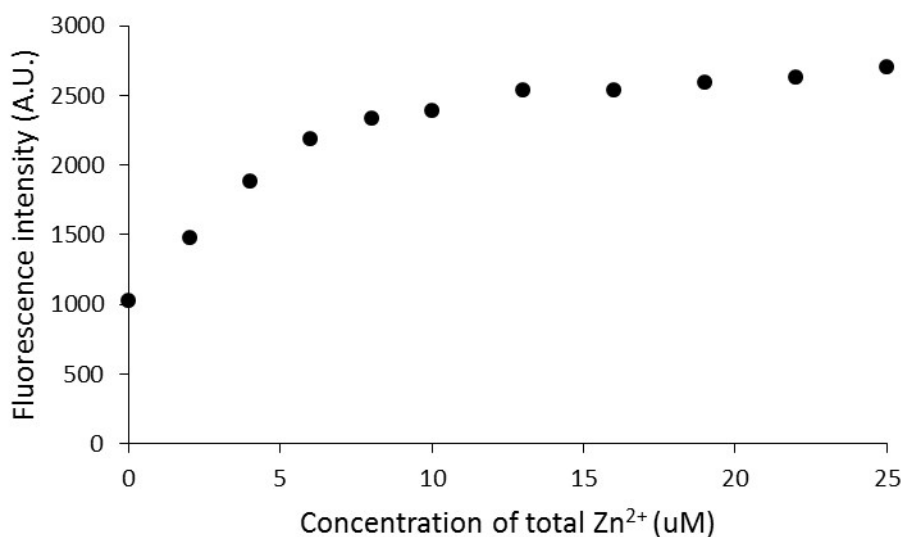
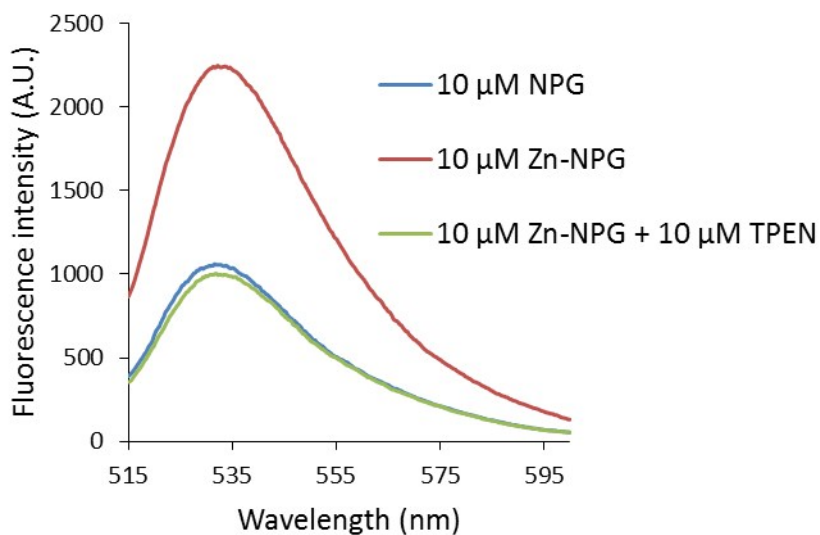


