

DO YOU REALLY KNOW WHAT YOUR ROBOT IS DOING? – THE IMPORTANCE OF PAYING ATTENTION TO LIQUID HANDLING DETAILS

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The introduction of automation into biology and chemistry labs has arguably led to significant advances in testing capabilities over the past 20+ years. Automation has certainly led to increased numbers of experiments, as compared to manual testing, particularly for pipetting operations. Because of this advantage, liquid handling robots have become commonplace even in small laboratories. However, in spite of all the advantages that something like a liquid handling robot brings to a laboratory, it also brings a different set of commonly overlooked challenges.

It may be argued that the largest challenge presented by using a liquid handling robot is the potentially incorrect assumption that the robot is doing what it is “supposed” to be doing. The robot may in fact be doing exactly what the user told it to do, but is that really what the user wanted? One may say that the real question is, do you *really* know how your robot is behaving, and particularly, do you *really* know how your robot is performing your assays?

This presentation is a follow-up to a poster we presented last year that discussed real case studies of how liquid handlers were performing, or rather miss-performing, certain commonly employed test procedures. Herein we will present even more examples of the importance of monitoring various commonly employed tasks, which are likely considered mundane and often assumed to have little bearing on overall robot performance. Specific examples that will be presented include; 1) pre-wetting tips, 2) using a blowout volume after pre-wet, 3) protocol transfer from one robot to a sibling, 4) protocol differences between high volume and low volume dispenses, 5) etc. The examples presented herein will help users to think more about the specific tasks they are asking their robots to perform, and hopefully uncover certain steps that, if observed and controlled, will result in better performance.