



96 AT ONE BLOW - GET A GRIP ON MANUAL NEXT GENERATION SEQUENCING LIBRARY

Krammes L., Roth T., Bauer E., Peter W., Schäfer M. | HLA-Laboratory of the Stefan-Morsch-Stiftung in Birkenfeld, Germany

INTRODUCTION

Next generation sequencing (NGS) became essential in routine HLA typing due to its efficiency in context of resolution, costs and throughput. To get a grip on the required multiple pipetting steps during NGS library preparation, we integrated the manual 96-channel pipetting system PLATEMASTER (GILSON) into our NGS workflow.

METHODS

To qualify this manual 96 channel pipetting device, we compared its performance to a conventional 8 channel pipette in terms of

- Pipetting accuracy
- Reproducibility
- Totally required pipetting time within a HLA NGS workflow

ACCURACY AND REPRODUCIBILITY

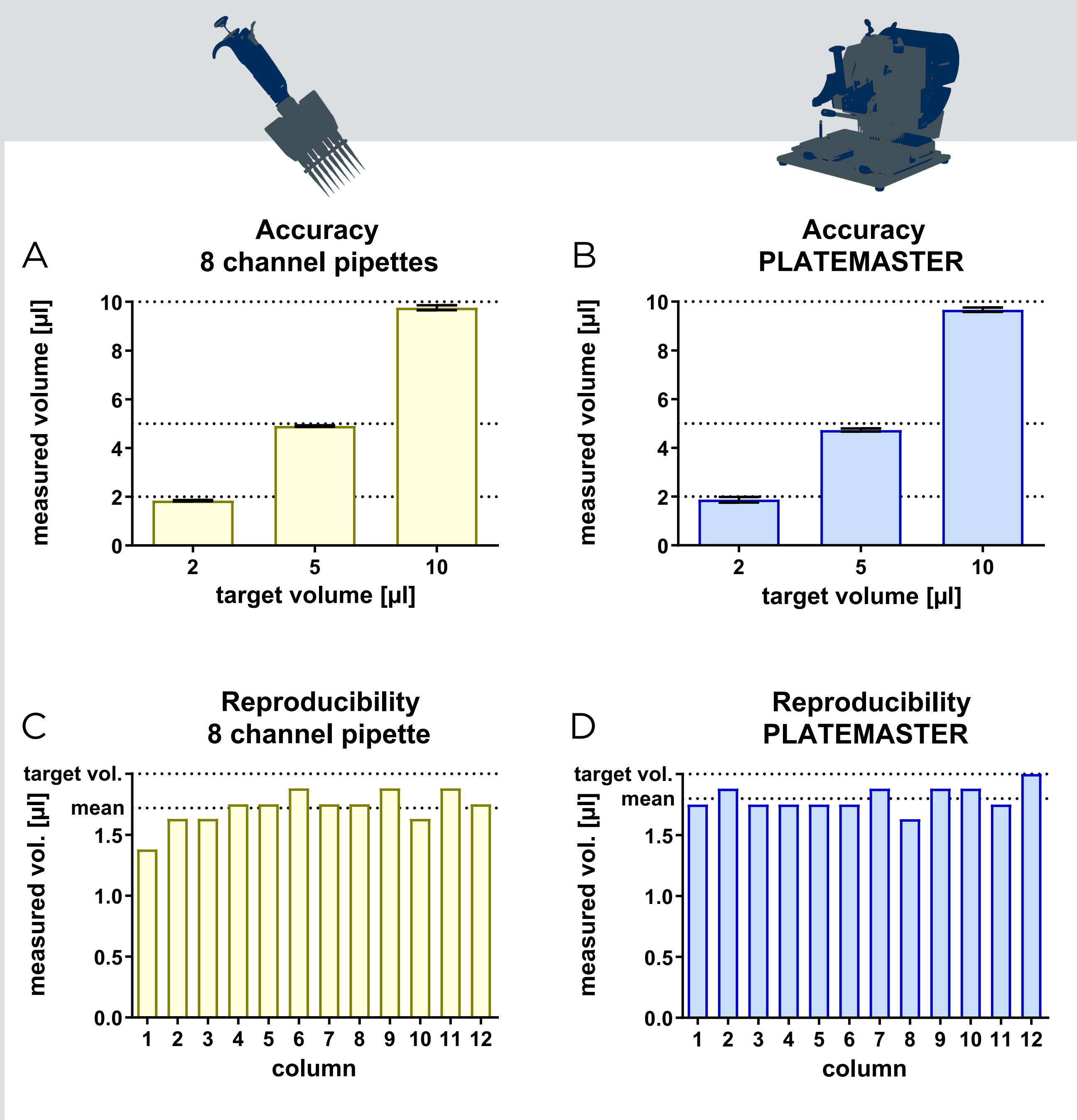


Figure 1: Pipetting accuracy was measured by weighing 3 times 3 different volumes transferred with an 8-channel pipette (A) and the Plate-master (B). Pipetting reproducibility was tested by measuring the transferred volume (set to 2 µl) per column of the 96-well plate (C, D).

