

## **Compact image representation for content-based image retrieval in DNA data storage.**

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### **Abstract-**

In this paper, we propose a novel image compression method for content-based image retrieval in the context of DNA data storage. Storing data on DNA is an extremely promising solution due to its compactness, long-term durability, and energy efficiency. However, its compactness introduces two challenges: the need for efficient data access and the ability to flexibly handle new (and not predefined) types of queries. To address the efficiency challenge, our approach enables direct image retrieval within the DNA domain. To ensure flexibility, we design a compact data identifier that is a semantic representation of the image and serves as a header at the beginning of the DNA strand. Our approach shows high visual and quantitative performance, outperforming state-of-the-art method for various types of query. This highlights that hybridization can be effectively modeled using cosine similarity, without the need for training.