

# Is Thailand Ready to Be a Leader in Drug (and Medical Products) Development?

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การสัมมนาเรื่อง การพัฒนาสู่ความมั่นคงและความสามารถทางยาในยุคประเทศไทย 4.0  
(Drug Security and Capability Development in the Era of Thailand 4.0)

วันศุกร์ที่ 31 มีนาคม 2560 เวลา 09.00-12.00 น.

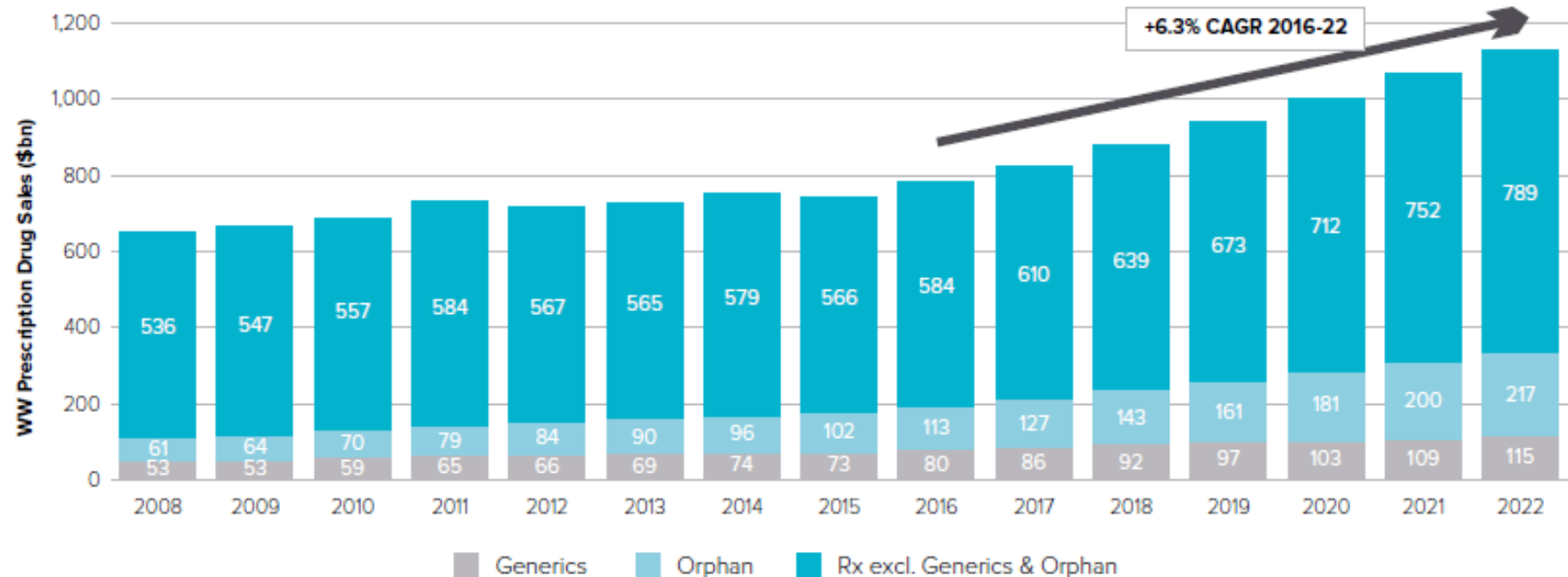
ห้องประชุม CC-305 อาคารศูนย์ประชุมอุทยานวิทยาศาสตร์ประเทศไทย (CC)



# Global trend is the driver

Worldwide Total Prescription Drug Sales (2008-2022)

Source: EvaluatePharma® August 2016



# TCELS Vision

“To make Thailand a world-class  
center for life sciences  
*innovation and investment*”

# Mission: Build and Connect the Value Chain

- Our mission is to connect, construct and foster life sciences industry value chain through *translation* and *acceleration* of research to market

