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Jeremy Strayer (jeremy.strayer@mtsu.edu) and **Grant Gardner**
(grant.gardner@mtsu.edu). *Exploring Integration through a BioCalculus Task: Implications for
STEM Education.*

In this session we present a task implemented in Calculus I for STEM majors that integrates the biological concept of variation with exponential functions. The context of the task is regarding students' personal amount of caffeine they consume each day and the rate of decay of caffeine in their system depending on different CYP1A2 gene variants. Sample student work and instructor feedback will show how the instructor was able to analyze students understanding of how mathematics can be applied to and help them understand biological concepts. The insights gained from teaching with this activity highlight the need for the field to better understand what is an integrated STEM curriculum. Because STEM is still loosely defined (NSB, 2015), we note that a consensus view of STEM through the integrated lens of each discipline is needed. Do STEM domains have integrated epistemological characteristics or do they tend to be combined in less integrated ways? We end with a discussion of a theoretical model of the integrated nature of STEM that we propose, which was built from a broad literature review. In particular, we discuss how this model should be used to inform how we develop integrated or interdisciplinary STEM tasks for first-year and/or second-year mathematics courses. (Received September 25, 2018)