Accelerating Treatments to Patients: Bridging the Valley of Death

Eric Schaeffer, PhD
Neuroscience Therapeutic Area Lead, J&J Innovation Center, Boston
• Global leader in health care
• More than 250 operating companies in 60 countries
• Selling products in more than 175 countries
• 126,500 employees worldwide
High percentage of pipelines are external

Top 12 Big Pharma’s late-stage pipeline valuations by source, 2012-2013

Source: Deloitte Consulting and Thomson Reuters
Our Innovation Centres

- Janssen Business Development
- Our Corporate VC – J&J Development Corporation
- Our Incubator - JLABS  http://jlabs.jnjinnovation.com/
“The Valley of Death” aka Lost in Translation

1.2 million medical papers

2015

396 INDs
CNS Drug Discovery – Little risk discharge before Phase 2!

Cumulative Probability of Success

Cumulative Cost

Years

Phase I

Phase IIa

Phase IIb

Phase III

FDA Review

0

0.5

1.0

Least investment in Pharma R&D

Highest incremental de-risking at POC stage

TI/TV^2

LO stage

Pre-Clinical

Phase I

Phase IIa

Phase IIb

Phase III

Cumulative Cost

HRA Sept 2017
Valley of Death from Different Perspectives

The “Pharma” Valley of Death

The “Academia” Valley of Death

Therapeutic Drug Discovery Pipeline

Discovery → Target Validation → Lead Optimization → Process Chemistry → Preclinical Development → Phase I Clinical Trial → Phase II Clinical Trial → Phase III Clinical Trial → FDA Application & Approval

Translation Gap - the “Valley of Death”

Sources: Michael J. Fox Foundation for Parkinson’s Research; FasterCures

NIH $29 Billion/Yr

Biotech & Pharma $64 Billion/Yr

HRA Sept 2017
Evolving Roles of stakeholders & Novel Partnerships

Pharma/Biotech
- Precompetitive partnerships
- External innovation centers

Academic
- Drug discovery centers
- Tech transfer
- Collaborating with industry

Government
- Interest in fostering/speeding translational science
- Willing to partner & invest with Industry

Venture/financial
- Exit via acquisition/licensing
- Collaborative/strategic

Venture Philanthropy

HRA Sept 2017
Wellcome Trust consortium for neuroinflammation in Mood and Alzheimer’s (NIMA)

A high unmet medical need calls for an innovative approach

• Engage leading academic and pharma experts to:
  • Understand the role of neuroinflammation in depression and AD
  • Leverage our drug discovery successes against immunological disorders
John Hopkins Brain Sciences Institute
External TI/TV networks fostering early stage drug discovery

Novel mechanism discovered by academic scientists → J&J Tool Compound → Target investigation and validation by Academic scientists

Benefits for academics:
- Access to Tool compound before peers
- Ability to connect pathway to disease first
- High Impact discoveries for grants & publications
- Enthusiasm for tool compound research
- Understanding of new pathway in disease models

Benefits for J&J Pharma:
- Tests of therapeutic hypotheses
- Rights to work on new pathways
- New pathways directed toward drug development
- Validated pathways for Lead optimization
- Academic labs validating biomarkers

Transformational drug programs: first in class
JLABS | Company Incubation

- Open innovation model
- Flexible, capital-efficient
- Turn-key lab space
- Community of entrepreneurs
- Access to experts

No strings attached!

SAN DIEGO
Flagship
January 2012
BAY AREA
JLABS @ QB3
October 2013
SOUTH SAN FRANCISCO
JLABS @ SSF
January 2015
BOSTON
JLABS @ LABCENTRAL
June 2013
TORONTO
JLABS @ TORONTO
Spring 2016
NEW YORK
JLABS@NYC
June 2018
HOUSTON
JLABS @ TMC
March 2016
Where do we go from here?

• Early Education
  • Integrate training in drug discovery as part of graduate programs, since many students will consider this path
  • Provide mentoring to academic investigators seeking to develop their discoveries (SPARKS, Stanford)

• Continue to foster new models
  • Government sponsored programs (NCATS, CTSC’s)
  • Academic drug discovery units (Emory, Harvard, Vanderbilt, etc)
  • Pharma investment in experimental medicine studies
  • More investment by Pharma and VCs in early biotech

• More cross-sector collaboration
  • Public Private Partnerships (focused projects)
  • Better communication across “boundaries”

Sharing expertise and removing siloes is needed to make progress
Thank you

eschaef7@its.jnj.com

www.jnjinnovation.com