

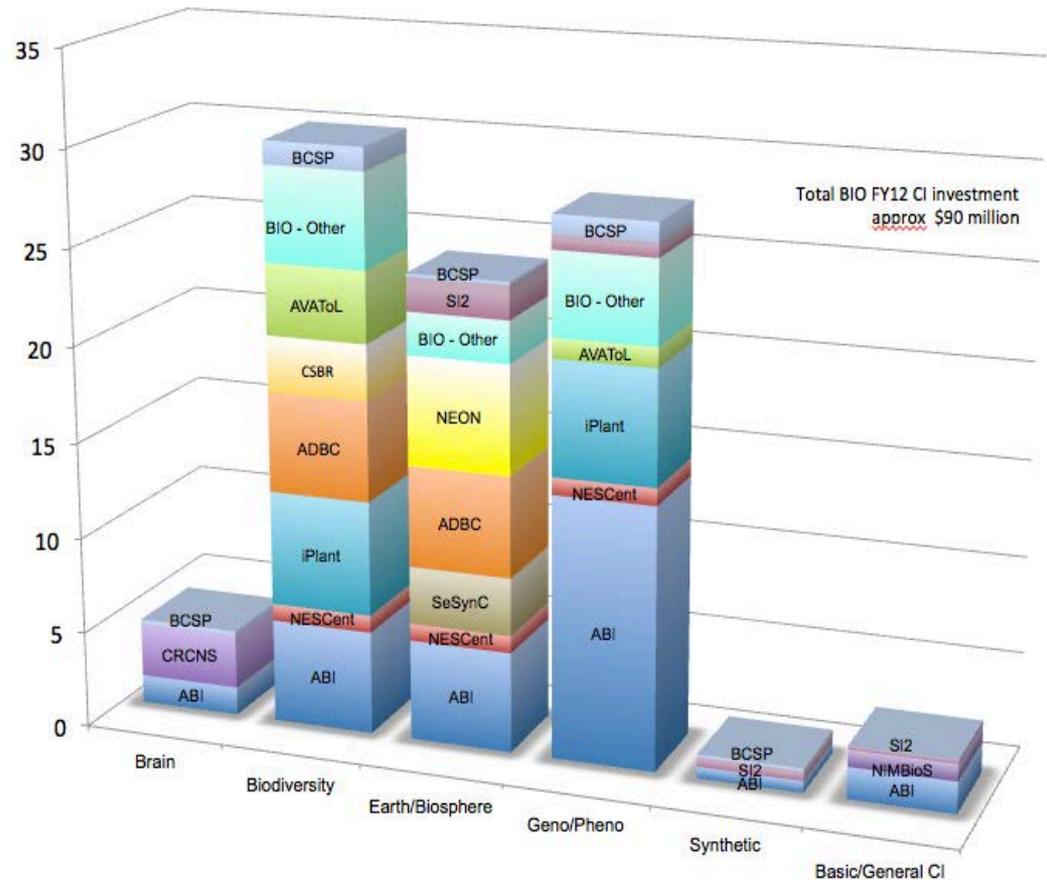
# Cyberinfrastructure for the Life Sciences Draft Strategic Plan

Presentation resulting from work by Judy Verbeke, Peter McCartney, Anne Maglia, Craig Stewart, Reed Beaman, Julie Dickerson, and Ann Haake, and incorporating suggestions from colleagues within the NSF (particularly OCI)

