

GENETIC ENGINEERING PROTECTS WOMENS REPRODUCTIVE CHOICES

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1: Life extension - Wikipedia

Genetic engineering threatens women's reproductive choices / Judith Levine -- 6. Genetic engineering protects women's reproductive choices / George Dvorsky -- 7. Cloning could save endangered species / Robert P. Lanza, Betsy L. Dresser; and Philip Damiani -- 8.

But make no mistake, human trait selection is coming. The resulting embryos were destroyed, but the achievement raised alarm bells among many scientists and ethicists. It was particularly significant because the scientists performed germline modifications, which means the edits would be heritable, i. So this is good news. Science will be allowed to move forward. Acceptable Work The committee agreed that basic and preclinical research should proceed. Once the appropriate oversight is put into place, the committee saw no reason to prevent work in the following areas: Developing technologies for editing genetic sequences in human cells Identifying potential benefits and risks of proposed clinical uses Understanding the biology of human embryos and germline cells The caveat: The gene editing committee also reaffirmed the practice of genetically altering somatic cells , i. Somatic gene editing could alleviate such conditions as cystic fibrosis, muscular dystrophy, certain cancers, sickle-cell anemia, and other genetic disorders. Unfortunately, the effects of somatic cell therapy are often short-lived, and patients require repeated treatments over the course of their lifespan to maintain the therapeutic effect. While they agreed that gene editing could be used to eliminate inherited diseases, they warned that it could also be used to introduce novel or enhanced human capacities, such as extreme longevity, boosts to intelligence, and added physical strength. The committee cited an obligation to consider broader implications, too, when it comes to heritable modifications: Gene editing would also enable our descendants to live healthier, longer lives. Savulescu also said it will finally put an end to the so-called genetic lottery: Some are born gifted and talented, others with short painful lives or severe disabilities. While we may worry about the creation of a genetic masterclass, we should also be concerned about those who draw the short genetic straw. Caplan said that gene-editing might create an even wider gap between the haves and have-nots. Unfounded Fears As MacDonald Glenn explained to Gizmodo, the committee members are hoping to prevent a potential unknown harm, a restatement of the precautionary principle. We most certainly have a moral obligation to influence human evolution with technology. To do otherwise would be to succumb to Darwinian selection, which works off a brutal process of trial and error, and often produces less-than-ideal results. And as MacDonald Glenn explained, the very fundamentals of medicine would be threatened by a prohibition. It is a quintessential element of compassion that we want to provide comfort and care to those who are ailing. Traits will be selected or discarded according to their efficacy. Parents, working with their doctors, will hew to established guidelines and oversight regimes. Earlier this year, geneticists scanned the genomes of 2, people from around the world, allowing them to map the 88 million ways that humans are genetically different. Reasonable Restraint Despite those objections, the committee did not explicitly rule out the possibility that gene-editing in humans will be allowed in the future: The international community should strive to establish norms concerning acceptable uses of human germline editing and to harmonize regulations, in order to discourage unacceptable activities while advancing human health and welfare. We therefore call upon the national academies that co-hosted the summit to take the lead in creating an ongoing international forum to discuss potential clinical uses of gene editing; help inform decisions by national policymakers and others; formulate recommendations and guidelines; and promote coordination among nations. This is exceptionally well said, and extremely encouraging. The gene-editing committee could have very easily gone the other way, and set the United States back in this critical area of research. Now, over the course of the next few years and decades, we can expect to see the kinds of scientific advances that will result in safe, effective, and accessible genetic interventions.

2: Free to Experiment? - Futurisms - The New Atlantis

Genetic engineering protects women's reproductive choices -- George Dvorsky Cloning could save endangered species -- Robert P. Lanza, -- Betsy L. Dresser, -- Philip Damiani Cloning may not be enough to save endangered species -- Ellen Goodman.

The year-old mother already has six children, aged seven and younger, one of whom is autistic. She is an unemployed student ironically, with a degree in child and adolescent development and lives with her parents who recently filed bankruptcy in a square foot three-bedroom house. All her children were conceived by IVF. Her mother, the grandmother of the babies, reports that her daughter is "obsessed with children" and was "just hoping for one more daughter. Will the octuplets be the tipping point toward serious consideration of regulation for the assisted reproduction industry? Here are some comments reported in the media: The professional organizations should take a stricter line with doctors and clinics, he said. Currently, we have a laissez-faire attitude towards ARTs and fertility clinics; we have trusted the doctors and clinics to regulate themselves, via the American Society for Reproductive Medicine - and this case demonstrates that we can no longer simply turn a blind eye. This is an outrageous situation that should not happen. Geeta Swamy , assistant professor of obstetrics and gynecology at Duke University: A number of commentators are saying a woman with six kids should not be allowed medical treatment to have additional ones, and I think, at a common sense level, that makes good sense. However, to make that work, that means someone is going to start deciding for other people how, when and why they can have children. To put this many embryos back in a woman who is so young and had proven fertility is completely irresponsible. What I would check if I had the time is the extent to which coverage of this story - whether negative or positive - is framed as a question of ethics. Would we write laws mandating selective reduction? Are we saying that doctors should decide which women are desirable for IVF treatment and which are not? She had no right to deliberately conceive octuplets, however, and it is a misunderstanding of reproductive rights to claim that she did In the rush to protect abortion rights, people should not ignore the rest of medical ethics. The right to end a pregnancy does not confer the right to begin one using artificial means. The right to selectively reduce a multiple pregnancy does not confer the right to create a multiple pregnancy of any number of embryos. The "right to choose" is the right to choose to terminate a pregnancy; it does not confer a right to choose anything, even if it is a reproductive choice. In this case, the fertility clinic that performed the procedure failed to exercise both restraint and common sense. This needs to change

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3: Sentient Developments: Most people favor reproductive technologies -- but not sex selection

Genetic engineering protects women's reproductive choices / George Dvorsky 7. Cloning could save endangered species / Robert P. Lanza, Betsy L. Dresser, and Philip Damiani.

