Influence of csgD and ompR on nanomechanics, adhesion forces and curli properties of *E. coli*

by

Stefano Perni [1], Emily Callard Preedy [1], Paolo Landini [2] and Polina Prokopovich [1] *

[1]Cardiff School of Pharmacy and Pharmaceutical Science, Cardiff University, Cardiff, UK

[2] Department of Biomolecular Sciences and Biotechnology, University of Milan, Milan, Italy
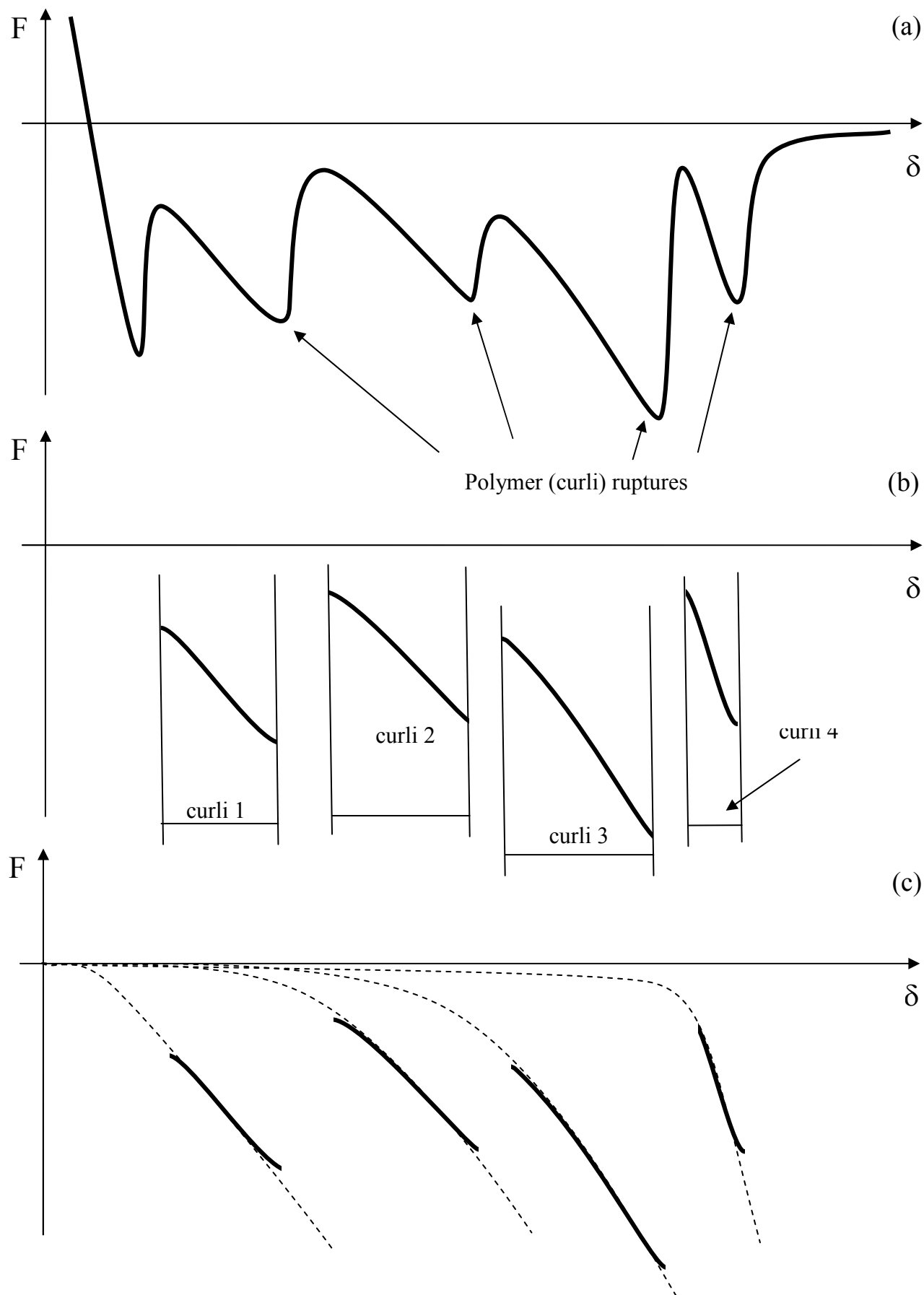
Supplementary Material

