

Construction and functional analysis of DNA origami base DNA-RNAP hybrid nanomachine

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In the cell, gene expression is highly controlled. To create biologically inspired nanoscale device enabling the control of gene expression, we made hybrid nanomachine (T7-tile) using DNA origami tile as the skeletal structure and T7 RNA polymerase (T7-RNAP) as the functional module (Miyazono et al., *EMBO J*, 2010). T7-tile hybrid allowed us to evaluate the effects of intermolecular distance of enzyme (T7-RNAP) and substrate (target gene containing T7 promoter). We will show our recent achievements.

[1] Miyazono Y., Hayashi M., Karagiannis P., Harada Y., Tadakuma H. Strain through the neck linker ensures processive runs: a DNA-kinesin hybrid nanomachine study. *EMBO J*. 29:93-106. 2010.