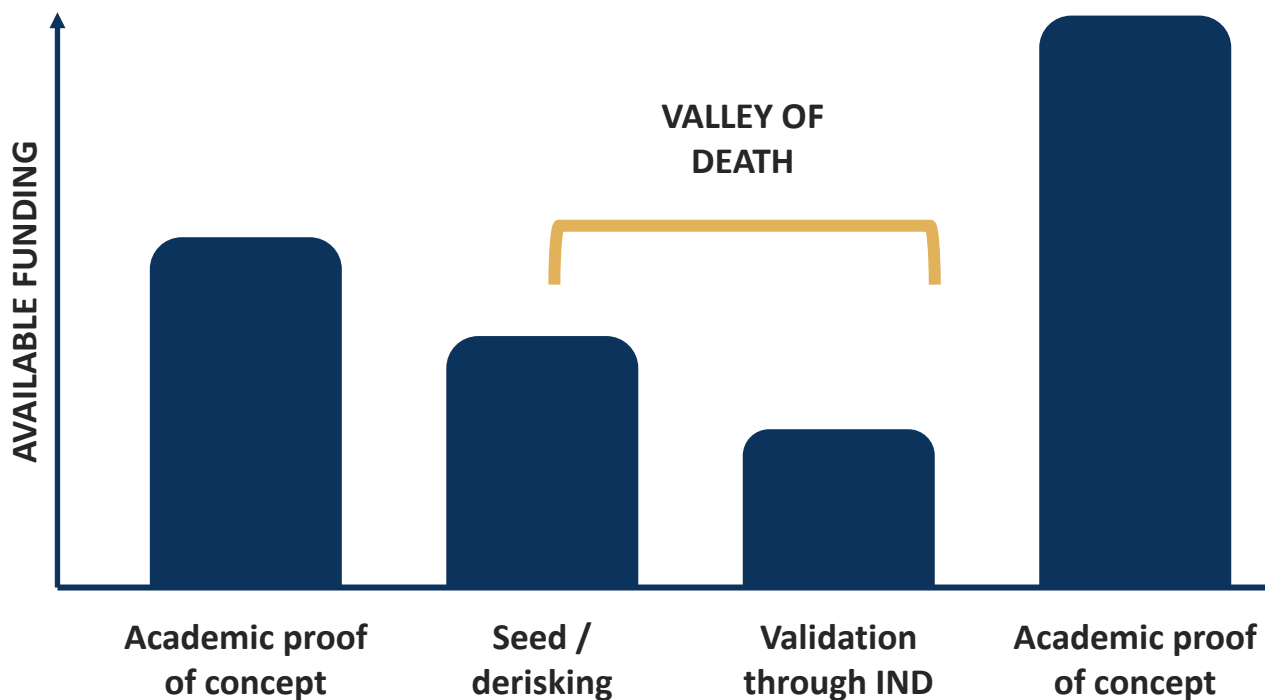


BRIDGING THE “VALLEY OF DEATH” FOR LONGEVITY BIOTECHNOLOGY

James Peyer, PhD
LONGEVITY LEADERS
4 February 2019

What is the biotech valley of death?