F (a)

δ

Polymer (curli) ruptures

F (b)

δ

curli 1

curli 2

curli 3

curli 4

F (c)

δ

Figure A1. Schematic representation of the algorithm for the determination of the number of curli and fitting of FJC model (······) to relevant sections of the retrace AFM curve (▬). In the example in a retrace curve, 4 regions of interest, related to 4 curli (a), were identified (b) and individually modelled with the FJC model (c).
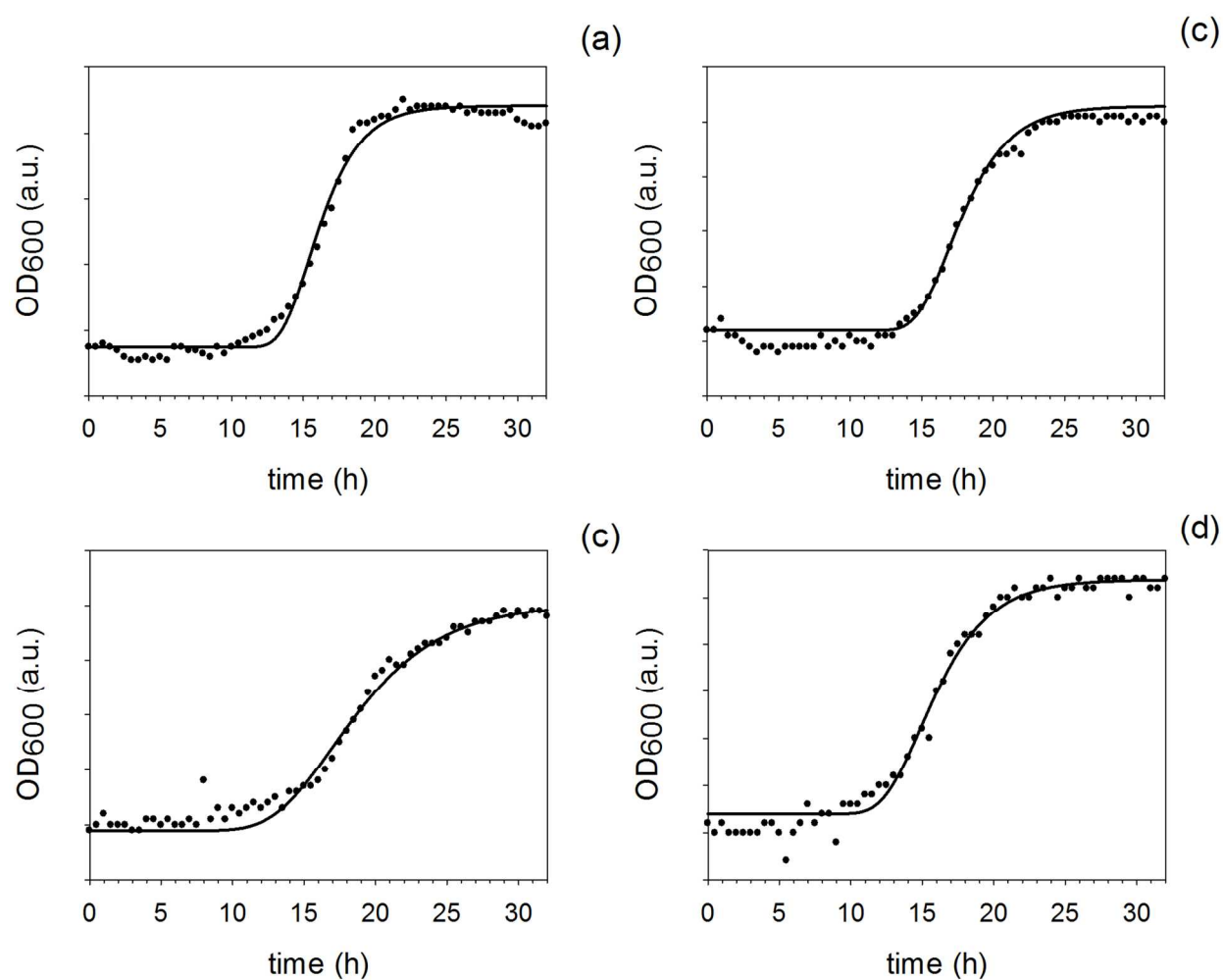
Figure A2. Examples of values of growth curve (●) and fitting with Gompertz model (▬) of *E. coli* MG1655 (a), *E. coli* MG1655 pT7-7CsgD (b), *E. coli* PHL628 (c) and *E. coli* PHL628 pT7-7CsgD (d). For image clarity the experimental points are plotted at 30 min intervals.
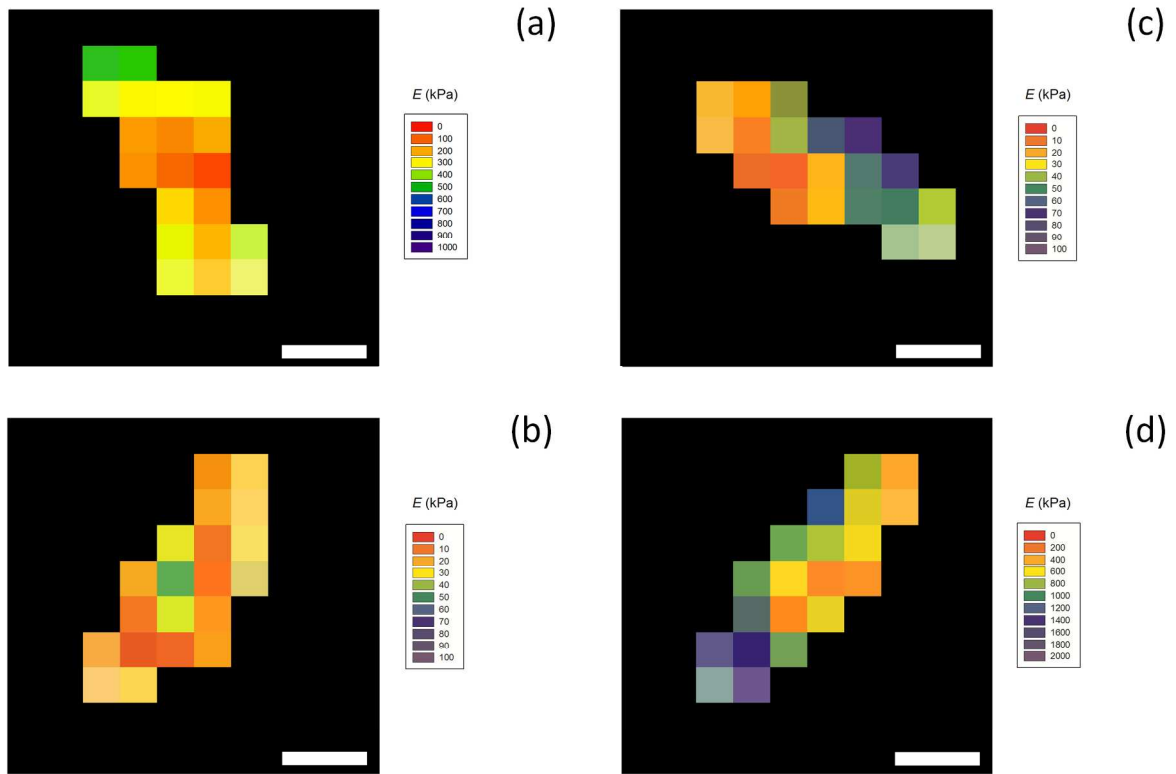
