

Cover Page



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Author: Albers, Harald

Title: Development of ATX and DUSP inhibitors : inhibiting phosphate ester hydrolysis in biology

Issue Date: 2012-04-04

Development of ATX and DUSP inhibitors

Inhibiting phosphate ester hydrolysis
in biology

Harald Matheas Henricus Gerardus Albers

Development of ATX and DUSP inhibitors

Inhibiting phosphate ester hydrolysis
in biology

PROEFSCHRIFT

ter verkrijging van
de graad van Doctor aan de Universiteit Leiden,
op gezag van Rector Magnificus prof.mr. P.F. van der Heijden,
volgens besluit van het College voor Promoties
te verdedigen op woensdag 4 april 2012
klokke 15.00 uur

door

Harald Matheas Henricus Gerardus Albers

geboren te Venray
in 1980

Promotiecommissie

Promotores: Prof.dr. H.S. Overkleeft
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Dr. W.H. Moolenaar
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ISBN: 978-90-8570-797-4

Cover: Crystal structure of inhibitor HA155 bound to the ATX active site.

The work described in this thesis was performed at the Divisions of Cellular Biochemistry and Cell Biology II of the Netherlands Cancer Institute, Amsterdam, The Netherlands. Financial support was provided by the Netherlands Organization for Scientific Research (NWO), the Dutch Cancer Society (KWF) and The Netherlands Proteomics Centre supported by The Netherlands Genomics Initiative.

Publication of this thesis was financially supported by the Dutch Cancer Society (KWF) and the Netherlands Cancer Institute. Printed by Wöhrmann Print Service, Zutphen.

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List of abbreviations

ABP	activity-based probe
ABTS	2,2'-azino-bis(3-ethylbenzothiazoline-6-sulphonic acid)
AP	alkaline phosphatase
Ap _n A	diadenosine polyphosphates
APT	attached proton test
ATP	adenosine-5'-triphosphate
ATX	autotaxin
AU	arbitrary units
bs	broad singlet
BSA	bovine serum albumin
CDC	cell division cycle
CFU	colony forming units
COSY	correlation spectroscopy
cPA	cyclic phosphatidic acid
δ	chemical shift
d	doublet
dd	double doublet
DMEM	Dulbecco's modified eagle's medium
DMF	<i>N,N</i> -dimethylformamide
DMSO	dimethyl sulfoxide
dppf	(diphenylphosphino) ferrocene
DUSP	dual specificity phosphatase
EC ₅₀	half maximal effective concentration
EDTA	ethylenediaminetetraacetic acid
EHEC	Enterohemorrhagische <i>Escherichia coli</i>
ENPP	ecto-nucleotide pyrophosphatase and phosphodiesterase
FACS	fluorescence-activated cell sorting
FAF	fatty acid-free
FCS	fetal calf serum
FRET	Förster fluorescence resonance energy transfer
FVB	friend virus B-type
h	hour(s)
HPLC-MS/MS	high performance liquid chromatography–tandem mass spectrometry
HRP	horseradish peroxidase
HTS	high-throughput screening
HVA	homo-vanillic acid
Hz	Hertz
IC ₅₀	half maximal inhibitory concentration
<i>J</i>	coupling constant
K	Kelvin
LB	lysogeny broth
λ _{em}	emission wavelength
λ _{ex}	excitation wavelength
LPA	lysophosphatidic acid
LPC	lysophosphatidylcholine
LPP	lipid phosphate phosphatases

lysoPLD	lysophospholipase D
m	multiplet
M	molar
MAG	monoacylglycerol
MDR	multidrug resistance
min	minute(s)
MIO	multiplicity of infection
m/z	mass-to-charge ratio
NAD ⁺	nicotinamide adenine dinucleotide
NCI	National Cancer Institute
NMR	nuclear magnetic resonance
OD ₅₉₅	optical density at 595 nm
OMF	3- <i>O</i> -methylfluorescein
OMFP	3- <i>O</i> -methylfluorescein phosphate
PAGE	polyacrylamide gel electrophoresis
PAO	phenylarsine oxide
PBS	phosphate buffered saline
PC	proprotein convertases
Pd/C	palladium on activated charcoal
PET	positron emission tomography
PI	percentage inhibition
PKB	protien kinase B
pNP	<i>para</i> -nitrophenol
pNPP	(<i>para</i> -nitrophenyl) phosphate
pNP-TMP	thymidine 5'-monophosphate <i>para</i> -nitrophenyl ester
ppm	parts per million
PSP	protein serine/threonine phosphatase
PTP	protein tyrosine phosphatase
PTPN	tyrosine-protein phosphatase non-receptor type
RA	residual activity
RMSD	root-mean-square deviation
RNA	ribonucleic acid
rpm	revolutions per minute
rt	room temperature
s	singlet
S.	<i>Salmonella</i>
S1P	sphingosine 1-phosphate
SAR	structure-activity relationship
SDS	sodium dodecyl sulphate
siRNA	small interfering RNA
SMB	somatomedin B
PEG	polyethylene glycol
SPC	sphingosylphosphorylcholine
TLC	thin layer chromatography
Tris	2-amino-2-(hydroxymethyl)-1,3-propanediol
U	enzyme unit
UDP	uridine diphosphate
Xac	<i>X. axonopodis</i> pV. <i>citri</i> .

