

**Electronic Supplementary Information (ESI)**

**Luminescent ruthenium probe for the determination of acetyl phosphate in complex biological matrices**

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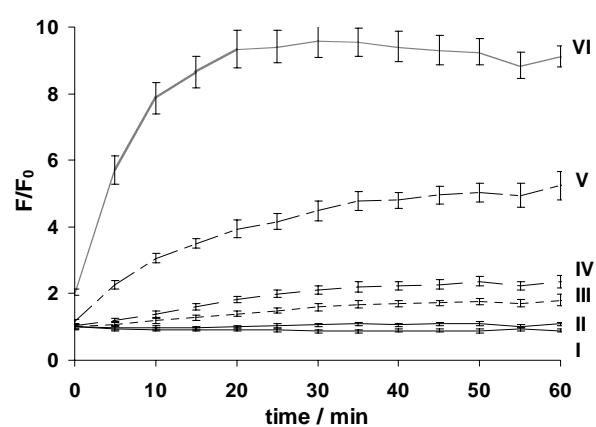
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## 1. Study of the influence of $Zn^{2+}$ -concentration on luminescence intensity

The determination of AcP was done as described in the main text. The AcP and Pi concentration are constant at 1 mmol/L. The concentration of  $ZnCl_2$  was varied from 50  $\mu\text{mol/L}$  to 5 mmol/L.

**Fig. S1** Luminescence of RuPDO-Zn in 40 mmol/L HEPES buffer of pH 7.4 in presence of 1 mmol/L Pi (RuPDO: 50  $\mu\text{mol/L}$ ; AcP: 1 mmol/L). The solid line (I) represents the sample without  $Zn^{2+}$ .  $Zn^{2+}$ -concentrations: II = 50  $\mu\text{mol/L}$ ; III = 250  $\mu\text{mol/L}$ ; IV = 500  $\mu\text{mol/L}$ ; V = 2500  $\mu\text{mol/L}$ ; VI = 5000  $\mu\text{mol/L}$ .

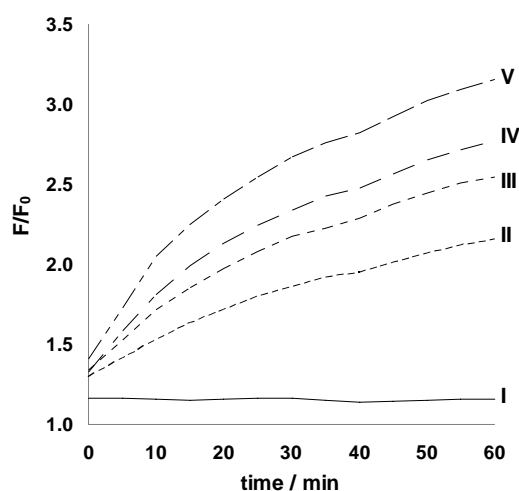


## 2. Testing of RuPDO in different complex biological matrices

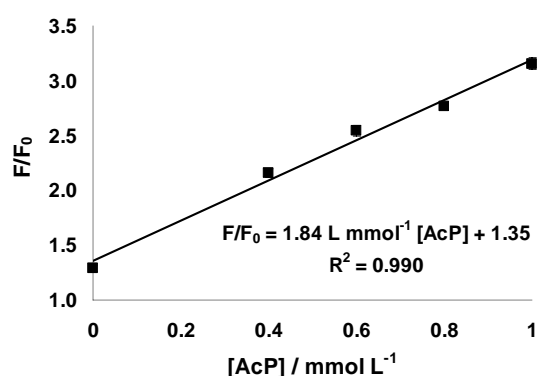
### 2.1 Testing in *E.Coli* Lysogeny broth (LB) medium

The determination of AcP was done as described in the main text, except that HEPES buffer was substituted by *E.Coli* Lysogeny broth medium. It is obvious from Figures S2 and S3 that AcP determination was successfully conducted in LB medium.

**Fig. S2** Luminescence of RuPDO-Zn in LB medium after spiking with AcP. Solid line (I) represents unspiked medium. Dashed lines (II to V) represent spiked samples of broth media. AcP concentration is increasing from 0.4 mmol/L (II) to 1 mmol/L (V). (n = 4).



