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Understanding Anthracyclines: Synthesis of a Focused Library of Doxorubicin/Aclarubicin - Inspired Structures

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Luck is the residue of design

- *John Milton*

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List of Abbreviations

Ac	acetyl
AIBN	azobisisobutyronitrile
Alloc	allyloxycarbonyl
app.	apparent
aq.	aqueous
$Ag(DPAH)_2$	silver(II) bis-(hydrogen dipicolinate)
b	broad
b.r.s.m.	based on recovered starting material
Bz	benzoyl
cat.	catalytic
CEL	conformational energy landscape
CoA	coenzyme A
cod	1,5-cyclooctadiene
COSY	correlation spectroscopy
d	doublet
dd	doublet of doublets
ddd	doublet of doublets of doublets
ddt	doublet of doublet of triplets
DCE	1,2-dichloroethane
DCM	dichloromethane
DDQ	2,3-dichloro-5,6-dicyano-1,4-benzoquinone
DEAD	diethyl azodicarboxylate
DIPEA	diisopropylethylamine; Hünigs base
DMAP	4-dimethylaminopyridine
DMF	*N,N*-dimethylformamide
DMP	Dess-Martin periodinane
DMSO	dimethyl sulfoxide
dq	doublet of quartets
DSB	double-stranded break
dt	doublet of triplets
DTBMP	2,6-di-*tert*-butyl-4-methylpyridine
dtt	doublet of triplet of triplets
EDCI	1-ethyl-3-(3-dimethylaminopropyl)carbodiimide
eq	molar equivalents
FDA	US Food and Drug Administration

HSQC	heteronuclear single-quantum coherence spectroscopy
IDCP	iodonium di-*sym*-collidine perchlorate
J	coupling constant (Hz)
K_{222}	4,7,13,16,21,24-hexaoxa-1,10-diazabicyclo[8.8.8]hexacosane
LC-MS	liquid-chromatography mass spectrometry
m	multiplet
Ms	methylsulfonate
M.S.	molecular sieves
NDMBA	*N,N*-dimethylbarbituric acid
NIS	*N*-iodosuccinimide
NMR	nuclear magnetic resonance
o.n.	overnight
OPMP	*p*-methoxyphenolate
Ph	phenyl
Phen	3,4,7,8-tetramethyl-1,10-phenanthroline
PMB	*p*-methoxybenzyl
pNBz	*p*-nitrobenzoyl
ppm	parts per million
pyr.	pyridine
q	quartet
qd	quartet of doublets
quant.	quantitative
ROS	reactive oxygen species
rt	room temperature
s	singlet
SAR	structure-activity relationship
sat.	saturated
Su	succinimide
t	triplet
TBABr	tetra-*n*-butylammonium bromide
TBAF	tetra-*n*-butylammonium fluoride
TBS	*tert*-butyldimethylsilyl
TBSOTf	*tert*-butyldimethylsilyl trifluoromethanesulfonate
td	triplet of doublets
TES	triethylsilyl
Tf	trifluoromethylsulfonate
TFAc	trifluoroacetyl