Supporting Information

Liver-kidney-on-chip to study toxicity of drug metabolites

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Seven supplementary figures are provided.

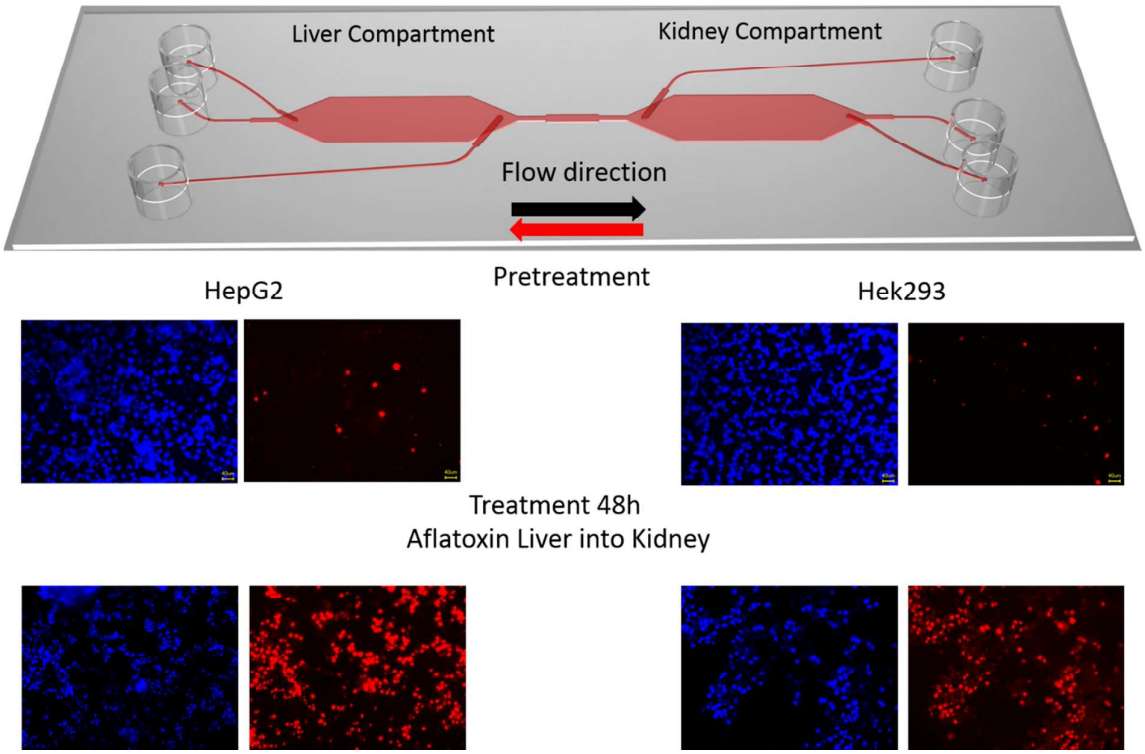

Figure S1 Top: Illustrative example of flow direction and chamber assignment. Bottom: Illustrative example of viability staining of HepG2 and Hek293 cells with Hoechst (blue) PI (red). Cells were stained prior to treatment with 22,5 µM AFB1 (top) and after 48 h treatment with AFB1 using microfluidic set up.