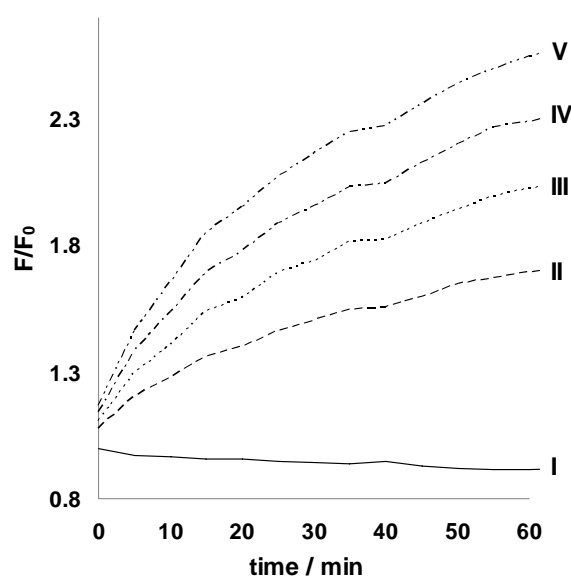
**Fig. S3** Calibration plot of RuPDO-Zn in LB medium after spiking with AcP. AcP concentration is increasing from 0.4 mmol/L to 1 mmol/L (n = 4).



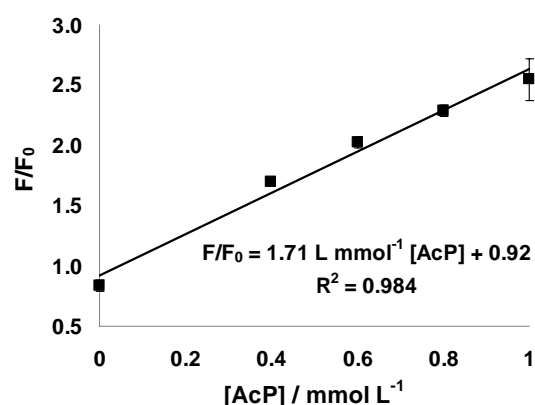
## 2.2 Testing in LB medium containing *E. Coli*

Bacteria were grown at 37 °C in EB medium to OD 0.5-1. 100 µL of the solution containing *E. Coli* were transferred into an Eppendorf Cup and filled up to 1 mL with LB medium. The determination of AcP was done as described in the main text, except that HEPES buffer was substituted by LB medium.

**Fig. S4** Luminescence of RuPDO-Zn in LB medium containing *E. Coli* after spiking with AcP. Solid line (I) represents unspiked medium with *E. Coli*. Dashed lines (II to V) represent spiked samples of broth media. AcP concentration is increasing from 0.4 mmol/L (II) to 1 mmol/L (V). (n = 4).



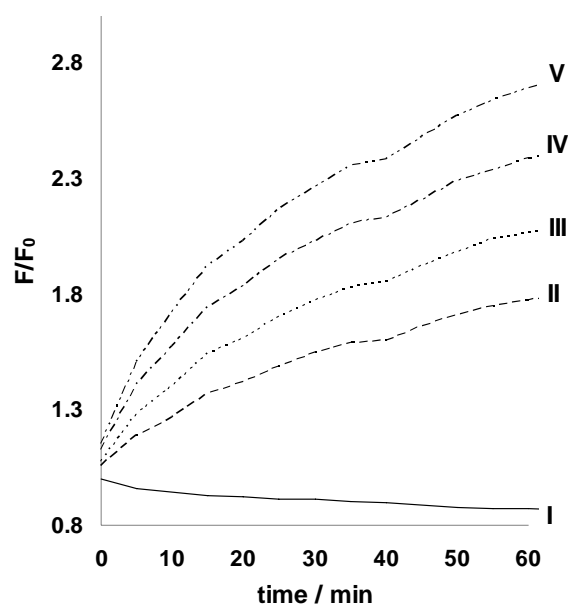
**Fig. S5** Calibration plot of RuPDO-Zn in LB medium containing sonicated *E. Coli* after spiking with AcP. AcP concentration is increasing from 0.4 mmol/L to 1 mmol/L (n = 4).



### 2.3 Testing in LB medium containing sonicated *E. Coli*

Bacteria were grown at 37 °C in EB medium to OD 0.5-1. 100 µL of the solution containing *E. Coli* were transferred into an Eppendorf Cup and filled up to 1 mL with LB medium. This solution was then sonicated for 10 min to lyse the bacteria. The determination of AcP was done as described in the main text, except that HEPES buffer was substituted by LB medium.

**Fig. S6** Luminescence of RuPDO-Zn in LB medium containing sonicated *E. Coli* after spiking with AcP. Solid line (I) represents unspiked medium. Dashed lines (II to V) represent spiked samples of broth media containing sonicated *E. Coli*. AcP concentration is increasing from 0.4 mmol/L (II) to 1 mmol/L (V). (n = 4).



**Fig. S7** Calibration plot of RuPDO-Zn in LB medium containing *E.Coli* after spiking with AcP. AcP concentration is increasing from 0.4 mmol/L to 1 mmol/L (n = 4).

