

Supporting Information

Rational Design of Single-Chain Polymeric Nanoparticles that Kill Planktonic and Biofilm Bacteria

Thuy-Khanh Nguyen,¹ Shu Jie Lam,² Kitty K. K. Ho,³ Naresh Kumar,³ Greg G. Qiao,² Suhelen Egan,⁴ Cyrille Boyer,^{1,} and Edgar H. H. Wong^{1,*}*

¹Centre for Advanced Macromolecular Design (CAMD) and Australian Centre for NanoMedicine (ACN), School of Chemical Engineering, UNSW Australia, Sydney NSW 2052, Australia.

²Department of Chemical and Biomolecular Engineering, The University of Melbourne, Parkville VIC 3010, Australia.

³School of Chemistry, UNSW Australia, Sydney NSW 2052, Australia.

⁴Centre for Marine Bio-Innovation, School of Biological, Earth and Environmental Sciences, UNSW Australia, Sydney NSW 2052, Australia.

Author correspondence: edgar.wong@unsw.edu.au; c.boyer@unsw.edu.au

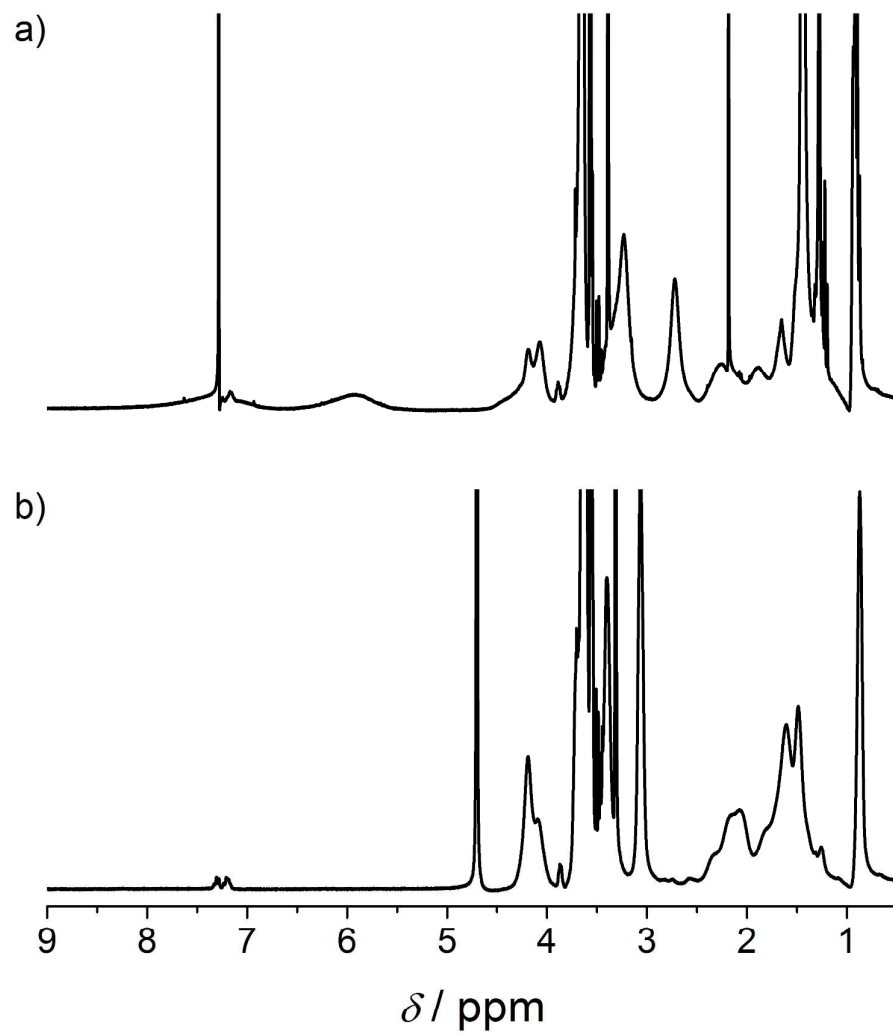


Figure S1. ^1H NMR spectra of Boc-protected linear polymer precursor in CDCl_3 (a) and the corresponding deprotected $\text{P}_{\text{Dab-L}}$ in D_2O (b).

