**Supporting Information**

***for***

**Targeted regulation of senescence-associated secretory phenotype with an aptamer-conjugated** **activatable senomorphic**

**Table S1.** DNA sequences used in this study.

|  |  |
| --- | --- |
| Name | Detailed sequence information (5’-3’) |
| N3-Aptamer | N3-AGGATAGGGGGTAGCTCGGTCGTGTTTTTGGG TTGTTTGGTGGGTCTTCTG |
| N3-Aptamer-Cy5 | N3-AGGATAGGGGGTAGCTCGGTCGTGTTTTTGGG TTGTTTGGTGGGTCTTCTG-Cy5 |
| N3-Control DNA-Cy5 | N3- (T) 51- Cy5 |

**Table S2.** HPLC procedures used in this study.

|  |  |  |
| --- | --- | --- |
| Tmie/min | Eluent A (0.1 M TEAA) | Eluent B (Acetonitrile) |
| 0 | 95% | 5% |
| 4 | 95% | 5% |
| 4.01 | 90% | 10% |
| 30 | 35% | 65% |

**Table S3.** The primary DNA sequences used in this work.

|  |  |  |
| --- | --- | --- |
| Gene | Forward（5’-3’） | Reverse（5’-3’） |
| P16 | GCTGCCCAACGCACCGAATA | ACCACCAGCGTGTCCA |
| P21 | GACAGCAGAGGAAGACCATGTGGAC | GAGTGGTAGAAATCTGTCATGCTG |
| IL-6 | CCAGGAGCCCAGCTATGAAC | CCCAGGGAGAAGGCAACTG |
| IL-1β | CTGTCCTGCGTGTTGAAAGA | TTGGGTAATTTTTGGGATCTACA |
| MMP3 | AGGGAACTTGAGCGTGAATC | TCACTTGTCTGTTGCACACG |
| GADPH | GAAGGTGAAGGTCGGAGTC | TTGAGGTCAATGAAGGGG |



**Figure S1.** 1H NMR spectrum of compound 2.



**Figure S2.** 13C NMR spectrum of compound 2.



**Figure S3.** 1H NMR spectrum of compound 3.



**Figure S4.** 13C NMR spectrum of compound 3.



**Figure S5.** 1H NMR spectrum of compound 4.



**Figure S6.** 13C NMR spectrum of compound 4.



**Figure S7.** 1H NMR spectrum of compound 5.



**Figure S8.** 13C NMR spectrum of compound 5.



**Figure S9.** (A) HPLC purification profile of Apt-H2SD. (B) ESI-MS spectrum of Apt-H2SD.



**Figure S10.** RT-qPCR qualification of the expression of p16, p21, and IL-1β at the mRNA level in proliferating BJ cells and senescent BJ cells.



**Figure S11.** Cell viability of proliferating and senescent BJ cells after treatment with Apt-H2SD at different concentrations.