

Ethics and Synthetic Biology: Showstopper or Sideshow?

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COI

I declare No
financial Conflicts of
Interest relevant
to this talk



Key Points

- The bogus 'ethics lag' and why this myth lingers on and what it means
- Key ethical issues for synthetic biology/ genomics--
 - Not: Safety, Environmental Impact, Patenting or Just Access to benefits
 - Are: Accountability, publishing, reductionism and playing god

Ethics lag

- “The synthetic life sciences seem to have emerged from nowhere, and their potential uses and misuses have taken the scientific and regulatory community by surprise”.
- “...it is a reminder of how scientific development might leave moral, social, legal discourse in its wake..”
 - Samuel, Selgelid and Kerridge, EMBO Reports, 10, 1, 2009: 10

Ethics lag

- Science is always leaping ahead
- Ethics struggles to keep up
- By the time ethical discourse starts the scientific 'horse' is out of the barn

- All interesting claims. However they are often and increasingly --false!

Ethics lag? Not

- Science rarely leaps--when it does it is a momentous moment in history!
- Look at recent 'leaps'--
 - Personalized medicine/genomics;
 - Face transplants,
 - ESCR,
 - deep brain stimulation
 - HPV vaccine
 - Cloning humans

Ethics lag? Not

- Each one of these has a 'history'
 - Personalized medicine/genomics at least since mapping of the human genome in 1999
 - Face transplants --at least ten years
 - ESCR at least since 1997 and embryo research/fetal tissue research goes back to late 1980s

If ethicists/ethics/ ELSI lag behind or get left behind it is only because they are not paying attention!!

Ethics lag? Not

- But in fact ethics did not lag behind on any of these 'leaps'!
- Articles on the ethics of each of these appeared either before or contemporaneously with the first public announcement of intent or possible attempt!!

Ethical challenges of synthetic biology circa 1999

- Synthetic genomics/biology is absolutely no exception.
- First article,

M.K. Cho, D. Magnus, AL Caplan, D McGee and the Ethics of Genomics Group, Ethical Considerations in Synthesizing a Minimal Genome, Science 289,

1999: 2087-2090

Key points raised in 1999

- Misuse for weapons/terrorism
- Environmental impact
- Health impact
- Justice--patents, ownership

- Life reduced to genetics--'reductionism'
- Exemplifies human hubris/playing god

Key points raised in 2009

Samuel, Selgelid, Kerridge, EMBO reports

- Misuse for weapons/terrorism
 - Spelled out in greater detail
- Environmental impact
- Health impact
- Justice--patents, ownership
- Commerce and self-regulation

What are the key issues? Not these

- Misuse for weapons/terrorism
 - Any technology can be misapplied/put to pernicious use
 - Issue is into whose hands does the technology fall?
- Environmental impact
 - Can be handled through regulation
- Health impact
 - Can be handled through regulation and enforcement
- Justice--patents, ownership, commerce
 - No special issue relative to synthetic biology

For these issues problem is political/policy
not ethics

What are the key issues? These

- Life reduced to genetics--'reductionism'
- Exemplifies human hubris
–playing 'God'

What are the key issues? These

- Life reduced to genetics-- 'reductionism'

Plenty of evidence to understand that life does not equal genes or genomes

can only function in an environment

can recombine to create new properties

there is life and then there is Life

sort of like embryo is human life and is a person

What are the key issues?

These

- **Playing God**

- Major religions accept manipulating nature
 - No religious opposition to GMOs or to elimination of smallpox
- Playing is bad but stewarding nature for human purposes is not
- Religious concern is purpose and fairness
- Spiritual concern--this is real--can man and technology be trusted?
 - Transparency, accountability, enforcement, limits

The lessons of the ethics lag

- Often posited by media but can be self-inflicted
- It is increasingly not real and is not real in case of synthetic biology
- Lack of consensus about what to do may be real
- Lack of political will or forum to engage policy may be real
- May be useful rhetorical tool for critics but often not legitimate