

# Supporting Information

## Pharmacoproteomics of Brain Barrier Transporters and Substrate Design for the Brain Targeted Drug Delivery

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### Contents

<b>Table S1.</b> Prediction of $K_{p,uu,brain,MDR1,human}$ of MDR1 substrate in human. ....	2
<b>Table S2.</b> Prediction of $K_{p,uu,brain,BCRP,human}$ of BCRP substrate in human. ....	3

**Table S1.** Prediction of  $K_{p,uu,brain,MDR1,human}$  of MDR1 substrate in human.

Rat $K_{p,uu,brain,MDR1,rat}$	Rat $TA_{vivo,MDR1,rat}P_{passive,vivo,MDR1,rat}$	Human $K_{p,uu,brain,MDR1,human}$	Ratio $K_{p,uu,brain,MDR1,human}/K_{p,uu,brain,MDR1,rat}$
$1.00 \times 10^{-4}$	20.1	$9.87 \times 10^{-4}$	9.87
$5.00 \times 10^{-4}$	4.02	$4.92 \times 10^{-3}$	9.84
$1.00 \times 10^{-3}$	2.01	$9.79 \times 10^{-3}$	9.79
$5.00 \times 10^{-3}$	$4.00 \times 10^{-1}$	$4.73 \times 10^{-2}$	9.46
$1.00 \times 10^{-2}$	$1.99 \times 10^{-1}$	$9.07 \times 10^{-2}$	9.07
$2.00 \times 10^{-2}$	$9.86 \times 10^{-2}$	$1.68 \times 10^{-1}$	8.39
$3.00 \times 10^{-2}$	$6.51 \times 10^{-2}$	$2.34 \times 10^{-1}$	7.80
$4.00 \times 10^{-2}$	$4.83 \times 10^{-2}$	$2.92 \times 10^{-1}$	7.29
$5.00 \times 10^{-2}$	$3.82 \times 10^{-2}$	$3.42 \times 10^{-1}$	6.84
$6.00 \times 10^{-2}$	$3.15 \times 10^{-2}$	$3.86 \times 10^{-1}$	6.45
$7.00 \times 10^{-2}$	$2.67 \times 10^{-2}$	$4.27 \times 10^{-1}$	6.09
$8.00 \times 10^{-2}$	$2.31 \times 10^{-2}$	$4.62 \times 10^{-1}$	5.78
$9.00 \times 10^{-2}$	$2.03 \times 10^{-2}$	$4.94 \times 10^{-1}$	5.49
$1.00 \times 10^{-1}$	$1.81 \times 10^{-2}$	$5.23 \times 10^{-1}$	5.23
$2.00 \times 10^{-1}$	$8.05 \times 10^{-3}$	$7.12 \times 10^{-1}$	3.56
$3.00 \times 10^{-1}$	$4.69 \times 10^{-3}$	$8.09 \times 10^{-1}$	2.70
$4.00 \times 10^{-1}$	$3.02 \times 10^{-3}$	$8.68 \times 10^{-1}$	2.17
$5.00 \times 10^{-1}$	$2.01 \times 10^{-3}$	$9.08 \times 10^{-1}$	1.81
$6.00 \times 10^{-1}$	$1.34 \times 10^{-3}$	$9.37 \times 10^{-1}$	1.56
$7.00 \times 10^{-1}$	$8.62 \times 10^{-4}$	$9.58 \times 10^{-1}$	1.37
$8.00 \times 10^{-1}$	$5.03 \times 10^{-4}$	$9.75 \times 10^{-1}$	1.22
$9.00 \times 10^{-1}$	$2.24 \times 10^{-4}$	$9.89 \times 10^{-1}$	1.10
$9.90 \times 10^{-1}$	$2.03 \times 10^{-5}$	$9.99 \times 10^{-1}$	1.01

Changing  $K_{p,uu,brain,MDR1,rat}$  from  $1.00 \times 10^{-4}$  to  $9.90 \times 10^{-1}$  with  $PEL_{MDR1,rat}$  of rat cerebrum ( $497 \text{ fmol/cm}^2$ ),  $TA_{MDR1, rat, vivo}/P_{passive, rat, vivo}$  was estimated by Eq. 5. Assuming  $RTA_{MDR1, human/rat}$  is 1.0,  $K_{p,uu,brain,MDR1, human}$  was predicted by Eq. 7 with  $PEL_{MDR1, human}$  of human cerebral cortex ( $50.3 \text{ fmol/cm}^2$ ).

