

A Multichannel Fluorescent Array Sensor for Discrimination of Different Types of Drug-Induced Kidney Injury

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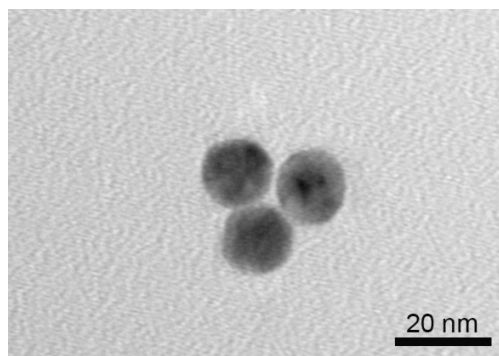


Figure S1. TEM image of AuNPs.

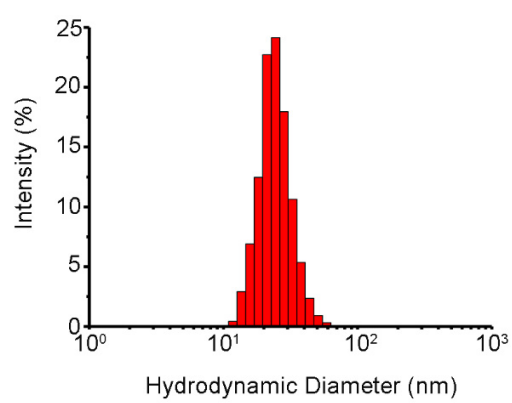


Figure S2. Size characterization of AuNPs.

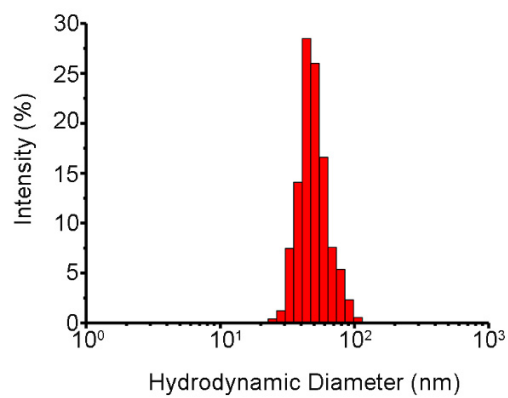


Figure S3. Size characterization of AuNPs-PEI/FLPs nanosensor.

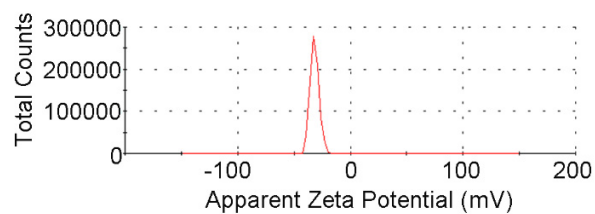


Figure S4. Zeta potential characterization of AuNPs.

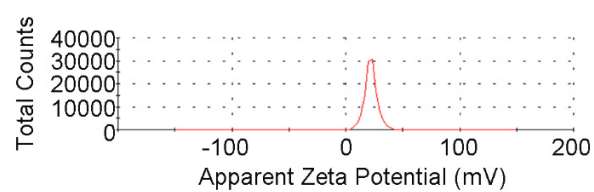


Figure S5. Zeta potential characterization of AuNPs-PEI.

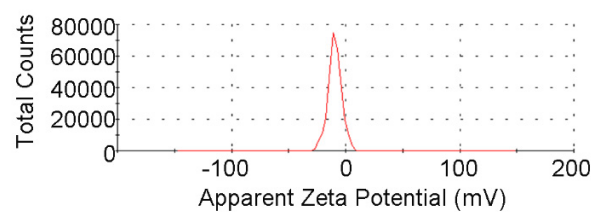


Figure S6. Zeta potential characterization of AuNPs-PEI/FLPs nanosensor.

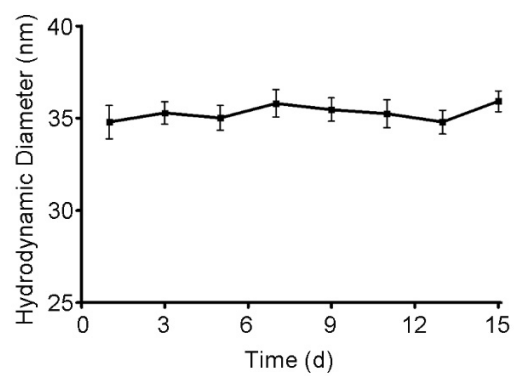


Figure S7. Hydrodynamic diameter of AuNPs-PEI during 2 weeks.

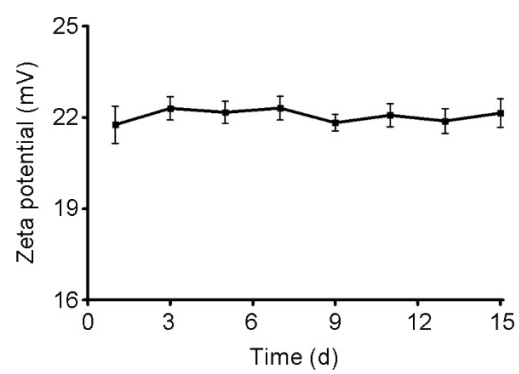


Figure S8. Zeta potential of AuNPs-PEI during 2 weeks.

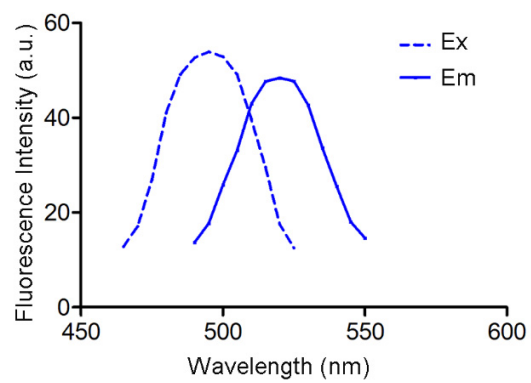


Figure S9. Excitation and emission fluorescence spectra of BSA-FITC.

