

Welcome

Finding Sources to Fund a Biotech Start-up

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Enjoy the presentations!



FierceBiotech

**Funding a Biotech Start-up:
Creating Value in Early Stage Companies**

**Daphne Zohar, Managing Partner, PureTech
Ventures**

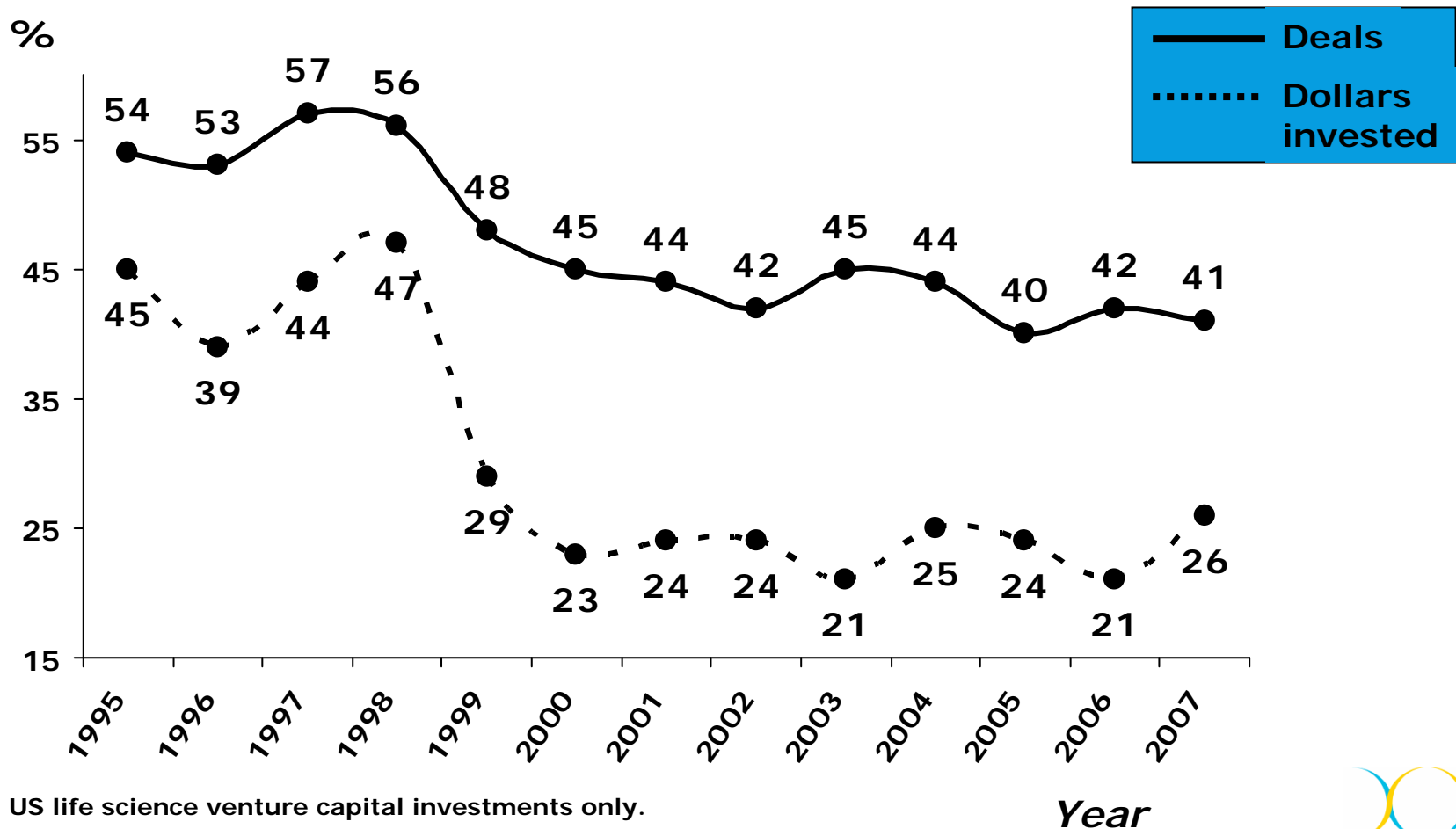
Agenda

- **Early Funding Environment**
- Building Early Value
- How to Fund an Early Stage Company

