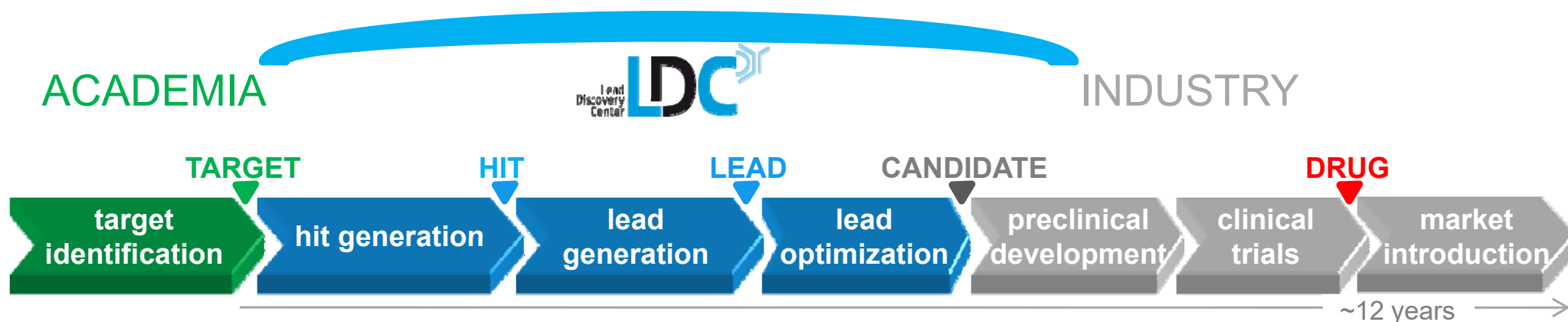


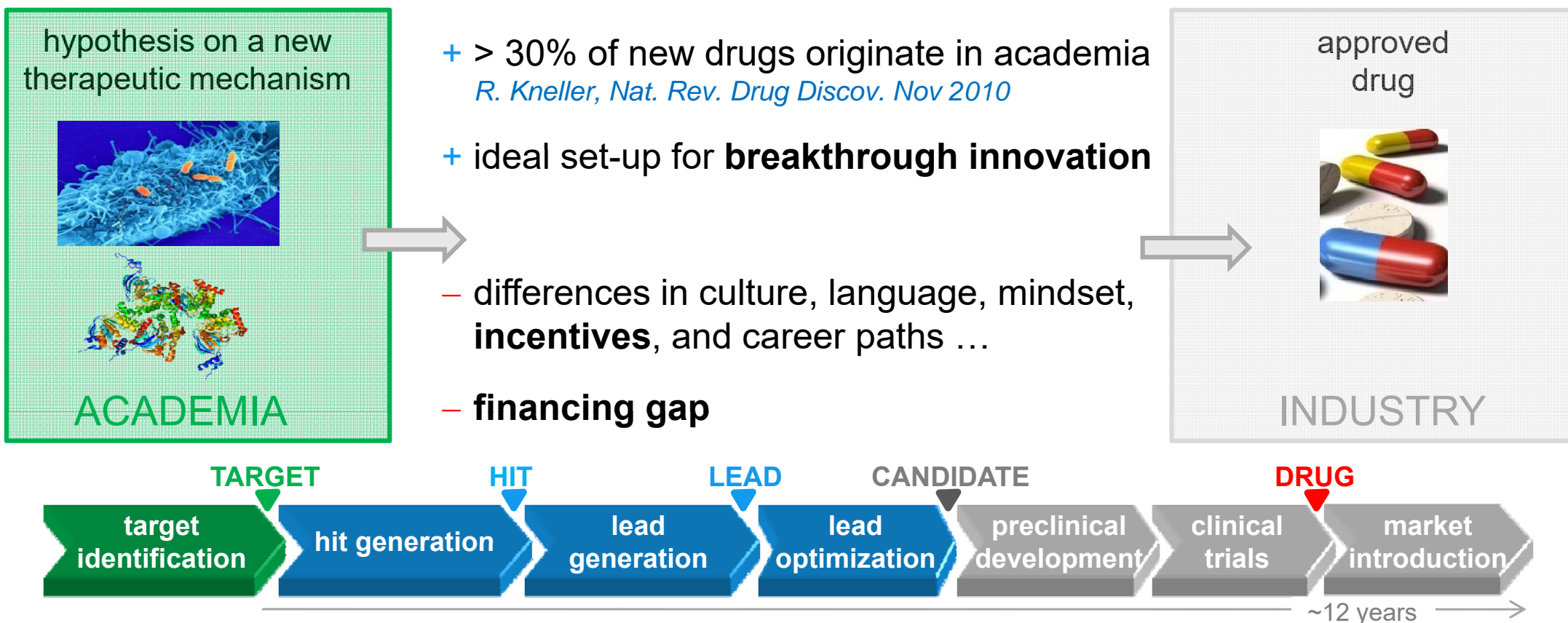
From Academic Ideas to Industrial Application – *Max Planck's **Lead Discovery Center** as a Model for a Translational Incubator*

