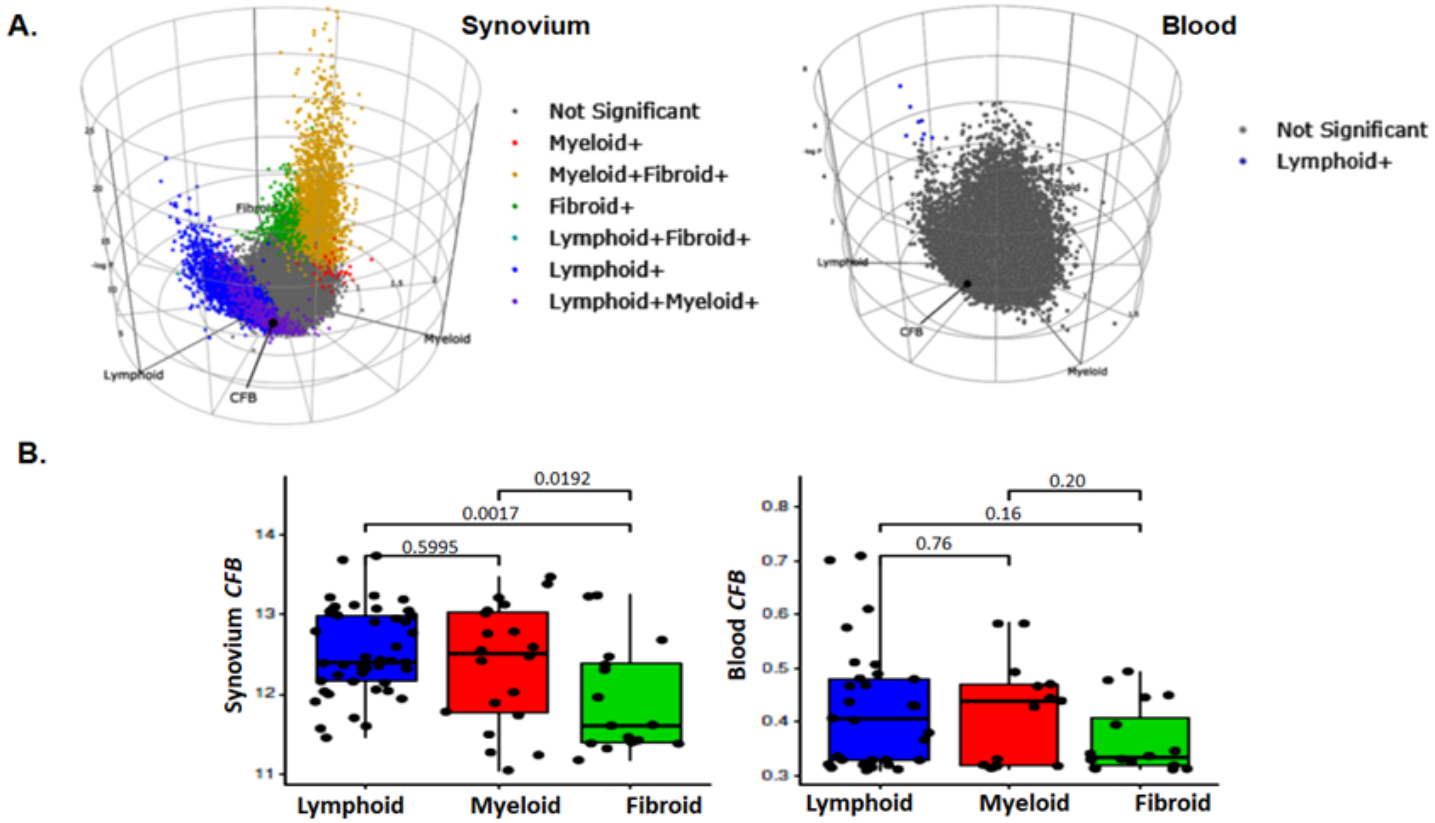
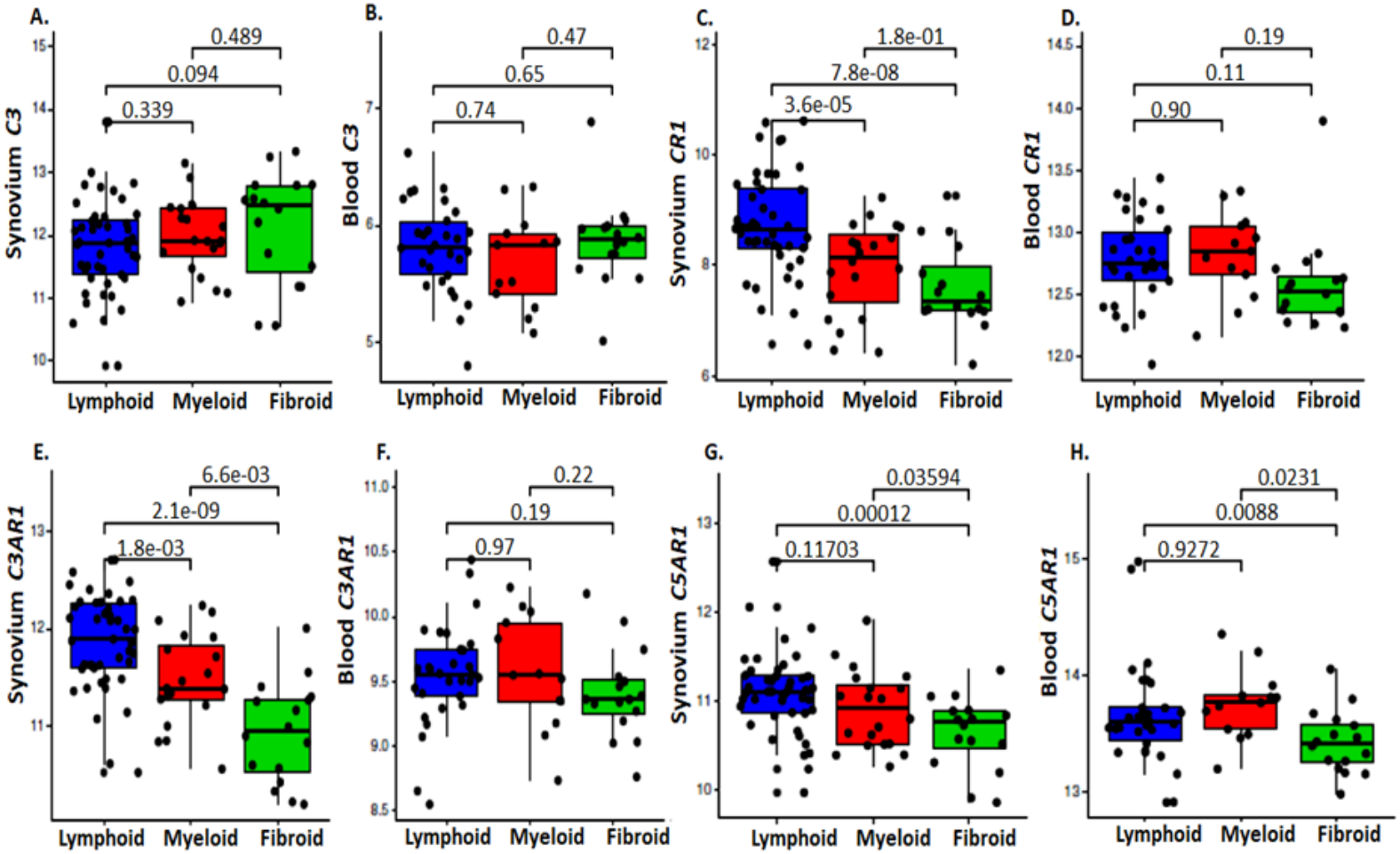
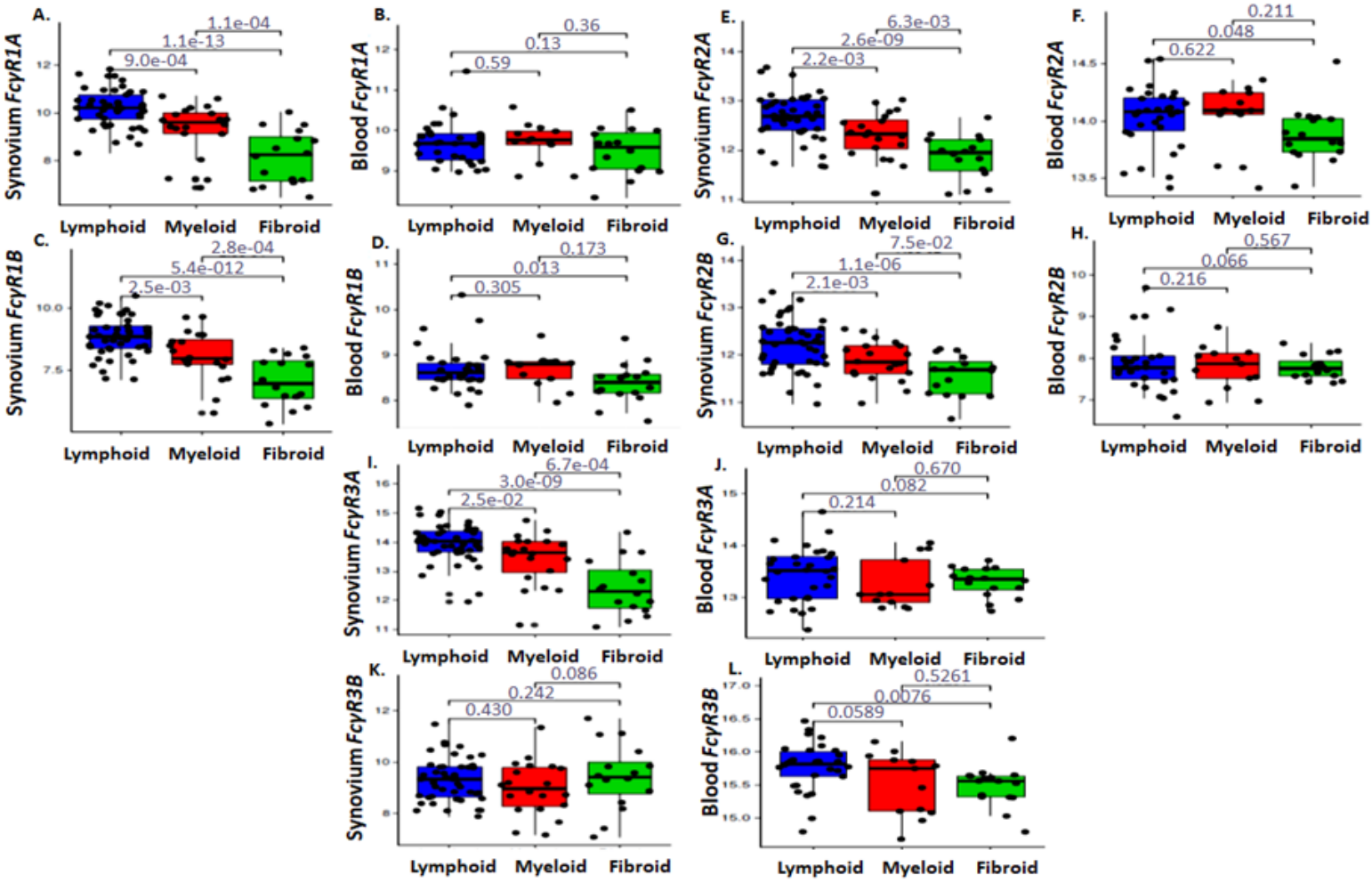


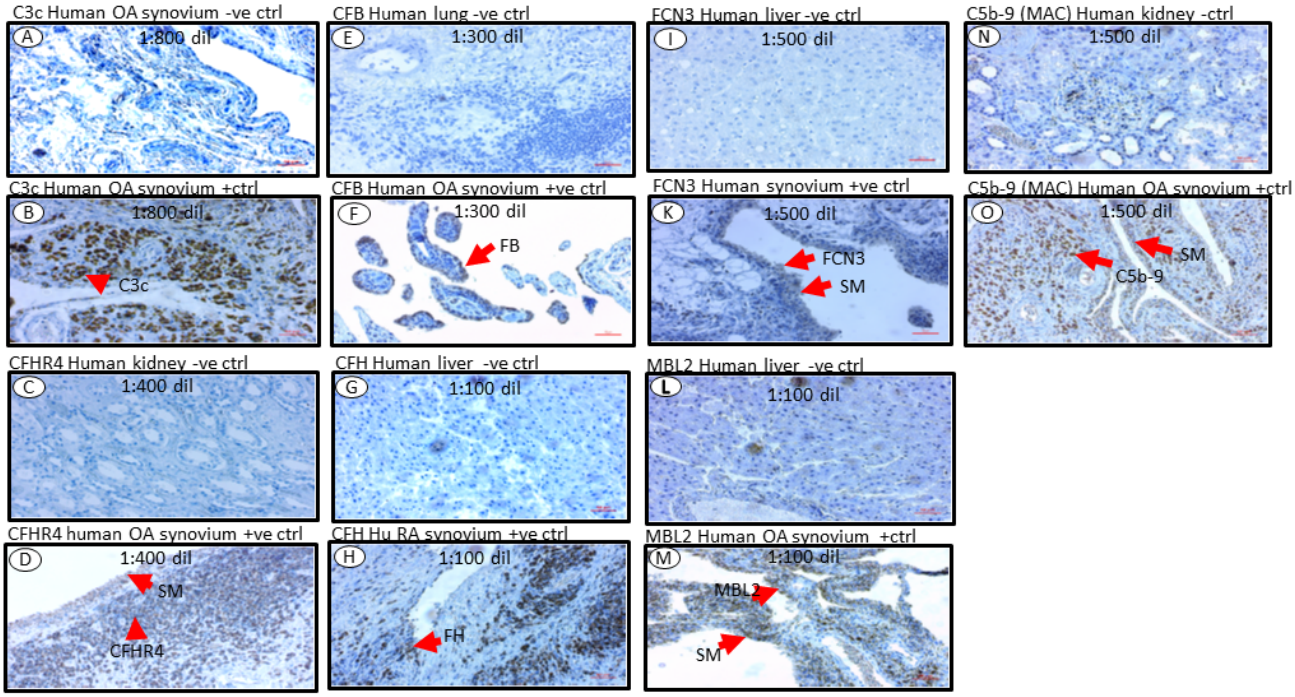
Supplement Figure 1. 3D cylindrical volcano plots showing differentially expressed *CFB* gene in the synovial tissue and blood populations. **A.** *CFB* differential gene expression in synovium (right) and blood (left) was mapped to pathotype vectors and plotted on 3 axes for lympho-myeloid (L), diffuse-myeloid (M), and pauci-immune fibroid (F) using polar coordinates in the horizontal plane. All genes upregulated in one group only are shown in primary colors: blue for lympho-myeloid upregulation, red for diffuse-myeloid, and green for pauci-immune fibroid. Secondary colors represent genes significantly upregulated in two groups (myeloid + lymphoid, purple; fibroid + myeloid, yellow; lymphoid + fibroid, cyan). Grey genes, including *CFB*, are not significant (FDR ≤ 0.05) according to the likelihood ratio test. **B.