

Trends in translational sciences: Role of industrial-academic collaboration

Science For A Better Life

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Khusru Asadullah, MD
Vice President & Head of Global Biomarker, Bayer HealthCare
Professor of Dermatology and Immunology, University Hospital Charité, Berlin

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Drugs do not Work in Everybody

Response rates (%)

- Translation sciences are expected to lead to better results

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Challenges in Drug Discovery

a Overall trend in R&D efficiency (inflation-adjusted)

Number of drugs per billion US\$ R&D spending*

→ The number of FDA approved drugs per billion US dollars of R&D spending has halved approximately every 9 years

Scannell et al., 2012 (11) *Nature Reviews Drug Discovery*

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High and Increasing Phase II Failures

.... success rates for new development projects in phase II have fallen from 28% to 18%, with insufficient efficacy as the most frequent reason

The 108 failures are divided according to reason for failure when reported (87 drugs) (a) and therapeutic area (b)

John Arrowsmith: Phase II failures: 2008-2010: *Nature Reviews Drug Discovery* Volume 10, May 2011, 1

Conclusions:

- Limitations of animal models
- Lack of stratification
- We seem to work on the wrong targets

We need better targets and biomarkers

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The Principle of Personalized Medicine

Trial and error vs **Informed treatment decision**

Biomarker-based prediction of treatment response will allow selection of patients appropriate for treatment

Graphic adapted from C. Carini, C. Frisuzzi, Eur. Pharm. Rev. 2008, 2, 39-45

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Reproducibility of Published Data

	Model reproduced 1:1	Model adapted to internal needs (and fine, assays)	Literature data transferred to another indication	Not applicable	Not applicable
In-house data in line with published results	1 (7%)	12 (80%)	0	1 (7%)	1 (7%)
Inconsistencies that led to project termination	11 (24%)	24 (60%)	2 (5%)	4 (9%)	4 (9%)

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Questions

- What are factors influencing reproducibility rate?
- Can it be that we are wrong?
- What are the reasons for the low reproducibility?
- What are our conclusions ?

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Different Categories of Collaborations

Consortia pre-competitive long-term interest shaping the environment	Alliances/Partnerships competitive research IP generation short- to mid-term need for complementary competencies from partner	Fee-for-Service clearly defined task no IP short-term interest
KOL-Networks		

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Innovative Partnership Models@BHC

- Models applied have to match the question to be addressed
- BHC Innovation sourcing → 2-Level Strategy

Strategic Alliances with Key Centers of Expertise

- Alliances with selected centers
- Know-how interchange
- Joint Projects
- Example: **dkfz**
- Risk and reward sharing
- Joint financing 1mio/a each

Broad Search Strategy

- Connect to know-how on a world-wide basis
- Useful to address specific questions (e.g. animal models; novel targets)
- Clear processes; filtering
- Example: Grants4Targets

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Innovative partnership models – our “Grants4Targets” Initiative

Background

- Numerous targets exist, but are “invisible” for us
- The knowledge outside > inside

Idea

- Join forces with academia and biotech start ups to translate innovative targets into drugs
- Provision of grants to evaluate and validate novel targets – “Grants4Targets”

Approach

- Easily accessible Internet site and submission tool
- Low bureaucratic burden for both partners
- Clear communication on “needs” – what are we looking for ?
- Fast processing of requests

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Grant types within G4T program

Support Grants (€5,000-10,000) to further advance research on targets or biomarkers that are at a very early stage of discovery; fixed grant approval letter;

Focus Grants (€10,000-125,000) for more mature ideas to address specific aspects of a target or biomarker as a first step towards transferring it to the drug-discovery process; fixed grant approval letter;

IP rights remain with the applicant

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www.grants4targets.com

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Initiative Announcement

Started in May 2009:

- Flyers and poster distributed at scientific and partnering meetings
- Approx. 2,500 targeted emails sent to potential multipliers/interesting target groups
- Advertising campaign in different scientific journals (print & online):

www.grants4targets.com

Next Deadline March 31, 2013

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WebTrends on www.grants4targets.com