PETER NUSSBAUMER

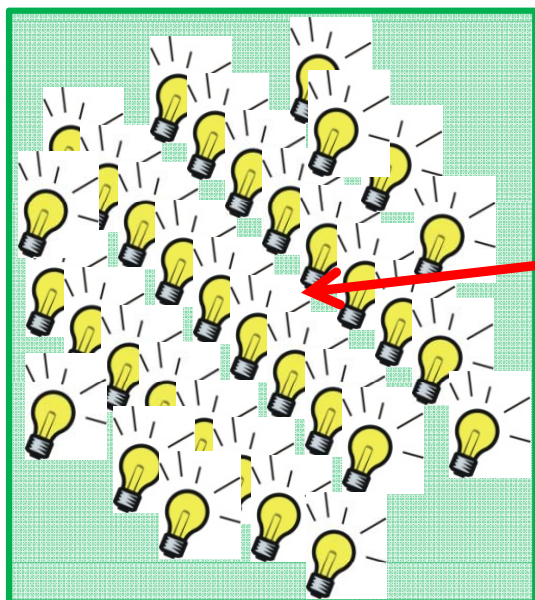
Lead Discovery Center GmbH, Dortmund, Germany



Translation is Rather a Rare Event Than a Regular Process



ACADEMIA



PULL

search for
THE BEST SOLUTION
to a very particular problem

INDUSTRY & VC

Cardiovascular D

Metabolic D

Oncology

solid tumors
blood cancers
lymphoma

KRAS

Immunology

Respiratory

Neuroscience

Antiinfectives

...



TARGET

HIT

LEAD

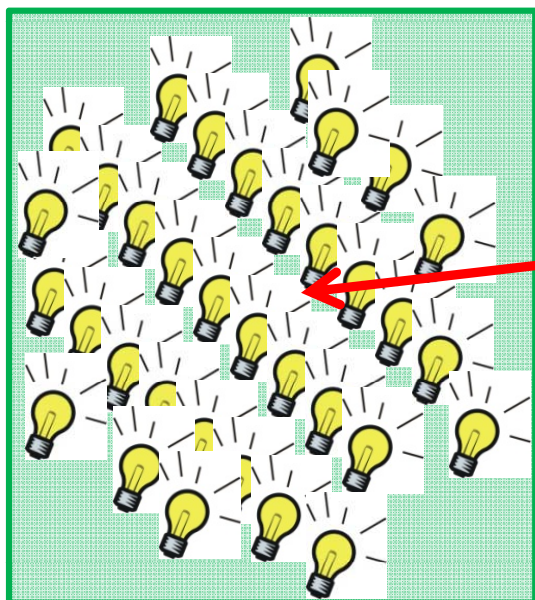
CANDIDATE

DRUG



~12 years →

ACADEMIA



search for

THE BEST APPLICATION

of excellent science

INDUSTRY & VC

Cardiovascular D

Metabolic D

Oncology

solid tumors
blood cancers
lymphoma

Immunology

Respiratory

Neuroscience

Antiinfectives

...

KRAS



PUSH

?
?
?

TARGET

HIT

LEAD

CANDIDATE

DRUG



~12 years →

Towards a New Paradigm in Early Drug Discovery

Should drug discovery know-how and processes be transferred into academia, should we recreate a pharma model inside academia?

