

BioPharma: From Research to Market

NHIC / Duke-NUS I&E Platform Partnering

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Biotech Landscape Remains Very Attractive: Huge Market and Investment Returns



Favourable Demographics

- Aging Populations
- Growing Affluence (e.g. Asia)



Transformative Science

- Biological Understanding (e.g. Genomics)
- New Therapies
- Computing / Big Data



Clear Business/Exit Model

- Big Pharma M&A for Innovation
- Favourable Public Markets

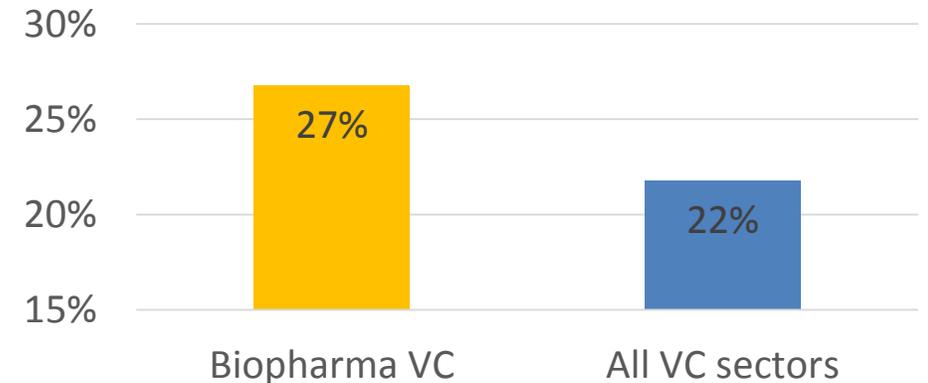
\$7.7 Trillion

Global Healthcare Spending

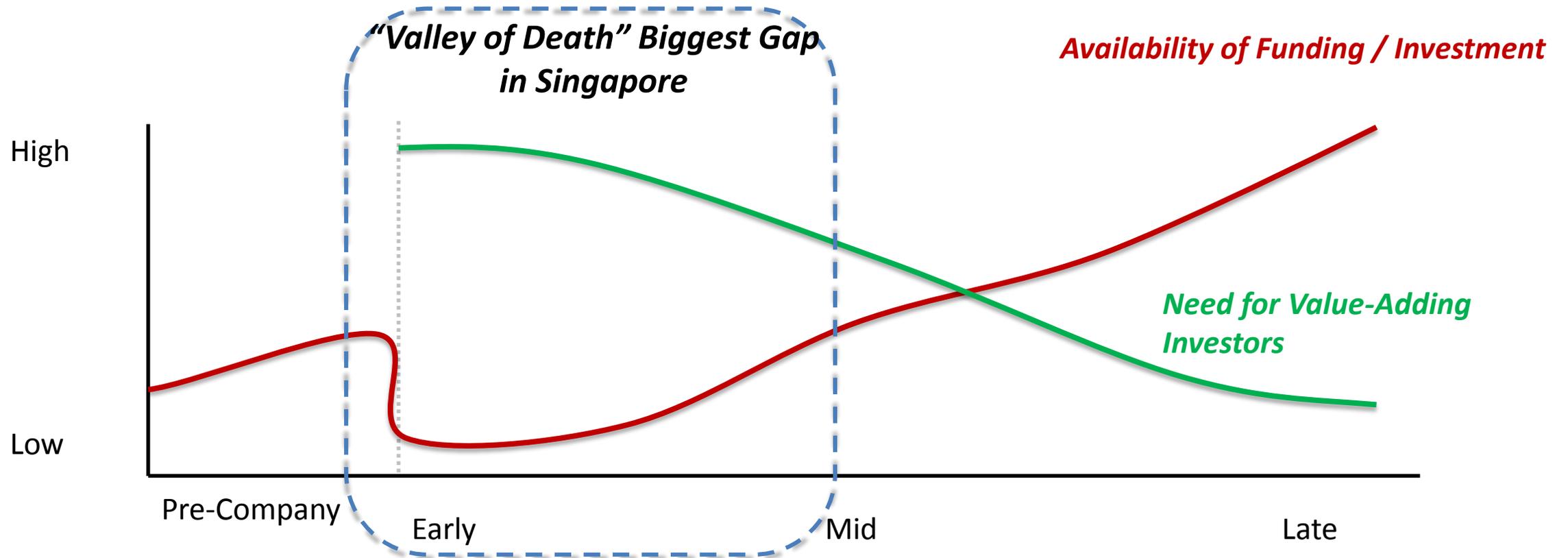
6% growth/year

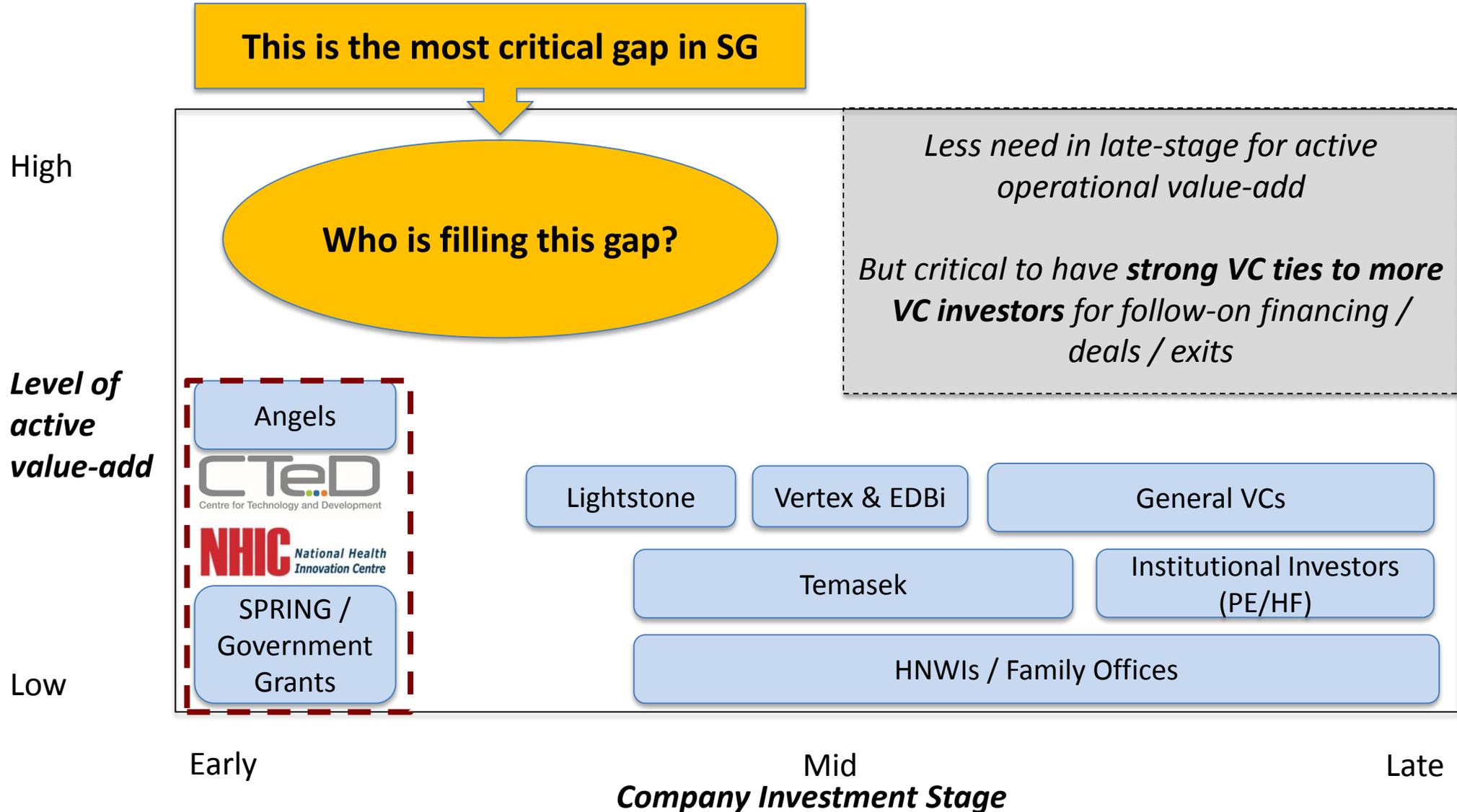
Top-Tier Returns

Venture Capital Net IRR (Realized)
2006-2016



Most Challenging in the Early Stages: Lack of Funding and Need Active Support





The Active Translation Model Creates New Ventures



Discover

Actively source and develop **transformative ideas**

Ask “What would an investor want to see.”



Incubate

Active de-risking to achieve **commercial readiness---POC**



Launch

Form company with significant **Series A**



Build

Support **company growth** via network, and capital

Opportunities & Collaboration Within CTeD & Duke-NUS Medical School



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Latest: CTeD Launches Cognalearn

Entrepreneur in Residence

A 1-3 year opportunity for individuals to join and work on selected CTeD projects.

[Learn More >](#)



