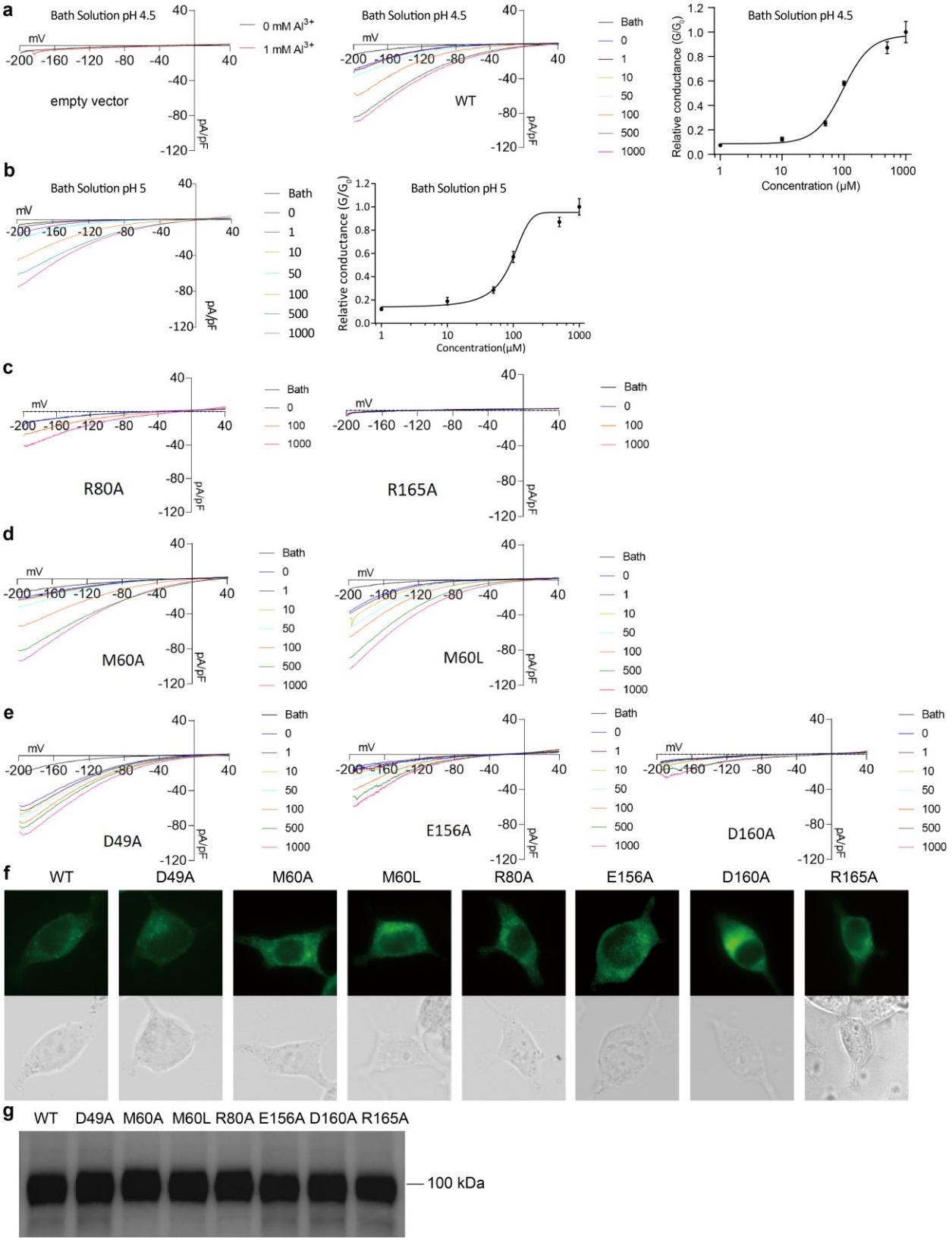

Fig. S2 Electrophysiological analyses of AtALMT1.

a, Representative *I–V* curves of empty vector (left) or AtALMT1 (middle) transfected HEK293T cells at various concentrations of extracellular Al^{3+}. The "Bath" and "0" *I–V* curves indicate the first and the last sweep of ramp recording model before Al^{3+} was perfused established by whole-cell configuration. Al^{3+} was perfused with different concentrations (in μM) when getting the steady-state currents. The membrane potential was held at 0 mV, and a voltage ramp of 500 ms duration from –200 mV to +80 mV was applied every 5 s. The right panel shows the concentration-dependent extracellular Al^{3+} activation of wild-type (WT) AtALMT1. Data are reported as mean ± s.e.m. of at least five independent biological replicates. Curves are least-square fits to a Hill equation with half-maximum activation concentration (EC_{50}) values of 98.17 ± 3.53 μM. **b**, The same current recording as that in **a** except that the bath solution pH was changed to 5. EC_{50} = 120.7 ± 11.93 μM. **c-e,** Representative *I–V* curves of mutant AtALMT1-transfected HEK293T cells at various concentrations of extracellular Al^{3+}. **f,** Representative fluorescent (upper) and bright field (lower) images of cells expressing green fluorescent protein (GFP)-strep-tagged WT and mutant AtALMT1. GFP fluorescence was readily detected in WT and mutant AtALMT1 cells with similar patterns. **g**, Western Blots with anti-strep antibody to probe the membrane extract of HEK293 cells overexpressing GFP-strep-tagged WT and mutant AtALMT1 shows that the WT and mutant AtALMT1 display comparable expression levels on the membrane.