Figure A3. Examples of values of Young modulus (*E*) measured on 20 different locations (surface mapping) on the surface of a single cell of *E. coli* MG1655 (a), *E. coli* MG1655 pT7-7CsgD (b), *E. coli* PHL628 (c) and *E. coli* PHL628 pT7-7CsgD (d).
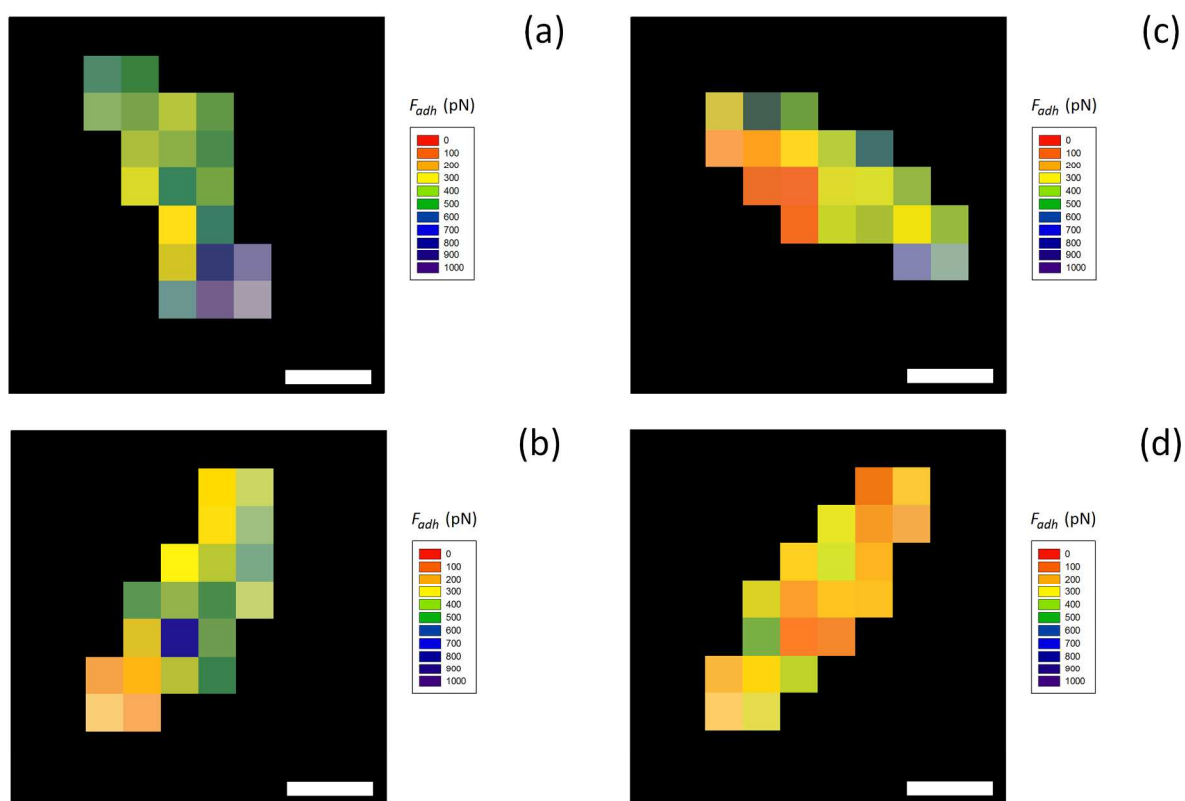
Figure A4. Examples of values of adhesion force *(F$_{adh}$)* measured on 20 different locations (surface