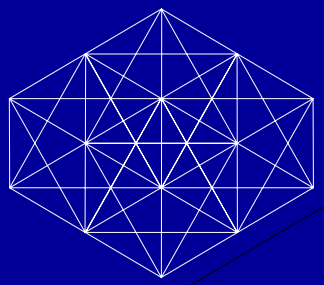


Integrative Bioinformatics

Team Report

Integrated Biosystems Research

Bioinformatics

Regional Research –

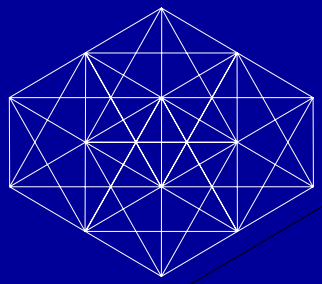
- Oncology: etiology, disease stratification, prognosis, therapeutic choice, therapeutic strategy
- Neurology: etiology, diagnosis, therapeutic strategy
- Diabetes: etiology

Integrated Biosystems Research

Bioinformatics

Research – Genomic Indicators in Disease

- Mutations as predisposing or causal (sequencing, genotyping)
- Altered patterns of genomic activity associations with disease subtypes, prognosis, therapy response & outcome (transcription, gene copy number, chromosomal rearrangements)
- Perturbation to reveal functional connections, vulnerabilities to therapy (RNAi screening)

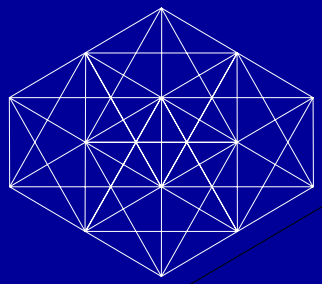


Integrated Biosystems Research

Bioinformatics

Resources –

- Large and growing shared computing center with ASU: clusters, SMP machines, fast storage
- Access to private databases of curated relationships between molecular species (Ingenuity, GeneGo)

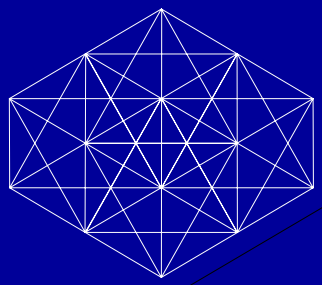


Integrated Biosystems Research

Bioinformatics

Skills –

- Individuals knowledgeable in the area of obtaining and consolidating publicly available data
- Individuals skilled in High Performance Computation
- Longstanding collaborative group of mathematicians, engineers and biologists skilled in developing practical analytical tools for prediction, classification and modeling.
- Rigor in determining what forms of analysis are feasible and mathematically justifiable



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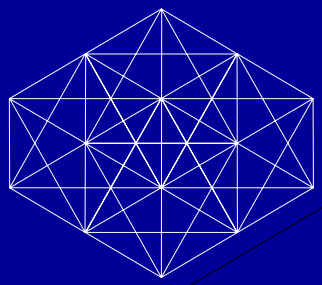
Bioinformatics

Tools –

- Tools for survey data viewing and trend analysis
- Analytic methods for detecting and ranking univariate relationships
- Analytics for detecting multivariate relationships and inter-predictivity among variables
- Model-based analytics to study influence in systems with redundancy, conditioning and feedback
- Model-based tools to find sample subsets where processes of interest are homogeneously regulated



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Regional Needs –

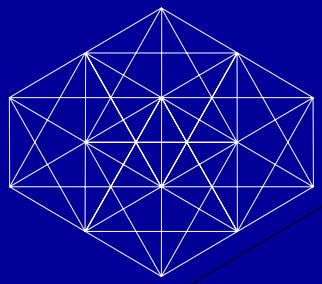
- Methods for accruing medical samples
  - Large numbers
  - Well preserved
  - Broadly annotated
- Expansion of the types of analysis that are applied to each sample
- Increased research on data categorization and/or discretization
- Development of further tools that work across such data representations

Integrated Biosystems Research

Bioinformatics

Regional Synergy –

- Proteomics can provide several different data perspectives to incorporate in integrative analysis



Integrated Biosystems Research

Bioinformatics

Questions and Answers?

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Neurological Institute

MAYO CLINIC