



Creating value for Bayer's early product pipeline from emerging Chinese pharma innovation ecosystems



Dr. Tom Kinzel

Bayer Pharmaceuticals

Head of Open Innovation Center Europe

2016-2019 Head of Open Innovation Center China

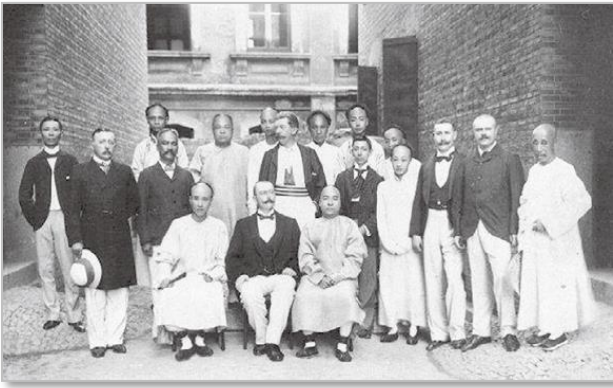
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Metropolitan Innovation Systems on the
Eurasian Continent in the 21st Century





Bayer has a long history in China

In 1882, Bayer started **dyestuff sales** in many cities in China.

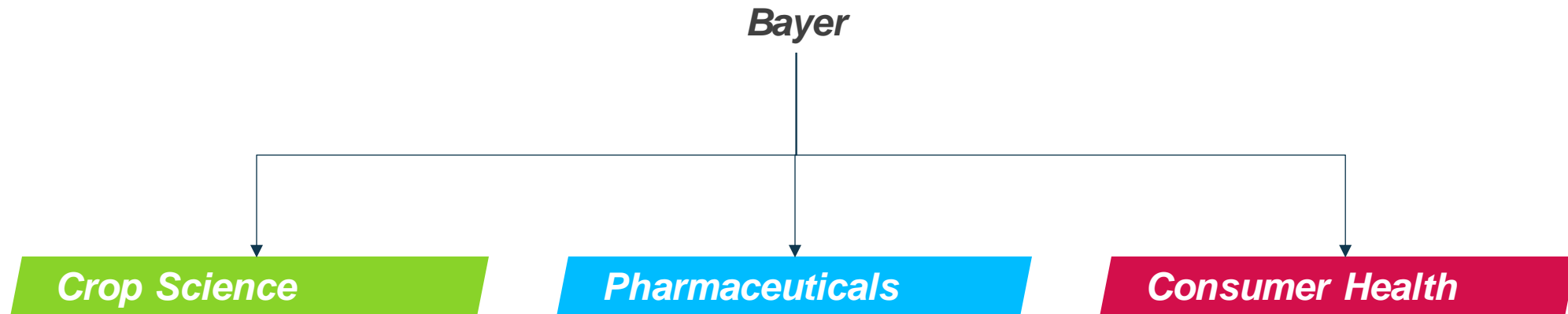


Bayer Pharma Co. was established 1936 in Shanghai.

