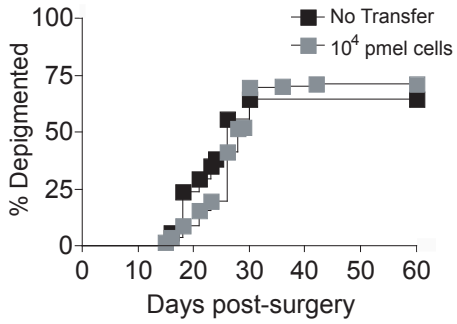
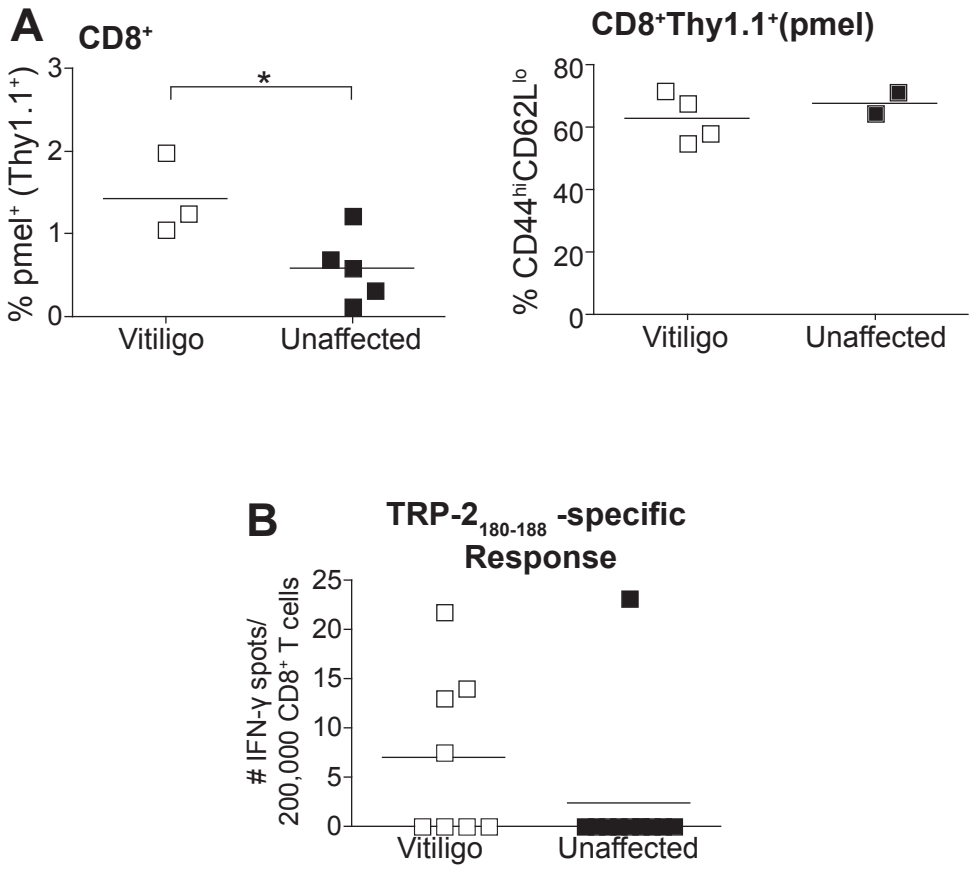
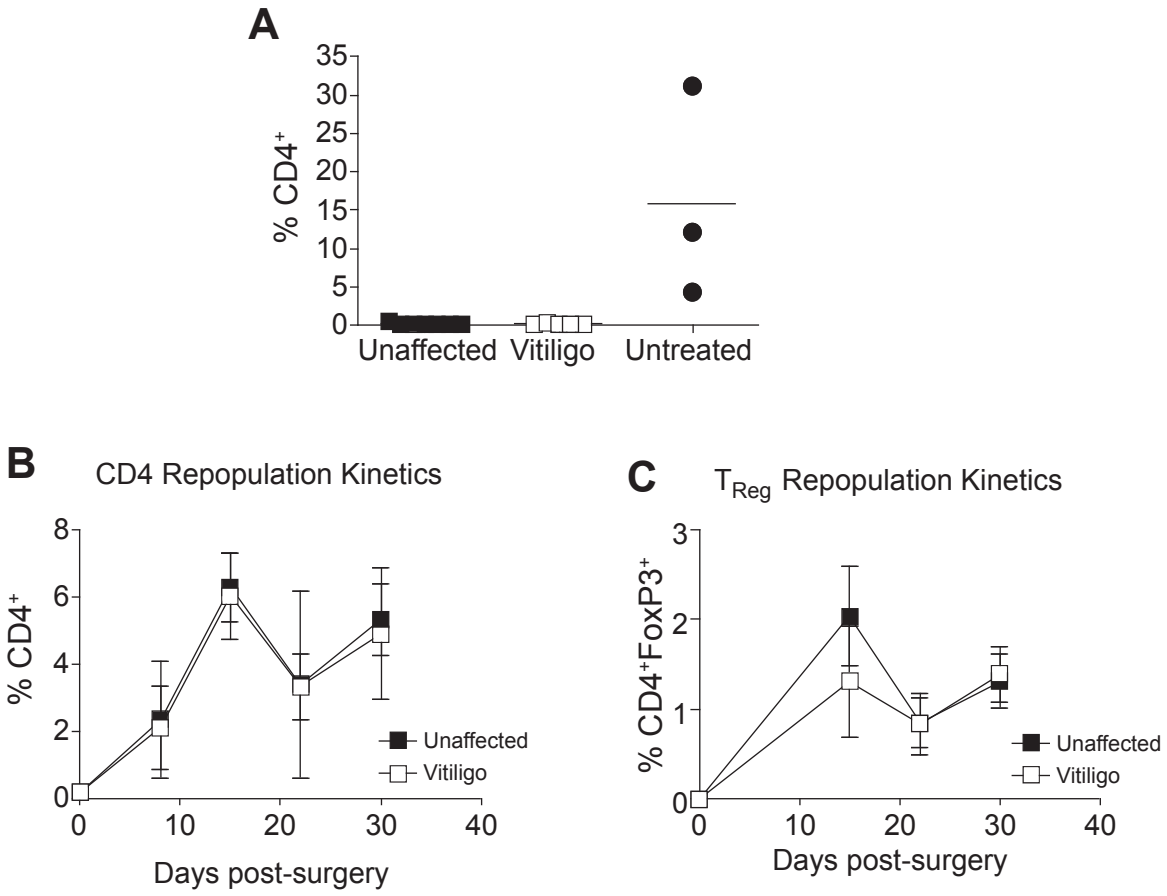


