SUPPLEMENTARY MATERIAL

Unexpected Reversible and Controllable Nuclear Uptake and Efflux of the DNA "Light-switching" Ru(II)-Polypyridyl Complex in Living Cells via Ion-Pairing with Chlorophenolate Counter-Anions

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SI FIGURES

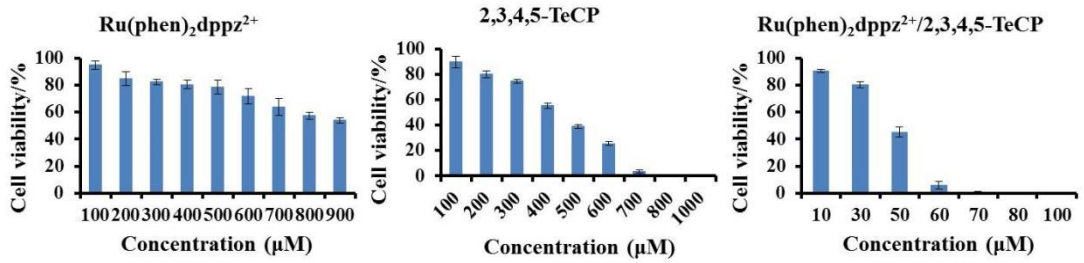

Figure S1. The cytotoxicity of the $[Ru(phen)_2(dppz)]^{2+}$, 2,3,4,5-TeCP and $[Ru(phen)_2(dppz)]^{2+}$/2,3,4,5-TeCP mixture on cells. Cells incubated with $[Ru(phen)_2(dppz)]Cl_2$ or 2,3,4,5-TeCP or $[Ru(phen)_2(dppz)]^{2+}$/2,3,4,5-TeCP mixture (concentration ratio = 1:3) for 24 h, then measured IC_{50} by Alamar Blue Assay.

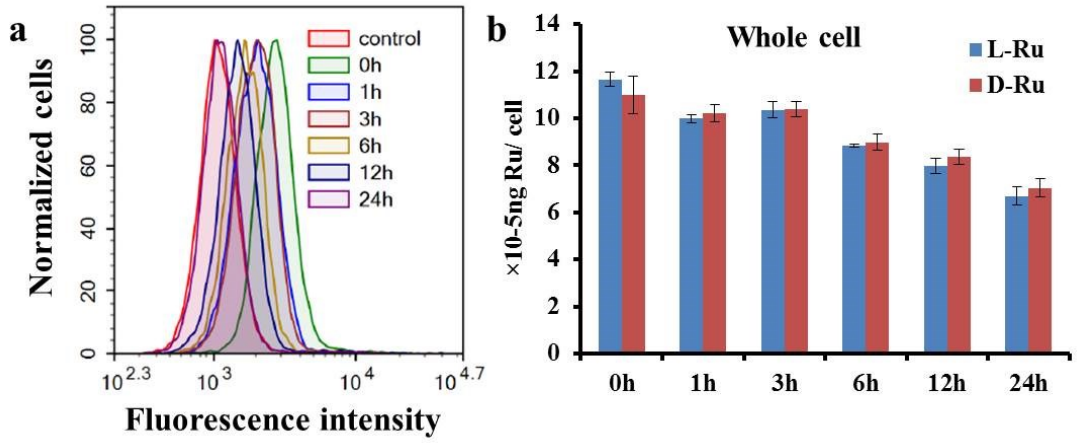

Figure S2. Cellular Ru decrease with time after wash with fresh medium. Cells incubated with racemic (a) or chiral (b) $[Ru(phen)_2(dppz)]Cl_2$ and 2,3,4,5-TeCP for 0.5 h, washed with PBS for 3 times, incubated with fresh medium for different times, then collected cells to do FACS (a) or separated nuclear and cytoplasm to do ICP-MS (b).

