

# Making Natural Product Research Work: The Importance of Collaborations and IP

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# Universities – the incubator for the biopharma industry

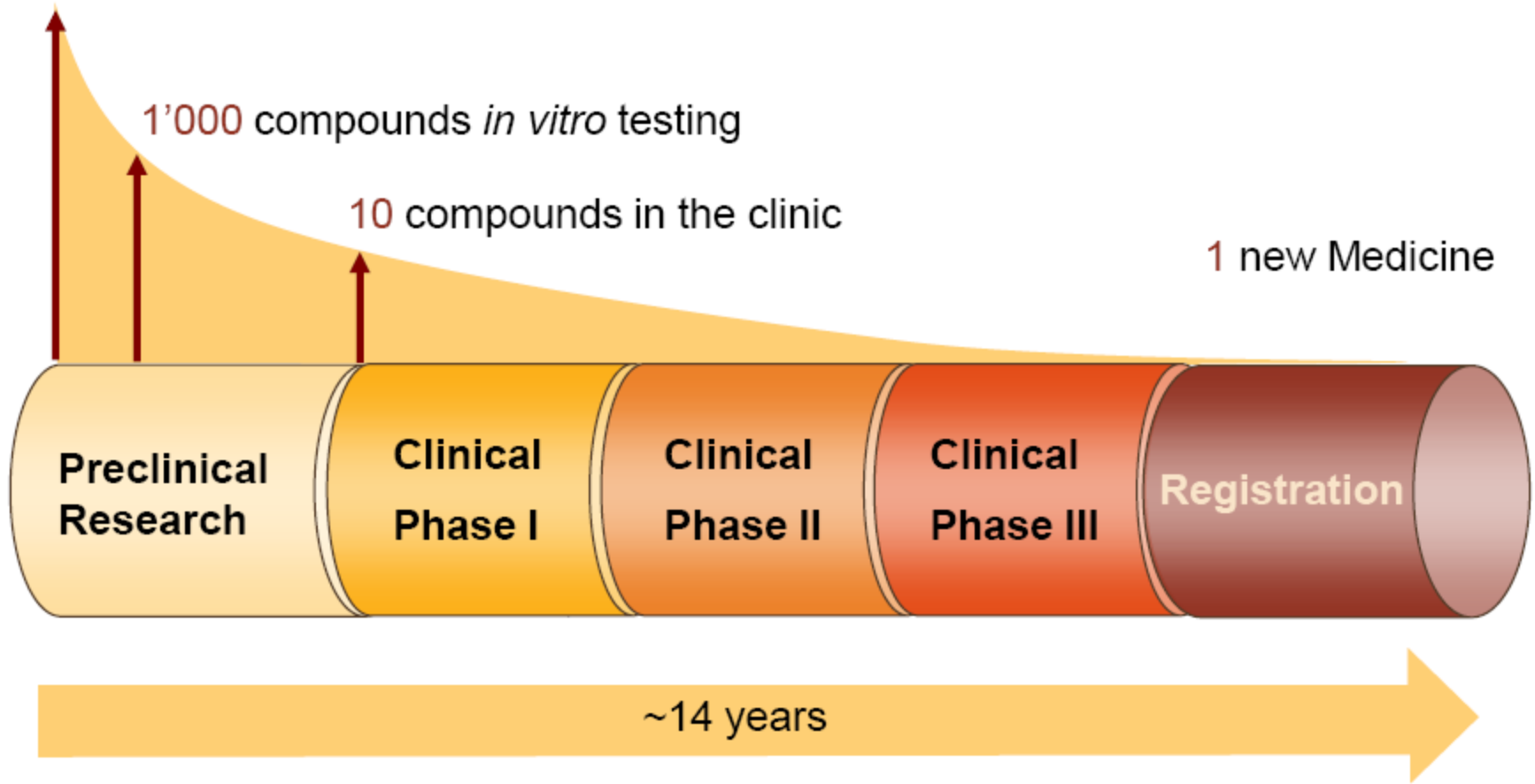
- ▶ In 2006, US universities launched more than 550 startups, most in biopharma (2/3 of biotech startups from academia)
- ▶ Vast majority of biologics on market today developed with university input
- ▶ Top 20 biotech patenting entities dominated by universities; all of “most cited” biotech patents are from academia

