Supplementary information

Figure legends

Figure 1. Comparison of the spectra of the $(P^+H_L^-)_1$ and $(P^+H_L^-)_2$ states upon excitation at 600 nm, 805 nm and 860 nm of R26 RCs or AM260W mutant RCs. Note that each plot presents the two states $(P^+H_L^-)_1$ (black) and $(P^+H_L^-)_2$ (red).

Figure 2. The decomposition of eight representative time traces into the time-dependent contributions of each of the species that participate in the spectral evolution. (A) traces detected for R26 RCs with Q_A removed (excitation wavelength 805 nm) at 1657, 1668, 1674, 1686, 1698, 1717, 1729 and 1742 cm^{-1}. (B) traces detected for R-26 RCs containing Q_A (excitation wavelength 860 nm) at 1649, 1654, 1666, 1678, 1696, 1728, 1747 and 1754 cm^{-1}. The black dots represent the data points probed at 80 delay times, and the black curves show the fits as obtained using the target analysis algorithm applied to the kinetic model shown in Figure 6. The scale is linear up to 3 ps and logarithmic thereafter. The concentration profiles show the time evolution of B_L^* (black), P^* (red), $P^+B_L^-$ (blue), $(P^+H_L^-)_1$ (green), $(P^+H_L^-)_2$ (magenta), $P^+Q_A^-$ (cyan) and ^3P (yellow).