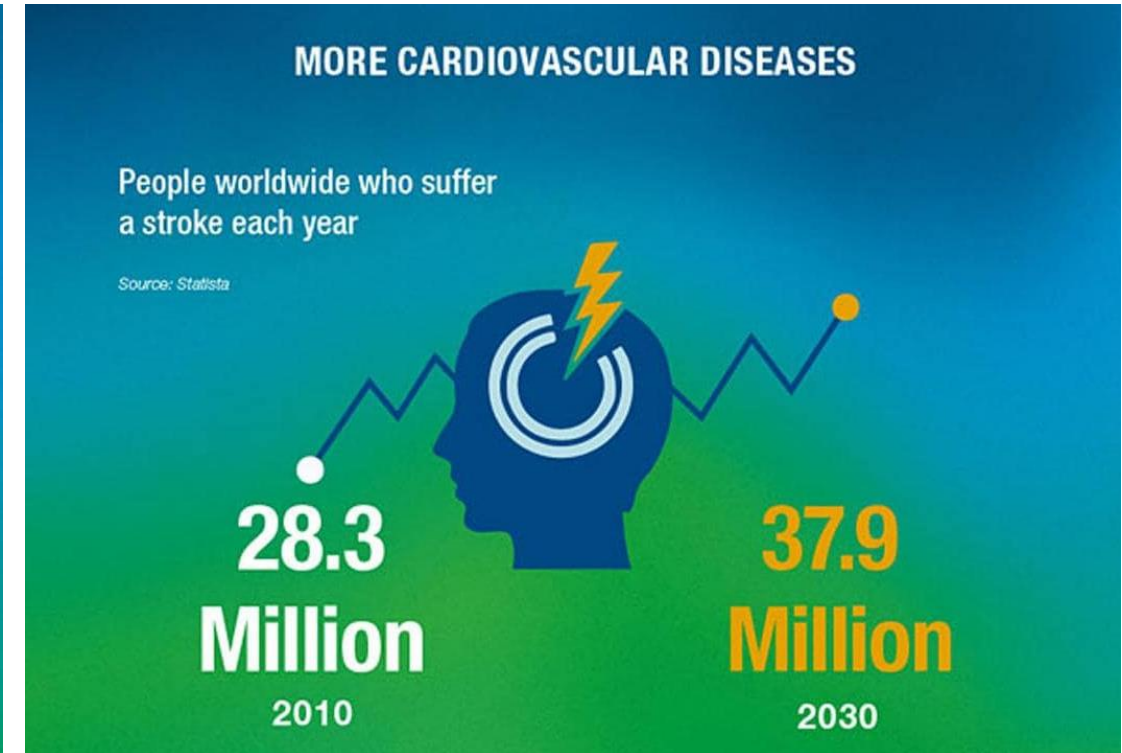
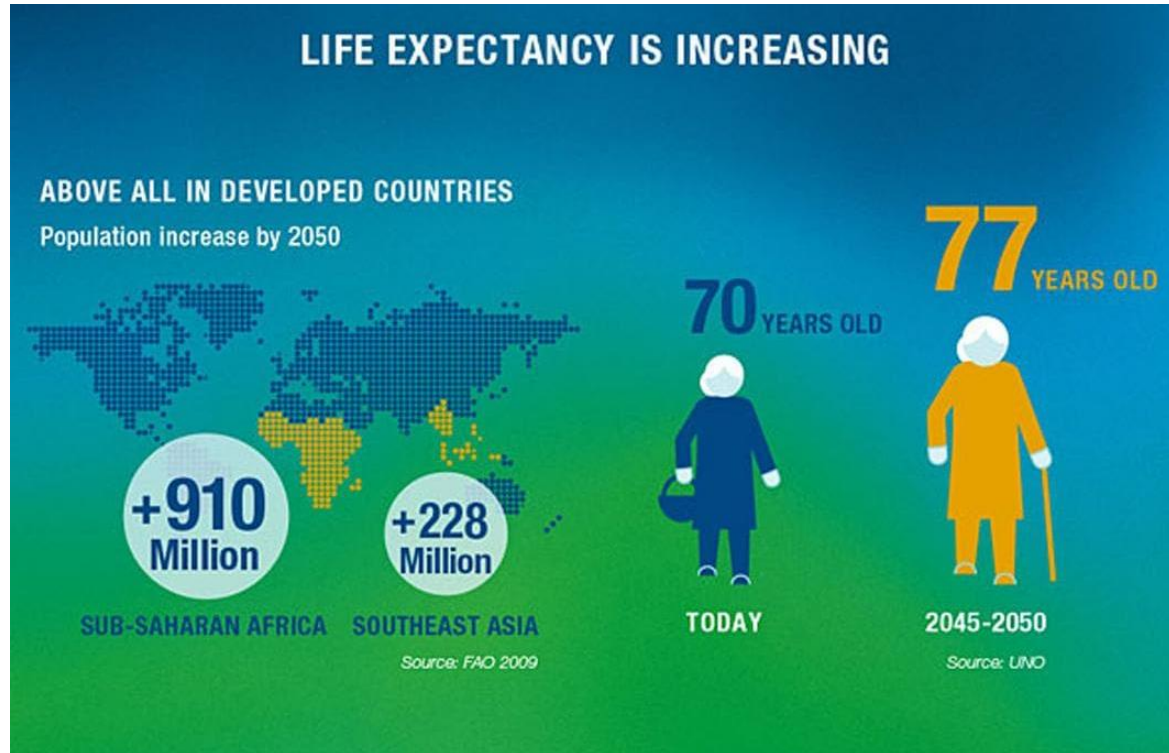




