Förster resonance energy transfer (FRET) and competition between SYBR Green and SYTOX Orange on DNA particles

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Fluorescent-labelled DNA structures have been widely used in various fields including biological application. However, the conventional labeling agents for observing the DNA structures have limitations such as cost-efficiency. Thus, it is important to utilize DNA staining dyes for monitoring the DNA particles and study the interactions between multiple staining dyes. Here we generated DNA microparticles and stained the particles with two different DNA intercalating dyes. The interactions between the dyes were analyzed in the view of förster resonance energy transfer (FRET) and competition between the dyes on the DNA particles. In accordance with the sequence and the staining methods, the DNA particles showed different aspects of fluorescence intensities. By adjusting the sequence and the staining method, DNA particles could emit multicolor and they could be utilized as tracers for biological imaging.