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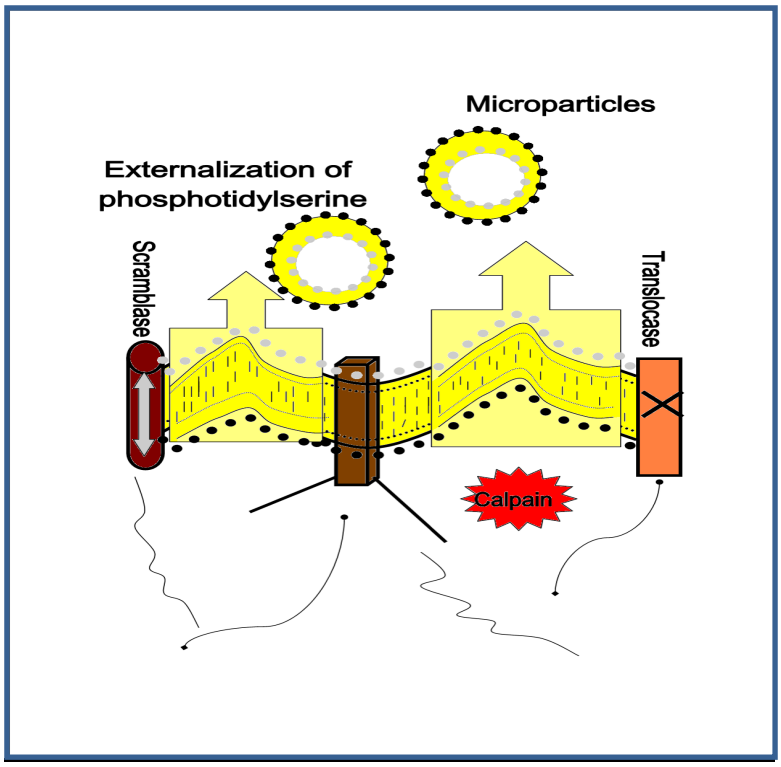

Title: Investigating the role of Microparticles/ Microvesicles/Extracellular vesicles in vascular biology, haemostasis and haemopoietic dysregulation

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This thesis is submitted for fulfilment of requirements for the Degree of Doctor of Philosophy
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Contents

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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I thank my colleagues in my department for their support during the course of the project. Finally, I thank my family for their constant support, patience and valuable time throughout my PhD.

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Publications included in this thesis

Refereed publications (seven)

PAPER 1: Enjeti AK, Ariyarajah 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, Ariyarajah 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, Ariyarajah 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, Ariyarajah 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.

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