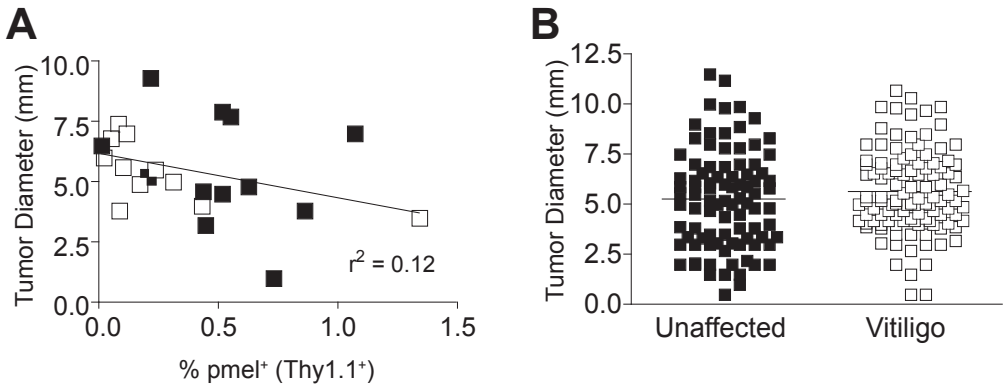
Supplemental Figure 1. *Adoptive transfer of pmel cells does not alter depigmentation kinetics.* Mice were treated as described in Figure 1A, either with or without adoptive transfer of pmel cells one day before primary tumor inoculation. Combined data from two identical experiments, with 30-60 mice per experiment, are depicted.