NGS WORKFLOW - TIME SAVING

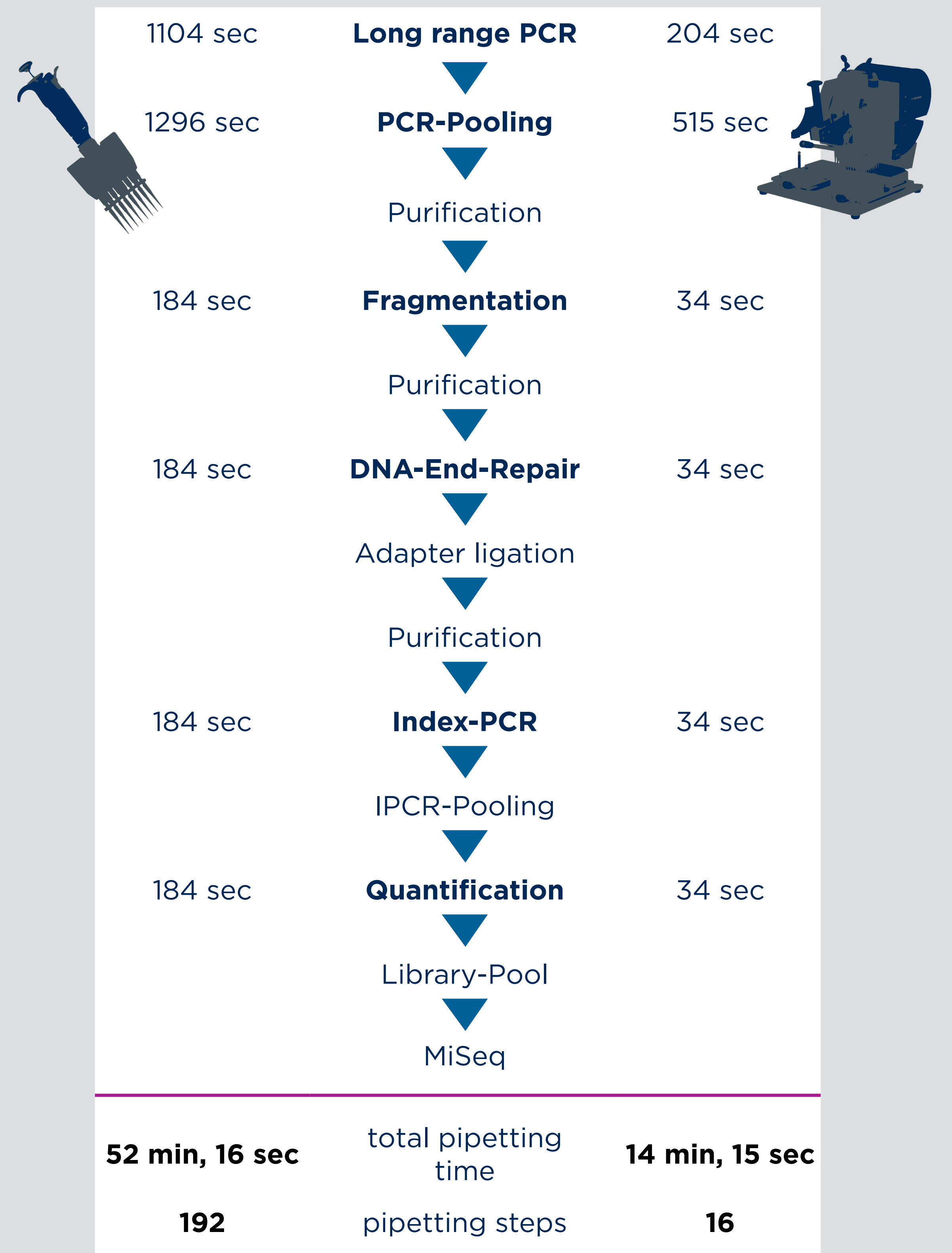


Figure 2: NGS workflow scheme (192 samples, 6 Loci). Required time for pipetting steps (bold) was compared using an 8-channel pipette (left) or the Platemaster (right). By using the Platemaster the number of pipetting steps was reduced by a factor of 12 and 73 % pipetting time was saved compared to an 8-channel pipette performing the same steps.

