cloning human embryos, that is, placing nuclear transplant pseudo-blastocysts into a woman’s uterus....Hopefully, the press will portray further scientific research in a more accurate light. Dr. [Irving] Weissman is not taking any more chances, however. In the future he will work much harder to ensure the press understands the issues by spelling out exactly what is planned and why, including any tricky issues such as nomenclature.” (Beverly 2003, p.

30.) [Note: presumably a “pseudo-blastocyst” is one they do not intend to implant where “authentic blastocyst” – also referred to in the article – is one that would be intended for transplantation. But, compare, “Whether or not a scientist or physician intends to implant a cluster of cells does not determine whether or not it is an embryo. If it is a cluster of liver cells, for example, the intention to implant it does not make it an embryo. Correspondingly, if it is a blastocyst capable of giving rise to embryo stem cells, the lack of intention to implant it does not cause it not to be an embryo” (Newman 2004, p. 3).]

22. As Newman puts it, “Until Stanford University decided in the last year to stop using the terms “embryo cloning” and “cloned embryos” to describe the technique of producing human embryos by nuclear transfer and the products of this technique, these were the terms used virtually exclusively by scientists for these items. The term “cloned embryo” is still the term of art in this field of research for the products of nuclear transfer” (Newman 2004, p.2). A

Medline search using this phrase turned up 42 uses of this term in article titles or abstracts during 2003-2004. In 2003, Ian Wilmut, the first scientist to clone a mammal, published an editorial in the journal, *Cloning and Stem Cells* titled Human Cells from Cloned Embryos in Research and Therapy.”

23. Proposition 71 defines “human reproductive cloning” as: “the practice of creating or attempting to create a human being by transferring the nucleus from a human cell into an egg cell from which the nucleus has been removed for the purpose of implanting the resulting product in a uterus to initiate a pregnancy.” (*Official . . . 2004*, p.154). By contrast, the term “research cloning” is meant to suggest that clonal embryos will be created for research purposes only and not for the purpose of implanting them in a woman’s uterus. The initiative, however, never uses the term “research cloning” anywhere, preferring instead to describe the processes used to derive pluripotent stem cells.

24. See notes 26 and 27, below.

25. Stem cells may be extracted from unused IVF (*in vitro fertilization*) embryos. To extract stem cells from clonal embryos, however, eggs are required first in order create the clone from which the cells may be derived. These eggs typically are extracted from women after placing them on leuprolide acetate (more commonly known as Lupron.) Because the long term health effects associated with use of this powerful hormone are unknown, it is not possible to give women a satisfactory informed consent. “More careful and long term research is needed, especially regarding the risks of...Lupron...commonly used to shut down a woman’s ovaries

before using super-ovulating drugs for hyperstimulation. As of the spring of 1999, the FDA had already received 4228 reports of adverse drug events from women using Lupron. Of these reports, 325 involved hospitalization... 25 deaths were reported” (Beeson 2004). Additionally, Proposition 71 allows for egg “donors” to be “reimbursed of expenses.” At IVF clinics payments run \$5,000-\$10,000, leading critics to refer to egg donation as “egg buying” and presenting the ethical quagmire that Prop 71 will lead to a largely rich man’s war but a poor woman’s fight. For more information see (Norsigian 2005).

At the time of this writing California’s Democratic Senator Deborah Ortiz (originally a supporter of Prop 71) and Republican Senator George Runner were introducing legislation seeking a moratorium on multiple egg retrieval for SCNT (Mecoy 2005).

26. The relevant section in the Rebuttal Against the Argument in Favor of Proposition 71 in the November 2, 2004 *Official Voter Information Guide*, reads:

“Stem Cell Research? YES! Human Embryo Cloning? NO! Here are just some of the many problems with Proposition 71: It specifically supports “embryo cloning” research also called “somatic cell nuclear transfer” which poses risks to women and unique ethical problems. To provide scientists with eggs for embryo cloning, at least initially, thousands of women may be subjected to the substantial risks of high dose hormones and egg extraction procedures just for the purposes of research. In addition, the perfection of embryo cloning technology – even if initially for medical therapies only – will increase the likelihood that human clones will be produced.” (*Official . . . 2004*, p. 72)

(Although I was one of three signatories on this statement, the text was the joint effort of a larger

number of prochoice feminists. The other two signatories were Judy Norsigian, Executive Director, Our Bodies Ourselves, and Francine Coeytaux, Founder, Pacific Institute for Women's Health.)

27. The court demanded of the Rebuttal only that one change be made, from “thousands of women *will* be subjected to substantial risks” to “thousands of women *may* be subjected to substantial risks.” See, (Berg et. Al. 2004).

28. See, California Secretary of State website: <http://cal-access.ss.ca.gov/Campaign/Measures/>

29. Chimerism is the creation of organisms by combining genes from two different animals, or from a human and another animal. On stem cell research and chimerism see, (Newman 2003; Shreeve 2005).

30. This is not to suggest that there is, today, no glimmer of a responsible science movement; only that the legal, political and economic developments spurring the growth of biotechnology as a commercial enterprise have created an environment much more hostile to its efforts. For examples of scientists operating within the tradition of the responsible science movement consider the efforts of New York Medical College cell biologist Stuart Newman (Weiss 2005), and microbial ecologist Ignacio Chapela (online at www.tenurejustice.org/Index.html).