

Transferring AMPure® XP steps in NGS library preparation to centrifugal Blue® Washer saves >\$1.20/sample, >4h hands-on time, >3,000 tips/ 384w plate



BLUE CAT BIO

The Knight lab at UCSD is constructing NGS libraries for one to three 384w plates¹⁾ worth of samples per week in a semi-automated workflow. Wanting to reduce hands-on time, cost/ sample and tip waste while re-using existing equipment and minimizing incremental CAPX, they transferred resource intensive bead separation steps to the **centrifugal Blue®Washer**. As a result, per 384w sample plate, they **reduced hands-on time** for the adaptor and post amplification AMPure® XP bead cleanup steps **from 7h to 2h50min**, **cut per sample cost by 50%**, and **avoided the environmental impact of disposing off > 3,000 tips**.

Workflow steps transferred to Blue®Washer²⁾

Dispense 40µl DI water into 384w MTP



Impact of Centrifugal Bead Separation (CBS)

- Save 384 tips @ 10c/tip
- Save time
- Reduce human error & fatigue

Evacuate supernatant



- Save 384 tips @ 10c/tip
- Save time
- Reduce errors

1x bead wash with 30µl 80% EtOH



- Save 2*384 tips @ 10c/tip
- Save time
- Reduce errors

Each of these 3 steps is repeated 2x, first for adaptor clean-up, then for post amplification AMPure® XP bead cleanup



x 2

How does Centrifugal Bead Separation (CBS) work?

- Place plate with magnetic bead assay on Blue®Washer magnetic carrier and let settle
- Blue®Washer expels supernatant from plate wells by centrifugation - a tip-less, non-contact alternative to aspiration - while the carrier's magnets retain beads in well
- Blue®Washer design ensures no well-to-well contamination



Magnetic carrier for Blue®Washer

- Saved 3,072 tips @ \$307.20
- Cut hands-on time from 7h to 2h50min @ \$40 = \$167

Total Savings:

- \$474/ 384w plate
- \$1.23/ sample
- 50% cost reduction for adaptor and post PCR clean-up steps⁵⁾

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1) Eppendorf™ twin.tec™ 384-Well PCR plate

2) Blue®Washer settings: dispense pressure level 3, angled dispenser aimed at center of well surface (jet hits at front well wall just above bottom) , evacuation with "MagBeadSpin"

3) P100 pipette by Eppendorf. Pipette 3 columns across. Need full set of 384 mosquito® tips to avoid cross contamination from source well

4) mosquito® HTS by ttpabtech, 16pin head, sequential tip loading from reel

5) Total cost/ 384w plate w/o Blue®Washer: \$955.80 (= \$307.20 mosquito® tips for dispense, evacuate, wash steps + \$89 AMPure® XP beads + 2*384*17c = \$130 Eppendorf tips, \$149.6 mosquito® tips for elution + 7h labor @ \$40h); AMPure® XP bead cost based on adding 7.5µl beads to 10.5µl sample per well (bead ratio 0.7 to optimize sample recovery and to exclude fragments <200bp)

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