OPEN INNOVATION PARTNERSHIPS AT ASTRAZENECA:

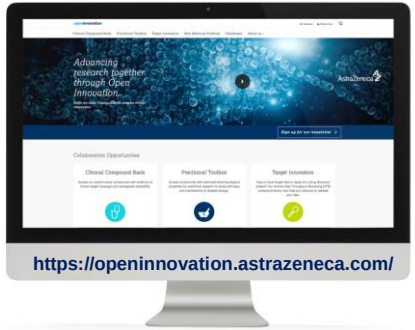
Dave Smith & Adrian Freeman

Open Access to Drug Discovery - CATS

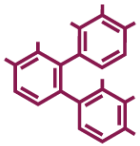
23rd November 2018

Rationale for Open Collaboration

Benefits to external collaborator and AstraZeneca



AstraZeneca



Compounds

Facilities

Drug Discovery Knowledge

External Scientists

Disease Knowledge

Patients / subpopulations

Technology

Questions that otherwise could not be asked

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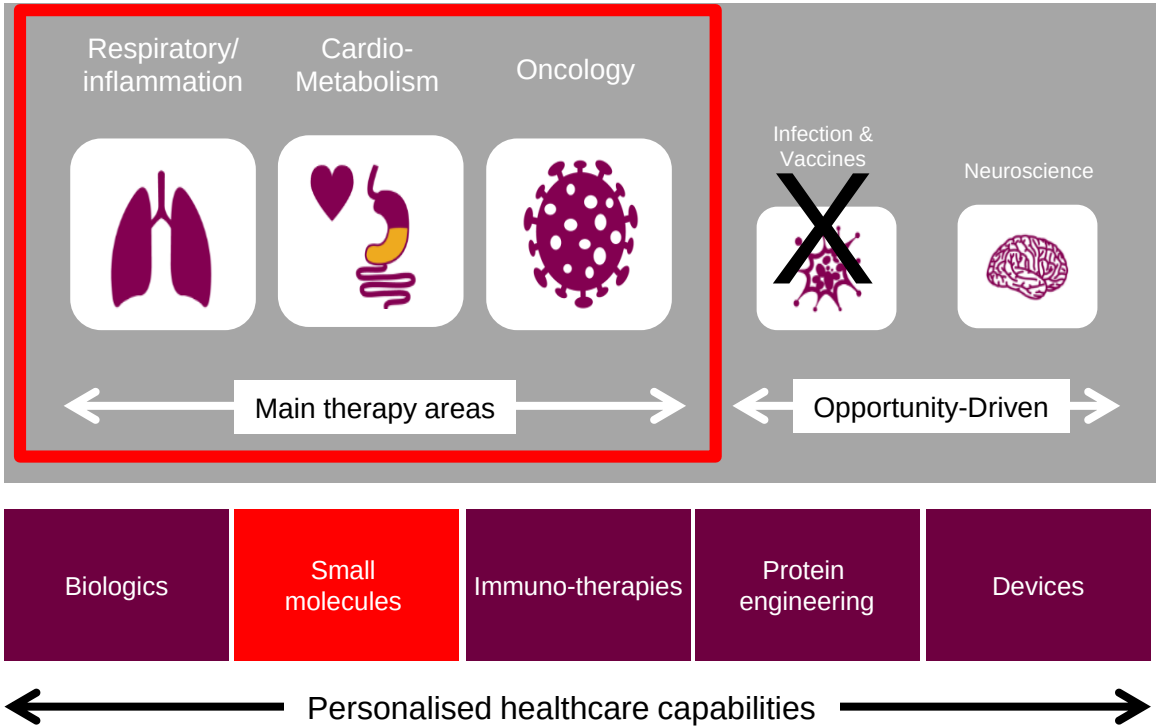
Key Therapy Areas for AstraZeneca



AstraZeneca Open Innovation 1

Clinical Compound Bank

Access our patient-ready compounds with evidence of human target coverage and manageable tolerability.

Delivered:
- **30** ISS clinical validation studies

Disease indication agnostic

Preclinical Toolbox

Access compounds with optimised pharmacological properties for preclinical research to study pathways and mechanisms of disease biology.