Research  
community

Public sector

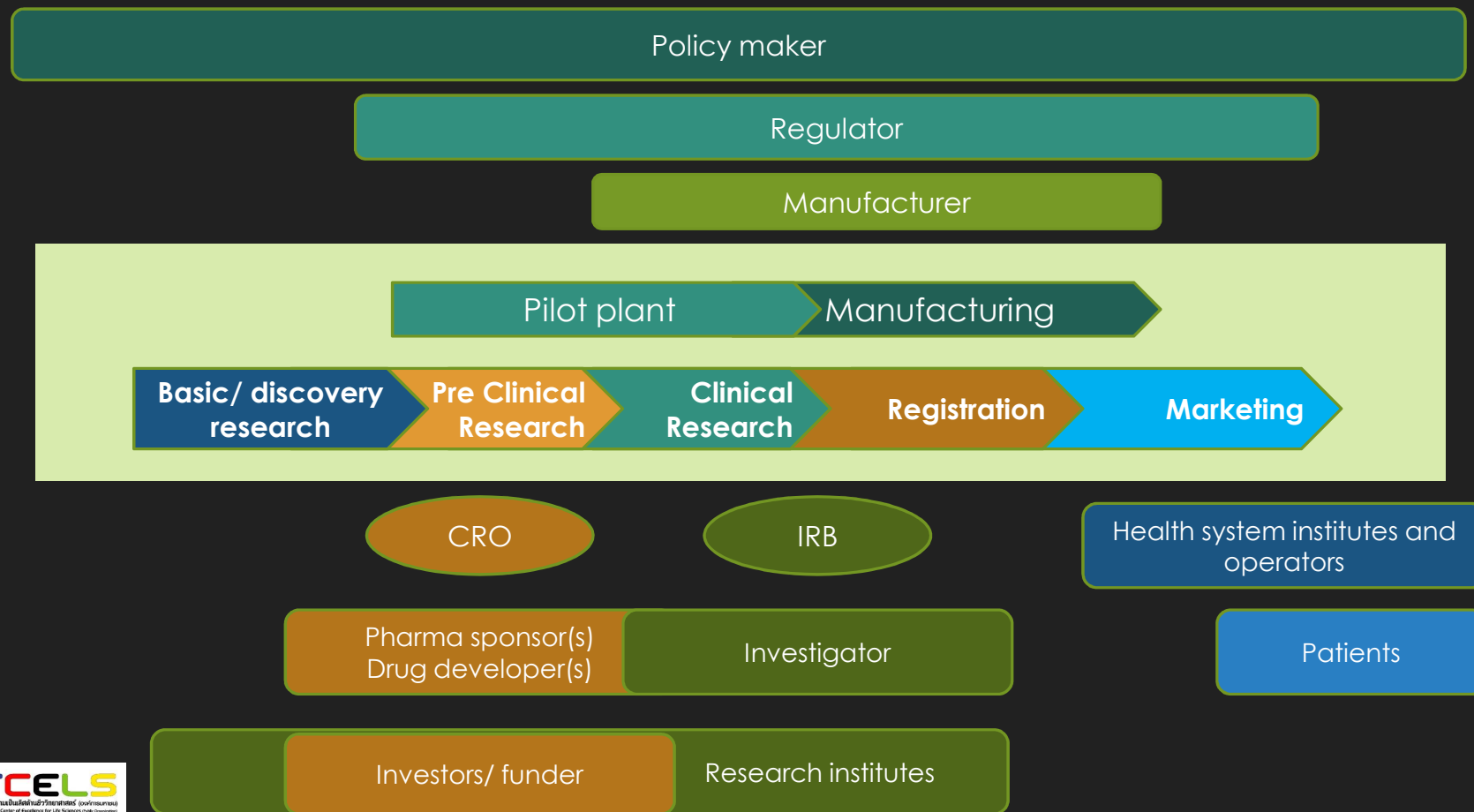


Entrepreneurs

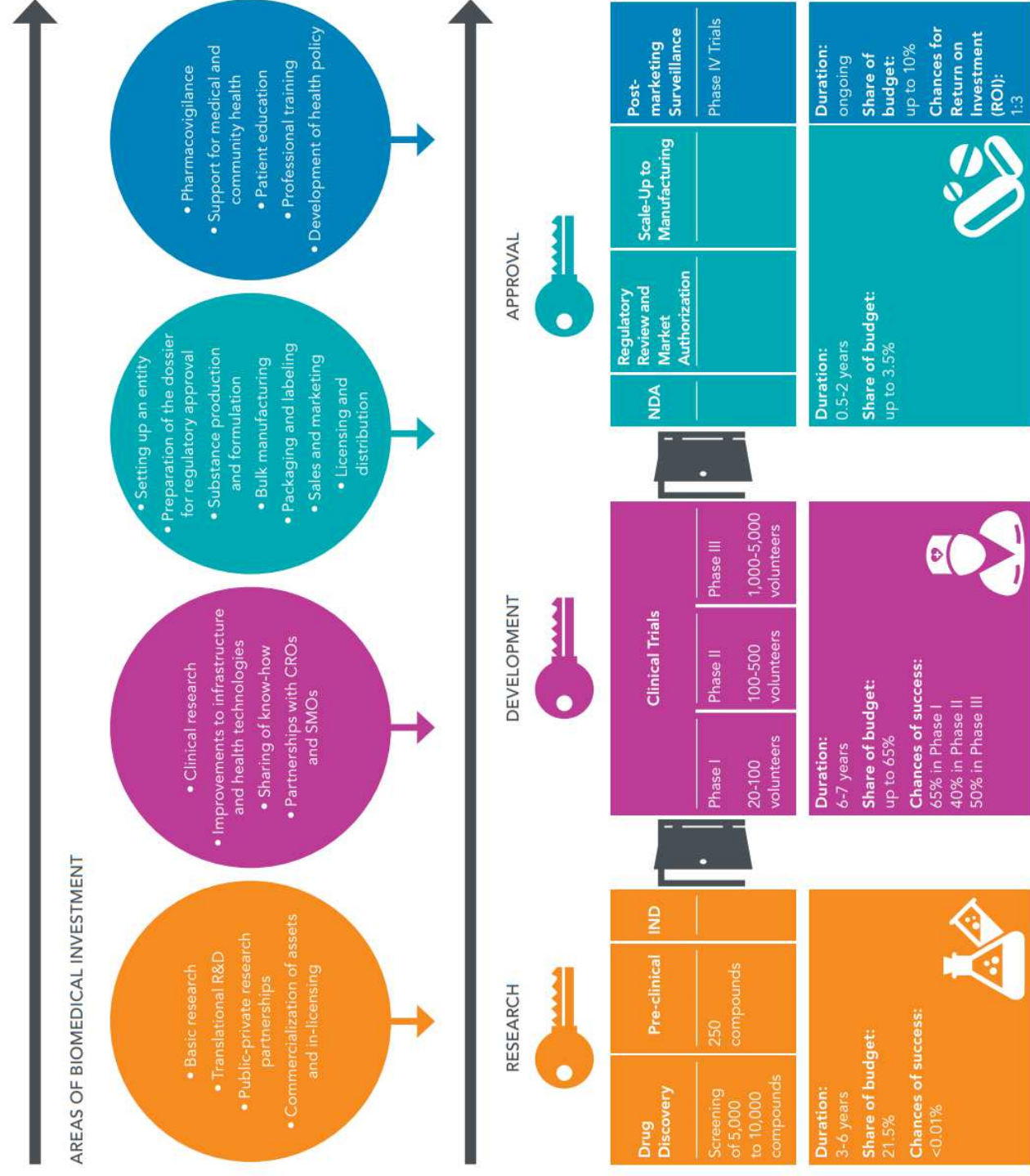
investors



# Stakeholders in Drug Development



**FIGURE 1** The range and value of biomedical investment across the biomedical R&D pipeline



Source: Pugatch Consilium; adapted from PhRMA<sup>13</sup> and Nature

# So are we ready?

Perhaps we are, in some areas?