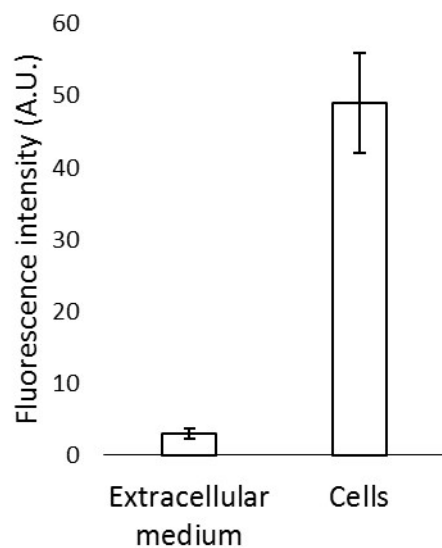
**Supplementary Information:**



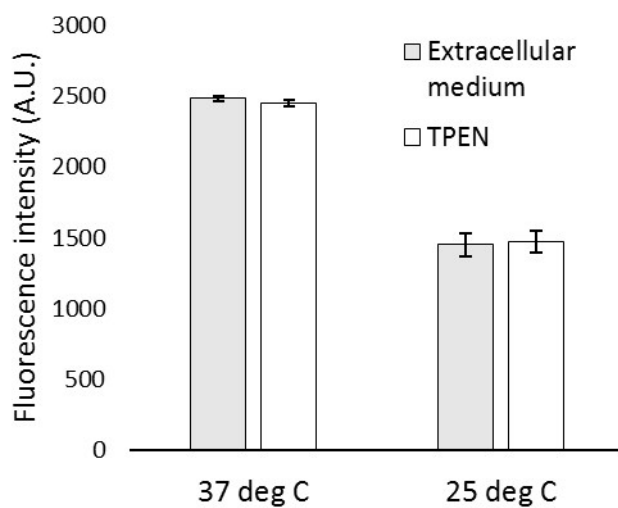
**Figure S1.** Titration of 10  $\mu\text{M}$  NPG<sub>A</sub> in 20 mM Tris (pH 7.4) with the increasing concentration of ZnCl<sub>2</sub> at 25° C.



**Figure S2.** Reaction of 10  $\mu\text{M}$  NPG<sub>A</sub> and 10  $\mu\text{M}$  Zn<sup>2+</sup> in 20 mM Tris (pH 7.4) at 25° C followed by the addition of 10  $\mu\text{M}$  TPEN.

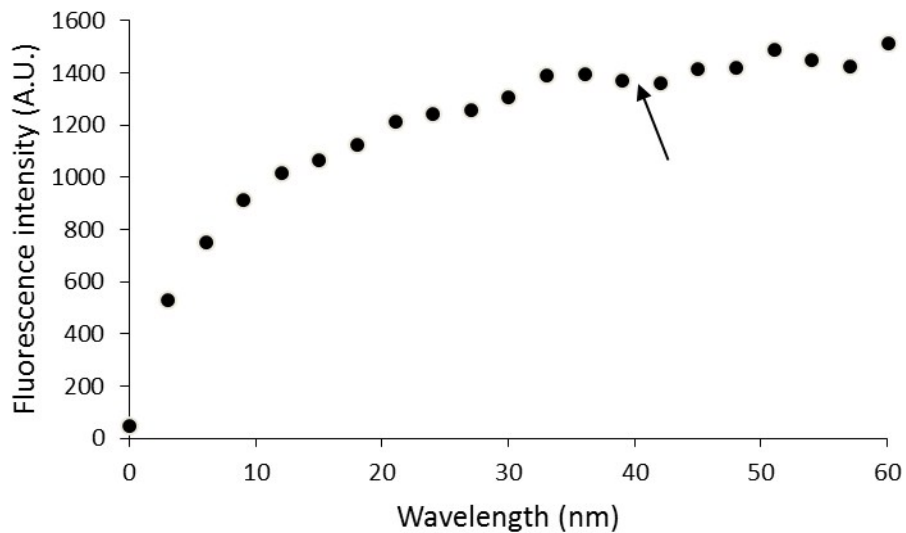


**Figure S3.** Background fluorescence of extracellular medium (DPBS), and  $10^7$  LLC-PK<sub>1</sub> cells suspended in DPBS at 25° C.

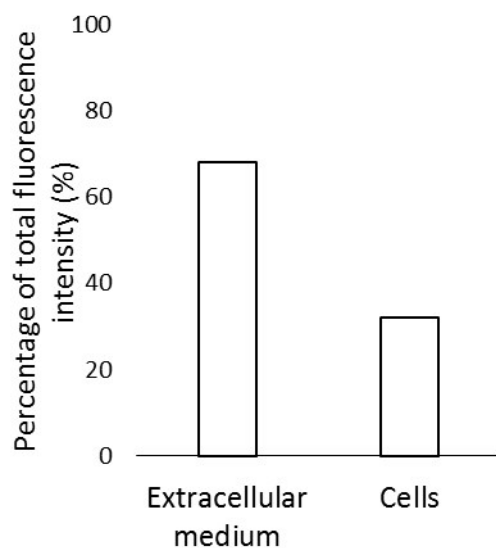


**Figure S4.** Reaction of TPEN with the extracellular medium separated from the reaction of  $10^7$  LLC-PK<sub>1</sub> cells with 10  $\mu$ M NPG<sub>E</sub> for an hour at 25° C. 10  $\mu$ M TPEN incubated for 5 min.

