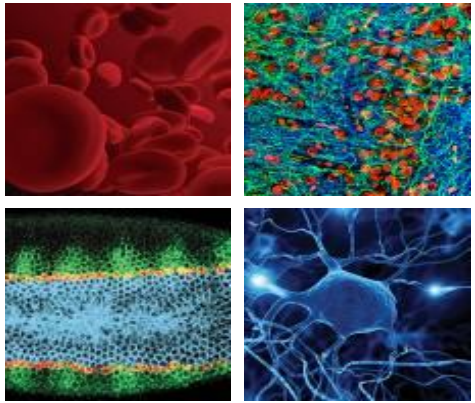

Systems Biology at Life tech

Kevin Clancy

Senior Scientist, MBR Informatics & Synthetic Biology

26 Mar 2010

life technologies™

Shaping Discovery, Improving Life

Search

ABOUT US | INVESTOR RELATIONS | NEWS GALLERY | GLOBAL CITIZENSHIP | CAREERS

New SOLiD™ 4 System announced for $3000 genomes in 2010

New SOLiD™ PI System makes sequencing affordable

Greg Lucier speaks about Molecular Medicine and Beyond

See how LIFE gives back in Global Citizenship

QUICK LINKS

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LIFE (COMMON STOCK)

Exchange	Price
NASDAQ (US Dollar)	$51.78

Change (%) -0.78

Corporate Facts

Life Technologies (NASDAQ: LIFE) is a global biotechnology tools company dedicated to improving the human condition.

Our systems, consumables and services enable researchers to accelerate scientific exploration, driving to discoveries and developments that make life even better.

Life Technologies customers do their work across the biological spectrum, working to advance personalized medicine, regenerative science, molecular diagnostics, agricultural and environmental research, and 21st century forensics. The company had sales of more than $3.3 billion, employs approximately 9,000 people, has a presence in 160 countries, and possesses a rapidly growing intellectual property estate of approximately 3,900 patents and exclusive licenses. Life Technologies was created by the combination of Invitrogen Corporation and Applied Biosystems Inc.

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P: (760) 603-7200
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www.lifetechnologies.com
www.invitrogen.com
www.appliedbiosystems.com

Life Technologies' Brands

Life Technologies is known for industry-leading brands from reagents to instruments. These include:

Ambion
Dynal
Gateway
GIBCO

Lipofectamine
MolecularProbes
Novex
Vector NTI

SuperScript
TaqMan
TOPO

DNA Analysis - SOLiD
RNA Analysis
Quality & Safety Testing
Forensics

Stem cells
Synthetic Biology

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Informatics at LIFE is cross-divisional

Instruments

- LIFE provides SW to both run and interpret results from many of its discovery platforms
- These Informatics products are distributed across the divisions and their development is managed by the divisions

Cloning and functional studies

- LIFE has a commercial software product family, Vector NTI®, that manages genomic information for cloning and functional studies
- LIFE reagents can accelerate validation, verification and functional studies

E-commerce

- LIFE, through AB and Invitrogen brands, has e-commerce portals, several of these allow users to explore genomic content and custom design assays or primers
- Present the search results in a biological context

Enable Integration of Existing Tools & Technologies

The heart of the Matter

- What we look for
  - Good technically
  - Good people skills
  - Good at working with new ideas
  - Enjoy what they do
- Job Opportunities
  - Bioinformatics/Software engineers
  - Cell culture
  - Engineers
  - Molecular biologists
  - Organizers and Managers
  - Sales
  - …

- How the university can help
  - Good breadth of knowledge
  - Computer & Maths skills
  - Bench exposure
  - Critical thinking
  - Some exposure to academia and industrial sciences
  - Collaborative programs?