National Heart
Centre Singapore
SingHealth

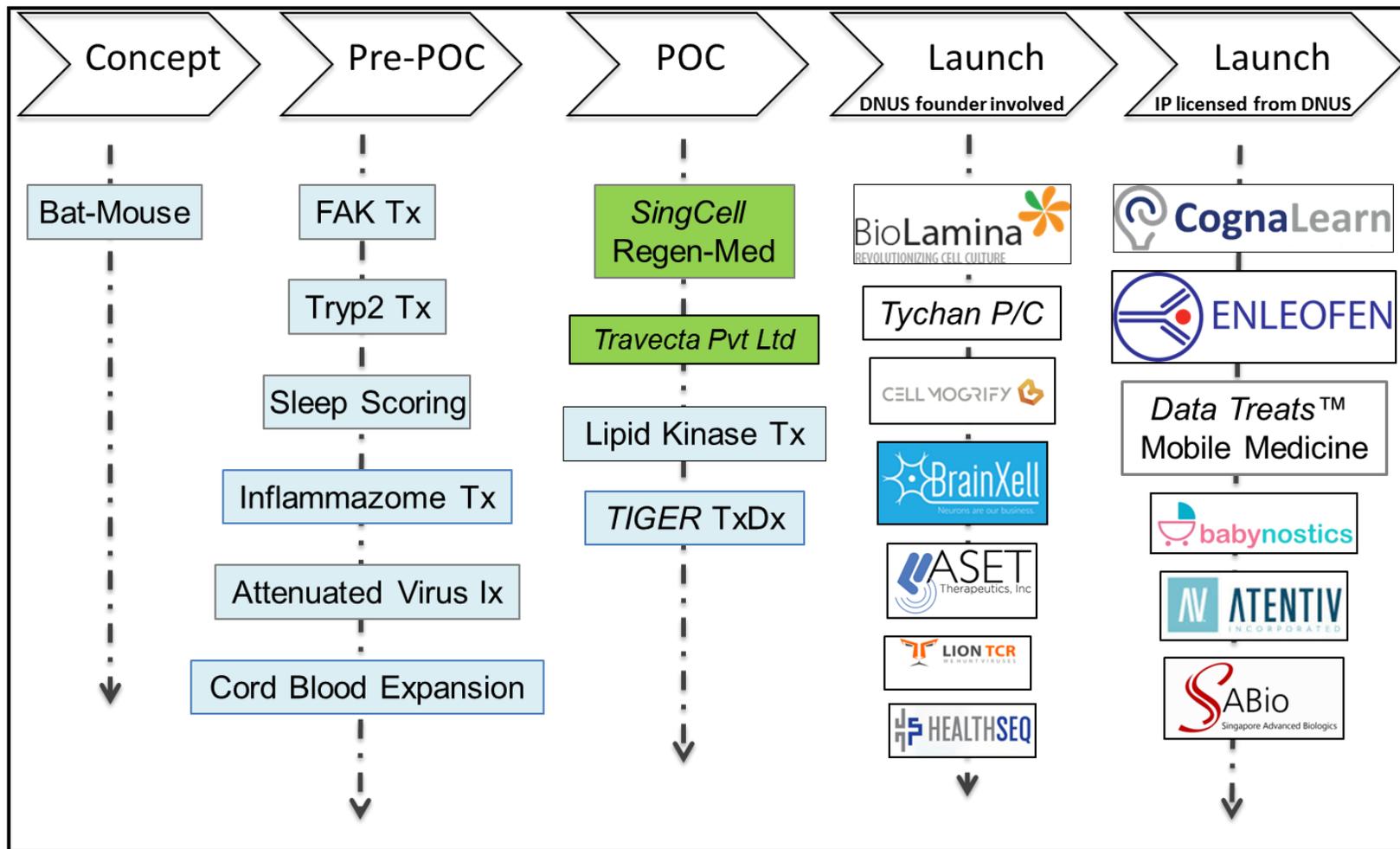


SINGAPORE
EYE
RESEARCH
INSTITUTE



National Health
Innovation Centre

Pipeline of Active Biotech Projects at Duke-NUS



- **Benefits:** Sourced at pre-commercial level and supports clinician scientists / basic researchers
