

Supplementary materials
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**Comparison of DNA extraction efficiency and reproducibility of different aeration diffuser
biofilms using bead beating protocol**

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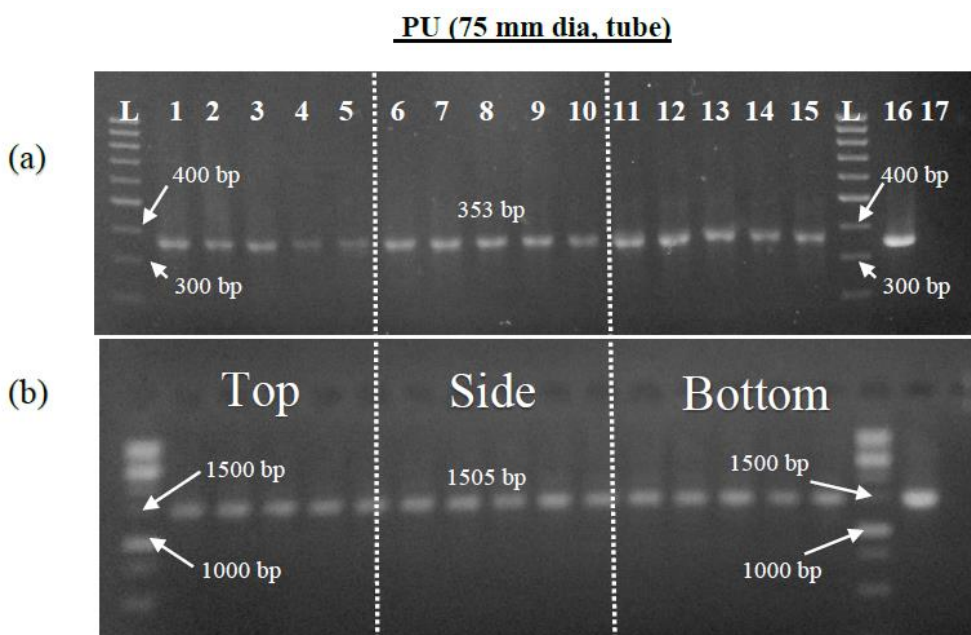
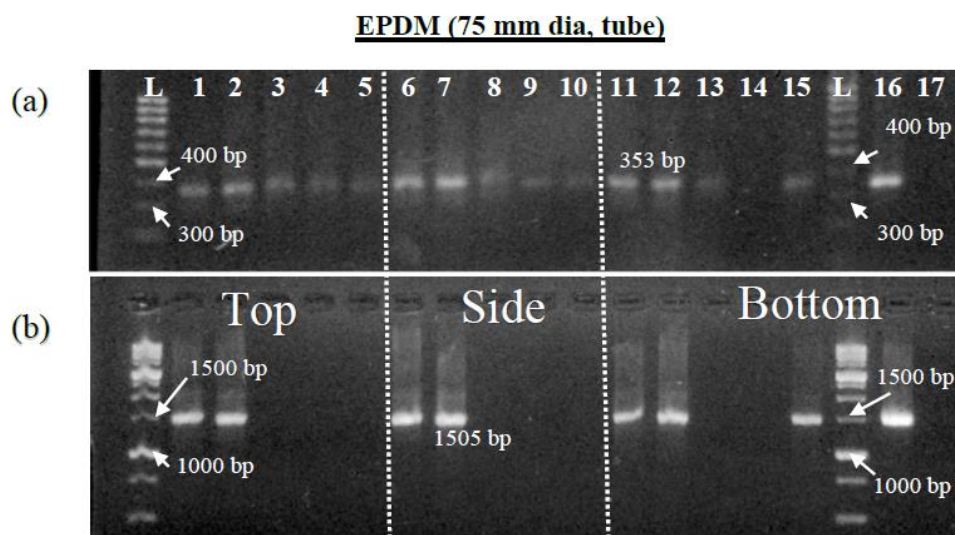


Fig. S1A. Images of gel electrophoresis of the PCR amplicons produced from two fragment sizes (353 bp and 1505 bp) using DNA extracts from EPDM and Polyurethane, 75 mm dia. Tube Membranes. L indicates 100 bp ladder (a) and 1000 bp ladder (b). Each grouping, lanes 1-5, 6-10, and 11-15, corresponds to the PCR amplicons from bead beatings 1-5, respectively. Lane 16, positive control; lane 17, negative control (HPLC water).