# Universities increasingly are primary engine of discovery / innovation for bio

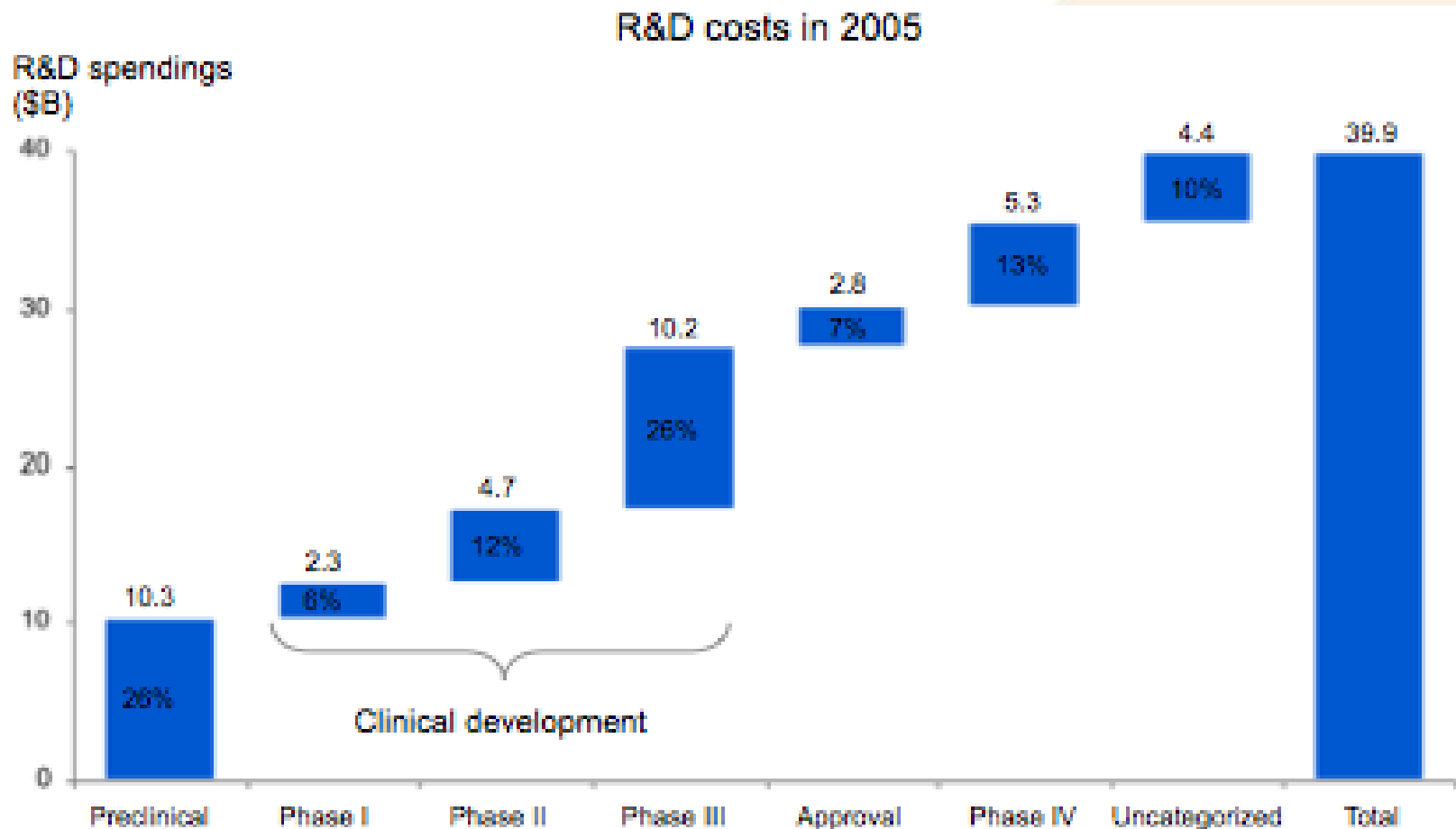
- ▶ Company pipelines drying up - since 1980, large biopharma companies' share of new FDA-approved drugs has declined from ~75% to ~35%
- ▶ >40% of pharma execs want to partner with academia or acquire biotechs to acquire innovation pipeline – new models
- ▶ As biopharma and VC move downstream, academia must address the risk and uncertainty of translation

# Lifecycle of a Product: Clinical Development

10'000 compounds in the beginning



# Lifecycle of a Product: Clinical Development



# Key opportunities – and challenges – with natural products

- ▶ Historical success
- ▶ Natural products libraries offer diversity of leads not typically found in synthetic chemical libraries; BUT...
- ▶ Longer discovery timelines
- ▶ Complexities in sourcing and in large scale production
- ▶ Other challenges in patenting/regulatory schemes
- ▶ Uncertain disclosure requirements heighten risk



# University collaborations critical in biopharma – especially natural products

- ▶ Screening/drug development capabilities previously only in industry; today in academia
- ▶ Funding agencies / foundations emphasizing translation; new NIH entity and programs
- ▶ New models of collaborations and partnerships (companies, NFPs, others)
- ▶ Universities engaging aggressively in entrepreneurial / economic development activities
- ▶ Universities well-positioned as “honest broker” in the natural products space
- ▶ Academic culture change – best talent wants to collaborate with industry – and change society

# Role of IP in innovation “ecosystem” between academia and industry

- ▶ US Law (Bayh-Dole Act) and similar laws elsewhere gave universities title to patents
- ▶ Goal - societal and economic benefit
- ▶ National policy frameworks allow universities to grant licenses, including exclusive licenses
- ▶ Bayh-Dole provides flexibility for universities in financial terms of licensing
- ▶ Patents (and Data Exclusivity) – provide essential exclusivity needed to attract investors



# Critical components for universities within innovation ecosystem

- ▶ Strong, certain, predictable IP system in which university can be strong player/partner – high-risk of biotech requires robust IP system
- ▶ Strong science (where it all starts)
- ▶ Capital
- ▶ Talent
  - ▶ Founders / Employees
  - ▶ Investors / Advisors
- ▶ Industry partners/collaborators

# Thank you for your attention

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