NO! Academia should not be industrialised!

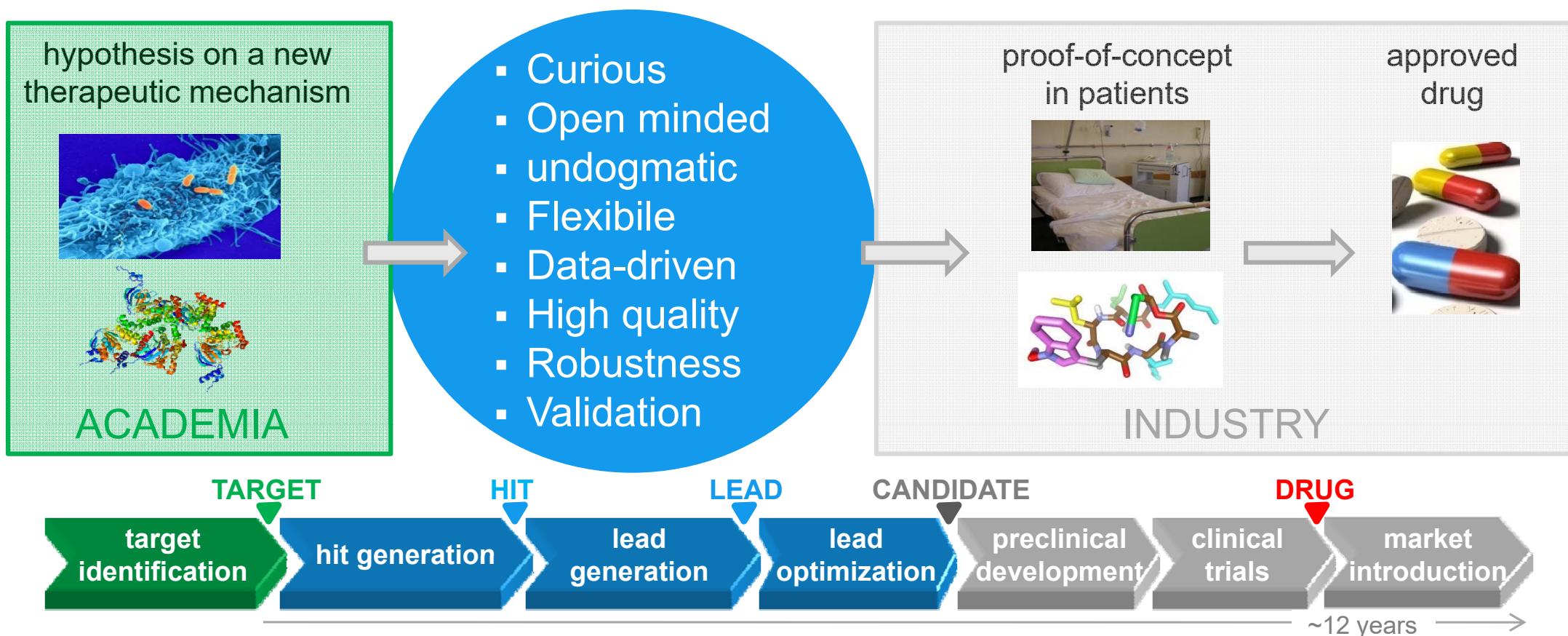
... but “learn” from industrial best practices

Should industry be heavily working in basic research?