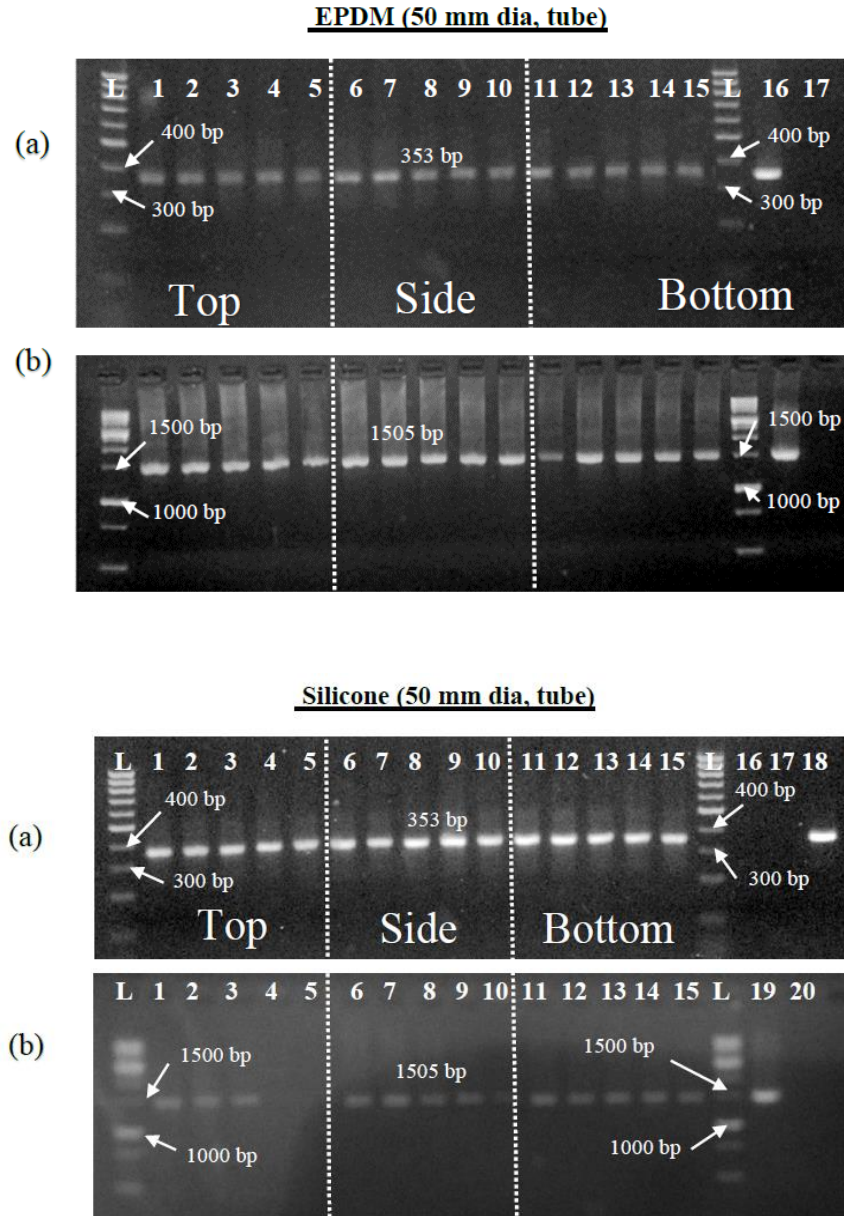


Fig. S1B. Images of gel electrophoresis of the PCR amplicons produced from two fragment sizes (353 bp and 1505 bp) using DNA extracts from EPDM and Silicone, 50 mm dia. Tube Membranes. L indicates 100 bp ladder (a) and 1000 bp ladder (b). Each grouping, lanes 1-5, 6-10, and 11-15, corresponds to the PCR amplicons from bead beatings 