How Self-Replicating Spacecraft Could Take Over the Galaxy Forget about generation ships, suspended animation, or the sudden appearance of a worm hole. The most likely way for aliens to visit us " whatever their motive " is by sending robotic probes. Given enough time and patience, a single self-replicating probe SRP could produce millions upon millions of offspring; it would be like a massive bubble expanding outward into the Galaxy. Physicist Michio Kaku describes Von Neumann probes as " the most mathematically efficient method to explore space: A dead moon rather than a planet makes the ideal destination for Von Neumann probes, since they can easily land and take off from these moons, and also because these moons have no erosion. These probes would live off the land, using naturally occurring deposits of iron, nickel, etc. They would create thousands of copies of themselves, which would then scatter and search for other star systems. In order to work, a von Neumann spacecraft would have to tap into advanced nanotechnology and artificial intelligence " technologies that advanced extraterrestrial civilizations are likely to develop. In fact, the device itself would be a molecular assembler, capable of reconstituting matter into copies of itself, which is why SRPs are also referred to as kinematic self-replicating machines. And indeed, these probes would be remarkably efficient. The slingshot effect would carry little-to-no extra cost and result in a fold increase in efficiency; models show that this technique could be used to send probes to every solar system in the galaxy in as little as 10 million years! The probes would collect matter, like dust and gas, from the interstellar medium as they traverse vast distances. Exploration probes would be designed strictly for space exploration and surveillance some of it even covertly ; these autonomous devices would not contact or interact with other intelligent civilizations. Exploration probes could remain local to a solar system so-called Astrochicken probes , or they could be sent on interstellar missions to explore and transmit their findings back to the home planet. These SRPs could study foreign solar systems in exquisite detail " and even alert the folks back home about the presence of extraterrestrial life. These probes could also act as stationary reconnaissance stations. SRPs could take residence in a data rich area and continuously beam that information back to the home planet " and all without ever being detected. And being von Neumann probes, they could spread exponentially. Bracewell probes The current SETI strategy of targeting stars and listening for radio signals has an extremely slim chance of success. That said, given the assumption that civilizations want to communicate with us, a more efficient way for them to make contact would be to disseminate self-replicating communication probes across the Galaxy. Image via David Darling. Bracewell who thought of the idea back in , these devices would work as an alternative to interstellar radio communication between widely separated civilizations. This strategy only makes sense given the inefficiency and weakness of radio signals emitted from the source planet. He argues we should be checking the mail instead of waiting for a phone call. Multiple Bracewell probes could also be set up as a distributed array of communication relay stations. In this story, a dormant Bracewell probe was lying in wait in the Vega system. It began to transmit a strong signal after it received a radio signal from Earth. Projects like Dyson Spheres, Ringworlds and Alderson Disks would require fleets of specialized and artificially intelligent probes working in concert to construct these truly massive structures. The most sensible way to construct and disseminate these probes would be through self-replication schemes. Megascale structures will require a horrendous amount of material. So, SRPs could be put to work as mining machines that dig-out and transport matter across vast distances. Ideally, these probes would be programmed to work together and take advantage of swarming intelligence and emergent properties. Colonization Probes As noted, molecular assembling nanotechnology will make it possible for probes to go about interstellar colonization. Such settlers would likely be uploaded consciousness patterns. This would obviously require an incredibly sophisticated mind emulation scheme, powerful artificial intelligence, and advanced supercomputing. Ideally,

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these consciousness patterns would be able to migrate to a robotic body for corporeal investigation of the environment. The number of settlers in any given location could be significant, limited only by computational resources. Colonization probes, sometimes referred to as seeder probes, could also perform double-duty as terraformers. Uplift probes Probes could also work to transform and "uplift" other civilizations and their citizens. In the story, these probes endowed primates with the capacity to use tools, and later, the human David Bowman was transformed into the next stage of evolution, the so-called Star Child. Also conceivable is technological or civilizational uplift in which an extraterrestrial intelligence brings an entire civilization up to its own advanced level. Motivations for doing so could involve meta-ethical imperatives meant to reduce suffering, to prevent civilizations from destroying themselves, or to ensure the safe onset of non-threatening post-Singularity intelligences. Or, it could be part of their plan to take over the Galaxy. Uplift probes could quickly bring a civilization to a post-Singularity, postbiological condition. Such a force might appear as a colonization wave that sweeps across the Galaxy, transforming all that it touches into computronium. Such a scenario has been projected by such thinkers as Hans Moravec and Ray Kurzweil. Berserker probes Unfortunately, we need to be on the lookout for malevolent probes, what Fred Saberhagen dubbed Berserkers. Just as an intelligent civilization could use self-replicating probes to spread life across the Galaxy, another misguided or evil civilization could do quite the opposite and destroy everything. Berserkers could also be mutated SRPs that are running amok. To prevent this, responsible ETIs should implement failsafes that immediately shut-down replication in the event of data corruption. Berserking SRPs could be disseminated with the sole purpose of sterilizing every planetary system it encounters, forever eliminating the possibility for life to emerge and evolve. By using a scorched galaxy policy, a civilization could sterilize the Milky Way in as little as 10 million years. Alternately, berserker probes could be disbursed across the entire Galaxy and lie dormant, patiently waiting for signs of intelligence. Berserkers could also work to stamp out intelligent life that it deems dangerous. In one scenario, an advanced civilization or Galactic club could monitor for potentially dangerous post-Singularity artificial superintelligences and quickly stamp them out of existence. Futurist Anders Sandberg has devised an idea for anti-berserker policing probes " devices that would be on the lookout for malevolent SPRs of any kind and take action. Civilizations might want to establish quarantined areas; policing probes would ensure that nothing gets through the defenses and ensure the integrity of a specified region. Xenophobic civilizations might want to set up quarantined areas to prevent memetic infection, to protect themselves against invasions or intrusions, or simply due to a fear of the unknown. The best way of stopping a replicator, argues Sandberg, is to nip it in the bud. To do so, an advanced civilization would require widespread surveillance and enough power to deal with possible threats. And because replicators could emerge outside a given region of control, a civilization would want to have widely stockpiled defenses. The easiest way of doing this? Yup, you guessed it: So, where are all the probes? Carl Sagan and William Newman came up with a different answer. They were convinced that Tipler had it all wrong and that all this talk of probes was sheer poppycock. In their paper, " The Solipsist Approach to Extraterrestrial Intelligence ," they calculated that von Neumann probes, should they exist, would eventually start to consume most of the mass in the Galaxy. They concluded that intelligent civilizations would never dare construct such probes and would try to destroy any such device as soon as it was detected. Probes with even a modicum of AI and smart programming could be programmed to stop after a certain reproductive threshold has been achieved time-to-produce schemes, maximum number of iterations, etc. All it would take is just one. One of the interesting things with police probes is that it makes strategic sense to announce that they are around to civilizations that might "break the law" " yet not reveal exactly how strong they are or what their modus operandi is. And the process of making police probes will likely be indistinguishable from making other replicators. Consequently, there might be a race to set up the first interstellar police force. At any rate, the reason for the absence of any kind of probes remains a mystery. Follow me on Twitter: This article originally appeared at io9.