Early-Stage Venture Investment Dropped

And “Early” is not so early anymore

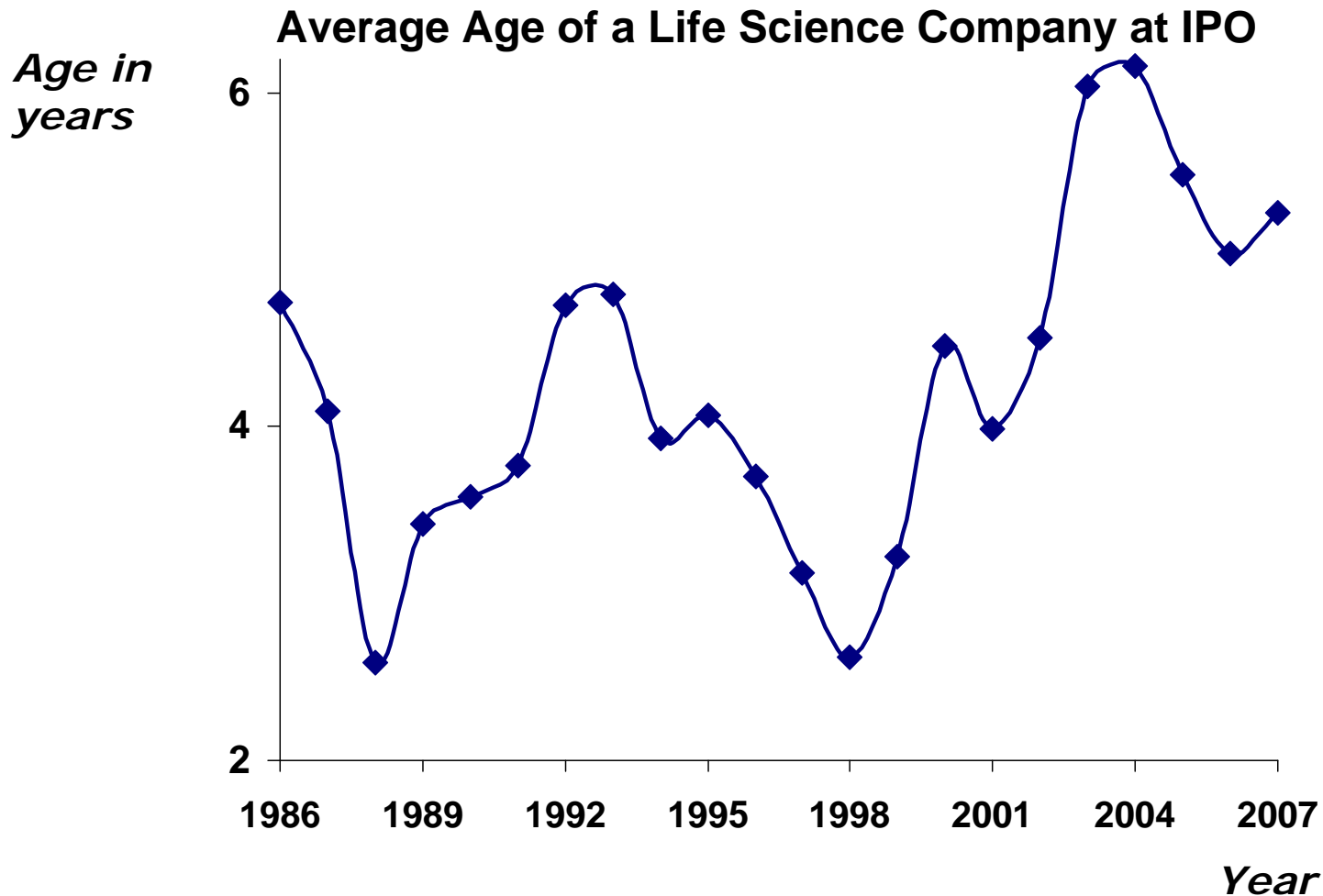
Early/seed stage as % of total life science ventures ¹



Note 1: US life science venture capital investments only.