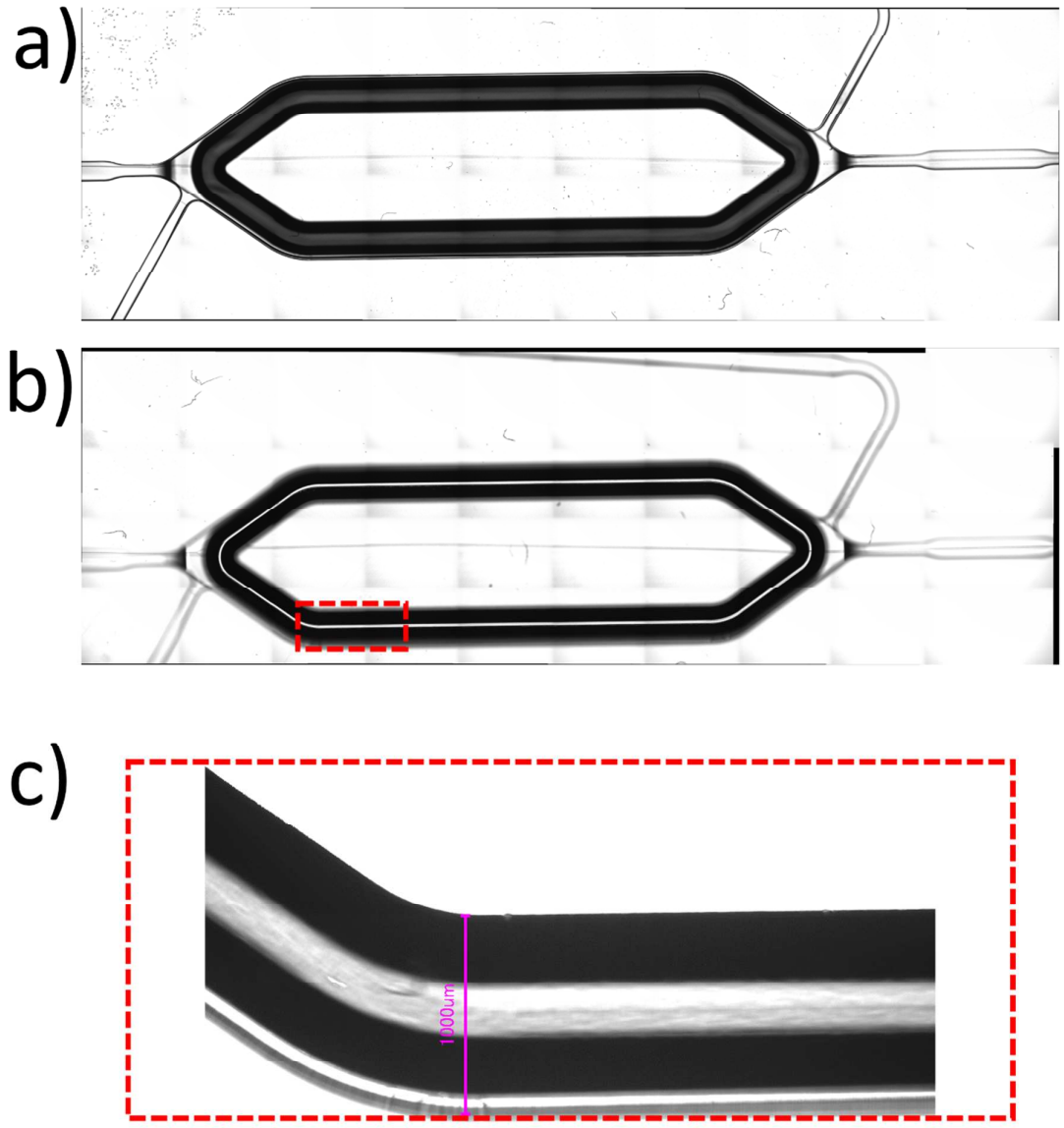

Figure S2 Detailed view on Chip design, a and b showing different focus levels of single chamber of the microfluidic design with the central cell culture area and the surrounding diffusion barrier /air bubble trap and media channel. Zoom in view on the diffusion barrier / air bubble trap is provided in c.

