Fig. S1 The relationship between RFP expression levels (log values). with thermodynamic model predicted expression levels (A) or with LacZ expression levels (B).



Fig. S2 the growth rates (OD values after 2 hours incubation) of CadR biosensors (A) and MerR biosensors (B). No significant difference was observed.



Fig. S3 (A) Biosensor P429-*merR* incubated with 0.25 μmol/L of Hg (II) or other metal ions. (B) Biosensor P429-*merR* co-incubated with 0.25 μmol/L of Hg (II) and 0.25 μmol/L interference ions.