



Universiteit  
Leiden  
The Netherlands

## **New insights into the prognostic value of the tumor-stroma ratio in patients with breast cancer**

Vangangelt, K.M.H.

### **Citation**

Vangangelt, K. M. H. (2020, September 16). *New insights into the prognostic value of the tumor-stroma ratio in patients with breast cancer*. Retrieved from <https://hdl.handle.net/1887/136526>

Version: Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/136526>

**Note:** To cite this publication please use the final published version (if applicable).

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/136526> holds various files of this Leiden University dissertation.

**Author:** Vangangelt, K.M.H.

**Title:** New insights into the prognostic value of the tumor-stroma ratio in patients with breast cancer

**Issue date:** 2020-09-16

NEW INSIGHTS INTO THE PROGNOSTIC VALUE  
OF THE TUMOR-STROMA RATIO IN PATIENTS  
WITH BREAST CANCER

Kiki M.H.Vangangelt

**Colofon**

New insights into the prognostic value of the tumor-stroma ratio in patients with breast cancer by Kiki Vangangelt.

ISBN: 978-94-6375-641-9

Illustrator: Marion Vangangelt

Lay-out: Vera van Ommeren | [www.persoonlijkproefschrift.nl](http://www.persoonlijkproefschrift.nl)

Printing: Ridderprint | [www.ridderprint.nl](http://www.ridderprint.nl)

© K.M.H. Vangangelt, Leiden, The Netherlands

All rights reserved. No part of this thesis may be reproduced or transmitted in any form, by any means, electronic or mechanical without prior written permission of the author.

Printing of this thesis was financially supported by Uitgeverij Jaap, Erbe Nederland B.V., Norgine B.V., Pfizer B.V., Servier Nederland Farma B.V., Chipsoft B.V., Sysmex Nederland B.V. and Blaak&Partners.

The research described in this thesis was financially supported by the Genootschap Keukenhof voor de vroege opsporing van kanker, Lisse, The Netherlands.

# NEW INSIGHTS INTO THE PROGNOSTIC VALUE OF THE TUMOR-STROMA RATIO IN PATIENTS WITH BREAST CANCER

Proefschrift

ter verkrijging van de graad van Doctor aan de Universiteit Leiden,  
op gezag van Rector Magnificus prof. mr. C.J.M.M. Stolker,  
volgens besluit van het College voor Promoties  
te verdedigen op woensdag 16 september 2020 klokke 13:45 uur

door

Kiki Margaretha Hubertina Vangangelt

geboren te Maastricht

in 1989

**Promotor**

Prof. dr. R.A.E.M. Tollenaar

**Copromotor**

Dr. W.E. Mesker

**Leden promotiecommissie**

Prof. dr. J.A van der Hage

Prof. dr. E. van der Wall, Universitair Medisch Centrum Utrecht, Utrecht

Prof. dr. P.J. van Diest, Universitair Medisch Centrum Utrecht, Utrecht

# TABLE OF CONTENTS

<b>CHAPTER 1</b>	7
Introduction and outline	
<b>CHAPTER 2</b>	19
The prognostic value of the tumor-stroma ratio in primary breast tumors with attention to triple negative tumors: a review <i>Breast Cancer Res Treat. 2019 Jan;173(1):55-64</i>	
<b>CHAPTER 3</b>	45
The prognostic value of the tumor-stroma ratio is most discriminative in patients with grade III or triple negative breast cancer <i>Int J Cancer. 2020 Apr 15;146(8):2296-2304</i>	
<b>CHAPTER 4</b>	75
The intra-tumoral stroma in patients with breast cancer increases with age <i>Breast Cancer Res Treat. 2020 Jan;179(1):37-45</i>	
<b>CHAPTER 5</b>	97
The prognostic value of the tumor-stroma ratio in tumor-positive axillary lymph nodes in breast cancer patients <i>Int J Cancer. 2018 Dec 15;143(12):3194-3200</i>	
<b>CHAPTER 6</b>	119
Prognostic value of the tumor-stroma ratio combined with the immune status of tumors in invasive breast carcinoma <i>Breast Cancer Res Treat. 2018 Apr;168(3):601-612</i>	
<b>CHAPTER 7</b>	151
Summary, general discussion and future perspectives	
<b>CHAPTER 8</b>	163
Nederlandse samenvatting	
<b>CHAPTER 9</b>	169
List of publications, curriculum vitae and acknowledgments	