Source: **VentureXpert** (disclosed deals only); **PureTech Analysis**

Longer Investments Required Pre-Exit

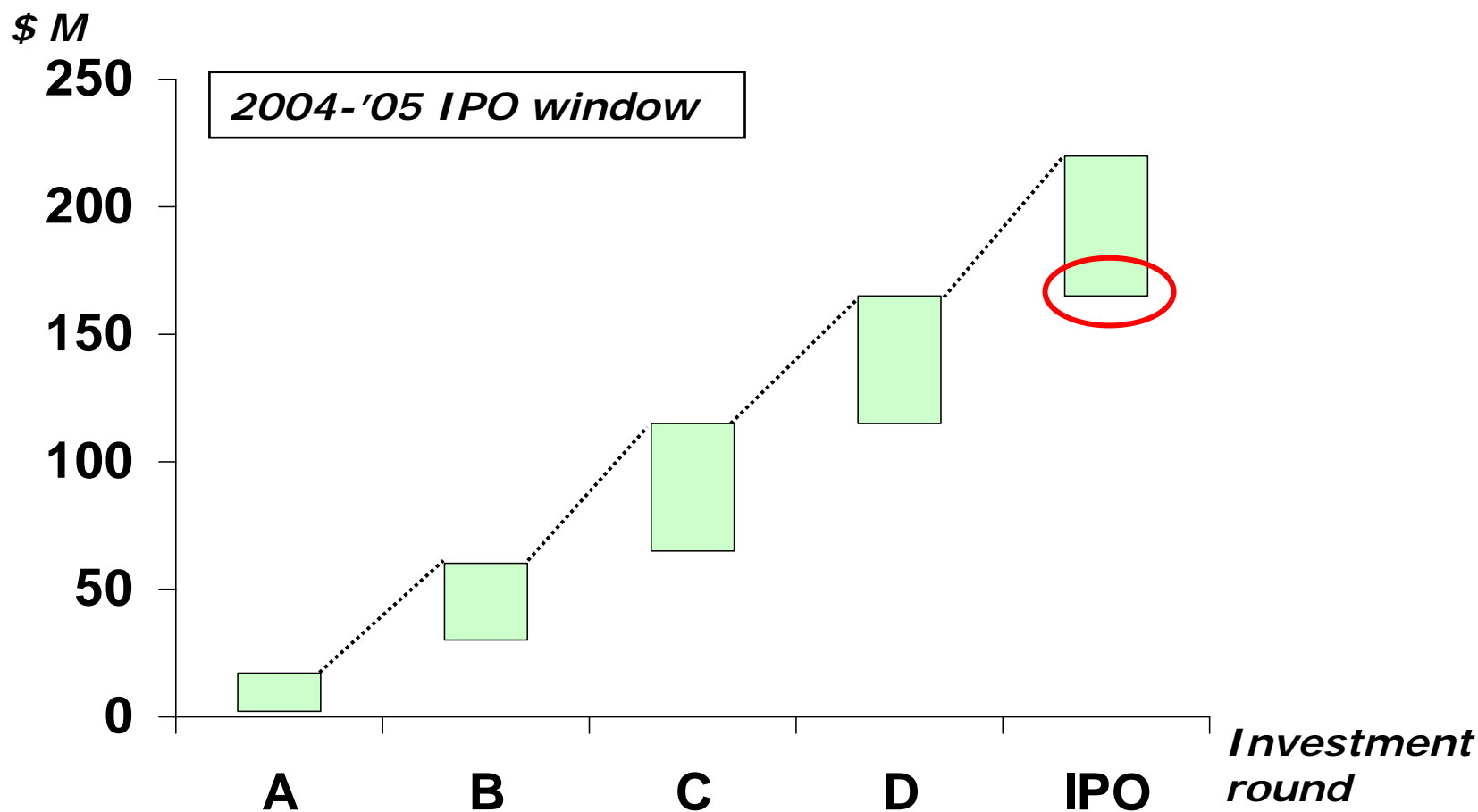


Note 1: Median age since first disclosed financing for a venture-backed life science company in a given IPO year.

Source: **VentureXpert** (disclosed deals only); **PureTech Ventures analysis**

Arizona Biotech @ 2008 PureTech Ventures.

More Money To Support but Lower Value at IPO

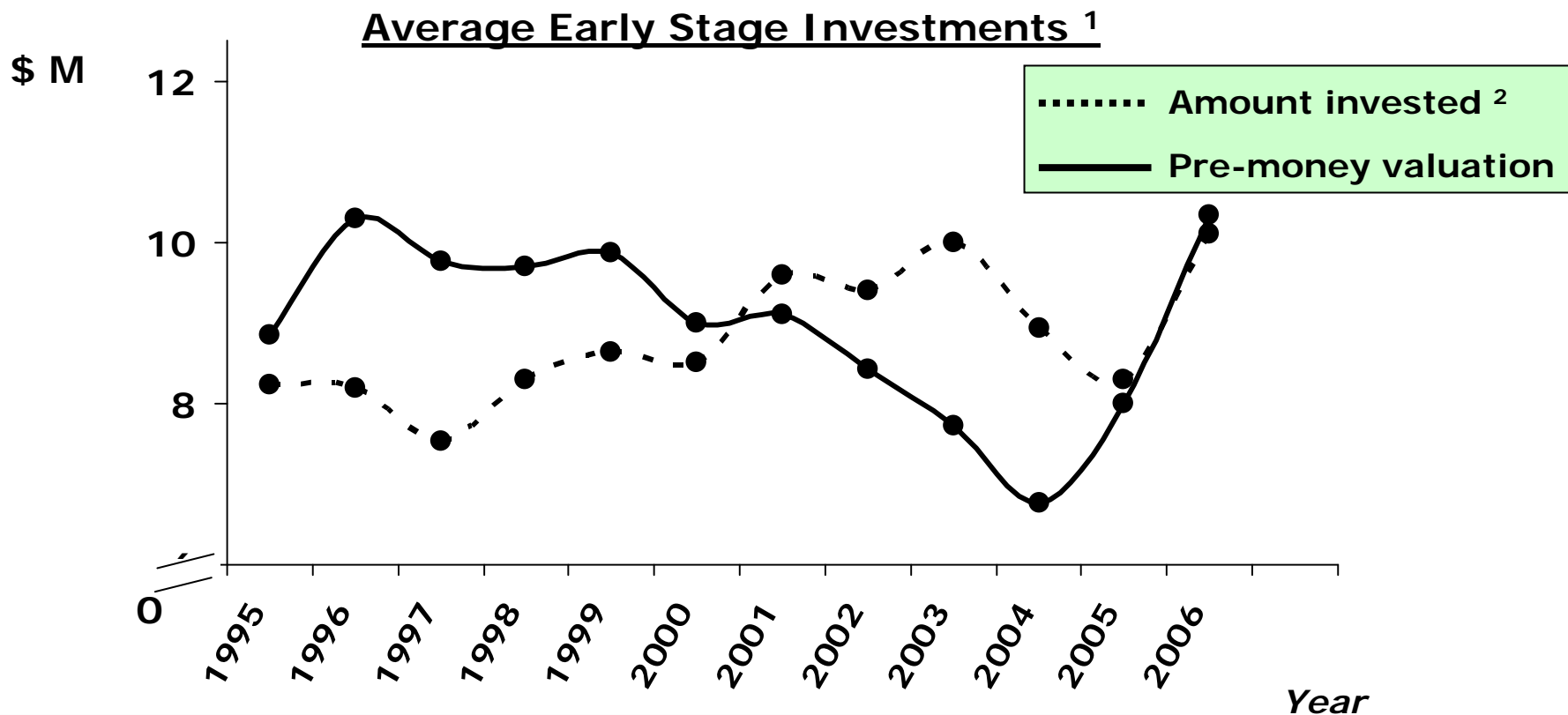


Representative example of a US life science company from recent IPO window. For illustrative purposes only.