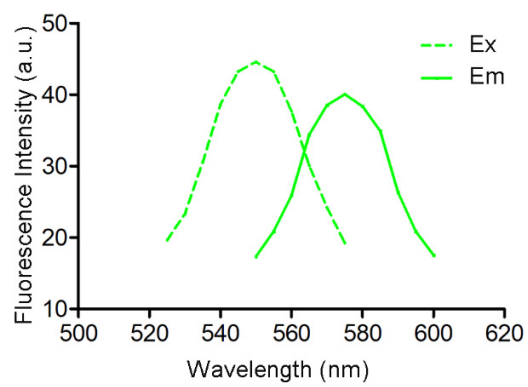


Figure S10. Excitation and emission fluorescence spectra of PNA-RhB.

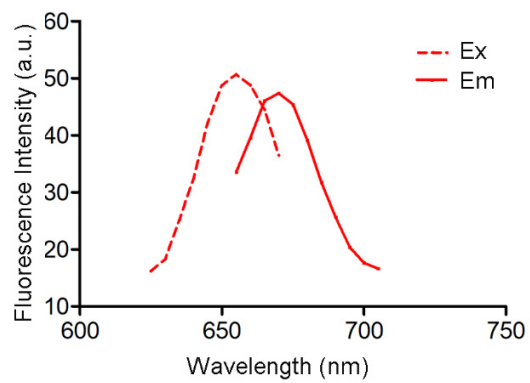


Figure S11. Excitation and emission fluorescence spectra of β -Lac-Cy5.

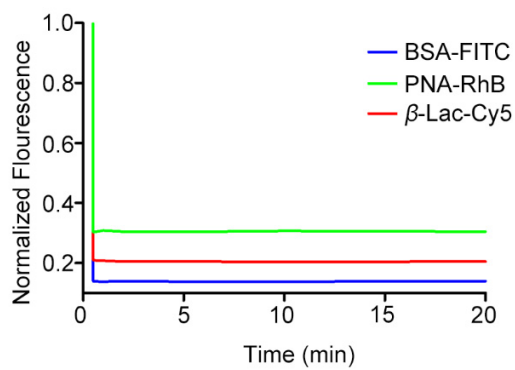


Figure S12. Normalized fluorescence intensity of FLPs incubation with AuNPs-PEI for different times.

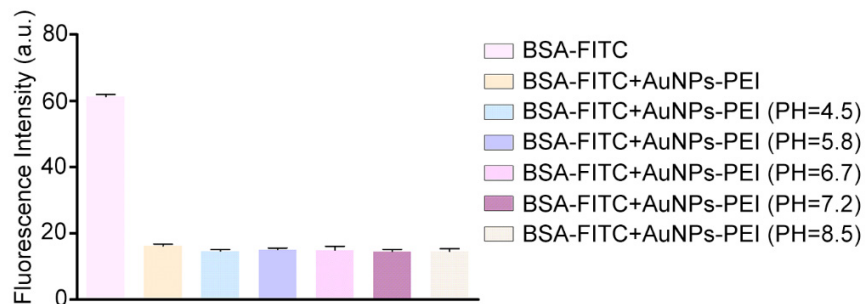


Figure S13. Effects of pH (from 4.5 to 8.5) on BSA–FITC and AuNPs–PEI.

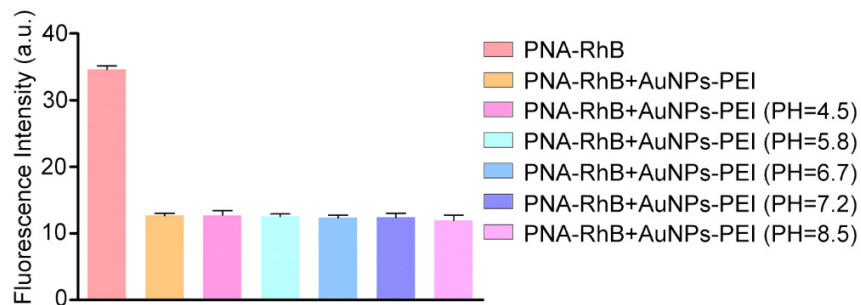


Figure S14. Effects of pH (from 4.5 to 8.5) on PNA–RhB and AuNPs–PEI.

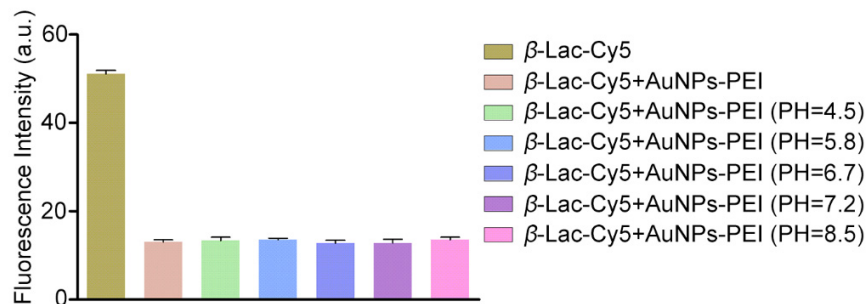


Figure S15. Effects of pH (from 4.5 to 8.5) on β -Lac-Cy5 and AuNPs-PEI.

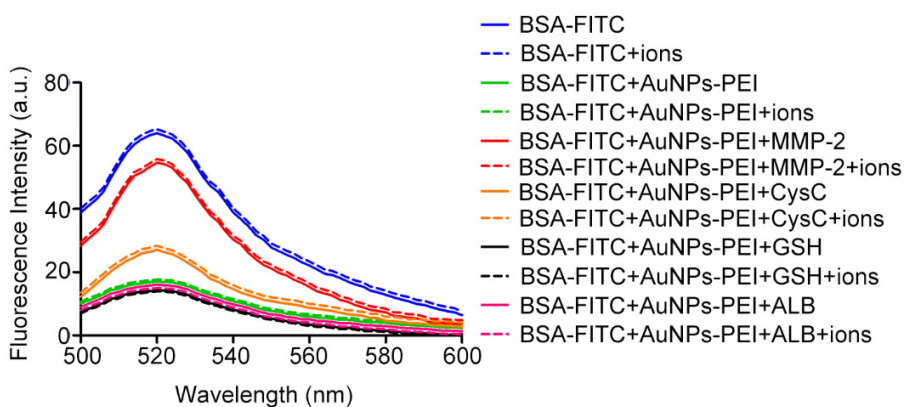


Figure S16. Effects of inorganic ions on BSA-FITC and AuNPs-PEI. MMP-2: matrix metalloproteinase-2.