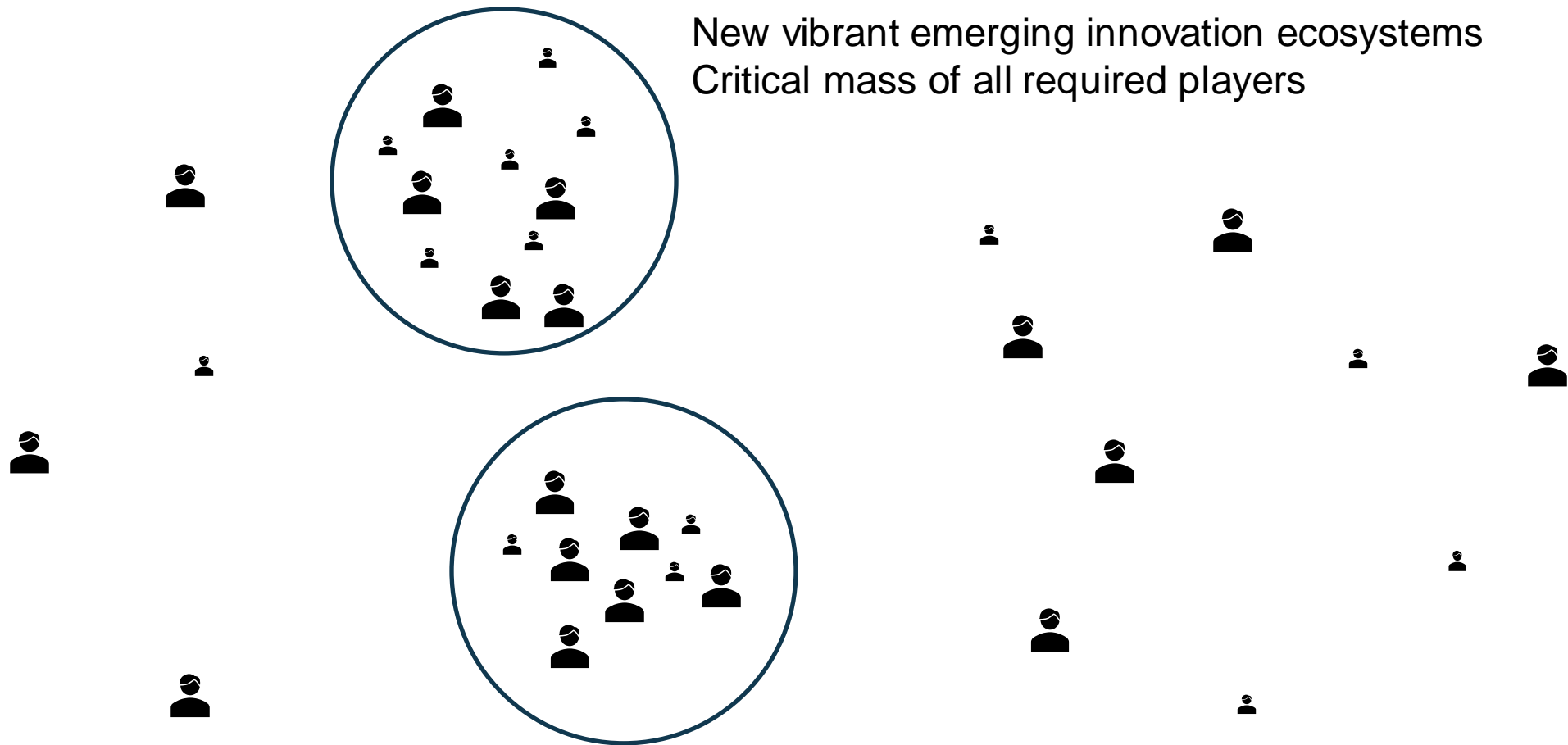
Bayer's business areas reflect our vision „Health For All, Hunger For None“



Megatrends influence the direction of research ...



... but also influence external innovation

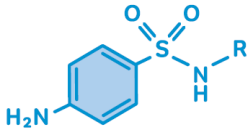




From Molecules To Medicine: The long process of drug development

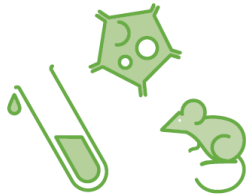
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Target and Drug
research



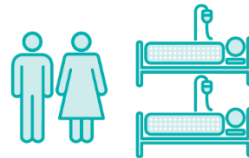
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Preclinical tests



3

Clinical trials



4

Approval



5

After launch



Bayer Pharma R&D - Open Innovation
provides access to external innovation

Open Innovation is a key pillar of our R&D Innovation Model



Examples

Access to new targets

- // New ways to investigate mechanisms of drug tolerance / resistance
- // Access to targets previously deemed intractable or undruggable

Access to early assets complementing our in-house pipeline

- // Small chemical and biological molecules
- // Innovative approaches to a new mechanism of action

