

Publications by Funding Source (Last 5 Years)**Funding Agency: Heart and Stroke Foundation of Canada****Grant title: Regulation of actin gene expression by mechanical loading**

1. Chan MW, Arora PD, Bozavikov P, **McCulloch CA**. FAK, PIP5KI $\{\gamma\}$ and gelsolin cooperatively mediate force-induced expression of $\{\alpha\}$ -smooth muscle actin. *J Cell Sci*. 2009 Aug 1;122(Pt 15):2769-81. Published.
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3. Pho M, Lee W, Watt DR, Laschinger C, Simmons CA, **McCulloch CA**. Cofilin is a marker of myofibroblast differentiation in cells from porcine aortic cardiac valves. *Am J Physiol Heart Circ Physiol*. 2008 Apr;294(4):H1767-78. Published.
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6. Zhao X-H, Laschinger C, Arora PD, Szász K, Kapus A, **McCulloch CA**. Force activates smooth muscle alpha-actin promoter activity through the Rho signaling pathway. *J Cell Science* 2007 May 15;120(Pt 10):1801-9. Published.
7. Fan L, Sebe A, Peterfi Z, Masszi A, Thirone AC, Rotstein OD, Nakano H, **McCulloch CA**, Szasz K, Mucsi I, Kapus A. Cell Contact-dependent Regulation of Epithelial-Myofibroblast Transition via the Rho-Rho Kinase-Phospho-Myosin Pathway. *Mol Biol Cell*. 2007 Mar;18(3):1083-97. Published.
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10. Wang J, Fan J, Laschinger C, Arora PD, Kapus A, Seth A, **McCulloch CA**. Smooth muscle actin determines mechanical force-induced p38 activation. *J Biol Chem*. 280:7273-84, 2005. Published.
11. Masszi A, Fan L, Rosivall L, **McCulloch CA**, Rotstein OD, Mucsi I, Kapus A. Integrity of cell-cell contacts is a critical regulator of TGF-beta 1-induced epithelial-to-myofibroblast transition: role for beta-catenin. *Am J Pathol*. 165:1955-1967, 2004. Published.

Funding Agency: Canadian Institute of Health Research (CIHR)
(with Co-applicant Greg Downey)

Grant title: IL-1 Signaling through focal adhesions

1. Wang Q, Rajshankar D, Branch DR, Siminovitch KA, Abreu MT, Downey GP, **McCulloch CA**. Protein-tyrosine Phosphatase- α and Src Functionally Link Focal Adhesions to the Endoplasmic Reticulum to Mediate Interleukin-1-induced Ca^{2+} Signaling. *J Biol Chem*. 2009 Jul 31;284(31):20763-72. Published.
2. Herrera Abreu MT, Penton PC, Kwok V, Vachon E, Shalloway D, Vidali L, Lee W, **McCulloch CA**, Downey GP. Tyrosine phosphatase PTPalpha regulates focal adhesion remodeling through Rac1 activation. *Am J Physiol Cell Physiol*. 2008; 294(4):C931-44. Published.
3. **McCulloch CA**, Downey GP, El-Gabalawy H. Signalling platforms that modulate the inflammatory response: new targets for drug development. *Nature Reviews Drug Discovery*. 2006; 5(10):864-76. Published.
4. Wang Q, Herrera Abreu MT, Siminovitch K, Downey GP, **McCulloch CA**, Phosphorylation of SHP-2 Regulates Interactions Between the Endoplasmic Reticulum and Focal Adhesions to Restrict IL-1-induced Ca^{2+} Signaling. *J Biol Chem*. 2006; 281(41):31093-105. Published.
5. Herrera Abreu MT, Wang Q, Vachon E, Suzuki T, Chow CW, Wang Y, Hong O, Villar J, **McCulloch CA**, Downey GP. Tyrosine phosphatase SHP-2 regulates IL-1 signaling in fibroblasts through focal adhesions. *J Cell Physiol*. 207:132-143, 2006. Published.
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7. Wang Q, Downey GP, Herrera-Abreu MT, Kapus A, **McCulloch CA**. SHP-2 modulates interleukin-1-induced Ca^{2+} flux and ERK activation via phosphorylation of phospholipase Cgamma1. *J Biol Chem*. 280:8397-406, 2005. Published.

Funding Agency: Canadian Institute of Health Research (CIHR)

Grant title: ER Signalling and filamin a in mechanoprotection

1. Shifrin Y, Arora PD, Ohta Y, Calderwood DA, **McCulloch CA**. The role of FilGAP-filamin A interactions in mechanoprotection. *Mol Biol Cell*. 2009 Mar;20(5):1269-79. Published.
2. Kim H, Sengupta A, Glogauer M, **McCulloch CA**. Filamin A regulates cell spreading and survival via beta1 integrins. *Exp Cell Res*. 2008 Feb 15;314(4):834-46. Published.
3. Mak BC, Wang Q, Laschinger C, Lee W, Ron D, Harding HP, Kaufman RJ, Scheuner D, Austin RC, **McCulloch CA**. Novel function of PERK as a mediator of force-induced apoptosis. *J Biol Chem*. 2008 Aug 22;283(34):23462-72. Published.
4. Papp S, Szabo E, Kim H, **McCulloch CA**, Opas M. Kinase-dependent adhesion to fibronectin: regulation by calreticulin. *Exp Cell Res*. 2008 Apr 1;314(6):1313-26. Published.

