**Micro Reactor Fabrication**

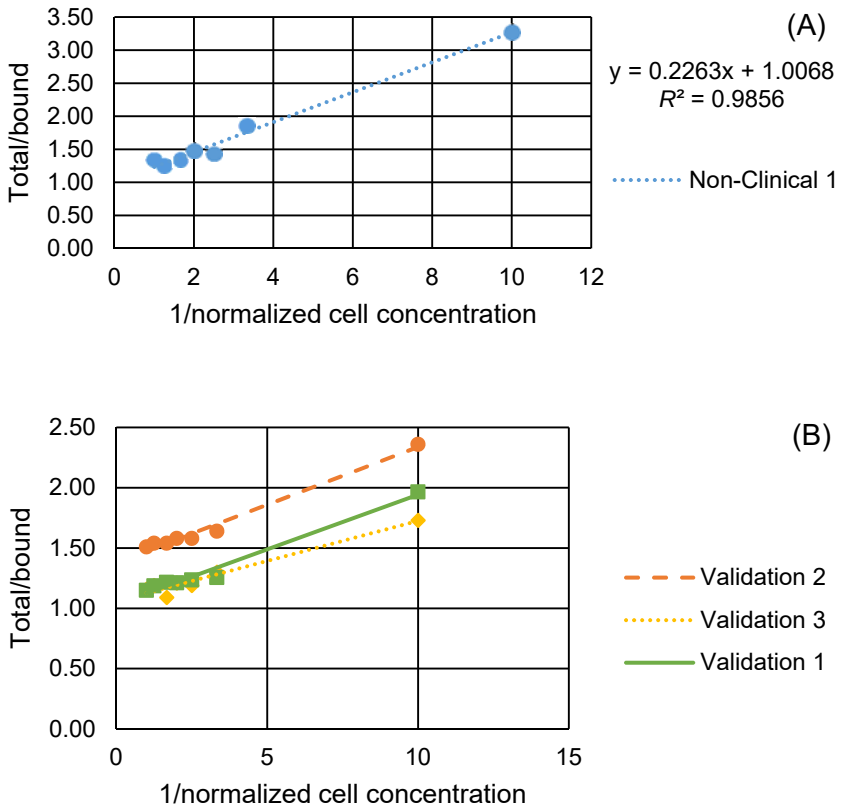
**General Information**

Glass microscope slides were purchased from Fisher Scientific and used in the manufacture of the PDMS reactors. The UV exposure system was purchased from OAI (San Jose, CA). Adobe Illustrator CS5 from Adobe Systems (San Jose, CA) was used to design the mask printed by FineLine Imaging (Colorado Springs, CO). The PL-360LP filter was purchased from Omega Optical (Brattleboro, VT). Perfluorodecyl-1H, 2H, 2H-trichlorosilane was purchased from Gelest (Morrisville, PA). Sylgard 184 PDMS was purchased from Dow Corning (Midland, MI).
The microreactors were constructed in a manner similar to previously reported methods.[Error! Bookmark not defined.]

***Mold fabrication.*** Silicon wafers were rinsed with acetone then isopropanol, dried with filtered nitrogen, heated on a hot plate, and then cooled with filtered nitrogen. SU-8 2050 photoresist was then spin-coated onto the wafers to a final thickness of ~100 μm. The wafers were soft baked on a hot plate for 5 min at 65 °C, 17 min at 95 °C, then 2 min at 65 °C, and allowed to cool to room temperature. Wafers were then placed in a UV exposure system one at a time, a transparency mask consisting of all features except the herringbones was then placed on the wafer, and a PL-360LP filter was put on top of the transparency mask. Following exposure to UV light, wafers were baked on a hot plate for 5 min at 65 °C, 10 min at 95 °C, 2 min at 65 °C, and then allowed to cool to room temperature. A second layer of SU-8 2050 (~50 μm thick) was then spin-coated on top of the first layer of SU-8 2050 and the process of soft baking, and UV exposure was repeated with appropriate times for the thinner layer of SU-8 2050. A different transparency mask was used for the second UV exposure that consisted of only

herringbone features. Herringbone features were aligned to the channels of the first photoresist layer. Following the second exposure, wafers were placed on a hot plate and temperature was ramped from room temperature to 55 °C. Wafers were baked for 2 h at 55 °C and then allowed to cool to room temperature slowly. Wafers were developed with propylene glycol monomethyl ether acetate (PGMEA), then rinsed with PGMEA and isopropanol, and finally dried with filtered nitrogen. A thin layer of perfluorodecyl-1H,1H,2H,2H-trichlorosilane was then deposited on wafers via vapor deposition to prevent adhesion of PDMS.

***PDMS attachment to glass.*** Sylgard 184 PDMS was combined in a 10:1 mass ratio (base : curing agent), mixed thoroughly, and degassed in a vacuum desiccator for ~20 min. Silane treated molds were placed in petri dishes and degassed PDMS was poured into the dishes and cured in an oven at 65 °C for ~2 h. The PDMS replicas were then peeled from the molds, and the holes for inlets and outlets were punched using hypodermic tubing or syringe needles with beveled edges. The glass slides were cleaned using an Alconox solution, rinsed with E-Pure water (18.0 MΩ cm) and dried with filtered nitrogen. The surfaces of the cleaned glass slides and PDMS replicas were then activated with oxygen plasma and pressed together. Bonded devices were incubated overnight in an oven at 65 °C.




*Supplemental Figure 1. Immunoreactivity Assays (A) Lindmo assay results on a sample not held to clinical standards (B) Lindmo assay results on three samples held to clinical standards.*