Expert Q&A:
The new models of dragonfly® discovery

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dragonfly® discovery 3 and 6 head - premium low volume dispensing at accessible investment levels

We spent time with Joby Jenkins, Director of Product Strategy, who takes us through where the concept for these two new variants came from, how they differ from our renowned 10 head version, and the positive impact these will have on our customers' workflows, outputs and budget.

01 Where did the original ideas for the dragonfly discovery 3 and 6 head variants come from, and what was the process for bringing them to life?

The idea came from the market – not only for the 3 and 6 head version of the instrument but for the product line as a whole. As workflows get more complex, the desire for highly accurate low volume dispensing becomes ever more prevalent. Whilst the 10 head version of dragonfly discovery met a lot of the markets needs, it quickly became apparent that the superior positive displacement dispensing technology we had developed could be equally effective in workflows where only a few, or even just one, reagent needed to be added at a time. Having 10 independently controlled channels was overkill for these applications, so we looked at simplifying the product so that we could offer something to the market at a much more accessible investment level, but with all the same performance benefits. Thus, the idea for the 3 and 6 head models of dragonfly discovery were born.

02 Who do you think would gain the most from having one of these models?

It's difficult to narrow it down to a specific customer type, as this innovative dispense technology is applied to such a wide variety of assay types and workflows. There was a clear need in genomics workflows such as NGS library prep and qPCR where costly, often viscous, reagents need to be added quickly and accurately. Similarly, in some functional genomics phenotypic screening workflows, there are often requirements for highly sensitive and costly reagents (e.g. Matrigel®, CAS9 etc) to be dispensed in accurate low volume aliquots. The 3 and 6 head dragonfly discovery models are ideal for this type of work, be it in an academic setting or a pharmaceutical screening lab, it's equally applicable.

03 What makes the two versions different to the previous model types of dragonfly discovery?

The big difference is the price point. The dispense heads are the most complex and hence costly part of the instrument, so by reducing the number from 10 to 6 and 3 it allows for a much lower price point to be reached. This in turn makes the instrument much more accessible and allows labs on tighter budget access to a leading reagent dispensing technology.

04 Do these versions have any new elements compared to previous model variants and will those be available across the range?

As well as launching the 3 and 6 head models this year, we have also introduced some game changing new accessories for the dragonfly discovery instrument. The auto-feed reservoirs (AFR) allow reagents to be pumped to aspiration valves on the instrument which enables to offline environmental control of reagents; heating, cooling, stirring, shaking etc., and unlimited vessel capacity (providing extended walkaway time for multi-plate screening runs). Liquids can be continuously recirculated which allows bead or cell suspensions to be handled with ease. All of this happens with a low dead volume and a fully disposable fluid path, from source vessel right through to the dispense tips themselves, so for assays where cross-contamination is a concern there is no reliance on flushing or washing of tubes and valves.

auto-feed reservoir modules (AFR)

05 What evidence is available to highlight that these new models are

A: fit for purpose?

The same core technology and even the instrument chassis remain the same as the already established 10 head instrument so there is no technical risk with these new models. The software UI has been updated to reflect the number of heads present in the instrument and to simplify the user experience for people wishing to only carry out basic bulk reagent additions as opposed to more complex multi-factorial experiments. Initial customer feedback from the beta users has been extremely positive.

B: better than existing industry options?

Anyone who has worked at the lab bench will know that positive displacement is the best way to move liquids accurately, particularly where viscosities are high. Although available in manually operated, high volume pipettes for many years this methodology has never previously been implemented for reagent dispensing. Couple this with the fact that the tips and reservoirs are fully disposable and minimum dispense volumes are just 200 nL, whatever the liquid type, it provides an unprecedented user experience.

C: ready to become THE instrument of choice for efficient reagent dispensing?

For the reasons above, this instrument takes usability and dispense reliability to levels not previously attained with reagent dispensers. Be it in a biopharmaceutical high throughput screening system, or a multi-user academic core lab, this instrument is so approachable, and the technology so fundamentally robust it will change the way the scientists carry out their work.

06 Are the instruments intuitive or do they require lengthy onboarding / implementation?

Right from the outset of the design phase, we put usability at the heart of the requirements. We've all heard the stories of high value instruments that sit unused because the barrier to use is too high or expert knowledge has been lost, and we were determined to not produce an instrument that suffered this fate. From the intuitive UI to the approachable hardware design and the fact the instrument is completely maintenance free (due to the fully disposable fluid path), it makes for a system that people feel comfortable using routinely with literally minutes, not hours, or days of training.

07 What are the biggest impacts that you see for new customers using these variants for the first time?

I think in labs where users are typically hand pipetting into plates, they will quickly realise that manually pipetting reagents is no longer necessary, or is a sensible use of their time. In labs where other reagent dispense systems are already available the impact will be around the simplicity of set up and running, and the reliability of the dispensing. Both types of user will soon find that they no longer have to question the reagent dispense accuracy of every experiment they run, or data set they interpret, where dragonfly discovery has been used.

08 When are these launching, where can I see them, and when can I place an order?

The 3 and 6 head instruments were launched in early 2020. We will be running a series of roadshows throughout Europe and North America in 2020, so just let us know if you'd like to see one and we'll work it in to the plans.

09 What are the future plans for the instruments in terms of investment, enhancements and future proofing?

We are expecting many 3 and 6 head instruments to get integrated in to larger automated workcells. Now that the auto-feed reservoirs are available, meaning unlimited walkaway time for multiple plate screening runs, and we will be working with customers and integrators to ensure implementation goes smoothly. Additionally, we expect to enable many new application workflows, and with that we expect some new software feature requests which can be rolled into future software releases to ensure users get the most out of the hardware.

10 As the Product Manager for this product what are you excited about in relation to the two new versions?

As mentioned before, I see the investment level for these models will reduce the financial barrier to adoption of this revolutionary dispensing technology, and hence enabling more applications and more workflows. The instrument is field upgradable from 3 to 6 to 10 heads, so it can grow with the lab's requirements. If for example their throughput increases with time, or if for example, they move increasingly complex assays on to the instrument. We now have not only a flexible and easy to use instrument to suit any workflow, but also a flexible pricing model to suit every lab.

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