- Active collaboration between PI and CTeD
- Advances internal IP
- Cash and resource efficient
- Trains PI and entrepreneurs
- Leads to viable spin-outs

Enleofen Pvt Ltd: NHCS/Duke-NUS IP

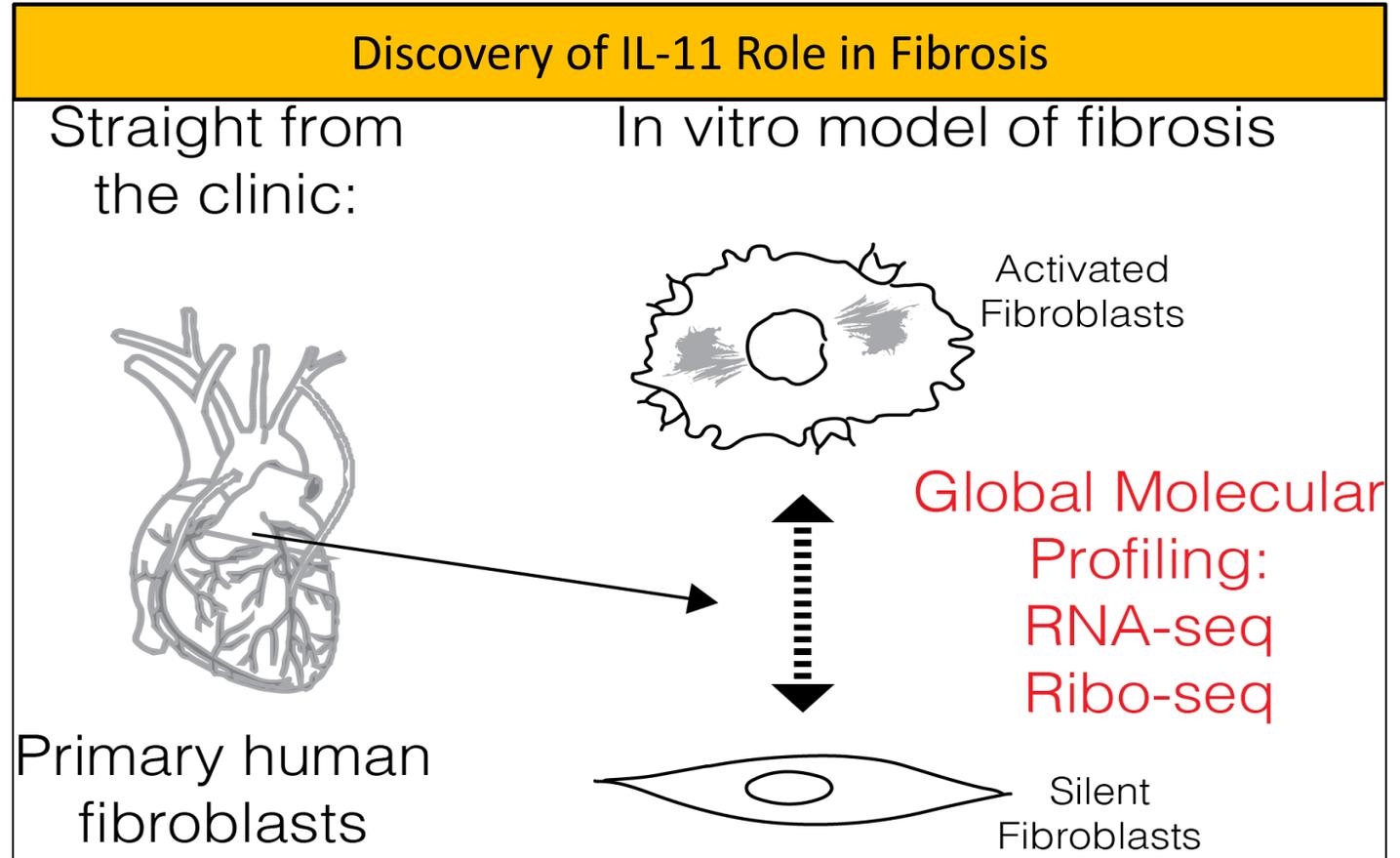
Discovery Platform for Anti-Fibrotic Targets/Drugs



