Supplementary Information

A Reconfigurable Microfluidic Building Block Platform for High-Throughput Nonhormonal Contraceptive Screening

Jyong-Huei Lee\textsuperscript{a}, Carl van der Linden\textsuperscript{b}, Francisco J. Diaz\textsuperscript{b*}, and Pak Kin Wong\textsuperscript{a,c*}

\textsuperscript{a}Department of Biomedical Engineering, The Pennsylvania State University, University Park, PA, 16802

\textsuperscript{b}Department of Animal Science, The Pennsylvania State University, University Park, PA, 16802

\textsuperscript{c}Department of Mechanical Engineering and Department of Surgery, The Pennsylvania State University, University Park, PA, 16802

Corresponding authors:

Francisco J. Diaz, email: fjd10@psu.edu

Pak Kin Wong, email: pak@engr.psu.edu
Figure S1. Transwell device design. A) Cross-sectional view of the transwell design (single well). B) Photographs of the middle layer (microwells with an embedded membrane) assembled on the bottom layer.
Figure S2. Equivalent circuit model of the chemical gradient generator.

\[
Q_{11}=Q_{12}=Q \\
Q_{21}=Q_{22}=Q_{31}=Q_{32}=2/3 Q \\
Q_{31}=Q_{32}=Q_{33}=Q_{34}=1/2 Q \\
Q_{32}=Q_{21}+Q_{31}=1/6Q=Q_{33} \\
Q_{32}=1/3 Q=Q_{33} \\
Q_{41}=Q_{42}=Q_{43}=Q_{44}=Q_{45}=2/5 Q \\
Q_{42}=Q_{41}=1/10 Q=Q_{44} \\
Q_{42}=Q_{42}+Q_{44}=3/10 Q=Q_{44} \\
Q_{43}=Q_{43}=1/5Q \\
C_i = (Q_i/Q_j)C_{i-1}+ (Q_i/Q_j)C_{i+1}
\]