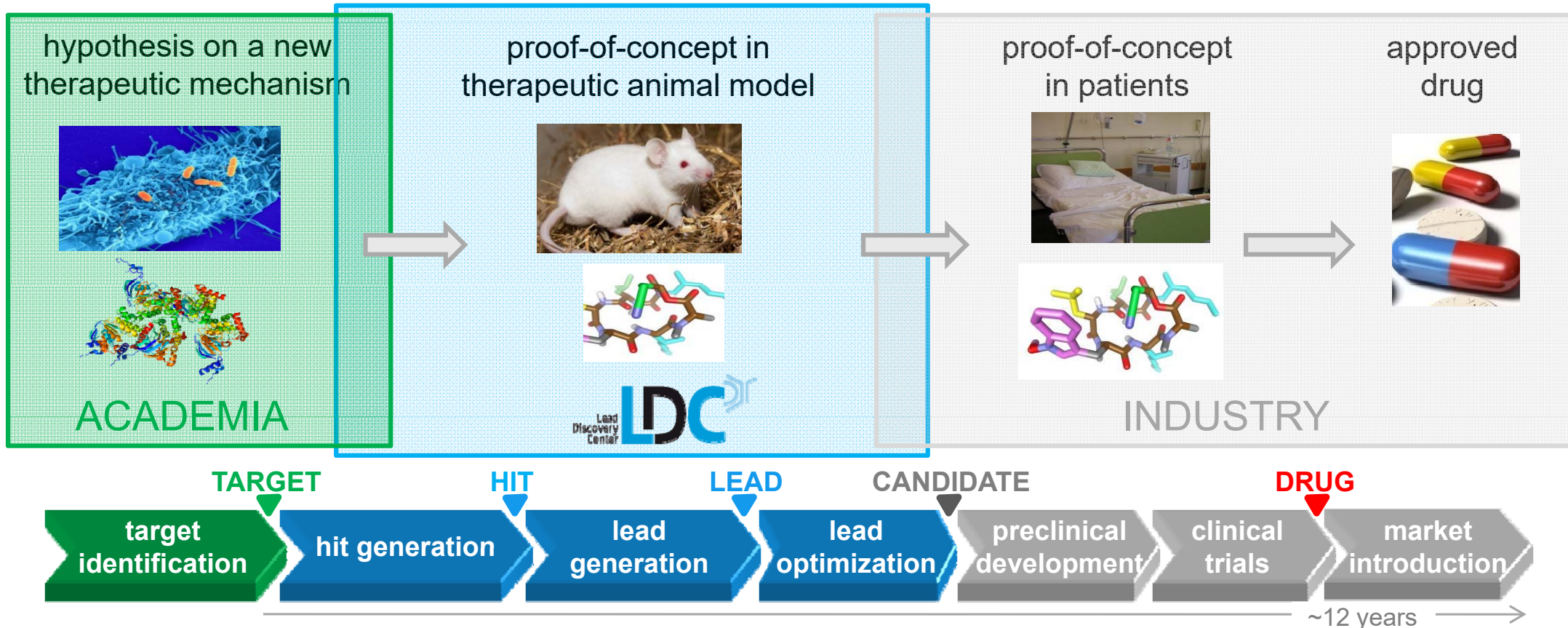
NO! Industry should not compete with academia!

