Funding the Pharmaceutical and Biotechnology Industry

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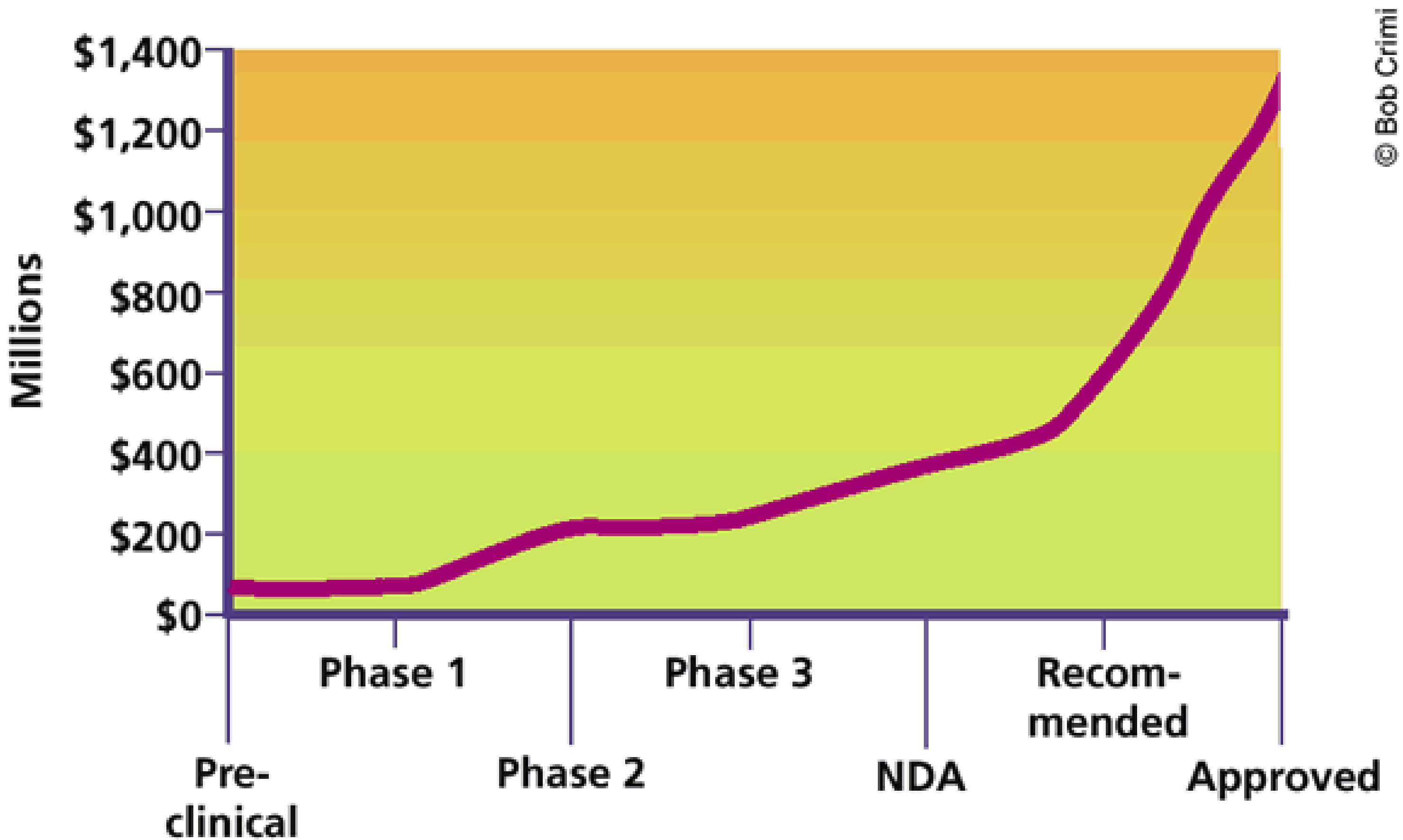
How is the Creation of New Therapeutics Funded

- Established companies
  - Some fraction of revenue typically allocated to internal R&D…
  - Complemented by business development strategy to identify new opportunities for licensing or acquisition…
  - Resulting in an actively managed, risk-adjusted pipeline
  - Both P&L and BS
- Start-up companies
  - Any (and all) imaginable sources of capital
  - Focus of this discussion

