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743 **Supplemental Figure S1:**

744 Recombinant DNA constructs, cell lines, and experimental assays.

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746 **Supplemental Figure S2: Alignment of the sequences of rhodopsin, DC-STAMP, and**

747 **chimeric PA-DC-STAMP.** Deletion of 16 amino acids including ITIM

748 (VSVSFYPKVERERIEY) is underlined in red. TM: transmembrane domain; IL: intracellular

749 loop; EL: extracellular loop.

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751 **Supplemental Figure S3: Positive photo-activatable (PA) DC-STAMP transfectants**

752 **(WT and TD) were identified by red m-cherry signals.** 293T cells were transiently

753 transfected with these constructs, labeled with Fluo-4 Ca²⁺ dye, and stimulated with 488-

754 nm light. (A) Fluo-4 Ca²⁺ imaging of 293T cells that were transiently transfected with PA-

755 DC-STAMP chimera. Cells expressing PA constructs could be identified by the expression

756 of red mCherry protein. Cells were stimulated with 488-nm light. (a) images of bright field,

757 (b) mCherry signal (red), (c) Fluo-4 AM Ca^{2+} signal (green), (d) merged image of mCherry &
758 Ca^{2+} signals.

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