

University of Groningen

Targeting the DNA damage response in cervical cancer

Wieringa, Hylke

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version

Publisher's PDF, also known as Version of record

Publication date:

2017

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Wieringa, H. (2017). Targeting the DNA damage response in cervical cancer [Groningen]: Rijksuniversiteit Groningen

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Targeting the DNA damage response in cervical cancer

Hylke Wiebe Wieringa

Publication of this thesis was financially supported by:
University of Groningen
University Medical Center Groningen
Graduate School of Medical Science
Stichting Werkgroep Interne Oncologie

Front cover: merged immunofluorescence image (magnification 60x) demonstrating DNA damage 72h after cisplatin treatment (2 μ M) in a human cancer cell (BT-549). DNA double strand marker γ -H2AX (green) is co-stained with cyclin-B (red) en 4',6-diamidino-2-phenylindole (DAPI; blue) reflecting respectively the mitotic cell cycle phase and the nucleus.

Layout	Bianca Pijl, www.pijlldesign.nl , Groningen, The Netherlands
Cover design	Bianca Pijl, www.pijlldesign.nl
Cover photo	A.M.H. Heijink
Printed by	Ipskamp Printing Enschede, The Netherlands
ISBN	978-90-367-9656-9 (print) 978-90-367-9657-6 (digital)

© Copyright 2017 H.W. Wieringa, Groningen, The Netherlands
All rights reserved. No part of this thesis may be reproduced stored in a retrieval system, or transmitted in any form or by any means, without prior permission of the author.



**rijksuniversiteit
 groningen**

Targeting the DNA damage response in cervical cancer

Proefschrift

ter verkrijging van de graad van doctor aan de
 Rijksuniversiteit Groningen
 op gezag van de
 rector magnificus, prof. dr. E. Sterken en
 volgens besluit van het College voor Promoties.

De openbare verdediging zal plaatsvinden op

woensdag 12 april 2017 om 14.30 uur

door

Hylke Wiebe Wieringa

geboren op 8 februari 1986
 te Ferwerderadeel

Promotores

Prof. dr. M.A.T.M. van Vugt

Prof. dr. E.G.E. de Vries

Prof. dr. A.G.J. van der Zee

Beoordelingscommissie

Prof. dr. H.W. Nijman

Prof. dr. R.P. Coppes

Prof. dr. L.J.A. Stalpers

Contents

Chapter 1	General introduction and thesis outline	7
Chapter 2	Breaking the DNA damage response to improve cervical cancer treatment <i>Cancer Treatment Reviews 2016;42:30-40</i>	13
Chapter 3	The role of ATM and 53BP1 as predictive markers in cervical cancer <i>International Journal of Cancer 2012;131:2056-66</i>	37
Chapter 4	ATR inhibition sensitizes cervical cancer cells for platinum-based chemoradiation <i>Manuscript in progress</i>	65
Chapter 5	Wee1 as a therapeutic target in cervical cancer <i>Manuscript in progress</i>	93
Chapter 6	The chick embryo chorioallantoic membrane model as a platform to study chemoradiotherapy responses in cervical cancer	113
Chapter 7	Summary, discussion and future perspectives	127
Appendices		139
	Nederlandse samenvatting	141
	Curriculum vitae	145
	Dankwoord	147

