The immune response to Aspergillus fumigatus, a common cause of mold pneumonia, involves myeloid phagocytes in the respiratory system. Neutrophils, monocytes, and alveolar macrophages play a crucial role in the defense against A. fumigatus. When these phagocytes engulf A. fumigatus conidia, the fusion of the phagosome with the lysosome is a key process for eliminating the conidia. Transcription factors TFEB and TFE3, known regulators of lysosomal biogenesis under stress, are activated by inflammatory stimuli in macrophages. The study investigated whether TFEB and TFE3 contribute to anti-Aspergillus immunity. Lung neutrophils were found to express TFEB and TFE3, and their target genes were upregulated during A. fumigatus lung infection. Furthermore, A. fumigatus infection induced the nuclear accumulation of TFEB and TFE3 in macrophages, a process regulated by Dectin-1 and CARD9. The genetic deletion of Tfeb and Tfe3 impaired macrophage killing of A. fumigatus conidia. However, in a murine model with immune-competent Aspergillus infection and genetic deficiency of Tfeb and Tfe3 in hematopoietic cells, lung myeloid phagocytes surprisingly showed no defects in conidial phagocytosis or killing. Loss of TFEB and TFE3 did not impact murine survival or the clearance of A. fumigatus from the lungs. The findings suggest that myeloid phagocytes activate TFEB and TFE3 in response to A. fumigatus, and although this pathway promotes macrophage fungicidal activity in vitro, genetic loss can be functionally compensated in the lung. This compensation results in no measurable defect in fungal control and host survival.