4: DESIGNER BABIES | 'SEARCH TERMS'

Authors share their views about the risks and benefits of genetic engineering, presenting information on genetically engineered crops, the regulation of genetic engineering, and the impact of cloning on society.

Just a friend of transhumanists. There may be an article about space advocacy or something where Wikipedia could make better use of it. It took a little time since my patience runs out when someone has to resort to name-calling so as not to engage the positions of people he disagrees with. I agree with the parts about making technology more widely available, though I would focus more on clean water and healthful food. I would also want to reverse some of the marvels of technology, like high fructose soft drinks India is now experiencing the benefits of this and cattle pastures supplanting South American rain forests. As for the issue of focusing on the problem of high fructose soft drinks rather than human genetic engineering, he ties them together. All good ideas, and corporations are certainly eager to make profits by first helping us kill ourselves and then by fixing us back up. But the basic cause of obesity is that we have bodies designed to spend hours walking around the savanna every day, and brains that find easy access to fats, sugars and carbohydrates irresistible. Only safe and cheap genetic and pharmaceutical therapies can successfully stop the deadly world-wide rise of obesity. I must have missed this part. He was referring to fact that for adults "more than sixty pharmaceutical treatments to alter metabolism or reduce appetite are being developed, based on more than genes that been discovered to regulate weight in humans. The gene or drug tweaks that keep us slim will likely be much simpler, modifying just one of those chemical pathways". As for the savannah comment, I neglected to quote the part where Hughes pointed out that beyond new food technologies, industrial society is also to blame for the obesity epidemic because it allowed us to become less active and encouraged more sedentary entertainment. Are they somatic gene insertions or germline modifications? If the former, what is the target tissue, fat, which would be genetically programmed to melt away? Also, fat, being lipid-rich, with little cytoplasm, would be very hard to engineer. Is there another somatic tissue that would be more suitable for engineering to reverse obesity? This would be a lot easier technically. Embryo transgenesis is more efficient, and the modification is much more likely to have a pervasive effect. Also, it would persist across generations. Embryo modification has its own risks of course -- developmental defects, shortened lifespan, etc. This is unfortunately the case with a lot of bioethicists who discuss genetic technologies. The gene or drug tweaks that keep us slim will likely be much simpler, modifying just one of those chemical pathways. Researchers at the University of Wisconsin-Madison have made mice that can stay slim on high-fat, high-calorie diets by snipping out just one gene, SCD-1, which codes for just one enzyme, SCD, which regulates insulin sensitivity. He also adds that somatic will quickly become germline in any case if people change their spermatogenic genes or eggs. As for other issues you raised, Hughes wrote the following: But we can and should pass laws about what kinds of medical products, services and technologies can be sold. All genetic therapies on embryos, fetuses, children and adults, like all drugs and medical devices, should first pass through animal and the human trials, and be shown to be safe and effective before they are made available to the public. Human cloning and germline modifications should have to show in clinical trials that they do not cause genetic abnormalities in mammals. The first human trials of cloning or genetic modification could be restricted to parents who need to use the technique to have a child because a parent has a serious genetic disease. Then, after observing these first experimental clones and gene-tweaked kids, we could open the technique to all prospective parents who want to use it. The length of time we need to wait to be certain of the safety of the genetic modifications will quickly shrink as we build computer models of the human genome and the proteins and tissue engineering that it codes for. One of the larger in silico biology efforts is the international E. Coli Alliance, which has created a computer model of the single-celled organism and how its genes work together to create the organism. Now they can begin tweaking it in computer simulations. With the exponential progress in gene scanning and computing power, a virtual model of genetic expression in the human body will not be far behind. Humans are only one order of

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magnitude more complex than E. We are already testing virtual drugs against virtual tissues. The firm Entelos in California has built a virtual asthma patient using equations that model biological parameters relevant to asthma such as the effect of bronchial inflammation and the thickness of vast database of clinical trial data, so that pharmaceuticals companies can use computer-assisted trial design to estimate best dosages and likely outcomes of trials. So we will soon be able to speed up approval of gene tweaks by simulating their effects on virtual humans. Artificial chromosomes may also turn out to be a safe alternative to existing genetic engineering techniques. Francis Fukuyama told Salon. Any appeal to the dangers of germline modification beyond adolescence, not to mention hypothetical anxieties about effects on the next generation, are absurd since future generations will be upgrading whatever genome they get from their parents. Indeed, from the most recent papers you can see just from internal evidence in the summaries that even the scientists acknowledge that the SCD protein has multiple effects, some health enhancing and some health impairing. Please forgive me, but what a load of crap! Since Hughes is one of the select few transhumanists who have taken the time to provide serious answers to most ethical and social issues related to human enhancement technologies, he deserves to be heard. However, I strongly disagree with him on many issues such as uplifting animals. By the way, you should know that I am only pitting you against him to learn from you both in order to possibly improve the article. It also seems from what you have provided that Hughes is advocating moving to experimental human germline manipulation for offspring of people who have certain genetic conditions. In any case, I appreciate your collegial remarks. In a chapter unrelated to the obesity question, he was talking about what he thinks might be appropriate in a few decades. That being said, whether or not you are right about obesity-related genes, Hughes argues that obesity is far older than and that we are getting fatter because people everywhere use far fewer calories in movement than our ancestors, and have access to far more food. No program of diet and exercise has stemmed the tide of obesity. The UN just acknowledged that there are now more obese people in the world than malnourished ones. Since the tendency towards obesity is on a bell curve and genetically inheritable, then it makes sense for some part of the population to change their metabolism genes. For others it would probably make more sense to use drugs or nano-neural machinery to modulate metabolism or appetite. That would allow more finetuning. It would be a great quote to use in Eugenics Wars argument specter of old eugenics! Any provocation pales into insignificance compared with the rhetoric used by the other side. Compared to Leon Kass, Hughes is a model of cool analytical reason. When I saw Annas and his team in action at the World Bioethics Congress a couple of years back I was genuinely shocked at the self-importance and arrogance that they displayed in the way they treated any whisper of dissent. None of what Metamagician has said in this last post bears on the question of whether Hughes understands the science. Annas, in fact, writes a long-standing column for the New England Journal of Medicine, whose editors and readers are not averse to medical science and its applications. I just clicked on the last reference, and was shocked to find that it led to a porn site. Someone please fix this before I vomit at the integrity of this. The first Transhumanist Arts piece was made into a high 8 mm film. Bring the two themes together. Or would it be more specific things, like the ability to upload fighting skills to their brains that represent transhumanist ideals? The Coming Era of Nanotechnology, [1] which discussed the prospects for nanotechnology and molecular assemblers, and founded the Foresight Institute. As the first nonprofit company to research, advocate for, and perform cryonics, the Southern California offices of the Alcor Life Extension Foundation became a nexus for futurists. Not all these activities were explicitly concerned with "transhumanism", but some of the involved individuals eventually had a pioneering role in the movement. Although Alcor became a nexus for futurists, was it a nexus for transhumanists? What are activities explicitly concerned with transhumanism? Who are these individuals who eventually had a pioneering role in the movement? All that is just a vague impression that I have, and which may be wrong. It may have come from George Dvorsky way back when the article was first written. However, I still question whether or not Drexler and his work should be identified as transhumanistic even if it technically is. I just thought it a little odd that there are mainly positive comments about Transhumanism while Eugenics is being demonized so much.