Access to new disease models and disease biology know-how

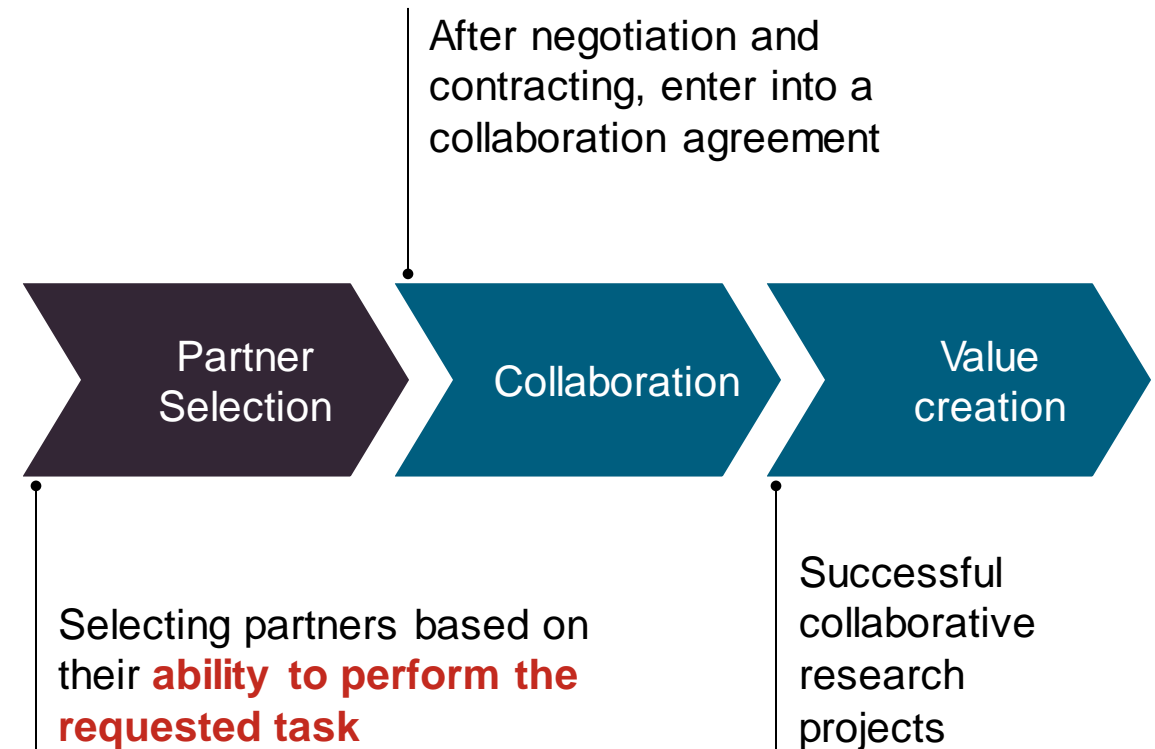
- // Inducible tumor models reflecting the etiology of human disease
- // State-of-the-art predictive *in-vitro*, *in-vivo* and *ex-vivo* models

Enabling biomarker technologies and ways to generate value out of (big) data

- // Reverse translation of clinical findings into preclinical research
- // Longitudinal information on samples, including genetic analysis