CysC: Cystatin C. GSH: glutathione. ALB: albumin.

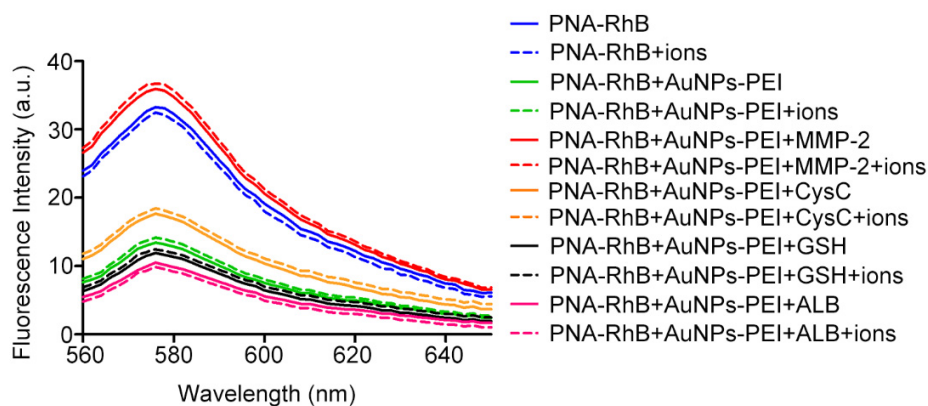


Figure S17. Effects of inorganic ions on PNA–RhB and AuNPs–PEI. MMP–2: matrix metalloproteinase–2. CysC: Cystatin C. GSH: glutathione. ALB: albumin.

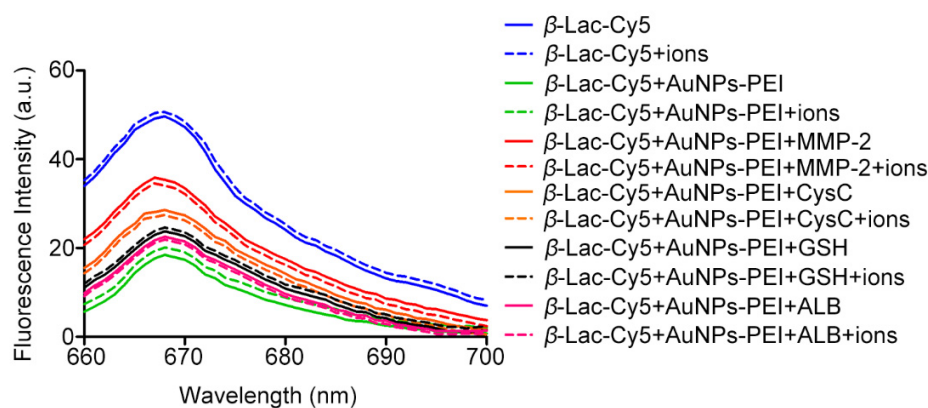


Figure S18. Effects of inorganic ions on β –Lac–Cy5 and AuNPs–PEI. MMP–2: matrix metalloproteinase–2. CysC: Cystatin C. GSH: glutathione. ALB: albumin.

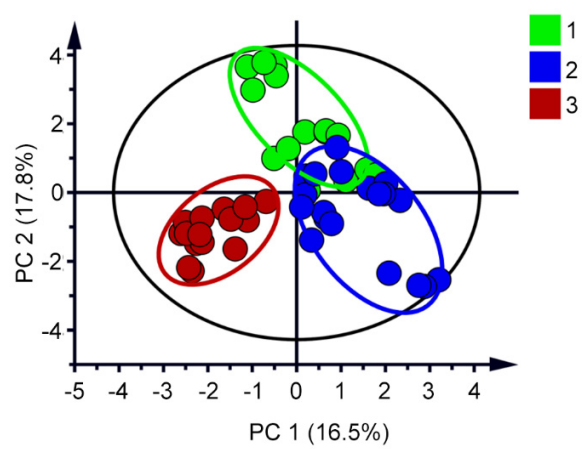


Figure S19. Two dimensional PCA score plot for discrimination and evaluation the different types of DIKI.

Table S1. Binding parameters for AuNPs–PEI and FLPs as determined by the fitting of the fluorescence titration curves

| Fluorophore | Binding constant (K_a), (M^{-1}) | R^2 |
|------------------|--|-------|
| BSA–FITC | 1.41×10^8 | 0.999 |
| PNA–RhB | 2.68×10^6 | 0.993 |
| β –Lac–Cy5 | 7.43×10^7 | 0.998 |

Table S2. The fluorescence intensity of three FLPs in AGs-induced kidney injury (n=5).