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Especially if we consider that they both stand up for the same exact idea of improving mankind Is it simply because of the fact that the term " eugenics " is tainted because of its abuse by Nazism? I disagree that there are mainly positive comments about transhumanism in light of the extensive criticisms section. I think the Eugenics Wars counter-argument answers your question quite well. However, I think a major difference is that if it were shown that the use of genetic engineering to improve humans was too dangerous or impossible, transhumanists would simply focus on technologies which do not have eugenic implications such as cybernetics and nanotechnology. DrDisco Eugenics is a specific type of Transhumanism - actual "upgrading" human DNA, either through selective breeding or genetic engineering Or, at the very least, it is all too likely to do those sorts of things. If the officials of the state are operating with a bad scientific theory, or with sheer pseudoscience, the results will be even crazier. Almost all parents have eugenic goals - they literally want to have good births that produce healthy babies, and public policy favours helping them out hence we ban thalidomide, for example , but there is a point at which state-sponsored eugenics is likely to turn into a nightmare and we are right to be suspicious of it. On the contrary, they favour strong protections to keep any decisions to improve the health and abilities of children in the hands of parents. Although libertarianism is theoretically neutral between the politically left and right, in the U. So, in this model, people will demand genetic engineering for their offspring just as they demand sports utility vehicles on their highways, trans fats, high fructose corn syrup and hormones in their foods, and breast implants for themselves and their daughters. Because libertarians may be in my view correct about X e. Even if the state were controlled by someone as intelligent as StN, I would rather trust my own judgment, influence of advertising and all, on these personal matters. Except in certain cases -- I like automobile seat-belt and motorcycle helmet laws. But germline genetic engineering is doing something to someone else, not oneself. But so do all transhumanists, as far as I know. No one is arguing that the state should not take steps to ban thalidomide or even to ban or otherwise discourage reproductive cloning - provided it is on the same grounds, i. But this is not what the debate about transhumanism is about. The fear is not that transhumanists will end up having deformed children; it is that they will end up having, for example, super-intelligent, super-disease-resistant children. If the state is going to prevent that it seems like it is either claiming to know better than the parents or claiming that there will be some cumulative intangible harm to society if such kids are allowed to be born arguable, but a dangerous argument when we consider the vast range of things that just might cause some cumulative intangible harm if they are allowed.

5: Egg and Sperm:

Authors share their views about the risks and benefits of genetic engineering, presenting information on genetically engineered crops, the regulation of genetic engineering, and the impact of cloning on society. Genetically engineered crops can help people in developing nations -- Dennis T. Avery.

Here are 10 possibilities. Some theorists, such as George Dvorsky, argue that we have a moral imperative to raise other species to our level of intelligence once we possess the technological means to do so. The human monopoly on sentient thought gives us an unfair and unjust advantage over our animal neighbors, and if the means exist to allow non-humans like apes, dolphins, and elephants to achieve the cognitive means of political participation, it is our moral duty to extend it to them. Alex Knapp believes that the costs in terms of animal life would be too high to justify it. In order to uplift a species, it would be necessary to make changes to the DNA on an embryonic level, leading to inevitable failed attempts before we got it right. Then there is the question of how to ensure that a successfully uplifted embryo would be gestated. Such experimentation would be morally wrong, with the potential for intelligent animals suffering physical abnormalities and early death due to human meddling. Even if successful, human beings would have no way to cope with the social and emotional needs a sapient chimpanzee, bonobo, or parrot would have. In other words, uplifted animals could be left emotionally traumatized due to ham-handed attempts by humans to raise them. Some argue that intelligent self-awareness is an ecological niche that can only sustainably hold a single species, explaining why the Neanderthals and our other human cousins were wiped out and assimilated. Creating intelligent animals could create evolutionary competition for humanity by potentially traumatized creatures with mental processes and value systems that we may not even be able to comprehend. Most would argue that this would be a bad thing, but not everyone agrees. Travis James Leland argued that the emotionless, sterile picture of the Borg is just Luddite propaganda, and a step toward collective intelligence could just as likely lead to happiness and freedom for individuals within the hive. Indeed, one of the reasons we connect through the Internet and social media is to become closer and more connected as a species, which is surely a step toward a collective. We are already able to send video, audio, and motor control information between the brain and the Internet through electrodes, and the information bandwidth required for a hive mind is theoretically possible as well. The technological infrastructure used for modern telecommunications and wireless Internet could be further developed for neural interfacing, though initially it would be of extremely low fidelity and difficult to use. There could very well be advantages to a hive mind consciousness, insofar as it would essentially become a superhuman entity capable of achievements beyond the scope of individuals. The ability to coordinate for mass projects would be enhanced, planning for complex goals would be more efficient, and human beings would grow closer to understanding one another. Of course, there are a number of downsides as well. Along with the existential fear of the loss of individual identity to the mass consciousness, there are threats of viruses and hackers in the system in early stages, not to mention worries over who exactly will control the technology: An emergent hive mind from social media is a different beast than a hive mind of soldiers and secret police developed by the military-industrial complex. He sees a fundamentally dangerous aspect of attempting to improve on our basic humanness. It is all those qualities coming together in a human whole that make up Factor X. Access to genetic modification technology could lead to the rise of genetic castes and erode our common humanity, as the wealthy would be able to create designer babies with significant advantages over the less genetically fortunate masses. Fukuyama is a conservative, but many on the left have similar fears. However, still others argue that parents should have the right to select advantageous physical and intellectual traits for their children based on reproductive rights and the natural duty of parents to do what is right for their children. This could include selecting for IQ, height, gender, and even skin color. The science of designer babies already exists in pre-implantation genetic diagnosis and in vitro fertilization, which enjoy widespread support for safeguarding against genetic diseases. Some fear that banning the technology over fears of genetic

