

## Scientific Restoration of the Icons from the Assumption Cathedral of the Ryazan Kremlin (Russia) with the Molecular Diagnostics of its Microbiological State

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### Abstract

Various heritage objects may subject to degradation by various microorganisms. Tempera paintings are at risk of biodeterioration, since the wide variety of organic and inorganic materials that are contained in art objects often provide an optimal habitat for biological colonization, causing aesthetic and structural damage. In this regard, the urgent task is scientific approach to restoration with opportune identification and characterization of destructive microorganisms. During molecular diagnostics of the microbiological state of the icons from the seven-tiered iconostasis of the Assumption Cathedral of the Ryazan Kremlin – one of the tallest in Russia – various fungi of the genera *Aspergillus*, *Penicillium*, *Alternaria* and the family *Mucoraceae*, as well as bacteria, were identified. The icons required restoration. Several icons had significant swelling and damage to the gesso and paint layer. The icons were treated with the antiseptic BAC and ethanol. All icons are under observation in the restoration workshop.

**Keywords:** Icons; Biodegradation; Fungal Diversity; Restoration; Ryazan Kremlin; Tempera Paintings

