Brief Overview of Research Funding: Grants and Entrepreneurship
Outline

• Research Grants
  – Who gives grants?
    • Government, Foundations, occasionally Companies.
  – Who applies for grants?
    • A researcher, through their institution.
  – What is the process/timeline?
    • Writing, submission, review, accept/decline.
  – Writing a grant proposal?
    • Seek advice from older, wiser colleagues.
    • The canonical “White Paper” outline
  – What does a grant pay for?
    • Mostly people’s time; also supplies, travel, institutional overhead.

• Entrepreneurship and start-ups
  – What’s the ONLY thing you MUST have for a company?
  – People, People, People --- the management team
  – Business plan
    • The “hockey stick”
  – Funding
    • Friends & Family; Angel Investors; Venture Capitalists; Investment banks
    • The “Golden Rule” --- who has the gold, makes the rules
  – Stock (equity) and vesting --- “Incentive”
  – You are likely to see
    • Confidential Disclosure Agreement (CDA), also called Non-Disclosure Agreement (NDA)
    • Employee assignment agreements
    • Employee non-compete agreements
  – Exit strategies
    • Initial Public Offering (IPO); Buy-out/merger/acquisition; Sustained profitable business
Who gives grants?

• Government.
  – Most national research-related agencies have a grant program, as do many state agencies.
    • NASA, Natl. Science Foundation, Natl. Insts. of Health, Depts. of Energy and Agriculture, etc.
    • Dept. of Defense usually awards contracts instead.

• Foundations.
  – Many foundations make grants in their area.
    • Bill & Melinda Gates Foundation
    • The Howard Hughes Medical Institute
    • Susan G. Komen Foundation

• Occasionally Companies.
  – Google, Yahoo, Microsoft
Who applies for grants?
A researcher, through their institution.

- The researcher has an idea and writes a proposal.
- The proposal is submitted through their institution.
  - Institutional signing official makes the actual submission.
- The award (if any) is made to the institution.
- The institution disburses and administers the funds.
- Finally, the researcher carries out the research.
What is the process/timeline?

• Highly variable; maybe six months to one year?
• Writing
  – Plan to spend about 8 weeks writing the “Science” section.
    » Six weeks for first good draft, 1 week for comments from colleagues, 1 week to revise in light of comments.
• Submission --- lots of administrative sections to provide
    » Work with institution’s contract & grants administrative staff.
• Review --- may spend 6 to 9 months undergoing review.
• Accept/decline.
  – If declined, read the reviews carefully and do better next time
Writing a grant proposal?

• Seek advice from older, wiser colleagues.
  – Ask to read copies of their successful proposals.
  – Serve on a grant review panel if possible.

• Canonical “White Paper” Outline
  – What are we trying to do? (no jargon!)
  – How is it done now & what’s blocking progress?
  – What is our key make-a-difference idea?
  – What are the good things that will result when we succeed?
Outline

• What is research Intellectual Property (IP)?
  – Patents
  – Copyrights
  – Trademarks
  – Trade Secrets / Confidential Information
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• A customer
People, People, People ---
The management team

• A common failure mode for high-tech start-ups
  – Techie founder believes that, because they’re a smart techie, they’re also a smart businessperson
  – You truly do need smart people who know business

• Typical business management team members
  – CEO/President
  – Chief Financial Officer (CFO)/accounting
  – Chief Business Officer (CBO)/sales & marketing
  – Chief Operations Officer (COO)/procedures, logistics
  – Chief Legal Officer (CLO)/IP, contract writing & review

• Often hired at a lower title (VP, Director, Manager)
  – Promoted later based on performance
  – Avoid filling your high-level slots too early

• Management team usually in place before major fund-raising
  – Will be scrutinized closely by funders
Business plan (outline)

• Executive summary: One page of highlights; concise; interesting
• Company description
  – History, industry focus, current status, future plans
• Product or service: How will you make money?
• Market Analysis
  – Market, customers & how to reach them, competitors
• Implementation strategy
  – Budgets, target dates, management tasks, milestones
  – Be sure you can track progress and results
• Web plan summary (for e-commerce)
• Management team --- people, people, people
• Financial analysis
  – Future projected profit-and-loss (P&L), cash-flow analysis
  – “Hockey stick” --- revenues initially flat, then increase dramatically
Funding

• Funding source varies with development stage
  – Friends & Family in “garage” stage
  – Angel Investors in “seed” stage
  – Venture Capitalists in “growth” stage
  – Investment banks in “mature” stage

• The “Golden Rule” --- who has the gold, makes the rules
  – You give up both ownership & control with growth

• Each successive funding round dilutes the previous rounds
  – Your fractional ownership will be reduced
  – Hopefully, though, your net worth will increase

• “Valuation” = (number of shares) x (price/share)
  – Determines your “cost” for next funding stage
  – Funders often value your company at less than you do

• What’s the ONLY reason companies fail?
  – They run out of money
  – In early stages, CEO/President spends almost all the time just raising money
Stock (equity) and vesting ---

“Incentive”

• Two kinds of stock
  – Preferred
    • Issued to funders at full “cost” of valuation
    • Paid back first if company fails or is liquidated
  – Common
    • Issued to employees, usually at very low cost
    • Usually incentive-based and tied to specific milestones
    • May be a grant or an option
    • Note: a grant is usually taxed as income, EVEN IF NEVER REALIZED

• Vesting: when do you actually own your shares?
  – Typically “vests” in monthly increments over 2-3 years
  – What if you quit or are fired while only partly vested?
    • Do you get to keep your partly vested shares?
    • Does the company get to repurchase them?
  – Typically all shares vest 100% upon an “exit event” (next)
You are likely to see

• Confidential Disclosure Agreement (CDA)
  – Also called Non-Disclosure Agreement (NDA)
  – You agree not to disclose confidential info for N years
    • Heavy legal/financial penalties
  – Standard exclusions:
    • Already known; public info; known from other channels

• Employee assignment agreements (often mandatory)
  – Commonly you assign all IP to your employer
  – Sometimes retain rights outside scope of employment

• Employee non-compete agreements (often mandatory)
  – You agree not to compete for N years
  – Avoids/reduces “employee poaching” for IP by competitors
  – **Be careful!** May greatly reduce your ability to get a new job
Exit Strategies

• How to get your money out of the company?
  • Initial Public Offering (IPO)
    – Become a publicly traded company
    – Typically you can’t sell your shares for 6 months
  • Buy-out/merger/acquisition
    – Merge with a competitor or bought by a customer
  • Sustained profitable business
    – Investors usually prefer to exit with the cash
• Investor’s exit goals
  – 5X return in 3 years or 10X return in 5 years
  – Need high returns because most start-ups fail
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