

The Future of Genetic Engineering & Other Emerging  
Technologies:

# *Human & Animal Biotechnologies*



Eric Hoffman  
Genetic Technology Policy Campaigner  
Friends of the Earth  
2010 U.S. Social Forum  
June 24, 2010

# Technologies :

- Animal Cloning
- Animal Genetic Engineering
- Human Cloning
- Human-Animal Hybrids
- Human Genetic Engineering
  - Gene "Therapy"/ Gene Doping
  - Germline Genetic Engineering

# Animal Cloning



- Over 20 animals have been successfully cloned
- FDA approved sale of food products from clones and their offspring – no labeling required (81% of Americans want labels)
- Flawed risk assessment
- Cloning technology dangerous, 95% of attempts fail, many others are seriously ill and die young
- Why clone animals? To carbon-copy successful GE animals

# Animal Genetic Engineering



- Crude and unreliable technology
- Flawed FDA safety review
- Force animals further into broken industrial food system
- “Enviropig™,” Aquabounty Salmon, animals to feel no pain, Goat milk for medicine

# Human Cloning

- Somatic Cell Nuclear Transfer (SCNT), same process used in animal cloning
- No successful attempts although many false claims
- Why? : Replace lost child, grow another person to replace organs, “cure” infertility, embryonic stem cell cloning
- Dangers to individuals
- Ethical concerns



# Human-Animal Hybrids



- “Chimeras” - Combining human and animal DNA in an egg
- Why?: help create more accurate “animal” models for researching human diseases.
- Opens the door to human contraction of diseases previously limited to animals.
- Flouts billions of years of evolution
- Ethical concerns:
  - Redefines what it means to human
  - Human rights – 99% human DNA and 1% animal DNA? What if its 1% human DNA and 99% animal DNA?
- Banned in Arizona, Ohio, & Louisiana



# Gene “Therapy”/Gene Doping

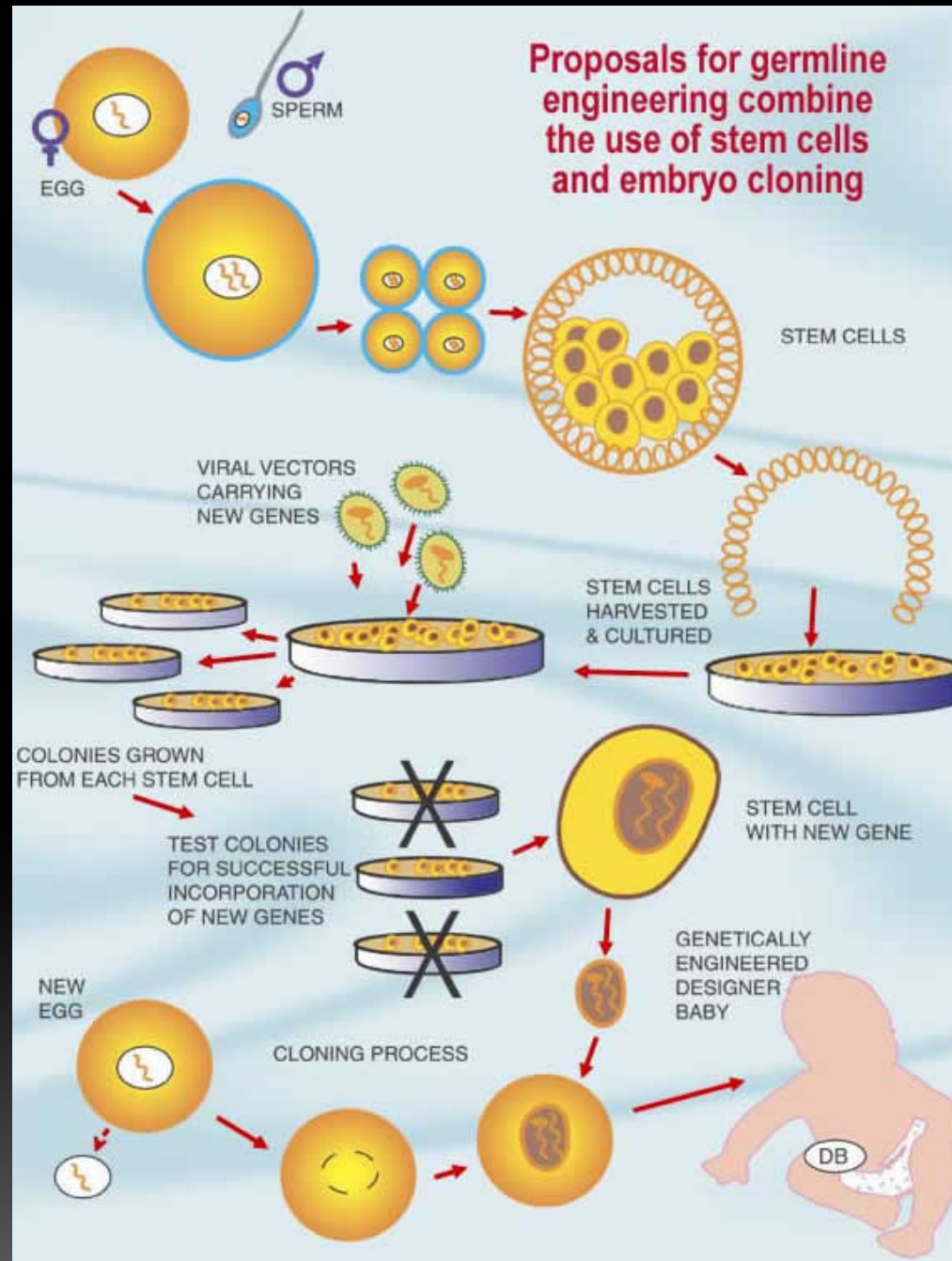
- Multiple deaths have been reported since the first gene therapy experiment in 1990
- Gene doping used in sports to create stronger/faster/etc athletes
- Banned in Olympics (World Anti-Doping Agency) and in U.S. amateur athletic competitions
- Who can afford? What makes a human “better?”
- Would not spread genes to offspring