castes might exacerbate the problem, as the wealthy will still be able to go to a country without a ban on designer babies. The atoms being moved around by the manipulators would get stuck to them with no feasible way to unstuck them. One solution to the threat of gray goo is another form of nanotechnology that would perform a beneficial role: These would be self-replicating police nanobots designed as a defense against autonomous and misbehaving gray goo. If the blue goo was subverted or overpowered by the gray goo, however, it could very well end up turning against us as well. Other potential limits on the spread of gray goo include limited replication capacity, wide dispersal, energy and chemical element requirements, or the use of rare elements such as titanium or diamond in constructing molecular assemblers. There are two forms of theoretical AI: The tasks these AIs perform are achieved in ways bearing little resemblance to human thinking patterns. Strong AI is designed to mimic human intelligence in reasoning, planning, learning, vision, and natural language conversations. Proponents for strong AI hope to achieve singularity, a point in which machine intelligence matches and exceeds human intelligence, after which technological progress will rapidly accelerate and we will be unable to predict or even comprehend the future development of civilization. Entrepreneur Elon Musk is vocal about the risks of artificial intelligence: It is sort of like the Monty Python thing: Nobody expects the Spanish inquisition. Bill Gates has expressed concern, and even Stephen Hawking sees reasons to be worried: But I think the development of full artificial intelligence could spell the end of the human race. Once humans develop artificial intelligence it would take off on its own and redesign itself at an ever-increasing rate. These ideas likely sprang from experiments in the 1950s when James Olds placed electrodes in the mesolimbic dopamine pathways of rats. The rats would ignore food and sleep in lieu of self-administering bursts of instant pleasure until they died of starvation. This is the dream of the so-called Abolitionist project, which seeks to combine wireheading, designer drugs, and genetic engineering to create the perfect society. However, mere orgasmic happiness would likely lead to global extinction given the track record, so it would have to be modified. A wearable technology known as Thync allows you to alter your mood and state of mind for calm or energy without the side effects or addiction of pharmaceuticals. The technology is based on transcranial direct-current stimulation, or tDCS, a low-cost way of sending electric current to the brain to improve intelligence, learning, vigilance, and memory. However, some futurists have raised fears of another form of mind-altering technology: This technology can be used to stimulate psychopathy by temporarily turning off that part of the amygdala which processes fear, giving the confidence of alcohol intoxication without the loss of clarity. The fear is that meddling with the human brain may create a future where humans are not only able to adjust their mood at will, but also able to turn off their capacity for fear and empathy when convenient. While these beings may or may not be genetically identical to modern humans, their emotional and social worlds may very well become utterly alien. These networked intelligences would be able to share knowledge and experiences much more readily than we can, leading to massive changes in the concepts of identity and personality, much like the hive consciousness discussed earlier. Not limited by physical bodies, these entities would find many human notions alien and irrelevant, perhaps even quaint. The term is also used to describe the process of uploading human minds onto computers to create backups of the human brain. There are many potential issues with mind uploading as a means of transcending the bounds of our human form. There are also ethical problems in developing the technology. For example, we would never be able to tell if it really worked: How can we know whether uploaded minds are truly conscious, or just mimicked copies behaving like an individual with no real internal mental state? The threat of abuse and manipulation of infomorphs is also a major concern. This technology has been used to create glow-in-the-dark mice as well as Glofish, fish which have been genetically altered with luminescent colors. The technology has been used in attempts to revive the woolly mammoth, and there are debates over whether to use transgenic primates to study the human condition. There is also the prospect of transgenic humans, who would benefit from genetic advantages borrowed from other animal species. Producing transgenic humans would require a number of steps. A suitable transgene would need to be isolated and promoted to express in the right way at the right time, then placed inside a human cell grown in tissue culture. A nucleus from the