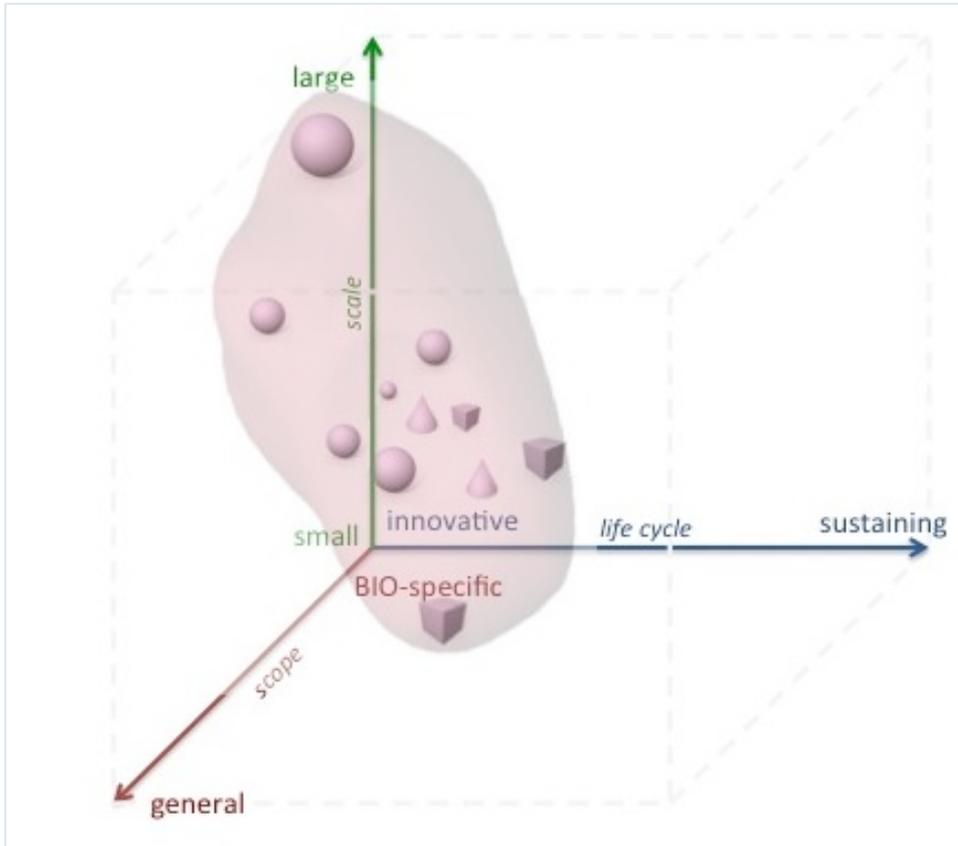
5 September 2012

# BIO - doing cyberinfrastructure since before that term was coined

- BIO investments in cyberinfrastructure in FY12 amounted to \$90M, aligned with the five BIO priority areas:
  - *Understanding the Brain*
  - *Understanding Biological Diversity*
  - *Interactions of the Earth, its Climate and the Biosphere*
  - *Phenomics: Genotype to Phenotype*
  - *Synthetic biology*



# A BIO view of CI investments



Example: Advanced Digitization of Biodiversity Collections

Enabled through combination of new and existing programs

- HUB – sphere (which supports the TCNs)
- Thematic Collections Networks – smaller spheres
- ABI supported tools – cubes
- Collections in Support of Biological Research - cones