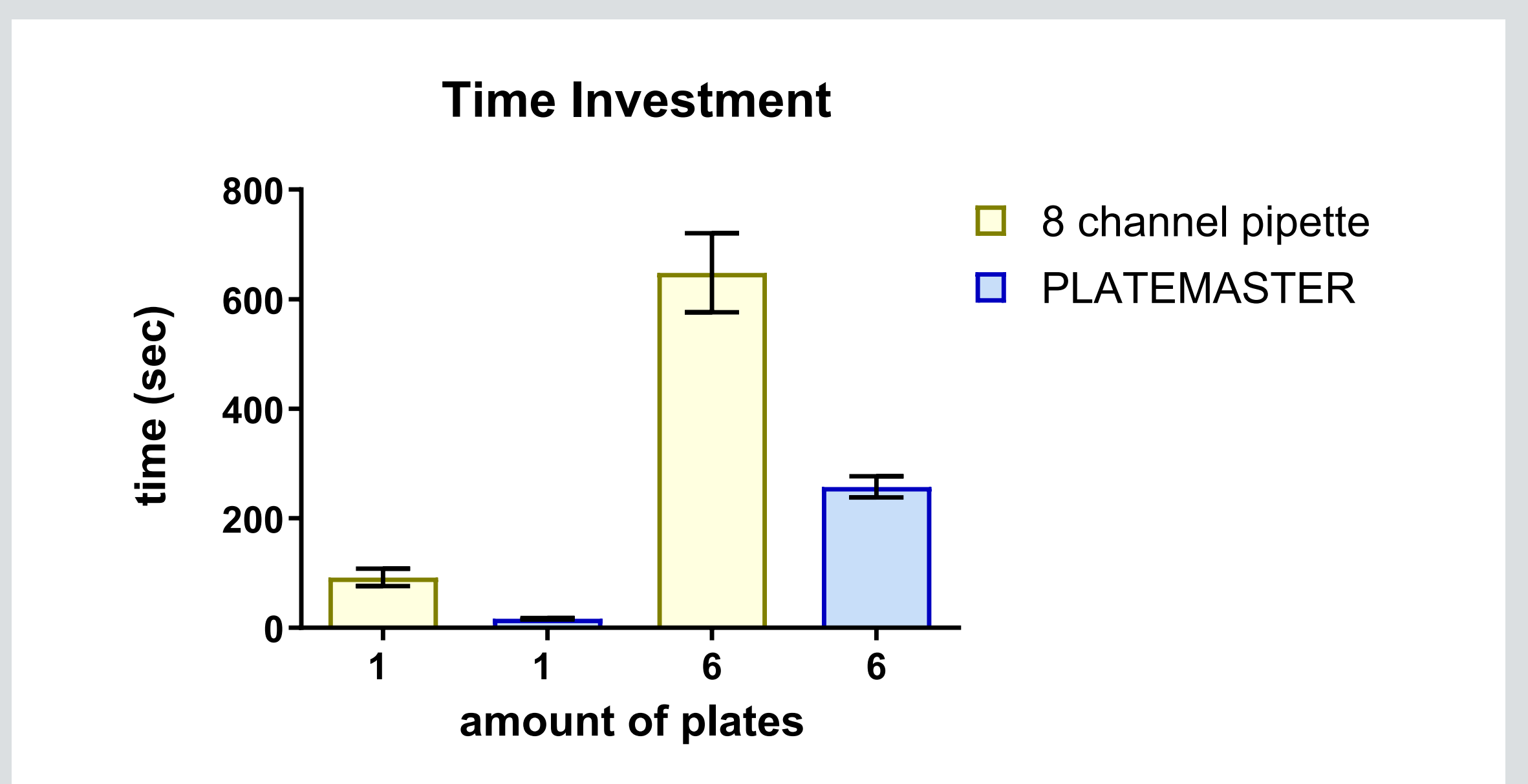


Figure 3: Time was measured for filling one or six 96-well plates using a manuell 8-channel pipette or the manuell Platemaster.

CONCLUSION

Pipetting 96-well plates with the PLATEMASTER (compared to an 8-channel-pipette):

- saves a significant amount of time
- without losing accuracy
- with gaining a higher reproducibility.
- reduces the amount of tedious pipetting steps by a factor of 12 and therefore minimized risk of transfer errors and samples cross contamination

► Higher throughput possible without the need of expensive robotic devices