transgenic human cell would need to be placed in an enucleated egg cell, then allowed to grow and divide. The now-developing embryo would be placed into a womb to come to term. The technologies needed to achieve all these steps are already available, and human and non-human genes have already been mixed through byproducts of in vitro and stem cell research. Some argue that the use of transgenes to modify humans can open up abilities conferred by nature onto other animal species, like sonar, acute senses, and the ability to photosynthesize or produce our own essential nutrients. The potential value would be greater than any concerns regarding human dignity, which is tied to our ability to reason rather than our genetic integrity. We could borrow genes from chimps to increase the efficiency of our muscles and performance on memorization tasks and strategic planning. But the implications are equally scary. But science marches on, and in years, the world could be full of humans with a touch of chimp, bat, octopus, or mouse. They were speculating on ways to enhance unconscious self-regulatory control functions through chemical or electronic means in order to permit humans to better survive across varied environmental conditions, with the ultimate goal of making humans better able to explore the cosmos. The purpose of the Cyborg, as well as his own homeostatic systems, is to provide an organizational system in which such robot-like problems are taken care of automatically and unconsciously, leaving man free to explore, to create, to think, and to feel. Zoltan Istvan, founder of the Transhumanist Politic Party, promotes a platform of heavy government spending on the development of artificial hearts and cranial implants designed to alert health authorities to a crisis and reduce crime rates. Another DARPA initiative with the potential for civilian application or horror is the development of artificial chromosomes. A name for a future merger of man and machine has been proposed: The concept was first explored in fiction by Olaf Stapleton in his book *Last and First Men*, which explored the rise and fall of 18 distinct human species over the next two billion years and our eventual migration from Earth to Venus. An *Anthropology of the Future* explored the same concept, in which civilization collapses after years of genetic engineering. Some of humanity escapes into space, only to return a few million years later to discover that man has branched off and evolved into a myriad of usually non-sentient forms in the interim. If human evolution continues, it is possible that there could be multiple human species in millions of years, though many believe it is unlikely. A study by Yale University found evidence that ovulatory characteristics mean that shorter, stouter women have more children, meaning that natural selection is beginning to select for these physical traits. Meanwhile, evolutionary psychologist Geoffrey Miller believes that human evolution will speed up due to modern society being better equipped at sexual selection, as well as the rise of genetic engineering. Cadell Last, a doctoral student in evolutionary anthropology and a researcher at the Global Brain Institute, believes that we may be on the cusp of a new great evolutionary transition, with technology driving us to become a longer-lived species with delayed reproduction and a heavier influence on cultural activities. Speciation into multiple human species is unlikely to happen, because human society is both too widespread and too integrated. Historically, there has been no evidence of an isolated group of humans going through the Galapagos scenario of speciation. However, if humanity expands to other planets and star systems, the potential for the rise of new human species adapted to different conditions increases, though they will hardly inherit the Earth, unless they come back four million years later with an armada. Which, of course, they would.

6: GENETIC ENGINEERING

Get this from a library! Genetic engineering: opposing viewpoints. [Louise I Gerdes;] -- Authors share their views about the risks and benefits of genetic engineering, presenting information on genetically engineered crops, the regulation of genetic engineering, and the impact of cloning.

The ruling - a result of the efforts of the American Civil Liberties Union in conjunction with the Association for Molecular Pathology, individual women and others - was, of course, not welcomed by the commercial company Myriad Genetics, which during the period when it thought it had its patent rights secured has been pestering genetic health service providers in the US and around the world with their absurd claims by implied threats of massive compensation suits to world monopoly on predictive genetic testing for breast and ovarian cancer, alternatively the cashing in of handsome licensing fees. The University of Utah Research Foundation that held the claimed patent together with Myriad - and that may be assumed to have been cashing in handsomely as a passive partner - should be held equally, if not more, accountable for this attempt to undercut sound business law, decent health care ethical standards, scientific progress and, not least, the health of those people belonging to families burdened by hereditary cancer, whose access to the preventive opportunities offered through genetic testing, and forthcoming advances of medical research, has been undercut. But back to the poverty of Myriad Genetics. To take just one example of this moral morass, Myriad offers predictive genetic testing for hereditary melanoma - a disease for which the actual risk figure is never given at the Myriad website. Clicking this product, you are immediately told that "Changes in the p16 gene increase cancer risk, making a melanoma diagnosis up to 50 times more likely by age 50", which of course tells you absolutely nothing about what risk of melanoma you actually run before the age of 50 if you have the indicated genetic mutation, but for most people convey the impression that a mutation makes your risk of contracting melanoma before 50 an even game. Take a minute or so to read it! Even considering that the people involved in Myriad are presumably not proper clinical doctors if they were, AMA would have revoked their licenses by now, right? Remember that nice graph you just saw? Its Y-axis measures not the actual risk of contracting melanoma, but - again! This message is cleverly conveyed by the sinister manner in which the general population risk figure is illustrated in the graph. That green staple to the right of the tall blue one seems to reach up to the 1 of the Y-axis, right? Have a closer look at the graph: It could be 0. Obviously not Myriad Genetics - or can they really be consciously hiding highly relevant facts from potential customers?? Just to get some perspective, hereditary melanoma is what geneticists refer to as a multi-factorial disease, i. The p16 test offered by Myriad targets just one among many different genes where a mutation may increase the risk for melanoma. This is actually conveyed by this admirably pedagogic right! Scroll down and read the message about the "uncertain variant", there you have it! But just above, Myriad boasts about the "comprehensive" and presumably ridiculously expensive variant of the test, described thus: Again, as close to fraud as you might dare to wander. The "entire encyclopedia" must be read the entire human genome, including all the other genes that may increase the risk of melanoma - right?? So, suppose you test negative in a "comprehensive" test - this is compatible with you carrying any of the other known genetic mutations of other genes that increase the risk of melanoma - what Myriad so handsomely describe as "no increased cancer risk" when explaining what a test result means. Did anyone mention fraud or deceitful behaviour? Hopefully, the ruling against patenting actual genes or naturally occurring genetic mutations will undercut the sour-tasting business of Myriad Genetics and other similar companies. For one thing, as a legal precedent, it has the potential of putting a stop to attempts of making ethically well-motivated and responsibly handled predictive genetic testing offered by national health services - for instance for colon-, breast- and ovarian cancer - unnecessary expensive and thus accessible for more people at risk. From a moral point of view, it is thus most welcome. From a legal point of view as well, since what judge Robert Sweet argues in the ruling, " If Myriad has a unique procedure to detect DNA, they may patent that, of course, but do they? It remains to be seen, but my

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guess is that they use the same state of the art science and technology as does any molecular genetic research lab, and that they knew very well that their only chance to make a buck was attempting the patenting of DNA trick. Patents have the potential of furthering innovation only when all of the basic scientific work has been done until then, the scientific principle of openness, free sharing, access and use of information is far superior , and in the case of human genetics, identifying genes connected to disease-groups is just the first letter of the first name of that long process. Christian and research fellow Daniela Cutas have agreed to guest blog in the coming months].

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7: Genetic engineering | Open Library

Genetic engineering benefits society / Henry I. Miller and Gregory Conko -- Genetic engineering threatens society / Ronnie Cummins -- Human cloning will harm society / Jeremy Rifkin-- The risks associated with human cloning have been exaggerated / James A. Byrne and John B. Gurdon -- Genetic engineering threatens women's reproductive choices.

