

Electronic Supplemental Information:

High-density self-contained microfluidic KOALA kits for use by everyone

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KOALA-HD Design and Dimensions:

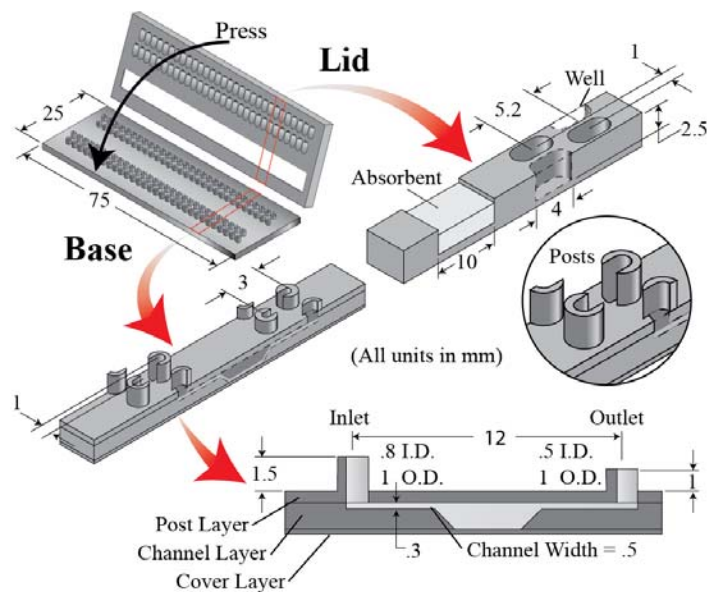


Figure S1. A dimensioned schematic of the KOALA-HD platform (all units in mm)

KOALA-HD Common Rail Designs:

Two common rail designs were tested. In the first design (Figure S2, top), common rail consists of several ports with fins on each side. When mated with a lid, the fins were designed to reach into the half elliptical wells to wick out the fluid. Two issues arose. First the fins were not large enough to collect all of the fluid, and second the concus-finn filaments cause liquids to go into the regions between the fins (“A”). In attempt to mitigate this issues a second design was tested wherein the fins were (1) elevated from the surface to prevent contamination from concus-finn filaments (“B”) and (2) enlarged to reach further into well (“C”) and (Figure S2, bottom). However, this design still had several issues via displacement of fluid causing wells to spill into adjacent wells.

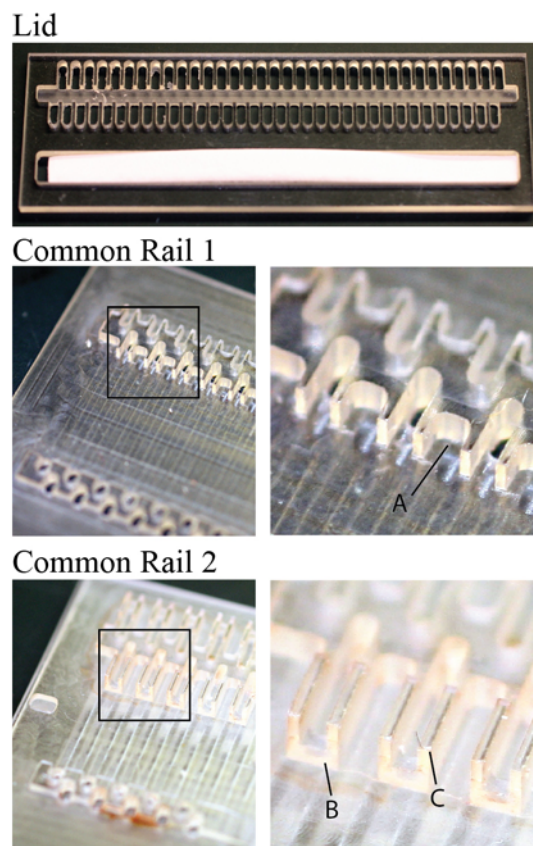


Figure S2. Alternative designs to the horseshoe posts

Post Orientation Effects on Dead Volume:

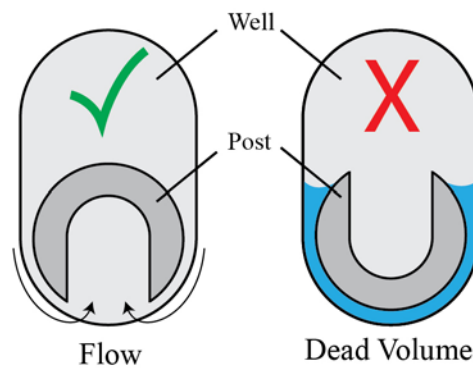


Figure S3. This schematic demonstrates the impacts of post orientation. Rotating the open side of the post enables capture of all of the fluid. If the post opens towards the center of the well, fluid gets trapped between the post and the wall.