CREST BCB Center

- Mission:
  "*To significantly enhance the research, education and training capacity at NMSU in the exciting area of Bioinformatics and Computational Biology*"
- Specific Objectives:
  - Establish NMSU as a *National Leader* in education, training, and research in Bioinformatics
  - Contribute in *Diversifying* the workforce in Computational Biology
  - Develop a *Culture* of education and research in Bioinformatics at NMSU

CREST Center of Research Excellence
in Bioinformatics and Computational Biology

New Mexico State University

CREST BCB Center: *The Origins*

- Foundations
  - widespread research and educational capabilities and interest (different departments and colleges)
  - many informal collaborations
- Established in late 2004
  - NSF CREST Grant (HRD-0420407)
    - Investigators from
      - Computer Science
      - Mathematical Sciences
      - Biology
      - Chemistry and Biochemistry
      - Plant and Environmental Sciences
  - ~$500K NMSU Support

CREST BCB Center: *Facilities and Expertise*

- 13 Investigators
- 5 Departments
- 2 Support Staff members
- Formal Collaborations
  - Iowa State University
  - Los Alamos National L.
  - Sandia National Labs
  - Univ. of Udine & Parma
  - Mesa Analytics Inc.
- Research Partnerships

- CREST Graduate Computing laboratory
- CREST/CRI Beowulf Cluster
- DB Servers
  - Hantavirus resources
  - Fungal Genomic Database
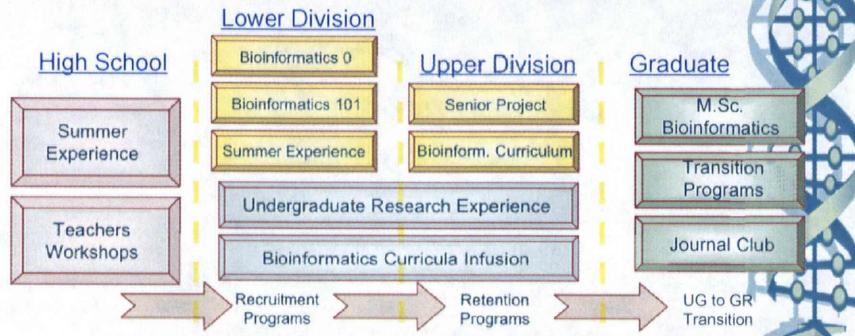
CREST BCB Center: *Programs*

- **Educational Pathway**
  - promote interest and participation at all levels (from high school to post-graduate studies)
  - infusion of bioinformatics components in the Computer Science and Biology curiricula
  - develop undergraduate and graduate educational programs in Bioinformatics

Lower Division

High School	Bioinformatics 0	Upper Division	Graduate
Summer Experience	Bioinformatics 101	Senior Project	M.Sc. Bioinformatics
	Summer Experience	Bioinform. Curriculum	Transition Programs
Teachers Workshops	Undergraduate Research Experience		Journal Club
	Bioinformatics Curricula Infusion		

Recruitment Programs → Retention Programs → UG to GR Transition
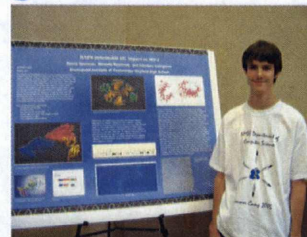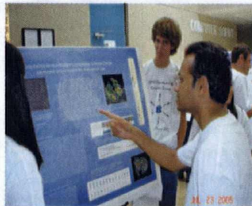

CREST BCB Center: *Programs*

- Outreach Programs
  - High School and Junior College Recruitment
  - 2-week High-School Summer workshop
  - 5-week High-School Summer Camp (Young Women)
    - 5-week College Summer Camp
    - Summer Research Experience for Tribal School instructors
    - NMSU Informational Workshops (UG and GR)
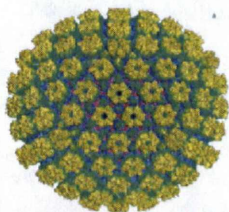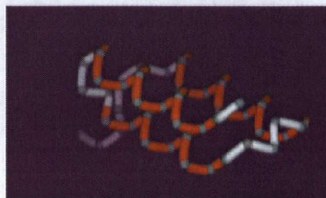   - Seminar Series

3

CREST BCB Center: *Programs*

- **Research Programs**
  - Overall Theme: "Develop tools and methodologies to gain knowledge, derive and test hypotheses from large biological data repositories"
    - Information Modeling for Emerging Pathogens
    - Protein Structure Determination for Complex and Membrane Proteins
    - Biological Function Determination from Sequence and Expression Data

CREST BCB Center: *Accomplishments*

- Educational Programs
  - UG Research Experiences
  - 2 UG and 4 Graduate courses
  - Initial Curriculum Infusion
  - Community College introductory course
  - Monthly high-school seminars
  - Joint courses (e.g., ISU) and seminars
  - Preliminary design of MS Program
- Outreach programs reached
  - ~40 high school students
  - 8 high school teachers
  - 2 tribal college instructors
  - 25 community college students
- Research Programs
  - Several new projects and collaborations
  - Many publications, new grants (e.g., ISU IGERT), research visibility

Thank You.

Questions?

CREST Center of Research Excellence
in Bioinformatics and Computational Biology

New Mexico State University