The Roles of the National Center for High-Performance Computing in Projects Involving Health-Care Big Data

Yu-Tai Wang[1][*]

[1]National Center for High-Performance Computing, National Applied Research Laboratories

[*]Corresponding: Yu-Tai Wang   Email: yutaiwang@narlabs.org.tw

ORCID: ID https://orcid.org/0000-0001-6677-2394

Abstract

The digitalization of biosamples offers an opportunity to permanently retain the information contained in biosamples and maximize data reutilization. However, the digitalized biomedical big data require large-scale information infrastructure to sustain relevant services. With the advancement of biomedical technologies, applications involving gene sequencing and artificial intelligence have exceeded a level that individual researchers or laboratories can afford in terms of data volume, computational capacity, and hardware requirements. The demands for personal information protection, information security, right of information self-determination, and the convenience and functional completeness of data analysis have also made biomedical data application and processing more reliant on advanced information technologies. A biomedical platform that meets the expectations of all stakeholders should thus be established through advanced information technologies to extract the maximum potential from biomedical data.

Keywords: biological big data, bioinformatics, artificial intelligence, information security, privacy protection

國網中心於執行醫療大數據相關計畫之角色

王聿泰[1*]

[1]財團法人國家實驗研究院國家高速網路與計算中心

*通訊作者：王聿泰　　　　　　　　　　　　所屬單位：財團法人國家實驗研究院國家高速網路與計算中心
電子信箱：yutaiwang@narlabs.org.tw　　　　聯絡地址：30076 新竹市東區研發六路7號

ORCID: iD https://orcid.org/0000-0001-6677-2394

摘要

生物檢體數位化後將有機會永久保存生物檢體中的資訊與成就資料再利用之最大效益，然而數位化後的生醫巨量資料將仰賴大型的資訊基礎設施使資料服務為之不墜。近年來隨著生醫科技的進展，無論是基因定序或人工智慧技術的應用下，資料的規模，或者是計算規模，與背後的資訊設備需求，早已不是個別研究人員的實驗室資源所可以承受。再者隨著對個人資料保護的要求、注重資訊安全，及尊重資料當事人對自身資料權利表達機會，乃至於資料使用者對於資料分析的方便性與功能完整性的要求，讓生醫資料的運用與處理更仰賴於各項先進資訊技術集結，透過資訊專業建置出符合各界期待的生醫平台，讓生醫資料發揮其最大的效益。

關鍵詞：生物資訊、巨量資料、人工智慧、資訊安全、個人隱私保護