*Dimensions of scope, scale, and point in life cycle*

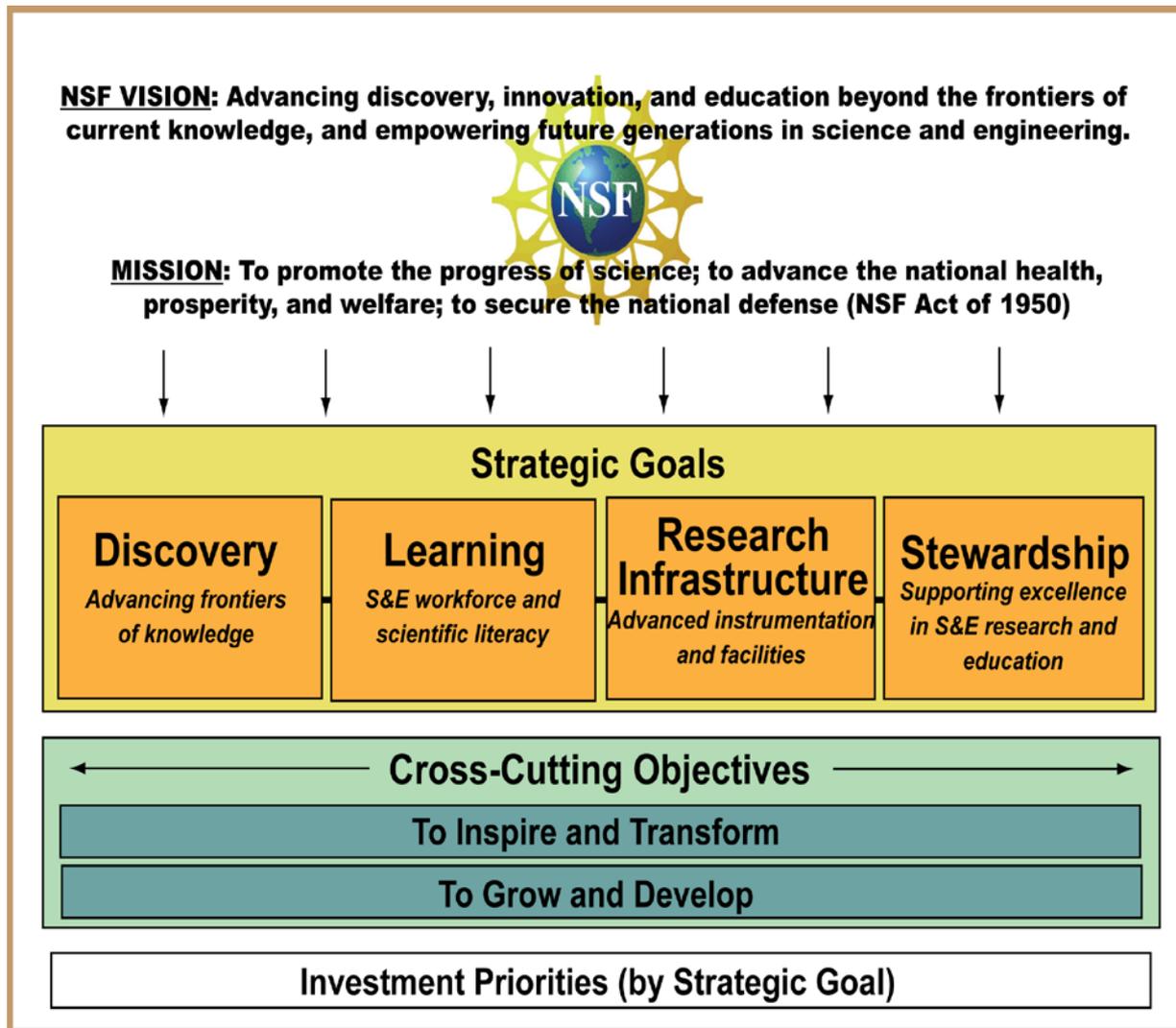
# CILS – 5 strategic goals

- **BIO Data Assimilation and Integration** (Big, heterogeneous, or otherwise). Ensure that important biological data are preserved and that biologists have the tools for preservation of important data and the tools to use and analyze those data.
- **Visualization, Knowledge Representation, and Collaboration Science for BIO.** Related to bio data assimilation and integration, provide visualization and knowledge representation tools that are deployed for use by practicing biologists.
- **Make the national CI more attuned to BIO research needs.** Facilitate evolution of national cyberinfrastructure (hardware, software, and people) so that it matches the work habits of biologists enables new discoveries and more efficient research. [cf. prior comments regarding gateways.]
- **Future computational tools.** Develop new tools that meet currently unmet and even unimagined needs.
- **Workforce development.** Foster development of a new generation of biologists who are comfortable using the most advanced cyberinfrastructure in existence

