GS04-2 **Development of 2,6-Dimethylnitrobenzene Based Nitric Oxide Donors Activated by Two-Photon Excitation**

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Nitric oxide (NO) is a key molecule in blood pressure regulation, neuromodulation, and biodefense. Since NO is unstable gas under ambient conditions, various NO donors have been developed and employed for biological studies instead of direct NO gas application. Although those NO donors have been useful, many of them release NO via spontaneous decomposition, so that it is difficult to control NO release.

NO donors, which can be controlled by photo excitation, are very convenient to temporal and spatial control of NO release. Our group recently reported NO release from 4-substituted-2,6-dimethylnitrobenzene by UV irradiation. However, the maximum absorption band for NO release from the compounds is limited to the UV-A range, which could be harmful to living cells. To overcome this limitation, we employed two-photon excitation which would be very advantageous to develop NO donors working at longer wavelength, ideally in the range of 700–900 nm, where photo-irradiation is biologically less harmful and penetrates deeper through tissues. We developed two-photon operating NO donors based on our previous photo-controllable NO donors and investigated the NO releasing properties of them.