Supporting information

Binary Light-up Fluorescent Probe Based on Silver Nanocluster for MicroRNA Detection

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Table S1. DNA and RNA sequences used in this work. Designations: A, T, C, G – DNA nucleobases, rA, rU, rC, rG – RNA nucleobases, green color – the cluster-bearing parts, red color – the spacer.

Name	Sequence (5`→3`)
miR-210	CTGTGCGTGTGACAGCGGCTGA
miR-210RNA	rCrUrGrUrGrCrGrUrGrUrGrArCrArGrCrGrGrCrUrGrA
Let-7a	TGAGGTAGTAGGTTGTATAGTT
miR-155	TTAATGCTAATCGTGATAGGGGTT
miR-21	TAGCTTATCAGACTGATGTTGA
random	ACTGTAAGAGTAATAATTTAAA
S1_A_A1	TCAGCCGCTGTACCCGTTTT
S2_A_A1	CCCCACCCCTACACACGCACAG
S1_A_A0	TCAGCCGCTGTCCCGTTTT
S2_A_A0	CCCCACCCCTCACACGCACAG
S1_A_A1_2gap	TCAGCCGCTG-ACCCGTTTT
S2_A_A1_2gap	CCCCACCCCTA-ACACGCACAG
S1_A_A1_4gap	TCAGCCGCT--ACCCGTTTT
S2_A_A1_4gap	CCCCACCCCTA--CACGCACAG
S1_A_A3	TCAGCCGCTGTAAACCCGTTTT
S2_A_A3	CCCCACCCCTAAACACACGCACAG
S1_A_ATAATA	TCAGCCGCTGTATAATACCCGTTTT
S2_A_TATTAT	CCCCACCCCTTATTATCACACGCACAG
S1_A_A5	TCAGCCGCTGTAAAAACCCGTTTT
S2_A_A5	CCCCACCCCTAAAAACACACGCACAG
S1_A_A7	TCAGCCGCTGTAAAAAAACCCGTTTT
S2_A_A7	CCCCACCCCTAAAAAAACACACGCACAG
S1_B_A0	TCAGCCGCTGTCCCCACCCC
S2_B_A0	CCCGTTTTCACACGCACAG
S1_B_A3	TCAGCCGCTGTAAACCCCACCCC
S2_B_A3	CCCGTTTTAAACACACGCACAG
S1_B_T3	TCAGCCGCTGTTTTCCCCACCCC
S2_B_T3	CCCGTTTTTTTCACACGCACAG
S1_B_ATA	TCAGCCGCTGTATACCCCACCCC
S2_B_TAT	CCCGTTTTTATCACACGCACAG
S1_B_ATAATA	TCAGCCGCTGTATAATACCCCACCCC
S2_B_TATTAT	CCCGTTTTTATTATCACACGCACAG
S1_B_A5	TCAGCCGCTGTAAAAACCCCACCCC
S2_B_A5	CCCGTTTTAAAAACACACGCACAG
S1_B_A5_2gap	TCAGCCGCTG-AAAAACCCCACCCC
S2_B_A5_2gap	CCCGTTTTAAAAA-ACACGCACAG
S1_B_A5_4gap	TCAGCCGCT--AAAAACCCCACCCC
S1_B_A5_4gap	CCCGTTTTAAAAA--CACGCACAG
S1_B_A7	TCAGCCGCTGTAAAAAAACCCCACCCC
S2_B_A7	CCCGTTTTAAAAAAACACACGCACAG
S1_B_A9	TCAGCCGCTGTAAAAAAAAACCCCACCCC
S2_B_A9	CCCGTTTTAAAAAAAAACACACGCACAG