Simple model - Collaboration by concrete research request



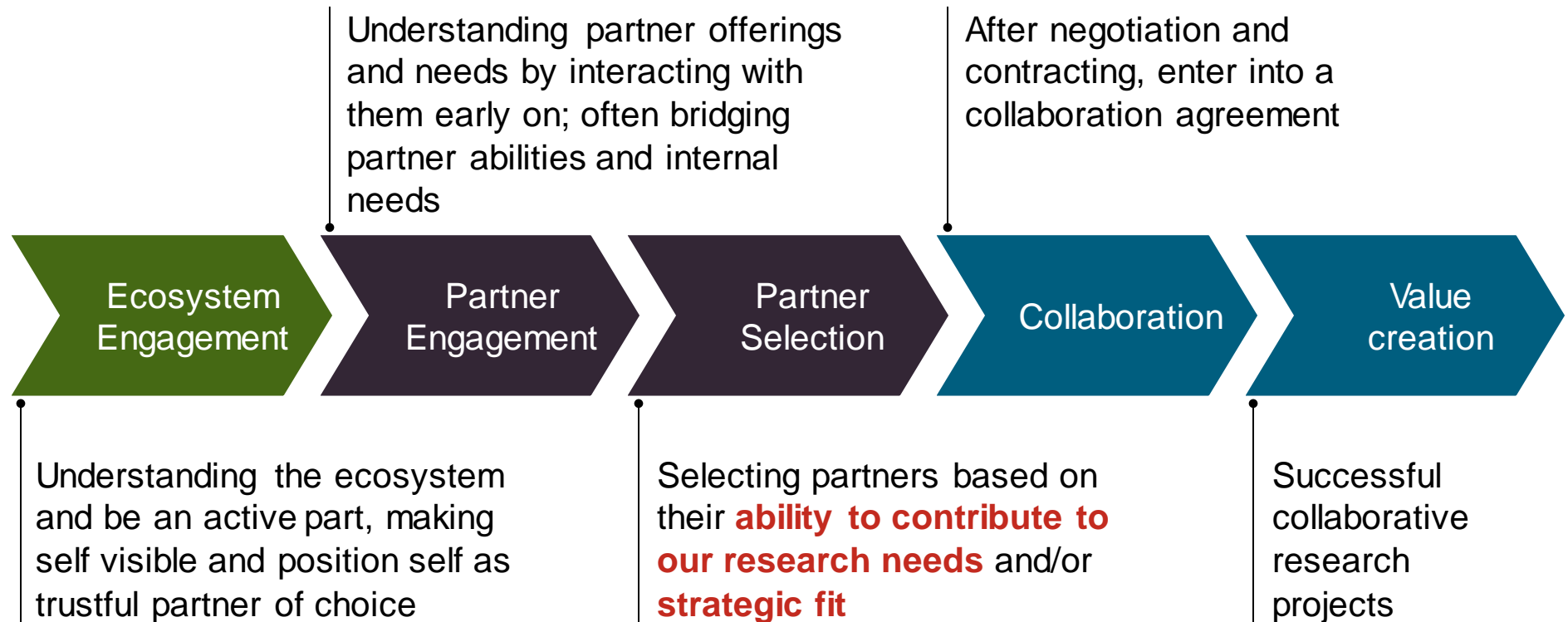


One step back - Driven by innovative new science outside of our core expertise and/or “footprint” model





Another step back - Driven by competition and the prospect of early access to truly innovative science