# Germline Genetic Engineering

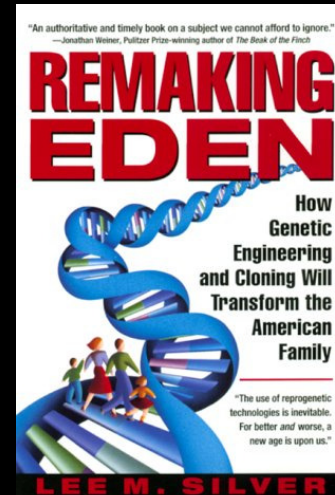
- Unlike gene doping, germline genetic engineering would transfer to offspring and all future generations





# Germline Genetic Engineering

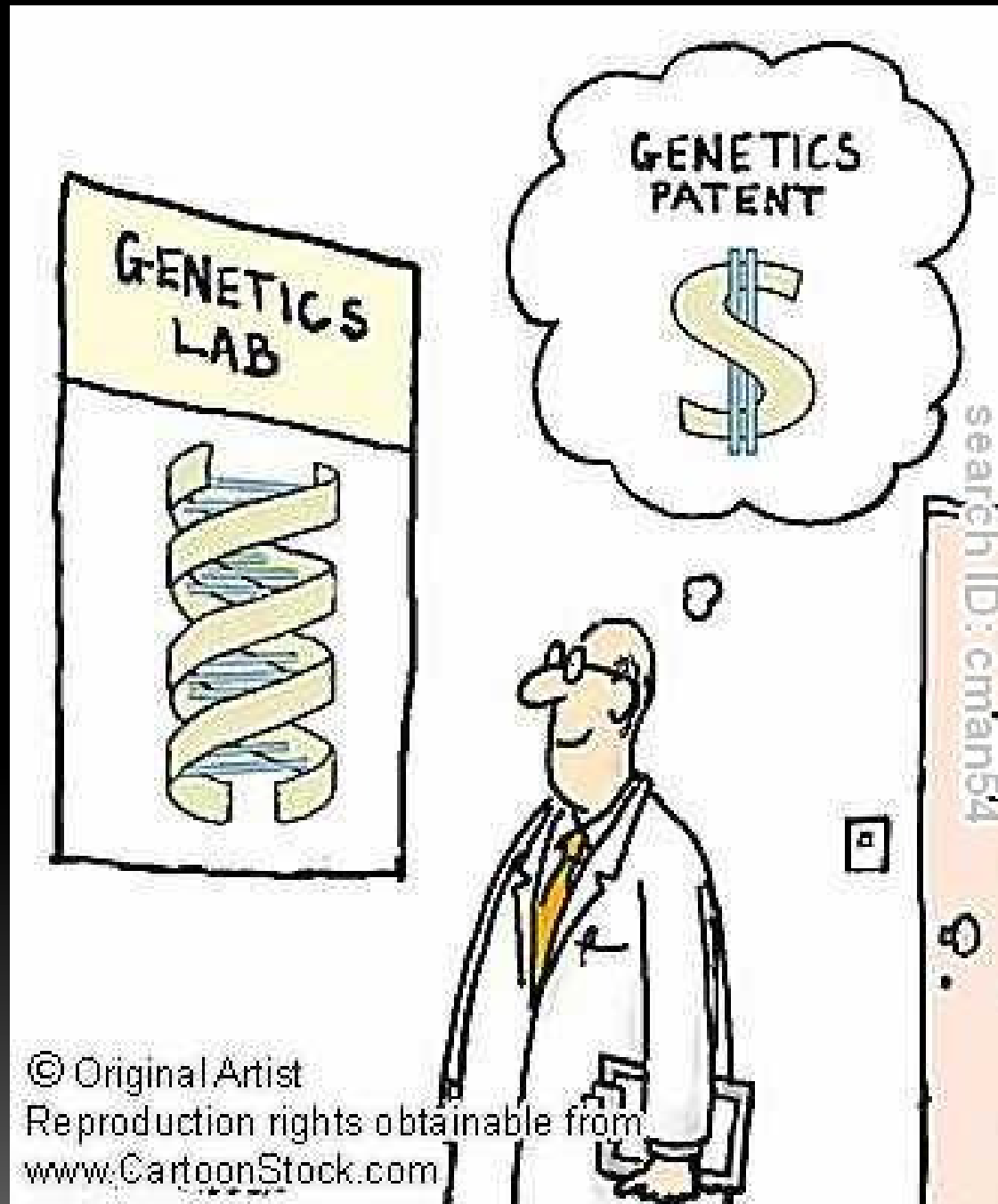
- Unlike gene doping, germline genetic engineering would transfer to offspring and all future generations
- Why?: Can prevent passing on serious genetic diseases, “enhance” children to be smarter, healthier, more athletic, more attractive
- Who decides what makes a “better” human? Who can afford this technology?
- “New Eugenics,” “designer babies”



# Who will own these technologies?



- 20% of the human genome has already been patented
- Thousands of plant and animal genes patented
- Cloned & GE animals can be patented
- Gene patents limit research, scientific innovation, and decrease access to life-saving tests
- Who will own GE humans?



© Original Artist  
Reproduction rights obtainable from  
[www.CartoonStock.com](http://www.CartoonStock.com)

# What Can We Do?



- Call your member of Congress and Senator and ask them to :
  - Support the **Genomic Research and Accessibility Act**, which would prohibit the patenting of all naturally occurring genes and DNA sequences
  - Support the **Human-Animal Hybrid Prohibition Act**, which would prohibit the creation of human-animal hybrid embryos and animals with human reproductive organs or human brains.
  - Formalize the **moratorium on human cloning** and prohibit all forms of human genetic engineering (including gene doping and gene “therapy”)