Stuart Cook, MD PhD
Professor & Director
CVMD & Heart Center



Seb Schaefer, PhD
Assistant Professor
CVMD





Stuart Cook MD, PhD
Professor, Director, CVMD
Program, Duke-NUS

CLINICIAN SCIENTIST

- Tanoto Foundation Professor of Cardiovascular Medicine
- Distinguished Clinician Scientist, Senior Consultant, National Heart Centre Singapore
- Director, National Heart Research Institute Singapore (NHRI-S)

Fibrosis Discovery Platform

- Human genetic & genomic discovery platform
- Heart disease focused
- 3+ years to build & develop

New Cytokine Project

- NFG1 over-expressed in disease cells, tissue
- NFG1 causal in Fibrosis
- K-O NFG1 blocks disease in animal models

CTeD Collaboration

- Therapeutic Antibody discovery
- Patent review
- Commercial review
- R&D plan

NHCS-CTeD-NHIC I2D Programme

- Active Translation Model
- Aligned public-sector funding (\$0.5M+)
- Milestone: Preclinical POC with novel antibodies, biologics, new IP filed

Enleofen Spin-Out

- www.enleofen.com
- Singapore-based
- Drug development
- Scale-up & POC
- Safety & tox for IND

CURRENT ACADEMIC FOCUS

- Fibrotic disease
- IncRNAs
- Novel disease modifiers



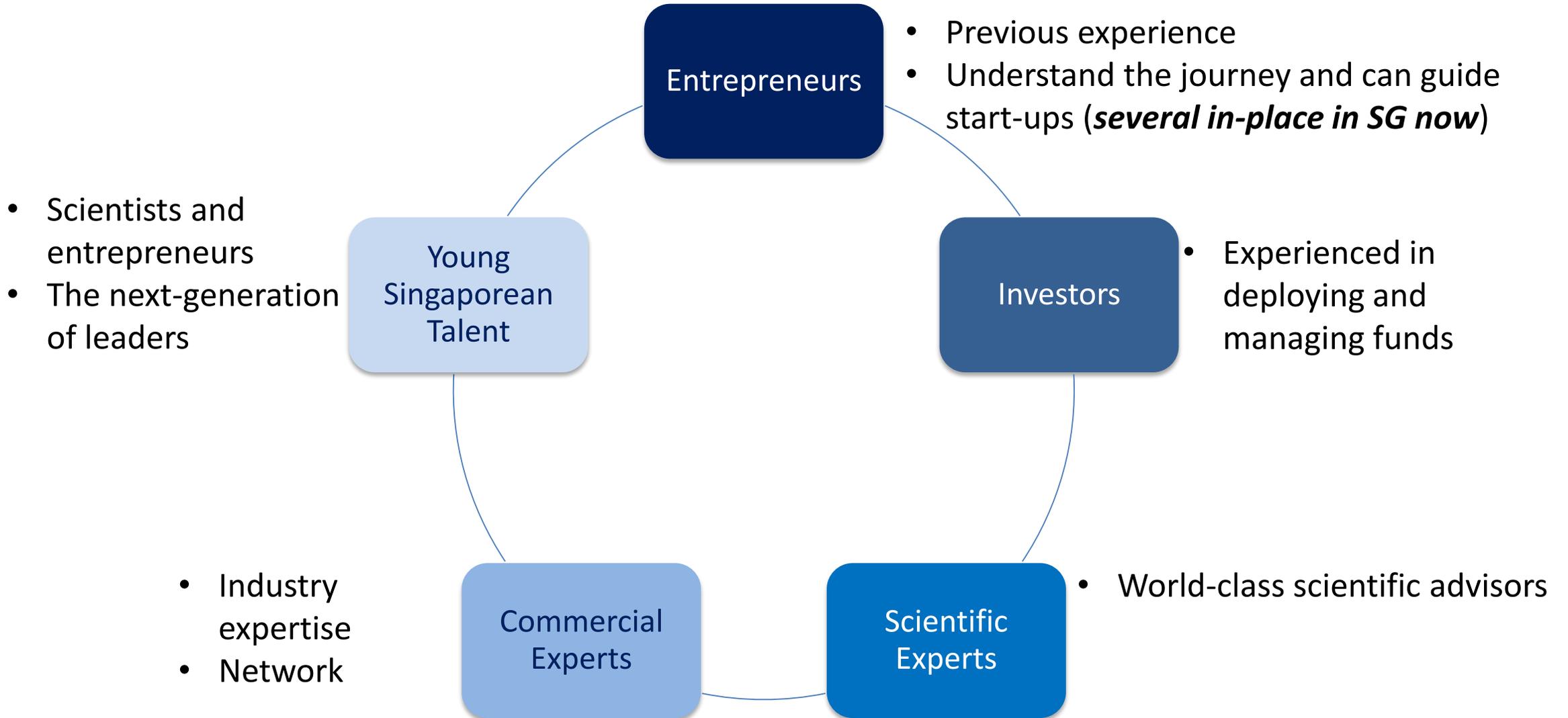
Breakthrough discovery presents hope for treating fibrotic diseases which cause organ impairment

Singapore, 28 August 2017 – A breakthrough discovery in the field of cardiovascular fibrosis research made at Duke-NUS Medical School (Duke-NUS) and National Heart Centre Singapore (NHCS) has been licensed to a newly launched company Enleofen Bio Pte Ltd, a Singapore-funded biotechnology start-up.

