DNA/RNA Degradation Rate in Fixed Tissue

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In today's research driven society, it has become commonplace for institutions to rely upon DNA and RNA extraction techniques to help obtain genomic data from old specimens. Generally, specimens were commonly preserved for future gross examination and/or teaching. Using histological examination of specimens from museum jars from the Pathology Department at the Indiana University School of Medicine, the sequential and chronological degradation of DNA and RNA has been studied. We examined gross specimens from nine decades from 1920 until 2000. We evaluated histologic preservation of nuclear structure in these samples. Nuclear preservation was based on amount of nuclei per 20x microscopic field, the crispness of the nuclear membrane and internal features. The nuclei in high lipid tissues such as the brain were found to degrade at a quicker rate than dense proteinaceous structures such as the heart and uterus. Our study has shown specimens preserved beyond roughly fifty years are likely to have little to no nuclei left, thus indicating that there was little to no DNA and RNA remaining. This technique of histologic evaluation is an important finding and general guideline which may save research institutions from the expensive process of DNA and RNA extraction

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