Source: Recombinant Capital; VentureXpert; PureTech Ventures analysis

Arizona Biotech © 2008, © 2007 PureTech Ventures.

Low Valuations Lead To Dilution: Early Investment Terms Unappealing to Founders

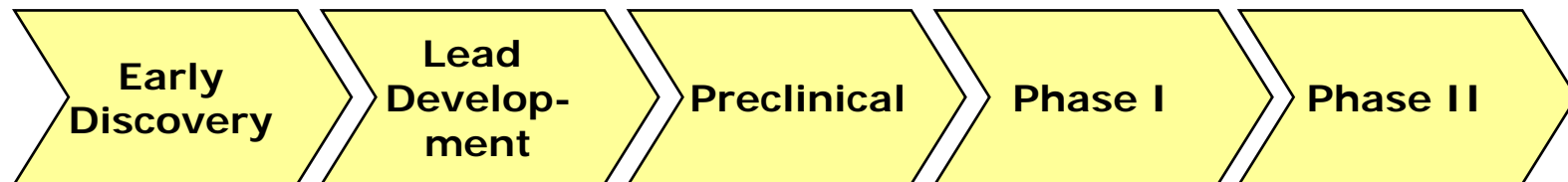


Note 1: Early stage defined as seed and first round investments of \$5M - \$30M on pre-money valuations of at least \$3M.

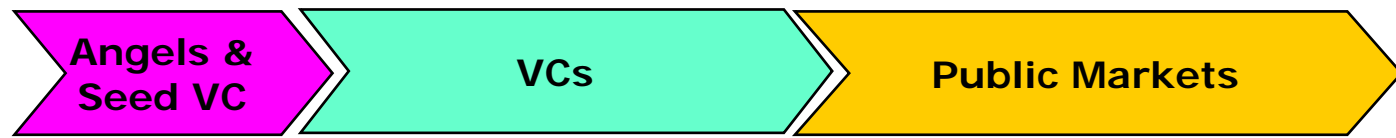
Note 2: Amount invested calculated by subtracting average pre-money value from average post-money value.

Source: *VentureXpert* (disclosed deals only); *PureTech Ventures* analysis

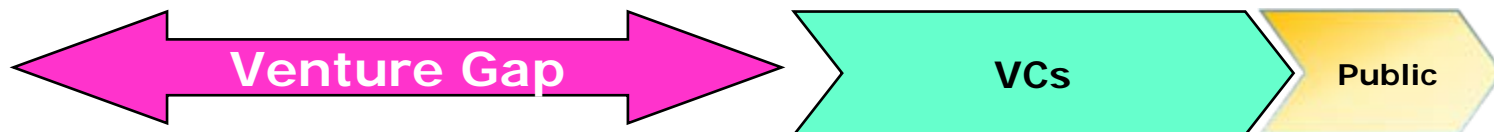
Disruption Of The Biotech Investing “Food Chain”



Traditional Investor Stage



Current Investor Stage



Agenda

- Early Funding Environment
- **Building Early Value**
- How to Fund an Early Stage Company

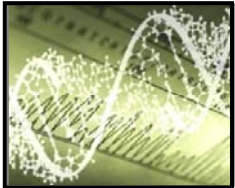
Creating Value: Elements of a “Fundable” Company

Technology



- Clear product differentiation and product “hook”
- Ability to hit key milestones in 1-3 years:

Upside



- **Significant Unmet Need:** Large potential market size
- High-impact paper or public relations

Protectability



- Strong IP protection for products: Prior art, FTO, blocking IP

Top People



- SAB of leading people in the world
- Top management team to lead company

Creating Value: Elements of a “Fundable” Company

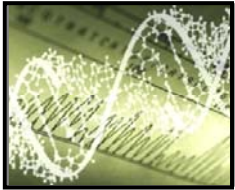
Why are these things important?

