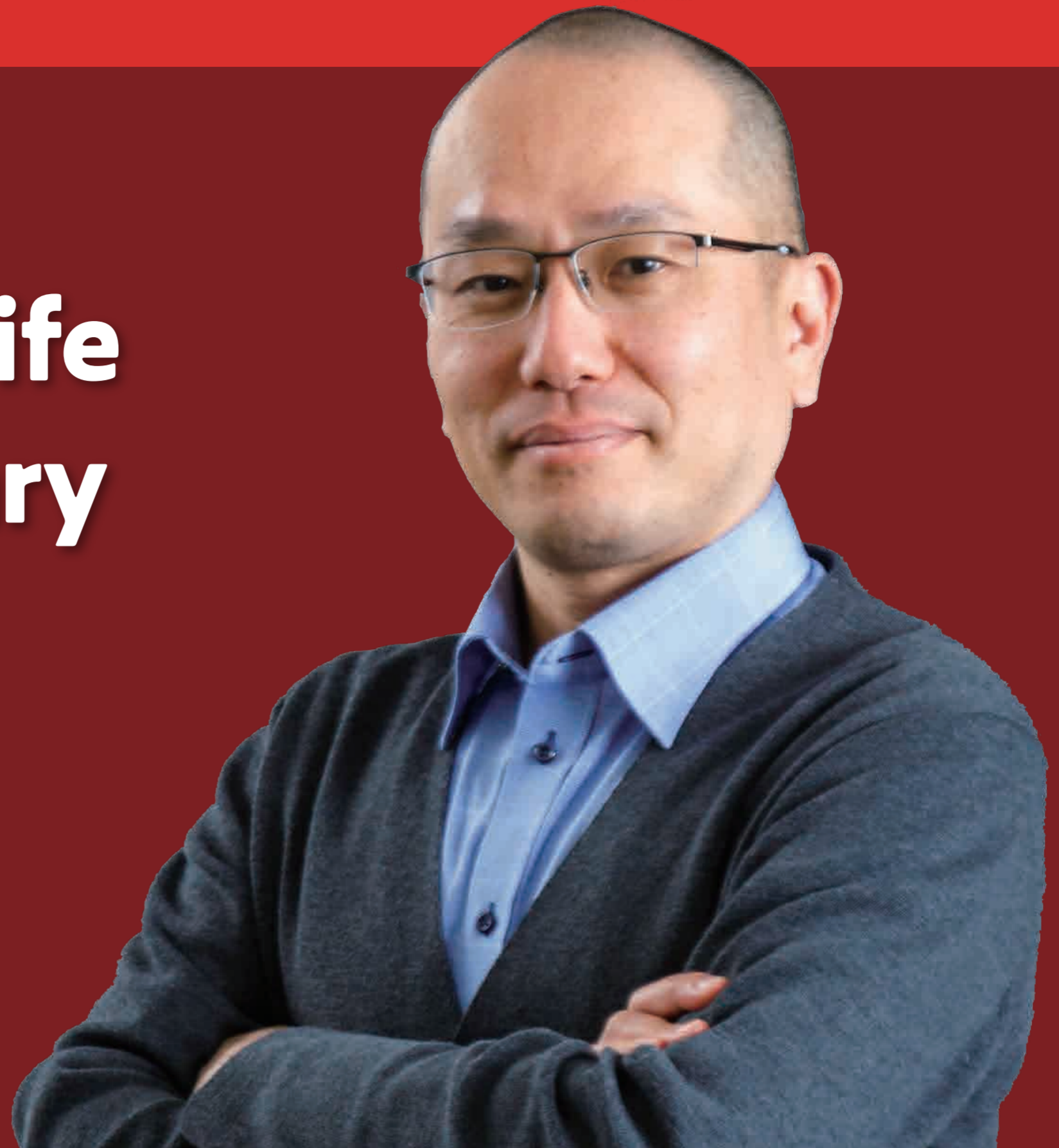


Emergence of life in an inflationary universe

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The origin of life may be the greatest mystery in natural science. Especially, we know almost nothing about how the first biological molecule (possibly an RNA) appeared from abiotic chemical processes. A widespread notion is that the abiogenesis probability is extremely low when we consider only random chemical reactions to polymerize a large biological molecule. However, we do not know any more efficient polymerization process expected to work in a realistic prebiotic environment. Here, I consider this problem from a viewpoint of cosmology. Cosmologists agree that the universe created by an inflation should extend far beyond the observable universe (13.8 billion light year radius). Then the inflationary universe may be sufficiently large to produce many abiogenesis events, even if we consider only the basic random polymerization. I will give a quantitative answer to this question, and discuss various implications about the origin-of-life studies.

