Pseudo-temporal analysis of ribonucleoprotein complex assembly using proximity labeling and nanopore sequencing

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RNA binding proteins (RBPs) play a crucial role throughout the entire RNA life cycle. Here, we developed a novel method that enables us to capture RNA-protein interactions in RNA-centric and long-range using direct RNA sequencing. We utilized proximity labeling to attach chemical probes to RNA molecules as RBP footprints that are small enough to pass through nanopores, thereby eliciting significant differences in nanopore signals. Therefore, we developed a computational tool named **nanoSURF** that could detect RBP binding sites at the single-molecule level. We use 3 different aspects of nanopore signal to measure anomaly between control sample and test sample. By using **nanoSURF**, we are trying to explore cooperative RBP interactions and the biogenesis pathway of the Telomerase RNA Component (TERC).