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Capillary Head for CyBi®-Well vario

Compound Transfer Directly from Stock

- Prepare ready-to-use assay plates
- Simultaneous transfer of 96 or 384 samples
- Highest precision

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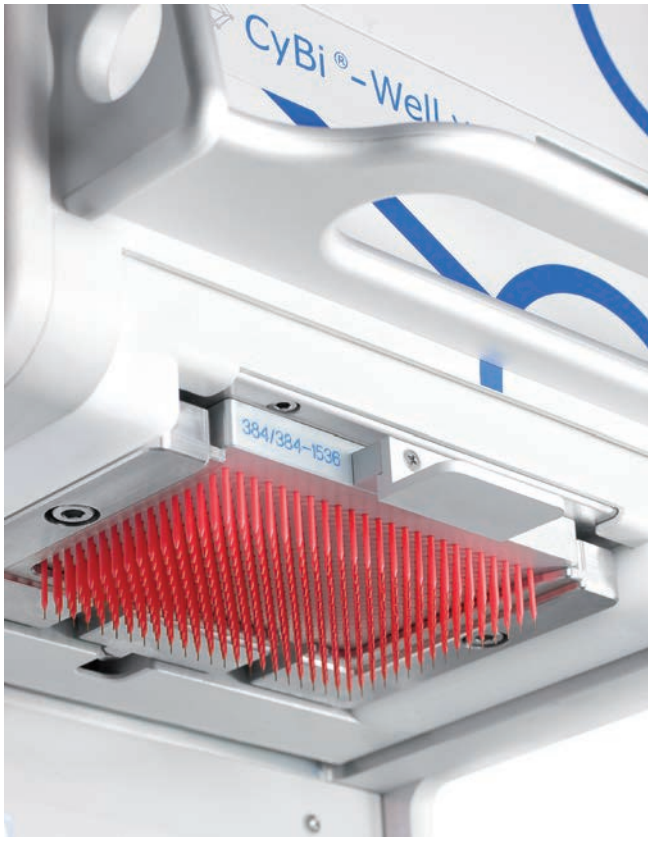
Capillary Head for CyBi®-Well vario

The Powerful Compound Transfer



The Capillary Head for the CyBi®-Well vario is an exchangeable pipetting head based on capillary action.

96 or 384 capillaries are filled simultaneously by capillary forces, whereas the dispensing is done by applying a pressure pulse simultaneously to all capillaries. Aspiration is achieved by dipping the capillary array into the liquid of the source plate, where the capillaries simultaneously "fill themselves". During the dispensing step the liquids in all capillaries are blown out in parallel into the target plate. This robust principle leads to results of highest precision and accuracy. The Capillary Head works on the sound footing of the CyBi®-Well vario base unit. This well proven platform offers a unique microplate handling system with precise movements and positioning.

As a standalone system or expanded to a compact assay workstation the CyBi®-Well vario with the Capillary Head is a fast and reliable system for compound handling.

The different capillary types of the CyBi®-Well vario Capillary Head with colour code and corresponding volume

❶ – 25 nl;❷–50 nl; ❸–100 nl; ❹–250 nl; ❺–500 nl; ❻–750 nl; ❼–1000 nl;

Why parallel compound transfer?

Since there is a trend towards achieving more information from individual samples, the number of data points per compound is increasing (multiple dose responses, testing of enzyme panels etc.). This causes a growing need for compound transfer, a need which can be handled very efficiently if parallel pipetting systems are involved.

Why capillary-based?

There are several technologies which allow the transfer of compounds. The Capillary Head can provide more robustness, since during operation an air pressure pulse is applied, which blow out the capillaries, thus creating an "on-line cleaning" effect. The capillaries do not need any pistons. This enhances the stability and robustness in comparison to more complex technologies.

Why nl-volumes?