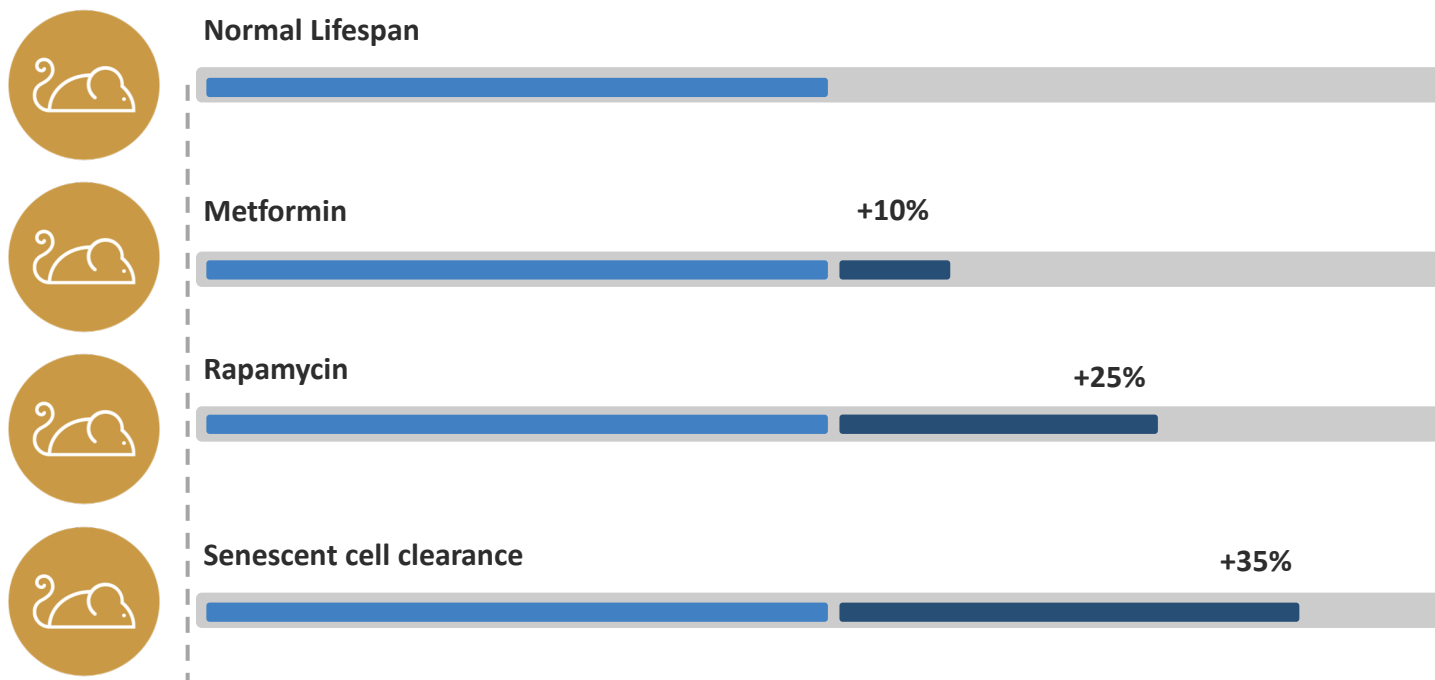
Key challenges to conquering the valley of death:

- **Strategy** – what's the story of your science?
- **Logistics and Team** – can all the parties come together and agree how to develop something?
- **Science** – is the science sufficiently mature to move forwards to translation?