| Drug name | Number | BSA-FITC | PNA-RhB | β -Lac-Cy5 |
|------------|--------|----------|---------|------------------|
| Gentamicin | 0-1 | 42.29 | 29.36 | 26.65 |
| | 0-2 | 40.91 | 30.86 | 28.22 |
| | 0-3 | 43.29 | 29.58 | 30.45 |
| | 0-4 | 43.92 | 29.52 | 25.24 |
| | 0-5 | 48.14 | 31.16 | 22.75 |
| | 0-6 | 40.91 | 32.74 | 32.11 |
| | 0-7 | 46.42 | 30.00 | 25.45 |
| | 1-1 | 47.51 | 32.96 | 29.18 |
| | 1-2 | 47.40 | 32.02 | 32.60 |
| | 1-3 | 52.54 | 32.64 | 29.68 |
| | 1-4 | 56.70 | 35.51 | 29.88 |
| | 1-5 | 51.04 | 33.28 | 30.34 |
| | 3-1 | 39.53 | 29.30 | 33.44 |
| | 3-2 | 40.38 | 28.29 | 32.66 |
| | 3-3 | 44.10 | 29.42 | 32.25 |
| | 3-4 | 37.81 | 29.13 | 34.89 |
| | 3-5 | 41.24 | 29.04 | 32.68 |
| | 3-6 | 47.55 | 28.24 | 32.46 |
| | 5-1 | 31.62 | 24.18 | 32.57 |
| | 5-2 | 31.19 | 26.83 | 37.05 |
| | 5-3 | 27.06 | 26.01 | 34.68 |
| | 5-4 | 31.50 | 25.96 | 32.34 |
| | 5-5 | 32.30 | 26.38 | 33.94 |
| | 7-1 | 33.85 | 26.43 | 41.70 |
| | 7-2 | 40.59 | 25.57 | 39.71 |
| | 7-3 | 33.53 | 24.95 | 38.31 |
| | 7-4 | 32.62 | 24.20 | 41.98 |
| | 7-5 | 43.32 | 24.51 | 38.53 |
| | 7-6 | 43.91 | 29.12 | 39.61 |
| | 9-1 | 46.55 | 25.42 | 36.57 |
| | 9-2 | 43.85 | 23.60 | 36.28 |
| | 9-3 | 45.28 | 25.14 | 36.92 |
| | 9-4 | 45.23 | 24.72 | 36.59 |
| | 14-1 | 53.80 | 33.78 | 36.42 |
| | 14-2 | 58.52 | 33.47 | 38.50 |
| | 14-3 | 56.16 | 33.63 | 37.46 |
| | 14-4 | 55.16 | 33.46 | 36.23 |
| | 0-1 | 42.29 | 29.36 | 26.65 |
| | 0-2 | 40.91 | 30.86 | 28.22 |
| | 0-3 | 43.29 | 29.58 | 30.45 |
| | 0-4 | 43.92 | 29.52 | 25.24 |
| | 0-5 | 48.14 | 31.16 | 22.75 |
| | 0-6 | 40.91 | 32.74 | 32.11 |
| | 0-7 | 46.42 | 30.00 | 25.45 |
| | 1-1 | 48.48 | 28.60 | 34.31 |
| | 1-2 | 44.33 | 31.68 | 34.50 |

| | | | | |
|------------|------|-------|-------|-------|
| Neomycin | 1-3 | 43.29 | 32.07 | 37.08 |
| | 1-4 | 43.49 | 31.15 | 37.99 |
| | 3-1 | 32.59 | 21.93 | 32.38 |
| | 3-2 | 43.33 | 21.80 | 34.87 |
| | 3-3 | 37.57 | 21.86 | 35.16 |
| | 3-4 | 31.91 | 23.10 | 33.78 |
| | 3-5 | 33.72 | 23.02 | 36.68 |
| | 5-1 | 31.49 | 25.84 | 26.20 |
| | 5-2 | 32.50 | 26.22 | 23.33 |
| | 5-3 | 36.61 | 25.09 | 24.45 |
| | 5-4 | 36.88 | 25.50 | 21.17 |
| | 5-5 | 39.03 | 27.26 | 22.73 |
| | 7-1 | 41.48 | 26.71 | 27.20 |
| | 7-2 | 41.09 | 27.06 | 26.70 |
| | 7-3 | 40.02 | 28.52 | 27.20 |
| | 7-4 | 39.19 | 26.59 | 28.47 |
| | 7-5 | 37.41 | 27.03 | 26.43 |
| | 9-1 | 27.64 | 29.48 | 24.90 |
| | 9-2 | 27.94 | 28.60 | 25.72 |
| | 9-3 | 26.02 | 27.55 | 26.48 |
| | 9-4 | 27.73 | 25.76 | 27.59 |
| | 9-5 | 27.33 | 27.85 | 26.17 |
| | 14-1 | 42.58 | 27.54 | 40.09 |
| | 14-2 | 42.80 | 26.72 | 38.90 |
| | 14-3 | 42.58 | 27.23 | 39.50 |
| Tobramycin | 0-1 | 42.29 | 29.36 | 26.65 |
| | 0-2 | 42.19 | 25.79 | 26.22 |
| | 0-3 | 30.63 | 30.00 | 20.84 |
| | 0-4 | 40.91 | 30.86 | 28.22 |
| | 0-5 | 43.29 | 29.58 | 30.45 |
| | 0-6 | 43.92 | 29.52 | 25.24 |
| | 0-7 | 46.42 | 30.00 | 25.45 |
| | 0-8 | 36.70 | 25.95 | 29.56 |
| | 1-1 | 54.30 | 32.36 | 40.79 |
| | 1-2 | 55.54 | 29.41 | 37.88 |
| | 1-3 | 55.38 | 33.22 | 40.72 |
| | 1-4 | 55.18 | 31.24 | 37.42 |
| | 1-5 | 53.68 | 30.89 | 40.17 |
| | 3-1 | 36.42 | 33.11 | 41.33 |
| | 3-2 | 36.35 | 30.10 | 38.27 |
| | 3-3 | 36.97 | 29.13 | 38.78 |
| | 3-4 | 39.16 | 30.49 | 41.41 |
| | 3-5 | 34.32 | 32.33 | 41.23 |
| | 5-1 | 37.56 | 28.48 | 33.79 |
| | 5-2 | 33.42 | 27.70 | 34.46 |
| | 5-3 | 36.88 | 27.09 | 36.30 |
| | 5-4 | 38.01 | 26.75 | 34.32 |
| | 5-6 | 37.62 | 28.18 | 34.34 |
| | 7-1 | 38.59 | 33.23 | 35.99 |

| | | | |
|------|-------|-------|-------|
| 7-2 | 37.46 | 35.36 | 38.20 |
| 7-3 | 35.75 | 32.50 | 33.68 |
| 7-4 | 37.28 | 33.16 | 32.58 |
| 7-5 | 37.43 | 31.81 | 35.38 |
| 9-1 | 48.37 | 33.05 | 43.09 |
| 9-2 | 50.79 | 31.76 | 44.89 |
| 9-3 | 45.28 | 33.02 | 45.03 |
| 9-4 | 51.48 | 34.14 | 43.61 |
| 9-5 | 40.82 | 34.70 | 40.33 |
| 14-1 | 32.72 | 24.22 | 38.23 |
| 14-2 | 31.65 | 25.06 | 37.12 |
| 14-3 | 32.19 | 24.64 | 37.67 |
| 14-4 | 30.90 | 24.67 | 38.09 |

