

Lithium ions destabilize i-motif structure

Sung Eun Kim*, Il-Buem Lee*, Changbong Hyeon**, and Seok-Cheol Hong*,**

* Department of Physics, Korea University, Seoul, 136-713, Korea

** School of Computational Sciences, Korea Institute for Advanced Study, Seoul 130-722, Korea

E-mail: hongsc@korea.ac.kr

We discovered that high concentration of lithium ions, in contrast to other monovalent cations, destabilizes a cytosine-quadruplex called i-motif by promoting its unfolding, not hindering its folding. We obtained such kinetic information by a new analysis scheme named sHaRPer. The unusual destabilization by lithium cations can be attributed to the small size of a lithium ion, which can disrupt hydrogen bonding between cytosines in i-motif.