... but support academic basic research

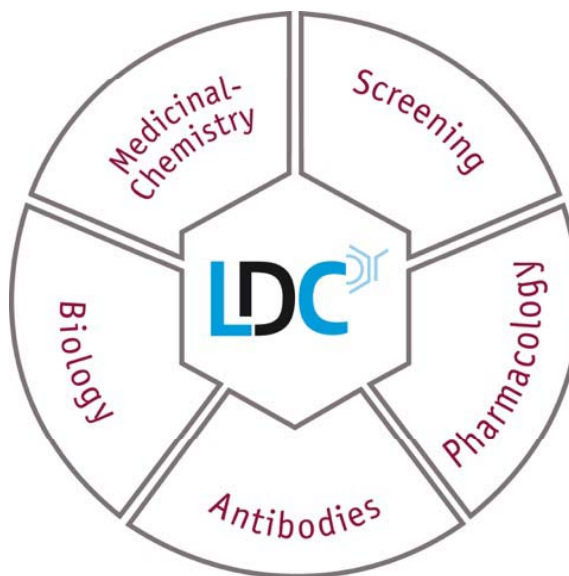
Solution: Translational Incubator



Paving the Way for Novel Medicines



Integrated Core Competencies & Expertises in Drug Discovery Established In-House



... supplemented by outsourcing & collaborations

Paving the Way for Novel Medicines

Translating academic ideas into innovative drugs



World Class
Science

INNOVATION



High Quality
Drug Discovery

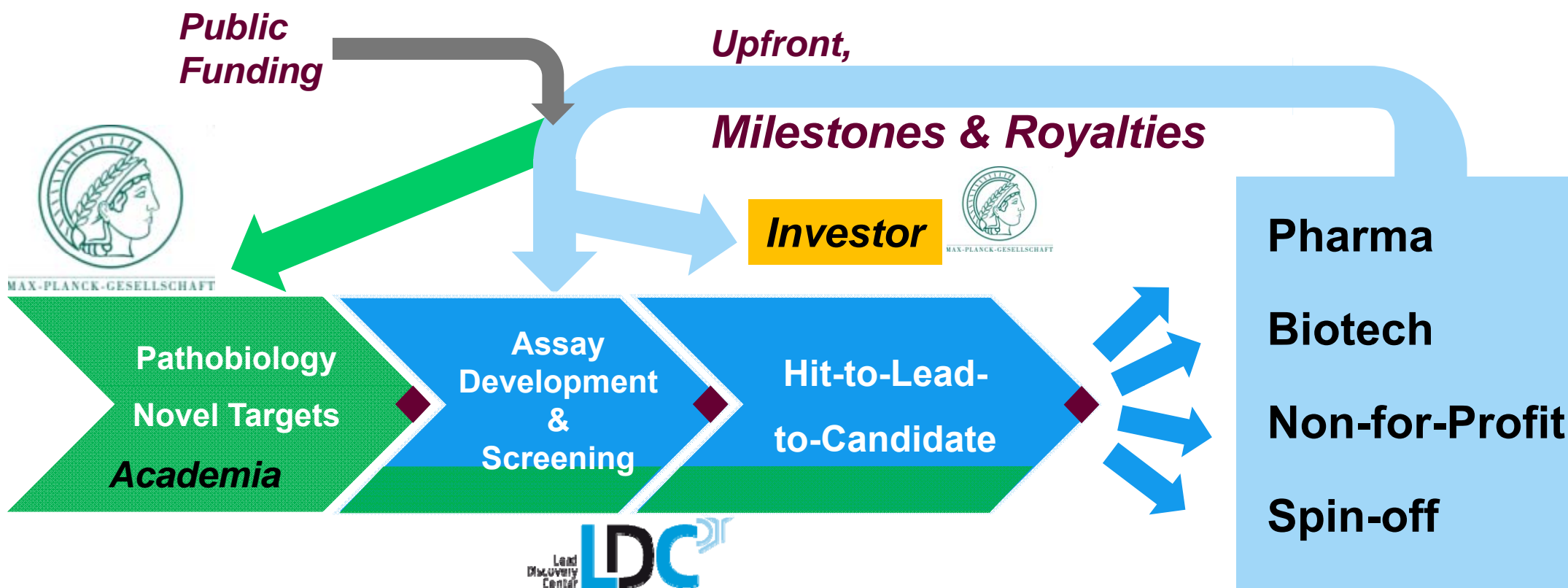
ROBUSTNESS



Flexible
Partnering

SUCCESS

LDC's Business Model: Share Fair – Fair Share



Translation Works at LDC

- 9 Lead nominations (*in vivo* PoC, IP), 4 approaches devalidated
- First in class *in vivo* PK/PD active series:
 - Inhibitors of mitochondrial polymerase, extracellular cyclophilins, vATPase
 - Monoselective ATP-competitive CDK and highly selective RON & Axl kinase inhibitors
- Validated Chemical Matter from Novel Assays:
 - Inhibitors of mitochondrial polymerase, Sirt 7, Trim32, LRRK2 GTPase, Cytolysin, SLC6A15, Plexin-B1/Sema4D, GFAT, Lin28B, ...
 - Inhibitors of NET formation from a High Content Screen using human primary neutrophils => GSDMD as novel drug target [Science Immunology 2018, 3, eaar6689](#)

Option / License Agreements



2011

oncology
license

ext. Phase Ib



2013

oncology
license

development



2015

oncology
license

lead optimisation



2016

neuroscience
option

lead identification



2016

Parkinson's
license

lead identification



2017

oncology
license + research coll.

lead optimisation



2017

oncology
license

development

Ratum ab Naturam et Diligentia



RaND Biosciences

2017

immuno-oncology
license + research coll.

lead optimisation



2017

orphan disease
option + co-funding

hit identification

Contributions to Spin-offs

ReWind Therapeutics

2017  REWIND
Therapeutics

re-myelination, e.g. MS

€15.2 million Series A financing by

Boehringer Ingelheim Venture Fund

Merck Ventures BV

PMV, a Flemish investment company

KU Leuven's Centre for Drug Design and Discovery

KU Leuven Gemma Frisius Fonds

Quench Bio

2018

- deal signed with VCs:
Atlas Venture & Arix Bioscience
- shares in company
- licensing milestone & royalties

Discovery Alliances



tu



Why Does It Work?