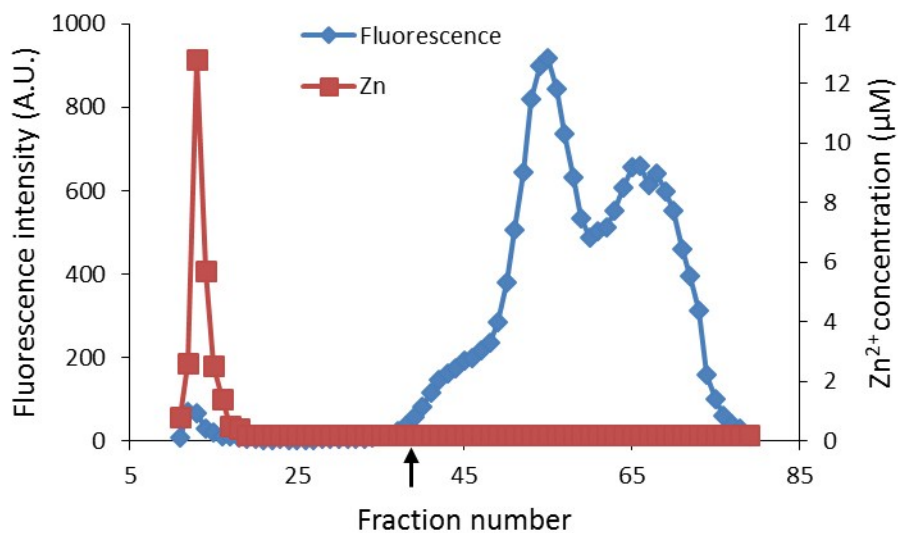
A.



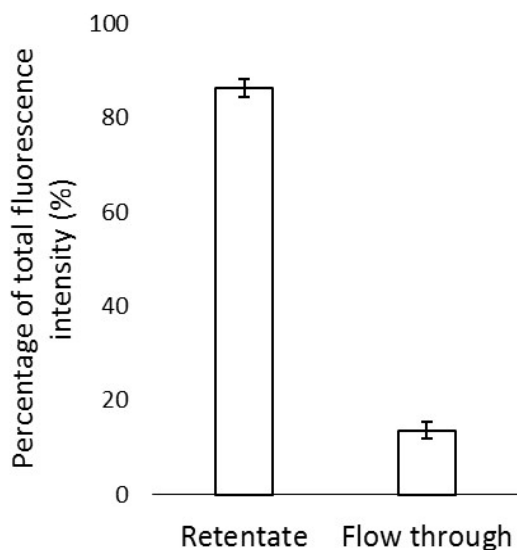
B.



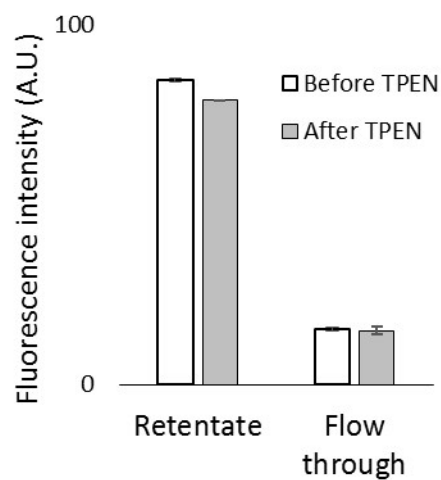
**Figure S5.** Reaction of CCRF-CEM cells and NPG<sub>E</sub>. (A) Reaction of  $2 \times 10^7$  CCRF-CEM cells suspended in DPBS at 25° C and 10  $\mu$ M NPG<sub>E</sub> for about 40 min followed by the addition of 10  $\mu$ M TPEN for another 20 min (arrow). (B) After one hour, the final reaction mixture was centrifuged to separate extracellular medium and cell pellet. Cell pellet was subsequently resuspended in 1 mL DPBS.



**Figure S6.** Reaction of proteome ( $10 \mu\text{M Zn}^{2+}$ ) in  $20 \text{ mM Tris}$  ( $\text{pH } 7.4$ ) and  $10 \mu\text{M NPG}_A$  for  $15 \text{ min}$  at  $25^\circ \text{ C}$  followed by Sephadex G-75 filtration of the final reaction mixture. The eluted fractions were analyzed for both fluorescence and zinc. Arrow shows total volume of the column.



**Figure S7.**  $2.5 \times 10^8 \text{ LLC-PK}_1$  cells suspended in DPBS were reacted with  $10 \mu\text{M NPG}_E$  for an hour in the dark. The cells were then washed three times to remove the extracellular NPG and resuspended in MilliQ water. Following sonication and centrifugation, the cell lysate was filtered using the Centricon filtration system and a  $3\text{kDa}$  cut-off filter to separate high molecular weight (retentate) and low molecular weight (flow through) components.



**Figure S8.** Separation of the reaction mixture of proteome and 10  $\mu\text{M}$  NPG<sub>E</sub> by Centricon filtration followed by the addition of 10  $\mu\text{M}$  TPEN for 5 min to both retentate and flow through fractions.