Table S3. The fluorescence intensity of three FLPs in PPIs-induced kidney injury (n=5).

| Drug name | Number | BSA-FITC | PNA-RhB | β -Lac-Cy5 |
|------------|--------|----------|---------|------------------|
| Omeprazole | 0-1 | 42.29 | 29.36 | 26.65 |
| | 0-2 | 40.91 | 30.86 | 28.22 |
| | 0-3 | 43.29 | 29.58 | 30.45 |
| | 0-4 | 43.92 | 29.52 | 25.24 |
| | 0-5 | 48.14 | 31.16 | 22.75 |
| | 0-6 | 40.91 | 32.74 | 32.11 |
| | 0-7 | 46.42 | 30.00 | 25.45 |
| | 1-1 | 64.74 | 29.20 | 35.34 |
| | 1-2 | 65.64 | 28.56 | 36.62 |
| | 1-3 | 66.39 | 29.12 | 39.08 |
| | 1-4 | 66.89 | 29.03 | 39.88 |
| | 3-1 | 39.13 | 26.29 | 35.89 |
| | 3-2 | 44.87 | 26.01 | 44.96 |
| | 3-3 | 44.43 | 26.21 | 41.39 |
| | 5-1 | 39.64 | 26.75 | 42.98 |
| | 5-2 | 40.69 | 25.89 | 37.58 |
| | 5-3 | 44.31 | 26.42 | 41.36 |
| | 5-4 | 43.33 | 26.16 | 38.84 |
| | 5-5 | 42.99 | 26.02 | 42.67 |
| | 7-1 | 31.28 | 29.24 | 30.15 |
| | 7-2 | 30.41 | 29.64 | 32.68 |
| | 7-3 | 29.15 | 30.04 | 31.48 |
| | 7-4 | 31.01 | 28.54 | 31.93 |
| | 7-5 | 42.19 | 25.79 | 26.22 |
| | 7-6 | 36.70 | 25.95 | 29.56 |
| | 9-1 | 51.09 | 29.86 | 40.60 |
| | 9-2 | 54.07 | 26.01 | 40.75 |
| | 9-3 | 56.72 | 28.58 | 40.98 |
| | 9-4 | 55.19 | 27.50 | 39.54 |
| | 14-1 | 48.93 | 30.29 | 40.10 |
| | 14-2 | 48.21 | 32.71 | 38.94 |
| | 14-3 | 49.10 | 31.70 | 39.41 |
| | 14-4 | 56.28 | 31.70 | 32.86 |
| | 0-1 | 42.29 | 29.36 | 26.65 |
| | 0-2 | 48.48 | 28.60 | 34.31 |
| | 0-3 | 40.91 | 30.86 | 28.22 |
| | 0-4 | 43.29 | 29.58 | 30.45 |
| | 0-5 | 43.92 | 29.52 | 25.24 |
| | 0-6 | 48.14 | 31.16 | 22.75 |
| | 0-7 | 46.42 | 30.00 | 25.45 |
| | 1-1 | 39.65 | 32.17 | 35.27 |
| | 1-2 | 38.72 | 31.43 | 36.83 |
| | 1-3 | 41.04 | 30.86 | 39.57 |
| | 1-4 | 46.28 | 28.33 | 36.49 |
| | 1-5 | 40.05 | 30.17 | 36.72 |
| | 1-6 | 39.77 | 30.85 | 35.07 |

| | | | | |
|--------------|------|-------|-------|-------|
| Lansoprazole | 3-1 | 39.19 | 30.02 | 39.37 |
| | 3-2 | 39.65 | 31.90 | 40.73 |
| | 3-3 | 41.27 | 28.57 | 39.28 |
| | 3-4 | 39.57 | 28.95 | 36.49 |
| | 3-5 | 38.68 | 31.06 | 37.35 |
| | 3-6 | 39.98 | 32.02 | 38.71 |
| | 5-1 | 32.84 | 28.07 | 40.31 |
| | 5-2 | 36.02 | 28.12 | 42.35 |
| | 5-3 | 35.36 | 28.79 | 39.75 |
| | 5-4 | 36.19 | 28.19 | 42.51 |
| | 5-5 | 36.14 | 28.41 | 40.39 |
| | 7-1 | 32.14 | 25.76 | 33.60 |
| | 7-2 | 32.23 | 27.89 | 33.52 |
| | 7-3 | 33.88 | 27.56 | 39.44 |
| | 7-4 | 33.98 | 26.55 | 38.38 |
| | 9-1 | 36.89 | 29.16 | 39.00 |
| | 9-2 | 36.19 | 29.58 | 40.11 |
| | 9-3 | 36.12 | 29.09 | 38.48 |
| | 9-4 | 36.51 | 29.31 | 38.63 |
| | 14-1 | 46.81 | 32.95 | 35.66 |
| | 14-2 | 47.67 | 31.59 | 33.52 |
| | 14-3 | 46.99 | 32.56 | 34.88 |
| | 14-4 | 40.91 | 32.74 | 32.11 |
| Pantoprazole | 0-1 | 43.84 | 31.07 | 27.51 |
| | 0-2 | 42.10 | 32.42 | 27.88 |
| | 0-3 | 43.49 | 31.25 | 29.92 |
| | 0-4 | 43.61 | 30.49 | 23.88 |
| | 0-5 | 50.15 | 32.62 | 24.43 |
| | 0-6 | 46.99 | 31.39 | 27.30 |
| | 1-1 | 58.56 | 30.03 | 32.67 |
| | 1-2 | 56.06 | 31.76 | 32.01 |
| | 1-3 | 60.57 | 32.36 | 32.22 |
| | 1-4 | 53.99 | 34.34 | 30.48 |
| | 1-5 | 57.59 | 32.95 | 35.28 |
| | 3-1 | 46.20 | 28.14 | 30.41 |
| | 3-2 | 47.79 | 27.73 | 31.18 |
| | 3-3 | 47.49 | 28.16 | 33.54 |
| | 3-4 | 47.86 | 27.85 | 33.17 |
| | 3-5 | 45.06 | 28.54 | 30.07 |
| | 5-1 | 54.78 | 29.13 | 35.42 |
| | 5-2 | 54.47 | 30.27 | 32.05 |
| | 5-3 | 41.39 | 32.03 | 35.60 |
| | 5-4 | 54.50 | 29.42 | 34.74 |
| | 5-5 | 41.60 | 33.16 | 32.58 |
| | 7-1 | 39.91 | 31.99 | 36.97 |
| | 7-2 | 39.75 | 28.92 | 36.01 |
| | 7-3 | 38.62 | 31.24 | 36.23 |
| | 7-4 | 38.26 | 31.38 | 37.28 |
| | 9-1 | 38.54 | 27.66 | 32.94 |