**Table S2.** Prediction of  $K_{p,uu,brain,BCRP,human}$  of BCRP substrate in human.

Rat $K_{p,uu,brain,BCRP,rat}$	Rat $TA_{vivo,BCRP,rat}/P_{passive,vivo,BCRP,rat}$	Human $K_{p,uu,brain,BCRP,human}$	Ratio $K_{p,uu,brain,BCRP,human}/K_{p,uu,brain,BCRP,rat}$
$1.00 \times 10^{-4}$	46.1	$5.23 \times 10^{-4}$	5.23
$5.00 \times 10^{-4}$	9.21	$2.61 \times 10^{-3}$	5.22
$1.00 \times 10^{-3}$	4.60	$5.21 \times 10^{-3}$	5.21
$5.00 \times 10^{-3}$	$9.17 \times 10^{-1}$	$2.56 \times 10^{-2}$	5.12
$1.00 \times 10^{-2}$	$4.56 \times 10^{-1}$	$5.02 \times 10^{-2}$	5.02
$2.00 \times 10^{-2}$	$2.26 \times 10^{-1}$	$9.64 \times 10^{-2}$	4.82
$3.00 \times 10^{-2}$	$1.49 \times 10^{-1}$	$1.39 \times 10^{-1}$	4.64
$4.00 \times 10^{-2}$	$1.11 \times 10^{-1}$	$1.79 \times 10^{-1}$	4.47
$5.00 \times 10^{-2}$	$8.76 \times 10^{-2}$	$2.16 \times 10^{-1}$	4.32
$6.00 \times 10^{-2}$	$7.22 \times 10^{-2}$	$2.50 \times 10^{-1}$	4.17
$7.00 \times 10^{-2}$	$6.12 \times 10^{-2}$	$2.82 \times 10^{-1}$	4.03
$8.00 \times 10^{-2}$	$5.30 \times 10^{-2}$	$3.13 \times 10^{-1}$	3.91
$9.00 \times 10^{-2}$	$4.66 \times 10^{-2}$	$3.41 \times 10^{-1}$	3.79
$1.00 \times 10^{-1}$	$4.15 \times 10^{-2}$	$3.67 \times 10^{-1}$	3.67
$2.00 \times 10^{-1}$	$1.84 \times 10^{-2}$	$5.67 \times 10^{-1}$	2.83
$3.00 \times 10^{-1}$	$1.08 \times 10^{-2}$	$6.91 \times 10^{-1}$	2.31
$4.00 \times 10^{-1}$	$6.91 \times 10^{-3}$	$7.77 \times 10^{-1}$	1.94
$5.00 \times 10^{-1}$	$4.61 \times 10^{-3}$	$8.39 \times 10^{-1}$	1.68
$6.00 \times 10^{-1}$	$3.07 \times 10^{-3}$	$8.87 \times 10^{-1}$	1.48
$7.00 \times 10^{-1}$	$1.97 \times 10^{-3}$	$9.24 \times 10^{-1}$	1.32
$8.00 \times 10^{-1}$	$1.15 \times 10^{-3}$	$9.54 \times 10^{-1}$	1.19
$9.00 \times 10^{-1}$	$5.12 \times 10^{-4}$	$9.79 \times 10^{-1}$	1.09
$9.90 \times 10^{-1}$	$4.65 \times 10^{-5}$	$9.98 \times 10^{-1}$	1.01

Changing  $K_{p,uu,brain,BCRP,rat}$  from  $1.00 \times 10^{-4}$  to  $9.90 \times 10^{-1}$  with  $PEL_{BCRP,rat}$  of rat cerebrum ( $217 \text{ fmol/cm}^2$ ),  $TA_{BCRP, rat, vivo}/P_{passive, rat, vivo}$  was estimated by Eq. 5. Assuming  $RTA_{BCRP, human/rat}$  is 1.0,  $K_{p,uu,brain,BCRP,human}$  was predicted by Eq. 7 with  $PEL_{BCRP,human}$  of human cerebral cortex ( $41.5 \text{ fmol/cm}^2$ ).