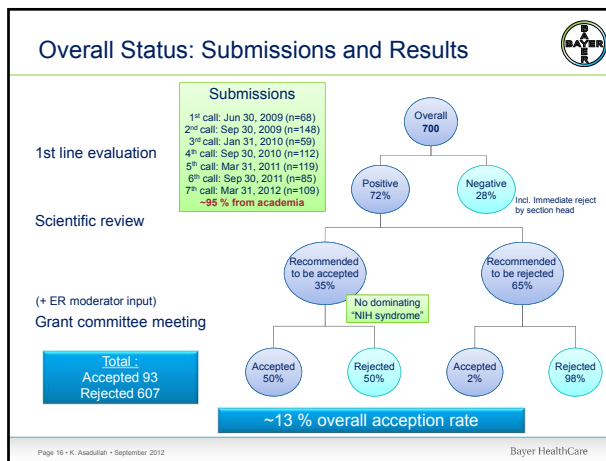
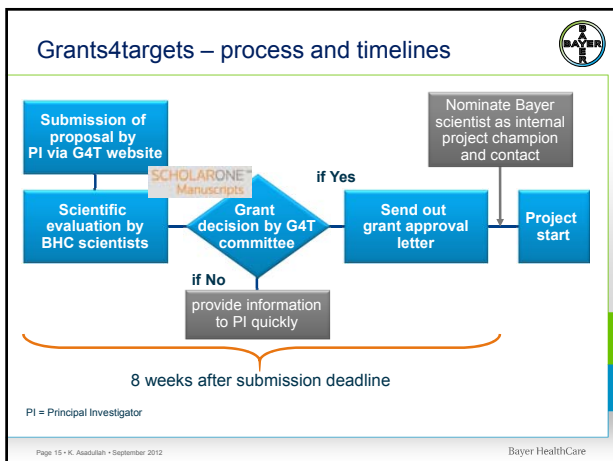
Analysis of website clicks overall

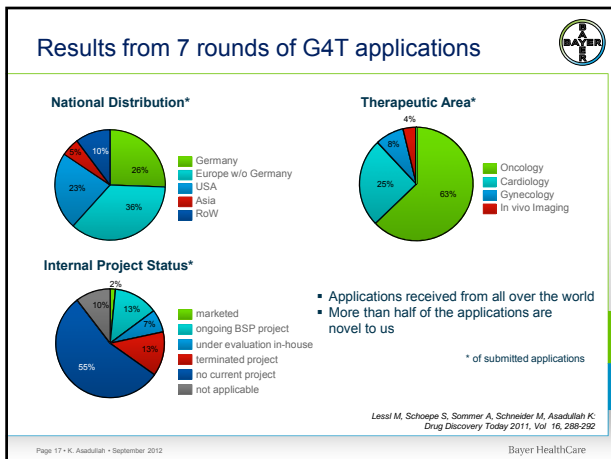
How did you become aware of us?

(round 4 - 7, Aug 2010 - May 2012, n=392)

Despite very little promotion we got noticed very well

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- ### 4 Good Reasons to Apply
1. Access to bridging funds
 2. Easy process
 3. Fast decision
 4. Access to a competent partner / modern drug discovery technologies
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Feedback from the scientific Community

Dr. Kallio, University of Turku, Finland:
"This program is a **fantastic opportunity** to forward pre-clinical target discovery and validation. It can serve as an **important bridge funding** or allow execution of a few critical assays."

Prof. Lanisnik Rizner, University of Ljubljana, Slovenia:
"The major **two advantages** of the G4T program are: a **short time needed for the application**; and a **fast response period** – as applicants we have been informed about our proposals in less than three months."

Prof. Multhaupt, Free University of Berlin, Germany:
"We have experienced an **excellent support by Bayer Scientists** and have had encouraging discussions."

Prof. Wang, Moores UCSD Cancer Center, La Jolla, USA:
"There are two advantages in the program. The first being the **speed** with which the grant is funded. The second being the **potential of further collaboration** in the future to advance the common research interests **between my laboratory and Bayer AG.**"

Reviewer of our manuscript submitted to Drug Discovery Today:
"The Grants4Targets scheme is an innovative and important move towards improved academic - industrial relationships. ... **Bayer are to be applauded for setting up this scheme.** This is a useful scheme and publication of this initial data is important."

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- ### Conclusions
- We must not rely on published data only.
 - Actions are needed to improve reproducibility (e.g. standards, publication of neg. data, cultural change)
 - Partnerships between industry and academia are key for innovative drug discovery. The need and interest to work together is increasing on both sides.
 - We need to work together as a scientific community. Close interactions between basic research / clinicians and different disciplines are needed.
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Thank you for your attention !