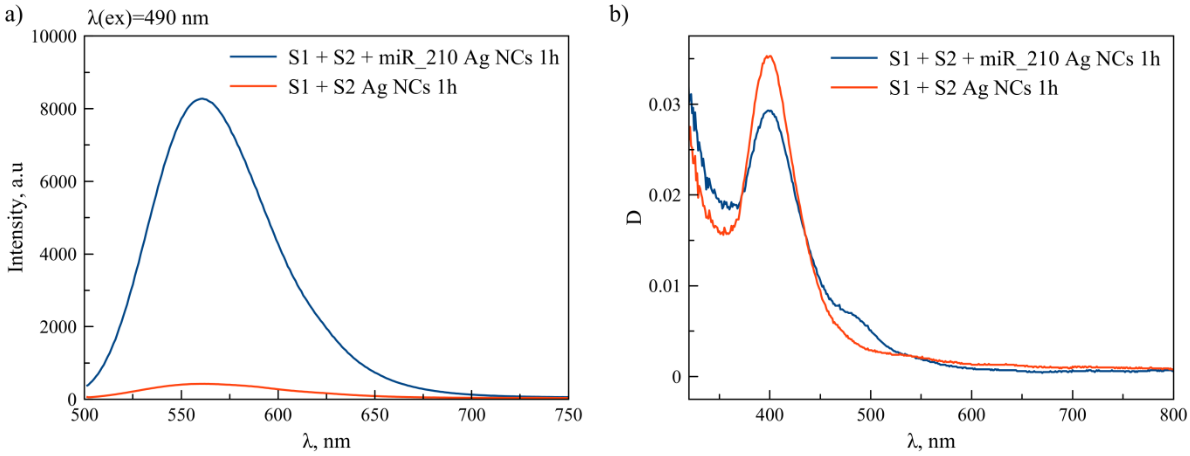

Fig. S1. Fluorescence emission (a) and absorbance (b) spectra of silver nanocluster synthesized on simultaneous mixing of DNA matrices S1_A_A1 and S2_A_A1 with miR_210 sequence (blue) in one hour. Negative control samples without miR_210 are painted in red.

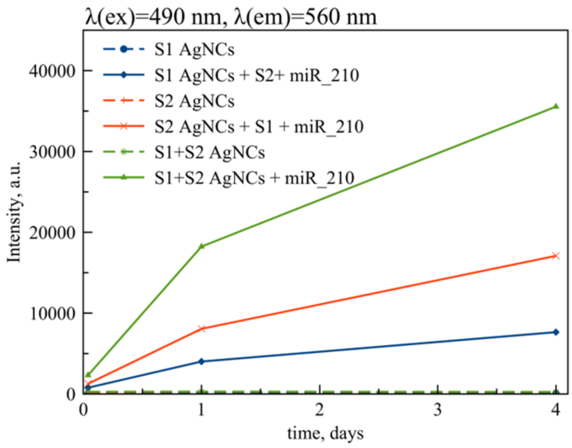

Fig. S2. Kinetics of fluorescence intensity of Ag NCs on S1, S2 or S1+S2 mix with and without target sequence miR_210.

