Open Innovation for Project Managers

Discovery to Market: Three Critical Stages – Turning Ideas into Projects
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Context for today

An interactive workshop on Open Innovation (OI)

- Preparing project managers in pharma & biotechs with limited or no experience of OI
- Drawing on case studies and your experience
- Exploring:
  - Definitions and examples
  - Different perspectives and roles
  - Barriers and enablers, and the implications for risk / project management

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With thanks to....

CEO and founder

Jackie Hunter, PhD, CBE, has over 20 years of Pharma leadership experience, most recently as SVP at GlaxoSmithKline, developing their external R&D innovation strategy. Prior to this she was accountable for discovery and early clinical development in Gastroenterology and Neurology. She has played significant roles in the implementation and governance of major international industrial and public-private partnerships.

Co-founder and Principal Consultant

Michael R. Barnes, PhD, has over 15 years pharma and biotech R&D experience leading Computational Biology & Informatics teams. As a co-founder of OI Pharma, Michael brings a strong focus on translational research and pre-competitive collaboration to the team, at GSK he co-led an EFPIA team to gain funding for the IMI OpenPhacts project - which is creating open informatics resources for drug discovery. Recently appointed as Director of Bioinformatics at the William Harvey Research Institute, Queen Mary University of London, Michael specialises in using Open Innovation as a tool to improve the translational and collaborative interface between industry and academia.
What is your experience of OI?
WHAT IS OPEN INNOVATION?
A deliberate shift from..
“the lab is my world”

Closed innovation – everything within

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To..
the world is ‘our extended cortex’

- Collaboration: outside in & inside out
- Using the best resources
- A mindset based on trust
- Proactive IP / idea management
- Can occur at any stage of the value chain
- Dare to share future profits (or losses)
Open Innovation can appear anywhere along a continuum...
...and anywhere along the R&D pipeline

**Target ID**
- Zealand ↔ academia hit ID
- Zealand ↔ academia Target ID
- Univ Dresden
- Harvard RNI; epigenetic targets
- NVS target ID

**Hit and Lead ID**
- Zealand ↔ big pharma Lead optimisation
- NZS hit & lead IP
- Formulation
- Tech screening
  - Catalent has a key string of activities & processes for this

**Lead Optimisation To Candidate**
- NZS lead optimisation
- Start-up
  - Due diligence
  - The type of contact / sharing the planned activities
- Lead optimisation with human companies - CEVA

**Phase I**
- NZS with agrochemical CEVA
- ND - Catalent can strongly collaborate and accelerate this stage
- Externalisation of assets

**Phase II**
- Phase I NVS
- Academic networks

**Phase III**
- New models for development
- Safety & reliability - Reliability supplied

**Market**
- Co development
- Patent access through use of new technologies (partnerships with tech companies)
- Risk sharing between pharma & CROs
- Attrition reduction
  - Scale up and pre-launch regulatory support
  - Electrospray technology spreading external parasiticide

**Participation in consortia**
- Compound library to academia
- Option leads

**Antibiotic alternatives**
- Endolysine
- Bacteriocine
- Bacteriophages

**Project WAVE**
- Royalty free license IPM

**Codevelopment with NGO TB Alliances**
- Joint venture Janssen Alzheimer's

**Joint venture**
- New / indication

**Externalisation of assets**
- Participation in consortia
- IPM
- Royalty free license IPM
There is an ecosystem involved!

- Exclusively Internal IP & Knowledge
- Single/Few Partner Relationships
- Many Partners
- Open Sharing
- Open Access
- Open Standards
- Public Domain Data Generation

Proprietary research is key: but needs to be highly strategic.
These are the foundation but require cultural change.
A proactive approach to IP

• Create and control strategic know-how and IP:
  – Obtain a competitive advantage

• Make available non-strategic know-how and IP:
  – Generate extra value from under-utilised IP

• Gain access to know-how and IP of others:
  – Create critical mass, new capabilities and market opportunities

• Access in innovation hotspots:
  – Interaction opportunity with talent and partners

