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Discovery of antibiotics and their targets in multidrug-resistant bacteria

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Discovery of Antibiotics and Their Targets in Multidrug-Resistant Bacteria

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*And you, like Concorde
I came, a gentle hill racer
I was breathless up on every mountain
Just to look for your light.*

—Black Country, New Road – Concorde (2021)

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List of abbreviations

Å	Ångstrom	EDTA	ethylenediaminetetraacetic acid
Ac	acetyl	equiv.	molar equivalents
ABPP	activity-based protein profiling	ESBL	extended-spectrum β -lactamase
ADME	absorption, distribution, metabolism, excretion	Et	ethyl
ADPNP	5'-adenylyl- β - γ -imidodiphosphate	FA	formic acid
AMP	ampicillin	FC	fold change
AMR	antimicrobial resistance	FQ	fluoroquinolone
aq.	aqueous	FSC	Fourier shell correlation
Ar	aryl	GyrA	DNA gyrase subunit A
ATP	adenosine triphosphate	GyrB	DNA gyrase subunit B
BCA	bicinchoninic acid assay	h	hour(s)
BCP	bacterial cytological profiling	HDR	homology directed repair
Boc	tert-butoxycarbonyl	HEPES	(4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid)
bp	base pair	HATU	1-[bis(dimethylamino)methylene]-1H-1,2,3-triazolo[4,5-b]pyridinium 3-oxide hexafluorophosphate
bs	broad singlet	HOBT	hydroxybenzotriazole
BSA	bovine serum albumin	HPLC	high-performance liquid chromatography
Bu	Butyl	HRMS	high-resolution mass spectrometry
CAMHB	cation-adjusted Mueller-Hinton broth	IC ₅₀	half maximal inhibitory concentration
Cas9	caspase-9	J	coupling constant
CHAPSO	3-[[3-(cholamidopropyl)dimethylammonio]-2-hydroxy-1-propanesulfonate	LB	lysogeny broth
CFU	colony forming units	LC	liquid chromatography
CIP	ciprofloxacin	LC-MS	liquid chromatography – mass spectrometry
CRISPR	clustered regularly interspaced short palindromic repeats	LFQ	label-free quantification
cryo-EM	cryogenic electron microscopy	LPS	lipopolysaccharide
CTF	contrast transfer function	m	multiplet
δ	chemical shift	M	molar
d	doublet	m	meta
DAPI	4',6'-diamidino-2-phenylindole	m/z	mass over charge
DCM	dichloromethane	MBC	minimum bactericidal concentration
dd	doublet of doublet	MCR	mobile colistin resistance
DIC	differential interference contrast	MDR	multidrug-resistance
DIPEA	diisopropylethylamine	MeCN	acetonitrile
DMAP	4-dimethylaminopyridine	MIC	minimum inhibitory concentration
DMEM	Dulbecco's Modified Eagle Medium	min	minute(s)
DMF	dimethylformamide	MoA	mode-of-action
DMSO	dimethyl sulfoxide	MRSA	methicillin-resistant Staphylococcus aureus
DNA	deoxyribonucleic acid	MS	mass spectrometry
dt	double triplet	Ms	mesyl
DTT	dithiothreitol		
EDC	1-ethyl-3-(3-dimethylaminopropyl)carbodiimide		

MSC	minimum synergistic concentration	t	triplet
MSSA	methicillin-susceptible Staphylococcus aureus	TAE	Tris base, acetic acid, EDTA
MTT	3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium	TBAB	tetrabutyl ammonium bromide
n	normal	TE	Tris, EDTA
NBTI	novel bacterial topoisomerase inhibitor	TBAF	tetrabutyl ammonium fluoride
NMP	N-methyl-2-pyrrolidone	TCEP	(tris(2-carboxyethyl)phosphine)
NMR	nuclear magnetic resonance	TET	tetracyclin
NOESY	nuclear Overhauser effect spectroscopy	TFA	trifluoroacetic acid
non	nonet	THF	tetrahydrofuran
o	ortho	THPTA	tris-hydroxypropyltriazolylmethylamine
OB-DIG	on-bead digestion	TIPS	triisopropylsilyl
OD600	optical density at 600 nm	TLC	thin layer chromatography
OM	outer membrane	TPAB	to pimp a butterfly
p	para	Tris	tris(hydroxymethyl)aminomethane
PAGE	polyacrylamide gel electrophoresis	Trt	trityl
PBS	phosphate-buffered saline	TSB	tryptic soy broth
PC	principal component	tt	triple triplet
PCA	principal component analysis	UV	ultraviolet
PCR	polymerase chain reaction	VISA	vancomycin-intermediate Staphylococcus aureus
Ph	phenyl	VRSA	vancomycin-resistant Staphylococcus aureus
PMBN	polymyxin B nonapeptide	WGS	whole-genome sequencing
ppm	parts per million	WT	wild-type
PyAOP	(7-azabenzotriazol-1-yloxy)tripyrrolidinophosphonium hexafluorophosphate		
Pyr	pyridine		
q	quartet		
quant.	quantitative		
quint	quintet		
rcf	relative centrifugal force		
RIF	rifampicin		
RNA	ribonucleic acid		
rpm	rounds per minute		
RT	room temperature		
s	singlet		
SA	Staphylococcus aureus		
SAR	structure-activity relationship		
sat.	saturated		
SD8	simocyclinone D8		
SDS	sodium dodecyl sulfate		
SNP	single nucleotide polymorphism		
spp.	several species		

