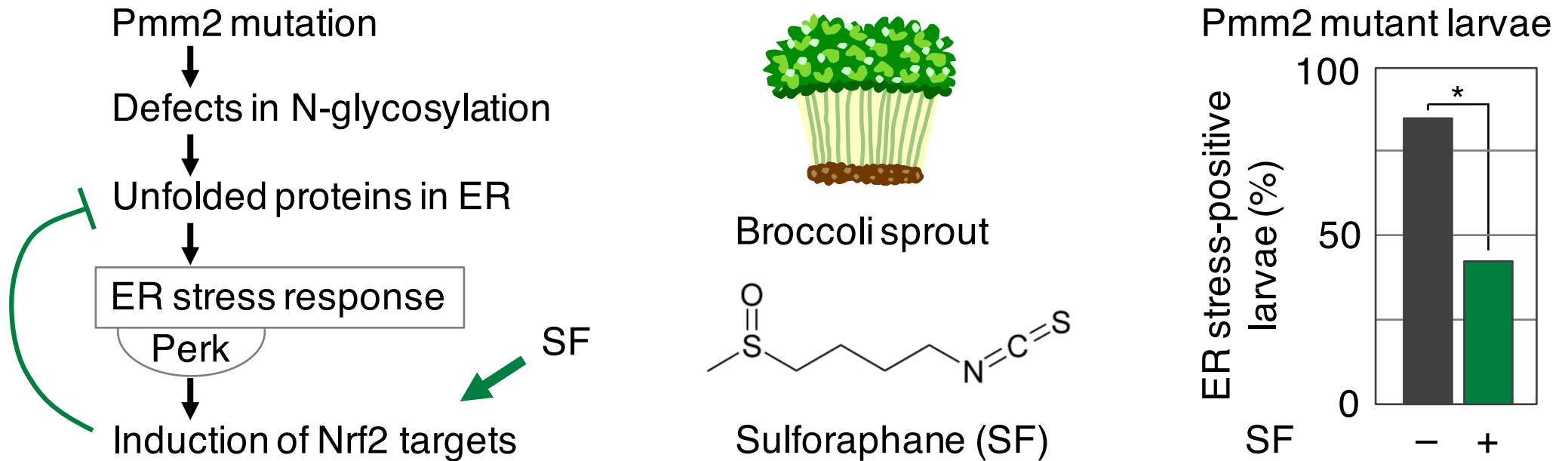


Nrf2 activation attenuates genetic endoplasmic reticulum stress induced by a mutation in the phosphomannomutase 2 gene in zebrafish



We demonstrated that Nrf2, a master regulator of the antioxidant response, also plays a critical role in the endoplasmic reticulum (ER) stress response using a zebrafish mutant in which Nrf2 is spontaneously activated. The gene responsible for this mutant was Pmm2, an enzyme required for the *N*-glycosylation. Human PMM2 is known to be the gene responsible for PMM2-CDG, which currently has no therapeutic options. *pmm2* mutant larvae showed upregulated ER stress and ER stress-dependent Nrf2 activation. Of note, the ER stress in mutant larvae was attenuated following treatment with the Nrf2 activator sulforaphane, which is found in broccoli sprout, suggesting that the pathological conditions of ER stress-associated diseases may be improved by taking Nrf2-activating foods.