Position Statement
Bioinformatics: Using Data to Protect Public Health

The Issue: Bioinformatics is the use of computational techniques to analyze and interpret biological data. It is essential for organizing large quantities of information used to protect public health. For example, each year, 5 to 20 percent of Americans contract influenza[1], which constantly evolves its genetic make-up.[2] Public health laboratories, including the State Hygienic Laboratory (SHL), use bioinformatics to analyze the genetic composition of influenza viruses to determine how they are changing with regards to their relationship with other viral strains, the impact of flu transmission, and the effectiveness or future adaptations of the vaccine for the next flu season.

In addition to influenza, SHL monitors many other illnesses, including those that cause foodborne outbreaks. This monitoring generates massive amounts of data that must be organized and analyzed. Bioinformatics is instrumental in the DNA fingerprinting of pathogens to precisely track the source of outbreaks. Sustaining and maintaining the infrastructure of this vital aspect of disease prevention and control supports the protection of Iowans from health threats.

The Background: Pursuant to Iowa Administrative Code Chapter 5.1(263), SHL is responsible for providing analytical and reference services, surveillance data and microbiological investigations, as well as applying the latest research to solve practical problems and improve public health. Bioinformatics and information technology help organize data, and apply data analysis tools to help define public health problems and inform public health decisions. Subject matter experts in bioinformatics and information technology specialists are uniquely trained to translate massive amounts of data into information that benefits public health.

Solutions:

- **Sustain funding:** To harness data to improve public health, funding must be sustained for bioinformatics programs at the federal level and, if necessary, supplemented at the state level for SHL and others agencies so data may be adequately organized, accessed and analyzed to improve public health.
- **Modernize robust infrastructure:** Modernize information technology across public health entities and maintain Iowa's strong infrastructure, including the State Hygienic Laboratory, to use data to prevent and respond to public health threats.
- **Encourage partnerships and data sharing:** Support data sharing between public and environmental health agencies, including SHL, and encourage partnerships with academic shareholders to ensure comprehensive and robust data sets.

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1 https://www.webmd.com/cold-and-flu/flu-statistics: What Are Your Odds of Getting the Flu?
2 https://www.cdc.gov/flu/professionals/laboratory/genetic-characterization.htm: Influenza Virus Genome Sequencing and Genetic Characterization