

Frontiers in Biotechnology, Winter 2007
Mgt 274a01, MIMG C133, C233

Tuesdays and Thursdays, 1:00-2:30 PM, Gold Hall B301
UCLA Anderson School of Management

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Registration: C133: through Bridget Wolfgang, bridgetw@microbio.ucla.edu
C233: Register online, should you encounter problems contact Ken Hazama, khazama@microbio.ucla.edu. Graduate students may elect to register for Mgt 274a01 for 4 units (requires a written research project).

A new chapter in the history of American industry began three decades ago as biotechnology companies started springing up from fundamental discoveries in molecular biology. The challenge confronting the field then continues today: to foster an environment outside of the universities where creative minds can turn research breakthroughs into marketable products.

Another challenge is finding the capital and forging the financial incentives to keep invention alive. Also vital is the need to collect, organize, and manage information necessary to understand disease, produce intellectual property, accelerate drug discovery, and streamline the research and development process, leading to novel discoveries and important enhancements.

Biotech is by its nature risky, cyclic, costly, and entrepreneurial. At a basic level, it provides workers in the field with research questions offering the opportunity to improve people's lives and better the human condition. Biotech has shown itself more versatile than the drug industry it both serves and competes with – more adept working at the frontiers of biomedical advancement.

Pharmaceuticals -- the most profitable industry in the United States for many years running -- depends now on biotech for essential inputs to its product pipeline. This dependency translates into highly capitalized deals and strategic alliances, adding up to a huge bet by big pharma on the future of the biotechnology industry.

Going beyond biomedical uses, agricultural and environmental applications have become important subject areas for biotechnology, expanding the scope and complexity of the policy and ethical concerns confronting it.

This course explores a range of issues in biotechnology, emphasizing information and innovation. We will navigate from hype to questioning and from media accounts to intelligent understanding. Sessions cover such topics as:

- Information as a tool for innovation and analysis
- Main diseases, most promising drugs, companies to watch
- Health, a large and constantly growing market for biotech
- Big pharma as investor, customer, competitor
- History of the biotech industry -- life cycle of a startup
- Alliances, mergers, acquisitions, licensing
- Sources of financing, venture capital, IPOs
- The FDA, DOA and EPA -- guardians and gatekeepers
- Clinical studies -- kick starting the regulatory process
- Translational research – bridging between academic and industry
- Valuation -- real options, risk-adjusted net present value
- Intellectual property: landmark cases, patents of living things
- Plant genomics, genetically modified organisms
- Biomarkers, DNA microarrays, whole genome analysis
- Stem cells, pharmacogenetics, imaging and its analysis
- Pricing, cloning, public-interest concerns, ethical issues

Guest lecturers bring the biotech industry to life. Visitors in the past have included **Chris Henny**, founder of Immunex and **Ed Fritzky**, its former chairman and CEO; **Joshua Boger**, founder and CEO of Vertex Pharmaceuticals; **Steve Fodor**, founder and CEO of Affymetrix; **Larry Souza**, developer of Neupogen and former research director at Amgen; **Gordon Ringold**, chairman and CEO of SurroMed; **Mark Edwards**, CEO of Recombinant Capital; **Sean Johnston**, vice president of intellectual property at Genentech; **Dave Goeddel**, CEO and co-founder of Tularik; and **Jerry Caulder**, CEO, founder, and chairman of Mycogen.

There will be a take-home midterm and final exam as part of the course, plus a term project due at the end. Fifty percent of the grade will be based on the exams, fifty percent on the project. Class discussion integrates research with business for both the management and science students. Discussion is lively and interactive, offering many opportunities for cross-disciplinary collaboration.

The timeline for project development over successive weeks of the quarter is as follows: (1) topic selection; (2) organization of teams; (3) outline and prospectus; (4) executive summary; (5) oral presentation and final written report.

References*

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