PROBLEM 1

AGING IS NOT AN INDICATION

Targeting the underlying causes of aging can extend mouse lifespan



Mouse before and after senescent cell clearance

BEFORE



AFTER

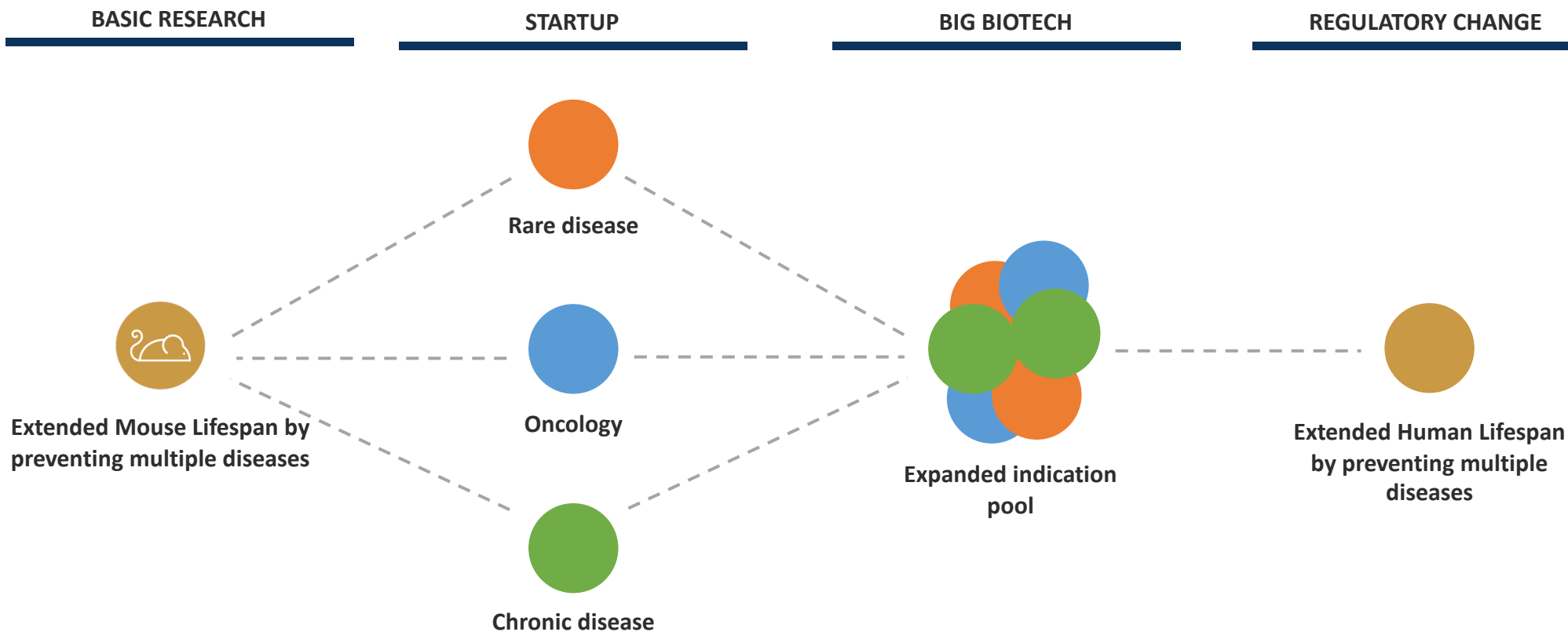



CLEARA

How do we turn longevity interventions into human medicines?