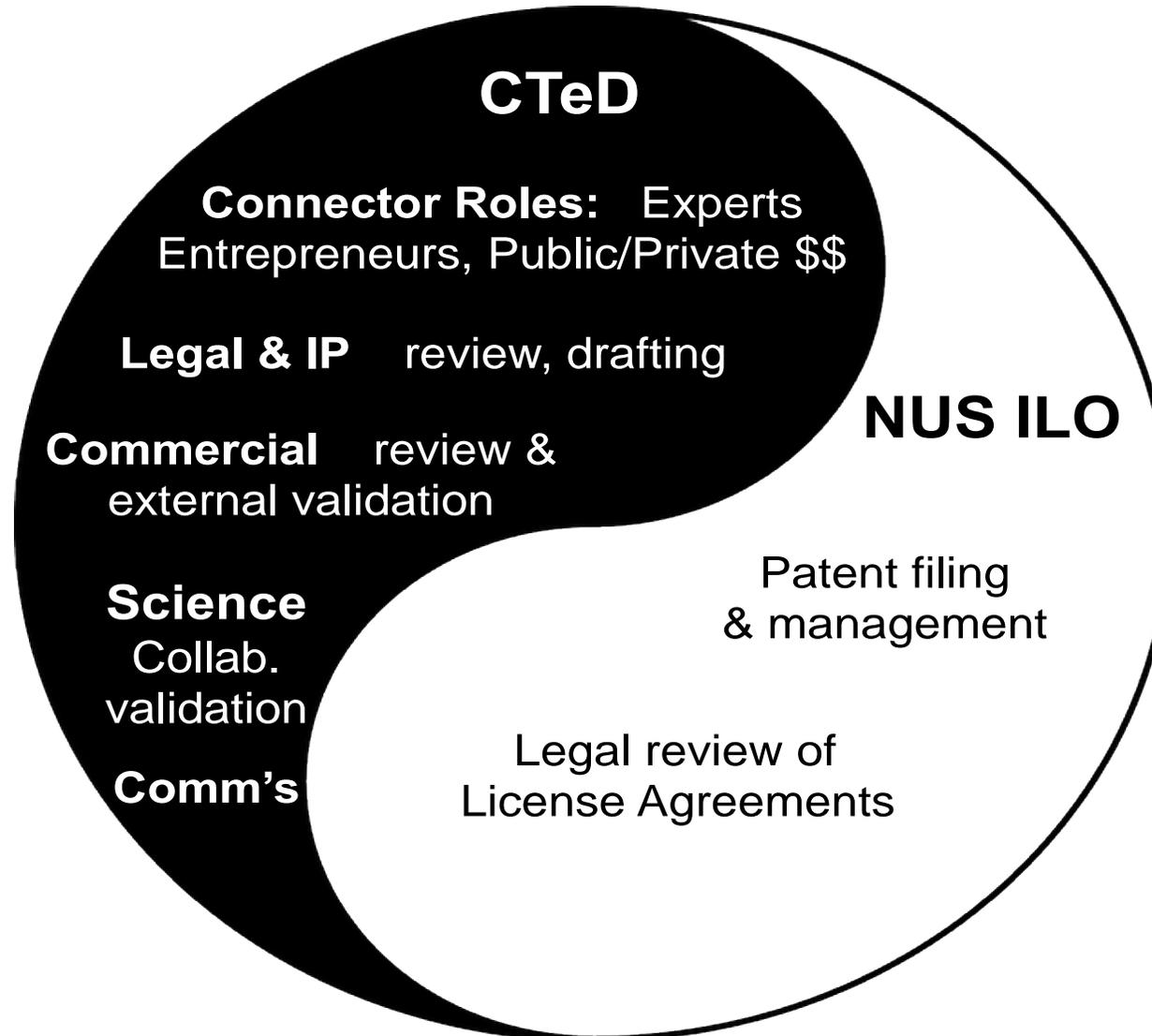


The development of the IP was facilitated by a unique collaborative model between Duke-NUS, NHCS and the National Health Innovation Centre Singapore. All three organisations partnered with Professor Cook to de-risk the discovery and prepare therapeutic technologies for commercial readiness as part of an 'Active Translation Model'. The Enleofen Bio agreement represents a significant milestone in the development and commercialisation of fundamental biomedical research conducted at Duke-NUS and SingHealth, which promises to lead to improved healthcare outcomes.

