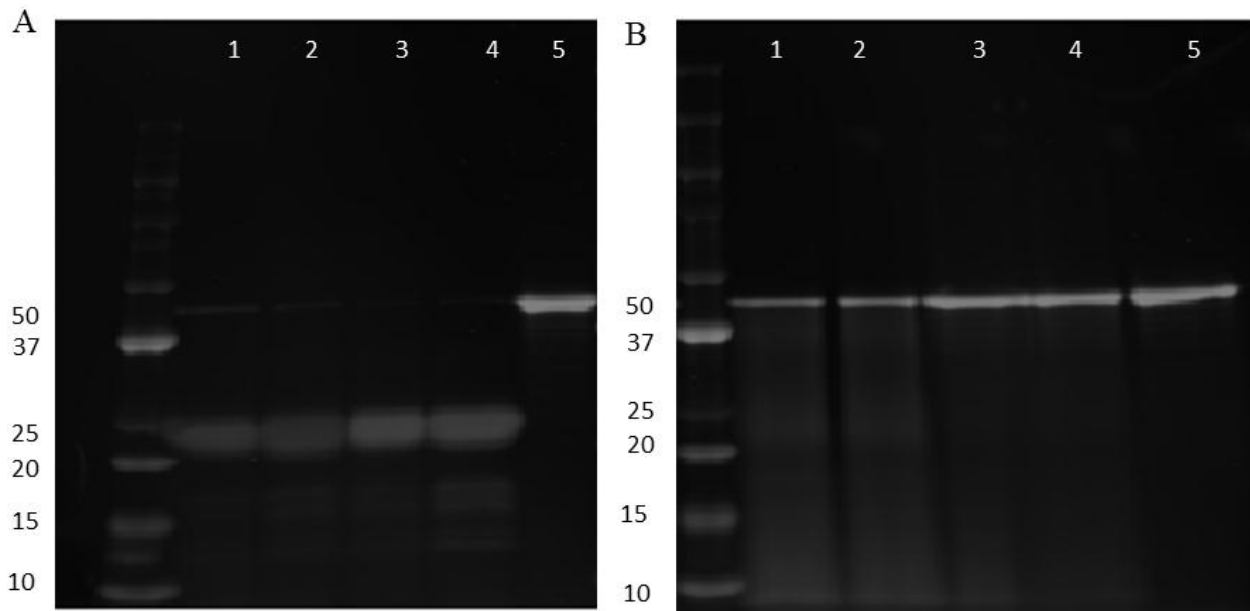
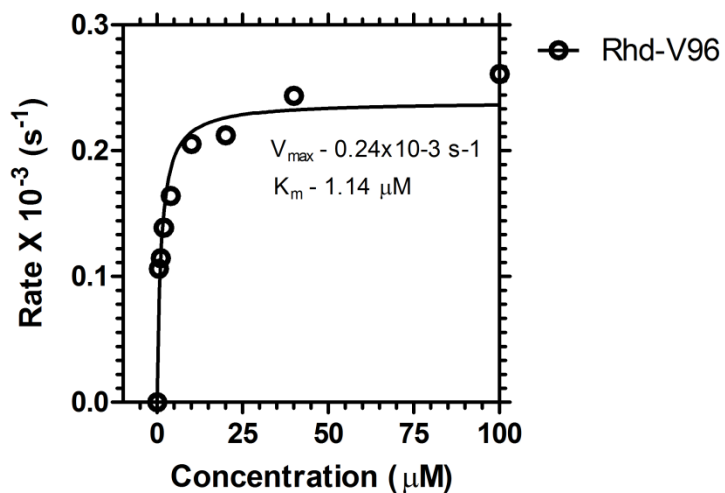


Supplementary Figure 1. SDS-PAGE image depicting degradation of CFSE labeled S96 by elastase and collagenase **A)** Representative gel for S96 incubated with elastase for 2hrs: Lane 1: 0.35 units at 20 °C; 2: 0.7 units at 20 °C; 3: 0.35 units at 37 °C; 4: 0.7 units at 37°C; 5: control. **B)** Representative gel for S96 incubated with collagenase for 2 hrs: Lane 1: 3.6 units at 37 °C; 2: 6.0 units at 37 °C; 3: 3.6 units at 20 °C; 4: 6.0 units at 20 °C; 5: control.



Supplementary Figure 2. SDS-PAGE image depicting degradation of CFSE labeled I96 by elastase and collagenase **A)** Representative gel for I96 incubated with elastase for 2hrs: Lane 1: 0.35 units at 4 °C; 2: 0.7 units at 4 °C; 3: 0.35 units at 37 °C; 4: 0.7 units at 37°C; 5: control. **B)** Representative gel for I96 incubated with collagenase for 2 hrs: Lane 1: 3.6 units at 4 °C; 2: 6.0 units at 4 °C; 3: 3.6 units at 37 °C; 4: 6.0 units at 37 °C; 5: control.



Supplementary Figure 3. Michaelis-Menten enzyme kinetics for proteolysis of rhodamine labeled V96. ELPs were incubated at 40 °C, which is above the phase transition temperature in the presence of 2.5 units/mL elastase. Based on the kinetic studies using PAGE, we used image analysis to calculate the rate order, V_{\max} ($0.24 \times 10^{-3} \text{ s}^{-1}$) and degradation constant, K_m ($1.14 \mu\text{M}$) after digesting various concentrations of Rhd-V96 for periods from 5 to 40 mins.