

# SALVABIO

Nanocelluloses, and particularly cellulose nanocrystals (CNCs), are emerging as innovative materials for cultural heritage conservation, especially for works of art on paper. Their physical and chemical properties offer effective solutions for the consolidation of materials without the use of traditional adhesives. CNCs are non-toxic materials, making their use safe for restorers and for the artwork itself. They can be applied directly to paper via an aqueous suspension and a simple brush. Once applied, CNCs form a transparent coating that does not alter the visual appearance of the work. They also offer good resistance to degradation, protecting the paper fibers over time. CNCs coat the paper fibers, increasing their diameter and improving their mechanical strength and chemical stability over time. The use of nanocelluloses, and CNCs in particular, in cultural heritage preservation represents a significant advance due to the combination of efficacy, safety, and reversibility. Continuing to develop and refine these materials, including their compatibility with various solvents, could revolutionize restoration techniques by providing sustainable and noninvasive solutions to preserve artworks and historical documents for future generations. This project is funded by the region of Tuscany, which, with its vast library holdings, has always been a bastion of cultural preservation, guardian of priceless works on paper. Today, thanks to innovations in materials science, such as the use of cellulose nanocrystals (CNCs), new frontiers are opening for the preservation of these treasures. The combination of tradition and innovation makes the region a benchmark in the search for sustainable and advanced solutions for the preservation of written knowledge.