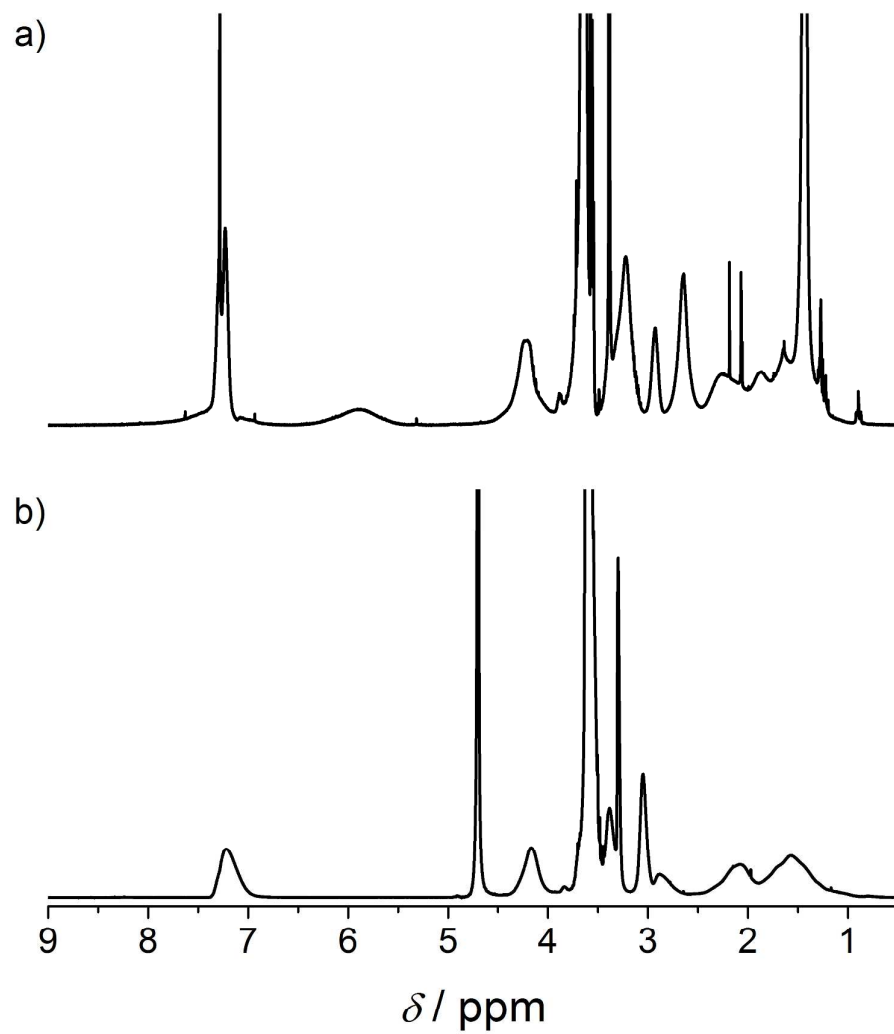


Figure S2. ¹H NMR spectra of Boc-protected linear polymer precursor in CDCl₃ (a) and the corresponding deprotected **P_{Dab-F}** in D₂O (b).

