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Fluorescence studies of gram-positive and gram-negative bacteria BRITTNI BLUST, None, TRACY SWINGER COLLABORATION[1], DR. MARIAN TZOLOV COLLABORATION[2], DR. JOSEPH CALABRESE COLLABORATION[3] — Autofluorescence is a relatively unexplored technique for identification. It is nondestructive, noncontact, fast, and has the potential to be integrated in small handheld devices. On the other hand, the autofluorescent signal is sometimes very week, or it can be overwhelmed by the emission of a surrounding medium. We are exploring the possibility to develop an optical method for identification of the Gram-type of bacterial cultures based on the autofluorescence. We have enhanced the detectivity of a standard fluorimeter using combination of bandpass and long pass filters. In this particular study, we are investigating if the previously observed difference in the autofluorescent spectra of Gram-positive and Gram-negative bacteria is dependent on the age of the culture. We have selected two types of bacteria, Kocuria rhizophila and Alcagenes faecalis, and we have monitored in equal time intervals of their development the autofluorescence spectra. The stages of development were monitored separately by measuring the turbidity and creating a growth curve. The goal of this study is to find out if the previously observed difference in the autofluorescence spectra of Gram-positive and Gram-negative bacteria is dependent on the stage of the development of the bacterial culture.

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