5. El Sayegh TY, Arora PD, Ling K, Laschinger C, Janmey PA, Anderson RA, **McCulloch CA**. Phosphatidylinositol-4,5 bisphosphate produced by PIP5K γ regulates gelsolin, actin assembly, and adhesion strength of N-cadherin junctions. *Mol Biol Cell*. 2007 Aug;18(8):3026-38. Published.
6. Papp S, Fadel MP, Kim H, **McCulloch CA**, Opas M. Calreticulin affects fibronectin-based cell-substratum adhesion via the regulation of C-SRC activity. *J Biol Chem*. 2007 Jun 1;282(22):16585-98. Published.
7. El Sayegh TY, Kapus A, **McCulloch CA**. Beyond the epithelium: Cadherin function in fibrous connective tissues. *FEBS Lett*. 2007 Jan 23;581(2):167-74. Published.
8. D'Addario M, Arora PD, **McCulloch CA**. Role of p38 in stress activation of Sp1. *Gene*. 2006; 379:51-61. Published.
9. **McCulloch CA**. Proteomics for the periodontium: current strategies and future promise. *Periodontol* 2000. 40:173-83, 2006. Published.
10. Sayegh TY, Arora PD, Fan L, Laschinger CA, Greer PA, **McCulloch CA**, Kapus A. Phosphorylation of N-Cadherin-associated Cortactin by Fer Kinase Regulates N-Cadherin Mobility and Intercellular Adhesion Strength. *Mol Biol Cell*. 16:5514-27, 2005. Published.
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Funding Agency: Canadian Institute of Health Research (CIHR)

Grant title: Fibroblast differentiation: role of actin in matrix remodelling

1. Huang Y, Arora P, **McCulloch CA**, Vogel WF. The collagen receptor DDR1 regulates cell spreading and motility by associating with myosin IIA. *J Cell Sci*. 2009 May 15;122(Pt 10):1637-46. Published.
2. Arora PD, Conti MA, Ravid S, Sacks DB, Kapus A, Adelstein RS, Bresnick AR, **McCulloch CA**. Rap1 activation in collagen phagocytosis is dependent on nonmuscle myosin II-A. *Mol Biol Cell*. 2008 Dec;19(12):5032-46. Published.
3. Arora PD, Marignani PA, **McCulloch CA**. Collagen phagocytosis is regulated by the guanine nucleotide exchange factor Vav2. *Am J Physiol Cell Physiol*. 2008 Jul;295(1):C130-7. Published.
4. Chan MW, Arora PD, **McCulloch CA**. Cyclosporin inhibition of collagen remodeling is mediated by gelsolin. *Am J Physiol Cell Physiol*. 2007 Sep;293(3):C1049-58. Published.

5. Jobin MC, Virdee I, **McCulloch CA**, Ellen RP. Activation of MAPK in fibroblasts by *Treponema denticola* major outer sheath protein. *Biochem Biophys Res Commun*. 2007 Apr 27;356(1):213-8. Published.
6. Chong SA, Lee W, Arora PD, Laschinger C, Young EW, Simmons CA, Manolson M, Sodek J, **McCulloch CA**. Methylglyoxal inhibits the binding step of collagen phagocytosis. *J Biol Chem*. 2007 Mar 16;282(11):8510-20. Published.
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11. Koivisto L, Hakkinen L, Matsumoto K, **McCulloch CA**, Yamada KM, Larjava H, Glycogen synthase kinase-3 regulates cytoskeleton and translocation of Rac1 in long cellular extensions of human keratinocytes. *Exp. Cell Res*. 293:68-80, 2004. Published.
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14. Zhu B, Suzuki K, Goldberg HA, Rittling SR, Denhardt DT, **McCulloch CA**, Sodek J. Osteopontin modulates CD44-dependent chemotaxis of peritoneal macrophages through G-protein-coupled receptors: Evidence of a role for an intracellular form of osteopontin. *J Cell Physiol*. 198:155-167, 2004. Published.
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Other Grants: Collaborations with PIs within and outside the CIHR Group in Matrix Dynamics

1. Hwang Q, Cheifetz S, Overall CM, **McCulloch CA**, Sodek J. Bone sialoprotein does not interact with pro-gelatinase A (MMP-2) or mediate MMP-2 activation. *BMC Cancer*. 2009 Apr 22;9:121. Published.

2. Nayak BN, Wiltshire WA, Ganss B, Tenenbaum H, **McCulloch CA**, Lekic C. Healing of periodontal tissues following transplantation of cells in a rat orthodontic tooth movement model. *Angle Orthod.* 2008 Sep;78(5):826-31. Published.
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