

University of Groningen

Advancing transcriptome analysis in models of disease and ageing

de Jong, Tristan Vincent

DOI:
[10.33612/diss.99203371](https://doi.org/10.33612/diss.99203371)

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:
2019

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

Citation for published version (APA):

de Jong, T. V. (2019). Advancing transcriptome analysis in models of disease and ageing. [Groningen]: Rijksuniversiteit Groningen. <https://doi.org/10.33612/diss.99203371>

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.

ADVANCING TRANSCRIPTOME
ANALYSIS IN MODELS OF DISEASE
AND AGEING

TRISTAN V. DE JONG

Cover design by Tristan de Jong:

“In narratology and comparative mythology, the hero's journey is the common template of a broad category of tales and lore that involves a hero who goes on an adventure, in a decisive crisis wins a victory, and then comes home changed or transformed.”

The research described in this thesis was conducted at the European Research Institute for the Biology of Ageing, University Medical Center Groningen, University of Groningen, The Netherlands

The printing of this thesis was financially supported by:

University of Groningen Library and University Medical Center Groningen

ISBN (print): 978-94-034-2051-6

ISBN (electronic): 978-94-034-1954-1

Printing: Ridderprint BV, the Netherlands



rijksuniversiteit
 groningen

ADVANCING TRANSCRIPTOME ANALYSIS IN MODELS OF DISEASE AND AGEING

PhD Thesis

to obtain the degree of PhD at the
 University of Groningen
 on the authority of the
 Rector Magnificus Prof. C. Wijmenga
 and in accordance with
 the decision by the College of Deans.

This thesis will be defended in public on

Monday 28 October 2019 at 12:45 hours

by

Tristan Vincent de Jong

born on 18th of June 1990
 in Waalwijk, The Netherlands

Supervisors

Prof. V. Guryev

Prof. E. A. A. Nollen

Assessment committee

Prof. R. W. Williams

Prof. G. de Haan

Prof. M. G. Rots

Paranymphs:

Sara Mouton

Frank Beltman

To my parents,

Thank you for everything

CONTENTS

	Page
Chapter 1 Outline of this thesis	9
Chapter 2 Gene expression variability – the other dimension in transcriptome analysis	13
Chapter 3 Identification of an RNA polymerase III regulator linked to disease-associated protein aggregation	53
Chapter 4 A p300 and SIRT1 regulated acetylation switch of C/EBP α controls mitochondrial function	93
Chapter 5 Temporal patterns of gene expression changes during induction of senescence	129
Chapter 6 Quantification of age-related structural genome changes in blood cells using whole genome sequencing	149
Chapter 7 Interindividual gene expression variability results from DNA sequence encoded gene noise determinants adjusted to fluctuation in system-state	169
Chapter 8 Reduced expression of C/EBP β -LIP extends health- and lifespan in mice	209
Chapter 9 General discussion	255
Chapter 10 List of publications	269
Chapter 11 Dutch Summary	273
Chapter 12 Acknowledgements	277

