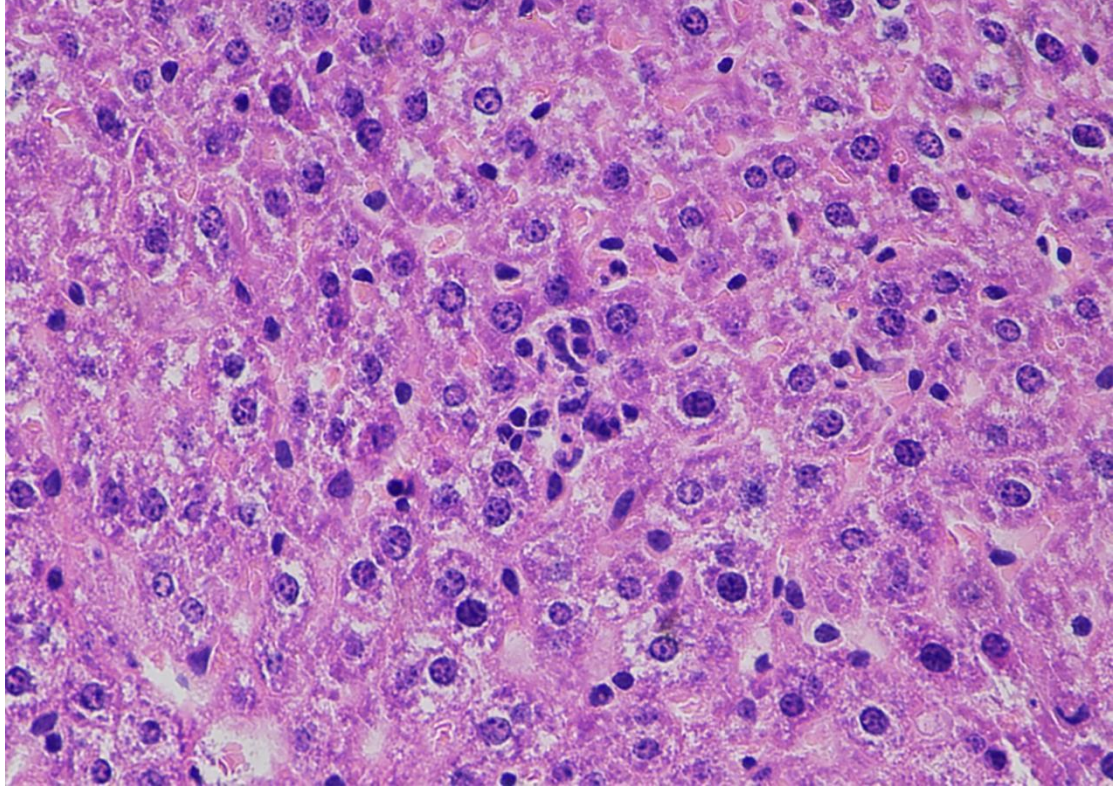


Supplementary Material

1 Supplementary Figures

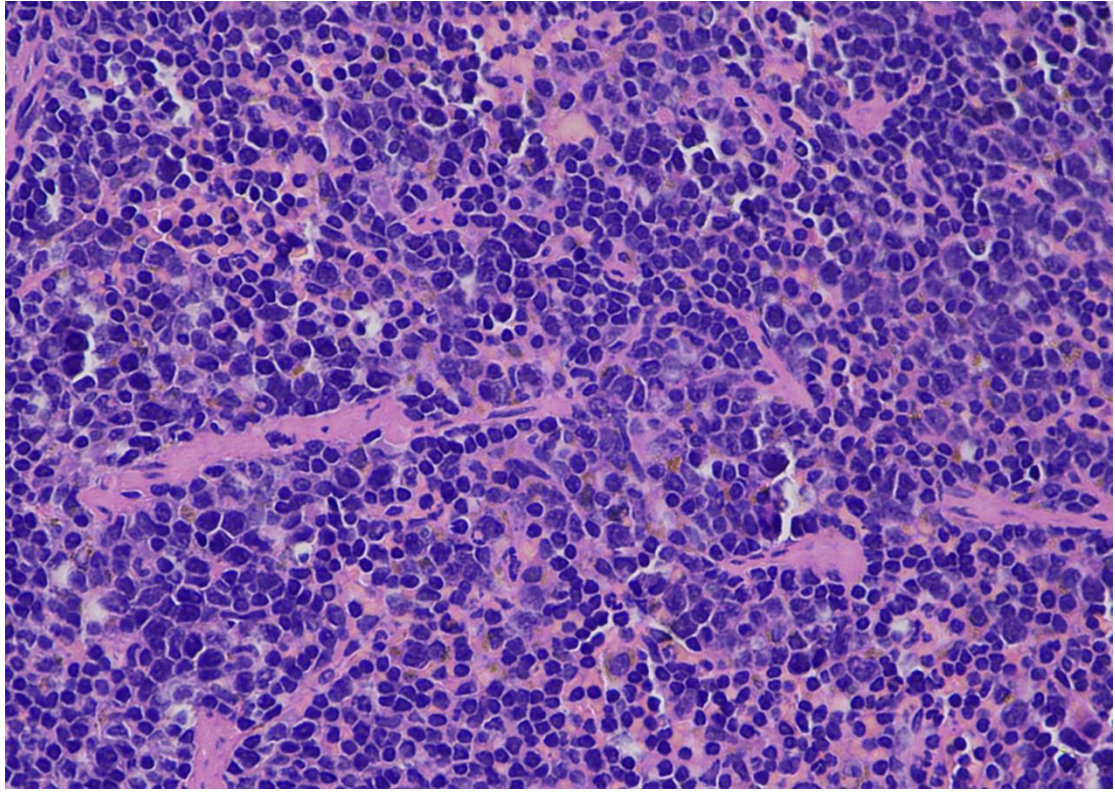
(A)

Liver

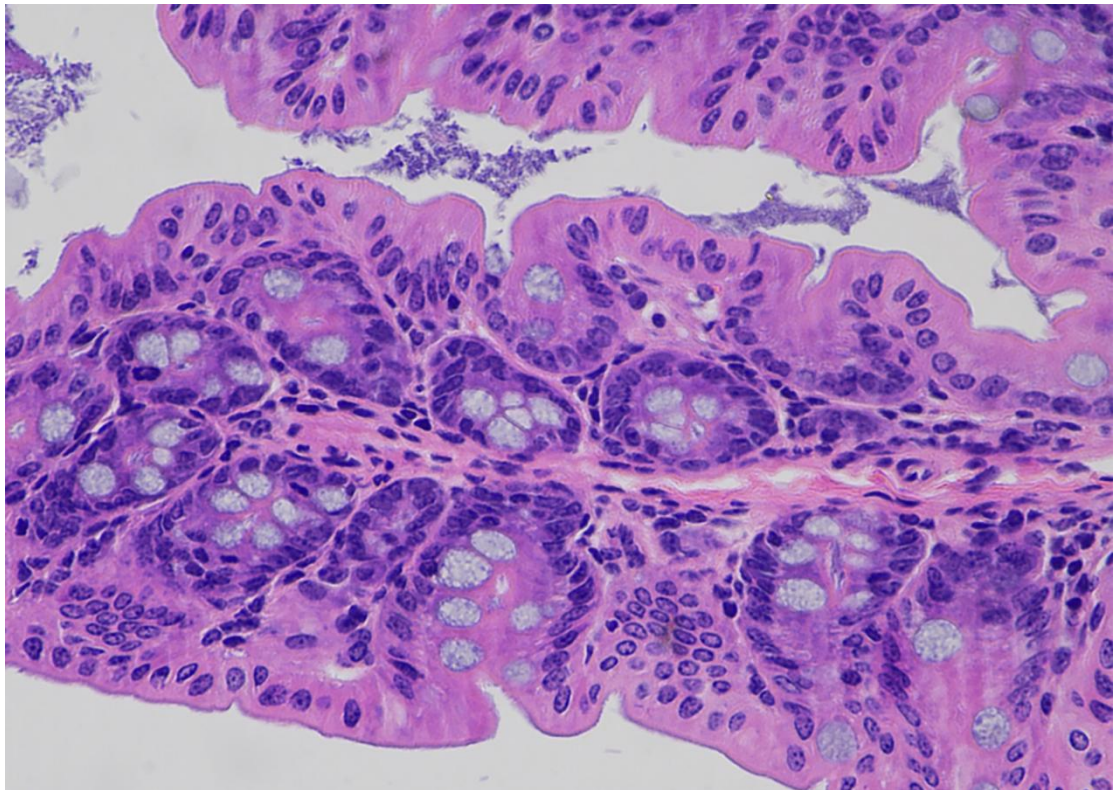


(B)