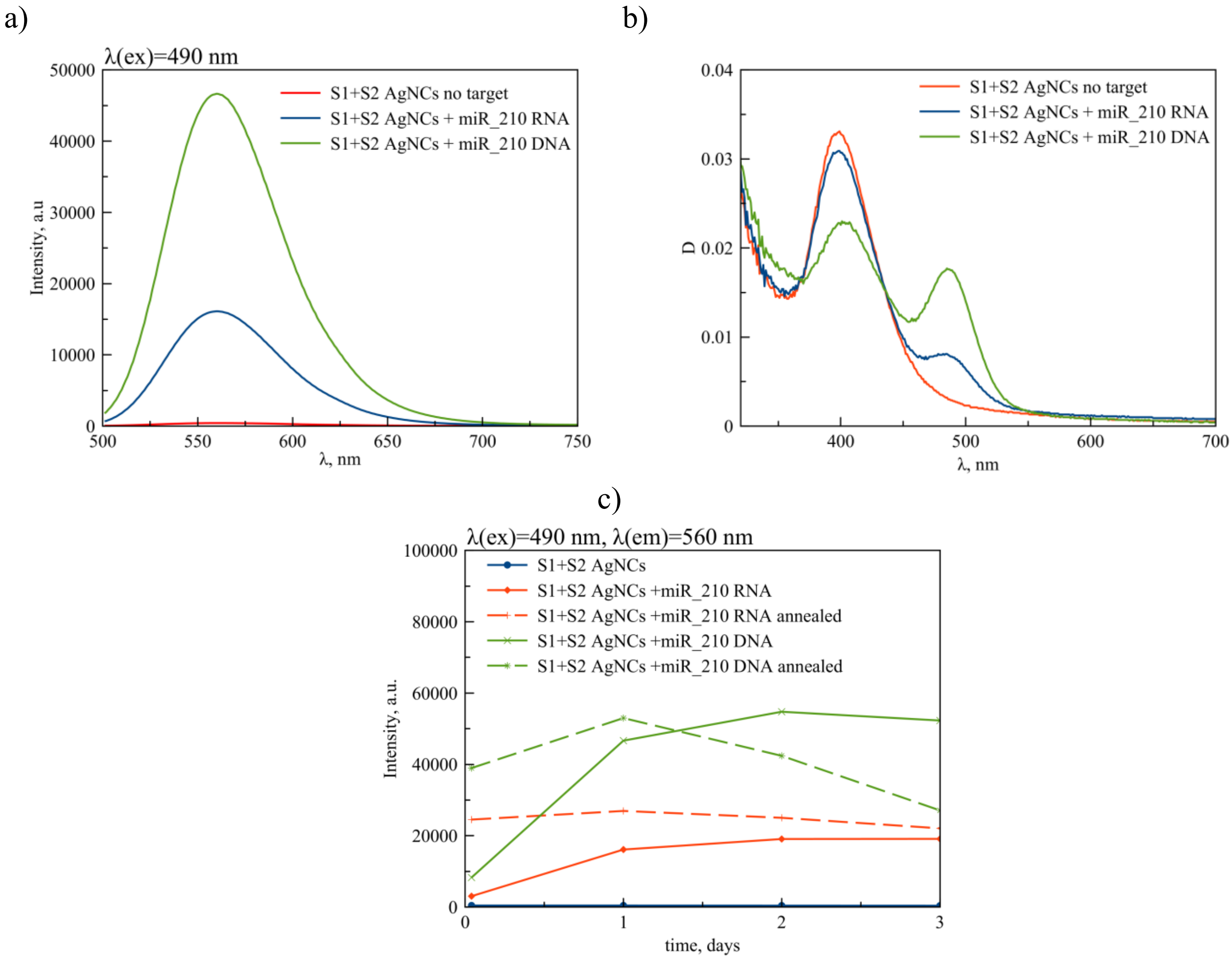

Fig. S3. Fluorescence (a), absorption spectra (b) and kinetics (c) of S1/S2/Ag NCs complexes with DNA and RNA target sequences.