1-5, respectively. For EPDM (50 mm dia) lane 16, positive control; lane 17, negative control (HPLC water); and for Silicone (50 mm dia) lane 16, 17 and 20, negative control (HPLC water); lane 18 and 19, positive control

EPDM disc and ceramic disc (230 mm dia, disc)

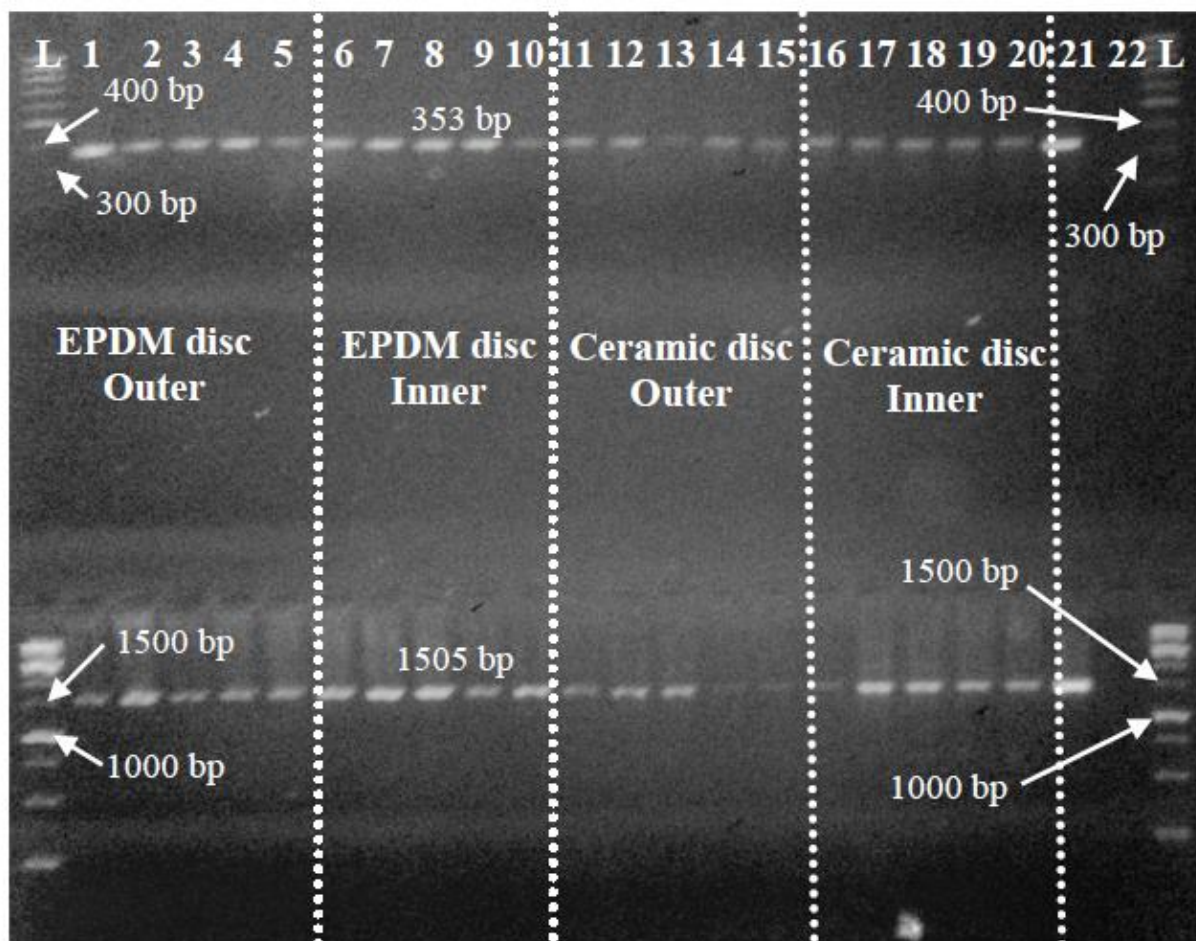
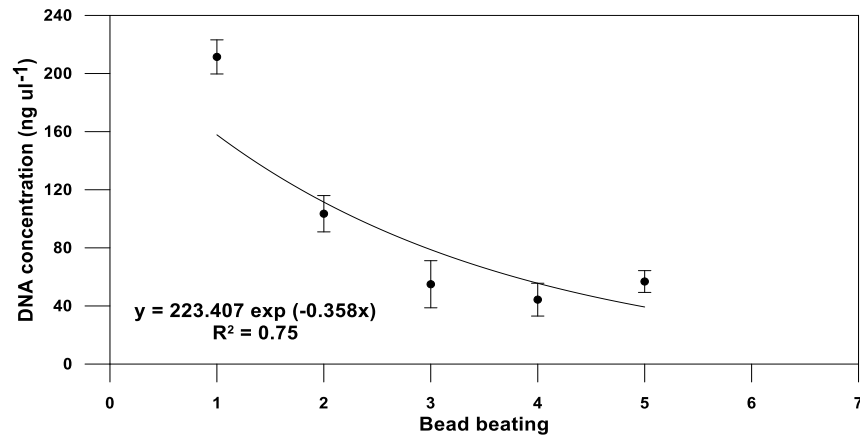
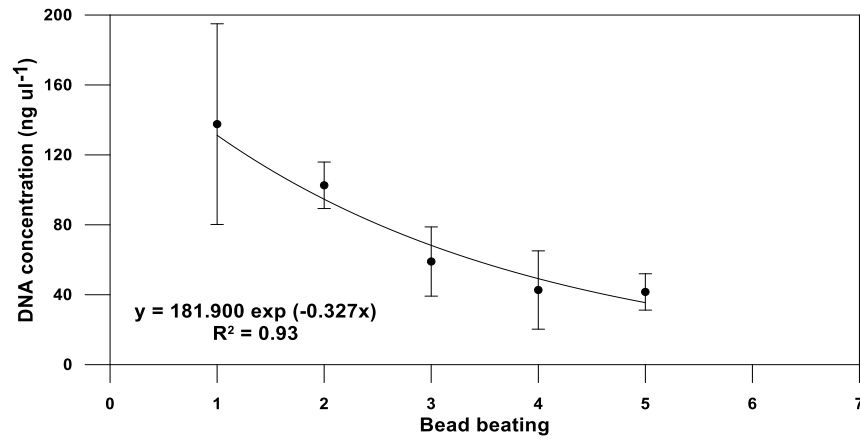