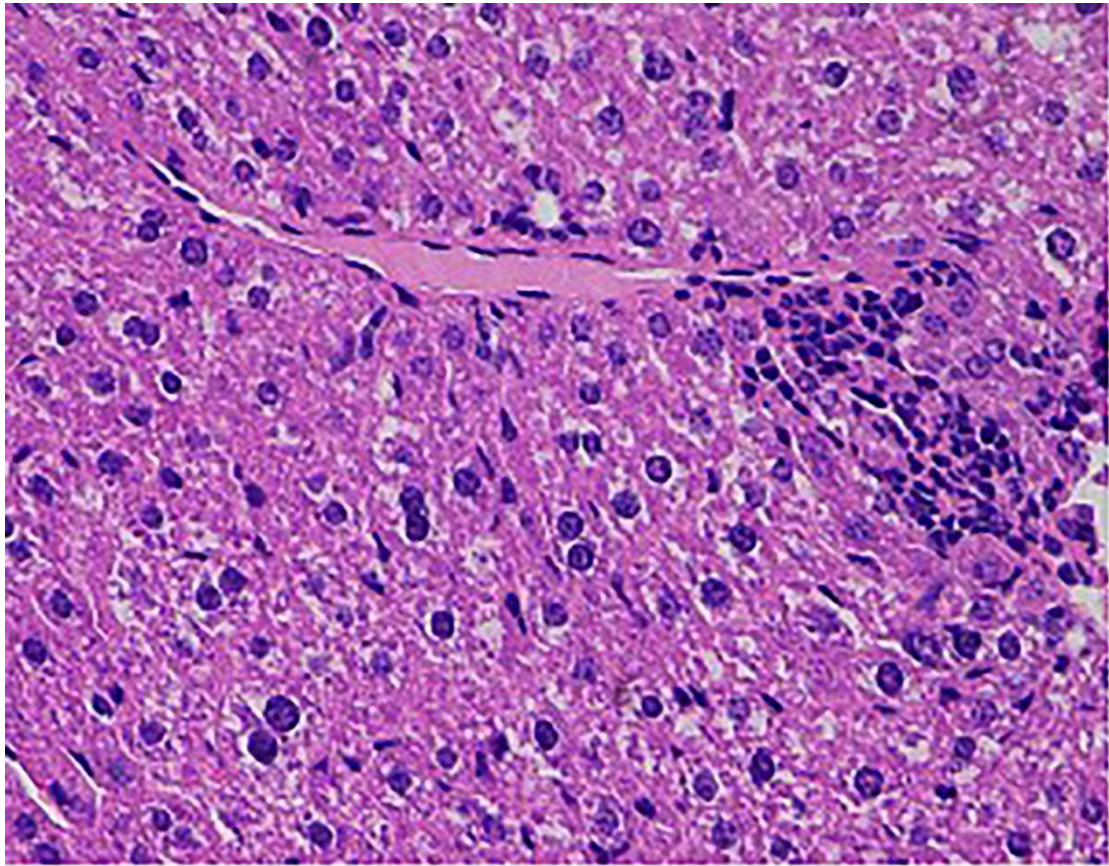
Spleen



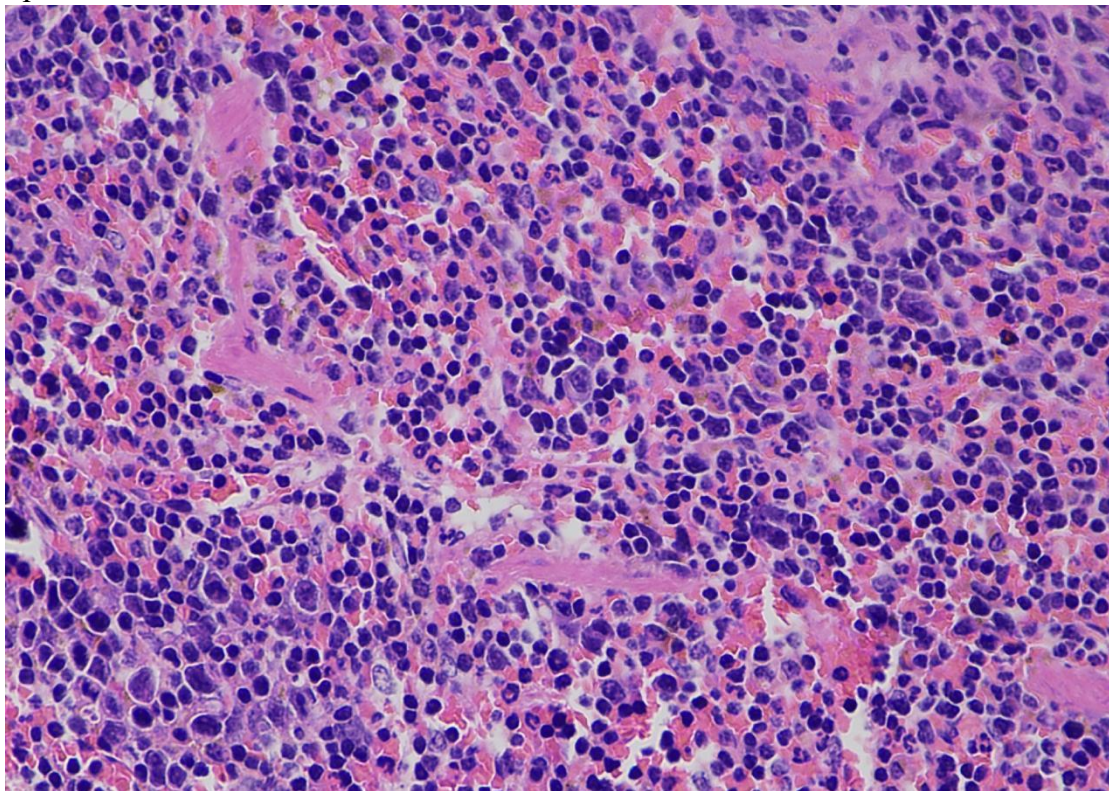
(C)
Cecum



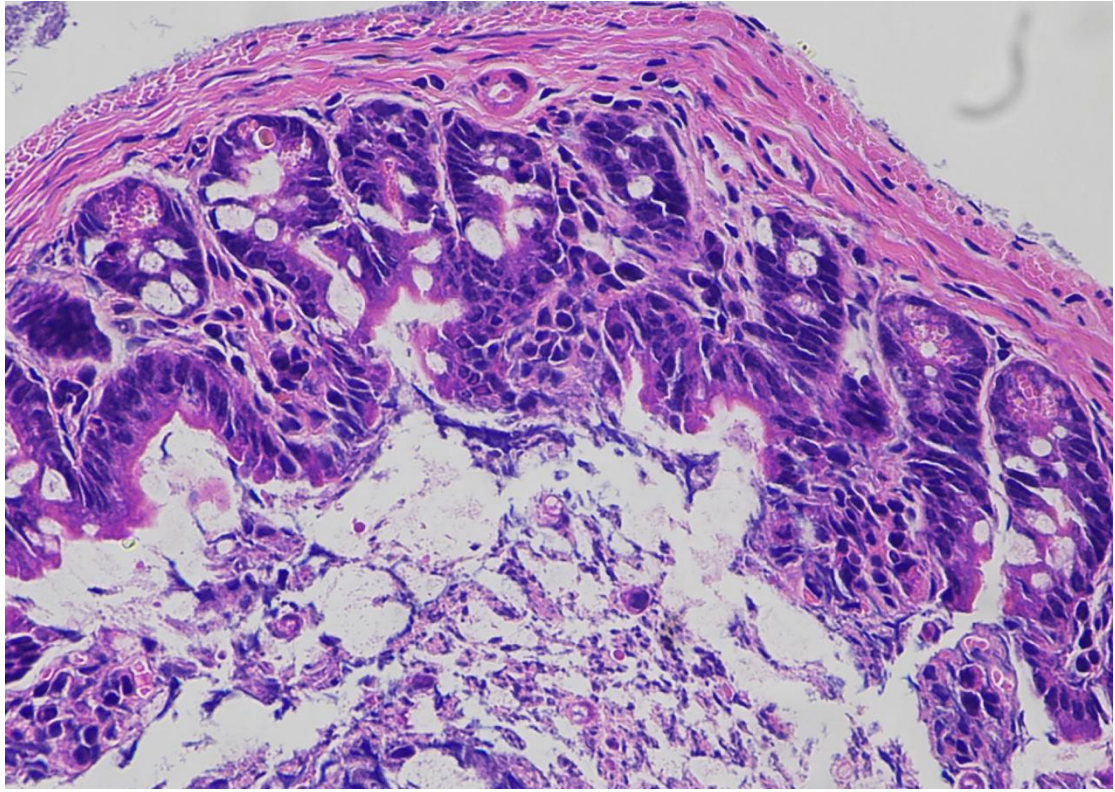
(D)
Liver



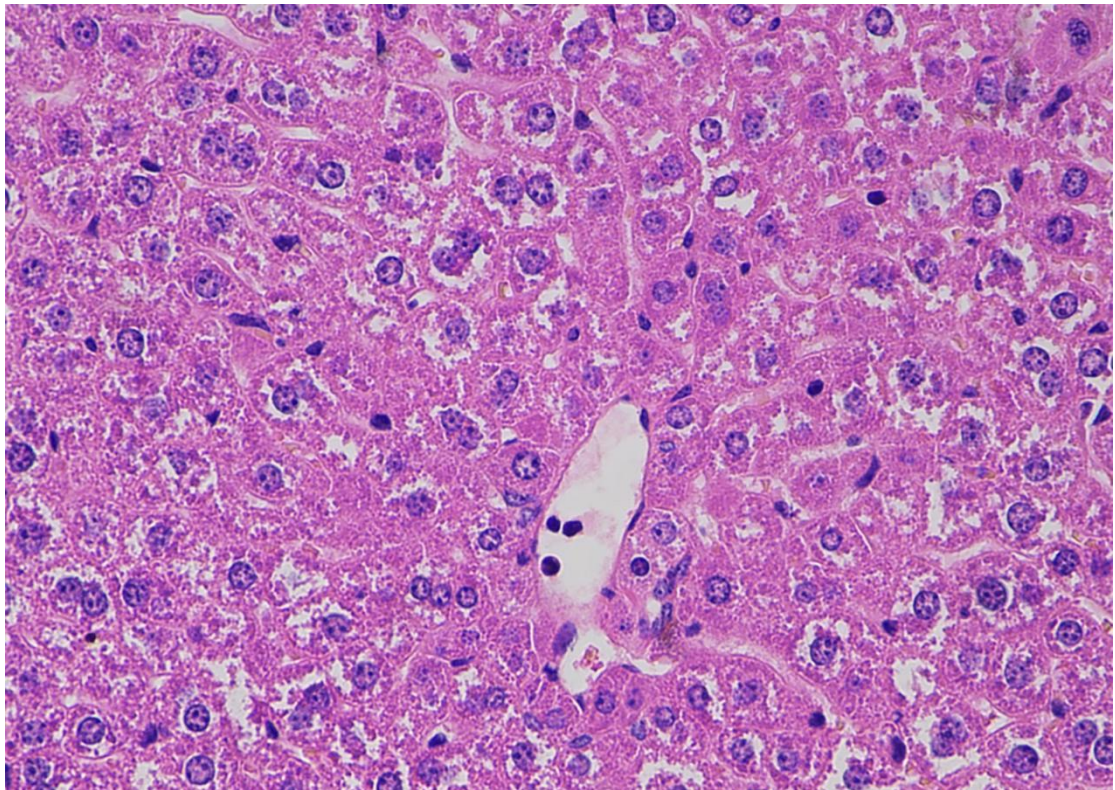
(E)
Spleen



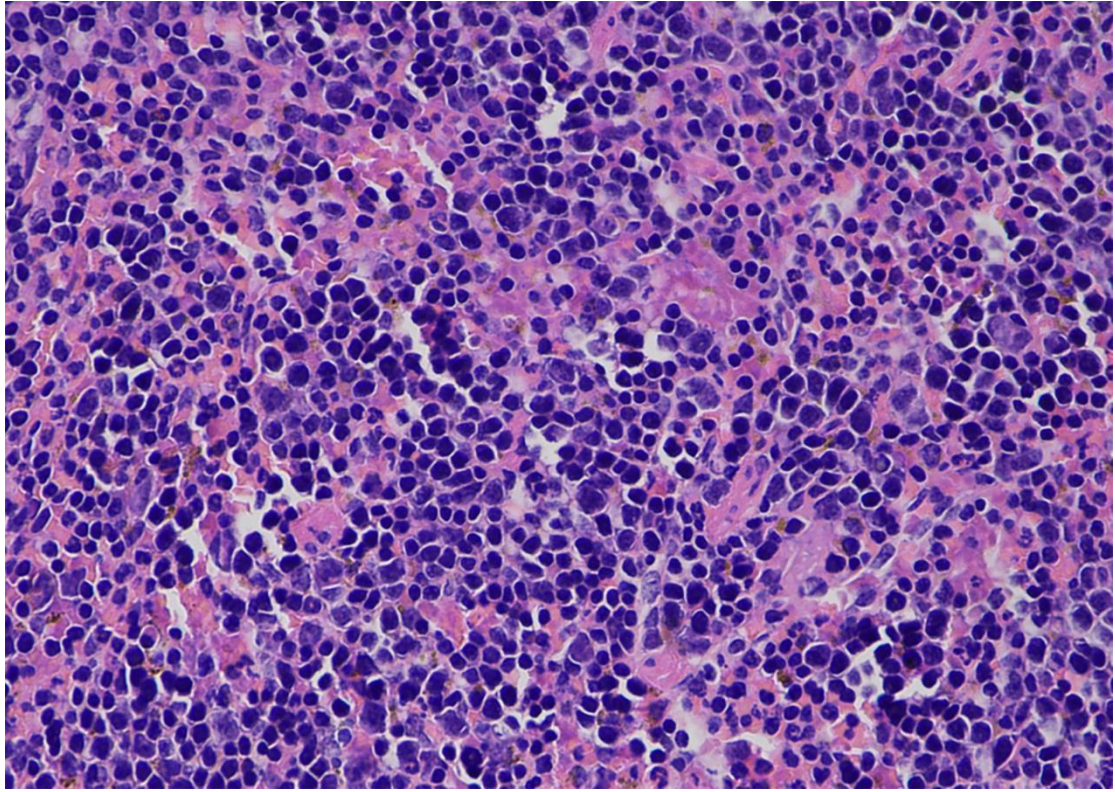
(F)
Cecum



