Unlike urodele amphibians, mammals have very restrictive regeneration capabilities. While urodeles are able to completely regenerate lost limbs, wounded mammalian tissue heals with a scar and a loss of the original functionality. One current hypothesis for this reduced regeneration capacity suggests that, evolutionarily, mammals sacrificed the regenerative trait for a highly developed immune system. Immune cells including neutrophils, macrophages, and T-cells have been intensely studied for their role linking inflammation to tissue fibrosis and scarring in mammals. However, very little research has been conducted to characterize mammalian regeneration abilities and the role of the immune system. Previous research has established that the most distal 1/3 of the terminal phalangeal element (P3) is able to completely regenerate after amputation in adult mice. In contrast, any amputation proximal to this point heals with a scar. This model enables us to compare characteristics of a regenerating digit tip with a non-regenerating digit within the same animal. We use this model to catalog the presence of immune cells in a regeneration-competent and regeneration-incompetent wound area. Using indirect immunofluorescence against specific immune cell markers, we track the change in leukocyte numbers in regeneration-competent and -incompetent areas over the course of 28 days. We show that during the early stages of wound healing (3-7 days post amputation), the presence of inflammatory cells is higher in a regeneration- incompetent region than in a regeneration- competent region. In both areas, the leukocyte response peaked at 3-5 days post amputation and returned to control levels after 10-14 days post amputation. Our studies establish a timeline for the leukocyte inflammation response in regeneration-competent and regeneration-incompetent sites and suggest that higher levels of leukocytes are present in the non-regenerating wound environment than in regenerating tissue. These findings support the need for further research into the role of leukocytes in regeneration and scarring.