Fig. S1C. Images of gel electrophoresis of the PCR amplicons produced from two fragment sizes (353 bp and 1505 bp) using DNA extracts from EPDM and Ceramic, 230 mm dia. Disc Membranes. L indicates 100 bp ladder (a) and 1000 bp ladder (b). Each grouping, lanes 1-5, 6-10, 11-15, and 16-20 corresponds to the PCR amplicons from bead beatings 1-5, respectively. Lane 21, positive control; lane 22, negative control (HPLC water).

A. *E. coli*



B. *G. amarae*



C. Mixed liquor

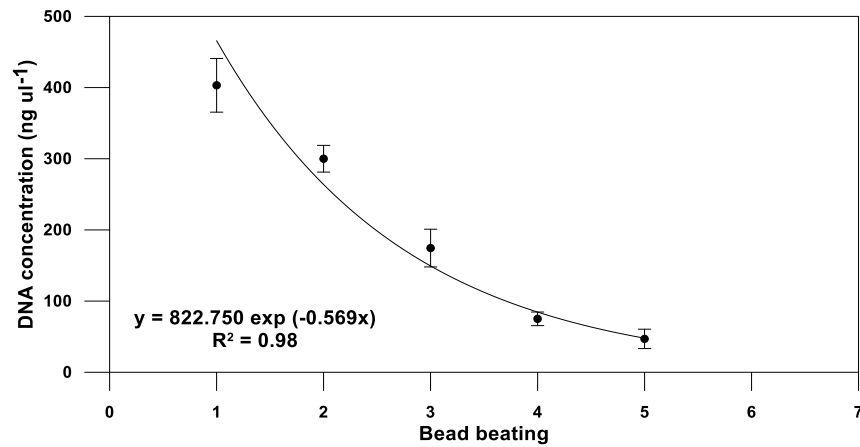


Fig. S2. DNA extract produced during each bead beating for *E. coli* (a), *G. amarae* (b) and mixed liquor (c) using the first order decay model

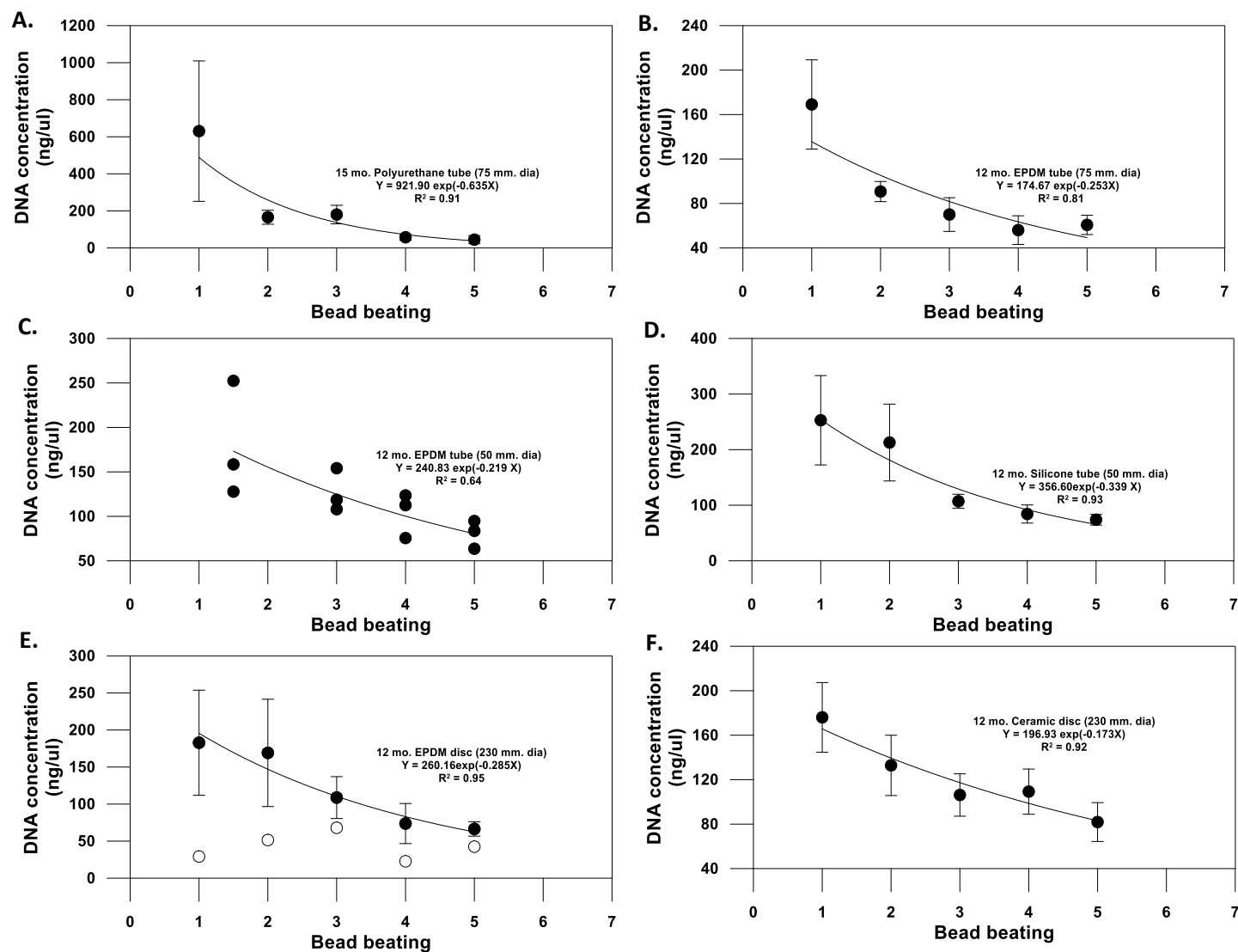
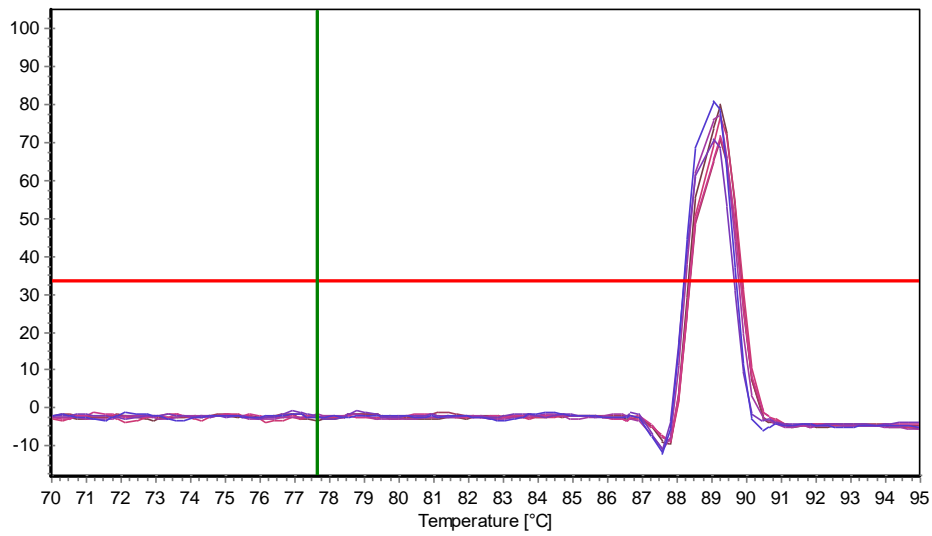