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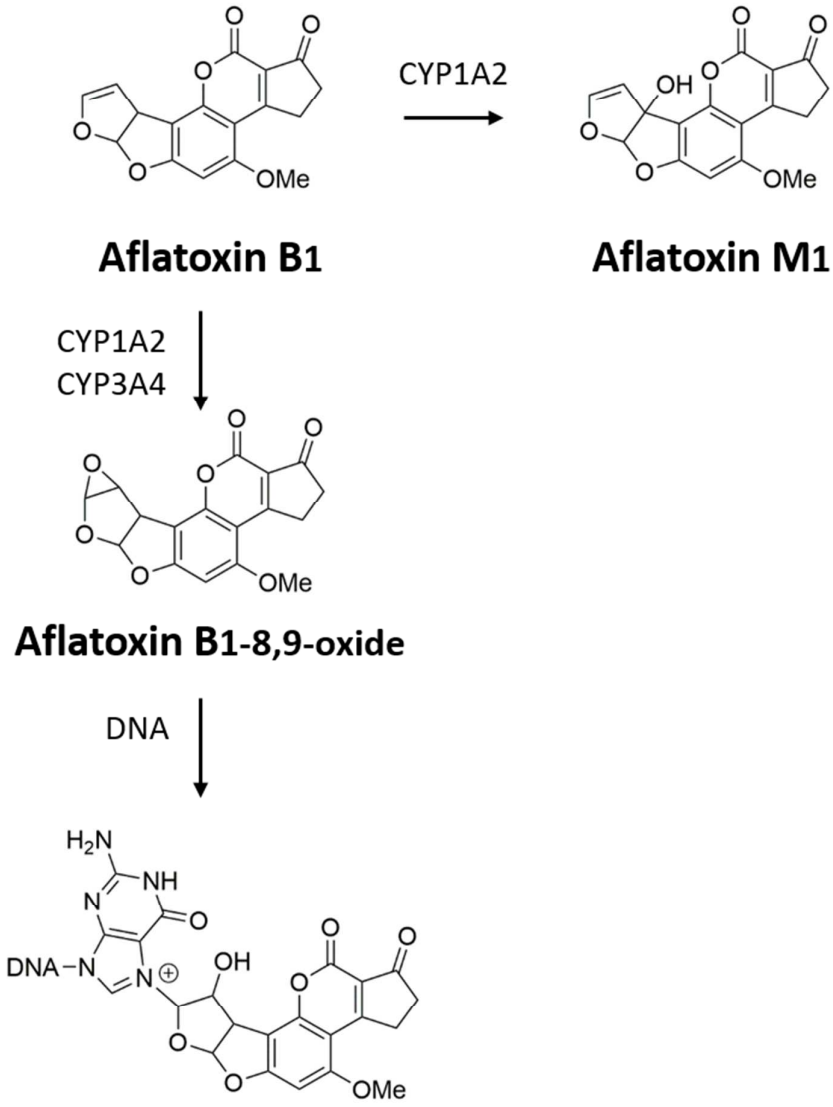

Figure S3 Metabolism of Aflatoxin B1 via CYP1A1 and CYP3A4 to Aflatoxin B1-8,9 oxide which is adducting to Guanine forming DNA damage.

