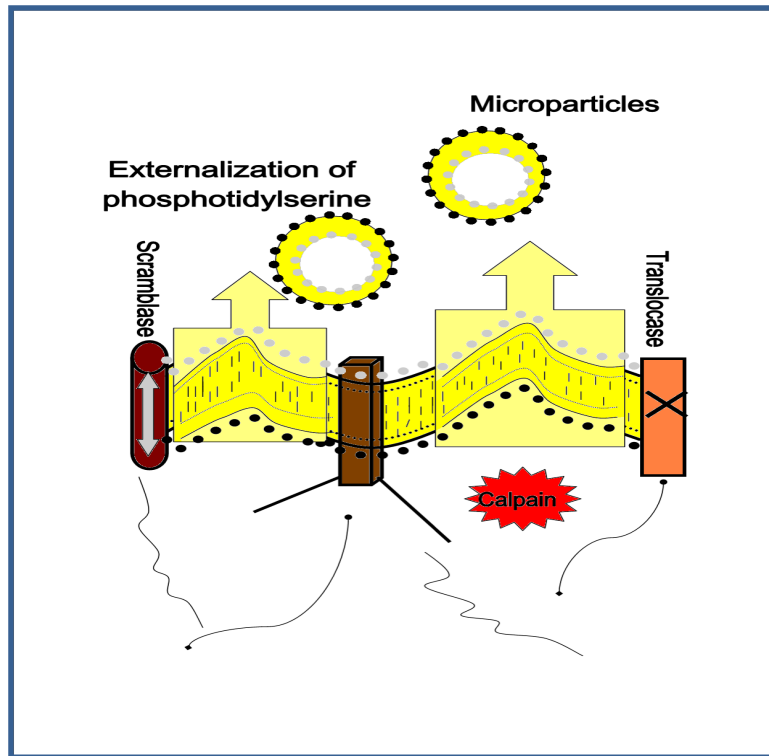




PhD Thesis
School of Medicine and Public Health
Faculty of Health and Medicine
University of Newcastle, NSW, Australia



Title: Investigating the role of Microparticles/
Microvesicles/Extracellular vesicles
in vascular biology, haemostasis and haemopoietic
dysregulation

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This thesis is submitted for fulfilment of requirements for the Degree of Doctor of Philosophy
The University of Newcastle, Australia
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Differential expression analysis algorithm

Ethics Approvals

Informed consent

Statements of contributions from co-authors and endorsement by Faculty Assistant Dean
(Research and Training)

Note : the publications are embedded as pdf and retain their original page numbers as in the manuscript. Each publication has a prelude consisting of the relevant aim, the citation and the key learning points.

PREFACE

Statement of originality

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to the final version of my thesis being made available worldwide when deposited in the University's Digital Repository subject to the provisions of the Copyright Act 1968 and any approved embargo.

Thesis by publication

Acknowledgement of Authorship

I hereby certify that the work embodied in this thesis contains published papers of which I am a joint **first** author. I have included as part of the thesis a written statement from each co-author, endorsed by the Faculty of Health Assistant Dean (Research Training), attesting to my contribution to the joint publications.

Note: I am submitting the PhD thesis by publication. The contents of the literature review and introductory material for each chapter are thus adapted from publications, included in this thesis.

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Publications included in this thesis

Refereed publications (seven)

PAPER 1: Enjeti AK, Ariyaratnam A, D'Crus A, Seldon M, Lincz LF. Correlative analysis of nanoparticle tracking, flow cytometric and functional measurements for circulating microvesicles in normal subjects. *Thromb Res*. 2016;145:18-23.

PAPER 2: Enjeti AK, Ariyaratnam A, Warwick E, Seldon M, Lincz LF. Challenges in Analysis of Circulating Extracellular Vesicles in Human Plasma Using Nanotracking and Tunable Resistive Pulse Sensing. *J Nanomed Nanotechnol*. 2017; 8: 468.

PAPER 3: Enjeti AK, Ariyaratnam A, D'Crus A, Seldon M, Lincz LF. Circulating microvesicle number, function and small RNA content vary with age, gender, smoking status, lipid and hormone profiles. *Thromb Res*. 2017;156:65-72.

PAPER 4: (Book Chapter) Enjeti AK, Seldon M. Microparticles : Role in Haemostasis and Venous Thromboembolism (ed 2012): InTech; 2012

PAPER 5: Enjeti AK, Lincz LF, Scorgie FE, Seldon M. Circulating microparticles are elevated in carriers of factor V Leiden. *Thromb Res*. 2010;126(3):250-253.

PAPER 6: Enjeti AK, Lincz LF, Seldon M, Isbister GK. Circulating microvesicles in snakebite patients with microangiopathy. *Res Pract Thromb Haemost* 2019;3:121-5.

PAPER 7: Enjeti AK, Ariyaratnam A, D'Crus A, Riveros C, Seldon M, Lincz LF. Circulating microvesicles are less procoagulant and carry different miRNA cargo in myelodysplasia. *Blood Cells Mol Dis* 2019;74:37-43.

Refereed Appendix publications (three)

Note: These manuscripts were published, with PhD candidate as first author, 3 years prior to commencement of the PhD at the university of Newcastle.

Appendix PAPER 1(Review): Enjeti AK, Lincz LF, Seldon M. Microparticles in health and disease. *Semin Thromb Hemost*. 2008;34(7):683-691.

Appendix PAPER 2(Review): Enjeti AK, Lincz LF, Seldon M. Detection and measurement of microparticles: an evolving research tool for vascular biology. *Semin Thromb Hemost*. 2007;33(8):771-779.

Appendix PAPER 3: Enjeti AK, Lincz L, Seldon M. BioMaleimide as a Generic Stain for Detection and Quantitation of Microparticles. *International journal of Laboratory Haematology*. 2007; Jul 2(3):196-199.

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Title page Figure legend

This picture was conceived by the authors and published on the cover page of the 'Seminars in Thrombosis and Haemostasis' journal. It shows the budding of MP (or MV) from the cell membrane by externalization of phosphatidylserine by the interplay of the enzymes scramblase and translocase.

Adapted from Appendix PAPER 1 (Review): Enjeti AK, Lincz LF, Seldon M. Microparticles in health and disease. *Semin Thromb Hemost.* 2008;34(7):683-691.

Abbreviations

APTT	Activated Partial Thromboplastin Time
ELISA	Enzyme linked immunoabsorbent assay
EV	Extracellular vesicles
ISEV	International society for extracellular vesicles
ISTH	International Society for Thrombosis and Haemostasis
MAHA	Microangiopathic haemolytic anaemia
MDS	Myelodysplasia
MP	Microparticles
MV	Microvesicles
NTA	Nanotracking analysis
TRPS	Tunable resistive pulse sensing
VICC	Venom induced consumptive coagulopathy
XaCT	Factor X-activated clotting time