Contribution ID: **129** Type: **Presentation**

A FAIR compliance review of a major open, biological data repository in Korea

Tuesday 14 October 2025 12:25 (11 minutes)

We can state the following on the sharing of research data. Policy shapes awareness, repositories promote practices and culture shapes practice. The existence of reliable and robust data repositories across disciplines, institutions, and geographical areas is a crucial step in the data sharing process. One of the world leaders in research investment and production is South Korea, which ranks second globally in terms of R&D investment as a percentage of GDP in 2023 (4.96%) behind Israel. In 2022, Korea accounted for 3.6% of global research article production, placing it at number 12. It is not doing enough to promote open science and the sharing of research data, despite the fact that it actively performs research. South Korea has just 13 repositories listed by re3data.org, a global register of research data repositories, while Australia has 107, the Netherlands has 82, and Japan has 65. But a recent event indicates that the nation is moving in a different direction.

A number of revisions to the Act on the Acquisition, Management, and Utilization of Biological Research Resources, passed by the Korean government in 2009, led to the launch of the Korea BioData Station (K-BDS), operated by the Korea Bioinformation Center (KOBIC), in December 2022. KOBIC is a part of the Korea Research Institute of Bioscience and Biotechnology, which is run by the government. A wide variety of biological datasets, such as those related to genomics, proteomics, metabolomics, imaging, chemical compounds, and clinical trials, are currently stored and shared throughout the nine open, reliable, full-scale data repositories that make up K-BDS. While more than two million records are still accessible to the public, private access is permitted in accordance with security and privacy requirements. K-BDS offers standardized data submission, curation services, and limited analytical capabilities. K-BDS databases provide an OpenAPI based on XML for external organizations looking to search and get its metadata and research data. Korea Research Institute of Science and Technology Information (KISTI) provides large-scale computing resources and a venue for exchange to promote collaboration among researchers as part of K-BDS. K-BDS and related data repositories are a major step forward in the sharing of biological data in Korea and around the world, and they are driving the rise of data repositories, which are becoming crucial elements for data-powered knowledge discovery and innovation.

The establishment of K-BDS represents a significant milestone in Korea's journey toward open science and data-driven research. This initiative addresses a critical gap in Korea's research infrastructure, particularly considering the country's substantial investments in R&D and its significant contribution to global scientific literature. By creating a centralized platform for biological data sharing, Korea is positioning itself to maximize the impact of its research outputs and foster greater international collaboration.

What makes K-BDS particularly noteworthy is its comprehensive approach to data management. Beyond mere storage, the platform incorporates sophisticated mechanisms for ensuring data quality, interoperability, and usability. The standardized submission protocols and curation services help maintain consistency across diverse datasets, while the OpenAPI functionality enables seamless integration with external systems and applications. This technical infrastructure is crucial for realizing the full potential of shared research data.

The two main parts of the proposed presentation will be providing an overview of K-BDS as open research data repositories and reporting on the FAIR compliance evaluation study.

The first part of the presentation will cover the following:

·the legal and policy frameworks of the K-BDS establishment;

·data registration, quality control, search & retrieval, data use and analytics;

·data standardization and metadata standards; and

·continuous enhancement and the launch of Korea's National Bio Big Data Project, a five-year initiative (2024-2028)

The K-BDS's FAIR compliance assessment will be the main topic of the presentation's second section. The FAIR principles served as a general guide for the development of K-BDS; a rigorous compliance evaluation may reveal both its strengths and weaknesses. The FAIRplus DataSet Maturity Model, designed for the biological sciences, serves as the foundation for the assessment. In close contact with the KOBIC staff in charge of running K-BDS, an external evaluation team carries out the compliance review. We will discuss the evaluation's implications for Korea's data repositories' future development.
This evaluation is particularly timely as Korea embarks on its National Bio Big Data Project. The findings will not only inform the ongoing development of K-BDS but also shape the broader strategy for research data management in Korea. By identifying areas of strength and opportunities for improvement, the assessment will help ensure that Korea's investments in data infrastructure yield maximum scientific and societal benefits. Moreover, the lessons learned from this evaluation could provide valuable insights for other countries seeking to enhance their own research data repositories, particularly those with similar profiles of high research output but limited data sharing infrastructure.

Primary authors: Prof. SHIM, Wonsik (Sungkyunkwan University); Dr JEONG, Haeyoung (Korea Bioinformation Center (KOBIC))

Presenter: Prof. SHIM, Wonsik (Sungkyunkwan University)

Session Classification: Presentations Session 4: Data Stewardship

Track Classification: SciDataCon Persistent Themes: Data Stewardship