
ASCAC Biotechnology Subcommittee Report

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Department of Energy
Advanced Scientific Computing Advisory Committee Meeting
October 25 - 26, 2001



Biotechnology subcommittee members

- ❖ Juan Meza (Chair), SNL
- ❖ Michael Colvin, LLNL
- ❖ John Guckenheimer, Cornell
- ❖ Bruce Hendrickson, SNL
- ❖ William Lester, UC Berkeley
- ❖ Greg McRae, MIT
- ❖ Margaret Wright, NYU



Charter: Examine the computational side of biotechnology (April, 2001)

- ❖ Areas on which the ASCR program should target investments to have maximum impact on the underlying science. Possible areas include:
 - specialized facilities for biological computation
 - basic research in underlying mathematical algorithms
 - basic research in advanced computer science related to data management
- ❖ How to most effectively couple research supported by the ASCR program with discipline-specific research carried out by biologists



Subcommittee Goals

- ❖ What are the grand challenges in computational/systems biology?
- ❖ Which areas have the greatest overlap to ASCR and DOE?
- ❖ What are the open mathematical and CS problems within these areas?
- ❖ Is there a model for bringing new people into these fields?



Summary of Activities

- ❖ Computational Biology Workshop for GTL, August 7-8, 2001
- ❖ Computational and Systems Biology Workshop (Lander), September 6-7, 2001
- ❖ Subcommittee meeting September 6, 2001
- ❖ Numerous other discussions, emails and phone calls



Lander meeting (personal perspective)

- ❖ Exciting, rapidly developing fields
 - Many areas where CS/Math could be applied: molecular dynamics, protein folding, genome sequencing, cell biology, cell signaling, regulatory systems,
 - Perhaps too many areas?
- ❖ Difficult to see where computing would be **most** useful
- ❖ Important to address “social” issues
 - Can't parachute in
 - Are biologists receptive to offers of help?
 - Developing new researchers at the interfaces



Topics for later discussion ...

- ❖ Workshop addressing higher level and long-term research issues
- ❖ Coordination with GTL workshops
- ❖ Coordination with other DOE offices (possibly through subcommittee on overarching issues)
- ❖ Coordination with other federal agencies, (NIH, NSF)