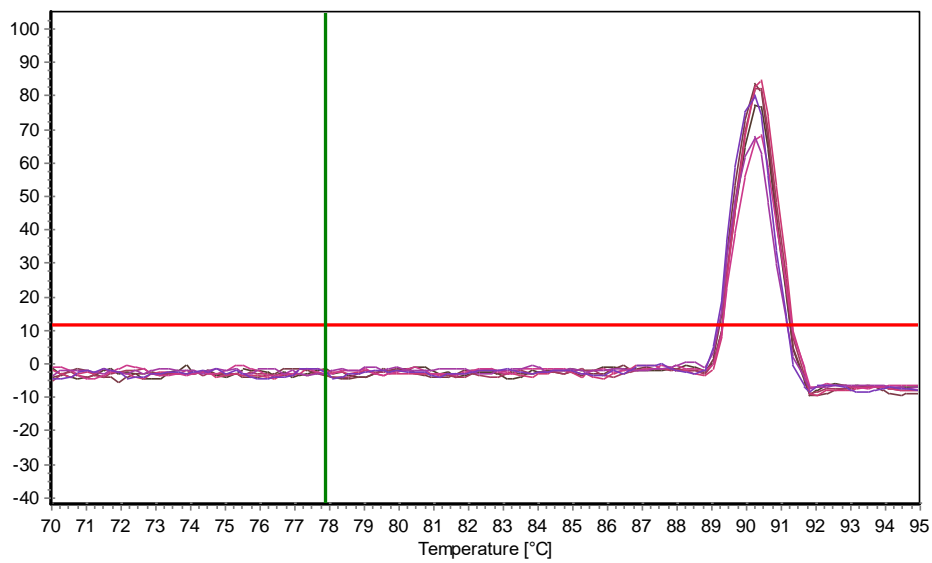
Fig. S3. The biofilm DNA extract produced during each bead beating using the first order decay model. Open circles indicating DNA yielded from inner location of the EPDM ceramic disc.