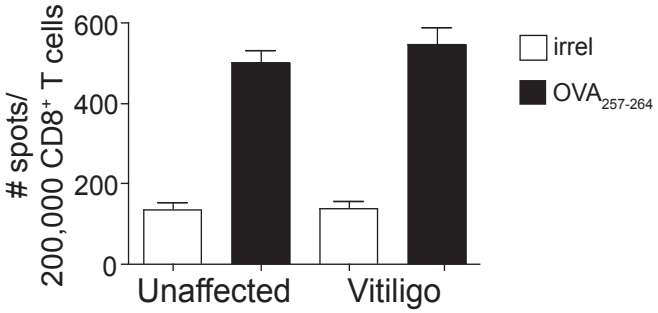
Supplemental Figure 2. *Larger tumor-specific CD8+ T cell responses are primed in tumor-draining lymph nodes of mice that eventually develop vitiligo.* Mice were treated as described in Figure 1A. Tumor-draining lymph nodes (TDLN) were removed on the day of surgery for analysis of primary T cell responses, and correlation with the eventual development of vitiligo (□) or lack thereof (■) on day 30. Removal of TDLNs did not substantially alter the incidence of vitiligo (16 of 33 mice were affected in four combined experiments). (A) Mice received adoptive transfer of 10^4 naïve pmel cells one day before treatment; flow cytometry was performed to detect proportions of live $CD8^+$ cells that were $Thy1.1^+$ pmel cells on the day of surgery. Statistically significant differences were assessed by *t* test, with * $P < 0.05$. Symbols represent individual mice, horizontal lines represent averages. Experiment was performed twice with similar results. (B) Endogenous responses to TRP-2. IFN-γ ELISPOT was performed on purified $CD8^+$ cells from individual TDLNs. Responses to TRP-$2_{180-188}$ peptide are normalized relative to irrelevant peptide. Symbols represent mean responses from individual mice (2-6 replicate wells per mouse) and horizontal lines represent averages of all mice within group. Data depict two combined experiments with similar results.



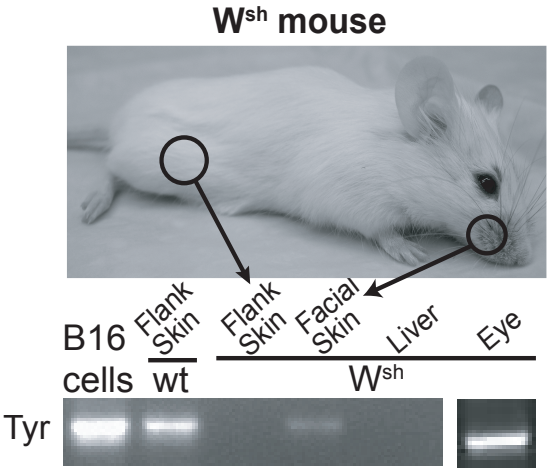
Supplemental Figure 3. *Vitiligo-affected and unaffected mice both undergo complete depletion of CD4 T cells and exhibit similar repopulation kinetics*. Mice received tumors, anti-CD4, and surgery as described in Figure 1A, and CD4 T cell populations were assessed by flow cytometry at various times, in peripheral blood. (A) CD4 T cell depletion efficiency on the day of surgery. Proportion of $CD4^+$ cells among live lymphocytes in individual mice that eventually developed vitiligo (□) or remained unaffected (■). Symbols represent individual mice and horizontal lines represent averages. (B-C) CD4 T cell repopulation kinetics. Proportion of total $CD4^+$ cells (B) or $CD4^+Foxp3^+$ cells (C) among live lymphocytes. Symbols represent averages +/- standard deviation of 5-7 mice per group. Experiment was performed twice with similar results.



