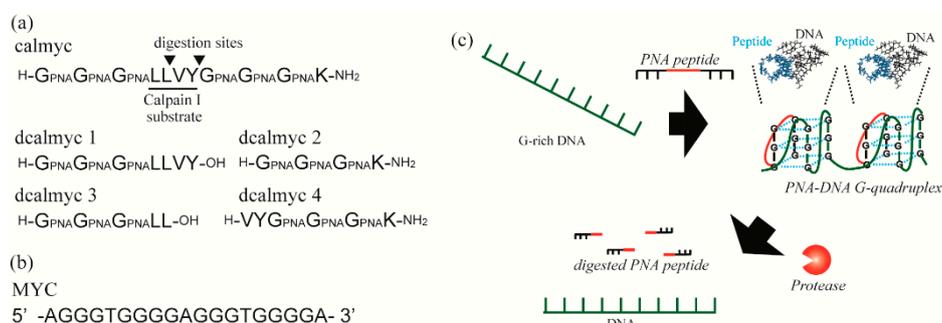


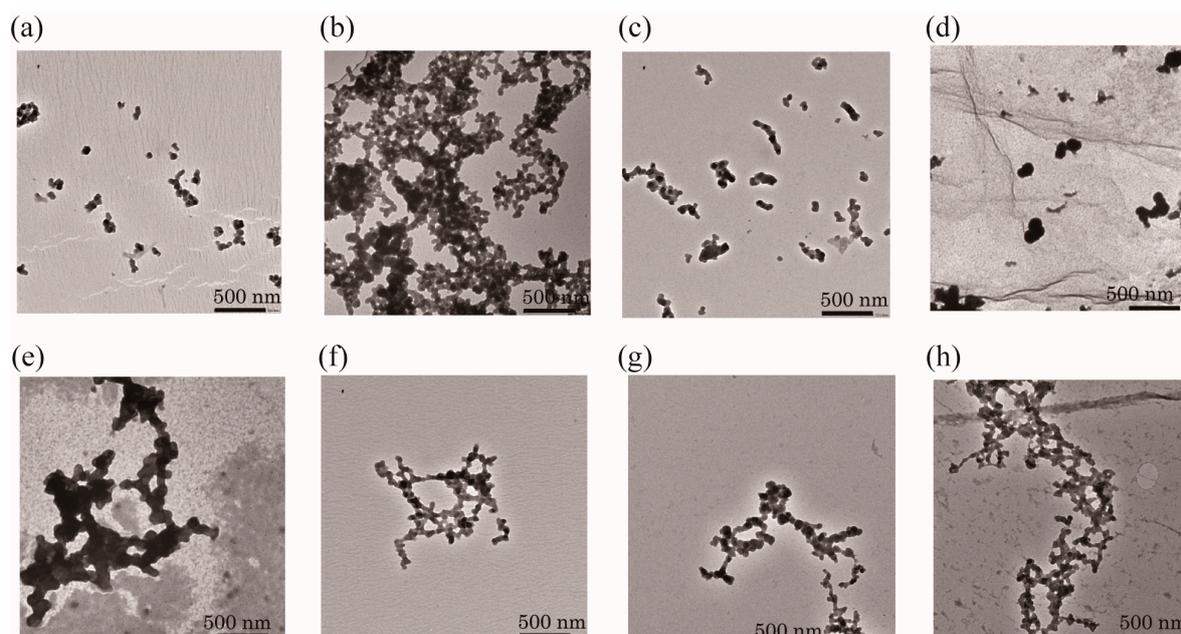
# DNA G-Wire Formation Using an Artificial Peptide is Controlled by Protease Activity

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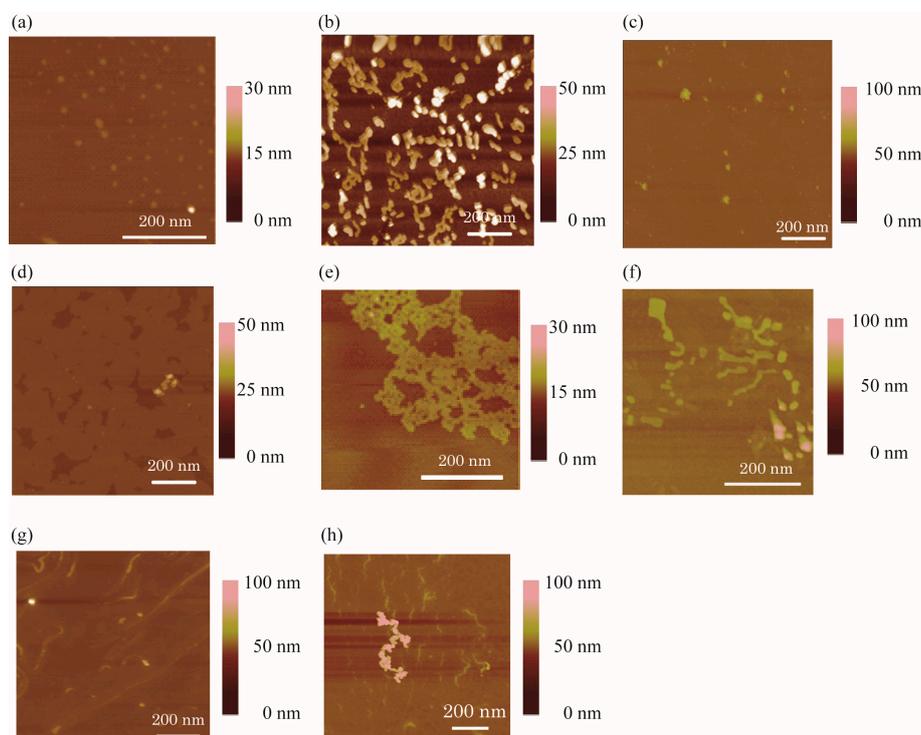