Delivered:
- 150+ projects approved

Primarily in AZ main therapy areas

Target Innovation

Have a novel target idea or assay for a drug discovery project? Our diverse High Throughput Screening (HTS) compound library may help you advance or validate your idea.

Delivered:
- 62 projects on-going/complete

Now aligned to AZ R&D focus areas

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AstraZeneca Open Innovation 2

New Molecule Profiling

Explore the properties and therapeutic potential of your novel compounds by leveraging our cheminformatic and screening technologies.

Delivered:
- 30,000 natural product compounds added to AZ's HTS library

Challenges

Offer and be rewarded for your innovative ideas and research expertise to help overcome difficult R&D barriers.

Delivered:
- 17 challenges run
- 2 collaborations delivered solutions

Data Library

Access preclinical data sets on our early development compounds for data mining and research purposes. to enhance understanding of translation to human efficacy and safety.

Launched June 2017
- Preclinical safety data
- Oncology combinations data

Preclinical Toolbox & Clinical Compound Bank

How does it work?

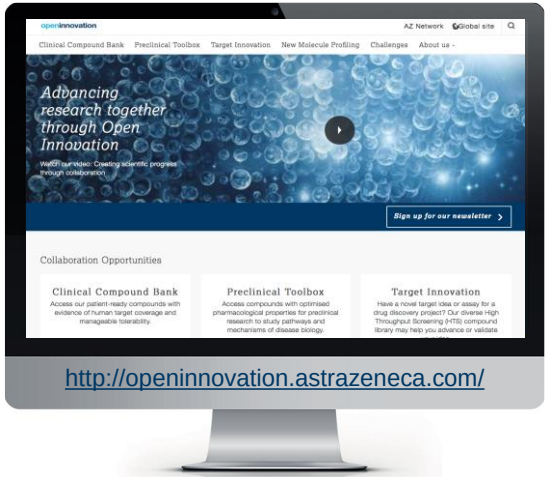
AZ Open Innovation web portal provides:

- List of available compounds
- Mechanism of action / target class
- Original disease area / indication(s)
- Route of administration
- CNS penetration

Applications to AZ Open Innovation

Guiding Principles

- Review what we offer
- Submit a non-confidential proposal
- If mutual interest ⇒ discuss further (CDA, MTA)
- If positive results ⇒ AZ option to negotiate license



http://openinnovation.astrazeneca.com/

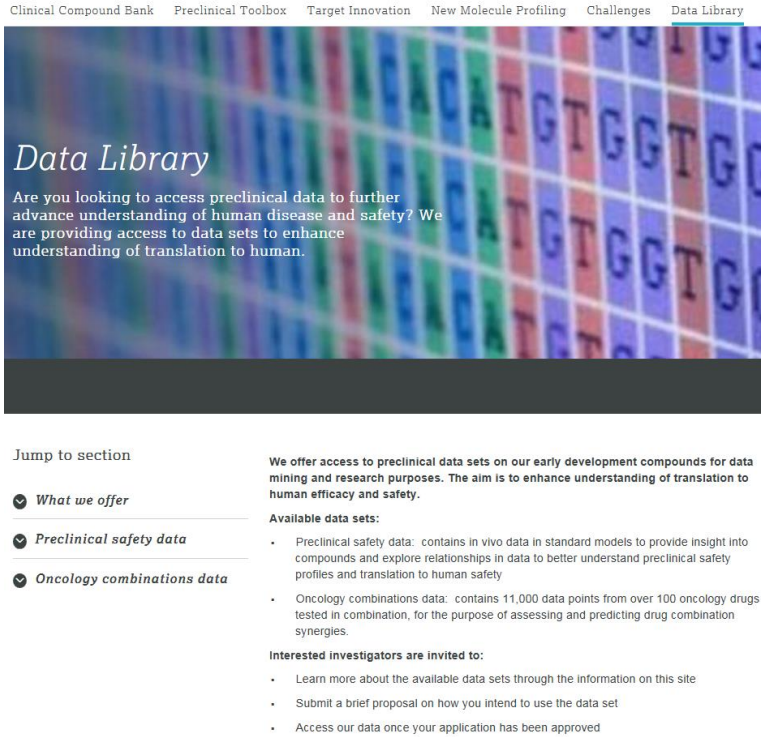
More details:

- Pre-existing IP remains with original owner
- New IP – ownership framework taking into account the contribution of each party. Generally data belongs to academic partner and AZ only claims compounds developed by AZ
  Publication encouraged

Data Library

- New data library module launched June 2017
- Only pharma company openly sharing large amounts of preclinical data
- Oncology combinations and preclinical safety data currently available; more coming later in 2017

New Data Library Module Launched



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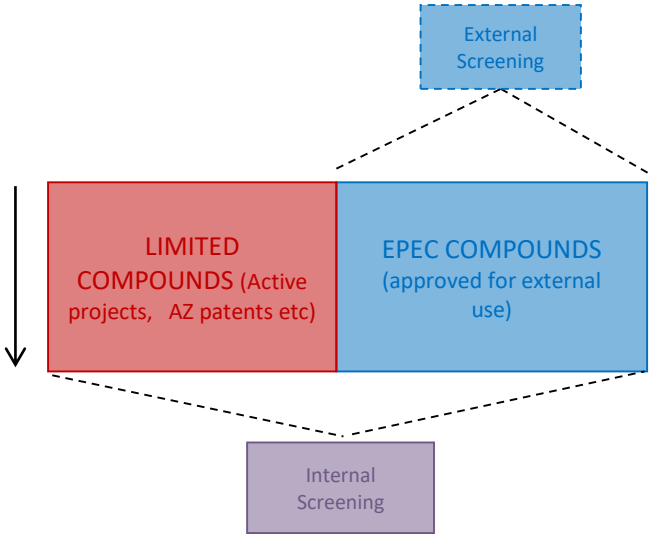
Target Innovation:
External Partnership Screening Set



EPEC- a flexible screening set for external partnerships

- Includes compounds of sufficient volume, without current project activity constraints; no ELF set, or AZ patent compounds
- **External screening partners can access sets of up to 250k compounds in 50k tranches**
- AZ also screens this set as part of our HTS strategy
- Allows external screening partners broad coverage of AZ collection's chemical space

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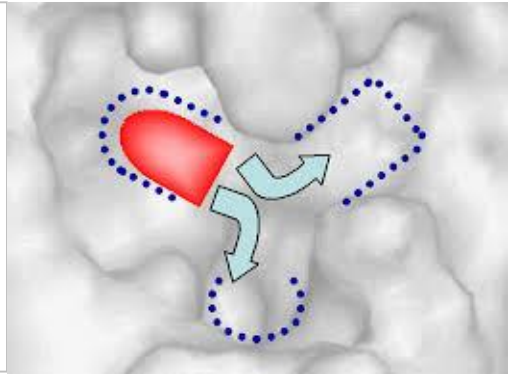
More screening collections available

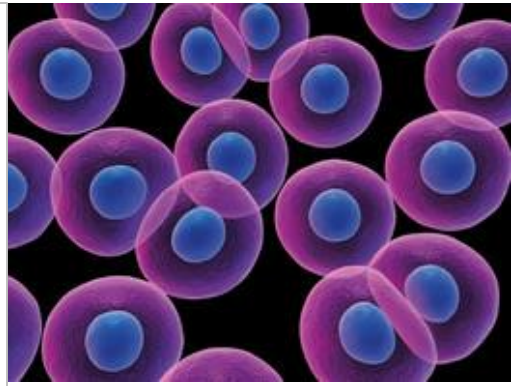
Fragments

- >17K fragments
- Average 15 heavy atoms
- Average cLogP = 1.3.
- The set can be screened as a whole or as a subset that can be cherry-picked depending on the throughput of the assay technology



Annotated Phenotypic Library

- 14K well annotated tool compounds.
- Compounds that have an affinity of < 100 nM on > 1200 human targets.
  - Pre- and clinical candidates
  - Compounds profiled extensively in selectivity panels,
  - Tool compounds
  - Marketed drugs
  - Many compounds not commercially available
- Powerful chem- and bioinformatics methods can be applied to identify a preliminary target list



and

https://www.astrazeneca.com/partnering/externally-sponsored-scientific-research.html

But most importantly please talk to us:
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