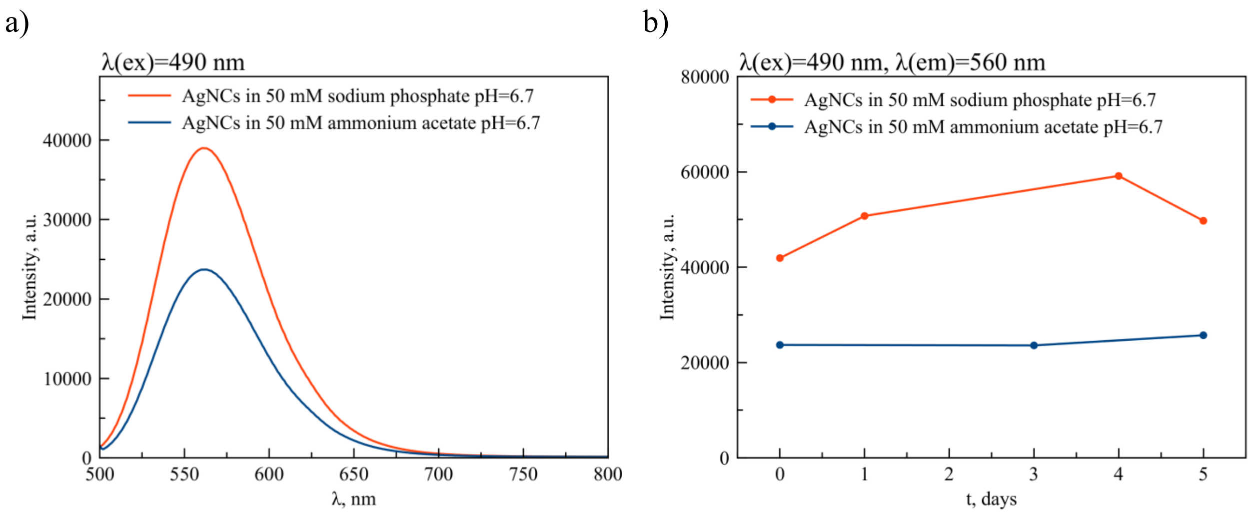

Fig. S4. Fluorescence spectra (a) and kinetics (b) of Ag NCs in different buffer solutions.

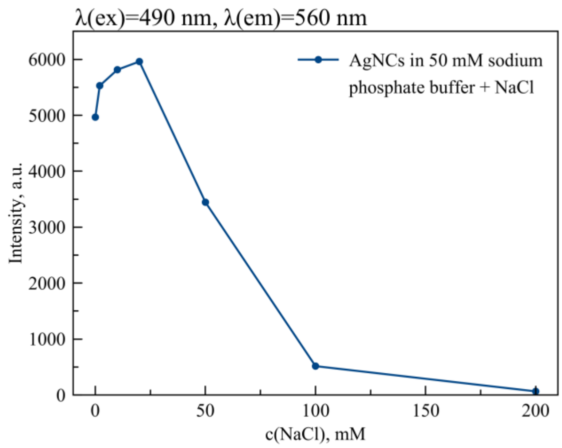

Fig. S5. Dependence of Ag NCs fluorescence intensity on concentration of additional NaCl.

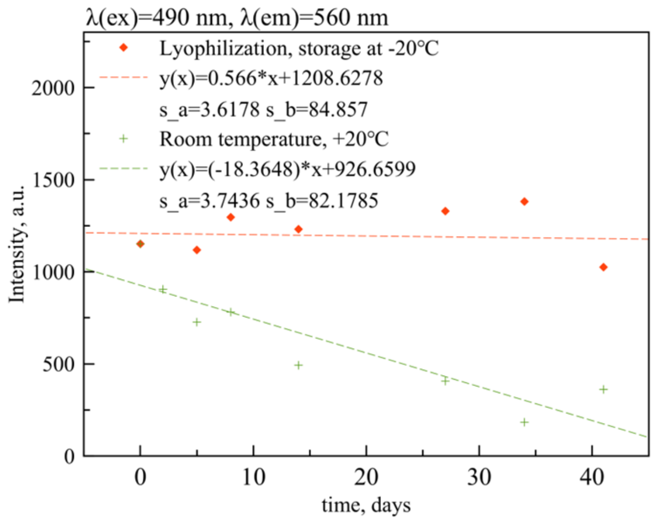

Fig. S6. Kinetics of Ag NCs rearrangement efficiency in two different storage conditions measured by fluorescence intensity at emission wavelength of 560 nm while excitation at 490 nm in different periods of time.

