New Zealand MSI Curriculum Vitae Template

PART 1

1a. Personal details						
Full name	*Title* Dr	*First name* *David*	*Second name(s)* *John*	*Family name* Crossman		
Present position	Senior Research Fellow					
Organisation/Employer	The University of Auckland					
Contact Address	Department of Physiology					
	Private Bag 92019					
	Auckland			**Post code**	1142	
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Email	d.crossman@auckland.ac.nz					

1b. Academic qualifications

2003, PhD, Biological Sciences, The University of Auckland
1996, BSc(Hons), Biochemistry, University of Otago

1c. Professional positions held

2015-	Senior Research Fellow Department of Physiology, The University of Auckland
2006-2014	Research Fellow Department of Physiology, The University of Auckland.
2001-2005	Research Scientist for Protemix LTD (Biotech company developing treatments for diabetes)
2000-2001	Laboratory Tutor; for Biochemistry, General Biology and Medical Biology, The University of Auckland
1996-1998	Laboratory Demonstrator; for Biochemistry, General Biology, Zoology and Botany, The University of Auckland

1d. Present research/professional speciality

My research is focused on understanding the pathological remodelling of the macro-molecular complexes that regulate cardiac muscle cell contraction in particular the transverse(t)-tubules. T-tubules are cylindrical invaginations of the plasma membrane that carry the cardiac action potential deep into myocytes where they trigger local influx of Ca^{2+} that synchronises a much larger global release of Ca^{2+} that initiates contraction. Remodelling of t-tubules is now recognised as major contributor to loss of contractility in the failing human heart. My work in this field includes one of the first quantitative confocal analysis of t-tubules and associated Ca^{2+} release channels in the failing human heart (Crossman *et al*, 2011). Subsequently I went on to demonstrate that contractile function in the failing human heart (measured by MRI) was strongly correlated to the amount of transverse t-tubules measured by confocal microscopy (Crossman *et al*, 2015) work that was highlighted by editorial in Journal of Molecular and Cellular Cardiology (doi: 10.1016/j.yjmcc.2015.05.015). Most recently, using mass-spectrometry and super resolution microscopy, I have identified for the first time that there is increased collagen within the dilated t-tubules in human heart failure. This work featured on the cover of Cardiovascular Research (Crossman *et al* 2017) and received expert editorial supporting our novel hypothesis that fibrosis is a mechanism of t-tubule remodelling (DOI: 10.1093/cvr/cvx091)

1e. Total years research experience	*14 years

*Note this includes three years in the commercial research sector (2003-5) and one and half years with serious illness (2009).

1f. Professional distinctions and memberships (including honours, prizes, scholarships, boards or governance roles, etc)

2017 NZ council nominee for International Union of Pure and Applied Biophysics

Invited oral presentations – last five years

2016. School of Biomedical Sciences University of Leeds, UK. “Super resolution imaging identifies fibrosis of the transverse tubules in human heart failure”

2016. Biophysics Research Group, University of Exeter, UK ““Super resolution imaging identifies fibrosis of the transverse tubules in human heart failure”

2016. Centre for Advanced Discovery and Experimental Therapeutics, Manchester University, UK. “Super resolution imaging identifies fibrosis of the transverse tubules in human heart failure”

2016. Gage Muscle Conference, Canberra, Australia. “Is glycosylation of type VI collagen in the failing human heart a form of muscular dystrophy?”

2016 Department of Physiology, Monash University, Melbourne, Australia. “Fibrosis of the transverse tubules in human heart failure: insights from super resolution microscopy”

2014 Biomedical Physics Group, University of Exeter, Exeter, UK. “Zooming in on the Transverse Tubules: dSTORM Imaging of Human Cardiac Junctions”

2014 International Union of Pure and Applied Biophysics Congress. Brisbane, Australia. “Zooming in on the Transverse Tubules: dSTORM Imaging of Human Cardiac Junctions”

2013 Waitakere College School Conference. Auckland. New Zealand. “Why do we need research?”

Fellowships and awards

2016 Traveling Fellowship to University of Leeds. Supported by the IRSES CORDIS3D Research Network supported by the Royal Society of New Zealand. $7,000.

2012 PJ Smith Freemasons Travelling Fellowship. The University of Auckland. To carry out a short research project in the Laboratory of Professor Gollegdge who heads the Vascular Biology Unit, James Cook University Australia. $14,500.