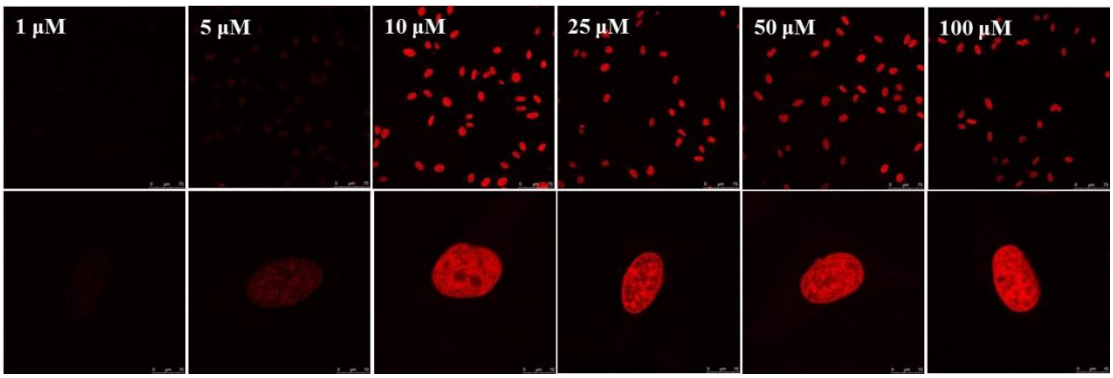

Figure S3. Cellular uptake of $[Ru(phen)_2(dppz)]^{2+}$ at different concentrations with 300 μM 2,3,4,5-TeCP. Cells incubated with different concentrations of $Ru(phen)_2(dppz)]Cl_2$ and 300 μM 2,3,4,5-TeCP for 0.5 h. Lower images are the higher magnification of upper images.

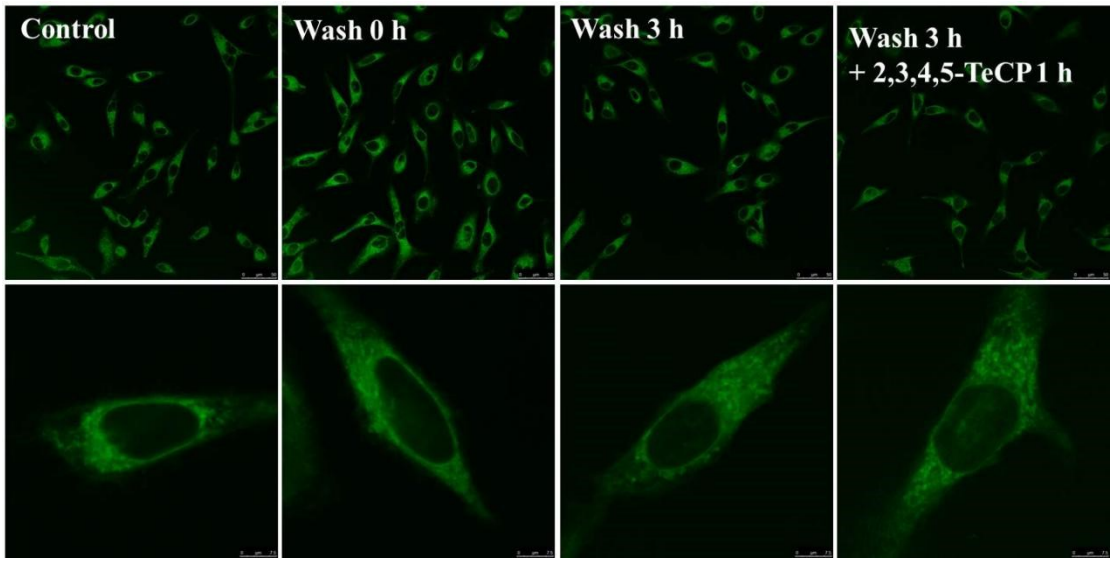

Figure S4. The treatment with $[Ru(phen)_2(dppz)]^{2+}$ and 2,3,4,5-TeCP did not damage the structure of cell membrane. The treated cells incubated with 1 μM $DiOC_6(3)$ for 15 min. Lower images are the higher magnification of upper images.

