University of Groningen

Discovery of prognostic markers in laryngeal cancer treated with radiotherapy

Bruine de Bruin, Leonie

DOI:
[10.33612/diss.143832673](https://doi.org/10.33612/diss.143832673)

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:
2020

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

Citation for published version (APA):
Bruine de Bruin, L. (2020). *Discovery of prognostic markers in laryngeal cancer treated with radiotherapy*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen.
<https://doi.org/10.33612/diss.143832673>

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).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

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.

Discovery of prognostic markers in laryngeal cancer treated with radiotherapy

Leonie Bruine de Bruin

Bookdesign: Ferdinand van Nispen, *my-thesis.nl*

Printed by: GVO Drukkers & Vormgevers, Ede

© L. Bruine de Bruin, 2020. All rights reserved. No part of this thesis may be reproduced or transmitted without prior written permission of the author.

The publication of this thesis was financially supported by:

Prof. dr. Eelco Huizinga Stichting, Ziekenhuis St Jansdal, Intermedis A&A, ALK-Abelló BV, Graduate School of Medical Sciences, Soluvos Medical BV, Atos Medical BV.

**rijksuniversiteit
 groningen**

Discovery of prognostic markers in laryngeal cancer treated with radiotherapy

Proefschrift

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

De openbare verdediging zal plaatsvinden op

dinsdag 24 november 2020 om 12:45 uur

door

Leonie Bruine de Bruin

geboren op 11 augustus 1984
 te Amersfoort

Promotores

Prof. dr. B.F.A.M van der Laan

Prof. dr. E. Schuurin

Copromotores

Dr. G.B. Halmos

Dr. B. van der Vegt

Beoordelingscommissie

Prof. dr. S.M. Willems

Prof. dr. F.K.L. Spijkervet

Prof. dr. M.W.M. van den Brekel

Paranimfen

Krista Bruine de Bruin

Eline Bruine de Bruin

CONTENTS

Chapter 1	General introduction	9
Chapter 2	Head and neck tumor hypoxia imaging by ¹⁸ F-fluoroazomycin-arabinoside (¹⁸ F-FAZA)-PET: a review <i>Clinical Nuclear Medicine. 2014 Jan;39(1):44-48</i>	27
Chapter 3	Assessment of hypoxic subvolumes in laryngeal cancer with ¹⁸ F-fluoroazomycin-arabinoside (¹⁸ F-FAZA)-PET/CT scanning and immunohistochemistry <i>Radiotherapy & Oncology. 2015 Oct;117(1):106-112</i>	43
Chapter 4	PTEN is associated with worse local control in early stage supraglottic laryngeal cancer treated with radiotherapy <i>Laryngoscope Investigative Otolaryngology. 2019 Jun 12;4(4):399-404</i>	59
Chapter 5	High pATM is associated with poor local control in supraglottic cancer treated with radiotherapy <i>Laryngoscope. 2020 Aug;130(8):1954-1960</i>	75
Chapter 6	High DNMT1 expression is associated with worse local control in early stage laryngeal squamous cell carcinoma <i>Submitted</i>	95
Chapter 7	Summary and general discussion	109
	Nederlandse samenvatting	131
	List of publications	137
	Dankwoord	139
	Curriculum vitae	143