Technology



- Clear product differentiation and product “hook”
- Ability to hit key milestones in 1-3 years:
Investors prefer to fund in milestone-driven tranches

Upside



- **Significant Unmet Need:** Large potential market size
- High-impact paper or public relations
Drives funding and partnering interest

Protectability



- Strong IP protection for products: Prior art, FTO, blocking IP
Key to value for early stage company

Top People



- SAB of leading people in the world
- Top management team to lead company

Validates, reducing risk; attracts ideas and people



PURETECH
VENTURES

Creating Value (example: People)

Pain mechanisms

Clifford Woolf, MD, PhD – Prof. and Chair of Anesthesia, Harvard Medical School, MGH; *Solace SAB Chair*



Chronic pain

Allan Basbaum, PhD – Professor and Chair of Anatomy, UCSF



Ion channels

Bruce Bean, PhD – Prof. of Neurobiology, Harvard Med School



Microglia

Joyce DeLeo, PhD - Prof. of Anesthesiology & Pharmacology, Dartmouth Med School



Clinical trials

Roy Freeman, MD- Prof. of Neurology, Harvard Medical School; Director Center for Autonomic and Peripheral Nerve Disorders



Regulatory

Lee Simon, MD –Clinical Medicine, Harvard Med School; former FDA Director, Analgesia Division



Spinal pharmacology

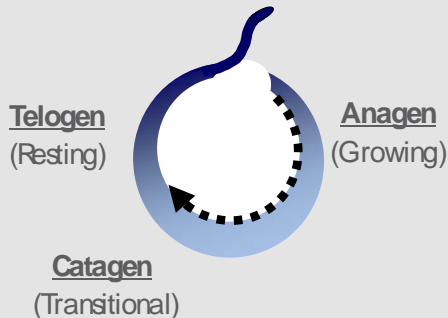
Tony Yaksh, PhD – Prof. of Anesthesiology and Pharmacology, UCSD School of Med



Creating Value (example: top-tier journal)

Past Efforts

Stimulation of old follicles:



PREVIOUS EFFORTS—
LARGELY UNSUCCESSFUL

Wnt-dependent *de novo* hair follicle regeneration in adult mouse skin after wounding

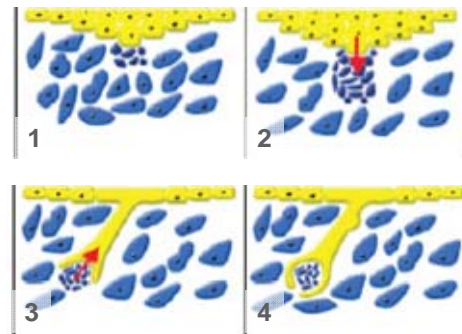
Mayumi Ito¹, Zaixin Yang¹, Thomas Andl¹, Chunhua Cui¹, Noori Kim¹, Sarah E. Millar¹

The mammalian hair follicle is a complex 'mini-organ' thought to form only during development; loss of an adult follicle is considered permanent. However, the possibility that hair follicles develop *de novo* following wounding was raised in studies on rabbits^{2,3}, mice⁴ and even humans fifty years ago⁵. Subsequently, these observations were generally discounted because definitive evidence for follicular neogenesis was not presented⁶. Here we show that, after wounding, hair follicles form *de novo* in genetically normal adult mice. The regenerated hair follicles establish a stem cell population, express known molecular markers of follicle differentiation, produce a hair shaft and progress through all stages of the hair follicle cycle. Lineage analysis demonstrated that the

nascent follicles arise from a stem cell niche, suggesting that we can assume a hair follicle stem cell niche exists in the epidermis after re-epithelialization of wounding-induced follicle loss. Wnt ligand in the epidermis induces the formation of new hair follicles. These remarkable findings in adult mice support the notion that hair follicle neogenesis is a normal phenotype in skin, and that the identification of hair follicle neogenesis suggests treatments for wound healing and skin disorders.

nature

Creation of new follicles:



FOLLICLE'S BREAKTHROUGH
PLATFORM



Nature paper generated interest from media & investors



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Wounded mice offer hope

POSTED: 1212 GMT (2012 HKT)

Start up: Microbial

By Frank Quaratiello

Thursday, May 17, 2007





Gene find triggers baldness hope

Hair loss in humans might be reversible, suggest scientists who have helped create new hair cells on the skin of mice.





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May 17, 2007

Baldness breakthrough: Stem cells coaxed into growing hair

From MacRae - More by this author » Last updated at 08:36am on 18th May 2007





Study offers hope of baldness reversal

Tests on mice could pave way for new hair-loss treatment

Reuters

Updated: 2:36 p.m. ET May 16, 2007



Daily Mail

24 HOURS A DAY

Baldness breakthrough: Stem cells coaxed into growing hair

From MacRae - More by this author » Last updated at 08:36am on 18th May 2007



TIMESONLINE

From Times Online

May 16, 2007

Breakthrough made in search for baldness cure



The Statesman

Hair Holy Grail within scientists' grasp

Aside from a few, fleeting empirical hints in the 1950s, adult men appear to be lacking regenerative abilities. Just asking those hair follicles have died—the result is baldness.

But there is a glimmer of hope for the hair-challenged among us. Scientists at the University of Pennsylvania report that new hair follicles formed on the heads of wounded mice.





WASHINGTON (Reuters) — Microbial scientists said on Wednesday in a finding that could lead to a cure for baldness.

news@nature.com

The best in science journalism

Published online: 16 May 2007 | doi:10.1038/news070514-12

Skin's own cells could beat baldness

Research on mice raises hopes for regrowing hair.

Michael Hopkin

Skin may have the capacity to regenerate lost hair follicles from within, according to a new discovery that could yield better treatments for baldness or abnormal hair growth. Researchers in the United States have found that when skin is wounded, epidermal cells can respond by assuming the properties of stem cells that generate hair follicles and growing new hair.