In the fable, after a lengthy debate between those who believe the dragon is a fact of life and those who believe the dragon can and should be destroyed, the dragon is finally killed. Bostrom argues that political inaction allowed many preventable human deaths to occur. Aging as a disease[edit] Mainstream medical organizations and practitioners do not consider aging to be a disease. Moody, director of academic affairs for AARP , notes that what is normal and what is disease strongly depend on a historical context. Perlman, coined the terms "aging syndrome" and "disease complex" in to describe aging. One view is, this would stimulate pharmaceutical companies to develop life extension therapies and in the United States of America, it would also increase the regulation of the anti-aging market by the FDA. Anti-aging now falls under the regulations for cosmetic medicine which are less tight than those for drugs. Since , investigators have found ways to increase the lifespan of nematode worms and yeast by fold; the record in nematodes was achieved through genetic engineering and the extension in yeast by a combination of genetic engineering and caloric restriction. Longevity gains from dietary restriction, or from mutations studied previously, yield smaller benefits to Drosophila than to nematodes, and smaller still to mammals. From an evolutionary perspective, mammals and their ancestors have already undergone several hundred million years of natural selection favoring traits that could directly or indirectly favor increased longevity, and may thus have already settled on gene sequences that promote lifespan. Moreover, the very notion of a "life-extension factor" that could apply across taxa presumes a linear response rarely seen in biology. Some drugs that are already approved for other uses have been studied for possible longevity effects on laboratory animals because of a possible CR-mimic effect; they include rapamycin , [69] metformin and other geroprotectors. One notable direction of research has been research into the possibility of using the enzyme telomerase in order to counter the process of telomere shortening. Eric Drexler , one of the founders of nanotechnology , postulated cell repair machines, including ones operating within cells and utilizing as yet hypothetical molecular computers , in his book Engines of Creation. Raymond Kurzweil , a futurist and transhumanist , stated in his book The Singularity Is Near that he believes that advanced medical nanorobotics could completely remedy the effects of aging by Hibbs suggested that certain repair machines might one day be reduced in size to the point that it would, in theory, be possible to as Feynman put it " swallow the doctor ". Recently, the US Department of Defense initiated a program to research the possibility of growing human body parts on mice. Dog and primate brain transplantation experiments were conducted in the mid 20th century but failed due to rejection and the inability to restore nerve connections. The use of human stem cells , particularly embryonic stem cells , is controversial. Use of stem cells taken from the umbilical cord or parts of the adult body may not provoke controversy. Some proponents of therapeutic cloning predict the production of whole bodies, lacking consciousness, for eventual brain transplantation. Cyborg Replacement of biological susceptible to diseases organs with mechanical ones could extend life. This is the goal of the Initiative. Cryonics For cryonicists advocates of cryopreservation , storing the body at low temperatures after death may provide an "ambulance" into a future in which advanced medical technologies may allow resuscitation and repair. They speculate cryogenic temperatures will minimize changes in biological tissue for many years, giving the medical community ample time to cure all disease, rejuvenate the aged and repair any damage that is caused by the cryopreservation process. Many cryonicists do not believe that legal death is " real death " because stoppage of heartbeat and breathing "the usual medical criteria for legal death" occur before biological death of cells and tissues of the body. Even at room temperature , cells may take hours to die and days to decompose. Although neurological damage occurs

within 4-6 minutes of cardiac arrest, the irreversible neurodegenerative processes do not manifest for hours. People, particularly children, have survived up to an hour without heartbeat after submersion in ice water. In one case, full recovery was reported after 45 minutes underwater. Resuscitation of a postembryonic human from cryonics is not possible with current science. Some scientists still support the idea based on their expectations of the capabilities of future science. Strategies for Engineered Negligible Senescence and Genetics of aging Another proposed life extension technology would combine existing and predicted future biochemical and genetic techniques. SENS proposes that rejuvenation may be obtained by removing aging damage via the use of stem cells and tissue engineering , telomere -lengthening machinery, allotopic expression of mitochondrial proteins, targeted ablation of cells, immunotherapeutic clearance, and novel lysosomal hydrolases. Genome editing Genome editing , in which nucleic acid polymers are delivered as a drug and are either expressed as proteins, interfere with the expression of proteins, or correct genetic mutations, has been proposed as a future strategy to prevent aging. The basic idea is that our bodies are composed of genes that activate throughout our lifetimes, some when we are young and others when we are older. Presumably, these genes are activated by environmental factors, and the changes caused by these genes activating can be lethal. It is a statistical certainty that we possess more lethal genes that activate in later life than in early life. Therefore, to extend life, we should be able to prevent these genes from switching on, and we should be able to do so by "identifying changes in the internal chemical environment of a body that take place during aging Mind uploading One hypothetical future strategy that, as some suggest,[who? The basic idea is to scan the structure of a particular brain in detail, and then construct a software model of it that is so faithful to the original that, when run on appropriate hardware, it will behave in essentially the same way as the original brain. Some scientists believe that the dead may one day be "resurrected" through simulation technology. Young blood transfusion Some clinics currently offer injection of blood products from young donors. The alleged benefits of the treatment, none of which have been demonstrated in a proper study, include a longer life, darker hair, better memory, better sleep, curing heart diseases, diabetes and Alzheimer. Karmazin has not published in any peer-reviewed journal and his current study does not use a control group.

8: What Will Human Faces Look Like In , Years? Scientists Respond To Future Speculation

In addition, ethicist George Annas has suggested that we need to set up an international criminal tribunal that will ban genetic engineering and xenotransplantation, along with other forms of.