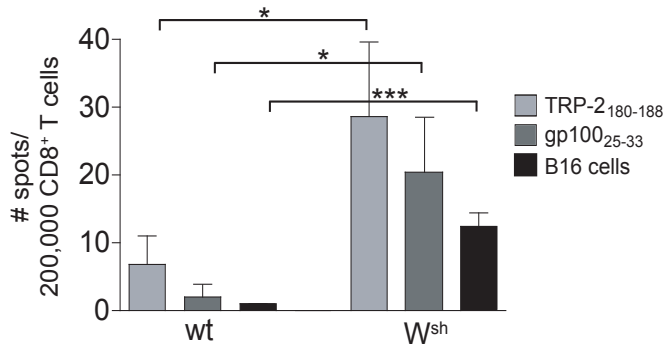
Supplemental Figure 4. *Larger primary tumor size does not correlate with the eventual development of vitiligo.* Mice were treated as described in Figure 1A, with adoptive transfer of 10^4 naive pmel cells on day -1. (A) Tumor diameter was assessed together with the proportion of Thy1.1$^+$pmel cells among live CD8$^+$ cells, in blood, on the day of surgery. Open symbols (□) represent mice that developed vitiligo within the next 30 days, and closed symbols (■) represent those that remained unaffected. Combined data from two experiments, with 10-12 mice per experiment, are depicted. (B) Tumor diameter on the day of surgery was assessed together with the development of vitiligo within the next 30 days. Combined data from 24 experiments, with 10-12 mice per experiment, are depicted. Symbols represent individual mice.



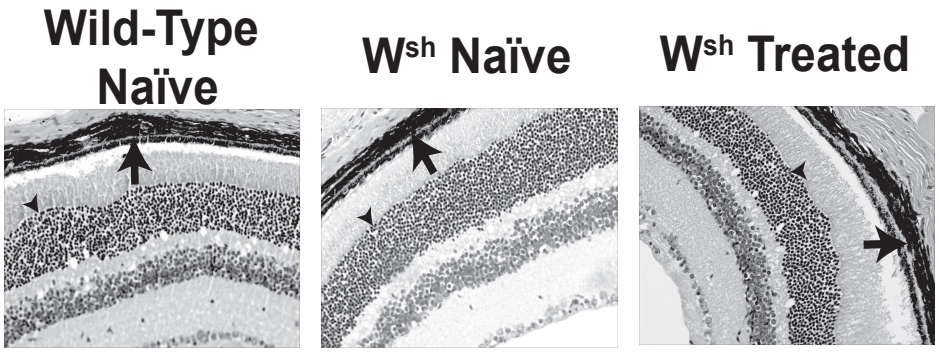
Supplemental Figure 5. *Vaccine recall responses to a foreign antigen are similar in vitiligo-affected and unaffected hosts.* Mice were primed as described in Figure 1A and then stratified based on the presence or absence of vitiligo. Mice were vaccinated three months post-surgery, i.v., with $OVA_{257-264}$ peptide + anti-CD40 / polyI-C, and then boosted an additional 30 days later with peptide + polyI-C. IFN-γ ELISPOT was performed on purified $CD8^+$ cells from pooled spleens (3-4 mice per group) to detect responses to OVA versus irrelevant (HY) peptide four days following boost. Data represent average ± SD of four replicate wells. Experiment was performed twice with similar results.



