The protozoan parasite *Toxoplasma gondii* heads out of its host cell when Ca\(^{2+}\) levels peak in its cytoplasm. Now, Arrizabalaga et al. (page 653) find that proper regulation of these Ca\(^{2+}\) levels, and thus of *Toxoplasma* exit, requires a Na\(^+/H^+\) exchanger (NHE), suggesting a link between proton and Ca\(^{2+}\) regulation.

The increase in Ca\(^{2+}\) levels, which can be induced artificially with an ionophore, triggers a series of morphological changes that primes *Toxoplasma* for both exit and a speedy entrance into a neighboring cell. Death can ensue, however, if the ionophore sticks around while there is no target cell for the parasite to enter; presumably the over-stimulated *Toxoplasma* cannot sustain itself in an activated state.

The authors used this death assay to isolate a mutant defective in activation. One mutant with a disruption in a sodium/hydrogen exchanger (NHE) showed both delayed exit and reduced hydrogen exchanger (NHE) activity. One mutant with a disruption in a sodium/hydrogen exchanger (NHE) showed both delayed exit and reduced hydrogen exchanger (NHE) activity. One mutant with a disruption in a sodium/hydrogen exchanger (NHE) showed both delayed exit and reduced hydrogen exchanger (NHE) activity. One mutant with a disruption in a sodium/hydrogen exchanger (NHE) showed both delayed exit and reduced hydrogen exchanger (NHE) activity. One mutant with a disruption in a sodium/hydrogen exchanger (NHE) showed both delayed exit and reduced hydrogen exchanger (NHE) activity. One mutant with a disruption in a sodium/hydrogen exchanger (NHE) showed both delayed exit and reduced hydrogen exchanger (NHE) activity.

Resting Ca\(^{2+}\) levels were higher in mutant parasites. This would make it harder to detect any exit signal that increased these Ca\(^{2+}\) levels even further, perhaps explaining why these mutants are slow to exit. The increase in resting Ca\(^{2+}\) levels may come about if a Ca\(^{2+}\) exporter (Ca\(^{2+}\) out/H\(^+\) in) relies on prior action of the NHE (H\(^+\) out/Na\(^+\) in). Such a hypothetical linkage may be part of regulating *Toxoplasma* mobility or simply an intersection between the exit system and *Toxoplasma*’s normal ion homeostasis.