

Table 2a - Distinctive Features of Early Biotech Firms

	(A) SCIENCE	(B) FINANCE	(C) COMMERCE	What Happened?
Alza (1968)	<ul style="list-style-type: none"> Assembled an all-star science advisory board Chose a campus-like setting near a major research university 	<ul style="list-style-type: none"> Went public with no products, breakthroughs, or revenue Used research partnerships with Big Pharma to generate funds 	<ul style="list-style-type: none"> Funders went on to start numerous biotech firms 	Ahead-of-his-time founder creates a prototype for future biotech firms. Acquired by Johnson & Johnson in 2001
Cetus (1972)	<ul style="list-style-type: none"> Assembled an all-star science advisory board Chose a campus-like setting near a major research university Offered "free space" for scientists Scientific founder stayed at the university and consulted with the company 	<ul style="list-style-type: none"> Used research partnerships with a diverse array of large corporations Achieved a record-breaking IPO in 1981 	<ul style="list-style-type: none"> Explored a wide range of commercial applications for biotech 	First-mover advantage doesn't hold due to lack of focus; acquired in 1991 by Chiron
Genentech (1976)	<ul style="list-style-type: none"> Insisted that staff scientists publish and contribute to public science Scientific founder stayed at the university and consulted with the company Launched as a "virtual" start-up: all initial research was conducted by contract with UCSF and City of Hope Hospital 	<ul style="list-style-type: none"> Received meager funding until scientific "proof of concept" Invented "milestone payment" form of incremental financing Achieved the first biotech IPO (1980): "gene dreams" for Wall Street Used research partnership to share cost and risk 	<ul style="list-style-type: none"> Pursued a "swing for the fences" strategy focused on blockbuster medicines 	Science married to finance creates novel model that produces an enviable record of innovation. Despite considerable resistance, became a fully owned subsidiary of Roche in 2009
Genex (1977)	<ul style="list-style-type: none"> Assembled an all-star science advisory board Scientific founder stayed at the university initially 	<ul style="list-style-type: none"> Established numerous research contracts with large companies 	<ul style="list-style-type: none"> Pursued low-cost, high volume strategy (e.g., biotech production of industrial chemicals) Made early investment in manufacturing plant Scientific founder went on to start addtuibak biotech firms 	Low-margin business model becomes unsustainable without investment by corporate partners; acquired in 1991 by Enzon
Biogen (1978)	<ul style="list-style-type: none"> Designed as an international consortium of top academic labs (i.e., science advisory board was the company) Launched as a "virtual" start-up: all initial research was conducted in founders' labs Scientific founders stayed at their respective universities full-time 	<ul style="list-style-type: none"> Received modest initial VC founding Out-licensed early breakthroughs to Big Pharma 	<ul style="list-style-type: none"> Targeted blockbuster medicines Scientific founders ran the company for its first seven years 	"World class research seminar" makes corporate governance challenging; licensing model proves robust. Merged with IDEC in 2003
Hybritech (1978)	<ul style="list-style-type: none"> Scientific founder stayed at the university full-time and consulted with the company Talented research assistant played a key founding role Chose a campus-like setting near a major research university (UCSD) and research institute (Salk) 	<ul style="list-style-type: none"> VC played dual role as investor and CEO 	<ul style="list-style-type: none"> Scientific founders become serial entrepreneur and/or VCs Recruited senior exec from Baxter run the company Focused on diagnostic products: avoided long clinical trials Introduced the first-ever commercial product based on monoclonal antibody technology 	Entrepreneurial scientist finds world-class VC, who recruits a pharma escape to run the show; bred for eventual sale and acquired by Eli Lilly in 1986