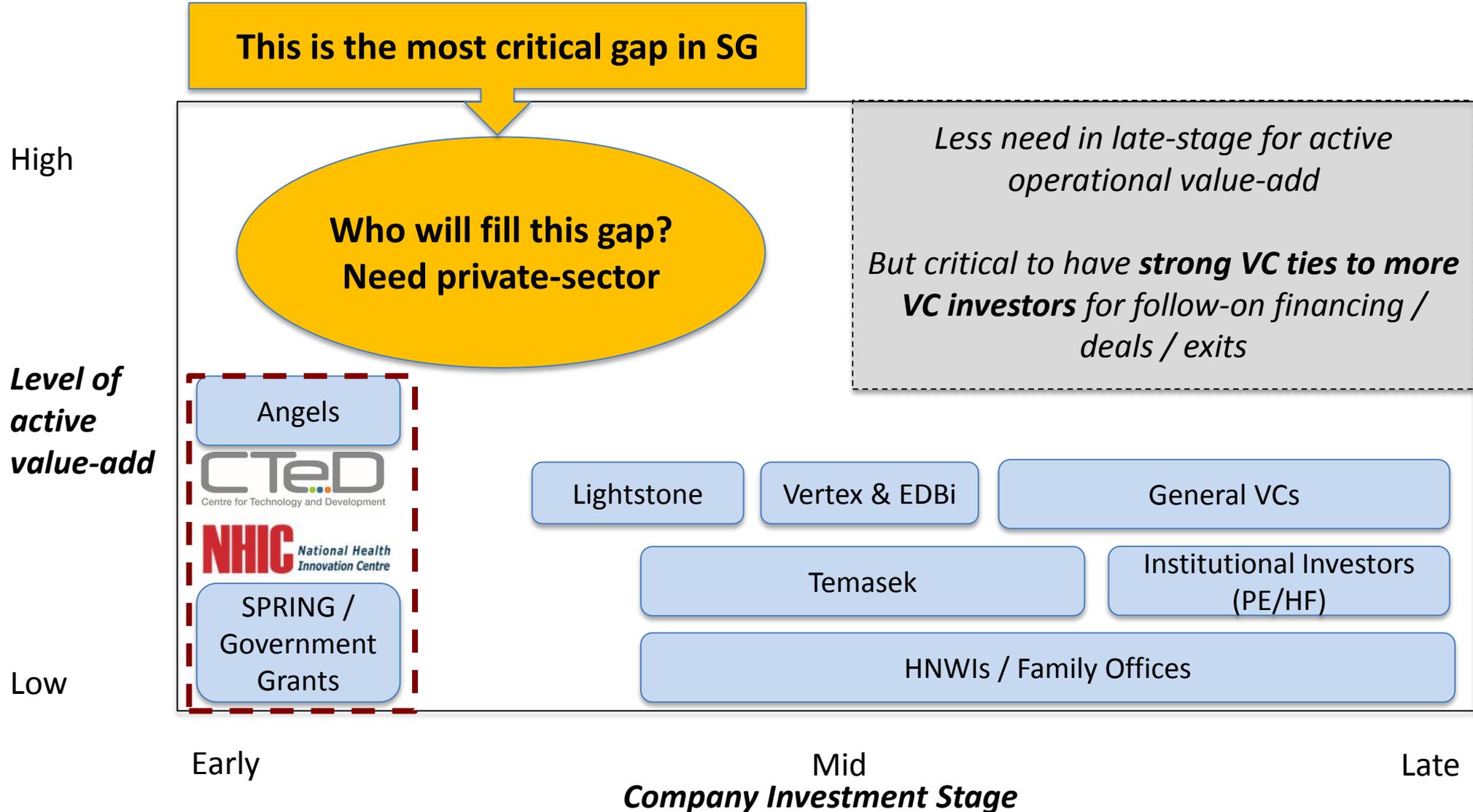
Lessons Learned 1: Recipe & Ingredients



Lessons Learned 2



A New Investment Platform Needed to Enable Strong Series A & B



Thank You

