

Fig. S1. Assessing contribution of K82, K163, and K170 to decorin- and dermatan sulfate-binding of DbpA using quantitative ELISA. The indicated concentrations of His₆-tagged RevA (negative control), rDbpA_{WT}, or its derived lysine mutants (rDbpA_{K51A}, rDbpA_{K82A}, rDbpA_{K124A}, rDbpA_{K163A}, rDbpA_{K170A}, or rDbpA_{K177A}) were added to quadruplicate wells coated with decorin (top) or dermatan sulfate (bottom). Each value represents the mean \pm SD (error bars) of bound protein measure by ELISA. Shown are representative results from three independently performed experiments and within each experiment, samples were run in quadruplicate. All experiments were performed with a single preparation of recombinant proteins. In all experiments, binding of rDbpA_{K82A}, rDbpA_{K163A}, and rDbpA_{K170A} to decorin and dermatan sulfate was statistically significant relative to rDbpA_{WT} at the three highest substrate concentrations ($P \leq 0.05$ by Student's *t* test). K_d values were calculated from the average of the three independent experiments (Table 4).

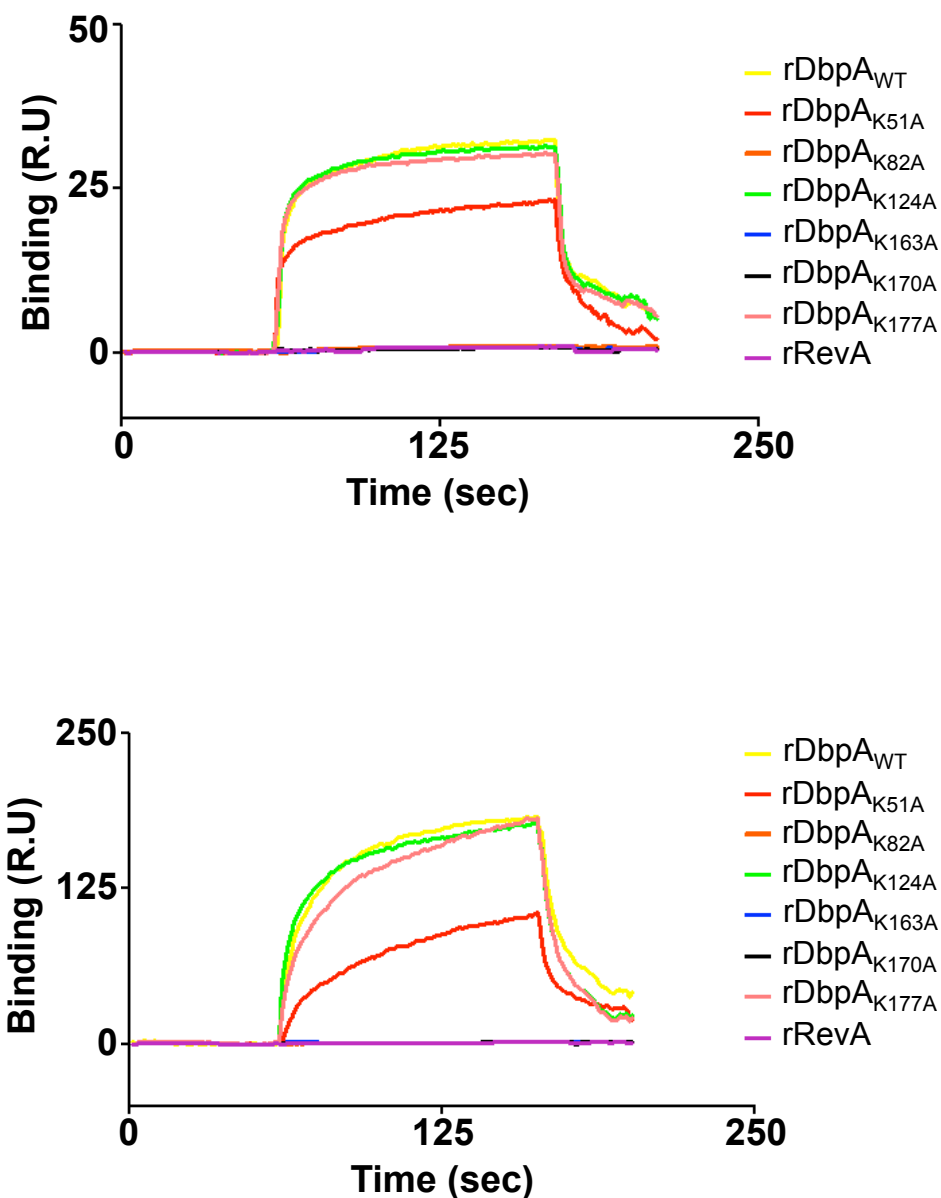


Fig. S2. Assessing contribution of K82, K163, and K170 to decorin- and dermatan sulfate-binding of DbpA by SPR. Profiles of the relative SPR responses for decorin- and dermatan sulfate-binding to rDbpA are shown. Binding in Response Units (R.U.) was measured by SPR. 1 μ M or 3 μ M His₆-tagged rDbpA_{WT} or its derived mutants (rDbpA_{K51A}, rDbpA_{K82A}, rDbpA_{K124A}, rDbpA_{K163A}, rDbpA_{K170A}, or rDbpA_{K177A}) were flowed over a surface coated with 10 μ g of decorin (top) or dermatan sulfate (bottom), respectively. Shown is a representative of six experiments performed on three independent occasions; within each experiment, samples were run in duplicate. All experiments were performed with a single preparation of recombinant proteins. The k_{on} , k_{off} , and K_d values (Table 4) were determined from the average of these six experiments.

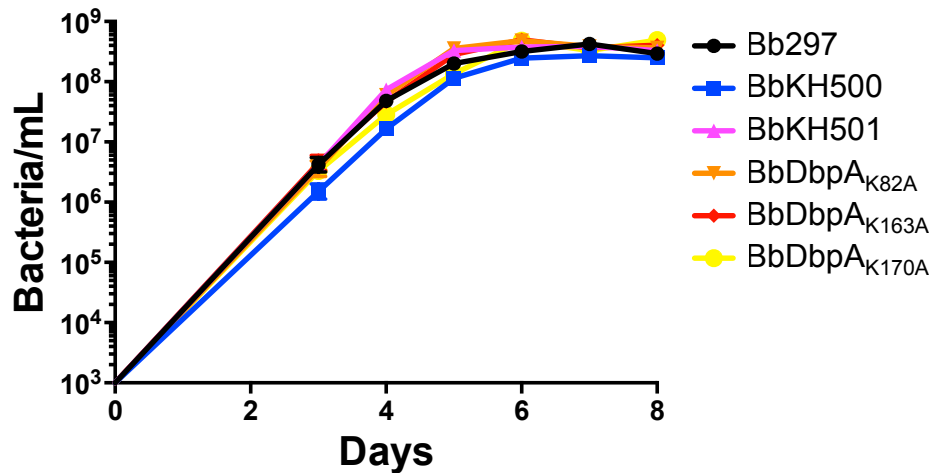


Fig. S3. Evaluation of *in vitro* growth characteristics of the DbpA lysine point mutants. Cultures of Bb297, BbKH500, BbKH501, BbDbpA_{K82A}, BbDbpA_{K163A}, and BbDbpA_{K170A} were grown for seven days and the cell density measured daily beginning at three days post-inoculation. Values in the growth curves represent the mean cell counts \pm SEM (error bars). Shown are representative data from one of three independently repeated growth curve experiments that generated equivalent results. For each culture and timepoint, bacteria were enumerated in 20 individual microscopic fields.