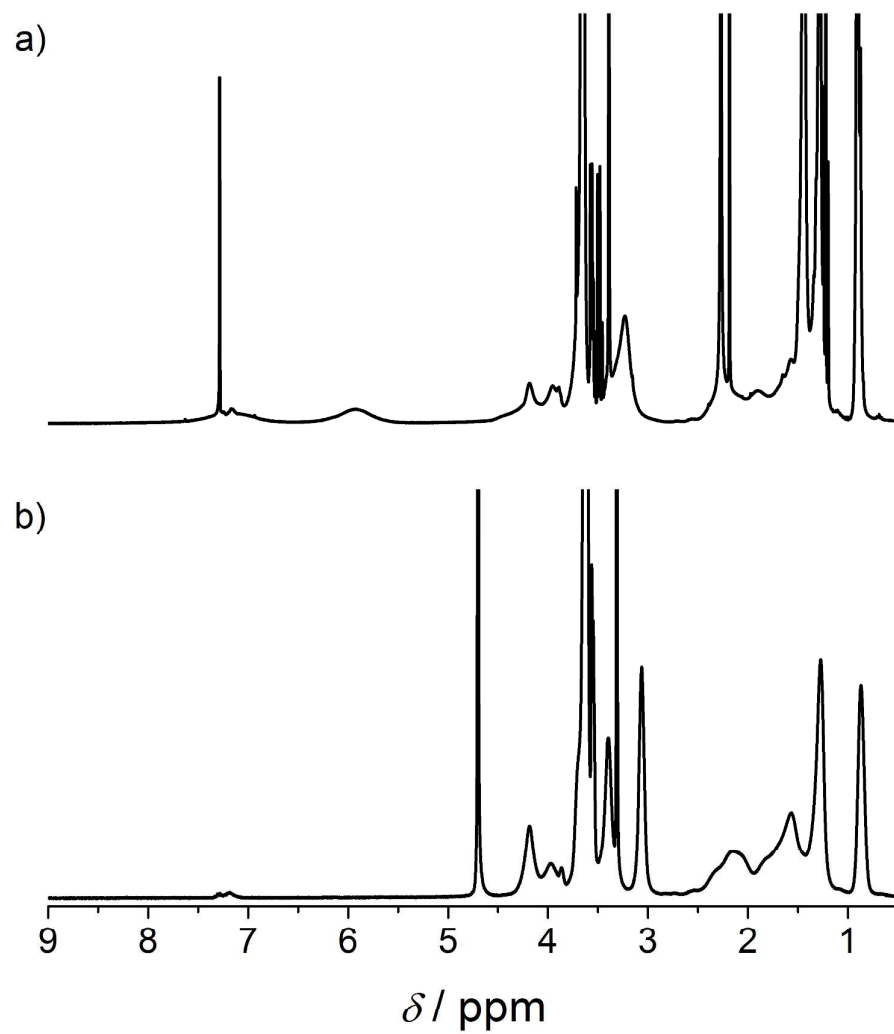


Figure S3. ^1H NMR spectra of Boc-protected linear polymer precursor in CDCl_3 (a) and the corresponding deprotected $\text{P}_{\text{Dab-EH}}$ in D_2O (b).

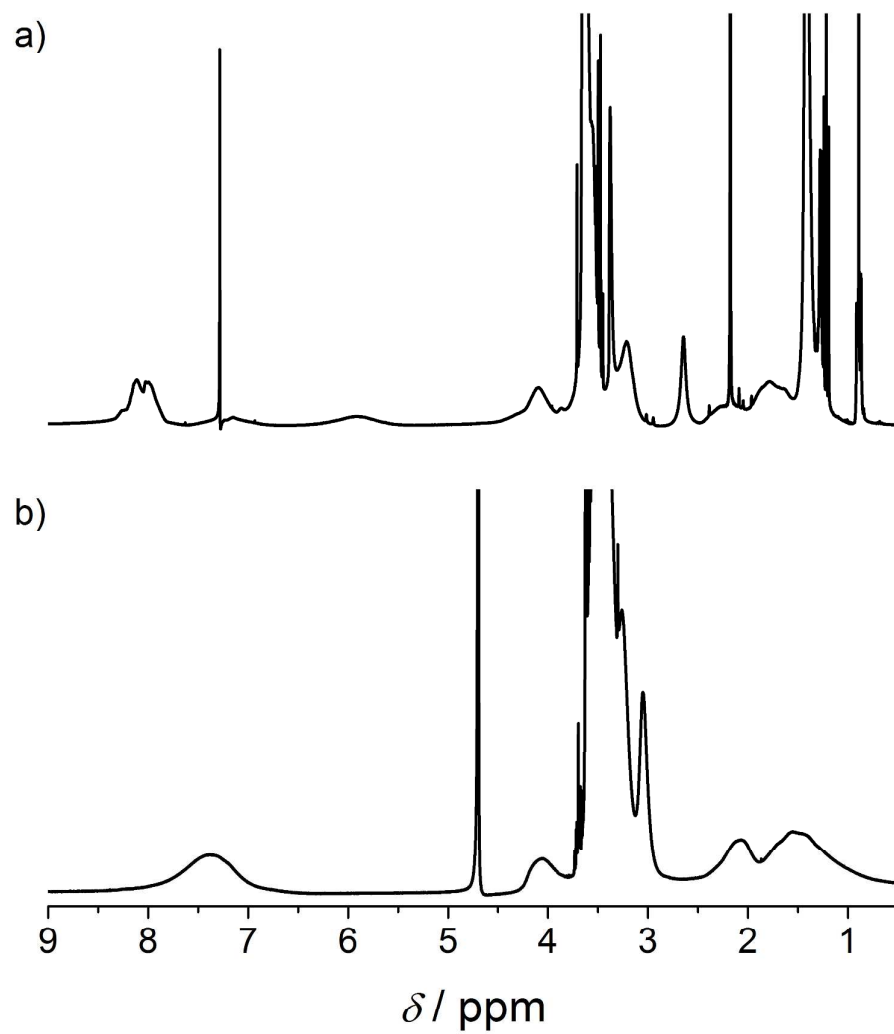


Figure S4. ¹H NMR spectra of Boc-protected linear polymer precursor in CDCl₃ (a) and the corresponding deprotected **P_{Dab-Pyr}** in D₂O (b).