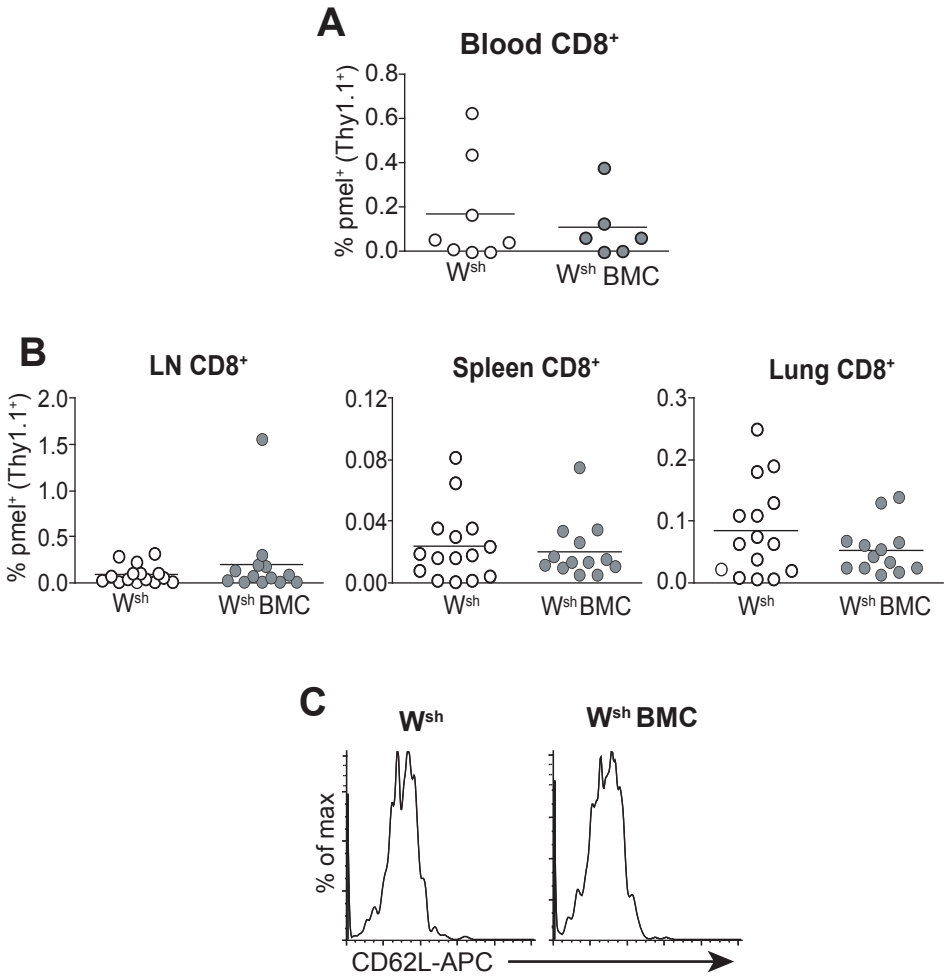
Supplemental Figure 6. *W^{sh} mice are a model of overwhelming melanocyte reduction. Top*, photograph of W^{sh} mouse; *bottom*, RT-PCR of *tyrosinase (tyr)* expression in B16 cells or indicated tissues of wild-type (wt) or W^{sh} mice. RT-PCR product from the eye was run on a separate gel than other organs. Each RT-PCR was repeated at least two times.



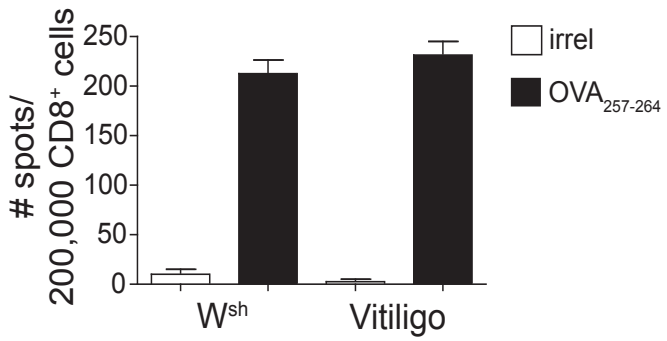
Supplemental Figure 7. *W^{sh} mice exhibit loss of CD8 T cell tolerance to antigens expressed by B16 melanoma.* Wild-type (wt) or W^{sh} mice were inoculated with 10^5 B16 melanoma cells. On day 12 of tumor growth, IFN-γ ELISPOT was performed on purified CD8 T cells from spleens of pooled groups (6 mice/group) of wt or W^{sh} mice, using either peptide-pulsed EL4 cells or whole B16 cells as targets, as indicated in legend. Data represent average ± SD of four replicate wells. Statistically significant differences between responses to each peptide comparing wt and W^{sh} mice were assessed by *t* test; indicated as * P <0.05, ** P < 0.01, *** P < 0.001.



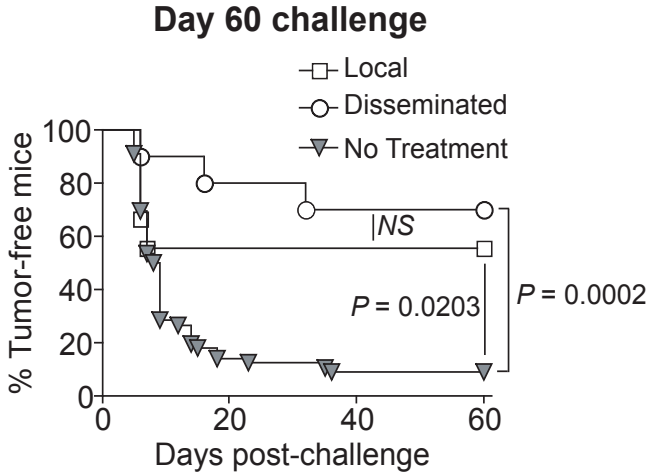
Supplemental Figure 8. *Retinas of W^{sh} mice appear normal.* Wild-type and W^{sh} mice were either left untreated, or treated as shown in Figure 1A. Eyes were harvested thirty-four days post-surgery, fixed, stained with hematoxylin and eosin, and underwent evaluation by a pathologist. Images were taken at 20X magnification. Arrows indicate pigmented epithelial layers lacking lymphocytic infiltration. Arrowheads indicate unperturbed retina. Samples are representative of 4-8 mice/group.