mapping) on the surface of a single cell of *E. coli* MG1655 (a), *E. coli* MG1655 pT7-7CsgD (b), *E. coli* PHL628 (c) and *E. coli* PHL628 pT7-7CsgD (d).
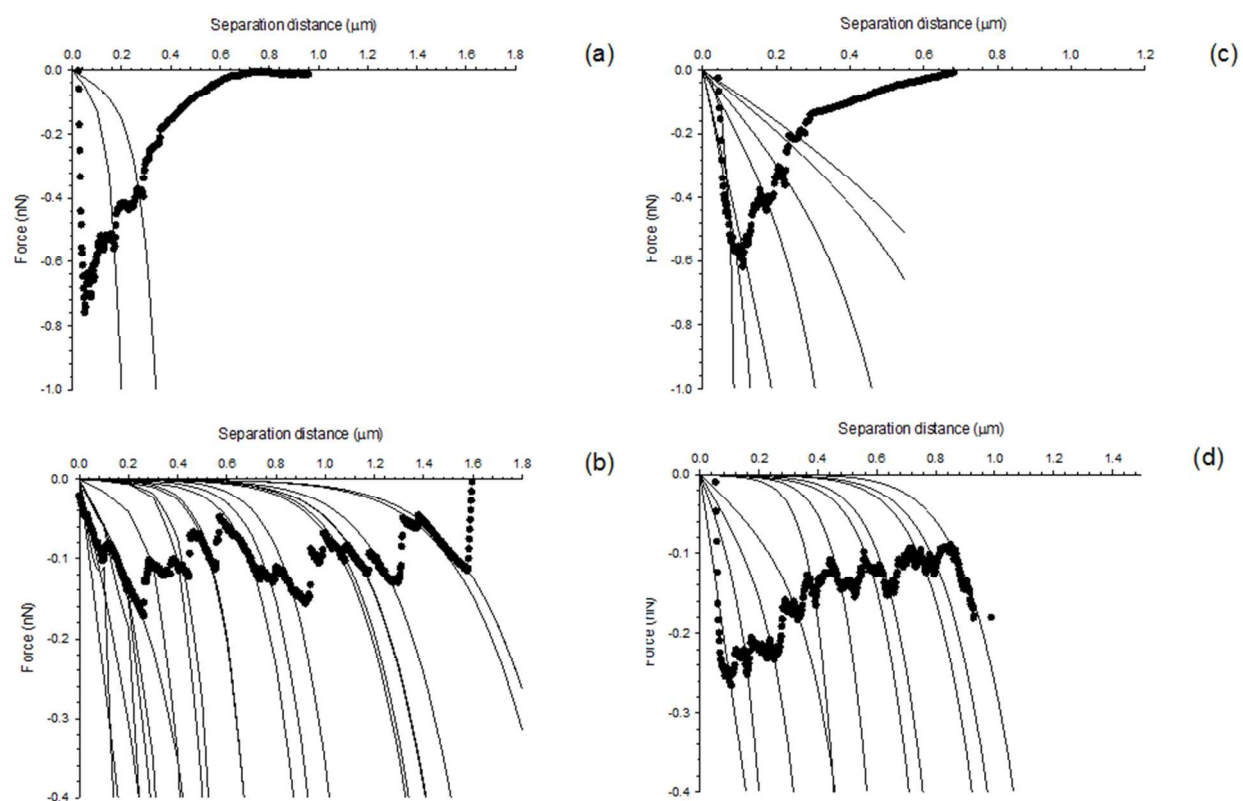
Figure A5. Examples of retrace curves for *E. coli* MG1655 (a), *E. coli* MG1655 pT7-7CsgD (b),

E. coli PHL628 (c), *E. coli* PHL628 pT7-7CsgD (d) and fitting with FJC.

■   retrace curve   ▬▬▬ FJC fitting