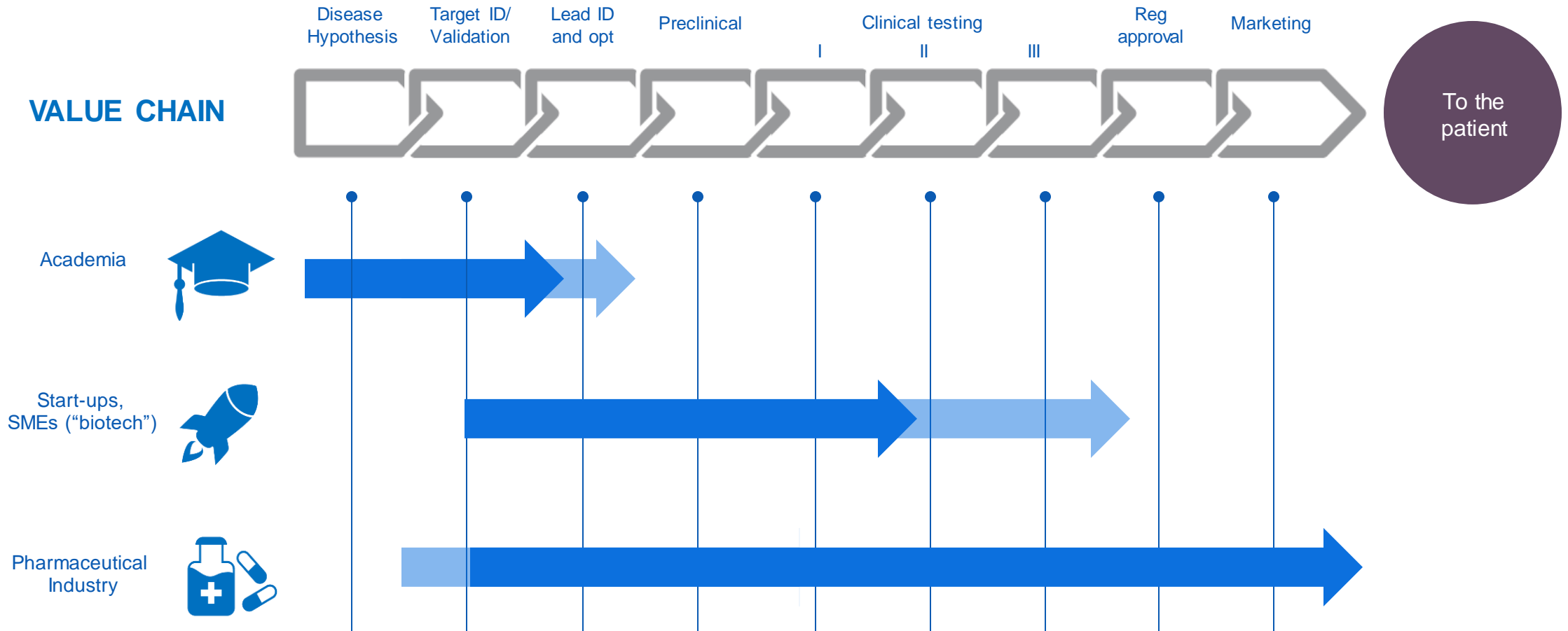


Finally – Be a major part in shaping ecosystems

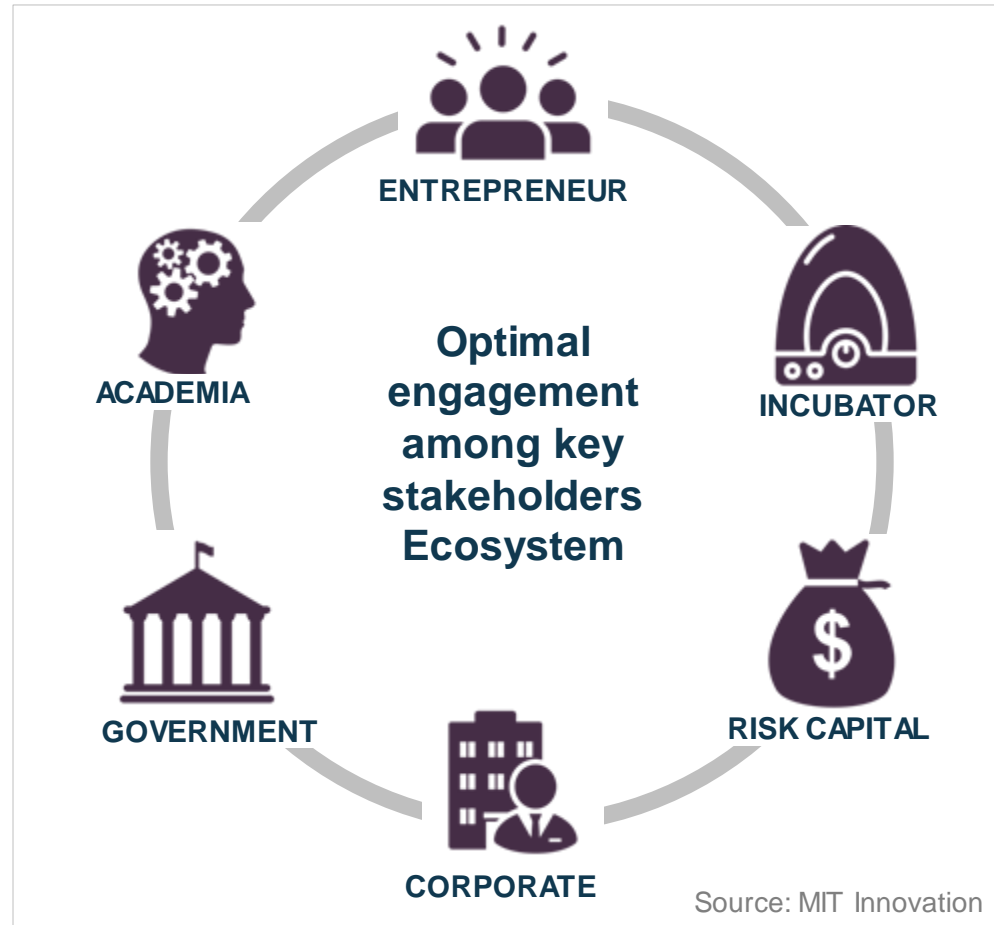




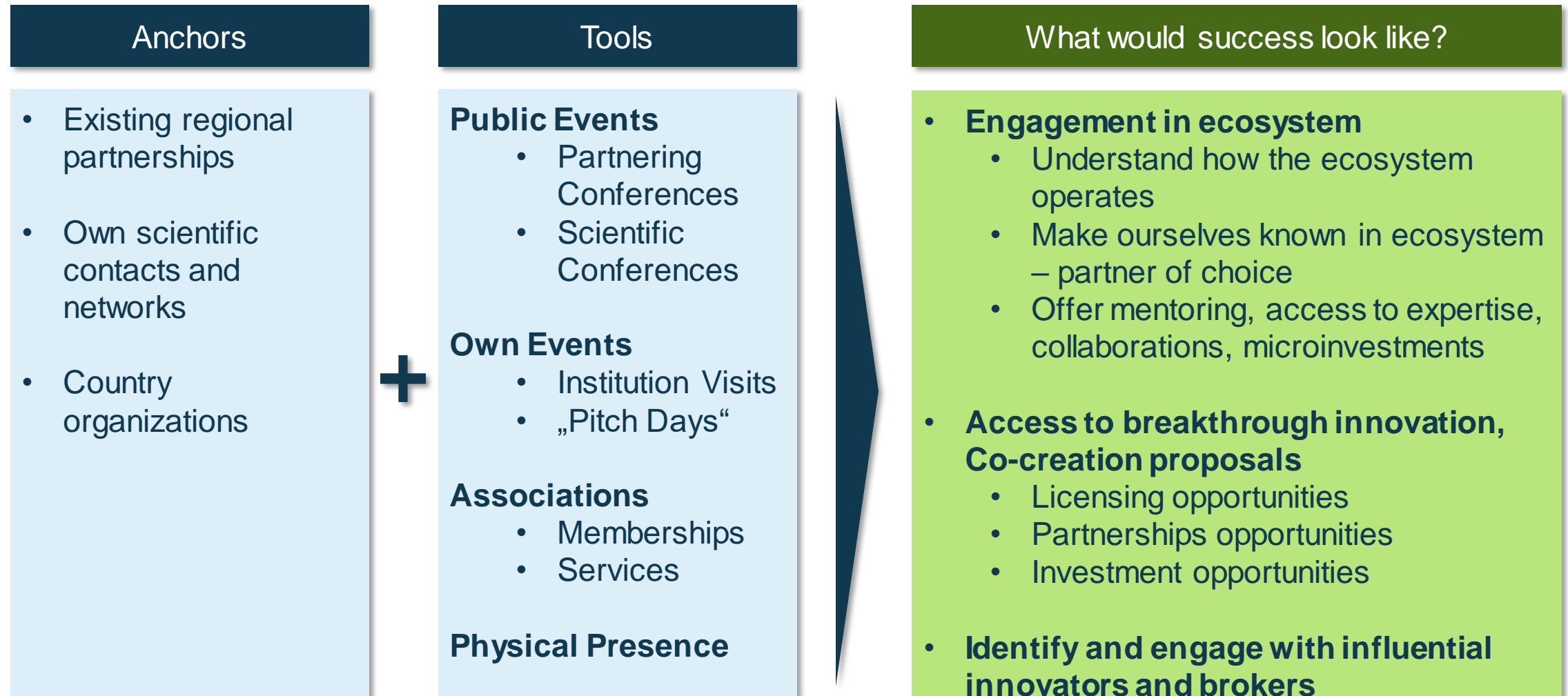
External partners contribute in various ways to our R&D value chain



Vibrant ecosystems are emerging in several hotspots world-wide



Systematic ecosystem engagement provides access to breakthrough innovation and influential innovators



Innovation Centers help to manage Bayer's global Network of Partnerships





Open Innovation Center China 2020: Beijing, Shanghai



Features of Innovation Ecosystem in China

- Top universities e.g. Peking university, Tsinghua university, Chinese academy of Sciences.
- Booming biotechs fueled by VC funding and well established CRO players with capabilities in drug discovery.
- MNC clustering, establishment of open innovation centers especially in the Shanghai-Suzhou region.

Ecosystem Engagement Strategy



Bayer Open Office Hours to engage researchers and to initiate new projects under current alliances and new connections to institutions in Shanghai.



Bayer-MassBio Mentorship program to reach out to early entrepreneurs and startups.



Exploring collaborations with venture capital funds.