| | | | | |
|--------------|------|-------|-------|-------|
| | 9-2 | 37.94 | 28.97 | 30.79 |
| | 9-3 | 37.48 | 29.85 | 29.22 |
| | 9-4 | 42.34 | 26.69 | 27.98 |
| | 9-5 | 37.07 | 28.01 | 30.11 |
| | 14-1 | 30.00 | 23.60 | 33.95 |
| | 14-2 | 30.47 | 24.46 | 31.06 |
| | 14-3 | 30.14 | 25.53 | 32.09 |
| | 14-4 | 23.46 | 27.55 | 31.07 |
| Esomeprazole | 0-1 | 41.59 | 30.62 | 24.25 |
| | 0-2 | 40.00 | 29.09 | 30.90 |
| | 0-3 | 43.82 | 30.04 | 29.70 |
| | 0-4 | 44.07 | 31.11 | 28.23 |
| | 0-5 | 46.32 | 29.41 | 22.40 |
| | 0-6 | 40.24 | 31.72 | 30.92 |
| | 0-7 | 48.06 | 30.07 | 24.48 |
| | 1-1 | 55.50 | 35.13 | 34.14 |
| | 1-2 | 56.00 | 30.04 | 32.20 |
| | 1-3 | 59.16 | 35.05 | 34.82 |
| | 1-4 | 57.58 | 32.11 | 31.60 |
| | 1-5 | 60.28 | 34.99 | 33.19 |
| | 1-6 | 60.78 | 34.31 | 34.37 |
| | 3-1 | 65.15 | 32.41 | 37.14 |
| | 3-2 | 47.05 | 33.80 | 38.75 |
| | 3-3 | 60.97 | 34.08 | 29.92 |
| | 3-4 | 62.24 | 34.06 | 32.79 |
| | 3-5 | 48.56 | 33.91 | 39.47 |
| | 5-1 | 53.24 | 27.40 | 41.44 |
| | 5-2 | 55.94 | 25.02 | 41.63 |
| | 5-3 | 55.02 | 27.82 | 41.32 |
| | 5-4 | 55.05 | 25.16 | 41.89 |
| | 5-5 | 44.79 | 26.99 | 42.35 |
| | 7-1 | 35.35 | 33.80 | 42.47 |
| | 7-2 | 50.42 | 31.08 | 34.89 |
| | 7-3 | 48.47 | 30.04 | 36.99 |
| | 7-4 | 55.63 | 30.25 | 32.19 |
| | 7-5 | 51.02 | 33.48 | 26.01 |
| | 9-1 | 62.64 | 30.32 | 45.55 |
| | 9-2 | 70.78 | 33.88 | 43.28 |
| | 9-3 | 74.04 | 28.39 | 48.42 |
| | 9-4 | 72.38 | 29.37 | 47.47 |
| | 14-1 | 42.78 | 25.67 | 26.67 |
| | 14-2 | 36.86 | 25.33 | 31.74 |
| | 14-3 | 30.99 | 27.26 | 34.86 |

Table S4. The fluorescence intensity of three FLPs in NSAIDs-induced kidney injury (n=5).

| Drug name | Number | BSA-FITC | PNA-RhB | β -Lac-Cy5 |
|-----------|--------|----------|---------|------------------|
| Ibuprofen | 0-1 | 42.29 | 29.36 | 26.65 |
| | 0-2 | 40.91 | 30.86 | 28.22 |
| | 0-3 | 43.29 | 29.58 | 30.45 |
| | 0-4 | 43.92 | 29.52 | 25.24 |
| | 0-5 | 40.91 | 32.74 | 32.11 |
| | 0-6 | 46.42 | 30.00 | 25.45 |
| | 1-1 | 53.34 | 28.19 | 37.25 |
| | 1-2 | 56.44 | 27.63 | 36.17 |
| | 1-3 | 55.51 | 29.07 | 40.00 |
| | 1-4 | 54.53 | 28.63 | 38.22 |
| | 1-5 | 52.70 | 28.35 | 36.90 |
| | 1-6 | 54.50 | 28.37 | 37.71 |
| | 3-1 | 31.17 | 27.40 | 36.27 |
| | 3-2 | 28.07 | 30.48 | 33.33 |
| | 3-3 | 36.97 | 25.77 | 33.80 |
| | 3-4 | 34.58 | 26.97 | 37.73 |
| | 3-5 | 35.79 | 28.71 | 37.57 |
| | 3-6 | 29.12 | 26.25 | 38.29 |
| | 5-1 | 44.61 | 28.12 | 34.85 |
| | 5-2 | 38.09 | 26.17 | 32.95 |
| | 5-3 | 40.80 | 28.18 | 32.71 |
| | 5-4 | 35.11 | 27.95 | 34.01 |
| | 5-5 | 40.67 | 27.69 | 33.06 |
| | 7-1 | 53.18 | 32.77 | 40.75 |
| | 7-2 | 52.22 | 33.78 | 42.22 |
| | 7-3 | 56.31 | 32.43 | 43.47 |
| | 7-4 | 54.07 | 33.97 | 40.61 |
| | 7-5 | 57.10 | 34.10 | 40.25 |
| | 7-6 | 54.58 | 33.41 | 41.46 |
| | 9-1 | 36.51 | 23.11 | 36.04 |
| | 9-2 | 33.52 | 20.86 | 32.79 |
| | 9-3 | 28.90 | 22.38 | 34.16 |
| | 9-4 | 29.19 | 24.20 | 34.31 |
| | 9-5 | 32.03 | 22.64 | 34.33 |
| | 14-1 | 33.77 | 26.33 | 29.81 |
| | 14-2 | 31.24 | 24.39 | 28.97 |
| | 14-3 | 30.48 | 29.59 | 29.25 |
| | 14-4 | 31.83 | 26.77 | 29.34 |
| | 0-1 | 42.29 | 29.36 | 26.65 |
| | 0-2 | 40.91 | 30.86 | 28.22 |
| | 0-3 | 43.92 | 29.52 | 25.24 |
| | 0-4 | 48.14 | 31.16 | 22.75 |
| | 0-5 | 56.28 | 31.70 | 32.86 |
| | 0-6 | 46.42 | 30.00 | 25.45 |
| | 1-1 | 43.64 | 26.27 | 31.07 |
| | 1-2 | 42.47 | 29.57 | 32.36 |