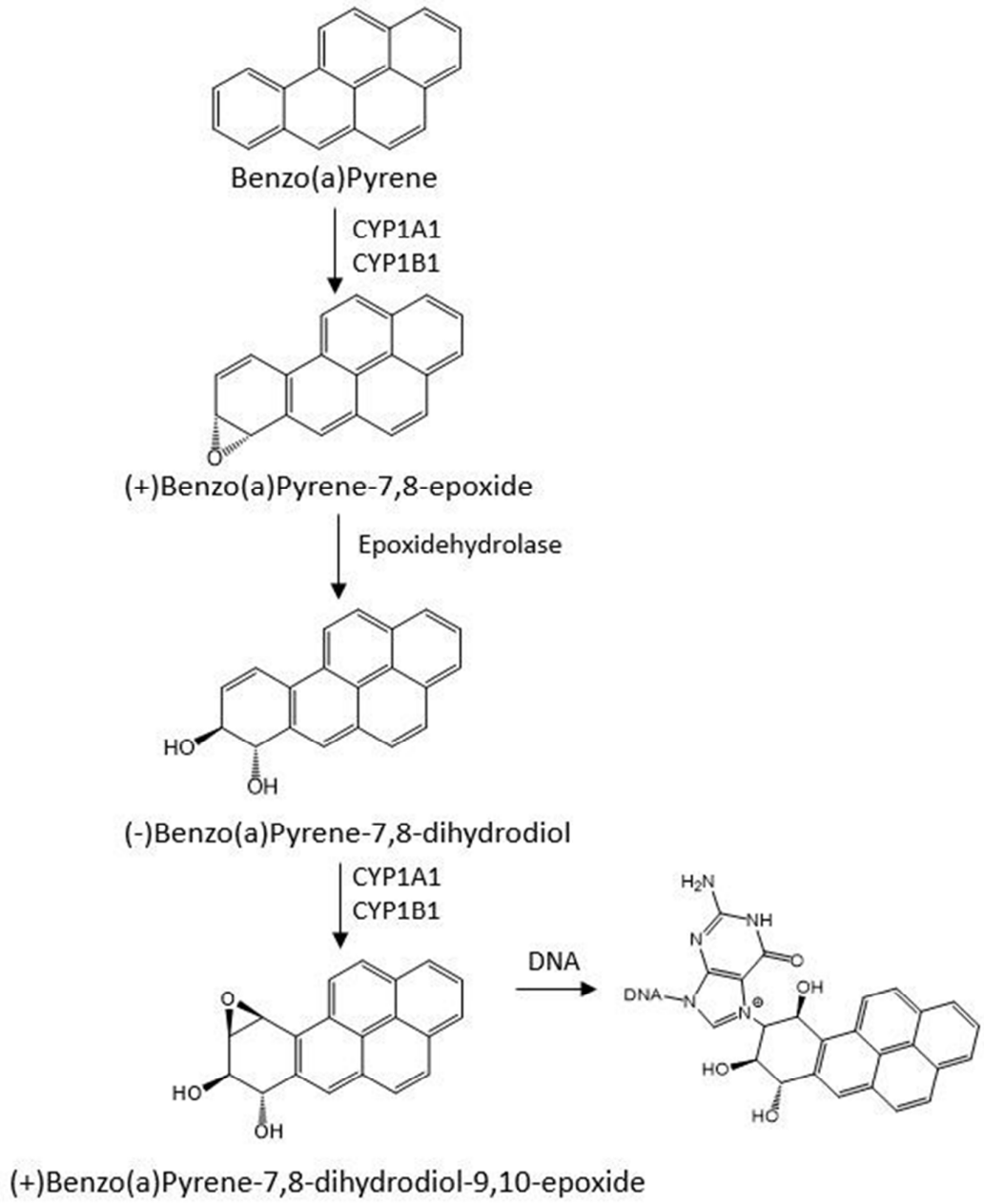

Figure S4 Metabolism of BaP via CYP1A1 and CYP1B1 to Benzo(a)pyrene-7.8 dihodroiol-9,10-epoxide forming DNA adduct causing DNA damage.

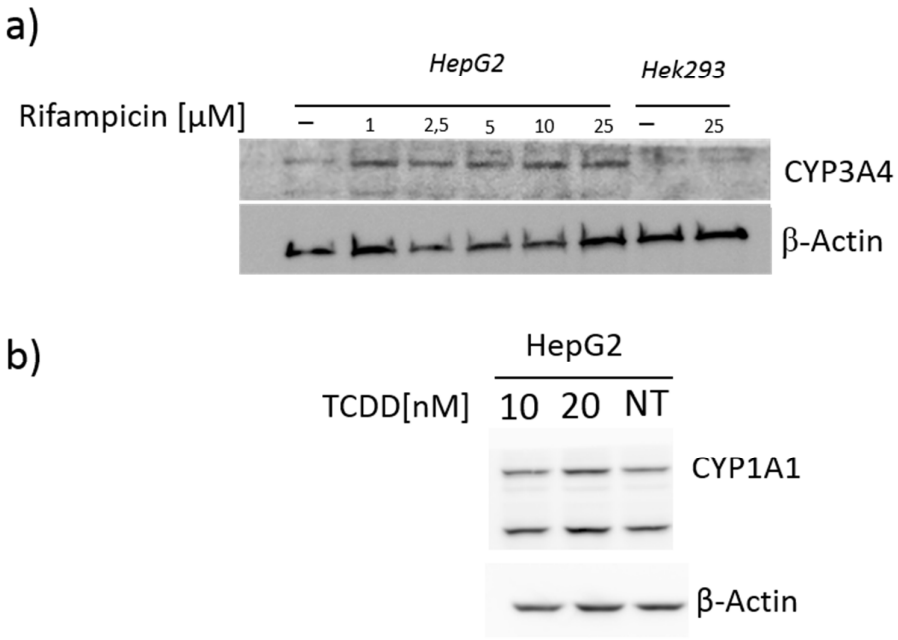

Figure S5 Protein level analysis. a) HepG2 and Hek293 were treated with varying concentrations of Rifampicin for 24 hours. CYP3A4 enzyme level was analyzed, ß-Actin was used as control. B) HepG2 cells treated with TCDD for 24 hours. CYP1A1 was analyzed, ß-Actin was used as control.

