Supporting information for:

Quantum Dot Probes for Bacteria Distinguish *Escherichia coli* Mutants and Permit In Vivo Imaging

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Cell Labeling: Compound **1** (4 μM) was incubated in TES buffer (5 mM TES, 145 mM NaCl, pH = 7.4) for 10 minutes with either streptavidin-coated **GQD** (Qdot® 565 Streptavidin Conjugate, em:565 nm, Invitrogen, Q10101MP) or streptavidin-coated **RQD** (Qdot® 655 Streptavidin Conjugate, em: 665 nm, Invitrogen, Q10121MP) or streptavidin-coated **NIRQD** (Qdot® 800 Streptavidin Conjugate, em: 800 nm, Invitrogen, MP10171MP). The pellet resulting from centrifugation of 0.5 mL of bacteria (OD = 0.5) was resuspended in 50 μL of TES buffer and treated with **1-QDG** or **1-RQD**. After 10 minutes, the labeled cells were washed twice (centrifugation and resuspension in 100 μL TES buffer) then imaged. In the case of **1-NIRQD**, a 100 μL solution of **NIRQD** (160 nM) and **1** (640 nM) was sterile filtered (0.2 μm pore size) and added to a pellet from 1 mL of *E. coli* K12 (OD = 1). After 10 minutes, the labeled cells were washed twice (centrifugation and resuspension in 50 μL TES buffer) and used for in vivo imaging.

Microscopy: Images were acquired on a Nikon Eclipse TE2000-U epifluorescence microscope using a 100X objective, 10X ocular and 1.5X optivar to obtain images at 1500X. **1-GQD** was imaged using a "green" filter set (Exciter: D480/30X, Dichroic: 400DCLP, Emitter: HQ535/50m), **1-RQD** was imaged using a "red" filter set (Exciter: HQ545/30x, Dichroic: Q570LP, Emitter: HQ610/75m) **1-NIRQD** was imaged using a "near infrared" filter set (Exciter HQ710/75x, Dichroic Q750LP, Emitter HQ810/90m).

In Vivo Imaging: A nude mouse (strain nu/nu, Taconic Inc.) was anesthetized under isofluorane and a 50 μL suspension of **1-NIRQD** bound to *E. coli* JM83 cells was injected in the left rear leg muscle. After 5 minutes, a 16-bit fluorescence image of the mouse was obtained using an IVIS Lumina in vivo imaging station, with the Cy 5.5 exciter (635 ± 20 nm) and ICG (840 ± 30 nm) emitter using a 10 s acquisition time, Fstop =1, and low binning (2x2). The image was then background subtracted and set to a "Fire" florescence intensity scale using the ImageJ v1.37 software suite available for free download at the NIH website http://rsb.info.nih.gov/ij/.

QD Photophysics: The Figure below was taken from the Invitrogen web-site at www.invitrogen.com.

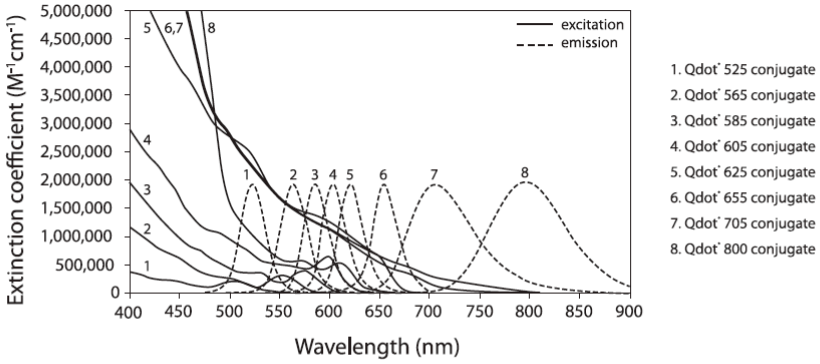

Figure 3. Typical absorption and emission spectra of Qdot® 525 streptavidin conjugate (1), Qdot® 565 streptavidin conjugate (2), Qdot® 585 streptavidin conjugate (3), Qdot® 605 streptavidin conjugate (4), Qdot® 625 streptavidin conjugate (5), Qdot® 655 streptavidin conjugate (6), Qdot® 705 streptavidin conjugate (7), Qdot® 800 streptavidin conjugate (8).