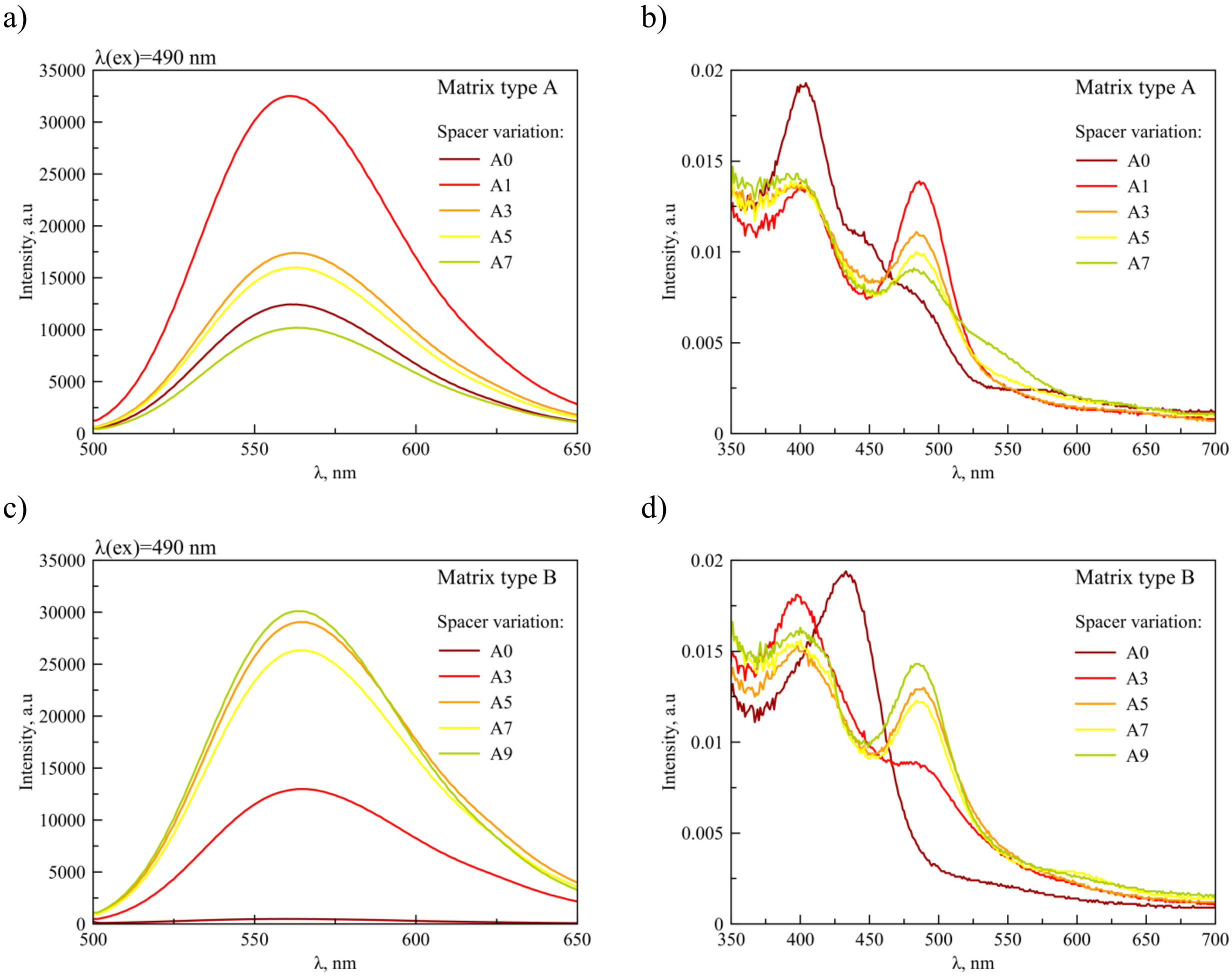

Fig. S7. Fluorescence (a, c) and absorption (b, d) spectra of Ag NCs for two matrix types A and D with variation of adenine spacer length.

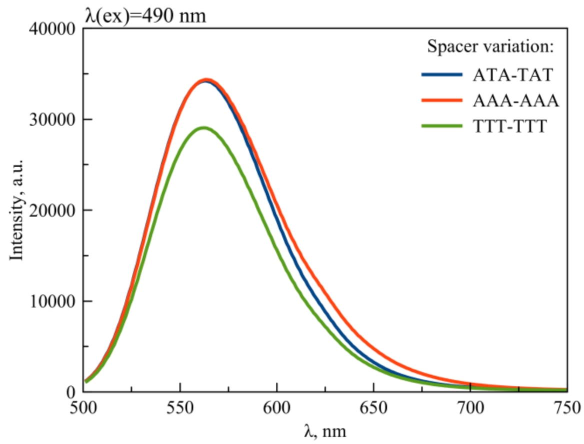

Fig. S8. Fluorescence emission spectra with excitation at 490 nm of Ag NCs in cases of different spacers.