| | | | | |
|------------|------|-------|-------|-------|
| Naproxen | 1-3 | 38.41 | 29.81 | 31.34 |
| | 1-4 | 42.22 | 29.74 | 30.51 |
| | 1-5 | 38.56 | 26.12 | 36.43 |
| | 1-6 | 40.09 | 27.40 | 34.67 |
| | 3-1 | 32.70 | 26.27 | 32.26 |
| | 3-3 | 31.46 | 25.18 | 30.13 |
| | 3-4 | 29.44 | 22.81 | 32.42 |
| | 3-5 | 32.89 | 26.12 | 33.37 |
| | 3-6 | 39.71 | 24.89 | 31.94 |
| | 5-1 | 46.94 | 32.69 | 44.44 |
| | 5-2 | 49.29 | 31.36 | 43.82 |
| | 5-3 | 40.65 | 34.41 | 39.99 |
| | 5-4 | 40.20 | 33.91 | 38.04 |
| | 7-1 | 51.86 | 31.63 | 40.12 |
| | 7-2 | 52.12 | 33.30 | 42.36 |
| | 7-3 | 41.26 | 32.09 | 44.94 |
| | 7-4 | 39.99 | 31.05 | 41.19 |
| | 7-5 | 52.56 | 27.40 | 40.07 |
| | 9-1 | 56.67 | 32.95 | 39.21 |
| | 9-2 | 57.52 | 32.46 | 39.32 |
| | 9-4 | 50.49 | 35.05 | 35.40 |
| | 9-5 | 58.17 | 30.21 | 35.14 |
| | 9-6 | 56.28 | 31.70 | 32.86 |
| | 14-1 | 66.26 | 34.87 | 49.57 |
| | 14-2 | 67.43 | 35.48 | 48.51 |
| | 14-3 | 66.84 | 35.18 | 49.04 |
| | 14-4 | 65.54 | 34.87 | 48.65 |
| Diclofenac | 0-1 | 42.29 | 29.36 | 26.65 |
| | 0-2 | 40.91 | 30.86 | 28.22 |
| | 0-3 | 43.29 | 29.58 | 30.45 |
| | 0-4 | 43.92 | 29.52 | 25.24 |
| | 0-5 | 48.14 | 31.16 | 22.75 |
| | 0-6 | 40.91 | 32.74 | 32.11 |
| | 0-7 | 46.42 | 30.00 | 25.45 |
| | 1-1 | 51.92 | 30.31 | 32.91 |
| | 1-2 | 48.85 | 31.42 | 32.24 |
| | 1-3 | 47.99 | 29.97 | 34.39 |
| | 1-4 | 48.66 | 33.17 | 39.99 |
| | 1-5 | 48.53 | 32.12 | 32.75 |
| | 1-6 | 51.55 | 32.98 | 35.64 |
| | 3-1 | 35.59 | 31.53 | 38.60 |
| | 3-2 | 37.06 | 29.35 | 35.57 |
| | 3-3 | 37.19 | 26.68 | 30.76 |
| | 3-4 | 37.20 | 28.31 | 37.76 |
| | 3-5 | 37.49 | 26.45 | 37.48 |
| | 3-6 | 30.01 | 29.92 | 33.75 |
| | 5-1 | 40.97 | 29.75 | 39.68 |
| | 5-2 | 40.31 | 25.61 | 37.10 |
| | 5-3 | 43.45 | 27.92 | 36.32 |

| | | | |
|------|-------|-------|-------|
| 5-4 | 41.58 | 27.76 | 37.70 |
| 7-1 | 54.40 | 29.96 | 39.03 |
| 7-2 | 55.93 | 28.60 | 37.35 |
| 7-3 | 53.50 | 28.74 | 35.15 |
| 7-4 | 55.98 | 26.34 | 36.28 |
| 7-5 | 54.95 | 28.41 | 36.95 |
| 9-1 | 32.18 | 23.63 | 36.13 |
| 9-2 | 33.07 | 23.09 | 37.93 |
| 9-3 | 31.70 | 25.01 | 35.07 |
| 9-4 | 32.86 | 26.28 | 33.29 |
| 9-5 | 31.55 | 24.95 | 33.30 |
| 14-1 | 42.19 | 25.79 | 26.22 |
| 14-2 | 36.41 | 27.90 | 23.53 |

Table S5. The VIP value of identification the three types of DIKI (3, 5, and 7 represent days of administration)

| Var ID (primary) | VIP |
|--------------------|---------|
| BSA-FITC-7 | 1.69164 |
| BSA-FITC-3 | 1.40387 |
| β -Lac-Cy5-5 | 1.38330 |
| BSA-FITC-5 | 1.31458 |
| β -Lac-Cy5-7 | 1.19527 |
| PNA-RhB-5 | 1.05385 |

Table S6. The training matrix of fluorescence response patterns of AuNPs–PEI/FLPs sensor against the three DIKI types (n=5).