# What Can We Do?



- Tell the Administration:
  - FDA must not approve food products from clones, their offspring, or genetically engineered animals for human consumption
  - If clones, their offspring, or GE animals are approved for consumption they must be **labeled** to give people a choice
- In Our Communities:
  - Broaden discussions against GE seeds to include animal and human genetic engineering – we are in this fight together
  - Build broad coalitions – issues can bring together left and right
  - Challenge the privatization of life at all levels
  - Talk to your state government officials

# Other Resources

## Books:

- *Human Genetic Engineering: A Guide for Activists, Skeptics, and the very Perplexed* – Peter Shanks
- *The Human Body Shop* – Andrew Kimbrell
- *Enough: Staying Human in an Engineered Age* – Bill McKibben
- *The Case Against Perfection: Ethics in the Age of Genetic Engineering* – Michael Sandel
- *"Who Owns You: The Corporate Gold Rush to Patent Your Genes"* - David Koepsell

## Organizations:

- Friends of the Earth
- International Center for Technology Assessment
- Center for Food Safety
- Center for Genetics and Society
- Council for Responsible Genetics
- Institute for Social Ecology
- Our Bodies Ourselves
- Indigenous Peoples Council on Biocolonialism

# Contact information

Eric Hoffman

Genetic Technology Policy Campaigner

Friends of the Earth U.S.

Email: [ehoffman@foe.org](mailto:ehoffman@foe.org)

Tel: 202.222.0747

[www.foe.org](http://www.foe.org)