Current Partnerships with Bayer



Since 2009



Since 2014



Since 2016

110 Joint projects, **9** Joint Publications, **20** Joint Symposia



Since 2009: Bayer-Tsinghua Joint Research Center - Partners with complementary Expertise



One of the **top two**
Chinese Universities

**Internationally
recognized** in the areas
of Structure Biology,
Oncology, Immunology
and Pharmacology

Very **dynamic growth**
within the school of life
science and school of
medicine – **many new
independent PI's** start
each year



**Improving
patient's
lives**

Track record in
**successful drug
research &
development**

R&D Focus: Cardiology,
Oncology, Women's
Healthcare

Competitive technology
platforms

Reliable partner to
academia



Bayer HealthCare - Peking University Joint Research Center for Innovative Drug Discovery

Signing Ceremony to the strategic partnership between Bayer Healthcare and Peking University

- January 08th 2014 - strategic partnership established
- Renewed partnership in 2016 and in 2019



**FierceBiotech
Research**

Sep 16, 2014

Notable academic-biopharma alliances of 2014

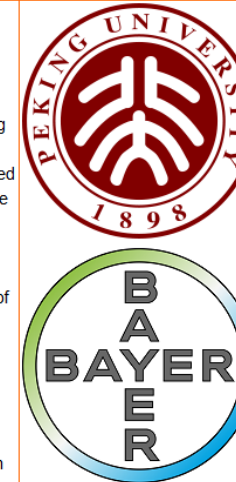
1. Peking University and Bayer Healthcare

Partner: Peking University
Company: Bayer Healthcare
Date: Jan. 8

Recognizing China's valuable place as a growing consumer of pharmaceutical products, Bayer Healthcare and Peking University in Beijing formed a three-year partnership earlier this year to create a joint research center at the school called the Bayer HealthCare/Peking University Center of Translational Research for Drug Discovery. The center will focus on drug discovery in the areas of cardiology, oncology, hematology and gynecological therapy.

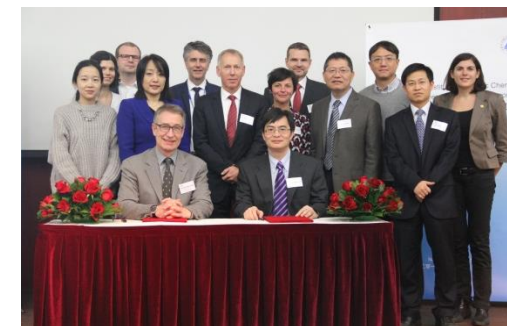
As part of the agreement, Bayer will provide funding for collaborative research projects and sponsor a Bayer Professorship and Bayer Investigator Awards to promote general research in the life sciences as well as work related to drug discovery in Bayer's core therapeutic areas.

Bayer has had its eye on drug discovery in China for years now. In 2009, it opened an innovation center as part of its R&D Center China to boost R&D activities there. [More](#)



Our collaboration with the Shanghai Institute of Organic Chemistry nicely illustrates the shift in focus on true collaboration

- **1996-2003**
Scaffold synthesis to support a library build-up program
- **2004-2009**
Increasing number and variety of program goals
- **2010-2016**
Development towards more value-added support
- **Since 2016**
New Strategic Alliance and Research Collaboration





World-wide perspective

Joint Labs

- // Joint Labs: e.g. German Cancer Research Center (DKFZ), Broad Institute, Brigham and Women's Hospital & Massachusetts General Hospital






Consortia

- // Innovative Medicines Initiative
- // Structural Genomics Consortium SGC



Arm's Length

- // Accelerator: e.g. Grants4-Initiatives 
- // Incubator: CoLaborator 
- // Acquisition: BlueRock Therapeutics 

Research Collaborations

- // Multiple projects: e.g., Evotec, Tsinghua University, Vanderbilt University, MD Anderson, Kyoto University, Arvinas, Dewpoint Therapeutics



License Agreements

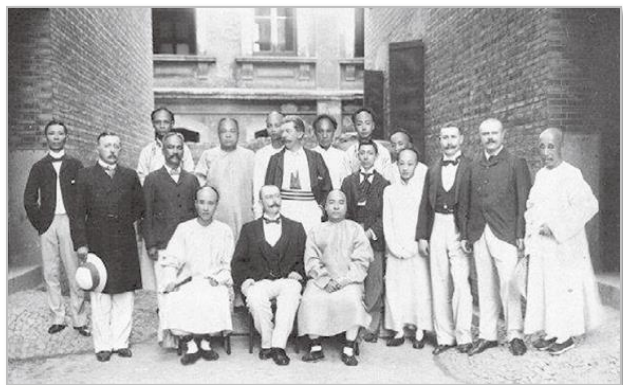
- // Pipeline assets: Loxo-195, Vericiguat, FXI-Antisense
- // Launched products: Nexavar, Stivarga, Vitrakvi, Eylea, Adempas, Nubeqa





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Current Status: innovation for research coming from Chinese institutions.





Thank you!



Bye-Bye