That's what happens in mice, report George Cotsarelis and his team at the University of Pennsylvania School of Medicine in Philadelphia. If the same is true of human skin, the research raises the possibility that older men with established baldness could be cured.

ness

vania after

ocked a cure for





MINI MEDICAL MIRACLES

POSSIBLE CURES FOR BALDNESS


8:23 28°

3 More Undiscovered Growth Stocks

By Tim Beyers May 18, 2007

What's a discovery worth? Billions -- if, that is, it's the *right* discovery.

For millions of American men, who spend an estimated \$1.5 billion a year on hair restoration products from Johnson & Johnson (NYSE: [JNJ](#)), Merck (NYSE: [MRK](#)), and others, curing baldness would be the right discovery. Turns out there may be reason for hope. Researchers at the University of Pennsylvania have learned how to regenerate hair follicles by stimulating the genes within. To me, that sounds like weird science. Nevertheless, it could become a huge business for private equity. Can you imagine? We were Follicle



The Motley Fool

To Educate, Amuse & Enrich™

Agenda

- Early Funding Environment
- Building Early Value
- **How to Fund an Early Stage Company**

Some Pitfalls in Creating an Early Stage Biotech

-Intellectual Property

- Publishing before locking down commercially driven IP
- Not covering key markets (dropping international rights)

-Tech Licensing

- Having unrealistic assessment of current value

-Principal Investigator / Key Founder

- Seeing the spinout as a source of funding for lab
- Splitting the equity “equally” with colleagues

-Management

- Friends and consultants. (No team is better than the wrong team).

-Funding...

The Funding Process

- Know your market & build relationships
 - Develop a relationship as an advisor/expert to funding sources
 - Time is important commodity of VCs
- Competitive Process until the end (or as long as possible)
 - Keep them separate
- Research comparables and have realistic expectations. Some general ranges:
 - Seed stage valuations \$1 – 4M pre-money
 - Series A valuations \$5 – 9M pre-money (unless unusual asset/competitive)
- What to do if your idea not “fundable” by traditional VCs?
 - Consider license to a strategic partner or other non-traditional sources
 - Build in missing components if possible (eg. SAB)

Mapping Sources of Funding

Primary considerations to match with investor:

- Stage of asset(s)
- Size of investment
- Market potential
- Strategic value to investor

Finding the Right Funding Source

- **Granting organizations (Government/Foundation)**
 - Strategic interests paramount
 - Potential non-dilutive capital at early stage
- **Angels**
 - May have strategic interests (clean-tech, orphan diseases, etc.)
 - Seed stage, small investments
- **Incubators/seed stage funds**
 - May have strategic interests (ties to universities, locations, corporations)
 - Seed stage companies in need of business or physical infrastructure
- **VC**
 - Different stages, investment sizes, strategic portfolio. *Important to match!*
 - Developed concept with top team and large market products
- **Corporations/Corporate VCs/New Models**
 - Strategic interests paramount
 - Generally for companies who can also benefit from the early relationship

About PureTech Ventures

PureTech is an institutional entrepreneur and seed stage investor

We partner with scientists to form companies based on breakthrough research

Our Partners include former Pharma CEOs, CSOs, EVPs, entrepreneurs and leading scientists

PureTech:

In-license technologies

Develops intellectual property

Builds team

Drives to critical value inflection milestones



▶ Accelerator Overview

▶ Mission: *Efficient and disciplined*

- ▶ Identification
- ▶ Evaluation
- ▶ Capitalization; and,
- ▶ Development

of emerging biotechnologies

▶ Focus:

- ▶ Quality of deals
- ▶ Capital efficiency
- ▶ Bandwidth efficiency

▶ Path:

- ▶ Leverage unique Sources
- ▶ Provide key Resources



▶ Accelerator Overview

- ▶ Dedicated syndicate of top-tier life sciences VC's
- ▶ Seven investments over first four years
 - ▶ \$31M invested in Series A of these 7 companies
 - ▶ 3 “graduates”, 2 companies currently at Accelerator
- ▶ Diverse portfolio across multiple therapeutic areas
- ▶ Manageable pace that matches initial projections
- ▶ Three “graduates” raised \$114M in Series B rounds
 - ▶ \$55M for VLST
 - ▶ \$29M for Spaltudaq
 - ▶ \$30M for Allozyne

► Raising Early Stage Capital: Do's and Don'ts

► Be clear and concise

- Accurate (eventually, even idiot VC's will find out...)
- Descriptive (avoid jargon and acronyms)
- Understandable (yes, grammar is important)
- Prepared (you get 1 shot – don't waste people's time)

▶ Raising Early Stage Capital: Do's and Don'ts

- ▶ Be clear and concise
- ▶ Know what you know, know what you don't know
 - ▶ Be completely honest
 - ▶ Teach what is novel and different
 - ▶ Don't teach what your audience already knows

▶ Raising Early Stage Capital: Do's and Don'ts

- ▶ Be clear and concise
- ▶ Know what you know, know what you don't know
- ▶ Be persistent (within reason...)
 - ▶ Don't give up with the first "no"
 - ▶ Learn from feedback and adjust
 - ▶ You can lead a horse to water, but...
 - ▶ When the horse is dead, quit beating it