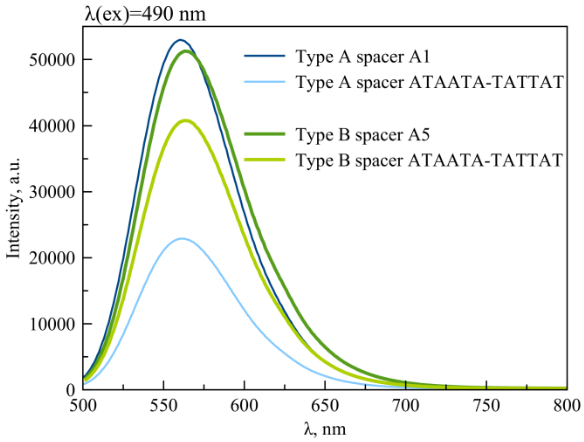

Fig. S9. Fluorescence emission spectra with excitation at 490 nm of Ag NCs in cases of different spacers.

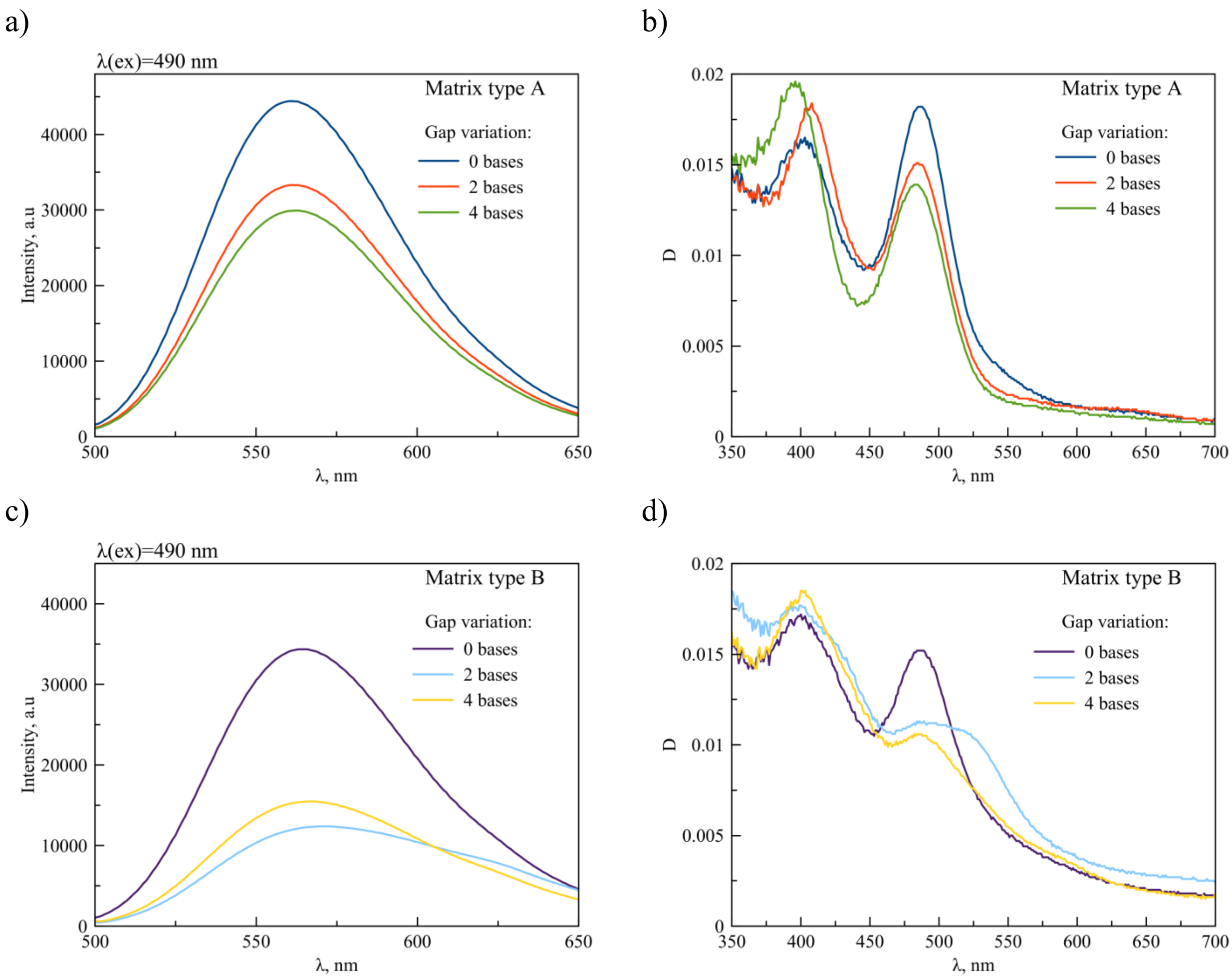

Fig. S10. Fluorescence (a, c) and absorption (b, d) spectra of Ag NCs for two matrix types A and D with variation of gap length between S1 and S2 parts.

