

A Comparison of the Sensitivities of *Serratia marcescens* and *Deinococcus radiodurans* to Ultraviolet Irradiation

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In recent years, there has been an increased interest in control of microbial growth, especially in light of single and multiply drug-resistant “superbugs”. Most students are also aware, at some level, of the side effects resulting from exposure to ultraviolet (UV) radiation. It is not uncommon, therefore, for an introductory lab to include an exercise that explores physical control of microbial growth by means of UV mutagenesis. I have developed a simple, engaging, interactive exercise for introductory freshman and sophomores that is an extension of such an exercise. This exercise compares the level of UV sensitivity displayed by *Serratia marcescens* (a commonly-occurring, mildly pathogenic, pigmented organism) to that displayed by *Deinococcus radiodurans* (an unrelated, non-pathogenic, pigmented organism). Students inoculate TSA plates with organism, irradiate with UV light for specified times, and subsequently score plates for numbers and phenotypes of organism. Results demonstrate a dose-dependent sensitivity of *Serratia marcescens* cultures to UV-irradiation, with lethality as the most commonly scored phenotype. By contrast, similarly treated *Deinococcus radiodurans* cultures are resistant to the effects of UV irradiation over the length of exposure tested. The results are discussed relative to possible differences in cell-specific management of oxidative stress.

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