** Although *CFB* gene expression is not significantly differentially expressed in synovium or blood according to likelihood ratio test nonetheless *CFB* significantly down-regulated in the pauci-immune i.e. fibroid pathotype compared with the lymphoid and myeloid pathotypes in the synovium only (left) and not in blood (right). These experiments were repeated on all synovial biopsies and blood samples i.e. n = 87; whole blood samples n = 67



Supplement Figure 2. Differential gene expression of the major complement protein C3 and various complement receptors across the three different pathotypes. No significant differences in synovial (A) or blood (B) C3 expression. Significant differences in expression across pathotypes of synovial CR1 (C), C3AR1 (E), and C5AR1 (G) but not blood CR1 (D), C3AR1 (F) or C5AR1 (H) expression. Lymphoid pathotype = Blue color solid bar, Myeloid pathotype = Red color solid bar, Fibroid pathotype = Green color solid bar. *$p < 0.05$ is significant. These experiments were repeated on all individual synovial biopsies and blood samples i.e. n = 87; whole blood samples n = 67



Supplement Figure 3. Comparing gene of expression of FcγRs across the three different pathotypes in the synovium and blood of ERA patients. Significant differences in expression across pathotypes in the synovium of **A.** FcγR1A, **C.** FcγR1B, **E.** FcγR2A, **G.** FcγR2B, and **I.** FcγR3A, but not FcγR3B (**K**). No significant differences in expression across pathotypes in the blood of **B.** FcγR1A, **D.** FcγR1B, **F.** FcγR2A, **H.** FcγR2B, **J.** FcγR3A, and **L.** FcγR3B. Lymphoid pathotype = Blue color solid bar, Myeloid pathotype = Red color solid bar, Fibroid pathotype = Green color solid bar. *$p < 0.05$ = significant. These experiments were repeated on all individual synovial biopsies and blood samples i.e. n = 87; whole blood samples n = 67



Supplement Figure 4. Immunohistochemical (IHC) staining showing negative and positive controls used to optimize seven complement related protein antibodies in addition to Hematoxylin and Eosin (H &E) using human surgical discard tissue such as osteoarthritis (OA) synovium, rheumatoid arthritis (RA) synovium, transplanted rejected kidney, liver, and lung. For negative controls in all IHC staining a 1X diluent (reaction buffer from Ventana Medical Systems + 1% Bovine serum albumin + 0.05% Sodium Azide) excluding primary antibody for each complement protein was used. **A, B.** C3c negative and positive controls using OA synovium respectively. **C, D.** CFHR4 negative and positive controls using kidney and OA synovium respectively. **E, F.** CFB negative and positive controls using lung and OA synovium respectively. **G, H.** CFH negative and positive controls using liver and RA synovium respectively. **I, J.** FCN3 negative and positive controls using liver and OA synovium respectively. **K, L.** MBL2 negative and positive controls liver and OA synovium respectively. **M, N.** C5b-9 (MAC) negative and positive controls kidney and OA synovium respectively. The dilution of each antibody used has been shown in the center of each panel. Positive brown color staining for each complement protein has been indicated by a red arrow. SM = synovial membrane. dil = dilution. –ve ctrl = Negative control, +ve ctrl = Positive control. Each IHC was repeated two times using human tissue. Magnification =20x, Scale bar = 50μm