

# Lighter work for many hands

**Drug development pipelines are under ever-increasing pressure to deliver more comprehensive data in a shorter timeframe, while reducing costs and making *in vitro* assay results more relevant to *in vivo* drug behavior. Assay automation and miniaturization has become essential for the oncology research team in Bayer's Pharmaceuticals Division.**

Knowledge of the relationship between the dose, bioavailability and clinical effects of a drug candidate are fundamental to the development of new therapeutics. Without in-depth characterization of the effects of a compound at a biochemical and cellular level, it would be impossible to safely progress drug candidates to the clinical phases of development. Drug titration studies are, therefore, at the heart of the drug development process, with many hundreds of dose-response curves generated each day across the globe.

Recent trends towards assay miniaturization have significantly reduced the cost and effort for drug titration studies, with a shift towards performing these experiments earlier on in the drug development workflow. Collecting more comprehensive data on early compounds supports the process of compound optimization and identification of the most promising candidates for the next steps of investigation. The reduction in assay volumes has been driven by the development of novel liquid handling

technologies – such as Tecan's D300e Digital Dispenser – capable of reproducible dispensing in the nano- to picoliter range. The ability to dispense drug candidates directly into assay plates has transformed the workflows of the oncology research laboratories at Bayer, as Carmen Wegner, biology lab assistant, explained: "We have three teams in oncology research, more than 60 people overall, and we perform a wide range of different activities on a daily basis. Our group is primarily responsible for performing functional assays, testing



The D300 has changed the way Bayer's Pharmaceuticals Division approaches many assays

compounds from our chemical department against human or animal cellular models of various cancers.”

“The timescales for our development projects have become much shorter, so anything that helps to accelerate research is much appreciated. We acquired the first D300 Digital Dispenser in 2013 and, since then, the way our laboratory approaches many assays has really changed. The Tecan D300s are very easy to use, and only require a brief introduction. After loading the assay plate and the Dispensehead cartridge containing the compound, the instrument takes care of everything else. This saves a great amount of staff time in planning and setting up experiments. There is no need for manual pipetting anymore, and the D300 performs calculations automatically – based on your target final concentrations.”

“Direct digital dispensing allows nanoliters – or even picoliters – of compound to be reliably added to a microplate well, which we couldn’t achieve manually. This eliminates the need for serial dilutions – as well as media changes for many cell-based assays – which also saves a lot of staff time, and reduces the amount of compound, reagent and consumables waste.”

“We now have five D300 instruments in the department – with more than 60 users. We find the software intuitive, and the systems are usually maintenance free. We only need Tecan’s technical support to help us program special applications. Overall, we are very excited about the instruments.”

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**To find out more about Tecan’s D300e Digital Dispenser, visit**  
[www.tecan.com/d300e](http://www.tecan.com/d300e)

**To learn more about the Pharmaceuticals Division of Bayer go to**  
[www.pharma.bayer.com](http://www.pharma.bayer.com)