## RESEARCH



Drug Discovery	Pre-clinical	IND
Screening of 5,000 to 10,000 compounds	250 compounds	

<b>Duration:</b> 3-6 years	<b>Share of budget:</b> 21.5%	<b>Chances of success:</b> <0.01%
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## DEVELOPMENT



Clinical Trials		
Phase I	Phase II	Phase III
20-100 volunteers	100-500 volunteers	1,000-5,000 volunteers

<b>Duration:</b> 6-7 years	<b>Share of budget:</b> up to 65%	<b>Chances of success:</b> 65% in Phase I 40% in Phase II 50% in Phase III
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## APPROVAL



NDA	Regulatory Review and Market Authorization	Scale-Up to Manufacturing	Post-marketing Surveillance
			Phase IV Trials

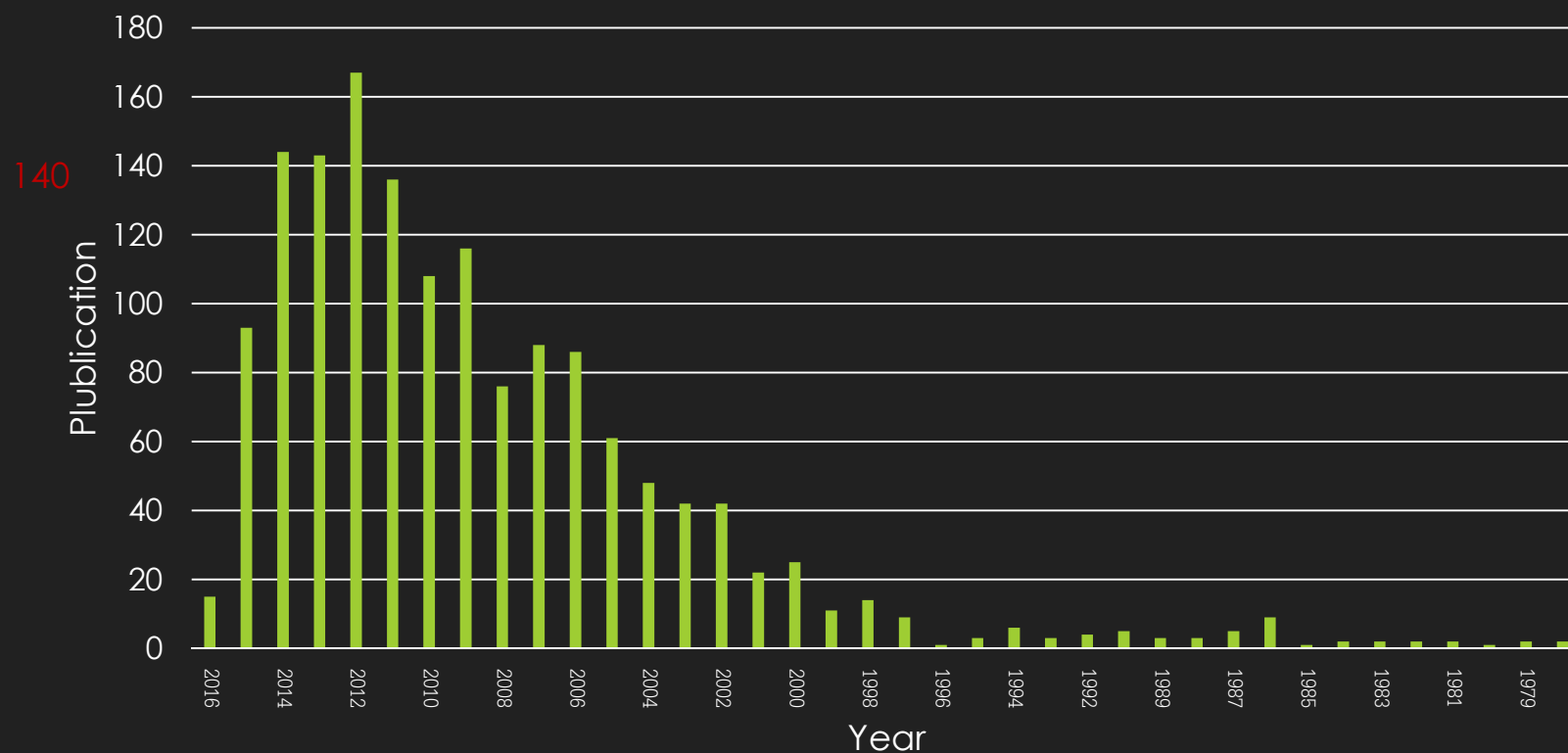
