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Substrate adaptability of β -lactamase

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Cover design: The cover idea is envisioned by Jing Sun inspired by the poem “Early Departure from Baidi City” (《早发白帝城》). Imogen Robertson crafted and illustrated the cover.

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Substrate adaptability of β -lactamase

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轻舟已过万重山

The boat has passed the Ten Thousand Mountains...

-李白 (Li Bai) 《早发白帝城》 (Early departure from Baidi City)

To my family and friends

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List of abbreviations

Amp	Ampicillin
BMRB	Biological Magnetic Resonance Data Bank
CAZ	Ceftazidime
CEF	Ceftriaxone
CD	Circular dichroism
CSP	Chemical shift perturbation
ER-PCR	Error-prone polymerase chain reaction
ESBL	Extended-spectrum β -lactamase
HSQC	Heteronuclear single-quantum coherence
IPTG	Isopropyl β -D-1 thiogalactopyranoside
Kan	Kanamycin
LB	Lysogenic broth
MES	2-(N-morpholino)ethanesulfonic acid
MIC	Minimal Inhibitory Concentration
MD	Molecular dynamics
NaPi	Phosphate buffer
NMR	Nuclear magnetic resonance
OD	Optical density
PCR	Polymerase Chain Reaction
PBP	Penicillin-binding protein
PDB	Protein Data bank
RMSD	Root-mean-square deviation
SDS-PAGE	Sodium lauryl sulfate polyacrylamide Gel Electrophoresis
TB	Tuberculosis
TROSY	Transverse relaxation-optimized spectroscopy
TEV	Tobacco etch virus
TSA	Thermal shift assay
WT	Wild type