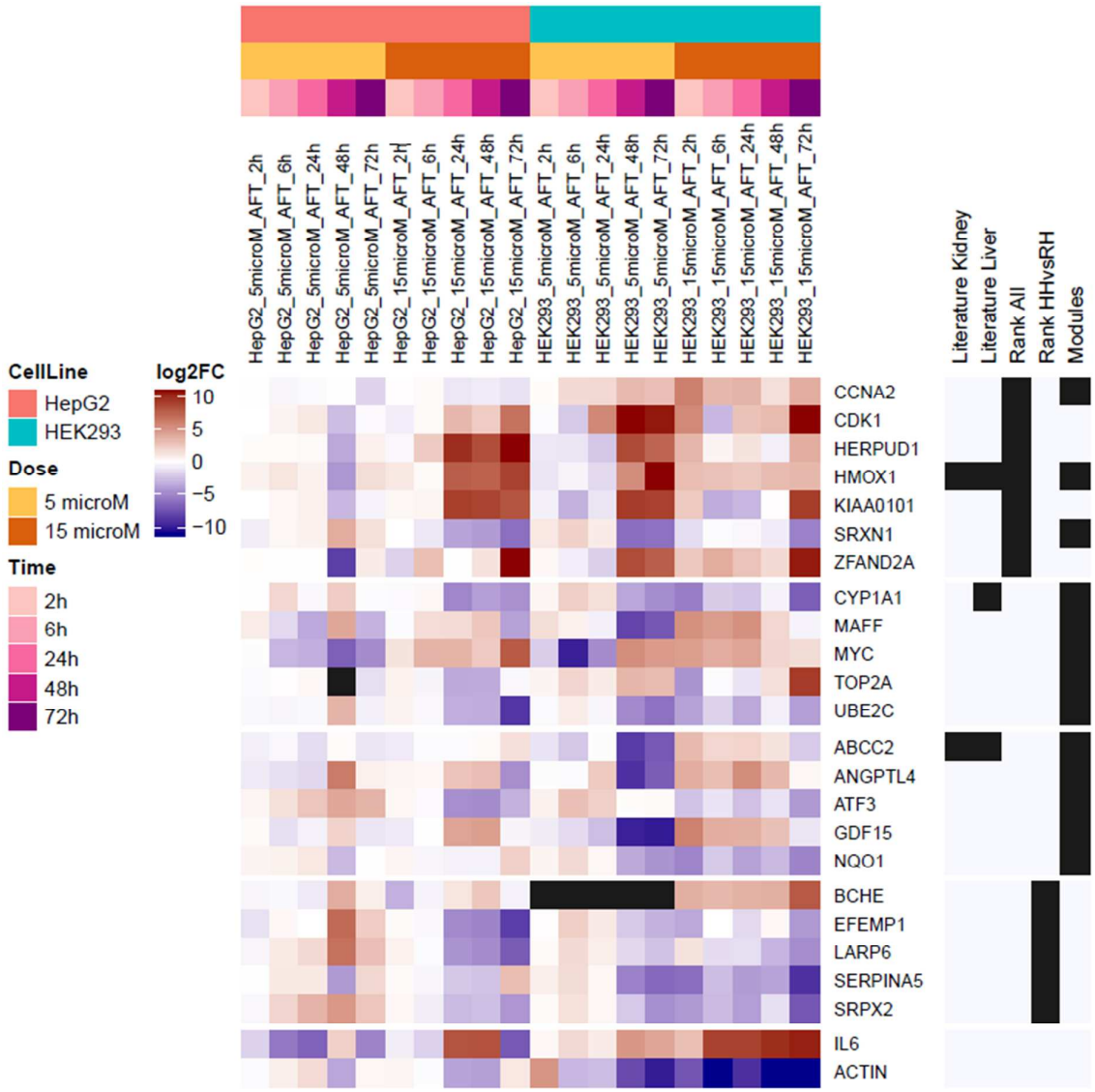

Figure S6 Gene map of HepG2 and Hek293 cell treated with 5 µM and 15 µM AFB1 for varying time points. Data presented are normalized to the geometric mean of all samples.