▶ Raising Early Stage Capital: Do's and Don'ts

- ▶ Be clear and concise
- ▶ Know what you know, know what you don't know
- ▶ Be persistent (within reason...)
- ▶ Be passionate (within reason...)
 - ▶ Your conviction can be convincing
 - ▶ Your lunacy can be convincing too...in the other direction

▶ Raising Early Stage Capital: Do's and Don'ts

- ▶ Be clear and concise
- ▶ Know what you know, know what you don't know
- ▶ Be persistent (within reason...)
- ▶ Be passionate (within reason...)
- ▶ Focus on what is important
 - ▶ Draw a straight line from now to success
 - ▶ Rely upon substance, not fluff

▶ Business Plans: Cardinal Rules

- ▶ Be clear and concise
- ▶ Know what you know, know what you don't know
- ▶ Be persistent (within reason...)
- ▶ Be passionate (within reason...)
- ▶ Focus on what is important

If you follow these simple rules...

► Raising Early Stage Capital: Do's and Don'ts

- Be clear and concise
- Know what you know, know what you don't know
- Be persistent (within reason...)
- Be passionate (within reason...)
- Focus on what is important

*If you follow these simple rules...
and your plan meets all of the basic requirements...*

► Raising Early Stage Capital: Do's and Don'ts

- Be clear and concise
- Know what you know, know what you don't know
- Be persistent (within reason...)
- Be passionate (within reason...)
- Focus on what is important

*If you follow these simple rules...
and your plan meets all of the basic requirements...
you will get the backing you seek.*



Biotechnology Greenhouse of Southeastern Pennsylvania

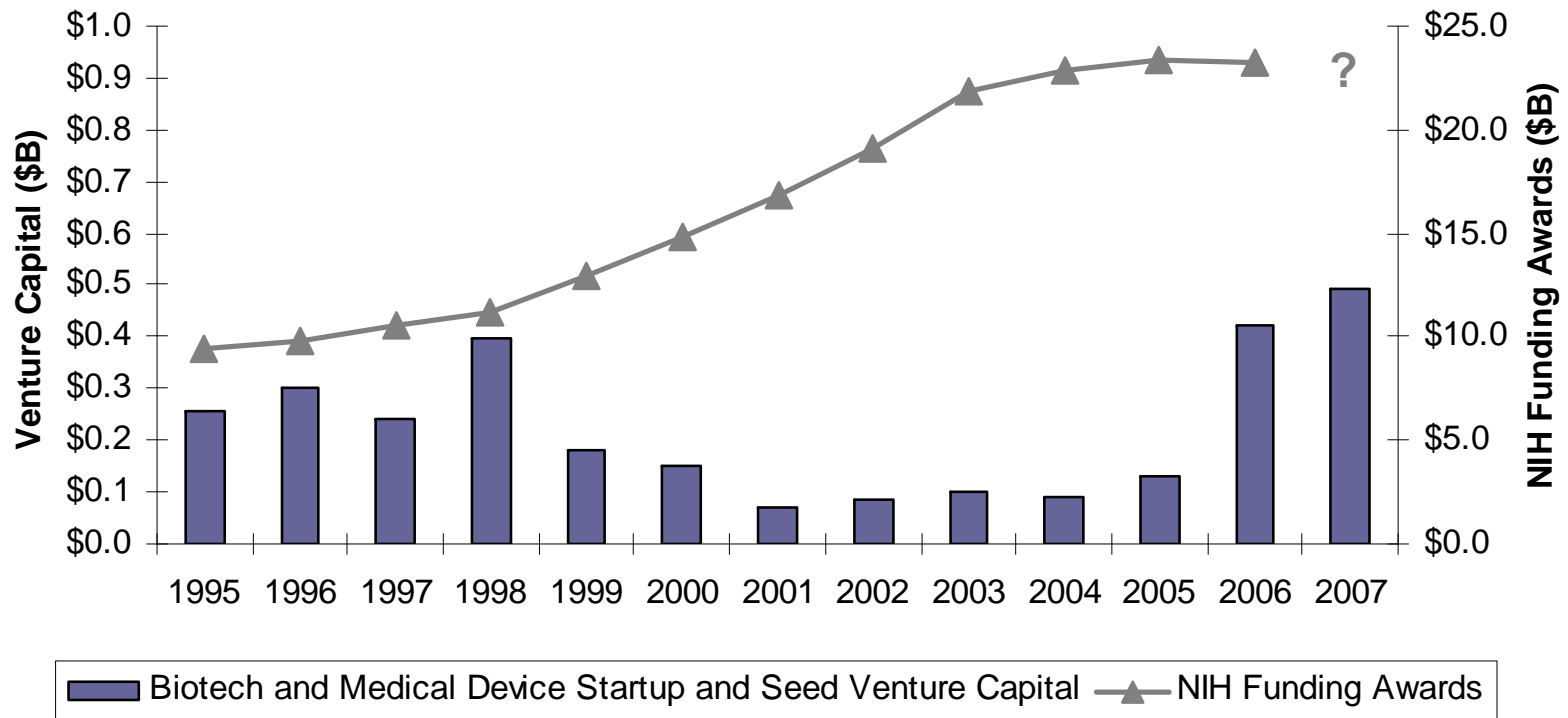
Finding Sources to Fund a Biotech Start-up
***FierceBiotech* – Webinar**
March 6, 2008