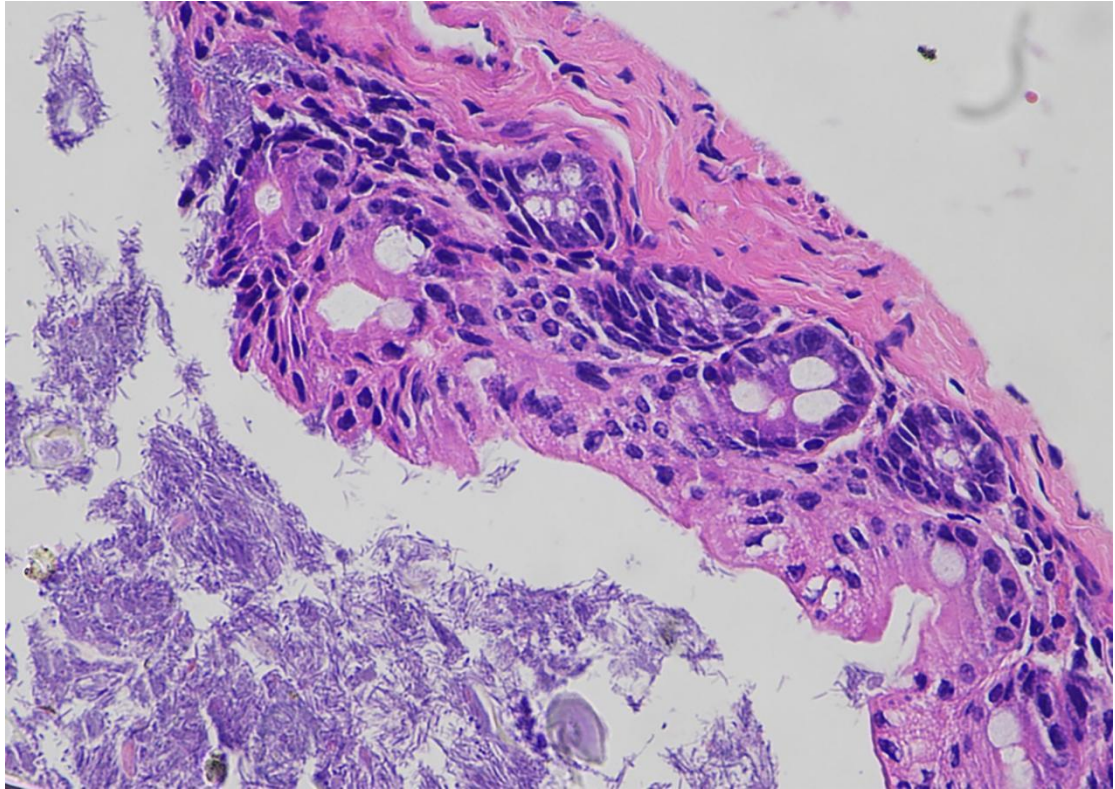
(G)
Liver



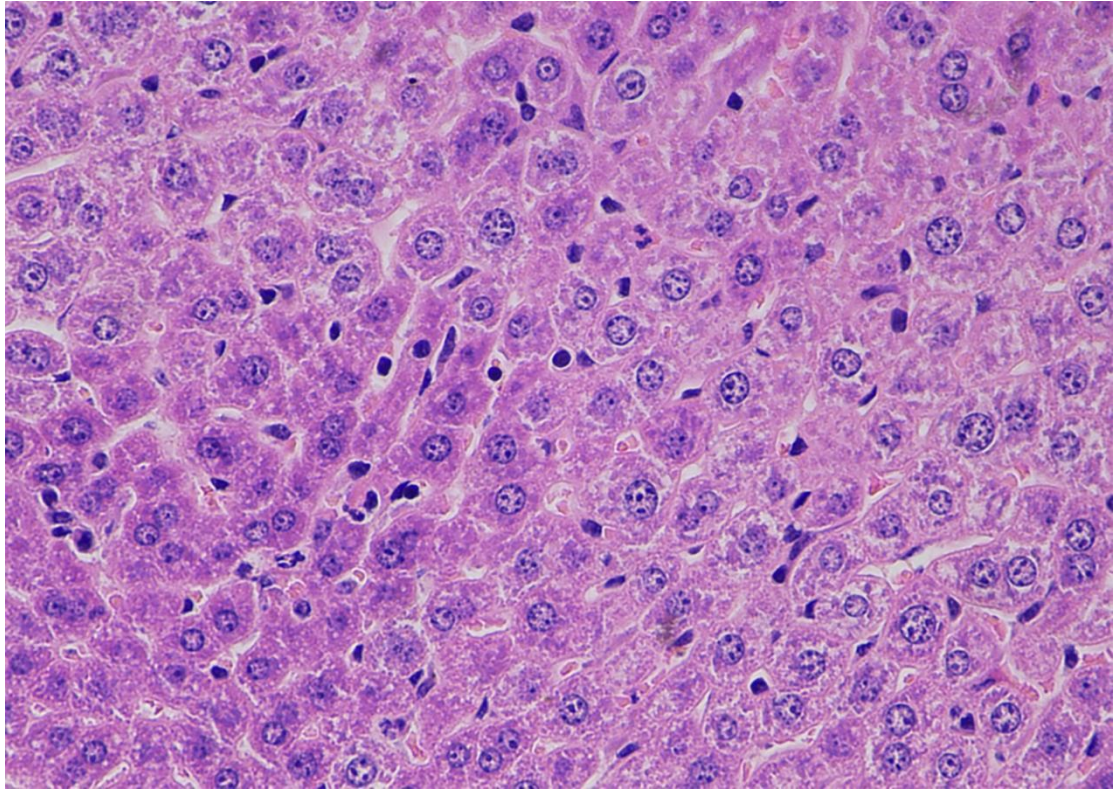
(H)
Spleen



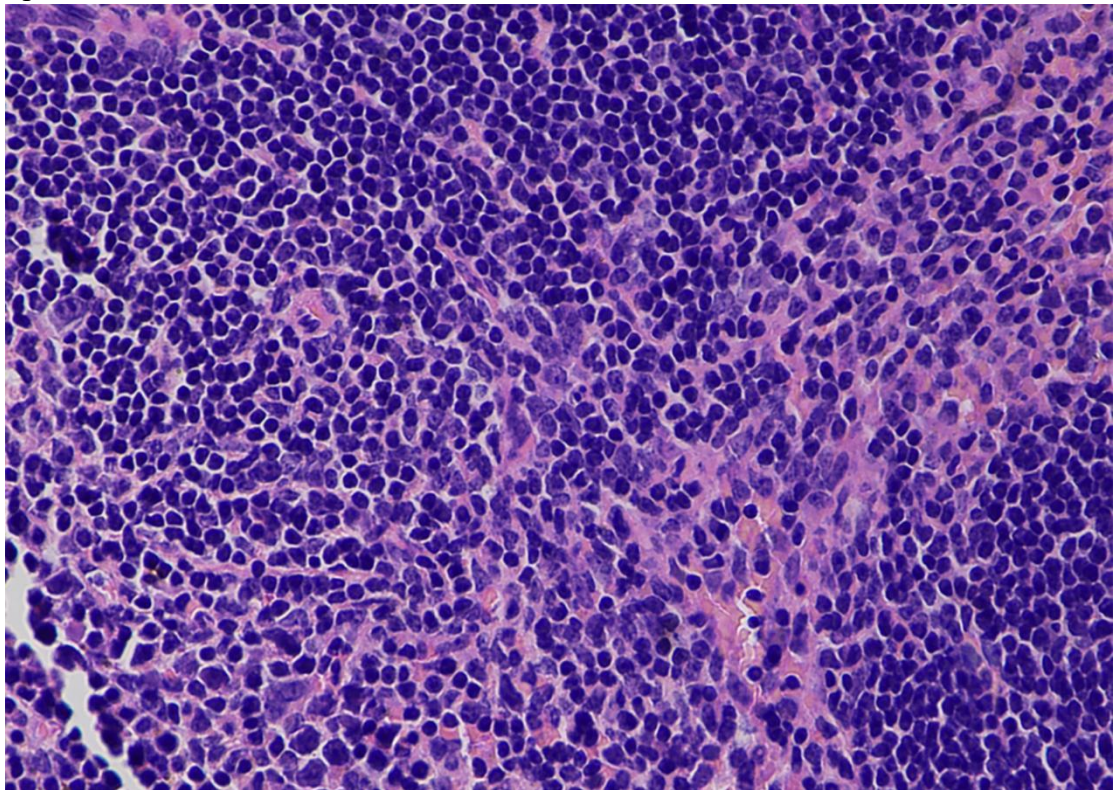
(I)
Cecum



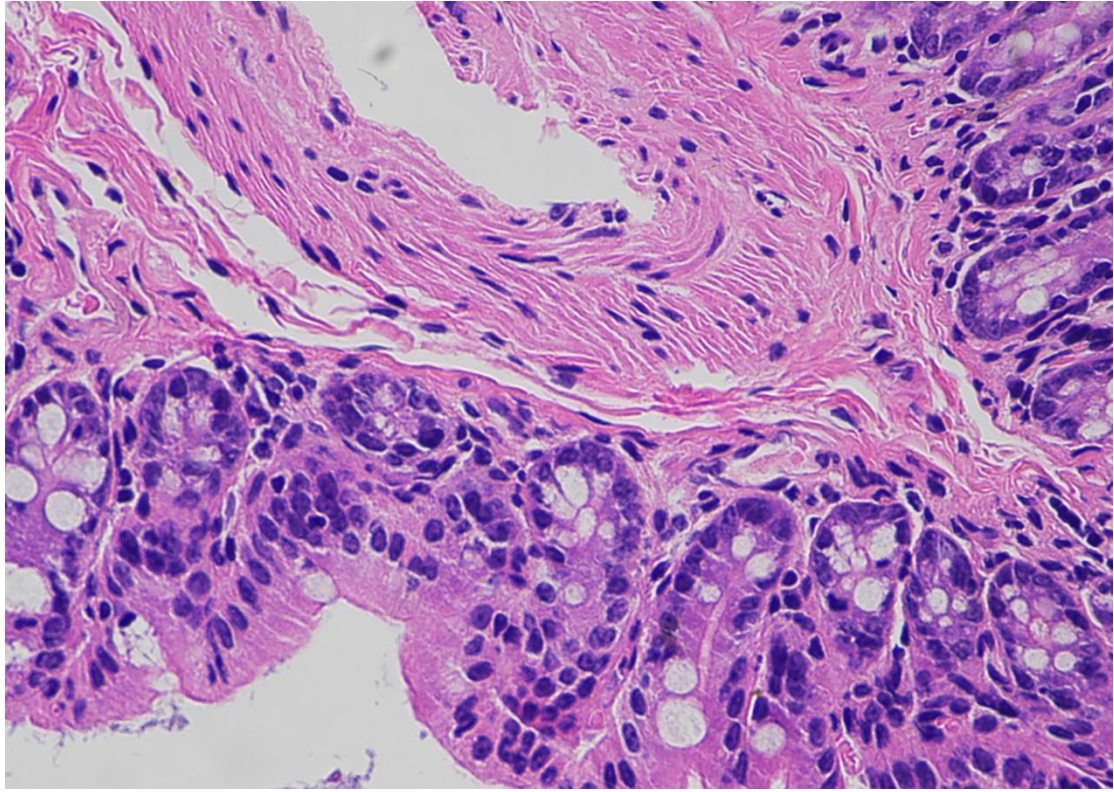
(J)
Liver



(K)
Spleen

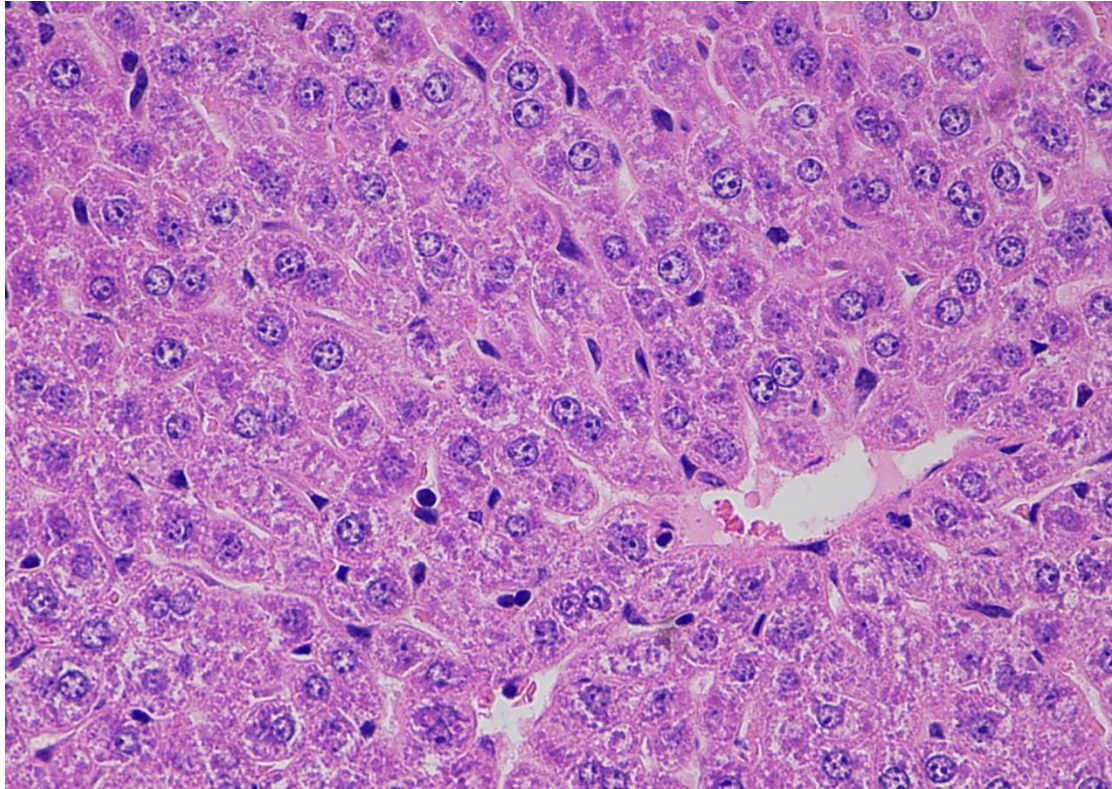


