

## Antitumor Responses by Dendritic Cells Stimulated with Photo-switchable Generation of Intracellular Reactive Oxygen Species

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Reactive oxygen species (ROS) play an important role in intracellular signaling as second messengers. However, studying the role of ROS in physiological redox signaling has been trouble due to the technical difficulties in manipulating ROS generation within cells. Here, we use two inert components, a photosensitizer and light, to finely control the generation of intracellular ROS and investigate their specific role in activating dendritic cells (DCs). Photo-switchable generation of ROS is capable of studying the effect of ROS to the DCs. A transient intracellular ROS surge could activate DCs from immature to mature and potentially enhances migration abilities of DCs in vitro and in vivo, but exogenous  $H_2O_2$  didn't do that. Further, mice immunized by intracellular ROS-stimulated DCs showed enhancement of tumor antigen specific T-cell responses, delayed tumor growth and resulted in better survival of mice than control. Therefore, this novel approach could provide a valuable tool for studying the role of ROS in cancer immunotherapy and vaccine research.

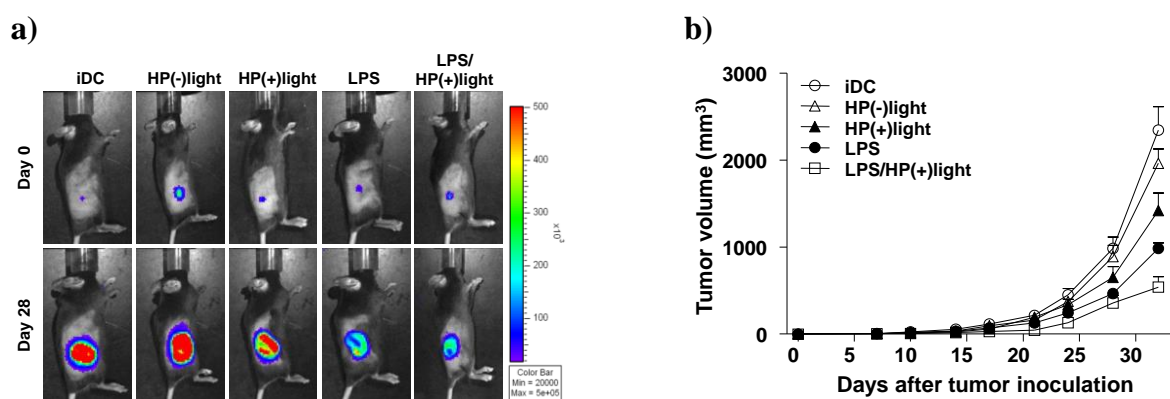


Figure. 1 (a) Representative tumor bioluminescent image and (b) tumor growth of immunized mice.

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