- Sourcing innovative ideas from & through academia
- Collaboration and trust relationship LDC/academics
- Incentive structure beyond just publications
- Critical funding for early stage drug discovery projects
- Industry standards @ LDC
- Highly motivated team, not distracted from frequent changes in portfolio and strategy
- and...

see also: Nussbaumer & Klebl, *Fut. Med. Chem.* **2015**, 7, 1879-1889



MAX-PLANCK-GESELLSCHAFT



Max-Planck-Innovation



Nussbaumer, LDC Biospain 2018

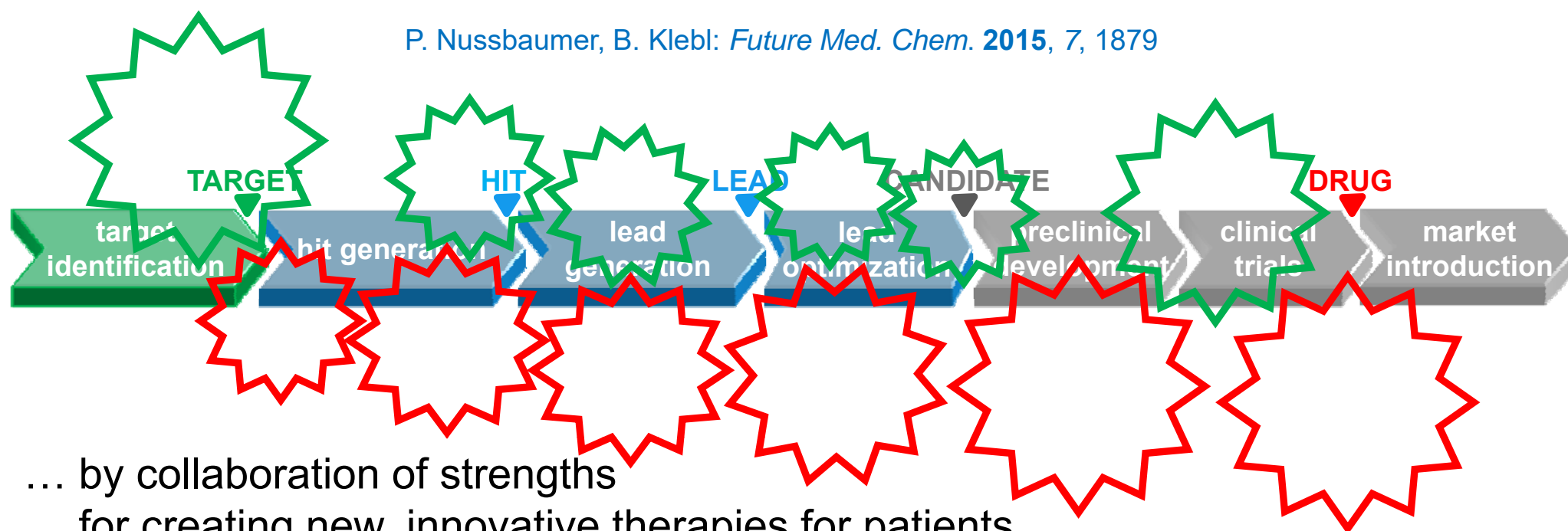
- patients
- society
- health care
- economy
- academia



... and many more

Towards a New Paradigm in Drug Discovery

P. Nussbaumer, B. Klebl: *Future Med. Chem.* **2015**, 7, 1879



- ... by collaboration of strengths
- ... for creating new, innovative therapies for patients
- ... sharing risks and sharing rewards (fair share & share fair)
- ... **with a professional translator / facilitator / motor**