2011 Maurice and Phyllis Paykel Trust Travel Grant. To attend the 2011 Cardiac Society of New Zealand and Australia 59th Annual Scientific Meeting, Perth Australia. $1,500.

2008 Auckland Medical Research Foundation Travel Grant. To attend the 2008 Cardiac Society of New Zealand and Australia 56th Annual Scientific Meeting, Adelaide, Australia. $1,500

2007 3D Live Cell Microscopy Course Scholarship from Professor James Pawley, The University of Wisconsin-Madison, Madison, USA. $5,000.

2007 Travel Grant from Auckland Medical Research foundation. To attend 2007 International short Course in 3D Imaging of Live Cells and 3D Image Processing, University of British Columbia, Vancouver, BC, Canada. $1,500.

1g. Total number of *peer reviewed* publications and patents	Journal articles	Books, book chapters, books edited	Conference proceedings	Patents
	30	2	16	0

PART 2

2a. Research publications and dissemination

Peer-reviewed journal articles last ten years

Citation count: 986 citations h-index of 14 (Google Scholar 5/7/17)
Journal articles

1. **Crossman DJ**, Shen X, Jüllig M, Munro M, Hou Y, Middleditch M, Shrestha D, Li A, Lal S, dos Remedios CG, Baddeley D, Ruygrok PN, Soeller C (2017) Increased collagen within the transverse tubules in human heart failure. Cardiovascular Research. doi.org/10.1093/cvr/cvx055. **Impact factor 5.9. Citations 2.**
2. **Crossman DJ**, Jayasinghe I, Soeller C (2017) T-tubule remodelling: a cellular pathology driven by both sides of the plasmalemma? Biophysical Reviews. In press.
3. Krishna SM, Seto SW, Jose R, Li J, Moxon J, Clancy P, **Crossman DJ**, Norman P, Emeto TI, Golledge J (2017) High serum thrombospondin-1 concentration is associated with slower abdominal aortic aneurysm growth and deficiency of thrombospondin-1 promotes angiotensin II induced aortic aneurysm in mice. Clinical Science 131: 1261-1281. **Impact factor 5.6. Citations 1.**
4. Power ASC, Pham T, Loiselle DS, **Crossman D**, Ward ML, Hickey AJR. (2016) Impaired ADP channeling to mitochondria and elevated reactive oxygen species in hypertensive hearts. American Journal of Physiology – Heart and Circulatory Physiology. DOI 10.1152/ajpheart.00050.2016. **Impact factor 3.3. citations 2.**
5. **Crossman DJ**, Young AA, Ruygrok PN, Nason GP, Baddelely D, Soeller C, Cannell MB. (2015). t-tubule disease: Relationship between t-tubule organization and regional contractile performance in human dilated cardiomyopathy. Journal of Molecular and Cellular Cardiology. 84:170–178. **Impact factor 5.2. citations 10.**
6. **Crossman DJ**, Hou Y, Jayasinghe I, Baddeley D, and Soeller C. (2015). Combining confocal and single molecule localisation microscopy: a correlative approach to multi-scale tissue imaging. Methods. 88:45-55. **Impact factor 3.2. citations 10.**
7. Rajagopala V, Bass G, Walker CG, **Crossman DJ**, Petzer A, Hickey A, Hoshijima M, Ellisman ME, Soeller C (2015). Examination of the effects of heterogeneous organization of RyR clusters, myofibrils and mitochondria on Ca2+ release patterns in cardiomyocytes. PloS Computational Biology. 11(9), e1004417. **Impact factor 4.9, citations 3.**
8. Yufeng H, Jayasinghe I, **Crossman DJ**, Baddeley D, and Soeller C. (2015) Nanoscale analysis of ryanodine receptor clusters in dyadic couplings of rat cardiac myocytes. Journal of Molecular and Cellular Cardiology. 80:45-55. **Impact factor 5.2, citations 10.**
9. Jayasinghe ID, Munro M, Clowsley A, Hou Y, **Crossman DJ**, and Soeller C. (2015) Revealing t-tubules in striated muscle with new optical super-resolution microscopy European Journal of Translational Myology. 25:15-26, **citations 6.**
10. **Crossman DJ**, Hou Y, Ruygrok PN, Soeller C. (2015). Next Generation Endomyocardial Biopsy: The Potential of Confocal and Super Resolution Microscopy. Heart Failure Reviews. 20:203-214. **Impact factor 4.0, citations 4.**
11. Hou Y, **Crossman, D**J, Rajagopal V, Baddeley D, Jayasinghe I, Soeller C. (2014). Super-resolution fluorescence imaging to study cardiac biophysics: α-actinin distribution and Z-disk. Prog Biophys Mol Biol. 115:328-339. **Impact factor 4.0, citations 16.**