Financing a New Biotech Company

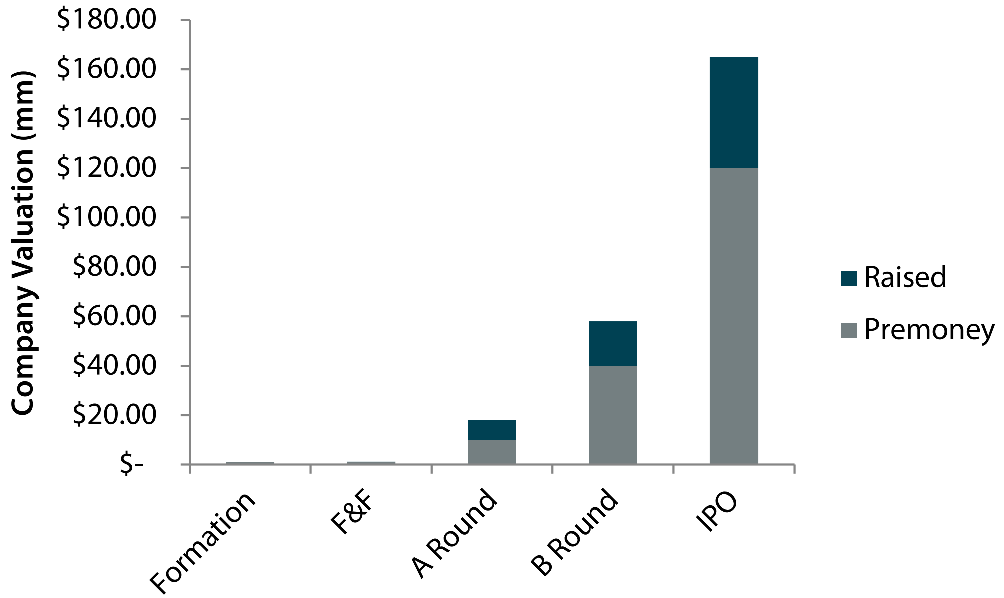
- Concept of benchmark-financing
  - Financing to get the next "value inflection point"
  - Serial "de-risking"
  - Raise iterative rounds, each at higher valuation, to minimize dilution
  - In the ideal, investors end up with smaller slices (dilution) of a larger pie (value-creation)