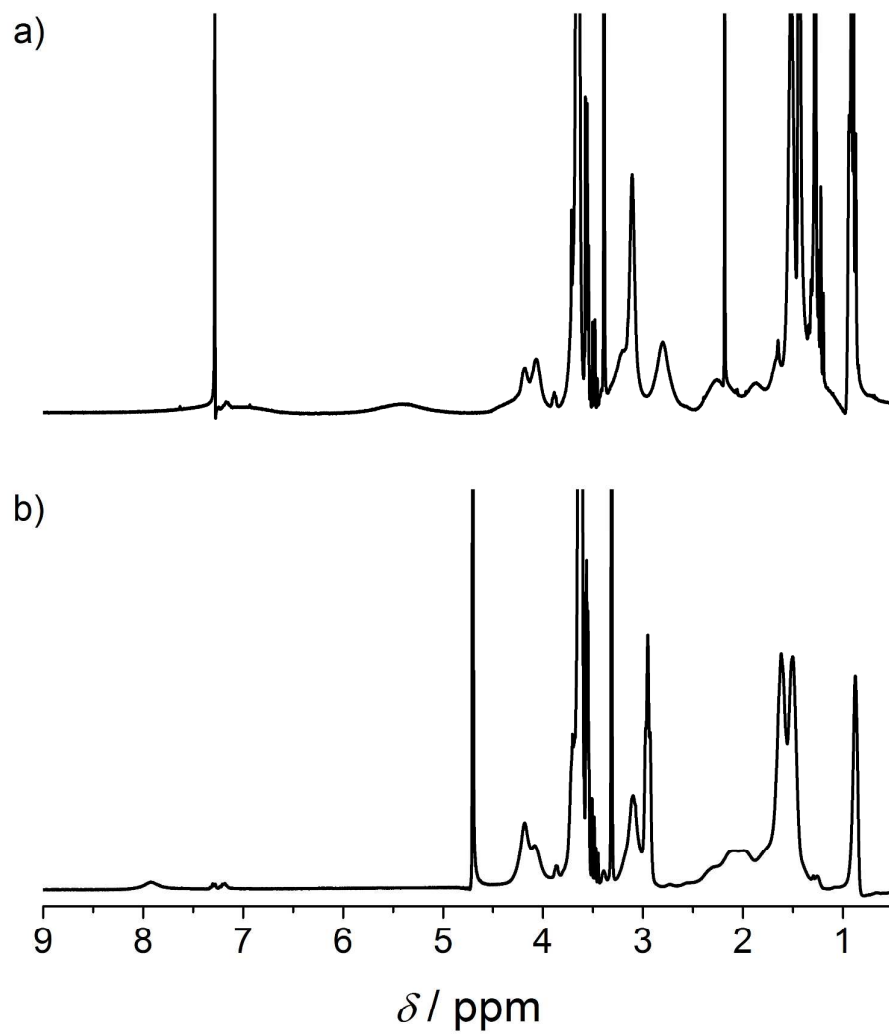


Figure S5. ¹H NMR spectra of Boc-protected linear polymer precursor in CDCl₃ (a) and the corresponding deprotected **P_{K-L}** in D₂O (b).

