
Information-Rich Screening Methods in Cell-Based Drug Discovery

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Abstract:

Cell-based or phenotypic drug discovery offers potential advantages, including the discovery of unexpected molecular mechanisms, identification of molecules with cellular activity, and the possibility of drug repurposing to speed clinical translation. This lecture will provide an overview of different screening approaches and analysis methods using transcriptional, morphological, and fitness-based readouts of drug activity. Examples of discoveries will include novel mechanisms that would have been missed by traditional *in vitro* target-based screens.

Reading list:

- Corsello SM, Bittker JA, Liu Z, Gould J, McCarren P, Hirschman JE, Johnston SE, Vrcic A, Wong B, Khan M, Asiedu J, Narayan R, Mader CC, Subramanian A, Golub TR. 2017. The Drug Repurposing Hub: a next-generation drug library and information resource. *Nat Med* **23**:405–408. doi:10.1038/nm.4306 <https://www.nature.com/articles/nm.4306>
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<https://www.nature.com/articles/s43018-019-0018-6>
- Seal S, Trapotsi M-A, Spjuth O, Singh S, Carreras-Puigvert J, Greene N, Bender A, Carpenter AE. 2024. Cell Painting: a decade of discovery and innovation in cellular imaging. *Nat Methods* 1–15. doi:10.1038/s41592-024-02528-8
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