Electronic Supplementary Material (ESI) for Analyst.
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Paper strip colorimetry for putrescine and spermidine detection using hybrid organic-inorganic perovskite with Eu^{3+} complex

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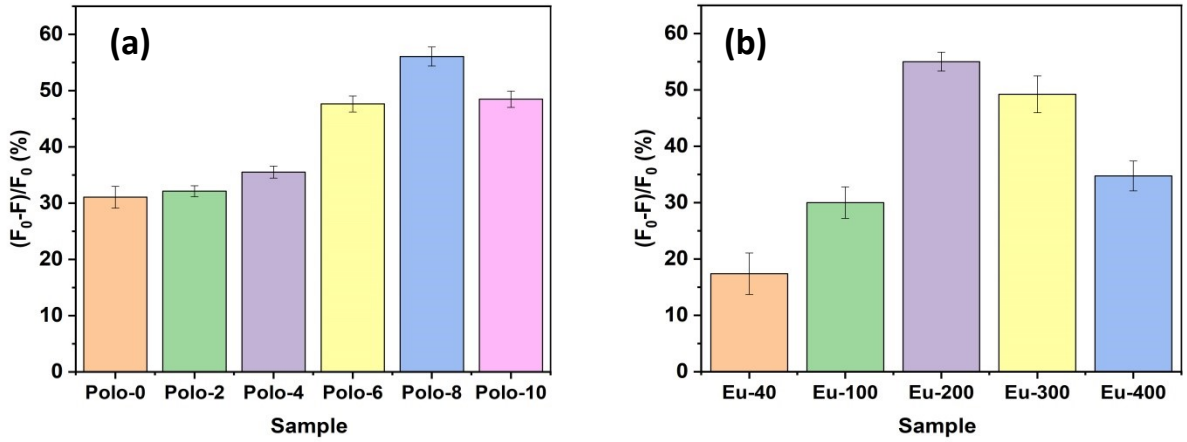


Figure S1: The influence of (a) poloxamer-188 on the quenching efficiency of the OPI-EuDPA mixture by 50 μM PUT/ SPD; (b) in the various ratio of EuDPA and OPI solution.

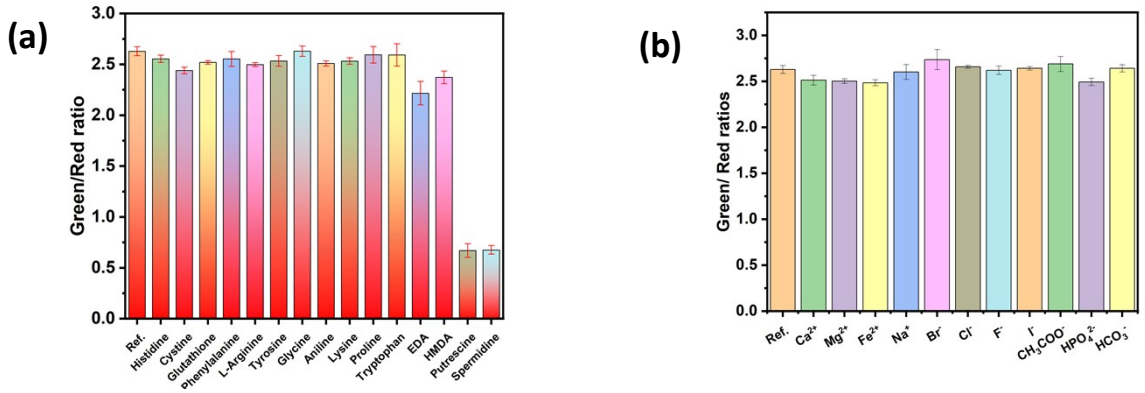
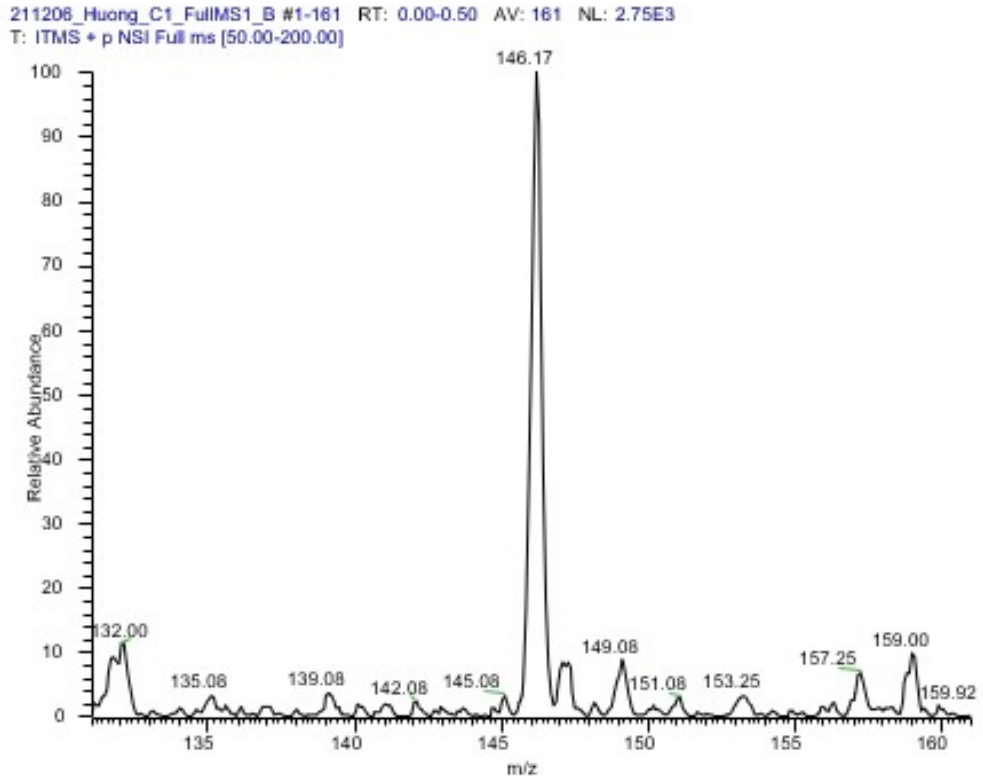