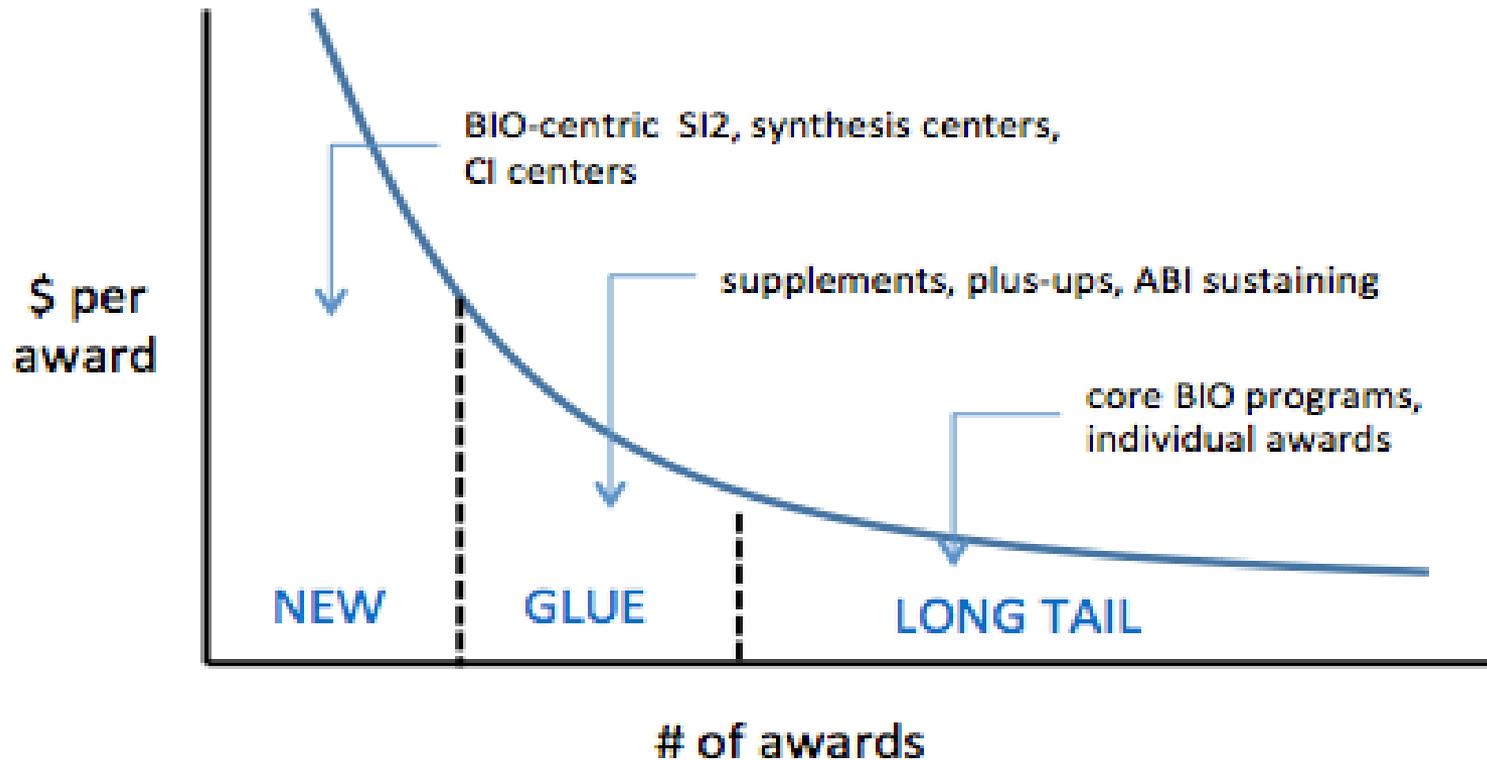
# Mapping BIO priorities and CILS goals

	BIO Data	Visualization & Knowledge Representation	Make the national CI more BIO-centric	Future computational tools	Workforce development
Understanding the Brain	X	X		X	
Understanding Biological Diversity	X	X	X		X
Earth, Climate, Biosphere	X	X	X		X
Genotype to Phenotype	X		X	X	X
Synthetic biology			X	X	

# Cyberinfrastructure is infrastructure



# Portfolio analysis & award management



- NSF can aid achievement of CILS goals through a combination of new programs or new emphases in existing programs (e.g. BIO-centric SI2s) and management of awards through plus ups and award conditions.
- Focus shifts left to right from innovation and discovery to BIO cyberinfrastructure as coordinated and planned infrastructure. Risk should go down from right to left.