

# Patient-Centric Decentralized Applications for Secure Personalized Medicine

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## Abstract

The evolution of technology research has yielded solutions that resolve the longstanding challenge of sharing sensitive medical data while ensuring data security and privacy. Blockchain-based technologies, particularly openDSU, play a pivotal role by enhancing transparency and security in transmitting confidential information. These innovations transcend traditional data-sharing barriers, achieving a harmonious balance between secure transmission and privacy. A noteworthy manifestation of this evolution is the PL project—a groundbreaking initiative that harnesses openDSU to develop a suite of decentralized applications (DApps). These DApps prove instrumental in simplifying the management of patient consent within clinical trials and facilitating the seamless exchange of medical data for diverse research endeavors. By streamlining consent processes and securely orchestrating data sharing, these applications underscore the potential of blockchain to revolutionize medical research methodologies.

The integration of Internet of Things (IoT)-type devices further amplifies the transformative impact of these advancements. These interconnected devices bring forth an era of personalized medicine automation, where real-time patient data can be harnessed to inform tailored treatment strategies. This convergence heralds an era of precision medicine, where patient care is optimized through data-driven insights and interventions. A salient aspect of these novel solutions lies in their universal applicability. The systems and methodologies developed through the PL project can seamlessly integrate into any medical framework, offering a versatile blueprint for secure medical data sharing. The implications of this research are far-reaching, fostering collaborative research ecosystems, improving patient outcomes, and catalyzing advancements in medical science.

**Keywords:** Personalized medicine; Real-time electronic consenting; Advanced medicine; Confidential data; Secure sharing

