



## Assays under control with the programmable Pipetman Concept®

The first-of-its-kind Pipetman Concept® takes advantage of a PC-to-pipette connection to outperform traditional motorized pipettes for manual pipetting tasks.

Pipettes are a staple of most laboratories, yet few offer such a comprehensive functional package as the new Pipetman Concept electronic pipette (**Fig. 1**) from Gilson. The Pipetman Concept utility software allows users to create pipetting protocols on their personal computer and transfer them to their Gilson pipette. Conceived with simplicity and flexibility in mind, Pipetman Concept offers exclusive multifunction characteristics housed in a traditional Gilson design. Here we outline the unique benefits of using the PC-to-pipette connection in the preparation of the protein standard curve of a test protocol for TGFβ<sub>1</sub> quantitation.

The preparation of the TGFβ<sub>1</sub> standard curve of the Promega enzyme-linked immunosorbent assay test for TGFβ<sub>1</sub> quantitation offers a great example of the unique advantages of using the PC-to-pipette connection for carrying out pipetting protocols. The process involves repetitive dispensing and serial dilutions using a 96-well flat-bottom plate. To prepare the TGFβ<sub>1</sub> standard curve within the assay plate, the user has to add 100 μl per well of the sample-dilution buffer to wells B–H in column 12 of the plate, then add 200 μl of the diluted TGFβ<sub>1</sub> standard (1,000 pg/ml) to the first well of the column designated for the standard curve (row A). Lastly, the user has to perform immediately serial 1:2 dilutions (100 μl/well) down the plate in column 12.

The Pipetman Concept C1200, with a volume range of 100–1,200 μl, is suited to carry out this part of the protocol, as it permits all the required steps to be accomplished with the same instrument and without stopping to change the volume. Moreover, electronic pipettes offer a wider volume range than mechanical ones, meaning fewer models are needed to cover a given volume range.

In contrast to manual pipettes, the Pipetman Concept C1200 achieves improved accuracy and precision by eliminating operator-to-operator variability as well as reducing errors caused by any one operator. Using the multiple dispensing function of the Pipetman Concept C1200, it is possible to dispense up to 12 aliquots of 100 μl from a single aspiration. Serial dilution down the plate in the columns



**Figure 1** | The Gilson Pipetman Concept electronic pipette and utility software.

designated for the standard curve involves aspiration and dispensing, followed by mixing—using the Pipetman Concept, all of these functions can be performed in succession without changing the pipette.

These advantages are available from several other manufacturers as intrinsic features of electronic pipettes, but with the Pipetman Concept, Gilson has engineered a first-of-its-kind, easy-to-use, PC-to-pipette connection so that scientists can concentrate on their work. One major advantage of using a PC-based application over a conventional electronic pipette is the use of preprogrammed tasks (such as aspiration, repetitive dispensing and mixing) that can be flexibly combined to match a protocol's pipetting steps. Once the pipetting protocol has been programmed, one just has to upload it onto the pipette to start rolling out the procedure (**Fig. 2**). Protocols can also be saved and stored for use at a later date, providing substantial time savings. Conventional electronic pipettes, in contrast, offer limited user-customization capabilities as well as a limited number of pipetting tasks.

One of the main prejudices against manual pipetting, and to a lesser extent against electronic pipetting, is that complex protocols demand the technician's full attention. Some researchers spend considerable time working out protocols for use with expensive assay kits and then executing them with military precision. But who has never been con-

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## APPLICATION NOTES

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PIPETMAN Concept model: E-300
Volume limit (μL): 300
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[Std curve TGFb1]
[Elisa Test Protocol for TGFβ1 Quantitation (homolog)
used 1.2 (Skovro 1500)μL]
The TGFβ1 standard curve is linear between 15.6 and
1,000pg/ml of the TGFβ1 Standard.

PURGE(auto)
WAIT(start not pushed; Asp TGF Std)
ASPIRATE(vol=200; speed=5; name=)
WAIT(start not pushed; Disp 12A)
DISPENSE(vol=200; speed=5; name=)
PURGE(auto)
WAIT(start not pushed; Asp 100μL 12A)
ASPIRATE(vol=100; speed=5; name=)
WAIT(start not pushed; Disp 12B)
DISPENSE(vol=100; speed=5; name=)
WAIT(start not pushed; MIX 5 times)
MIX(vol=200; speed_asp=5; speed_disp=5; n* mix.=5; name=)
ALARM(duration=short; type=double)
WAIT(start not pushed; Blow out)
PURGE(auto)
WAIT(start not pushed; Asp 100μL 12B)
ASPIRATE(vol=100; speed=5; name=)
WAIT(start not pushed; Disp 12C)
DISPENSE(vol=100; speed=5; name=)
WAIT(start not pushed; MIX 5 times)
MIX(vol=200; speed_asp=5; speed_disp=5; n* mix.=5; name=)
ALARM(duration=short; type=double)
WAIT(start not pushed; Blow out)
PURGE(auto)
  
```

Figure 2 | Protocol transcription using the Pipetman Concept utility software.

fronted with the mishandling of a critical step? Errors may result from glancing back and forth at the protocol sheet or result from a momentary lapse of concentration caused by the need to readjust the pipette's settings. The Pipetman Concept not only eliminates these risks, it goes one step further by enabling the user to customize the screen of their pipette so that the different pipetting tasks programmed beforehand appear on screen—for example, “Dip 12 B to H”, “Asp TGF 1 Std” or “Disp 12 C” (Fig. 3). This offers an undeniable comfort of use when carrying out a complex protocol and helps users avoid errors.

Additionally, the user can choose from four different types of alarms that can be activated upon request, prompting the user to trigger the next action, indicating the end of a mixing phase, warning the operator each time a tip needs to be changed or reminding the user to start incubation. Another outright benefit of using the PC-to-pipette connection is that the operator can execute a pipetting protocol in one go and avoid the trouble of interrupting manipulation to change or reprogram the pipette for the subsequent steps with all the risks that entails.

### Conclusion

In summary, the Pipetman Concept offers a combination of quality, usability and comfort. It handles simple pipetting tasks and complex protocols equally well, making both routine and comprehensive tasks easy to perform. This new concept of motorized pipette provides the missing



Figure 3 | Examples of customized screen displays.

link between manual and automated liquid handling. The utility software dramatically increases the standard Pipetman Concept features, making it a genuinely multifunctional precision instrument. Fourteen models cover the full range of volumes from 0.5 to 10 ml, with both single and multichannel pipetting models available. Additional information is available on our company website (<http://www.gilson.com>).

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