Electronic Supplementary Information for

A Highly Selective Phosphorescence Probe for Histidine in Living Bodies

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Figure S1. $^1$H NMR of [Ru(bpy)$_2$(phen-DPA)]($\text{PF}_6$)$_2$ (CD$_3$CN, 400MHz).

Figure S2. $^{13}$C NMR of [Ru(bpy)$_2$(phen-DPA)]($\text{PF}_6$)$_2$ (CD$_3$CN, 100MHz).
Figure S3. ESI-MS of [Ru(bpy)$_2$(phen-DPA)](PF$_6$)$_2$.

Figure S4. ESI-MS of Ru-Ni.
Figure S5. ESI-MS of the product of Ru-Ni reacted with Histidine.
Table S1. Photophysical parameters of the Ru complexes\textsuperscript{[a]}.  

<table>
<thead>
<tr>
<th>complex</th>
<th>$\lambda_{\text{ex,max}}$ (nm)</th>
<th>$\varepsilon_{450}$ (cm$^{-1}$M$^{-1}$)</th>
<th>$\lambda_{\text{em,max}}$ (nm)</th>
<th>$\phi$ (%)</th>
<th>$\tau$ (ns)$^{[b]}$</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="PF$_6$">Ru(bpy)$_2$(phen-DPA)</a>$_2$</td>
<td>450</td>
<td>$1.64 \times 10^4$</td>
<td>603</td>
<td>4.17</td>
<td>683</td>
</tr>
<tr>
<td>Ru-Ni</td>
<td>450</td>
<td>$1.77 \times 10^4$</td>
<td>603</td>
<td>0.35</td>
<td>655</td>
</tr>
</tbody>
</table>

\textsuperscript{[a]} All data were obtained in EtOH/HEPES buffer (50 mM, pH 7.2, 2 : 3, v/v). \textsuperscript{[b]} Phosphorescence lifetime, measured with the phosphorescence method.
Figure S6. UV/Vis absorption spectra of the Ru complexes (30 μM) in EtOH/HEPES buffer (50 mM, pH 7.2, 2 : 3, v/v). [Ru(bpy)₂(phen-DPA)](PF₆)₂: black line; Ru-Ni: red line
Figure S7. Decay traces of the Ru(II) complexes solutions. (A) [Ru(bpy)$_2$(phen-DPA)][PF$_6$]$_2$; (B) Ru-Ni
Figure S8. (A) Emission spectra of \([\text{Ru(bpy)}_2(\text{phen-DPA})](\text{PF}_6)_2\) (10 μM) in the presence of different concentrations of Ni\(^{2+}\) in EtOH/HEPES buffer (50 mM, pH 7.2, 2 : 3, v/v) (Ni\(^{2+}\) concentrations: 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10 and 12 μM). (B) The change in luminescence intensity of \([\text{Ru(bpy)}_2(\text{phen-DPA})](\text{PF}_6)_2\) at 603 nm in the presence of different concentrations of Ni\(^{2+}\) (0-20 μM). Excitation wavelength: 450 nm.
Figure S9. Viabilities of the HeLa cells after incubated with different concentrations of Ru-Ni for 3 h.