KEYNOTE 7

Future directions of bioinformatics in Thailand: Competencies, strategic priorities, and BAT's vision and mission

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ABSTRACT

Thailand stands at a defining moment in the life sciences, where the ability to decode nature through data is reshaping how the nation designs its future in health, agriculture, and the bio-economy. The Genomic Thailand initiative, which has sequenced the genomes of tens of thousands of citizens, has created the largest biological dataset in the country's history and, with it, an urgent demand for bioinformaticians who can transform raw sequence into actionable knowledge. Realising this potential, however, requires far more than technical training. It depends on a mature ecosystem encompassing data governance, high-performance computing, secure access to clinical and biological records, and genuine cross-disciplinary collaboration—conditions that no single institution can establish alone. This keynote examines the core competencies that the next generation of bioinformaticians must master and the strategic priorities needed to position Thailand as a creator of innovation rather than an importer of costly technologies. It then introduces the vision and mission of the Bioinformatics Academic Association in Thailand (BAT): to serve as a sustainable, self-driven central mechanism uniting academia, government, industry, and international partners. Through network expansion, resource sharing, standard setting, technical guidance, and evidence-based policy advocacy, BAT aims to build a complete national research and innovation ecosystem. Aligned with the conference theme, Decode the Nature, Design the Future, the talk charts a practical path toward precision medicine, smart agriculture, and a thriving bio-industry that strengthen Thailand's competitiveness on the regional and global stage.

Keywords: bioinformatics; precision medicine; smart agriculture; bio-economy; research ecosystem; workforce competencies; BAT.