Change in Value of a BioPharma Asset

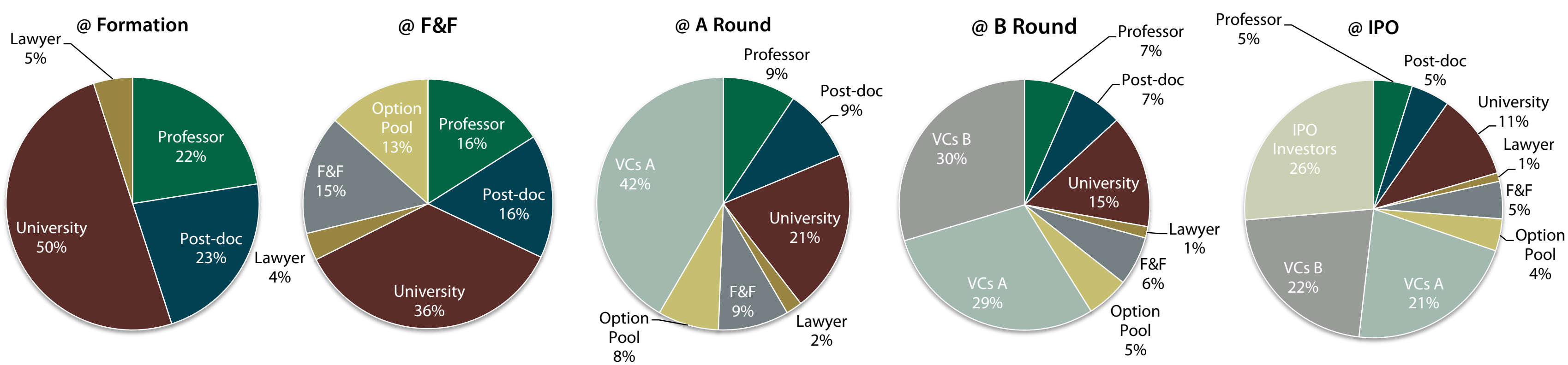


Source: Burril & Co., Ernst & Young, 1997

Hypothetical Company Funding History

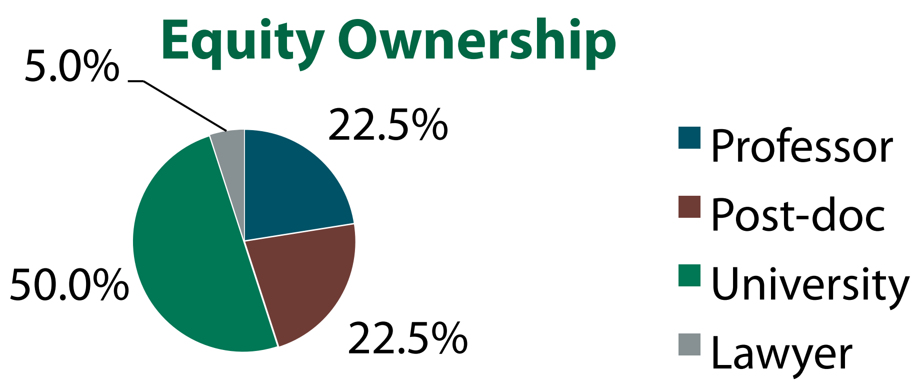


Formation → F&F → A Round → B Round → IPO



Formation of the Company

- Founder(s) takes idea and forms company
- Founder contributes, licenses, or otherwise acquires asset or technology to develop
- Example:
  - Role of uncharacterized receptor and cognate peptide ligands discovered in university lab
  - University files patents on discoveries
  - Professor and trusted post-doc postulate that receptors and ligands have role in a disease and that the ligand could be a useful therapy
  - They form a company, invest $5k each to begin operations, and enter a licensing agreement with the university



NORTHLAND CAPITAL MARKETS

Friends and Family Stage

- The company needs capital to begin operations, to pay the post-doc (now President), to rent office & lab space, and to hire a technician
- The company is valued at $1.0 million dollars and raises $250 k from:
  - Post-doc's parents
  - Professor's rich brother-in-law
  - Emeritus professor who started a company 20 years ago
  - Two of the lawyer's clients who invest in local startups
- Company also establishes an option pool to attract future employees

A Round Financing

- Typically, first institutional investor (Venture Capital, Hedge Funds, etc.) round
- After deep due diligence into IP, data, market projections, etc.
- Investors will likely seek representation on board of directors

B Round Financing

- Institutional investors, perhaps including strategic investors (like big pharma companies)
- Often institutional investors will own most of the company and thus control it
  - Implications for founders' roles
- Company may start to prepare for "exit"
  - Path to IPO or trade sale
  - Gives investors ability to monetize the value created since inception

Initial Public Offering (IPO)

- Company enters public markets in conjunction with capital raise
- Process:
  - Hire underwriters (investment banks)
  - Prepare and file public disclosure documents with the SEC
  - Banks sell stock to public market investors (Mutual funds, hedge funds, private individuals, etc.) through price discovery process mediated by banks
  - Company "goes public" and anyone can trade the stock

Public Capital Markets

- Can provide means to offer stock on a public or private basis
- Public companies generally maintain a cash "runway"
- Milestone-based financing for development stage companies
  - Positive results buoy stock price
  - Raising capital by selling stock is less dilutive at higher prices

Valuing a Company

- IPOs are valued in a competitive process that discovers a clearing price
- Publicly listed companies have a value determined by the market that adjusts with every stock trade
- Private company valuation is challenging:
  - Some formal methodologies:
    - DCF—Discounted Cash Flow
    - Take-out value of comparable companies
    - Sum-of-the-parts valuation
    - Step-up from prior valuation
  - Ultimately, value is determined by what an investor or acquirer is willing to pay and the company is willing to accept

Non-dilutive Financing

- Debt
  - Bank loans for companies with cash flow
  - Specialty lenders that lend against biomedical assets, sometimes even prior to commercialization
  - Convertible debt for established public company
- Grants from the government, foundations, etc.
  - Often slow and uncertain
  - May only support certain R&D, excluding crucial regulatory and early commercial activities
- License deals
  - Company can out-license commercial rights to an assets
  - Potential for upfront and trailing license fees, royalties
- Royalties
  - Company can sell revenue interest in a commercial or soon-to-be commercial asset