12. Ward ML, **Crossman, DJ**. (2014). Cellular mechanisms underlying the impaired contractility of diabetic cardiomyopathy. World J Cardiol. 6: 577–584. **Citations 17.**
13. Jensen, CC, **Crossman, DJ**. (2014). Types of Imaging – direct STORM. The Anatomy Record. 297:2227-2231. **Impact factor 1.3, citations 6.**
14. Moxon JV, Liu D, Moran CS, **Crossman, DJ**, Krishna, SM, Yonglitthipagon P, Emeto TI, Morris DR, Mulvenna J, Rush CM, Golledge J. (2014). Proteomic and genomic analyses suggest the association of Apolipoprotein C1 with abdominal aortic aneurysm. PROTEOMICS - Clinical Applications. 8:762-772. **Impact factor 2.7, citations 11.**
15. Jayasinghe ID, **Crossman DJ**, Soeller C, Cannell MB. (2012) Comparison of the organization of t-tubules, sarcoplasmic reticulum and ryanodine receptors in rat and human ventricular myocardium. Clinical and Experimental Pharmacology and Physiology. 39:469-476. **Impact factor 2.4, citations 27**.
16. Young AA, **Crossman DJ**, Ruygrok PR, Soeller C, Cannell MB. (2011) Co-registration of cardiac MRI and ex vivo heart specimens. Journal of Magnetic Resonance Imaging. 34(5), 1065-1071. **Impact factor 2.6, citations 7.**
17. Ward ML, **Crossman DJ**, Cannell MB. (2011) Mechanisms of reduced contractility in an animal model of hypertensive heart failure. Clinical and Experimental Pharmacology and Physiology. 38:711-716. **Impact factor 2.4, citations 10.**
18. Baddeley D, **Crossman D**, Rossberger S, Cheyne JE, Montgomery JM, Jayasinghe ID, Cremer C, Cannell MB, Soeller C. (2011) 4D super-resolution microscopy with conventional fluorophores and single wavelength excitation in optically thick cells and tissues. PLoS one. 6(5):e20645. **Impact factor 3.5, citations 102.**
19. **Crossman DJ**, Ruygrok PR, Soeller C, Cannell MB. (2011) Changes in the Organization of Excitation-Contraction Coupling Structures in Failing Human Heart. PLoS one. 6(3):e1901. **Impact factor 3.5, citations 102.**
20. Ward ML, **Crossman DJ**, Loiselle DS, Cannell MB. (2010) Non-steady-state calcium handling in failing hearts from the spontaneously hypertensive rat. Pflugers Arch. 460(6):991-1001. **Impact factor 3.1, citations 8.**
21. Jayasinghe ID, **Crossman DJ**, Soeller C and Cannell MB. (2010) A new twist in cardiac muscle: dislocated and helicoid arrangements of myofibrillar z-disks in mammalian ventricular myocytes. Journal of Molecular and Cellular Cardiology. 48:964-71. **Impact factor 5.1,citations 11.**
22. Gong D, Lu L, Chen X, Reddy S, **Crossman DJ**, Glyn-Jones S, Choong YS, Kennedy J, Barry B, Zhang S, Chan YK, Ruggiero K, Phillips ARJ, Cooper GJS (2008) A copper(II)-selective chelator ameliorates diabetes-evoked renal fibrosis and albuminuria, and suppresses pathogenic TGF-β activation in the kidneys of rats used as a model of diabetes. Diabetologia. 51. 1741-1751. **Impact factor 6.9, citations 50.**
23. Soeller C, **Crossman D**, Gilbert R, Cannell MB (2007) Analysis of ryanodine receptor clusters in rat and human cardiac myocytes. Proceedings of the National Academy of Sciences. 104:14958-14963. **Impact factor 9.7, citations 91.**
24. Jüllig M, Chen X, Hickey AJ, **Crossman DJ**, Xu A, Wang Y, Greenwood DR, Choong YS, Schönberger SJ, Middleditch MJ, Phillips ARJ, Cooper GJS (2007) Reversal of diabetes-evoked changes in mitochondrial protein expression of cardiac left ventricle by treatment with a copper(II)-selective chelator. PROTEOMICS - Clinical Applications. 1:387-399. **Impact factor 2.7, citations**

24.