Very often DMSO is a limiting factor for compound handling. Most compounds (e.g. for High Throughput Screening) are stored in this organic solvent. But many biological assays, especially most of the cell-based systems, are sensitive to DMSO. Therefore, intermediate dilutions of compounds in water-based solvents are involved. This is an expensive and time-consuming step and it often leads to compound precipitation effects. A way out of this drawback could be a compound transfer of very small volumes which, for example, allows for a 1:100 dilution directly from a DMSO based stock. The Capillary Head capable of transferring nl volumes can easily perform such tasks.

Why dry dispensing?

Often it is necessary to separate compound preparation steps from the assay performance. It can be advantageous to prepare the compounds in microplates for storage. Thus, they can be used directly in an assay without the need of any further compound handling. Adding compounds first implies a dry pipetting, which can easily be performed by applying a capillary-based system.

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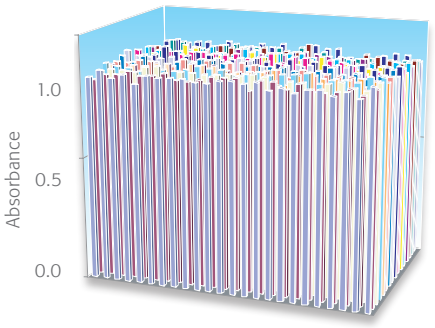
Capillary Head for CyBi®-Well vario

Experience Precision

The examples below demonstrate typical results of different volume transfers, plate types and measurement modes. The data show that the expected precision in the daily work flow often exceeds our quoted specifications of CV < 10 %.

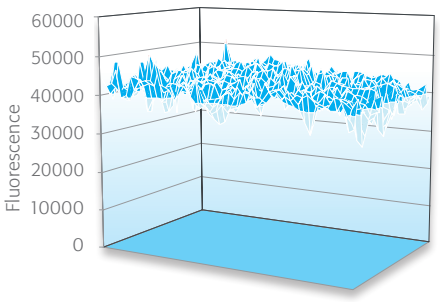
Plate	Volume	CV	Reading Mode
384	250 nl	1.3 %	Absorbance
384	100 nl	2.1 %	Absorbance
384	50 nl	4.5 %	Absorbance
384	25 nl	6.8 %	Absorbance
1536	50 nl	5.6 %	Fluorescence



384-well plate, 100 nl, CV = 2.1 %

For example, in a GPCR antagonist assay, the capillary technology showed an excellent reproducibility for different volumes (25 nl and 50 nl in 1536-well plates). In addition, there was a very good agreement in comparison to a classical approach using intermediate dilutions.*

Volume	Technology	Mode	IC50 of antagonist
25 nl	Capillary-based	Directly from stock	54.8 nM
50 nl	Capillary-based	Directly from stock	59.0 nM
2000 nl	Standard Pipetting	From intermediate	73.1 nM



1536-well plate, 50 nl : CV = 5.6 %

Specifications

Technology	Capillary-based[1]
Usage	Parallel sample transfer (96 or 384) Capillary magazines
Aspiration	By capillary forces
Dispension	By an air pressure pulse
Volumes (fixed) in nl	25, 50, 100, 250, 500, 750 or 1000
Precision	CV < 10 % for all volumes; Typical examples (based upon absorbance measurements): 25 nl CV < 9 %; 100 nl CV < 3 %; 250 nl CV < 2 %
Plate formats	96, 384, 1536
Material of capillaries	Glass or ceramic
Disposables	None
Transfer time	Approximately 15,000 samples in 65 minutes [2,3] / washing included
Washing efficiency	The carry-over is less than 0.01% (if used with capillary wash station, as described in the "How To Use Guide")
Control of the instrument	CyBio® Composer or keyboard
Microplate handling	The CyBi®-Well vario base unit provides high precision and reliable movement of: **Microplate carriage:** left – right; **Microplate lifter:** up – down; **Fine positioning** of 96-, 384-, 1536-well microplates No teaching of movements necessary Microplate storage in stackers possible

[1] OEM by Digilab, Inc.; [2] Regardless of plate type or transfer volume; [3] 10 microplates in 1536 well format

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