Supplementary Information

Development of dansyl based copper (II) complex to detect hydrogen sulfide in hypoxia

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Fig. S1 Biological pathway for hydrogen production under hypoxia and normoxia

Fig. S2 $^1$H NMR spectrum of CD in CDCl$_3$
**Fig. S3** $^{13}$C NMR spectrum of CD in CDCl$_3$.

**Fig. S4** HRMS spectrum of CD

Exact-MS: 428.333 (M+Na)
Fig. S5 HRMS spectrum of Cu-CD

Fig. S6 UV absorption spectrum of compound CD (25 μM) in PBS buffer (10% DMSO).
Fig. S7 Fluorescence Emission changes of Cu-CD (25 µM) in the presence of H₂S (0-6 µM)

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y = 2E+07x + 8E+07
R² = 0.9752
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Fig. S8 Fluorescence intensity changes of Cu-CD (25 µM) upon addition of Cyanide, Histidine and Pyrophosphate (each analyte~200 µM) at 37 °C in PBS buffer for 45 min.
Fig. S9 Immunofluorescence imaging of HIF-1α expression under normoxia or hypoxia (1 h, 4 h, and 8 h) using HeLa cells. For acquiring immune-fluorescence images in normoxia or hypoxia condition, HeLa cells were incubated for 8 h in normal condition or introduced into the hypoxia incubator chamber for 1, 4 or 8 h. The fluorescence signals of the fluorescent probe and HIF-1α were merge with Lyso-Tracker deep red. Scale bars = 100 μm.
**Fig. S10** Western blotting analysis of HIF-1α (a) CSE protein expression (b) under normoxia and hypoxia (1 h, 4 h, and 8 h) using HeLa cells and relative intensity normalized to the expression of GAPDH and relative ratio of the proteins was quantified using ImageJ software. *P < .05; **P < .001

**Table 1:** Fluorescence quantum yield of Cu-CD and Cu-CD in the presence of H$_2$S

| Cu-CD + H$_2$S | 0.52 |
| Cu-CD         | 0.04 |