**Figure S1.** (a) Sequences of the peptides used in this study. (b) Sequence of the DNA used in this study. (c) Scheme showing switching of DNA secondary structure by the designed peptide and a specific protease. This figure was modified and reproduced from Ref. 52 with permission from the Royal society of chemistry.

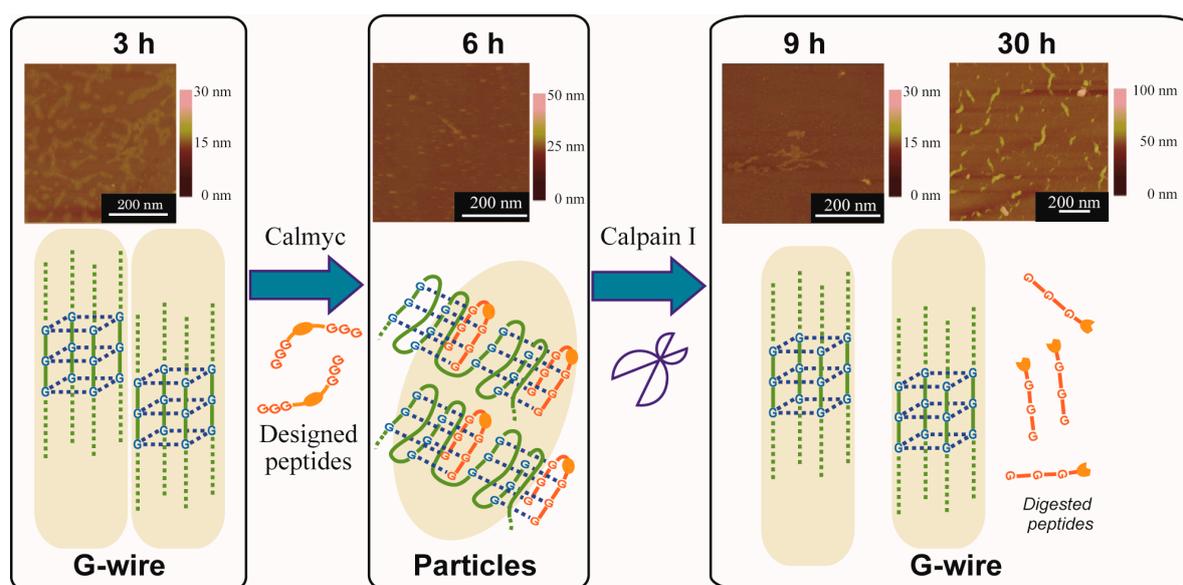


**Figure S2.** (a) TEM image following incubation for 3 hours with MYC in the absence of  $\text{Ca}^{2+}$ . TEM images following incubation for 3 hours in the presence of  $\text{Ca}^{2+}$  with (b) MYC alone (an alternative

image of Figure 2a), (c) calmyc alone, (d) MYC and calmyc (an alternative image of Figure 2b), (e) MYC and dcalmyc 1,2, (f) MYC and dcalmyc 3,4, (g) MYC, calmyc, and calpain I (an alternative image of Figure 2c), (h) following incubation for 24 hours in the presence of  $\text{Ca}^{2+}$  with MYC, calmyc, and calpain I (an alternative image of Figure 2d).



**Figure S3.** (a) AFM image following incubation for 3 hours with MYC in the absence of  $\text{Ca}^{2+}$ . AFM images following incubation for 3 hours in the presence of  $\text{Ca}^{2+}$  with (b) MYC alone (an alternative image (wider range) of Figure 2a), (c) calmyc alone, (d) MYC and calmyc (an alternative image (wider range) of Figure 2b), (e) MYC and dcalmyc 1,2, (f) MYC and dcalmyc 3,4, (g) MYC, calmyc, and calpain I (an alternative image (wider range) of Figure 2c), (h) following incubation for 24 hours in the presence of  $\text{Ca}^{2+}$  with MYC, calmyc, and calpain I (a wider range image of Figure 2d).



**Figure S4.** AFM images of reversible switching of DNA nanowire formation with time using the peptide and the protease. MYC alone in the presence of  $\text{Ca}^{2+}$  was incubated for 3 hours (the 3 h AFM image in the left column), then the peptide was added and the sample was incubated for another 3

hours (the 6 h AFM image in the middle column). After a total of 6 hours of incubation, calpain I was added and the sample was incubated for another 3 hours or 24 hours (the 9 h AFM image and the 30 h AFM image in the right column).