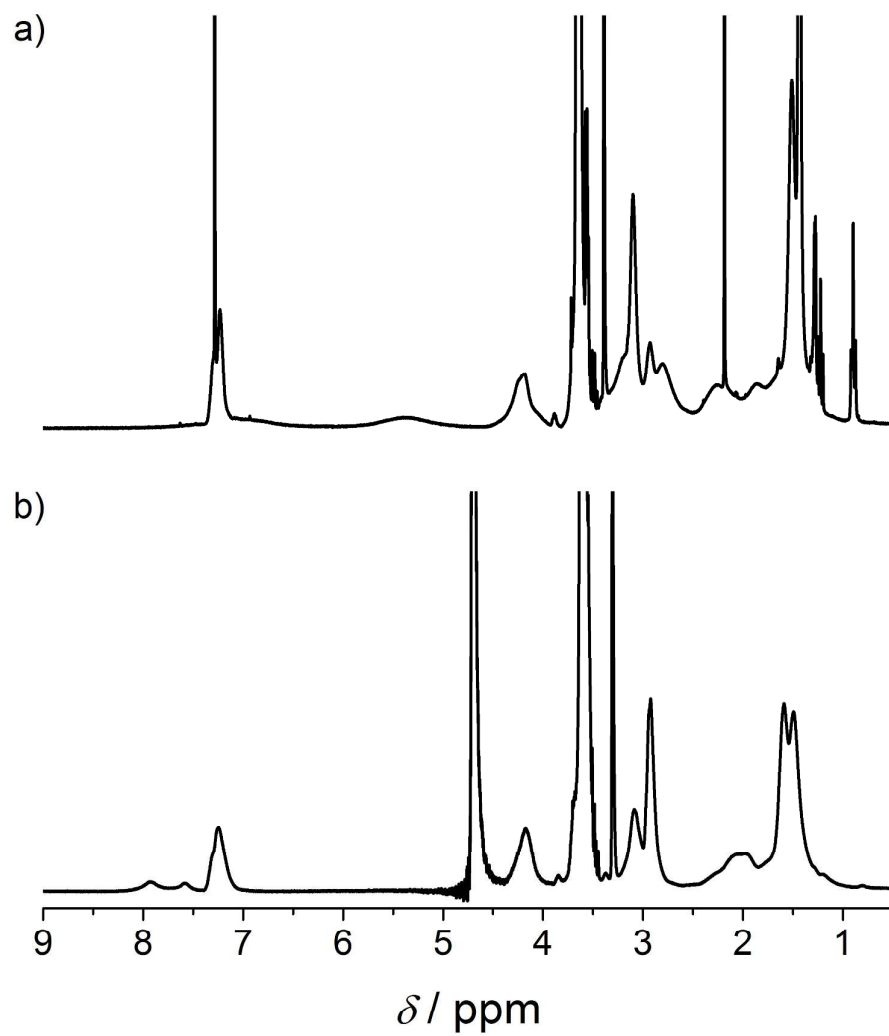


Figure S6. ¹H NMR spectra of Boc-protected linear polymer precursor in CDCl₃ (a) and the corresponding deprotected **P_{K-F}** in D₂O (b).

