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Award-winning paper in 2017.

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Announcement

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Award-winning paper in 2017

Papers published in *Journal of Environmental Engineering and Science* are eligible for awards from the Institution of Civil Engineers (ICE). Papers from any of the ICE journals can be nominated for several awards. In addition, each journal has awards dedicated to their specific subject area.

On Monday 8 October 2018, ICE president Robert Mair presented an award to the following paper published in *Journal of Environmental Engineering and Science* in 2017. The Editorial Panel nominated their best papers and an awards committee chaired by Nigel Wright allocated the awards.

Environmental Engineering and Science Prize

The Environmental Engineering and Science Prize was awarded to Zhi *et al.* (2017).

Abstract

The authors recently demonstrated that naturalised strains of *Escherichia coli* exist in municipal waste water, characterised by (a) biomarker patterns in intergenic regions distinct from human and animal *E. coli* strains and (b) an insertion element (*IS30*) located in the *uspC-flhDC* intergenic region of the genome. Remarkably, these strains are naturally adapted to survival and growth in waste water and differentially survive the treatment process. The

authors sought to explore the adaptive mechanisms used by these strains for survival. A serial stress experiment (nutrient deprivation and osmotic stress followed by chlorine treatment) was performed and survival was measured using culture. Waste water strains were shown to be approximately 100 times more resistant to chlorine treatment than a wild-type human faecal strain. Naturalised waste water strains were also more robust at producing biofilms – an adaptive strategy for surviving environmental stressors. Since biofilm formation has been linked to increased motility, the authors examined the expression of the flagellar regulator gene, *flhDC*, under serial stress conditions. Chlorine was a potent inducer of *flhDC* expression in waste water strains. The results demonstrate that waste water strains possess adaptive genotypic/phenotypic properties related to their survival in waste water and challenge the understanding of treatment reduction based on *E. coli* as an indicator of treatment performance.

REFERENCE

Zhi S, Banting GS, Ruecker NJ and Neumann NF (2017) Stress resistance in naturalised waste water *E. coli* strains. *Journal of Environmental Engineering and Science* **12**(2): 42–50, <https://doi.org/10.1680/jenes.16.00021>.