(L)
Cecum

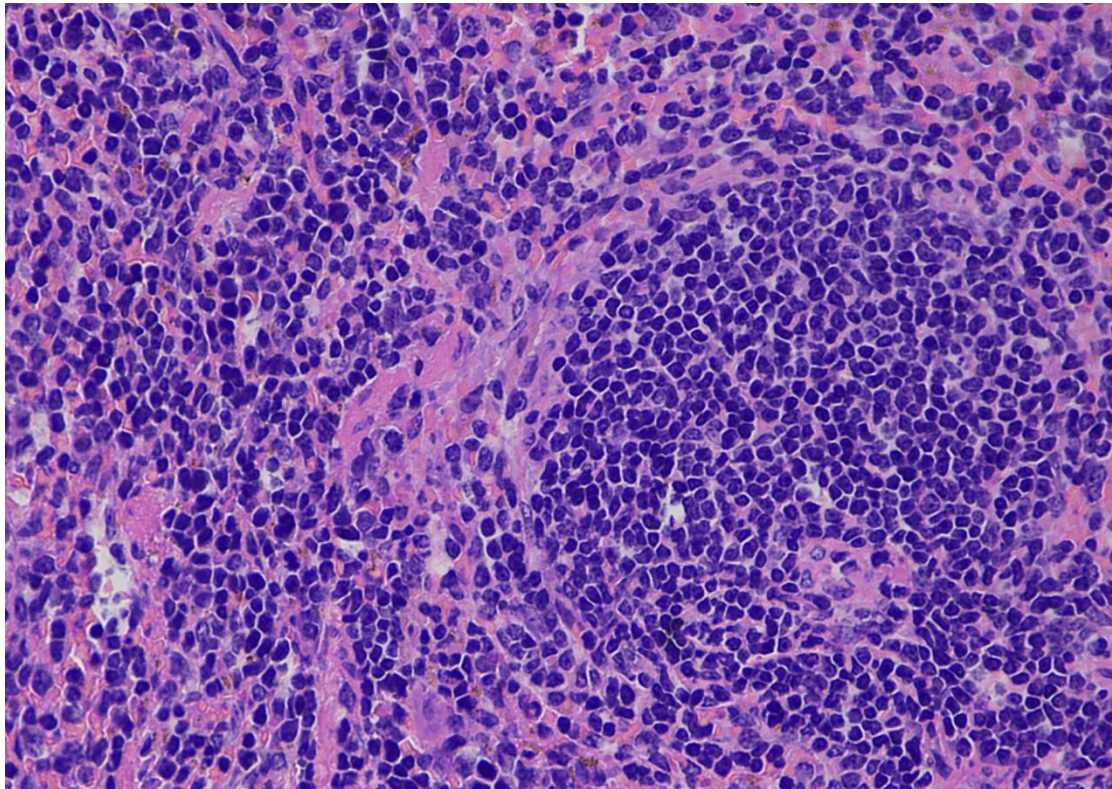


Supplementary Figure 1. Histological analysis after immunization. Representative images of haematoxylin and eosin-stained spleen, liver, and cecum tissue sections at 3 d post i.m. injection. (A), (B), and (C) are pathological sections of PBS group. (D), (E), and (F) are pathological sections of Sdu189 group. (G), (H), and (I) are pathological sections of Sdu189 Δ *spiC* group. (J), (K), and (L) are pathological sections of Sdu189 Δ *spiC* Δ *aroA* group (magnification is 400 \times).

