

# Transliteration of a Short Genetic Message from Deoxyxylose (dXyloNA) to Deoxyribose (DNA) in *Escherichia coli*

Faten Jaziri,<sup>1</sup> Mohitosh Maiti,<sup>2</sup> Eveline Lescrinier,<sup>2</sup> Philippe Marlière,<sup>1</sup> Valérie Pezo,<sup>1</sup> Piet Herdewijn<sup>2\*</sup>

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**ABSTRACT** Redesigning nucleic acids in function of *Xenobiology* aims at identifying new chemically modified nucleic acids (XNAs) that do not exchange information with natural nucleic acids (DNA and RNA) and can function as orthogonal genetic informational polymers. As backbone (sugar) modifications of nucleic acids influence the double-helix geometry, they might be particularly suitable for this purpose. Here, we have evaluated the potential of deoxyxylofuranose nucleic acids (dXyloNAs) to serve as template for DNA synthesis in *E. coli*. dXyloNAs could indeed be recognized as genetic polymers *in vivo* at the level of one codon, notwithstanding the fact that dXyloNA does not undergo cross-pairing with natural nucleic acids *in vitro*.

**Keywords:** nucleic acids, xenobiology, *E. coli*, deoxyxylofuranose nucleic acids, DNA synthesis

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