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Next-Generation WGS Analysis: From Rapid Diagnosis to Lifelong Insights

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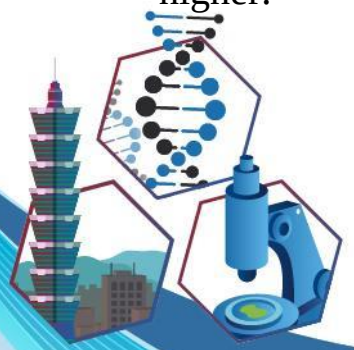
With rapid advancements in human genome research and gene sequencing technology, whole-genome sequencing (WGS) has become more affordable and accessible. However, managing and analyzing the vast amount of WGS data remains a challenge. To address this, our department has partnered with a bioinformatics company to develop Magic Bison, a real-time WGS analysis system that integrates gene analysis technology, cloud computing, big data processing, and AI to diagnose genetic diseases quickly and accurately.

Unlike traditional genetic tests, WGS data is not a one-time-use resource. Magic Bison is designed to support continuous reanalysis, enabling clinicians to extract new and more precise insights over a patient's lifetime as analysis methods and databases evolve. This capability enhances diagnostic accuracy and allows for ongoing adjustments to personalized treatment strategies in clinical practice.

We will present real-world applications of our system in diagnosing genetic diseases. Our collaboration has also led to the development of Strata Finder, an AI-driven algorithm within our system that evaluates WGS data for complex disease risks such as asthma, heart attacks (AMI), and strokes. Strata Finder has demonstrated accuracy rates of 96% or higher.



Beyond diagnosis, Magic Bison offers pharmacogenomics analysis, constitution analysis, proactive health assessments, and HLA typing. It also enables rapid WGS data analysis in NGS labs and is optimized for clinical use, particularly during follow-up visits, ensuring timely and precise patient care.

With a user-friendly interface designed for healthcare professionals, our goal is to make WGS analysis accessible to general practitioners, paving the way for truly personalized precision medicine, prevention, and health.