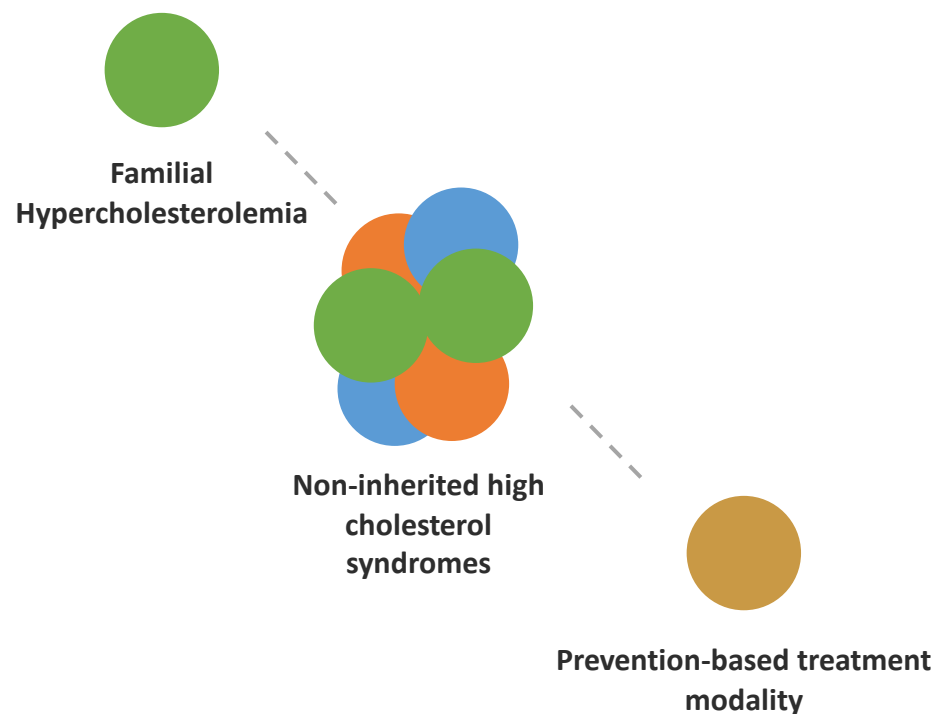


Apollo/Commercial view: therapeutics will treat disease, then prevent disease

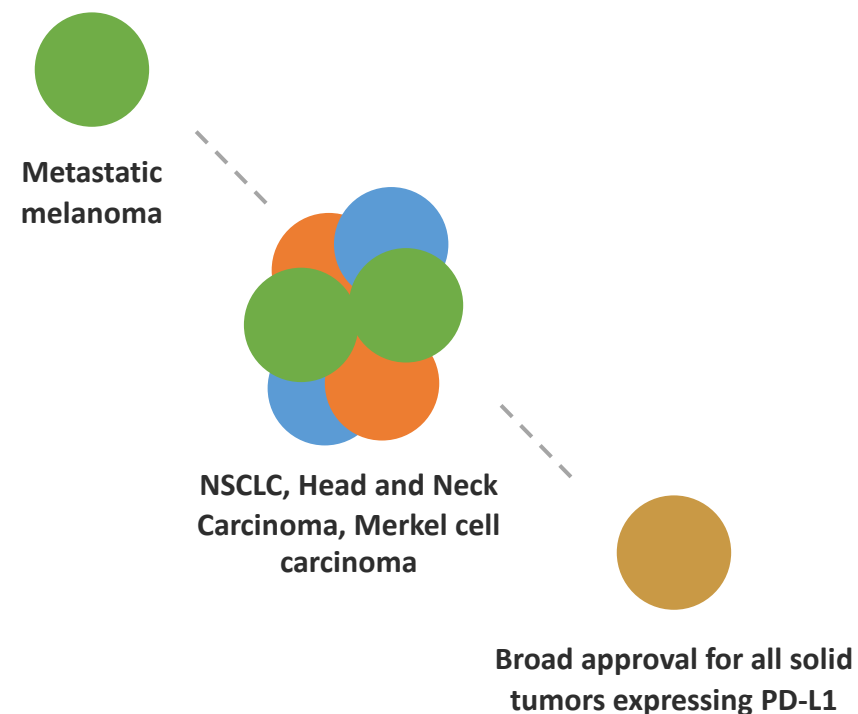


This is already being done & FDA welcomes indication expansion

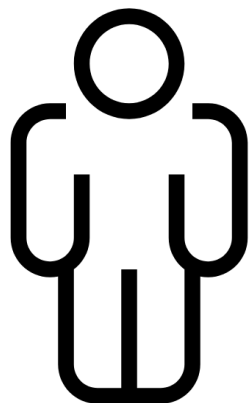
HMG-CoA REDUCTASE INHIBITORS (STATINS)



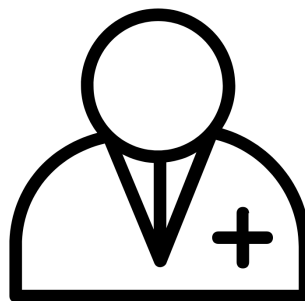
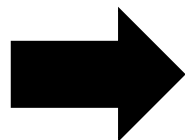
Anti-PD-1 THERAPY



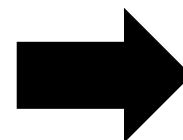
Longevity therapeutics can be tested and used like other drugs



Patient at risk



Visits doctor



**Takes medicine to
prevent disease**

Longevity therapeutics can be tested and used like other drugs



The first “longevity drug” to navigate this approval process will be a major inflection point for the field

Developing therapeutics is a long, hard road with huge costs

FULLY CAPITALIZED COSTS OF CREATING ONE NEW DRUG
(inclusive of failures and time value of money costs)

