

SEPTEMBER 24, 2026 – 15:00 (3:00 p.m.)

Aula 24, Polo Didattico San Miniato

Applying the chemist's toolbox to the synthesis and development of RNA therapeutics

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The seminar is part of the teaching activities of the PhD in Chemical and Pharmaceutical Sciences

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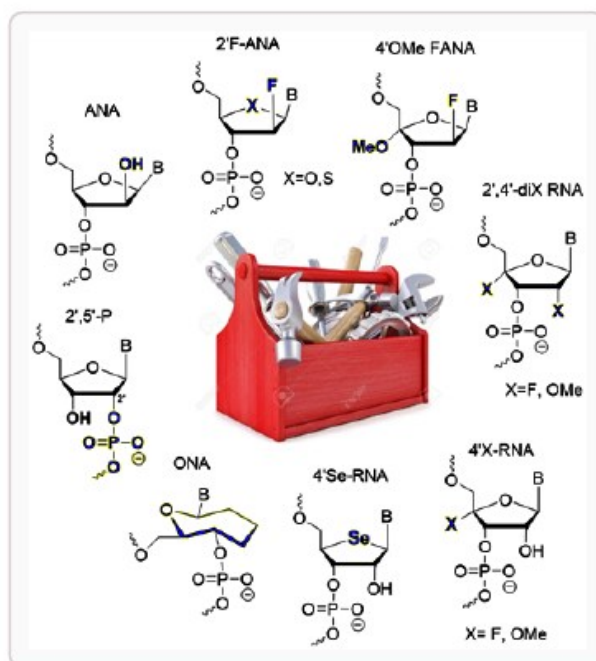
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Abstract

Nucleic Acid therapeutics are undergoing a golden age, with over two dozen clinically approved drugs and many more in clinical trials. Chemical modifications of nucleic acids have been key to this development as they enhance properties such as binding affinity, bioavailability and nuclease resistance. This presentation aims to highlight how chemical modifications allow us to establish guidelines for a broad set of oligonucleotide therapeutic applications (siRNA, CRISPR/Cas, mRNA, ASOs). It will also focus on the development of novel methods for preparing oligonucleotides with an emphasis on improving the sustainability of the process.



Selected publications

1. Z. Lyu, M.J. Damha et al., Synthesis of long and functionally active RNAs facilitated by acetal levulinic ester (ALE) chemistry, *Nucleic Acids Research*, 2026, 54(2):gkaf1525.
2. J. Marlyn, O. Del Carlo, J. Thorpe, M.J. Damha, Amino and hydroxyl functionalization of nucleosides via resonant acoustic mixing, *Green Chemistry* 2025, 27, 8313–8318.
3. M. Manoharan, M.J. Damha, D.R. Corey, Challenges and Opportunities for Nucleic Acid Therapeutics, *Nucleic Acid Therapeutics* 2022, 32, 8–13.

