1 Table S1 shows the performance of TMF in the case of tuning λ_u, λ_v, λ_d, λ_c one by one on GDSC dataset.

Table S1. The performance of TMF in the case of tuning λ_u, λ_v, λ_d, λ_c one by one on GDSC dataset

λ_u	1	0.5	0.05	0.005
λ_v =1, λ_d =1, λ_c =1	0.9986	1.0028	1.0088	1.0105
λ_v	1	0.5	0.05	0.005
λ_u =1, λ_d =1, λ_c =1	0.9986	0.9900	0.9798	0.9816
λ_d	1	0.5	0.05	0.005
λ_v =1, λ_u =1, λ_c =1	0.9986	1.0136	1.0206	1.0123
λ_c	1	0.5	0.05	0.005
λ_v =1, λ_u =1, λ_d =1	0.9986	1.0310	1.0310	1.0310

Note: The performance is measured by $\rho 1$. The regularization parameters λ_u, λ_v, λ_d and λ_c are tuned from the list {0.005, 0.05, 0.5, 1} successively, by setting others as 1. $\rho 1$ is the drug-averaged quotient of PCC divided by *E*.

2 Tables S2 shows the PCC and PCC_S/R of KBMF, SRMF and TMF in 10-CV test on CCLE dataset.

Table S2. Results of KBMF, SRMF and TMF on CCLE dataset in 10-CV test

Methods	*PCC_S/R*	*PCC*
TMF	0.770(±0.05)	0.720(±0.002)
SRMF	0.638(±0.07)	0.607(±0.09)
KBMF	0.650(±0.1)	0.710(±0.10)