

Bioinformatics & Database Needs

USDA Genomics BluePrint

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*Science To
Practice*

Genome Selection

Precision Breeding

Discovery Science

Reduce Animal Disease

*Accelerate Genetic
Improvement*

*Apply Precision Agriculture
to Phenotyping*

*Understand Microbiome
Contribution to Traits*

(CYBER)INFRASTRUCTURE

Infrastructure Goals

- Training the next generation of animal scientists
- Developing advanced genomic tools
- Create big data infrastructure
- Advancing biotechnology
- Characterizing and preserving genetic diversity

1. Training & Education

A. Training

- There is funding support for workshops, but workshops are offered on an ad hoc basis.
- Needs to be continued support AFTER the workshop – this relies on sustainability of resources/trainers offering the training.

B. Education

- Education grants exist – tend to focus on technical tasks
 - Need a focus on “workforce ready” skills
 - Real world data sets (build resilience for “messy” data
 - Experiential training – links with industry (e.g., internships
- Data Management Skills for a data savvy workforce (rather than data scientists)
 - Expose students to data management concepts early & often

2. Data Analysis

- Computational capacity is ‘solved’
 - Need to adapt existing platforms (user experience, software/workflows)
- Most ‘software’ is solved
 - Improvements for industry use?
- Animal Genome Databases
 - Resources need to be inter-operable and sustainable
 - Data should be democratized
- Meta-data standards, benchmarking for analysis, SOP, best practice
- How do we fund “boring” organizational or benchmarking projects?



3. Online Resources & Databases

- Move away from species-centric databases to knowledgebases that integrate more data types
 - Support more sophisticated queries
 - Support data democratization (data sharing & re-use capacity)
- Need to get serious about user interfaces & advanced querying
 - Work with human-computer interface & visualization experts
- Resources need sustainability plans separate to continued competitive funding
 - “Boring” maintenance tasks that are not innovative or exciting