

Supplemental Figures Legends

Supplemental Figure 1. Local expression of BMP6 in the salivary glands of mice.

A) Mice cannulated with a mix of AAV5-BMP6 and AAV5-luciferase were imaged in vivo for luciferase expression using Xenogen live imaging. The majority of luciferase signal was localized within the SMG region. **B)** Detection of BMP6 in mice transduced with AAV5-BMP6 was done using a directly conjugated anti-BMP6 antibody and showed extensive expression in the ductal cells, consistent with the ductal tropism of AAV5 vectors in the salivary gland. All images are taken at 40X magnification.

Supplemental Figure 2. Unsupervised clustering segregates female Sjögren's

patients from healthy controls. A) Heatmap showing statistically significant genes (unpaired t-test, B-H FDR MTC with $P < 0.05$) above 2-fold and the unsupervised clustering of the samples via SOM (4x3, Pearson's Uncentered Coefficient). Volunteers are shaded red, and patients are shaded blue; the numbers given above the columns are the corresponding SG numbers to each study subject. **B)** Bayesian ANOVA statistical analysis shows agreement in up/downregulated genes (genes from A are identified in the plot). **C)** Top differentially expressed genes are shown in detail.

Supplemental Figure 3. QPCR validation of microarray. The results obtained using the custom microarray platform were validated by examining the correlation between the expression levels in the microarray and qPCR results obtained for a subset of genes. The quantitative-PCR results were obtained using representative samples from the patient population as well as the healthy volunteers in the study and are expressed as $\Delta\Delta Ct$ compared with GAPDH was the internal housekeeping gene.

Supplemental Figure 4. Additional BMP6 microarray. Data shown is the mean \pm SEM from each group. pSS patients (N=7) had significant increase in BMP6 gene expression compared to healthy volunteers (N=11). The Mann-Whitney U test was used in this analysis.

Supplemental Figure 5. BMP6 expression is independent of focus score. BMP6 expression was quantified by measuring the relative immunofluorescence intensity of

multiframe images of sections stained with anti-BMP6 antibody. Values represent the mean pixel intensity.

Supplemental Figure 6. BMP6 expression and salivary flow rates. Salivary gland immunofluorescent staining for BMP6 in AAV5-BMP6 treated mice (left panel) and SFR (right panel) from the tested mice. All images are multiframe fields created using Olympus flowview 1000 software taken at 40X magnification. Scale bar is 240 microns. Data suggests a trend of decreased SFR relative to increased BMP6 expression. BMP6 signal was quantified by counting pixel intensity.