\$2.6 B

Source: Tufts CSDD

And it can take 15 YEARS to reach the market

BASIC RESEARCH

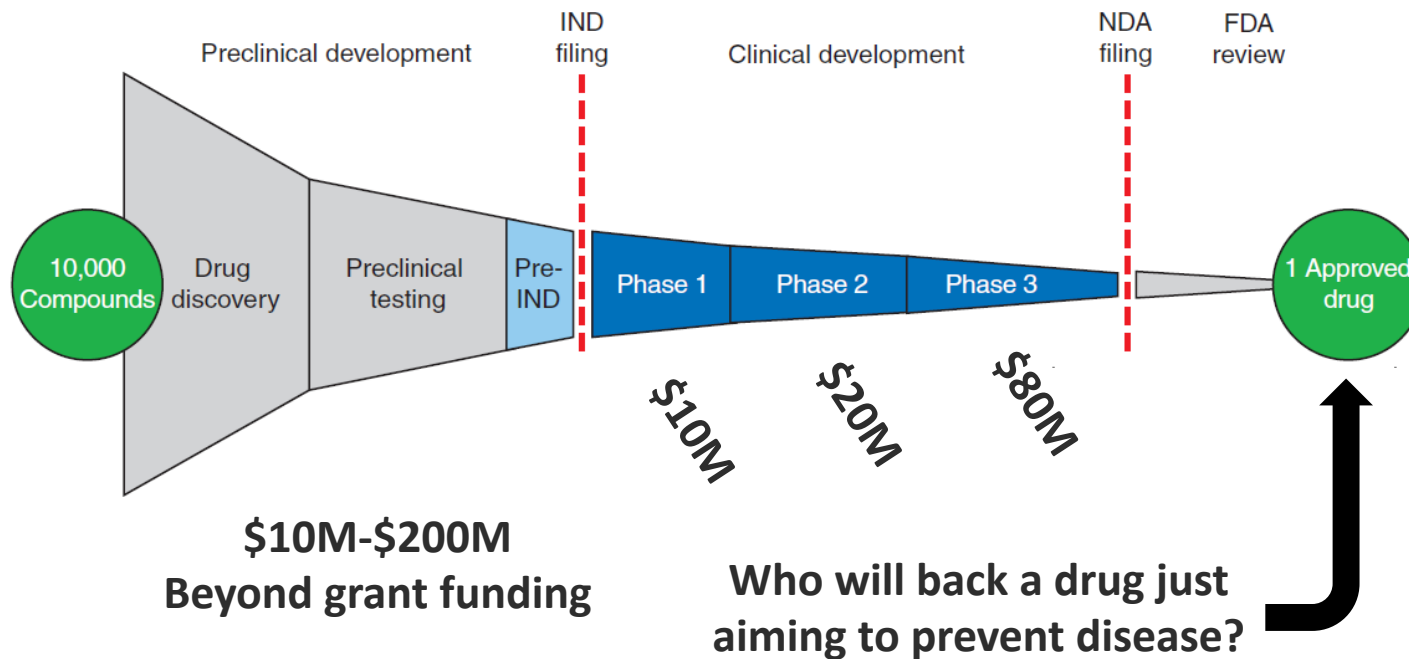
DRUG DISCOVERY

OPTIMIZATION

CLINICAL TRIALS

APPROVAL

The costs of developing a drug at each stage are substantial and the risk of investment is justified by the size of the market at the end



