Supplementary material:

Video S1: Growth curve and videos of *S. aureus* grown with or without penicillin G. *S. aureus* were incubated in a 96 wells microtiter plate and scanned by oCelloScope every 15 minutes for 6 hours. Left: Video of *S. aureus* incubated without antibiotic. Middle: Video of *S. aureus* incubated in presence of Penicillin G Right: Growth curve of *S. aureus* without (blue) or in presence of Penicillin G (green). Big dots in both wells are beads used by oCelloScope to focus the images.

Video S2: Growth curve and videos of *E. coli* growing with or without Polymyxin B. *E. coli* were incubated in a 96 wells microtiter plate and scanned by oCelloScope every 15 minutes for 2 hours. Left: Video of *E. coli* incubated without antibiotic. Middle: Video of *S. aureus* incubated in presence of antibiotic. Polymyxin B was added after 65 minutes. Right: Growth curve of *E. coli* without (blue) or in presence of Polymyxin after 65 minutes (green). Big dots in both wells are beads used by oCelloScope to focus the images.

Figure S1: Growth curves for *E. coli* started with different numbers of bacteria. Growth is measured every 5 minutes. (+) indicates presence of Polymyxin B.

Video S3: Videos and growth curves of urine samples from catheterized pigs. The upper left corner video shows the positive control (pos con). The lower left video shows the negative control (neg con). The upper right video shows urine incubated with the combination of 16/2 µg/ml Ticarcillin and Clavulanic acid (TIM). The lower right video shows urine incubated with the combination of 32/2 µg/ml Ticarcillin and Clavulanic acid. The automatically generated growth curves are display to the far right presenting the positive control (black), the negative control (grey), urine incubated with the combination of 16/2 µg/ml Ticarcillin and Clavulanic acid (dark green), and urine incubated with the combination of 32/2 µg/ml Ticarcillin and Clavulanic acid (light green).