The American Dream Tuesday, July 3, The greatest environmental threat that we are facing is genetic modification. All over the globe, scientists are treating the fabric of life as if it was a playground where anything goes. Behind closed doors, scientists all over the planet are creating some of the most freakish and most bizarre monsters that you could possibly imagine, and very few people seem concerned about it. But the truth is that messing with the building blocks of life is going to have some very serious consequences. Scientists claim that they are making our crops stronger, more productive and less vulnerable to insects. Scientists claim that they can alter our animals so that they are more "useful" to us. Scientists claim that genetic modification is only going to "enhance" humanity. But what if something goes seriously wrong? For example, what if we learn that eating genetically modified food is really, really bad for us? It would be kind of hard to go back now. We have rushed ahead and have created hordes of freakish genetic monsters without ever seriously considering the consequences. Someday, future generations may look back on us and wonder how we could have ever been so incredibly foolish. Frankenfood We were promised that genetically modified crops would enable us to feed the world. The researchers discovered that resistance-conferring mutations in cotton bollworm were three times more common in northern China than in areas of northwestern China where less Bt cotton has been grown. Rootworms are becoming resistant to the toxins grown inside Bt corn, and this is starting to cause major problems in eastern Iowa, northwestern Illinois, and parts of Minnesota and Nebraska, rows of Bt corn have toppled over, their roots eaten by rootworms. But it is happening. Meanwhile, we are also now learning that Bt corn may not be quite as "safe" for humans as we had been promised. They also suggest that the toxin may have come from eating meat from animals fed Bt corn, which most livestock raised in confined animal feeding operations CAFO, or so-called "factory farms" are. These shocking results raise the frightening possibility that eating Bt corn might actually turn your intestinal flora into a sort of "living pesticide factory" essentially manufacturing Bt-toxin from within your digestive system on a continuing basis. If this hypothesis is correct, is it then also possible that the Bt-toxin might damage the integrity of your digestive tract in the same way it damages insects? Remember, the toxin actually ruptures the stomach of insects, causing them to die. But again, there are peer-reviewed published research showing that Bt-toxin does bind with mouse small intestines and with intestinal tissue from rhesus monkeys. Turning Our Animals Into Monsters Scientists all over the world seem to have no problem messing with our animals either. So how did they do this? Well, they inserted human genes into the cows. So those cows are now essentially part human and part cow. Are you disturbed yet? And these are just the things that they are admitting to publicly. Can you imagine what kind of bizarre monsters are being created in private? Sadly, now even human babies are being genetically modified. Recently it was reported that scientists have created babies that have three parents. The disclosure that 30 healthy babies were born after a series of experiments in the United States provoked another furious debate about ethics. Fifteen of the children were born in the past three years as a result of one experimental programme at the Institute for Reproductive Medicine and Science of St Barnabas in New Jersey. The babies were born to women who had problems conceiving. Extra genes from a female donor were inserted into their eggs before they were fertilised in an attempt to enable them to conceive. Genetic fingerprint tests on two one-year-old children confirm that they have inherited DNA from three adults --two women and one man. The implications of this are staggering. Will those babies be allowed to reproduce someday? If so, that genetic material will get into the general population, and once that happens there will be no retrieving it. Scientists all over the globe have also been creating creatures that are part-human and part-animal in an attempt to find cures for various diseases. Scientists have created more than human-animal hybrid embryos in British laboratories. The hybrids have been produced secretly over the past three years

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by researchers looking into possible cures for a wide range of diseases. Who in the world decided that this would be a good idea? This kind of mixing of animals and humans is even happening in the heartland of the United States. On a farm about six miles outside this gambling town, Jason Chamberlain looks over a flock of about 50 smelly sheep, many of them possessing partially human livers, hearts, brains and other organs. What does being "part-human" mean? Is there something fundamental that sets us apart from the animals? If so, when is that line crossed? It is absolutely amazing that more people are not upset about this stuff. That same MSNBC article described some of the other things that scientists are doing with human genetic material. In the past two years, scientists have created pigs with human blood, fused rabbit eggs with human DNA and injected human stem cells to make paralyzed mice walk. Should science be able to do whatever it wants to with human DNA? Are we absolutely certain that all of these bizarre experiments will never have any very serious unintended consequences? If you ever need an organ transplant, you might want to check where the organ is coming from. If you are not careful, doctors might implant an organ from a monster that is part-human and part-pig inside of you. The idea is that humans can be greatly "enhanced" using computers, microchips, nanobots, "micro-machines", genetic engineering and other cutting edge technologies. By merging humans and technology, those promoting transhumanism believe that humans can become much stronger and much more intelligent. They believe that aging, sickness, disease, disabilities, physical suffering and even death can eventually be totally eliminated. But at some point would such "super humans" cease to be human? And what would that mean for the rest of us? These are very important questions. Our world was created with incredible precision and with a natural balance between "the birds and the bees and the flowers and the trees". It is incredibly arrogant to think that we can turn our crops, our animals and even our babies into freakish genetic monsters and that everything will be just fine. We are ripping nature to shreds and we are rapidly destroying the environment that has been entrusted to us. In the end, I am afraid that we will pay a great price for our pride.

9: eugenics | Bioethics Research Library

Genetic technologies will make that possible. But the very tools we will use to achieve these goals will also open the door to the selection for and ultimately manipulation of non-disease-related genetic traits "and with them a new set of evolutionary possibilities.

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The decrease in the purchasing power of money. Gods, Men and Ghosts Yeshiva fundamentalism in the Haredi community in Israel I want Jesus to walk with me How to Afford Your Own Log Home, 5th Care and punishment The cisg: general issues No lawyer and no statesman School failure disorders of learning. The night of the black frost American Foreign Policy Since the Vietnam War Do Unto Others. Then Run Kellers karma by Lawrence Block Trade Rules in the Making New industrial relations? Bluebird in Paradise Cove Red cliffs of Malpara How to Write Better Resumes and Cover Letters (How to Write Better Resumes) A new system of husbandry, from many years experience, with tables shewing the expence and profit of each Foxit er creator Monitoring populations of Shoshonea pulvinata in the Pryor and Beartooth Mountains, Carbon County, Montan Is our county a melting pot? Old New Testaments Concluded Kingdoms Swords (Starfist, Book 7) Layers in the osi model A walkers guide to the Dorset coast path. Visual control of robots The Invention of Racism in Classical Antiquity Contexts, Intertexts, and Hypertexts (Written Language (Written Language) Quitting is leading too Who Gets the Apartment? (Tales from the Back Page (Tales from the Back Page) Hikayat pohon ganja The names of the mountains Library movement and library development in north-east region Marketing concepts and strategies 5th edition Educating engineers designing for the future of the field From the Horses Mouth (Sabrina The Teenage Witch) Reel 780. Warren (E.Ds 114-23 to 114-31), Wayne, Washington, Woodford Fundamentals of flight 2nd edition solutions Separable algebroids