Tunable and Selective Degradation of Amine-Reactive Multilayers in Acidic Media

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Supporting Information

Figure S1: Fluorescence microscopy images of (PVDMA_{TMR/1})_5–EA capsules incubated in PBS buffer at pH 7.4. Capsules were fabricated with TMR-labeled PVDMA (red fluorescence) and loaded with FITC-dextran (green fluorescence). Images show capsules (A-B) at time t=0 hr and (C-D) after incubation for 96 hr. Scale bars are 10 µm.
Figure S2: Bright-field (A-B) and fluorescence (C-F) microscopy images showing (PVDMA_{TMR\textsubscript{1}})\textsubscript{5}–EA capsules incubated in cell culture medium before (top row) and after (bottom row) addition of trypan blue. Capsules were fabricated with TMR-labeled PVDMA (red fluorescence) and loaded with FITC-dextran (green fluorescence). Trypan blue can quench red fluorescence of polymeric shells (C-D) but not green fluorescence from FITC-dextran inside capsules (E-F). Scale bars are 10 µm.
Figure S3: Fluorescence microscopy images of HeLa cells after 18 hr incubation with multilayer capsules. Capsules were fabricated with TMR-labeled PVDMA (red fluorescence) and loaded with FITC-dextran (green fluorescence). Similar populations of (PVDMA\textsubscript{TMR}/1\textsubscript{5}–EA, (PVDMA\textsubscript{TMR}/1\textsubscript{5}–DA, and (PVDMA\textsubscript{TMR}/2\textsubscript{5}–EA capsules were observed in culture media before rinsing (A-F), but only a small portion of them were associated with cells after rinsing (G-L). Addition of trypan blue revealed capsules internalized by cells (M-R). Scale bars are 30 µm.
Figure S4: This figure is a companion to Figure 7 in the main text and provides additional fields of view showing cells and capsules in other locations. High magnification microscopy images showing HeLa cells incubated with multilayer capsules ((PVDMA_{TMR/1})_5–EA, (PVDMA_{TMR/1})_5–DA, and (PVDMA_{TMR/2})_5–EA). Left Panel: phase contrast (A, D, G) and corresponding merged fluorescence images (B, E, H) of cells after 18 hr incubation with capsules. Orange or yellow arrowheads indicate capsules that are inside or outside cells, respectively. Right panel: merged fluorescence images (C, F, I) of cells after 72 hr of incubation with capsules (phase contrast images are not shown due to high confluency of cells). Insets show enlarged images of capsules marked by the white asterisk. All images were acquired in the presence of trypan blue (see text). Scale bars are 10 µm.