Synthetic Biology the Next Step for Genomics

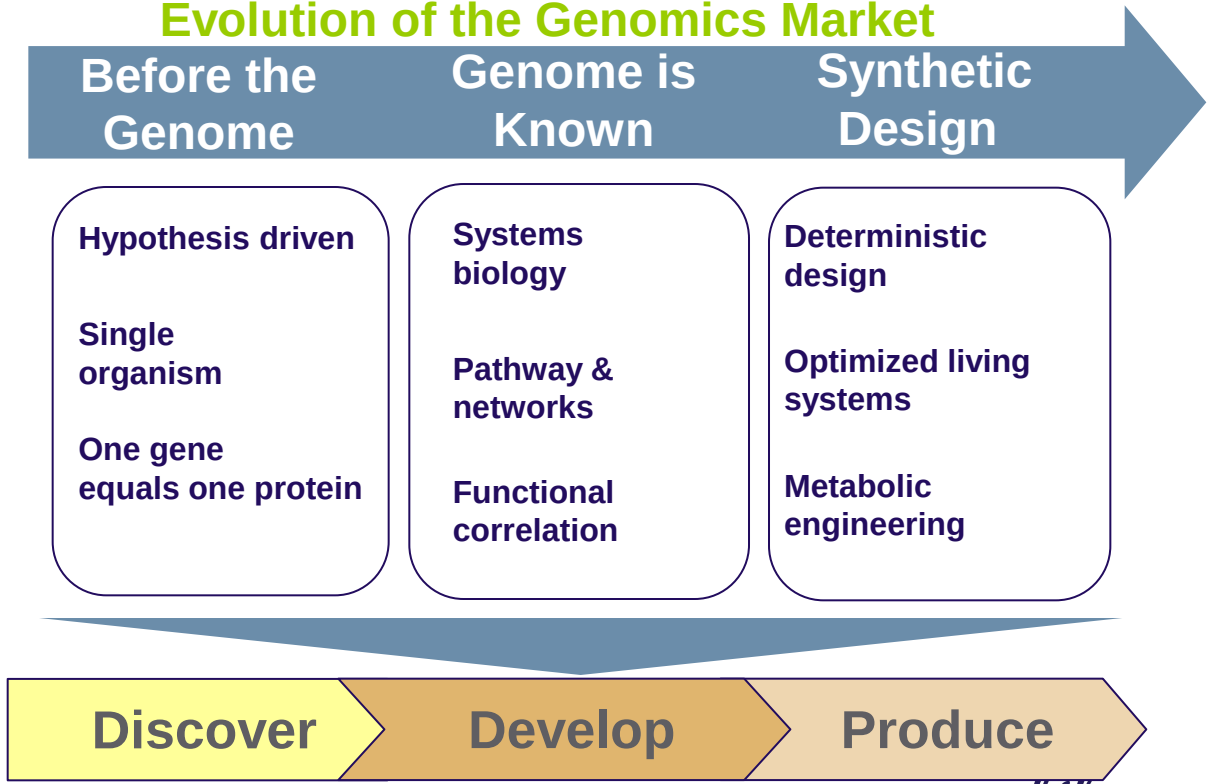
Synthetic Biology

What ? Fabrication of biological components that reproduce the properties of living systems

How ? combining biochemistry, molecular biology, engineering and informatics

Why ? Turning Genomics from a hit-or-miss field of discovery, to the type of discipline engineers use to design, build and validate new systems

Evolution of the Genomics Market



Synthetic Biology: Impacting a Broad Applications

Healthcare

Enabling new therapies for cancer and other diseases

Energy

Harnessing photosynthetic organisms to produce fuels directly from CO2

Chemicals

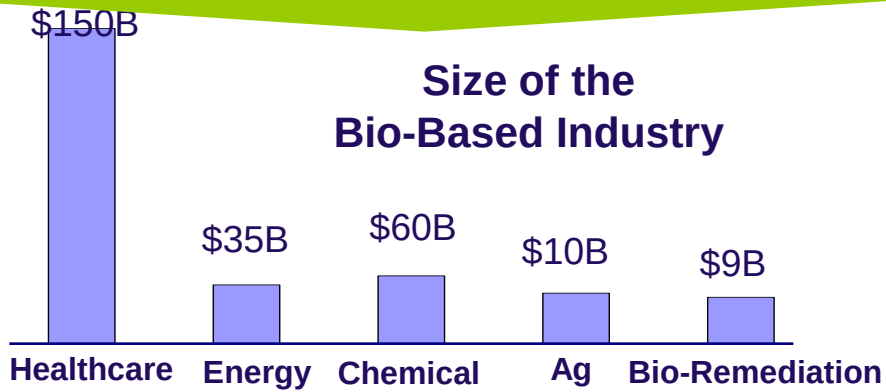
Replacing chemical processes by green, bio-based processes

Agriculture

Developing high-yield, more resistant, high nutrition and economic crops

Bio-Remediation

Developing microbial solutions to clean water and generate energy in the process



 Genome Synthesis and Design Futures – Implications for the US Economy – DOE Bio-Era report - Feb 2007

LIFE's Tool Box for Synthetic Biology

	Sequencing	Bio Informatics	Parts and Devices	Pathway to Genome Synthesis	Cloning Assembly Transfer	Hosts
Today	CE Sequencing SOLiD	Vector NTI Initial design and biocomputational tools	Vectors ORFs Gene Synthesis	Oligonucleotides Small pathways	Gateway/TOPO REAL assembly Delivery Sample Prep	Cloning Strains Expression Hosts

From a basic toolbox today to…

Tomorrow	• **G3 Seq.** • **Metagenomics**	• **Complete *in-silico* design and simulation tools**	• **Catalog of key parts** • ***Catalog of key devices***	• **Complex pathway synthesis** • **Full genome synthesis**	• **Assembly systems** • **Optimized host transfer**	• **Standard Systems for industrial processes**

Integrated design, synthesis & measurement tools to enable predictable biological factories

life technologies™

Good Resources

- http://www.lifetech.com