

Experimental/Data Technology

Marc Vidal (Dana-Farber/Harvard Medical)
“Interactome Networks”

Fabio Piano (New York University)
“Phenomics: in Vivo Functional Analysis of the
Genome”

Chair: Fumiaki Katagiri (Univ. of Minnesota)

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Recent Trends in Data Generation - driven by technology

- “-omics”
 - Very large, single types of data (Massively parallel assays)
- Higher spatial, temporal resolutions
 - Higher sensitivity (even single molecule)
 - Imaging technology
 - Non-invasive methods: tracking a single event

Why do we generate such data?

- “Because we can ...”
Learning curve for the community

We needed to learn:

what types of information can be extracted

what types of data are required for particular purposes

how these types of experiments can be properly done.

- Do we have sufficient data now? (types, amounts, quality)

Network modeling at two different scales

- Top-down: decomposition
 - Utilizing “-omics” phenomenological data to define relationships among biomolecules in the network.

GAP

- Bottom-up: reconstitution
 - Quantitative modeling of relatively small, isolated networks.
 - Need to know complete network topology and biochemical information, e.g., concentrations of molecules, kinetic constants.