Supplemental Material 2. Some Suggestions for Modifications to Standards to Specify Content Related To Bioinformatics

Emergent Theme	Example of Present State Standard	Modification
Human Genome Project	Through the development of new technologies we have discovered new information about the human genome, medical disorders, and forensic sciences.- *Idaho*	Students should understand that through the use of new technologies coupled with the application of computer science, we have discovered new information about the human genome, medical disorders, and forensic sciences. Students should understand the roles of computers in storing and using large amounts of biological information related to a variety of genome projects (e.g. Human, Mouse, Mustard)
Evolution	Describe how scientists continue to investigate and critically analyze aspects of evolutionary theory. (The intent of this benchmark does not mandate the teaching or testing of intelligent design). *–Ohio*	Describe how scientists use bioinformatics tools to support/modify aspects of evolutionary theory. (The intent of this benchmark does not mandate the teaching or testing of intelligent design).
Forensics	Analyze the applications of DNA technology (forensics, medicine, agriculture) *–Mississippi*	Analyze the applications of DNA technology, including the use of biological databases in forensics, medicine, and agriculture.
Classification	Explain how the classification of species is based on similarities (e.g., structural, genetic, molecular) which indicate evolutionary relationships. *-Nevada*	Explain how the classification of species is based on similarities (e.g., structural, genetic, molecular), which can be rapidly determined and analyzed through computer programs, thereby establishing new evolutionary relationships and classification schemes.
Nucleotide Variations	Compare genetic variations observed in plants and animals (adaptations and mutations). *–Arkansas*	Compare genetic variations in DNA sequences; Understand how computers can rapidly identify mutations.
Medicine	Describe technology used in the prevention, diagnosis, and treatment of diseases and explain its function in terms of human body processes. *– Michigan*	Describe how bioinformatics uses available biological data to prevent and identify diseases, and may be used to explain their function.
Computer Use	Use appropriate technologies to collect, analyze, and communicate scientific data. - *New Mexico*	Use computers to analyze sets of biological data and understand the growing field of bioinformatics.
Agriculture/Food Technology	Genetic engineering (biotechnology) is used to produce novel biomedical and agricultural products.- *Connecticut*	Bioinformatics organizes available biological data to rapidly facilitate the field of genetic engineering (biotechnology) in order to produce novel biomedical and agricultural products.
STS/SSI	Investigate the scientific and ethical ramifications of genetic engineering, recombinant DNA, selective breeding, hybridization, cell and tissue culture, transgenic animals, and DNA fingerprinting. *-Tennessee*	Investigate the scientific and ethical ramifications of genetic engineering, recombinant DNA, selective breeding, hybridization, cell and tissue culture, transgenic animals, DNA fingerprinting, and availability of rapidly accruing biological data/database storage.