<b>Duration:</b> 0.5-2 years	<b>Share of budget:</b> up to 3.5%	<b>Chances for Return on Investment (ROI):</b> 1:3
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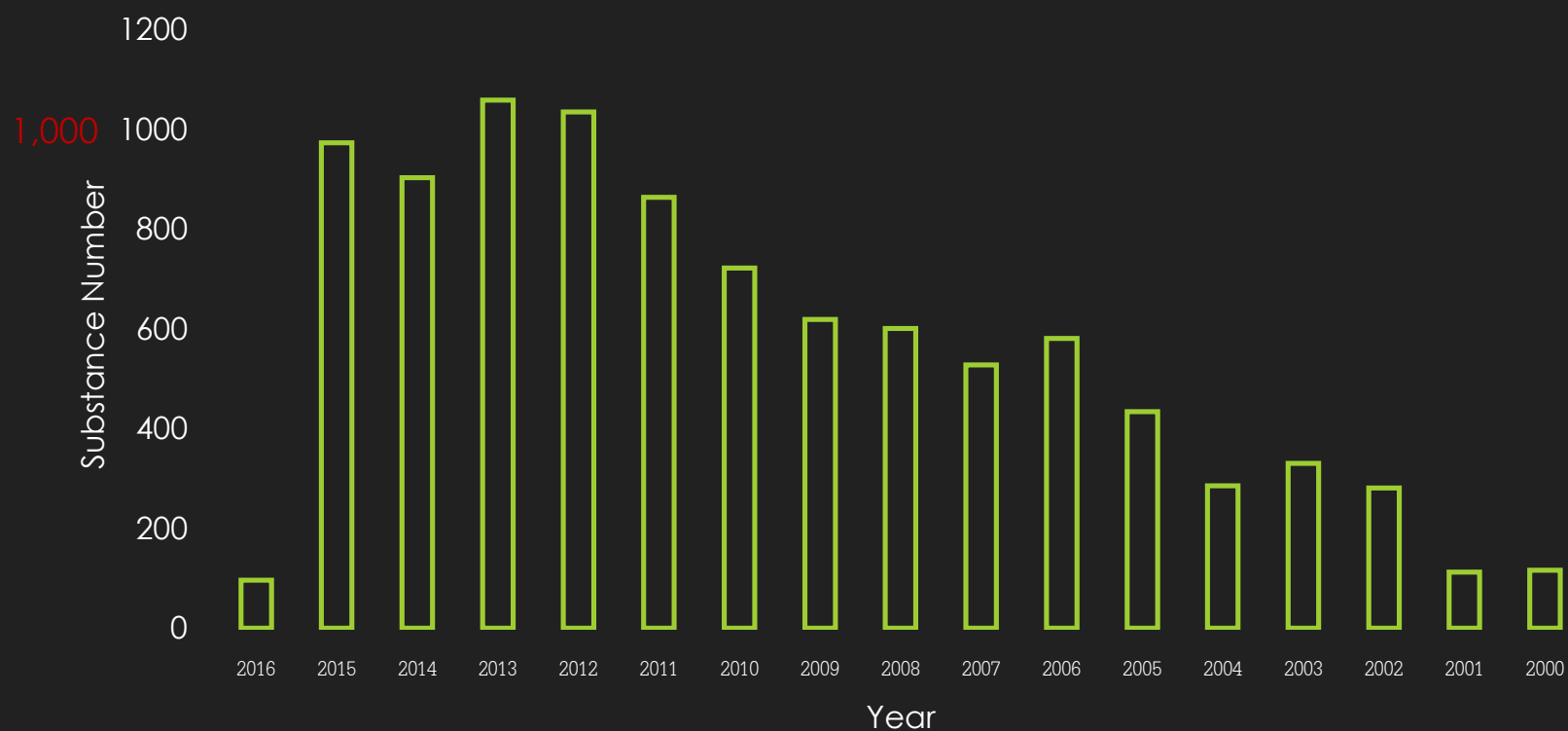
Source: Pugatch Consilium; adapted from PhRMA<sup>13</sup> and Nature



## Publications of Natural Product Research Produced by Thai Researchers (from Scifinder Database)



# Natural Product Compounds from Publications Reported by Thai Researchers (from Scifinder Database)



# Thailand's R&D Expenditure

“Our target is for GERD to reach 1% of GDP within 2018”

----- Dr. Kitipong Phromwong, Executive Director of STI

And roughly >30% of that expenditure in biotechnology is channeled towards medical research.