Supplemental Figure 9. *Primary and memory pmel T cell responses to B16 melanoma are equivalent in W^{sh} mice and mast cell-reconstituted W^{sh} mice.* W^{sh} bone marrow chimeric mice (W^{sh} BMC) were generated by irradiating W^{sh} mice with a total of 650 RADS, in two doses, 24 hours apart, and then administering 10^7 wild-type Ly5.2$^+$ C57BL/6 bone marrow cells, i.v., three hours later. Blood samples were analyzed 30 days later by flow cytometry to confirm >95% lymphocyte reconstitution. 120 days after bone marrow transplant, groups of W^{sh} BMC hosts and unmanipulated W^{sh} mice each received 10^4 naïve pmel cells, and were then treated as described in Figure 1A. (A) On the day of surgery, mice were bled and assessed for the proportion of primed pmel cells (Thy1.1$^+$CD44^{hi}) among total CD8 T cells. (B-C) Thirty days after surgery, the proportion of pmel cells among total CD8 T cells (B), and CD62L expression on CD8$^+$Thy1.1$^+$CD44^{hi} pmel cells in lymph nodes (C) was analyzed by flow cytometry. Histograms depict representative mice, symbols represent individual mice, and horizontal lines represent averages. Data from two combined experiments, with 6-8 mice per group, are depicted.



Supplemental Figure 10. *Vaccine recall responses to a foreign antigen are similar in W^{sh} and vitiligo-affected hosts.* W^{sh} mice or wild-type mice were treated as described in Figure 1A. Six months post-surgery, W^{sh} mice and wild-type mice that had developed vitiligo were vaccinated i.v. with $OVA_{257-264}$ peptide + anti-CD40 / polyI-C, and then boosted an additional 30 days later with peptide + polyI-C. IFN-γ ELISPOT was performed four days after boost on purified $CD8^+$ cells from pooled spleens (3-4 mice per group), to detect responses to OVA versus irrelevant (HY) peptide. Data represent average ± SD of four replicate wells. Experiment was performed twice with similar results.



Supplemental Figure 11. *Long-lived tumor protection is similar in hosts with local or disseminated vitiligo.* Mice were either primed as shown in Figure 1A or left untreated, and then stratified based on the development of local or systemic vitiligo 60 days later, as described in Figure 1. Groups were re-inoculated with B16 melanoma cells i.d. 60 days post-surgery, and incidence of challenge tumors is depicted. Data represent 8-25 mice/group, combined from 3 experiments. Significance was determined by Log-rank analysis.

Supplemental Methods

OVA vaccination and recall response monitoring. Mice received B16 tumor cell inoculation, anti-CD4 treatment, and surgery, and at various time points after tumor excision were vaccinated against $OVA_{257-264}$ peptide. Vaccination involved 50 μg of anti-CD40 mAb (clone FGK4.5, BioExpress) i.p., and 100 μg of $OVA_{257-264}$ peptide + 150 μg polyIC (Sigma) 4-6 hours later, i.v. Thirty days after vaccination, 100 μg $OVA_{257-264}$ peptide + 150μg polyIC was administered i.v. as a boost. The recall response was determined four days later by IFN-γ ELISPOT as described in Methods.

Histology of eye tissue. Eyes were removed from wild-type or W^{sh} mice mice and stored in 10% Formalin for >24hrs. Parafin-embedded tissues were cut and stained with hematoxylin and eosin to determine cellular infiltration and morphology. The sections were blindly scored by a pathologist. Images of slides were taken using a Nikon Eclipse 80i at 20X magnification.