Adapted from: Kessel & Frank, *Nature Biotechnology*, 2007

Biotech companies have to support a compound through all five stages

BASIC RESEARCH

DISCOVERY

OPTIMIZATION

CLINICAL TRIALS

APPROVAL

PROBLEM 1

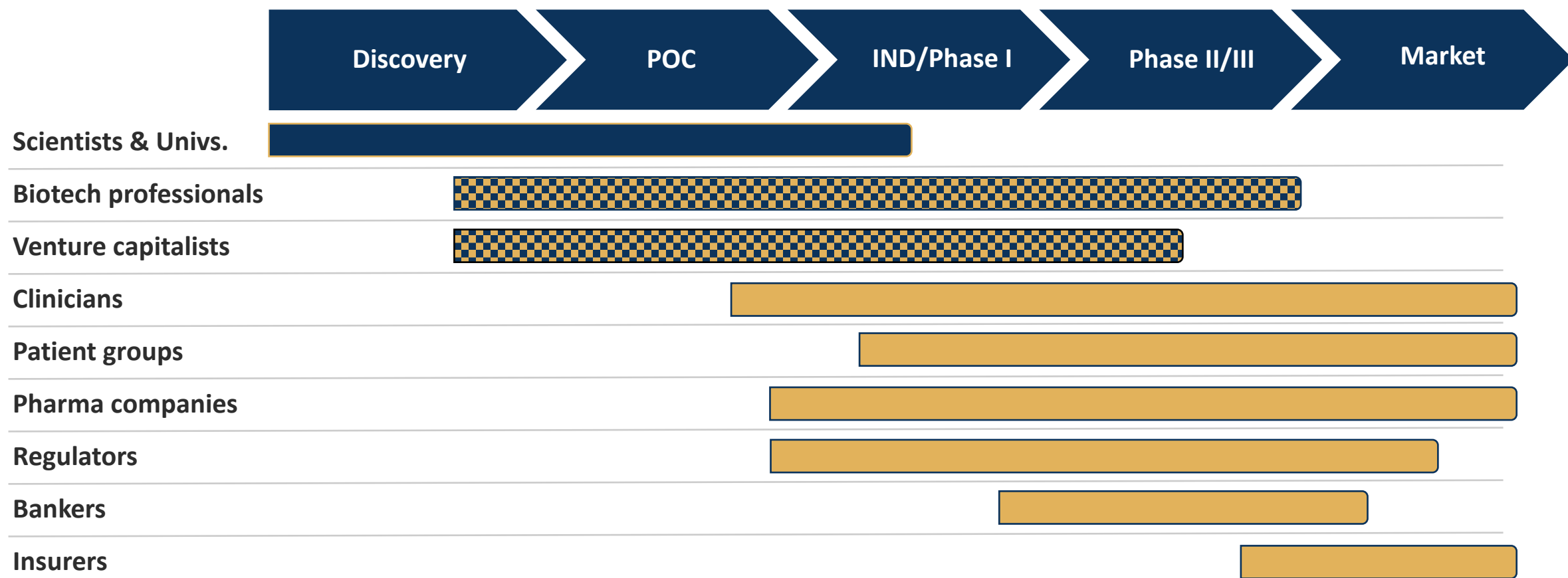
AGING IS NOT AN INDICATION

TAKE HOME: Have a clear angle on an indication from the start of the project

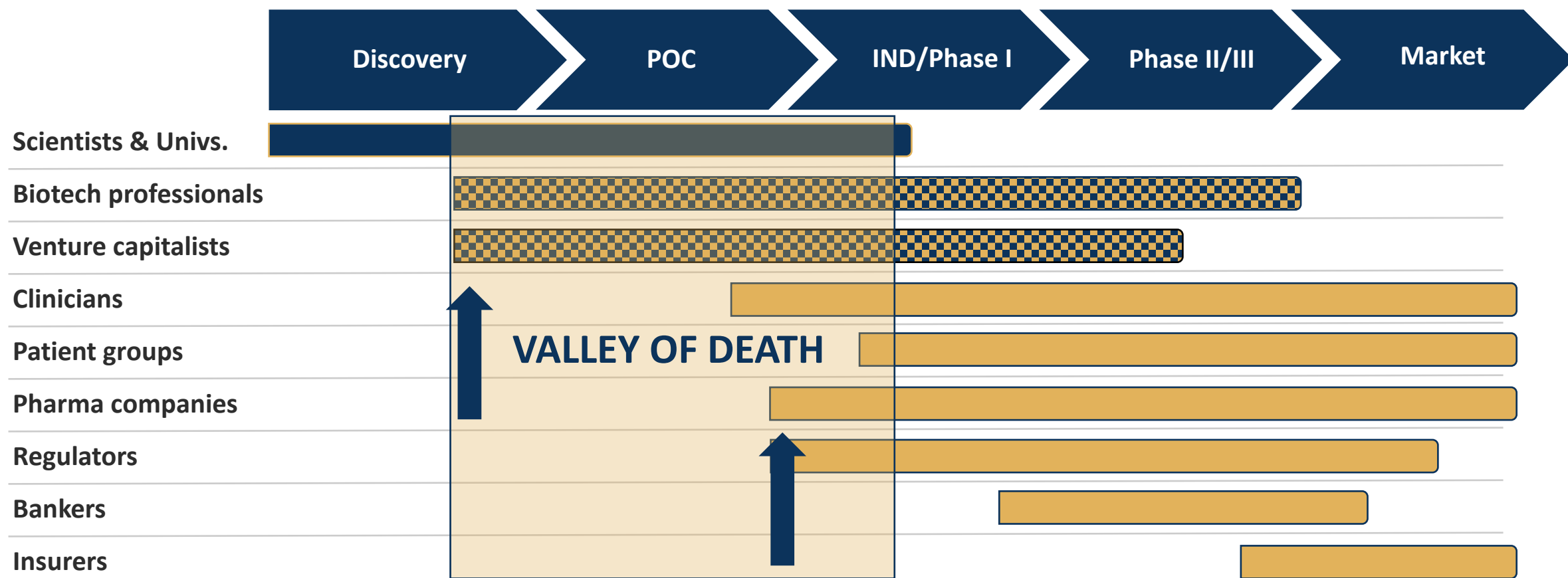
PROBLEM 2

DRUG DEVELOPMENT TAKES A VILLAGE

Making a new medicine has two stakeholder switches during development



Making a new medicine has two stakeholder switches during development



Biotechs face common challenges at these two transition points

Most common challenges



Project to Startup transition

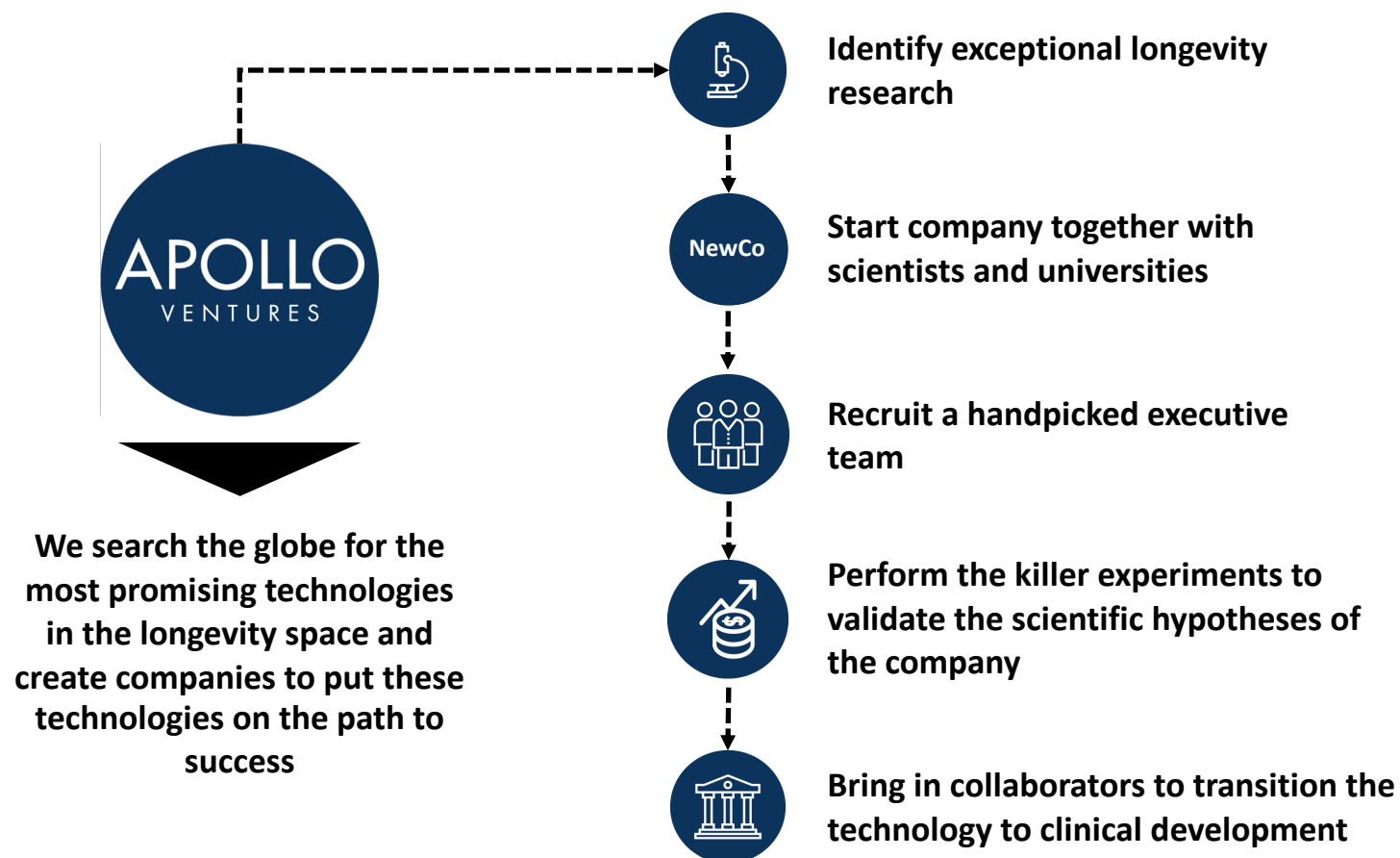
Licensing negotiations
Indication strategy
Team building
Trusted network



Startup to Biotech transition

Fundraising spike
Data package contents
Team composition
Cap table
Stakeholder engagement

Our strategy – a company builder’s approach to longevity biotech



Taking biotech companies

**From ZERO
to helping
MILLIONS**

- I. Start with great science
- II. Assemble a top team
- III. Execute the right strategy

PROBLEM 2

DRUG DEVELOPMENT TAKES A VILLAGE

TAKE HOME: Work with people you trust, who understand the work, and can bring great people together to work on a problem with a shared vision

WHY THIS MEETING IS IMPORTANT

- Finding the right people to work with on aging biology projects is key to kicking off new ventures
- Getting input from experts in the space can improve the chances your strategies are right – the space is young and nobody has all the answers yet
- We are all rooting for each other – a breakout success in this space will lift the entire field to further prominence

THANKS FOR YOUR TIME!