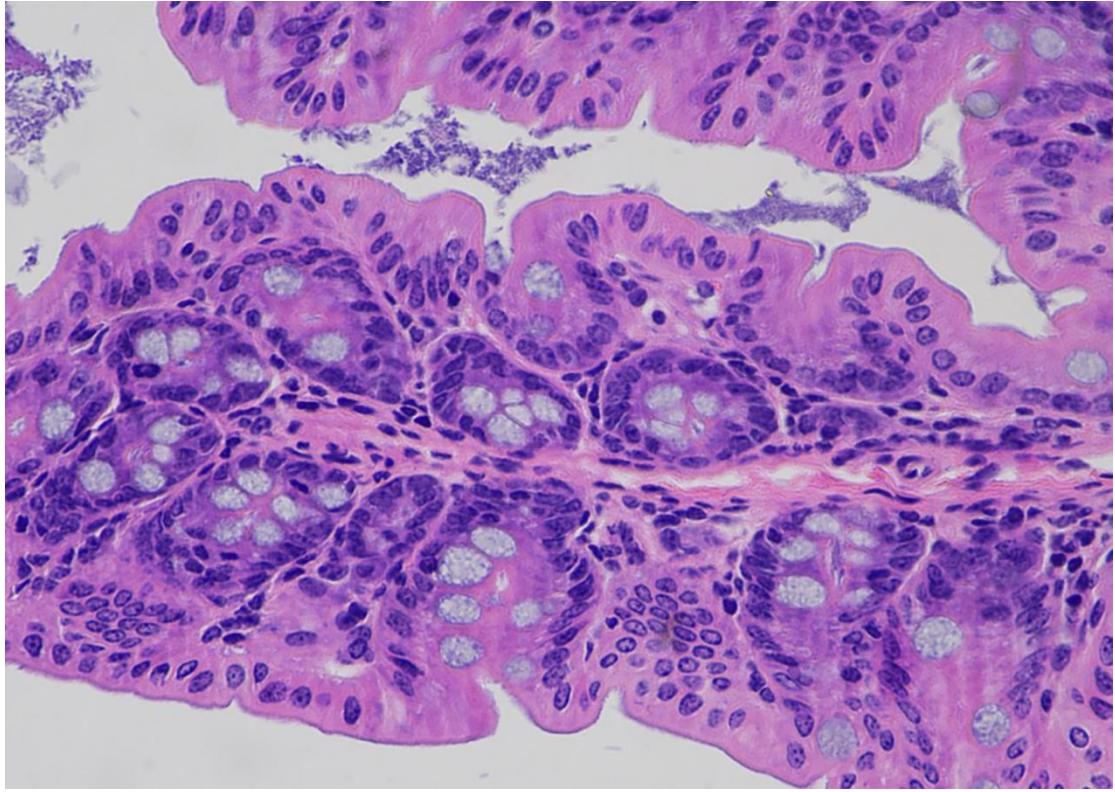
(A)
Liver



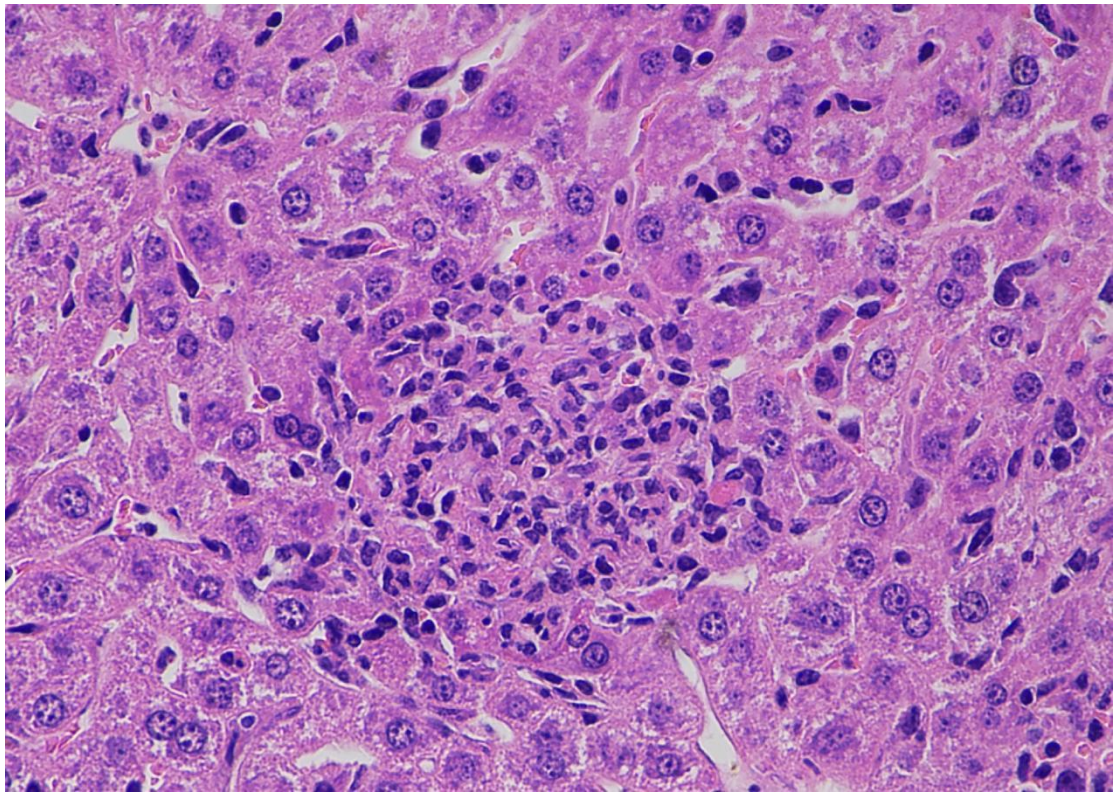
(B)
Spleen



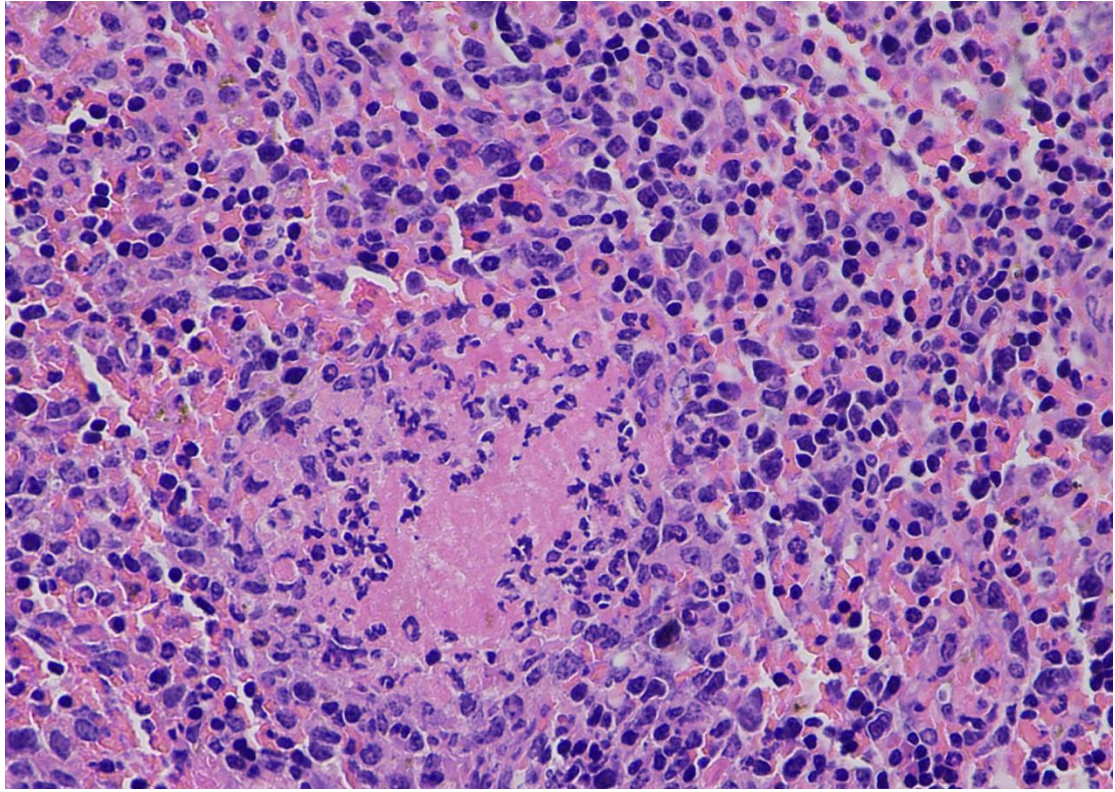
(C)
Cecum



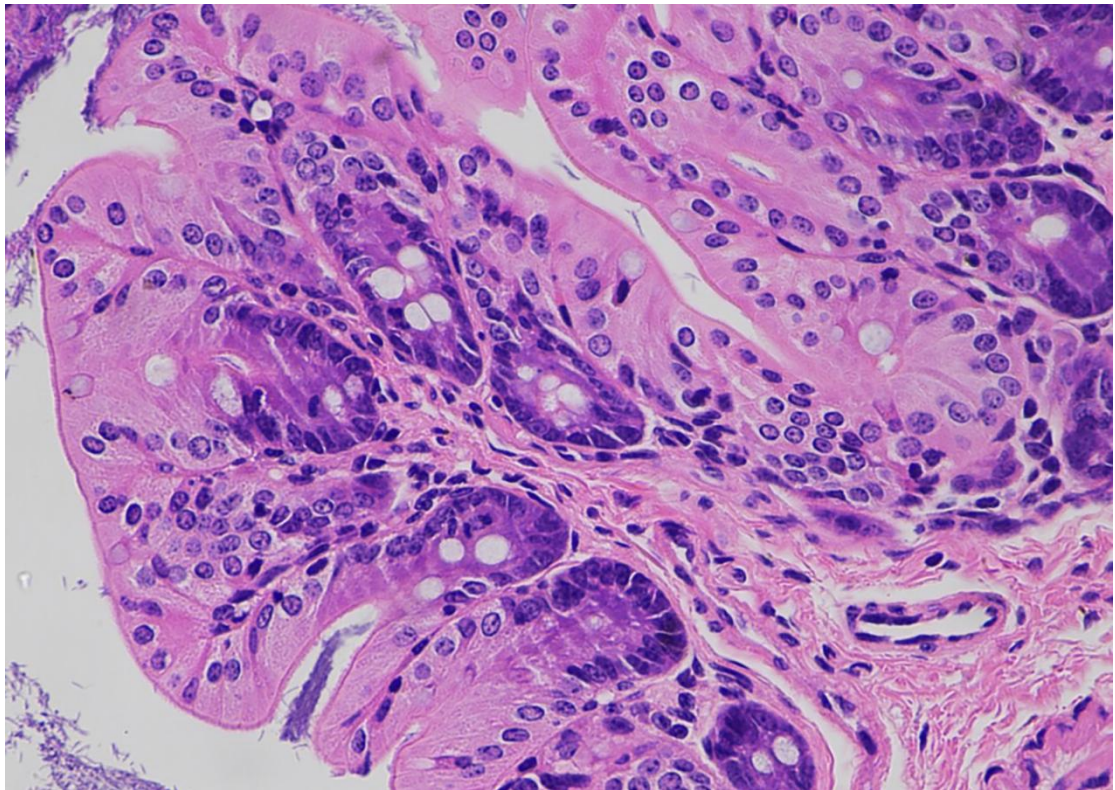
(D)
Liver



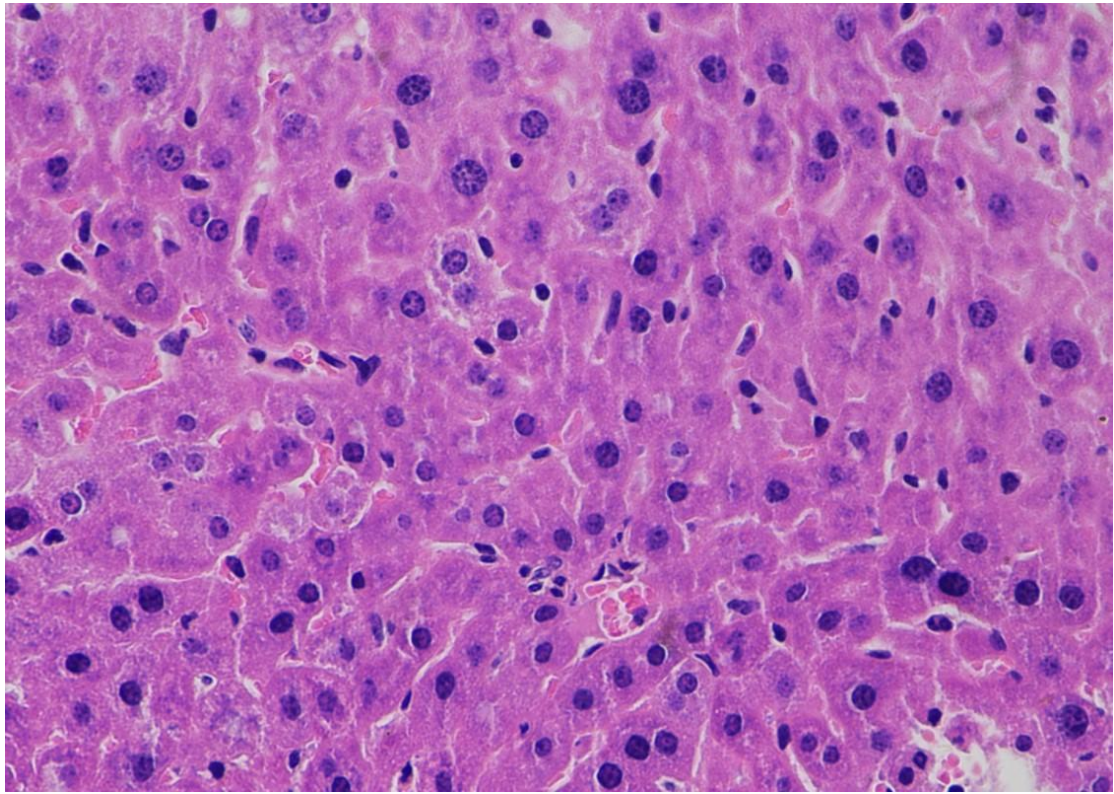
(E)
Spleen



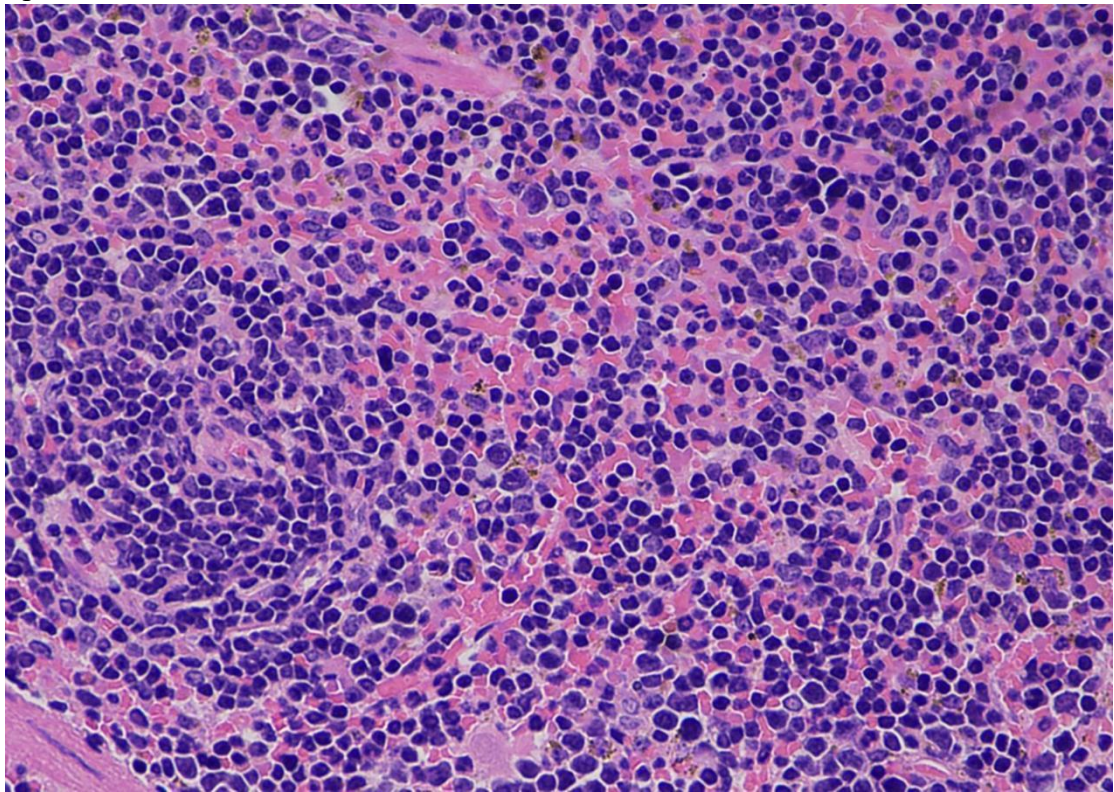
(F)
Cecum



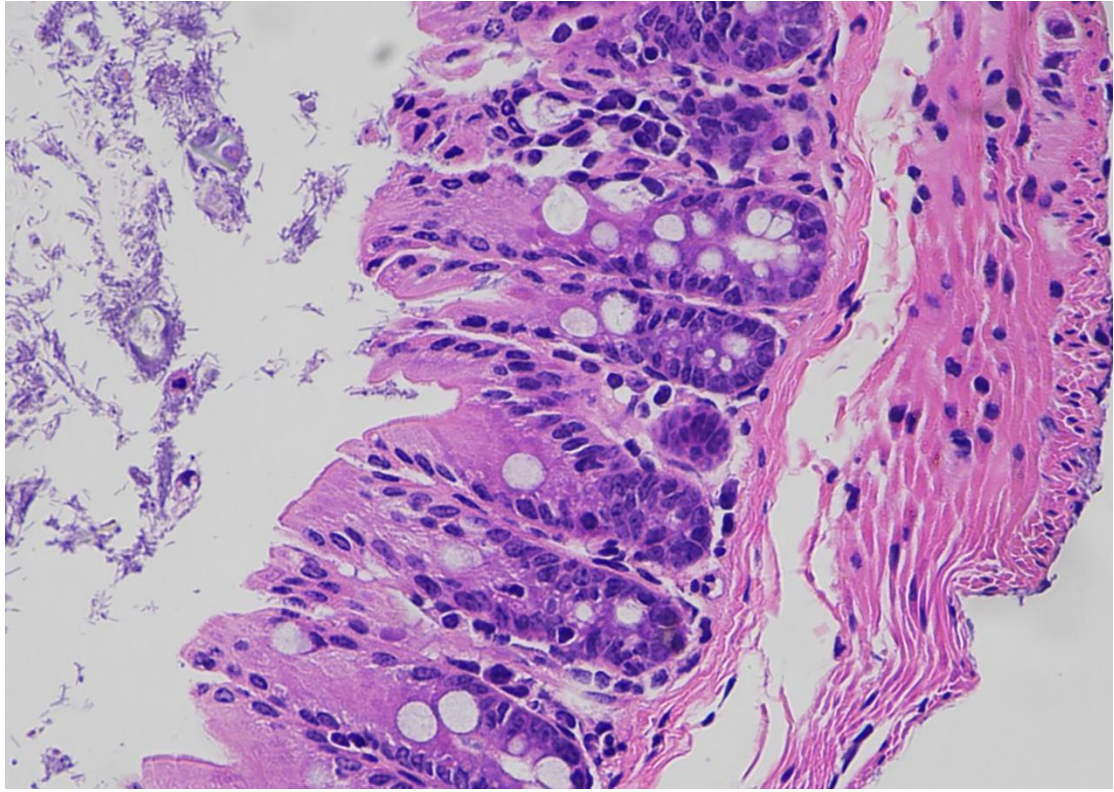