25. Jüllig M, Hickey AJ, Middleditch MJ, **Crossman DJ**, Lee SC, Cooper GJS (2007) Characterization of proteomic changes in cardiac mitochondria in streptozotocin-diabetic rats using iTRAQTM isobaric tags. PROTEOMICS - Clinical Applications. 1:565-576. **Impact factor 2.7, citations 40.**
26. Cannell MB, **Crossman DJ**, Soeller C (2006). Effect of changes in action potential spike configuration, junctional sarcoplasmic reticulum micro-architecture and altered t-tubule structure in human heart failure. Journal of Muscle Research and Cell Motility. 27:297-306. **Impact factor 1.9, citations 71.**

Peer reviewed books, book chapters, books edited

1. Soeller C, Hou Y, Jayasinghe I, Baddeley D, and **Crossman DJ**. (2017). Correlative Single Molecule Localisation Microscopy and Confocal Microscopy. Methods in Moelcular Biology. Springer Protocols.
2. Marshall C, **Crossman D**, Love C, Mcinnes S, Fleming R (2000) Structural studies of cold-adaption: lactate dehydrogenases from Notothenioid fish. In Davison W, Howard-Williams C, Broady P (eds) Antarctic Ecosystems: models for wider ecological understanding. Canterbury University, Christchurch.

Refereed conference proceedings – last five years

1. **Crossman D**, Xin S, Munro M, Hou Y, Li A, Lal S, dos Remedios C, Baddeley D, Ruygrok P, Soeller C (2017) Super resolution imaging identifies fibrosis of the transverse tubules in human heart failure. J Muscle Res Cell Motil. doi:10.1007/s10974-016-9457-1. **Talk.**
2. Munro ML, Shen X, Ward M, **Crossman DJ**, Soeller C (2016) Relationship between Multi-Scale Cardiomyocyte Organization and Function in Trabeculae of the Failing Human Heart. Biophysical Journal. 3:598a.
3. **Crossman D**, Shen X, Jüllig M, Baddeley D, Ruygrok P, Soeller C. Fibrosis of the Transverse Tubules in human heart failure. Heart, Lung and Circulation. 24:S206. **Talk**.
4. Power, A, Ward M, **Crossman D**, Hickey A (2015) Measuring mitochondrial function in multicellular cardiac trabeculae. Heart, Lung and Circulation. 24:S212
5. Hou Y, Jayasinghe I, **Crossman D**, Baddeley D, Soeller C (2015) Optical super resolution imaging of cardiac myocyte excitation contraction structures. Heart, Lung and Circulation. 24:S354.
6. **Crossman DJ**, Ruygrok PN, Young A, Soeller C, Cannell M (2013) Transverse tubule angle is correlated to contractile function in human heart failure. J. Mol Cell Cardiol 65:S1
7. Hou Y, Baddeley D, **Crossman D**, Soeller C (2013) Nanoscale distribution of Ryanodine receptors and junctophillin 2 in rat cardiac myocytes Heart, Lung and Circulation. 22:S189
8. Hou Y, Baddeley **D, Crossman D**, Cannell M, Soeller C (2013) Optical super-resolution imaging of junctional clusters within fixed rat and human cardiac tissue. J. Mol Cell Cardiol 65:S106
9. **Crossman DJ**, Ruygrok PN, Young A, Soeller C, Cannell MB (2013). Mitochondrial function is linked to impair contractility in human heart failure. Heart, Lung and Circulation. 22:S82
10. **Crossman DJ**, Ruygrok PN, Young A, Soeller C, Cannell MB (2012). Changes in Dystrophin Labelling of Transverse Tubules are Correlated with Contractile Function in Human Heart failure. Heart, Lung and Circulation. 21:S75
11. **Crossman DJ**, Ruygrok PN, Young A, Soeller C, Cannell MB (2012) Transverse tubule structure is related to contractile function in human heart failure. Biophysical Journal. 98:552a