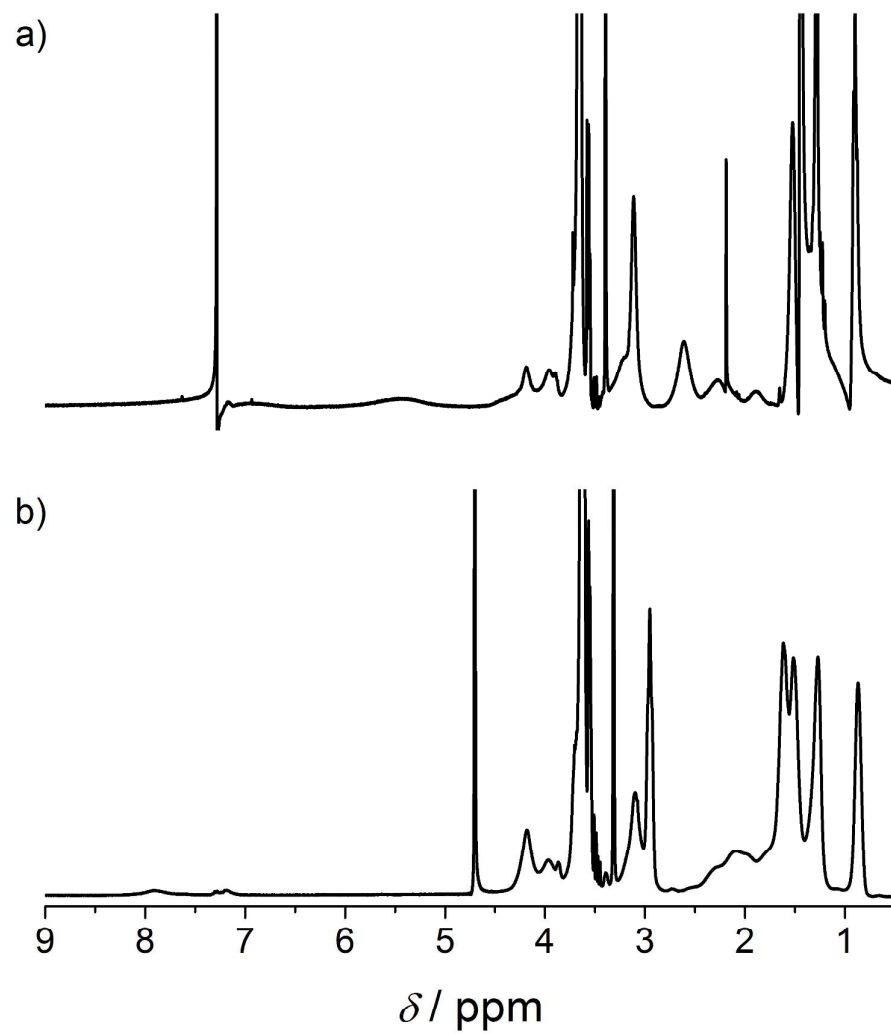


Figure S7. ^1H NMR spectra of Boc-protected linear polymer precursor in CDCl_3 (a) and the corresponding deprotected $\mathbf{P}_{\text{K-EH}}$ in D_2O (b).

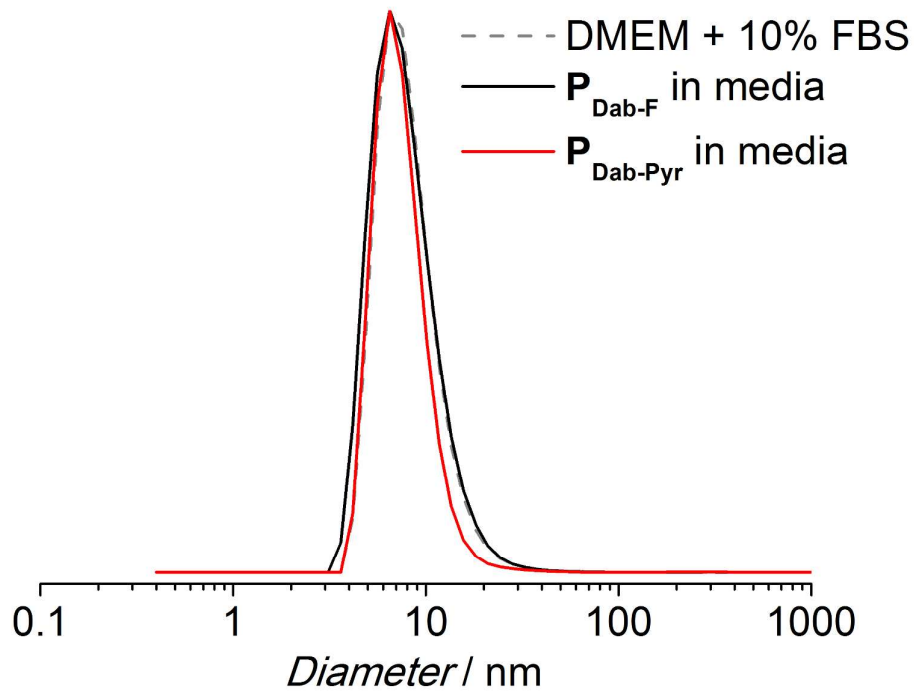


Figure S8. DLS volume distributions of SCPNs P_{Dab-F} and $P_{Dab-Pyr}$ in DMEM supplemented with 10% FBS cell culture media.

Table S1. Antimicrobial Activity of Compounds in M9 Minimal Media

Entry	MIC ($\mu\text{g mL}^{-1}$ [μM]) ^a against <i>P. aeruginosa</i>
P_{Dab-L}	64 [2.3]
P_{Dab-F}	32 [1.2]
P_{Dab-EH}	16 [0.6]
P_{Dab-Pyr}	32 [1.1]
P_{K-L}	n.d. ^b
P_{K-F}	n.d.
P_{K-EH}	16 [0.6]
P_{C1}	n.d.
P_{C2}	n.d.
Col ^c	64 [36.4]
Gm ^c	8 [16.8]

^aThe strain used was *P. aeruginosa* PAO1. The values in square brackets are the MIC values expressed in μM concentration. ^bn.d. indicates 'not determined.' ^cCol = colistin methanesulfonate and Gm = gentamicin.