

Genomics Enabled Drug Repurposing and Repositioning

Some Emerging Themes

Aidan Power

Who's doing what?

- NIH – NCATS, Individual Institutes' intramural programs
- Academic institutions +/- NIH funding
- Pharma/Biotech companies
- Technology companies

Strategies Employed

- Hypothesis Generation: Bioinformatics/chemistry driven
 - Systematic, organized
 - Toolbox incomplete/follow-up
- Hypothesis Testing: Biology/mechanism
 - Opportunistic, detailed
 - Dependent on ‘individual’ interests
- Outreach
 - Various approaches for crowd sourcing
- All approaches need to end up in human experiments
 - Stratified/precision/personalized
 - Could use tool compounds (to test pharmacology and understand mechanism)
 - But don’t forget about the animal/mechanistic/biology

The Good News

- Technologies and data opportunities unprecedented
- Great examples of success – particularly in rare diseases
 - Convergence of interests from Pharma/Biotech, NIH, FDA
- Interesting collaboration models
 - MRC/AZ, NCATS multiple companies
 - New

Challenges

- Academic Research
 - Integrated/comprehensive libraries of pre-clinical or tool compounds
 - Limited view of what's available from companies (clearing house?)
 - Funding/review bodies often not geared towards
- Pharma
 - Patent/IP issues
 - Cost of transactions for licensing

New Opportunities/Questions

- Opportunities for systematic integration of data and deep biology driven approaches
- New models of collaboration – templates for CRAs, CRAs
- New funding models
- Are there other experiments around drug repositioning that could be developed?
- Should global strategies be implemented for Rare Diseases e.g. IRDC