| | Drug name | BSA–FITC–3 | BSA–FITC–5 | PNA–RhB–5 | β –Lac–Cy5–5 | BSA–FITC–7 | β –Lac–Cy5–7 |
|-----|--------------|------------|------------|-----------|--------------------|------------|--------------------|
| AGs | gentamicin | 39.5263 | 31.6187 | 24.1776 | 32.5692 | 33.8467 | 41.6963 |
| | gentamicin | 40.3848 | 31.1930 | 26.8298 | 37.0489 | 40.5949 | 39.7112 |
| | gentamicin | 44.0951 | 27.0634 | 26.0146 | 34.6765 | 33.5250 | 38.3102 |
| | gentamicin | 37.8056 | 31.5034 | 25.9602 | 32.3440 | 32.6238 | 41.9842 |
| | gentamicin | 41.2400 | 32.2958 | 26.3772 | 33.9402 | 43.3223 | 38.5322 |
| | neomycin | 32.5895 | 31.4898 | 25.8412 | 26.2019 | 41.4822 | 27.2006 |
| | neomycin | 43.3313 | 32.5004 | 26.2237 | 23.3322 | 41.0896 | 26.6977 |
| | neomycin | 37.5684 | 36.6060 | 25.0939 | 24.4511 | 40.0216 | 27.2038 |
| | neomycin | 31.9121 | 36.8767 | 25.4975 | 21.1692 | 39.1893 | 28.4742 |
| | neomycin | 33.7216 | 39.0335 | 27.2585 | 22.7269 | 37.4109 | 26.4321 |
| | tobramycin | 36.4247 | 37.5641 | 28.4767 | 33.7944 | 38.5918 | 35.9887 |
| | tobramycin | 36.3533 | 33.4189 | 27.6971 | 34.4623 | 37.4603 | 38.1951 |
| | tobramycin | 36.9739 | 36.8751 | 27.0912 | 36.3011 | 35.7462 | 33.6776 |
| | tobramycin | 39.1583 | 38.0051 | 26.7530 | 34.3198 | 37.2785 | 32.5803 |
| | tobramycin | 34.3228 | 27.4164 | 26.2679 | 32.7086 | 37.4347 | 35.3796 |
| PPI | lansoprazole | 39.1910 | 32.8406 | 28.0713 | 40.3098 | 32.1355 | 33.6008 |
| | lansoprazole | 39.6498 | 36.0188 | 28.1210 | 42.3468 | 32.2332 | 33.5196 |
| | lansoprazole | 41.2653 | 35.3564 | 28.7898 | 39.7543 | 33.8825 | 39.4444 |
| | lansoprazole | 39.5669 | 36.1873 | 28.1882 | 42.5129 | 33.9782 | 38.3842 |
| | lansoprazole | 38.6760 | 36.1410 | 28.4111 | 40.3927 | 33.0574 | 36.2372 |
| | omeprazole | 39.1264 | 39.6441 | 26.7452 | 42.9824 | 31.2804 | 30.1527 |
| | omeprazole | 44.8651 | 40.6936 | 25.8868 | 37.5834 | 30.4091 | 32.6794 |
| | omeprazole | 44.4332 | 44.3137 | 26.4208 | 41.3609 | 29.1521 | 31.4768 |
| | omeprazole | 42.8082 | 43.3292 | 26.1566 | 38.8355 | 31.0107 | 31.9294 |
| | omeprazole | 39.8082 | 42.9908 | 26.0182 | 42.6722 | 42.1922 | 26.2244 |
| | pantoprazole | 46.1981 | 54.7838 | 29.1327 | 35.4156 | 39.9085 | 36.9717 |
| | pantoprazole | 47.7899 | 54.4737 | 30.2712 | 32.0455 | 39.7527 | 36.0066 |
| | pantoprazole | 47.4948 | 41.3863 | 32.0340 | 35.5978 | 38.6191 | 36.2348 |
| | pantoprazole | 47.8569 | 54.5047 | 29.4215 | 34.7418 | 38.2612 | 37.2846 |
| | pantoprazole | 45.0612 | 41.5985 | 33.1601 | 32.5803 | 39.1354 | 36.6244 |
| | esomeprazole | 65.1510 | 53.2432 | 27.4044 | 41.4411 | 35.3490 | 42.4687 |
| | esomeprazole | 47.0544 | 55.9409 | 25.0216 | 41.6348 | 50.4232 | 34.8945 |
| | esomeprazole | 60.9746 | 55.0226 | 27.8176 | 41.3190 | 48.4688 | 36.9880 |
| PPI | esomeprazole | 62.2440 | 55.0524 | 25.1606 | 41.8928 | 55.6276 | 32.1850 |
| | naproxen | 32.6953 | 46.9447 | 32.6882 | 44.4375 | 51.8637 | 40.1226 |
| | naproxen | 31.4638 | 49.2903 | 31.3601 | 43.8162 | 52.1218 | 42.3574 |
| | naproxen | 29.4381 | 40.6523 | 34.4090 | 39.9886 | 41.2596 | 44.9445 |
| | naproxen | 32.8870 | 40.1969 | 33.9068 | 38.0396 | 39.9851 | 41.1872 |
| | naproxen | 39.7063 | 44.2710 | 33.0910 | 41.5705 | 52.5645 | 40.0741 |
| | Ibuprofen | 31.1749 | 44.6094 | 28.1189 | 34.8500 | 53.1838 | 40.7460 |
| | Ibuprofen | 28.0718 | 38.0893 | 26.1736 | 32.9494 | 52.2150 | 42.2240 |

| | | | | | | | |
|--------|------------|---------|---------|---------|---------|---------|---------|
| NASIDs | Ibuprofen | 36.9724 | 40.8008 | 28.1771 | 32.7083 | 56.3140 | 43.4661 |
| | Ibuprofen | 34.5800 | 35.1149 | 27.9475 | 34.0148 | 54.0692 | 40.6065 |
| | Ibuprofen | 35.7916 | 40.6696 | 27.6902 | 33.0587 | 57.0970 | 40.2516 |
| | diclofenac | 35.5897 | 40.9747 | 29.7475 | 39.6789 | 54.3971 | 39.0340 |
| | diclofenac | 37.0628 | 40.3067 | 25.6118 | 37.0969 | 55.9325 | 37.3509 |
| | diclofenac | 37.1851 | 43.4543 | 27.9226 | 36.3202 | 53.5008 | 35.1542 |
| | diclofenac | 37.2039 | 41.5786 | 27.7606 | 37.6986 | 55.9763 | 36.2794 |
| | diclofenac | 37.4930 | 40.7832 | 27.0342 | 36.6512 | 54.9517 | 36.9546 |