A.



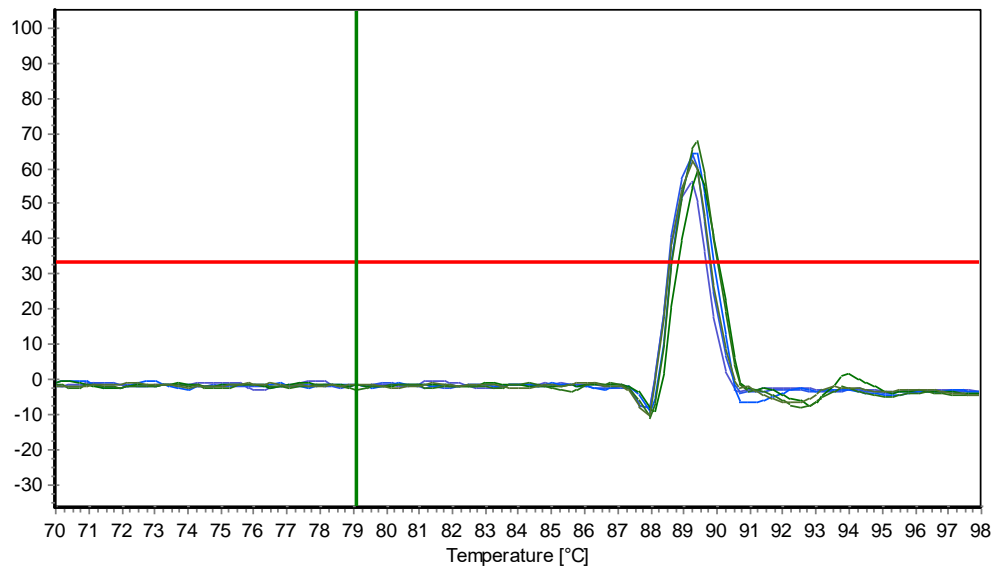
Threshold: 33%

B.



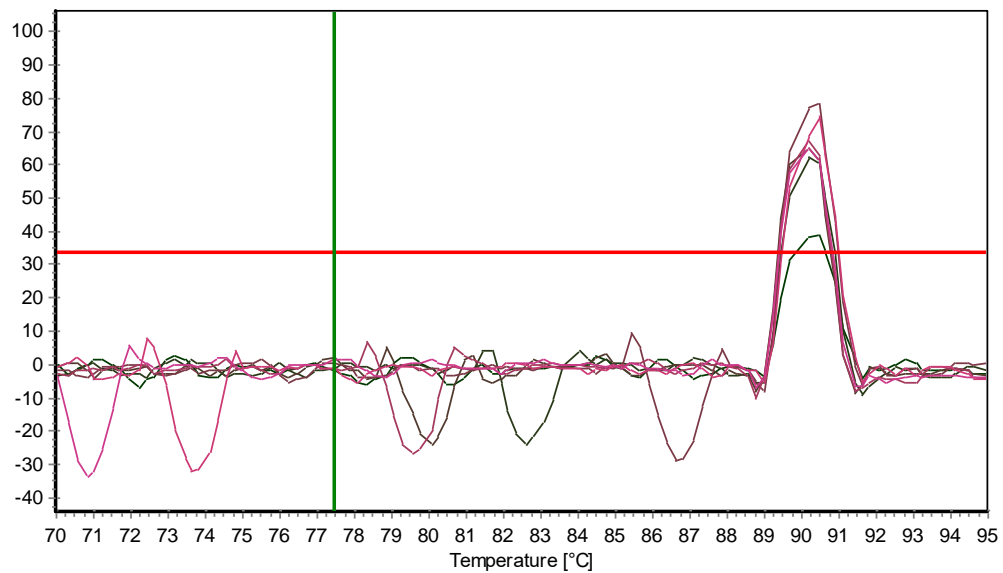
Threshold: 12%

C.



