Supporting Information

pH-dependent Adsorption of Peptides on Montmorillonite for Resisting UV irradiation

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### Table S1. Adsorption and desorption rate of peptides on MMT at different pH for 30 min with standard deviation.

| Sample name | pH=10 Adsorption Rate/% | pH=3 Adsorption Rate/% | pH=10 Desorption Rate/% | pH=3 Desorption Rate/% |
|-------------|------------------------|------------------------|------------------------|------------------------|
| Phe:        | 13.45% (0.47)          | 97.57% (0.17)          | 88.41% (0.51)          |
| Tyr:        | 2.09% (0.07)           | 80.25% (0.11)          | 97.25% (4.08)          |
| Val:        | 5.14% (2.39)           | 62.36% (1.41)          | 96.02% (8.41)          |
| Ala:        | 3.99% (4.06)           | 77.04% (1.18)          | 96.39% (0.34)          |
| Leu:        | 2.51% (3.56)           | 62.14% (0.25)          | 98.23% (0.73)          |
| Pro:        | 30.53% (0.71)          | 90.09% (0.48)          | 63.55% (2.98)          |
| FFFFD       | 1.81% (0.66)           | 99.38% (0.012)         | 87.79% (0.15)          |
| Phe         | 33.36% (0.63)          | 47.46% (1.04)          | 65.79% (1.65)          |

Note: The numbers in the brackets stand for standard deviation.

### Table S2. Experimental grouping designs.

| Group | pH=3 | pH=10 MMT | Without MMT |
|-------|------|-----------|-------------|
| 1     | √    |           |             |
| 2     | √    |           | √           |
| 3     |      | √         |             |
| 4     |      |           | √           |

### Table S3. MMT protection of peptides under UV radiation with standard deviation.

| Sample | MMT-adsorbed Sample | Free Sample |
|--------|---------------------|-------------|
|        | pH=10 1 day | pH=3 5 days | pH=10 1 day | pH=3 5 days | pH=10 1 day | pH=3 5 days |
| Phe    | 77.82% (3.42) | 15.96% (2.52) | 90.86% (0.78) | 83.58% (1.79) | 54.9% (4.04) | 23.16% (1.72) | 44.49% (2.32) | 2.77% (0.25) |
| Tyr    | 50.72% (1.69) | 33.29% (1.20) | 79.39% (0.63) | 66.42% (2.67) | 61.55% (4.61) | 41.98% (3.09) | 64.77% (0.33) | 44.69% (1.26) |
| Val    | 84.16% (2.08) | 56.23% (1.38) | 83.74% (0.66) | 68.41% (1.34) | 85.25% (2.37) | 60.47% (0.87) | 76.14% (2.62) | 14.03% (1.22) |
| Ala    | 63.29% (8.26) | 50.76% (1.67) | 87.43% (3.52) | 79.31% (0.29) | 82.76% (3.73) | 19.16% (3.46) | 79.63% (1.70) | 15.92% (0.02) |
| Leu    | 84.55% (1.85) | 27.17% (1.85) | 97.43% (3.52) | 97.31% (0.29) | 92.3% (3.89)  | 97.61% (0.99) | 87.31% (4.89) | 44.56% (3.31) |
| Pro    | 73.38% (0.76) | 15.45% (3.45) | 85.57% (0.65) | 65.49% (2.45) | 46.57% (0.65) | 45.41% (2.45) | 21.12% (1.16) | trace         | 35.27% (9.39) | 6.49% (1.36) |
| FFFFD  | 79.87% (1.33) | 64.56% (3.43) | 80.36% (6.26) | 53.3% (14.20) | 17.87% (8.31) | 3.55% (1.48)  | 31.19% (3.53) | 4.27% (1.60)  |
| Phe    | 88.41% (0.58) | 75.52% (0.93) | 7.5% (0.33)   | 1.49% (0.56)   | 86.83% (3.67) | 70.63% (7.12) |

Note: The numbers in the brackets stand for standard deviation.