Figure S2: A study on available selectivity (a) and (b) interferences (b) of the proposed sensor exhibited high selectivity for putrescine and spermidine at a concentration of 50 µg/mL.

MS analysis: Mass spectrometry analyses were conducted utilizing a Thermo Fisher Scientific LCQ Fleet linear ion trap mass spectrometer (San Jose, CA, USA). The ion injection time was set to a maximum of 50 ms with 10 microscans per spectrum. Thermo Fisher Scientific Xcalibur 4.1 software was utilized for the collection and analysis of MS data. Tandem MS employing collision-induced dissociation (CID) was employed for analyte classification. Putrescine and spermidine in human serum were identified using 0.1% formic acid in water as the spray solvent. Mass spectral analysis were conducted within the m/z range of 50 to 200.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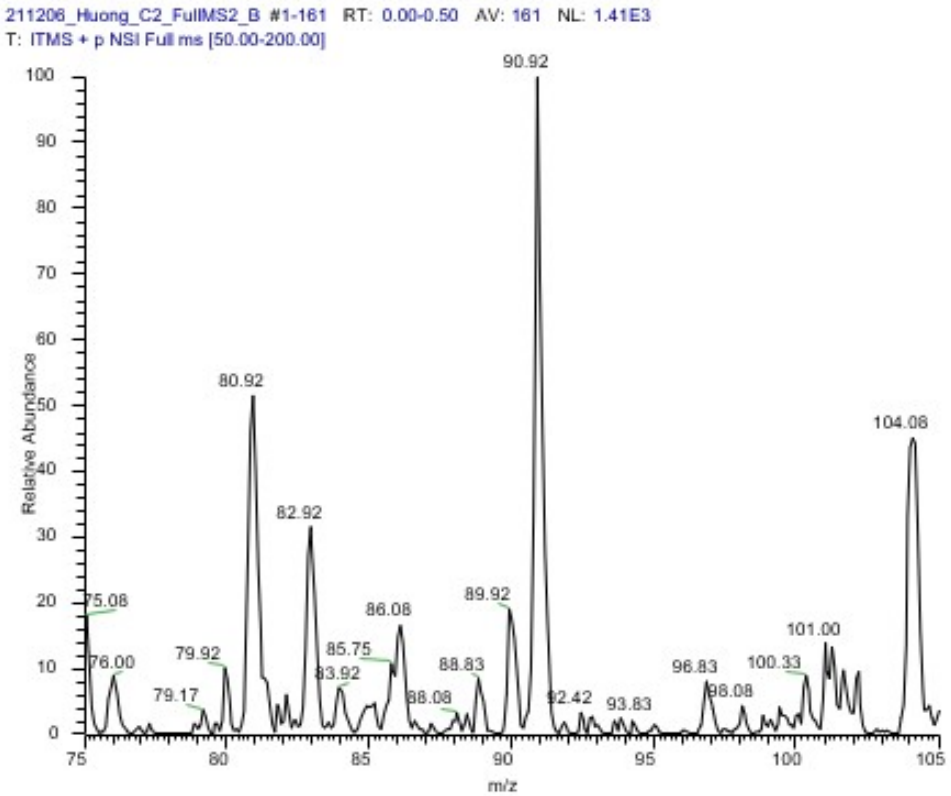
T: ITMS + p NSI Full ms [50.00-200.00]
Relative Abundance
m/z
146.17
132.00
135.08
139.08
142.08
145.08
149.08
151.08
153.25
157.25
159.00
159.92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T: ITMS + p NSI Full ms [50.00-200.00]
Relative Abundance
m/z
90.92
80.92
104.08
82.92
75.08
86.08
89.92
101.00
76.00
79.92
85.75
83.92
88.83
96.83
100.33
79.17
88.08
92.42
93.83
98.08

Figure S3: Typical MS spectra obtained from the serum samples for SPD (m/z 146) and PUT (m/z 90).

Table S1: Determination of PUT and SPD in serum samples using MS			
	Spiked (μM)	Putrescine (μM)	Spermidine (μM)
Serum sample# 1	1.50	1.70 ± 0.07	1.77 ± 0.24
Serum sample#2	1.50	1.65 ± 0.06	1.84 ± 0.16