



Natalie Kuldell
February 3rd, 2015

[http://openwetware.org/wiki/20.20\(S15\)](http://openwetware.org/wiki/20.20(S15))

2020: Futurists

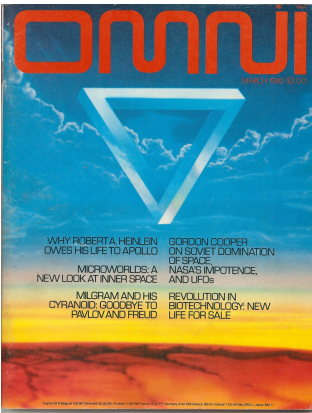
Freeman Dyson writes:

"Biotechnology will become as domesticated as computer games and children and housewives will create their new animal and plant species at home."




Quack? Genius?

2020: Historians



WHY ROBERTA HENKEN OWES HIS LIFE TO APOLO 11
MICROWORLDS: A NEW LOOK AT INNER SPACE
MILGRAM AND HIS CYRANOID: GOODBYE TO RIMOV AND FIELD

GORDON COOPER ON SOVIET DOMINATION OF SPACE
NASSAS IMPOTENCE AND UFOs
REVOLUTION IN BIOTECHNOLOGY: NEW LIFE FOR SALE

INTRODUCING HP-85.

A NEW WORLD OF PERSONAL-PROFESSIONAL COMPUTATION.

"a sophisticated computer at your fingertips"

- 20 lb
- 16K RAM
- Built in thermal printer
- Operating system and BASIC language in ROM

Imagine the new world that...
for the HP-85A language, BASIC...
to design. Excellence in design...
to design. Excellence in design...
to design. Excellence in design...

HEWLETT PACKARD

"a scientist clad in white spools threads of DNA onto a glass rod. He is about to treat it with enzymes, then insert it into E. coli, endowing the microbe with powers nature never gave it."



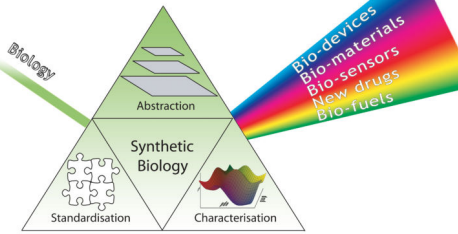
THE GENE TRUST

BY KATHLEEN AND BARBARA KALLIFE

Science and Business join forces to exploit the machinery of life

PHOTOGRAPHS BY DOUGLAS HARRIS

What's new: Application of engineering principles to biology



What you'll work on...



1. design a plausible and compelling synthetic biological system
2. develop a detailed design plan and construction roadmap
3. evaluate ownership, commercial, ethical aspects of the project

What you'll learn (I think)...



Understand the operation of genetic programs in prokaryotes and eukaryotes.

What you'll learn (I think)...



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Describe key enabling technologies that support the engineering of biology, including synthesis, abstraction and standardization.

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Home	Lecture and Studio schedule	20.385 Reading Schedule
Week 1	Week 2	Week 3
Week 4	Week 5	Week 6
Week 7	Week 8	Week 9
Week 10	Week 11	Week 12
Week 13	Week 14	
Expectations	Guidelines: 3 Ideas Presentation	Guidelines: Tech Spec Review
		Guidelines: Final Presentations
Team Building Resources		Teacher Resources

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Tuesdays/Thursdays
11-12:30

Start with challenge/puzzle/activity

Follow-up with group discussion

Occasional homework

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✦ How can biology be made easier to engineer?

✦ What are the consequences of success?

✦ How has nature solved physical challenges?

✦ In what ways does nature innovate?

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Wednesdays 2-5

Challenge	What is the challenge to address?	Importance of challenge? Impact of solution?
Project name	Your title here	Possible competing technologies? Known and unknown?
Device-level diagram	Your design here	Model for system operation? Plan for validation and debugging? Buildable? Cost? Time?
Parts-level diagram	Parts list here	Sourcing? Description and annotation of function? Safety? Security?

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65%, team grades

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65%, team grades

Blog Entries

30%, individual grades

Instructor Leverage

5%, individual grades

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any ???s

Let's get building!!!

the end