(G)
Liver



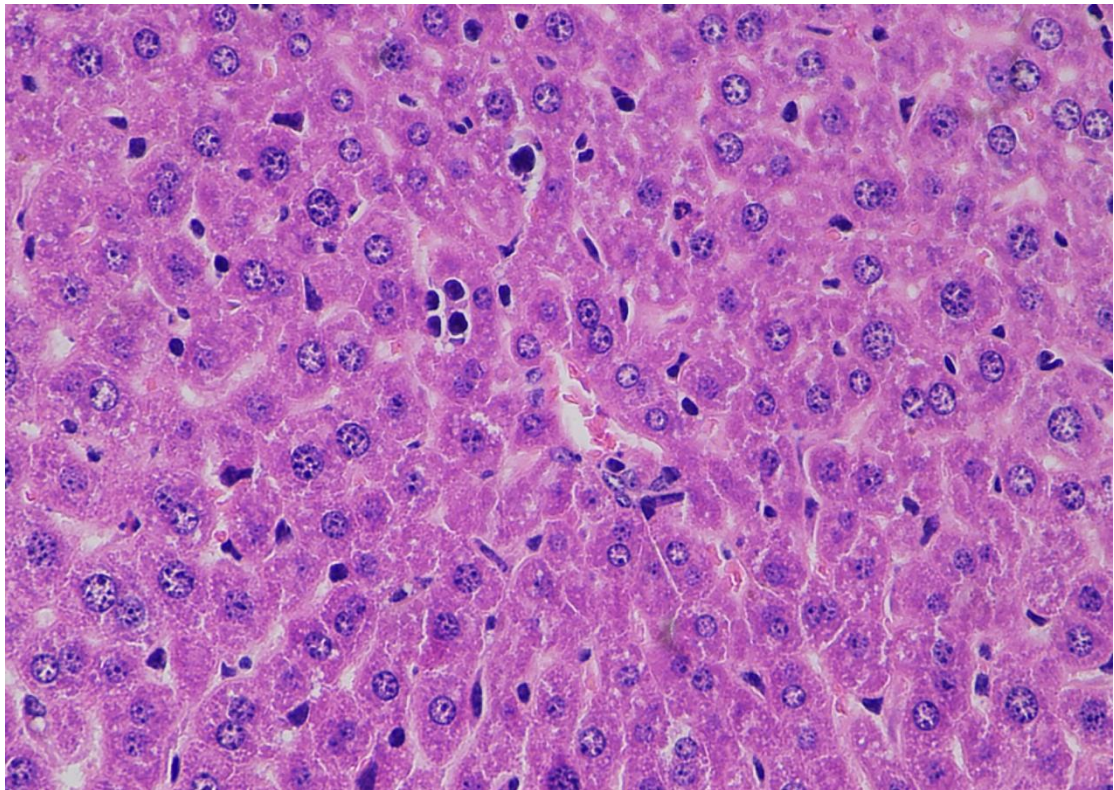
(H)
Spleen



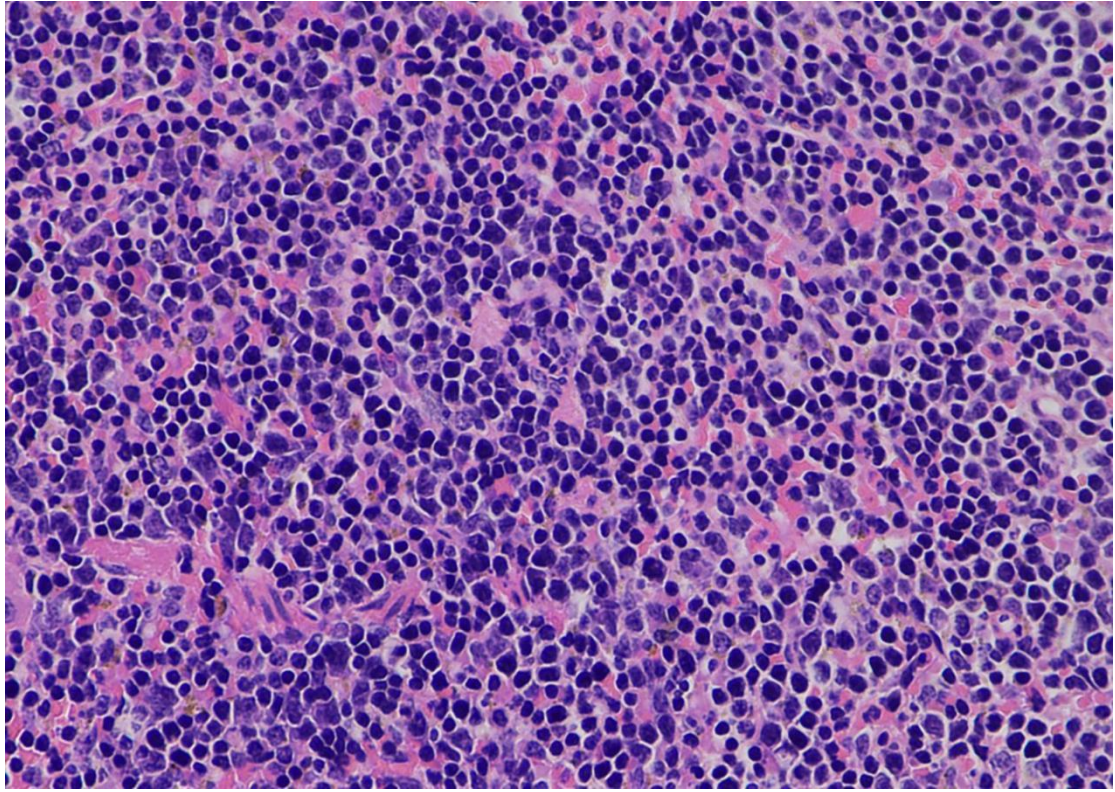
(I)
Cecum



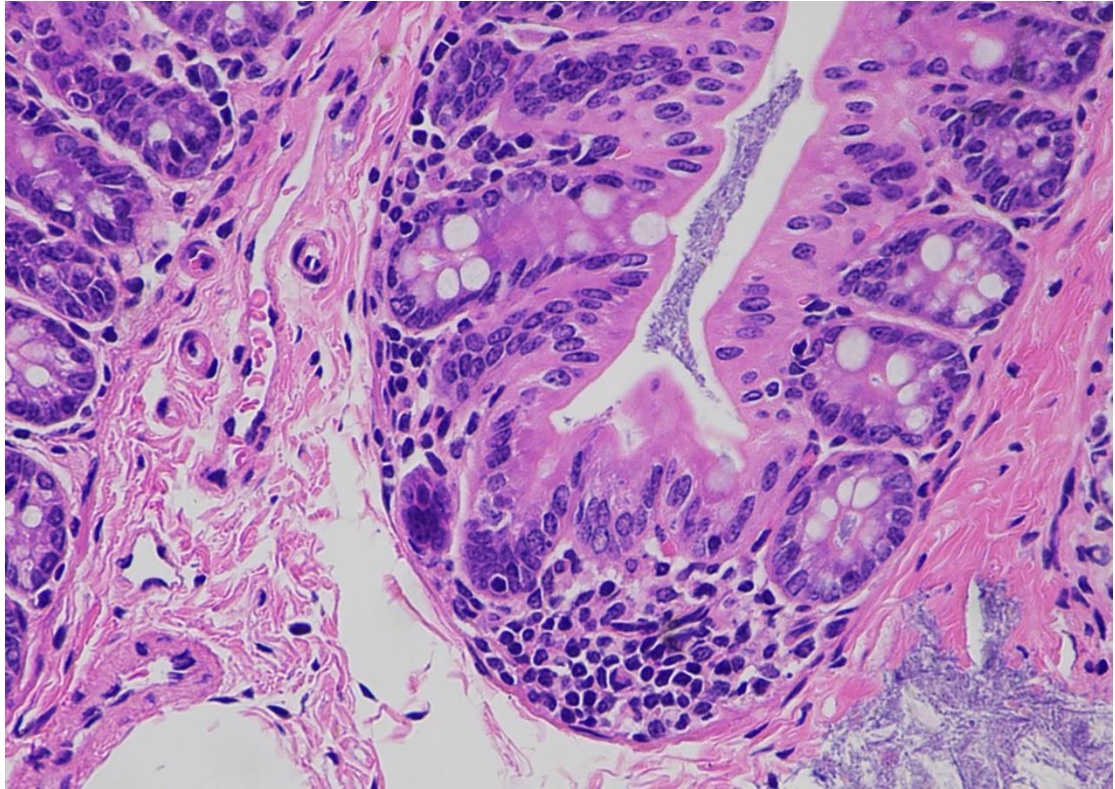
(J)
Liver



(K)
Spleen



(L)
Cecum



Supplementary Figure 2. Histological analysis after immunization. Representative images of haematoxylin and eosin-stained spleen, liver, and cecum tissue sections at 14 d post i.m. injection. (A), (B), and (C) are pathological sections of PBS group. (D),

(E), and (F) are pathological sections of Sdu189 group. (G), (H), and (I) are pathological sections of Sdu189 Δ *spiC* group. (J), (K), and (L) are pathological sections of Sdu189 Δ *spiC* Δ *aroA* group (magnification is 400 \times).