Threshold: 33%

D.



Threshold: 33%

Fig. S4. The 353 bp and 1505 bp amplicons melt curve analysis for *E. coli* (A and B) and *G. amarae* (C and D) extracts

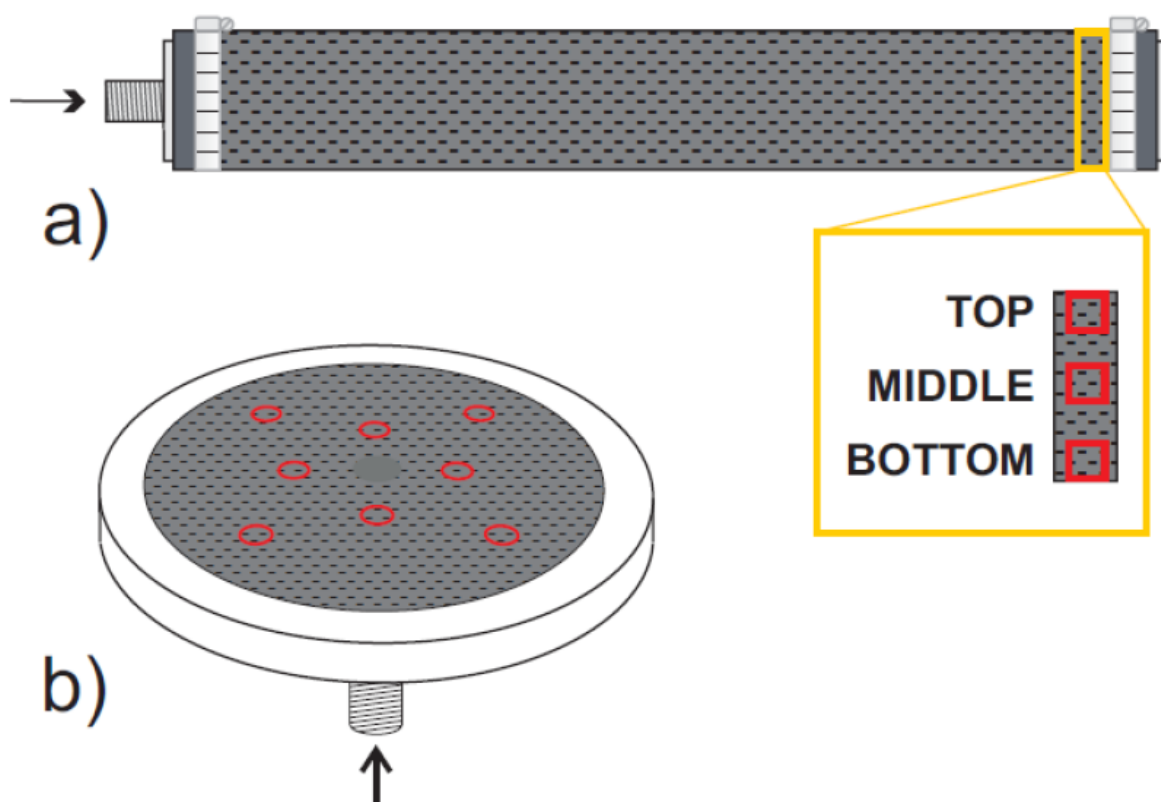


Fig. S5. Diffusers and fouling biofilm sampling for a) tube diffusers and b) disc diffusers