A shift from protecting IP to managing it
WHAT EXAMPLES OF OI ARE YOU AWARE OF?
PHILIPS  
NEC  
fluXXion  
IBM  
NXP  
oce  
Silicon Hive  
Polymer Vision  
PHILIPS
Research institutes
Universities
Virtual proteins
Corporate innovators
Start-up companies
Technical services
Business support
Network organizations
Venture funds
MiPlaza
POINT-ONE Innovation Fund
DELTAPATENTS
EUROPARTNERS
VDL Enabling Technologies Group
Accenture
Creative Conversion Factory
YACHT
High Tech people
New Venture Partners, LLC
Eindhoven Brainport
Educational Foundation of Plastic Electronics
pharma partners
open innovation in bioscience
MiPlaza shared facilities and services

- Beta Ventures building
- Thin film facilities cleanroom
- RF T&M labs
- Materials analysis
- Molecular biology lab
- Photonics cleanroom
- Reliability lab
- Electronic prototyping

MiPlaza facts and figures
- Total clean room area 5000 m²
- Total staff 250 employees
- Turnover 40 M€uro
But also world wide opening up innovation globally based on local strengths

Eindhoven
- Healthcare
- Lifestyle
- Technology

Hamburg
- Healthcare

Aachen
- Lighting
- Healthcare

Shanghai
- Emerging markets
  - New business
- Network

Bangalore
- Emerging markets

Cambridge
- New business

Briarcliff (NY)
- Clinical sites
  - Healthcare

Over 10% of all Philips employees are dedicated to R&D, from which 15% (1800) are within Philips Research
Philips seen as a leader in OI

• Best practice in Inside-Out OI
  – in making IP work harder for Philips & others
  – in incubation, venturing, attracting investment
  – in creating High Tech Campus Eindhoven, NL

• Extensive network of academic and clinical research relationships

• Long-lasting engagement in public/private partnerships

• Promising examples of Outside-In OI
OI drug discovery at Lilly

Connecting Compounds to Patients

- Lilly Phenotypic Drug Discovery Initiative (PD²)
- Lilly Target Drug Discovery Initiative (TargetD²)
- Lilly TB Drug Discovery Initiative

Test your molecules

SAR and Lead optimisation

ABOUT
Open Innovation
Future drug discovery relies on finding solutions for complex, unmet medical needs. PD² and TargetD² connect external investigators with Lilly science to find compounds that may become medicines.

THE SCIENCE
of Open Innovation
Modern drug discovery uses complementary, specific biological targets, PD² queries complex cellular.

GETTING
Started
The Open Innovation Drug Discovery Program uses a confidential, automatic algorithm to select structures for biological screening. A full data report is returned to the investigator after screening.

EVALUATING
Compounds
The Open Innovation Drug Discovery program uses a confidential, automatic algorithm to select structures for biological screening. A full data report is returned to the investigator after screening.

PARTNERING
in Drug Discovery
Once a compound generates promising results, investigators have the option to reveal the structure to Lilly for review. Findings may lead to a partnership for further studies or collaborative agreement.
Lilly’s PD2 initiative

• In PD2, Lilly will provide no-cost access to phenotypic assay panel for external investigators

• PD² panel includes disease-relevant assays

• Confidential compound submission via web-based interface

• Full data report provided to investigator

• Promising findings can serve as basis for a collaborative agreement
OI@Lilly: Evaluating New Molecules
The Lilly OI drug discovery process

Infectious Disease Research Institute

Investigator and Institution

Lilly Decision Making

In Silico Structure Selection

In Vitro Screening

Timeline

Full data reports returned in < 60 days (depends upon actual progression down testing panel plus individual assay performance)

Structure requests about 2x per quarter

15 days to accept structure request

45 days to evaluate structure

180 days to negotiate agreement

TB screening module → Biological data

Design/submit compounds

Request for structure reveal

Structure reveal process

Request for analogs

Discussion w/ Lilly Global External R&D

Communication of Lilly decision

END Collaborate with Lilly TB initiative

END Collaborate with Lilly OIDD

YES

NO

YES

NO

END

YES

Approved

Cheminformatics filter

TB selection tool

Biological data

Yes

No

Accepted

Accepted

CIDD screening panel (PD2 and TargetD)
WHAT ARE THE KEY CONSIDERATIONS FOR OI?

