**A Study of Adopting Ethereum Smart Contract for Biomedical Applications**

Ethereum is a blockchain platform supporting smart contracts (i.e., a program managing digital objects on blockchain) and decentralized applications and has been proposed to be adopted for biomedical domain. In this study, we conducted literature review and built an Ethereum network to test the smart contracts. We investigated the healthcare-related applications for Ethereum, and identified that adopting Ethereum provides the flexibility of managing transactions through smart contracts in a decentralized way. This flexibility is very important for biomedical applications, such as the access control of medical record sharing. The blockchain model eliminates the intermediary of access control between health data owners (e.g. patients) and data retrievers (e.g., physicians). Instead, data owners can grant access to the data retrievers through the blockchain-based, peer-to-peer network. The Ethereum model reduces effective time costs and enhances protection of the transaction data. It also satisfies the needs of researchers in regard to data availability and data access control logistics.