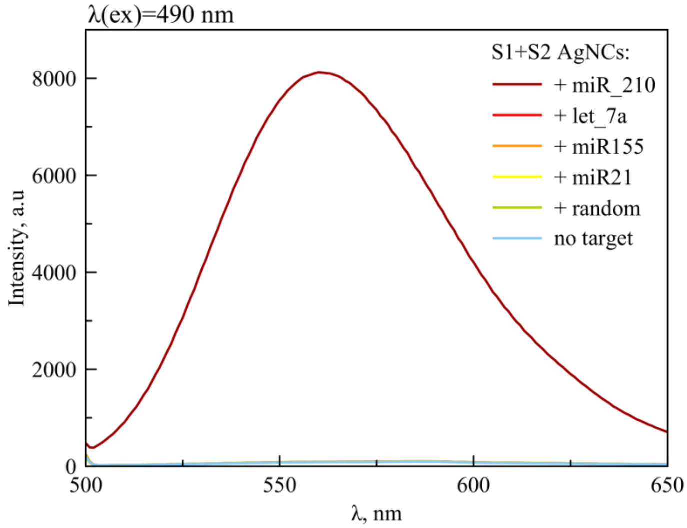

Fig. S11. Selectivity test of miR-210 binary Ag NCs sensor, fluorescence emission spectra with excitation at 490 nm in cases of addition of different target sequences.

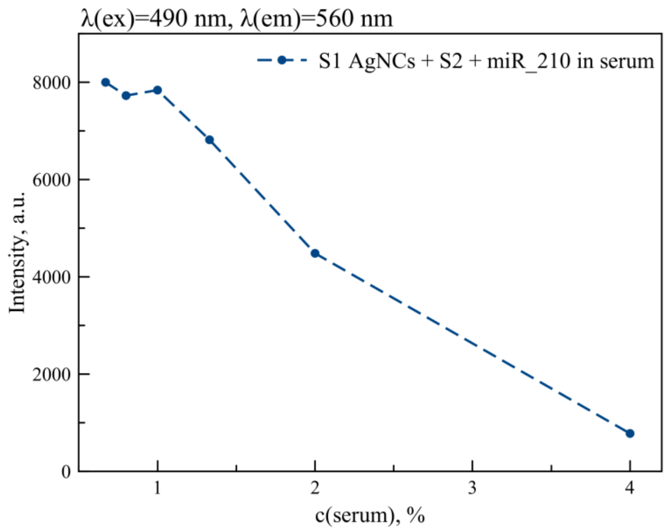

Fig. S12. Dependence of Ag NCs fluorescence intensity on concentration of serum in a sample.