

MS05 Nucleic acids and their interaction

MS5-05

RNA X-ray Structures at Atomic Resolution that Contain an Essential Constituent of the mRNA Vaccines: N1-Methylpseudouridine

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Abstract

In the two COVID-19 mRNA vaccines of Pfizer-BioNTech[1] and Moderna, all uridines of the mRNA have been substituted by N1-methylpseudouridine (m¹Ψ).[2, 3] N1-Methylpseudouridine has been characterized as a natural product already more than 40 years ago [4, 5] and has been identified in a multitude of ribosome structures [6, 7, 8, 9, 10], however only at a resolution of 2.9 angstrom or even lower. Given the relevance of this topic, we set out to crystallize N1-methylpseudouridine alone and as part of high-resolution double-stranded RNA structures. We will report about our success in achieving both goals, the latter at a resolution of up to 1.05 angstrom.

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