# But how and for whom are we going to spend the money?

- Industry
- Government
- Academia
- NGOs



- Research career development
- Influx of external talent
- Industry development

**There are lessons to be learned from.**

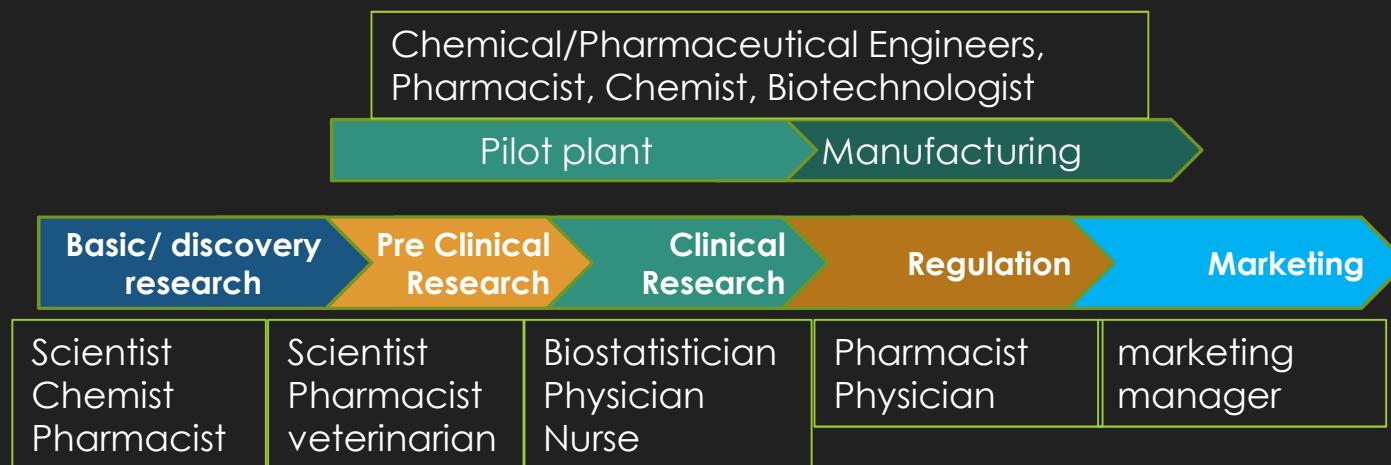


# Company listed for innovation project\*

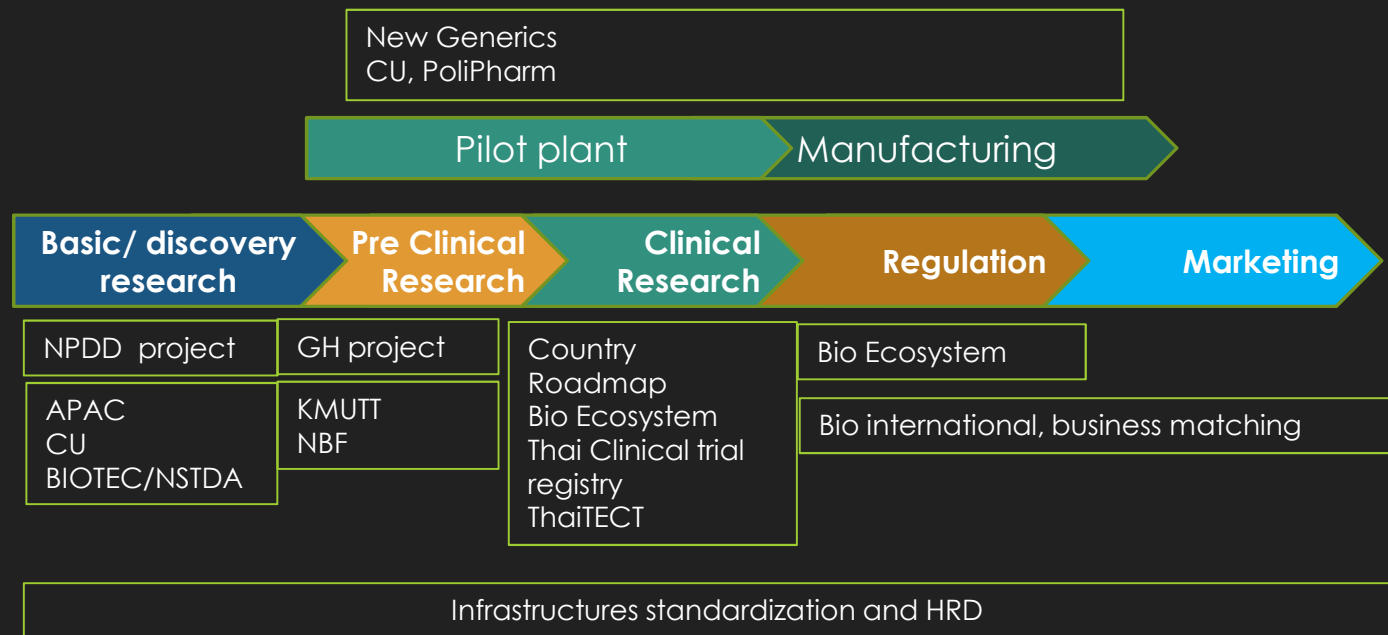
Company	Authorized Capital	Research Project
Bio Lab	85 MTHB	Drug formulation development
Umeda	60 MTHB	Drug formulation development
Polipharm	50 MTHB	Drug formulation development
Greater Pharma	105 MTHB	Oral care product
Medicine Supply	25 MTHB	New product development
JSP Pharmaceutical	66 MTHB	Drug formulation development
Osoth Inter Lab	600 MTHB	Antihypertension and antihyperlipidemic products
Thai Herbal Product	80 MTHB	Drug, Herbal and Nutritional products
SPS Medical	1 MTHB	New drug development
R.X. Manufacturing	50 MTHB	New drug development

\*Thailand RD Innovation Business Profile 2015

# Drug Value Chain Careers



# Some of TCELS Effort (-2017)



# Fortune 500's fastest-growing pharma company\*

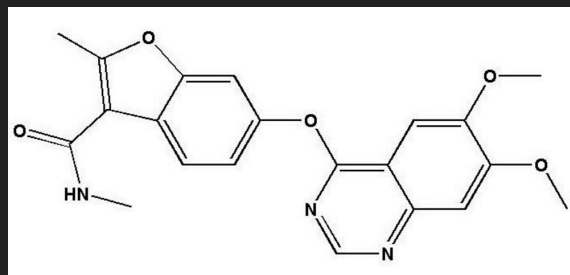
Company	Fortune500 ranking	5-year annual sales growth	Revenue in 2014	Forecast 2015 revenue
Gilead Sciences	118	28.8%	\$24.9 billion	\$29 billion
Celgene	369	23.3%	\$7.7 billion	\$9 billion
Biogen	298	17.3%	\$9.7 billion	\$11 billion
Allergan	380	10%	\$7.2 billion	\$8 billion
Merck	71	9%	\$42.2 billion	\$46 billion

\*Fortune500 2015, [Laura Lorenzetti](#) Jun 20, 2015



# The Rise of China

- On its way to be the very first prescription drug to be designed and developed entirely in China that will be on a path to global commercialization.



Fruquintinib, also known as HMPL-013, is a small molecule inhibitor of vascular endothelial growth factor receptors (VEGFRs)

# Readiness?

- Depending on your vision
- Our choices in the short term
  - Next gen drug discovery: synthetic biology, genome-enabled DD etc.
  - Commercialization of asset and in-licensing
  - Open up for external talent
  - Co-creation: Get to be part of the global value chain, quickly
- What to do for the long run
  - Strengthen research community (increase R&D fund) and grow the industry at the same time.
  - Grow career options for scientists and non-scientists

# Learned It the Hard Way...

- No more planning without the end game in mind.
- Establish frequent dialogue among investigators and stakeholders.
- Avoid having too many science projects masquerading as companies.
- We cannot do it all by ourselves. Partnership is needed.