Roles / perspectives and barriers / enablers
What would you say are the...  

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<th>Weaknesses</th>
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...of Open Innovation?
Here are examples of what others are saying...

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| • We have clear assets and expertise that we can offer others  
  • We have lots of internal teams that want to join in this effort  
  • There is a capability for OI all along the value chain | • There is no clear top-down strategy  
  • There are too many disparate efforts going on  
  • Internal teams inhibit innovation by focusing on obstacles rather than opportunities |

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| • Establishing the right contacts to people in other organisations could quickly produce win: wins  
  • We could leverage existing external relationships  
  • We have some success stories that could be actively shared | • If we have no clear internal agreement on what we want to achieve we could waste time and effort  
  • External partners may not have a strategy aligned with ours  
  • If we don’t do this, competitors will get ahead of us |
Different roles and perspectives

- Big company vs. small
- Academia vs. industry (Pharma, Biotech..)
- Different sectors (Pharma, Consumer, IT, other..)
- Different geographical locations
Culture, organisation and technology can be barriers or enablers!

- Organisation strategy
- Technology e.g. for Crowd Sourcing
- Experience
- Personality types
- Mindsets
- Culture
- Organisation size
- IP
- Processes

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Players in the OI Ecosystem

**Secondary Innovator**
- *Translational powerhouse*
- Industry, SME
- May be resistant to change
- Domain expert
- Good network
- Makes tech transfer work
- Publicises needs (Crowd sourcing)
- Partner with 1\textdegree Innovator

**Primary Innovator**
- *Innovation powerhouse*
- Academia, SME
- Specialist
- Close partnership with 2\textdegree innovator
- Avoid exclusive licensing
- Needs good understanding of business reqs. of 2\textdegree & 3\textdegree Innovators

**Tertiary Innovator**
- *Innovation super-consumer*
- Industry and large SME
- Multidisciplinary
- Highly networked
- Tech-transfer and In-licensing
- May seek exclusivity
- Change agent
- Out licensing
Different perspectives

**Industry**
- Declining budgets
- Declining productivity
- Risk aversion (share risk)
- R&D externalisation trend
- Late stage focus
- Driver: Shareholder value

**Academia**
- Austerity measures
- Translational imperative
- Impactful publication critical
- Increasingly entrepreneurial
- Early stage focus
- Drivers: Publication & Health

“Risk” perceived by Industry is a partnering opportunity for Academia. Analysts agree:
- “Return on Investment from External R&D is 3 x Internal” (Morgan Stanley, 2009)
Large vs. small

Large company
1. More conservative / less risk taking
2. Medium time horizons
3. Decisions by committee
4. Financially secure
5. Portfolio approach
6. Standard processes
7. Usually lots of in-house support / experience e.g. in partnering & IP

Small company
1. Entrepreneurial / risk takers
2. Short term horizons
3. Rapid decision making
4. Financial urgency
5. Focus on single projects
6. Flexible processes
7. Limited support / experience
WHAT ARE THE IMPLICATIONS FOR YOU?
Implications for managing a global open innovation team!

• Different management skills:
  – Flexible and directive
  – Senior management accountability
  – Lead site

• A well-defined goal
  – Problem vs. solution
  – Vision and customer focused

• A strong team
  – Interpersonal relationships
  – Sound working practices
  – Rigorous project management
  – Different site accountabilities

• Build the team’s expertise
  – Capability vs. availability
  – Interdependencies, collaboration, knowledge sharing

http://elisabethgoodman.wordpress.com/2012/10/23/the-needs-of-globally-dispersed-innovative-teams/
Thank you!

• Any final questions / comments?

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