Barbara S. Schilberg
Managing Director and CEO



Seed Funding Gap

Ratio of NIH Funding to Startup Capital



Sources: Venture Capital Data – PWC MoneyTree Database. NIH Funding (Total US) – NIH Award Information and Data (<http://grants.nih.gov/grants/award/awardtr.htm>)

Regional Concentration of Startup Capital

- **80% of seed/startup deals in biotech and medical devices occur in 8 locations:**
 - ◆ **Silicon Valley**
 - ◆ **Boston**
 - ◆ **Washington, DC**
 - ◆ **San Diego**
 - ◆ **Philadelphia metro**
 - ◆ **New York metro**
 - ◆ **Los Angeles**
 - ◆ **Washington State**

Bridging the Gap – Types of Funds

- **High Net Worth Individuals**
 - ♦ Upstart Ventures (UT/\$30M), Translational Accelerator (AZ/\$20M)
- **Special Purpose Funds**
 - ♦ Neuro Venture Capital (NC/CA/\$20M), In Q Tel (VA/\$63M)
- **Seed Funds**
 - ♦ Avalon Ventures (CA/new fund \$84M), BioVentures Investors (MA/\$61M)
- **VCs as LPs**
 - ♦ Accelerator Corp. (WA/\$23M), Innovation Factory
- **States as LPs**
 - ♦ BioCrossroads (IN/\$6M seed fund); BioAdvance (PA/\$20M); South West Michigan First (\$17M)

See “Startup funds by group/region” --
<http://www.bioadvance.com/entrepreneurial.asp>

Pennsylvania's Approach

- **BioAdvance -- one of three PA life science “greenhouses”**
 - ♦ Each greenhouse customizes a business plan for its region
- **Greenhouse program launched in 2002 under \$2 billion Life Sciences Initiative**
 - ♦ **Created funding continuum**
 - \$1.6 billion – annual research funding
 - \$100 million – one-time only to greenhouses
 - \$60 million – venture capital

BioAdvance Greenhouse Fund

▪ \$20 million pre-seed/seed fund

- ♦ Focus on therapeutics, devices, diagnostics & supporting services
- ♦ Funding supports commercial proof of concept
- ♦ Enable the company to reach the next stage of capital
- ♦ Up to \$1M per company
 - No match required
 - BioAdvance typically serves as first investor

« Return on investment will fund next generation »

Results to Date



- **≈ 10% of proposals funded**
- **\$11.5 million in investments**
 - ♦ 21 seed
 - ♦ 9 pre-seed
 - ♦ 5 new investments pending
- **80% of portfolio making progress**
 - ♦ 5 exits; 4 before reaching venture financing
 - ♦ >\$250 million in acquisition value
- **>50% of companies have attracted \$215 million in subsequent follow-on capital**

What do we look for?

- **Technical merit**
 - ♦ Scientific rationale
 - ♦ Feasibility of plan
 - ♦ Technical proof of concept has been achieved
- **Commercial merit**
 - ♦ Significance of medical need
 - ♦ Time to market
 - ♦ Size of market compared with cost to develop
 - ♦ Product differentiation/competitive advantage
 - ♦ Barriers to entry through patents, other
- **Qualifications of team**
 - ♦ Relevant experience with the proposed activities
- **Ability to reach Series A funding within 24 months**
- **Significant presence in PA**

You get extra points if:

- You have more than one qualified team member
- You have correctly identified your first indication
- You know whether/how your product would be reimbursed
- You understand the development hurdles and regulatory path
- You have other resources (grants, etc.) sufficient to get to a Series A round
 - ♦ Almost everyone needs at least \$2M of seed funding
- You have a back-up plan to manage risk
 - ♦ Platform technology with multiple products or multiple indications for a product

Most Frequent Reasons for Rejection

- IP is weak, narrow or nonexistent
- Landscape is crowded
- Market size doesn't justify development costs
- Team doesn't have relevant experience

Conclusion: Finding the Right Investor

- **Seed stage investing is local unless you are a serial entrepreneur**
- **Funds are not monolithic: different personalities and preferences**
 - ♦ **Do your homework; use your advisors**
- **Be selective: understand how you fit the investor**
 - ♦ **Investment strategy/mission**
 - Traditional VCs look for 10X return
 - ♦ **Size of investment**
 - Large VCs need to invest \$15-60M per company
 - ♦ **Fund cycle**
 - Look for funds that closed recently
 - ♦ **Current portfolio – what does it tell you?**
- **The community is small—word does travel**
- **Introductions from credible sources are helpful**

Contact Information

Contact us with any questions:

- Visit www.bioadvance.com
- Email esemple@bioadvance.com

BioAdvance Portfolio



Exits Through Acquisition



Thank You

- Thank you for joining us at this FierceLive! Webinar!
- This webinar has been recorded and will be available on-demand within 24 hours. You will receive a notice when the recording is up.
- Thank you for joining us!