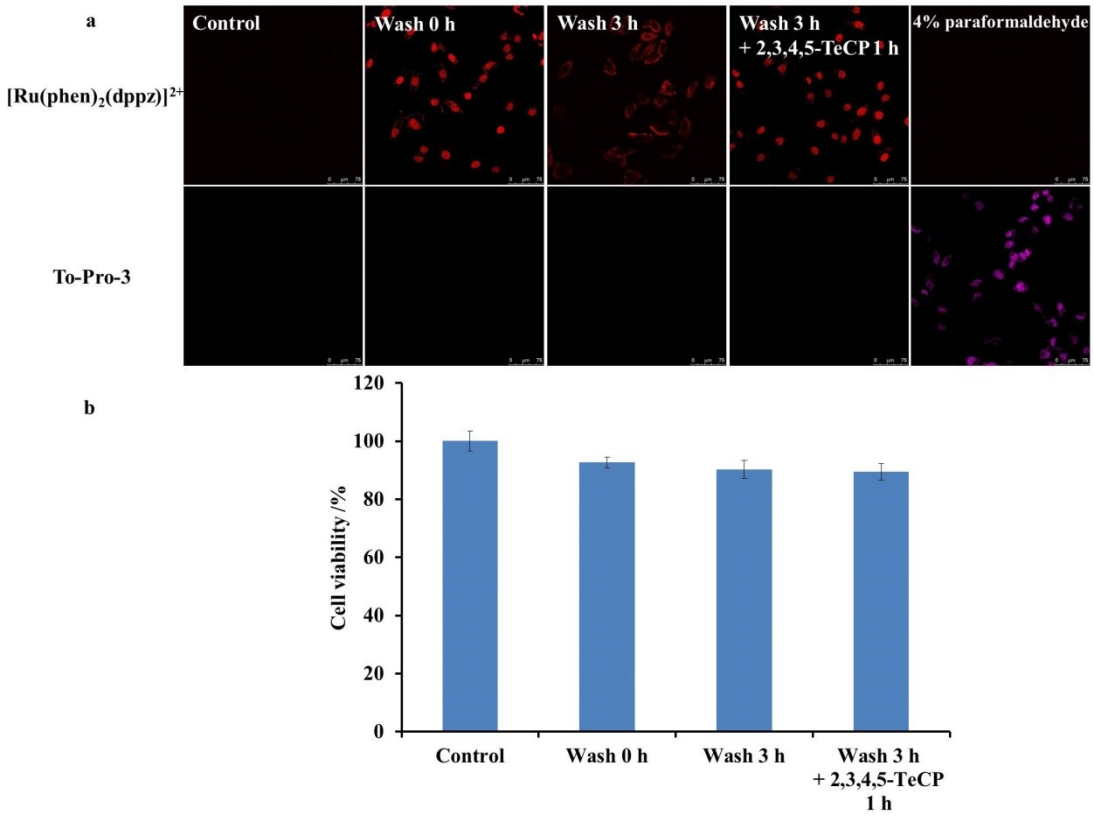

Figure S5. The health of cells after the uptake and efflux of $[Ru(phen)_2(dppz)]^{2+}$, and the step of further addition of 2,3,4,5-TeCP after the washing step. a. The treatment with $[Ru(phen)_2(dppz)]^{2+}$ and 2,3,4,5-TeCP did not damage the integrity of cell membrane. 4% paraformaldehyde was applied for positive control of To-Pro 3 staining. b. The viability of the cells after treatment has been measured by Alamar Blue Assay.

