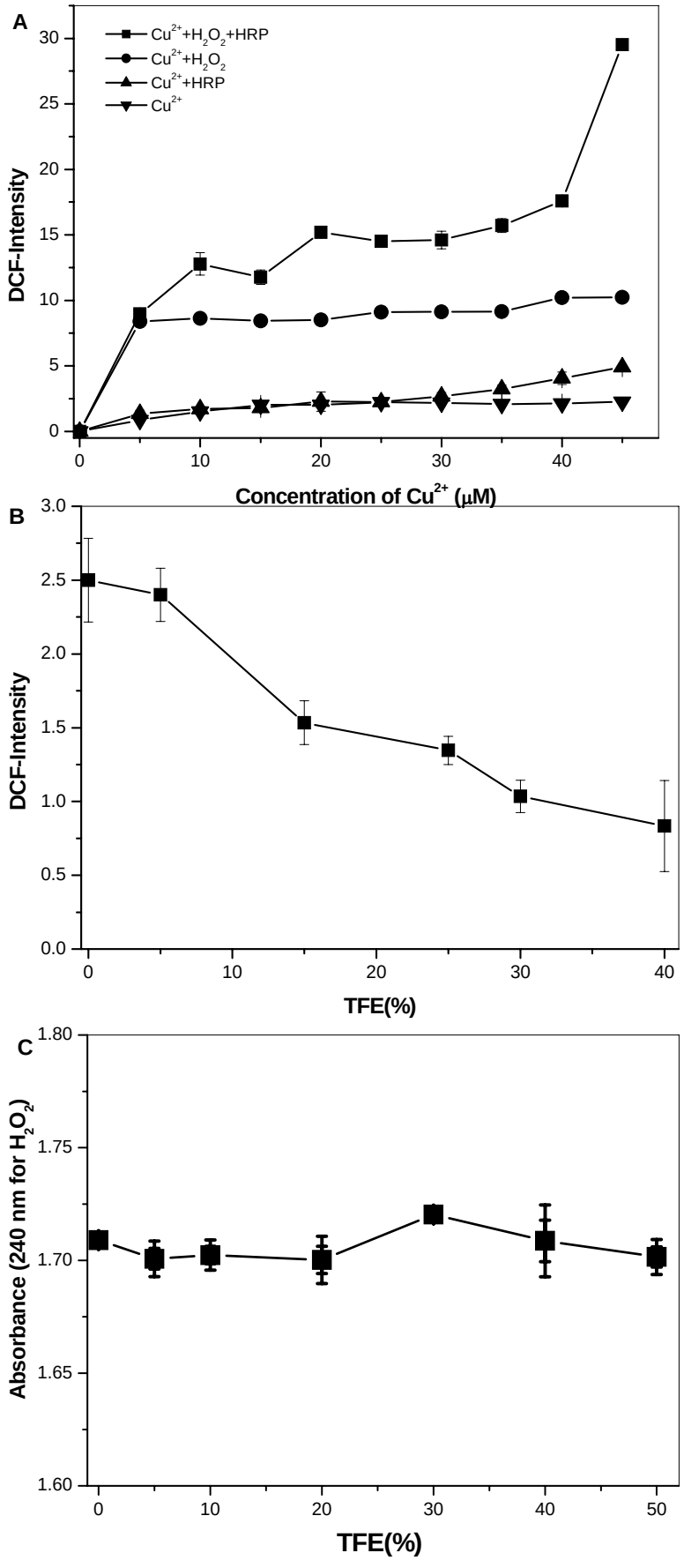
Supplemental Data

Effect of Trifluoroethanol on Cu^{2+} Conductivity and H_2O_2 Generation

Previously, we have demonstrated that the conformation of Aβ40 can be manipulated using trifluoroethanol (TFE) [18]. Since TFE was extensively used in this study, the effect of TFE on Cu^{2+} binding affinity and H_2O_2 generation has to be evaluated before further studies. Figure S1(B) shows the plot of DCF intensity vs. TFE percentage. It can be seen that the DCF intensity was decreased with an increase of TFE percentage. The fluorescence intensity of DCF in 40% TFE is 47% decrease in comparison with that of DCF intensity in 5% TFE. There are three possible reasons for the decrease of DCF intensity with an increase of TFE percentage: 1) the DCF fluorescence may be quenched by TFE, 2) the formation of H_2O_2 may be quenched by TFE, 3) the solubility of Cu^{2+} May be decreased. As shown in figure S1(C), the concentration of H_2O_2, which was determined by using UV/Vis absorption spectroscopy with an extinction coefficient $\varepsilon = 43.6\ M^{-1}$ at 240 nm, is basically kept at constant in different percentage of TFE, indicating that TFE does not further affect the formation or redox reaction of H_2O_2. Furthermore, the conductivity of 30 μM Cu^{2+} in 5% and 40% TFE is identical (data not shown), suggesting that TFE does not affect the solubility of Cu^{2+} ions and possibly the Cu^{2+}-binding to Aβ40. Therefore, the possible reason for the reduction of fluorescence intensity may be attributed to the quench of DCF fluorescence by TFE.

Figure S1 (A) Free radical generation of H_2O_2 under different composition of Cu^{2+}, TFE and H_2O_2. (B) The plot of DCF fluorescence intensity vs. TFE percentage. Basically, the intensity of DCF fluorescence is decreased with the increase of TFE content. In (C) The plot of H_2O_2 level vs. TFE percentage as measured using absorption spectroscopy. The amount of H_2O_2 was basically kept at constant for different percentage of TFE.


A
Cu2++H2O2+HRP
Cu2++H2O2
Cu2++HRP
Cu2+
DCF-Intensity
Concentration of Cu2+ (μM)
B
DCF-Intensity
TFE(%)
C
Absorbance (240 nm for H2O2)
TFE(%)