JMBE Journal of Microbiology & Biology Education

JMBE Biosafety Review Rubric

Updated September 2015

The *JMBE* Biosafety Review rubric has been put in place to ensure that author includes important safety information in their manuscript, thus mitigating the risk to students, faculty, and institutions who are adopting the experiments described therein. The information should also help novice educators navigate protocols and safety issues to which they are not familiar.

1. Do the authors specifically state the BSL and specify that they followed the ASM Biosafety Guidelines, with appropriate links/references?*

2. Do the authors explain how they used the ASM Biosafety Guidelines in a way that readers/adopters unfamiliar with the organism/technique can adequately follow appropriate safety measures?*

3. Do the authors make a connection between safety training and the students (students know how to do X because they were taught proper procedure during Y)? This includes assumptions of prior training for students to successfully and safely complete the exercise (e.g., students must show competency in handling BSL-1 organisms before using BSL-2 organisms). *

4. Does the activity create a more resistant organism (e.g., antibiotic resistance) with the procedure? The safety risks of these types of activities are not well defined and need further conversations within the microbiological community. *JMBE* submissions that involve creating more resistant organisms will be treated on a case-by-case basis.*
    A. Is selecting resistance truly necessary for this activity or are there other approaches that may accomplish the same learning outcomes?
    B. Do the authors discuss the evolution and antibiotic resistance of organisms they're using?
    C. Not every type of resistance selection is as risky as others. For example, insertion of a common plasmid containing an ampicillin resistance gene is a relatively low-level safety risk; its presence is ubiquitous. However, selecting for genomic DNA mutations that allow for resistance to a critical antibiotic (e.g., Cipro) or to a common chemical (e.g., triclosan) has much greater risk should those organisms escape the laboratory setting. If the resistance selection is risky, do the authors treat the activity as at least BSL-2?

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5. Does the BSL classification of the organism vary depending upon the specific strain (e.g., *E. coli* K12 vs. O157 H7) or database reference (e.g., ATCC vs. ECACC)?*
    A. If the BSL for an organism varies depending on the database/guidelines, then the author should opt for and follow the higher BSL guidelines.
    B. If there are multiple strains of an organism available, the author must make it clear that the protocol/activity described in the manuscript only applies to one particular strain, and that using other strains could change the BSL of the experiment.

6. Do the authors specifically state that all work with isolated unknown organisms is performed at BSL-2?*

7. Are there other comments about safety procedures or other aspects of the manuscript that you wish to mention?

*Required question