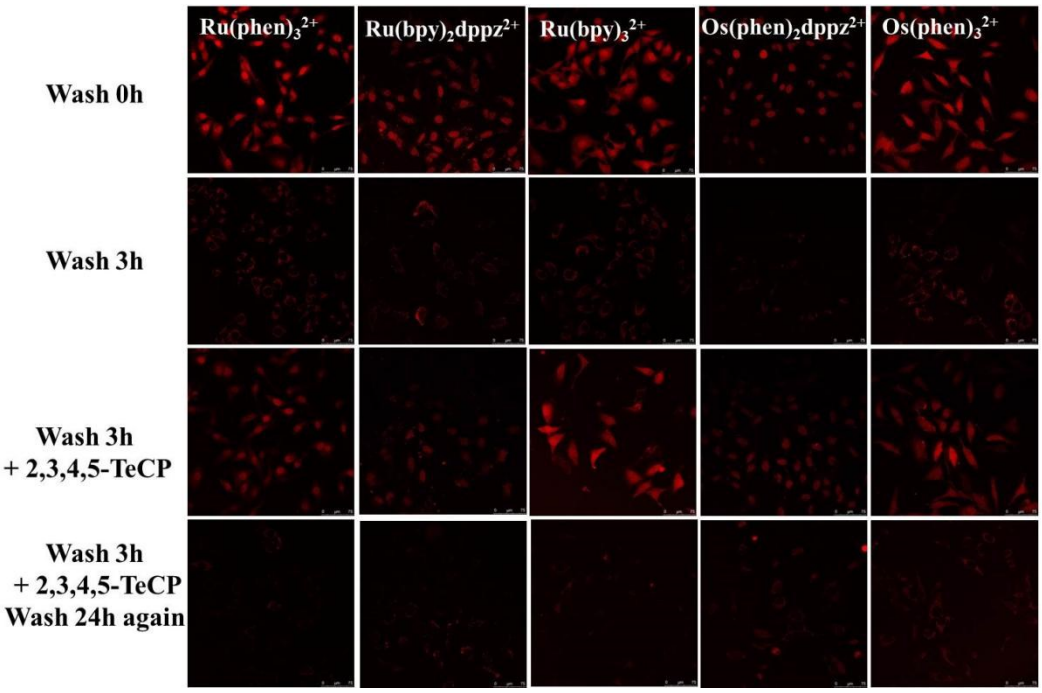

Figure S6. Reversible nuclear uptake and efflux of Ru and Os complexes. Cells incubated with 100 μM Ru/Os, 300 μM 2,3,4,5-TeCP for 0.5 h, washed with PBS for 3 times, captured images after 0 h, 3 h. For cells washed after 3 h, added 300 μM 2,3,4,5-TeCP for 1 h, captured image, then washed cells with PBS for 3 times and captured images after 24 h.

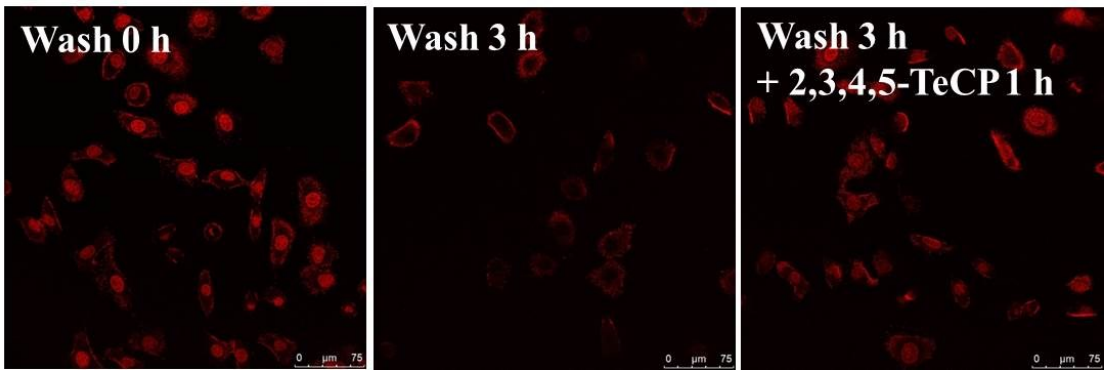

Figure S7. Reversible nuclear uptake and efflux of Ru complex on A549 cells