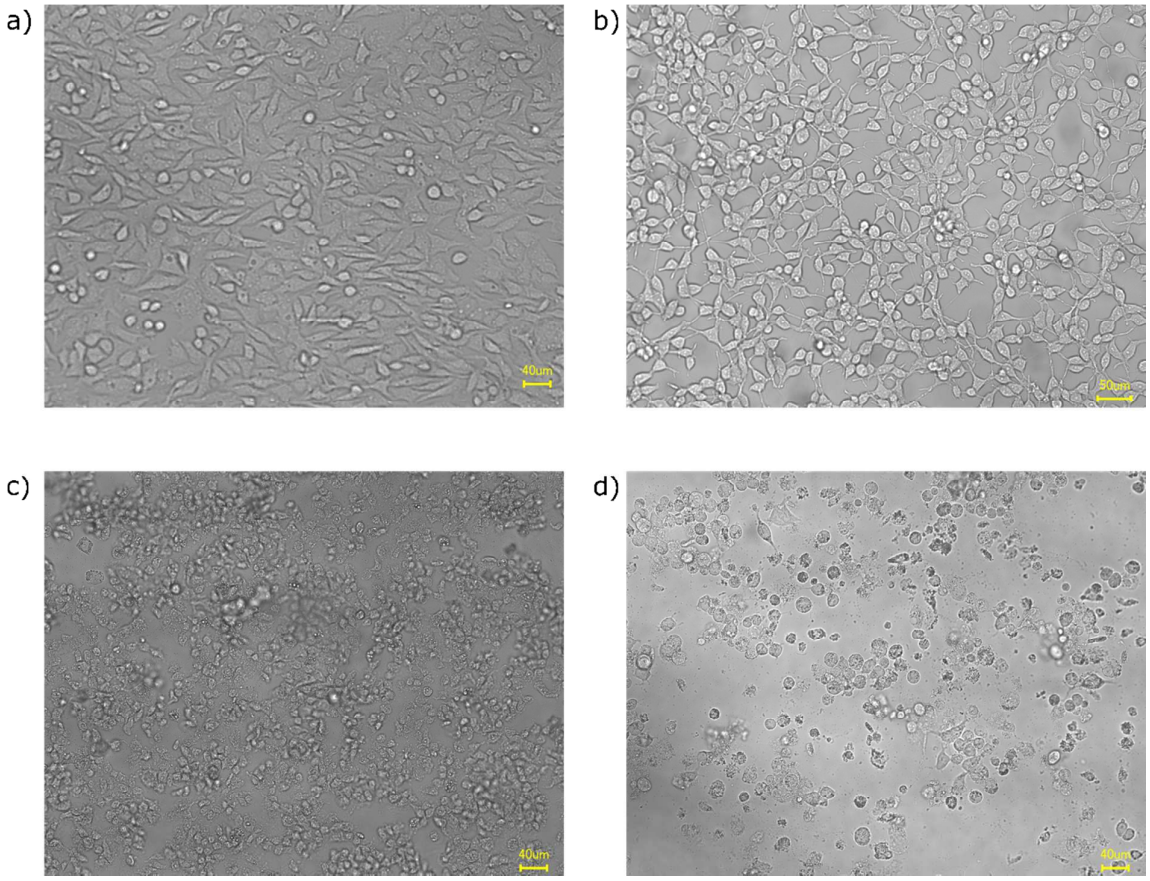

Figure S7 Pictures of non-treated HepG2 WT cells (a) non treated Hek293 cells (b), HepG2 cells treated with 22,5 µM AFB1 (c) and Hek293 cells treated with 22,5 µM AFB1 (d) on chip. 20x magnification was used scale bar is 40 µM.