BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
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NAME	POSITION TITLE
Andrews, David W	Professor, Biochemistry and Biomedical Sciences Canada Research Chair in Membrane Biogenesis
eRA COMMONS USER NAME Not Applicable	

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
University of Ottawa, Canada	B.Sc.	1979	Biochemistry
University of Toronto, Canada	Ph.D.	1985	Medical Biophysics
University of California, San Francisco, CA	Post Doc	1986-1988	Cell Physiology

A. Positions and Honors

Positions and Employment

1986-1988 Postdoctoral Fellow, University of California, San Francisco, CA
1988-1993 Assistant Professor, Department of Biochemistry, McMaster University, Hamilton, Canada
1993-1998 Associate Professor, Department of Biochemistry, McMaster University, Hamilton, Canada
1998- Professor, Department of Biochemistry, McMaster University, Hamilton, Canada
2000-2001 Interim Chair, Department of Biochemistry, McMaster University, Hamilton, Canada

Honors and Awards

1985 President's Award, Canadian Microscopical Society, Canada
1986-1988 MRC Postdoctoral Scholarship, Medical Research Council of Canada, Canada
1989-1994 MRC Scholarship, Medical Research Council of Canada, Canada
1995-2000 MRC Scientist, Medical Research Council of Canada, Canada
2000-2001 MRC Senior Scientist, Medical Research Council of Canada, Canada
2001-2008 Canada Research Chair in Membrane Biogenesis, Canada Research Chair, Canada
2008-2015 Canada Research Chair in Membrane Biogenesis, Canada Research Chair, Canada

Patents

Patent #5,824,497: High Efficiency Translation of mRNA Molecules
Patent #5,807,707: High Efficiency Translation of mRNA Molecules
Patent #WO9837186: In Vitro Peptide or Protein Expression Library

B. Book Chapters and Selected Peer Reviewed Publications

Book Chapters Since 2004

1. Mainprize, I.L., Vulcu, F. and Andrews, D.W., The Signal Recognition Particle and its Receptor in ER Protein Targeting. IN: The Enzymes vol. XXV Molecular machines involved in protein transport across cellular membranes, eds. Dalbey, R.E., Koehler, C.M. and Tamanoi, F., Academic Press, London, UK, pp 177-201, 2007.

Selected Peer Reviewed Publications Since 2004 (of 81 lifetime)

1. Annis, M.G., Yethon, J.A., Leber, B. and Andrews, D.W., (2004) There is more to life and death than mitochondria: Bcl-2 Proteins at the Endoplasmic Reticulum. BBA 1644:115-123. (Review)
2. McCartney, A., Dyer , J., Dhanoa, P., Kim, P.K., Andrews, D.W. and Mullen, R. (2004) Membrane-bound fatty acid desaturases are inserted cotranslationally into the ER and contain different ER retrieval motifs at their carboxy termini. The Plant Journal, 37: 156-173.
3. Kim, P.K., Annis, M.G., Dlugosz, P.J., Leber, B., and Andrews D. W. (2004) During Apoptosis Bcl-2 Undergoes a Change in Membrane Topology at Both the Endoplasmic Reticulum and Mitochondria. Mol. Cell. 14:523-529.
4. Zhang, Z., Lapolla, S.M., Annis, M.G., Truscott, M., Roberts, G.J., Miao, Y., Shao, Y., Tan, C., Peng, J., Johnson, A.E., Zhang, X.C., Andrews, D.W. and Lin, J. (2004) Bcl-2 homodimerization involves two distinct binding surfaces, a topographic arrangement that provides an effective mechanism for Bcl-2 to capture activated Bax. J. Biol. Chem., 279:43920-43928.

5. Hwang, Y.T., Pelitire S., Henderson, M.P.A., Andrews D.W., Dyer, J.M., and Mullen R.T.,(2004) Targeting Signals Mediate the Sorting of Different Isoforms of the Tail-Anchored Membrane Protein Cytochrome b5 to Either Endoplasmic Reticulum or Mitochondria. Plant Cell 11:3002-3019.
6. Kong, D., Xu, L., Hao, H., Zhu W., Andrews, D.W., Yoon, Y., Kuo T.H.(2004) Regulation of Ca2+-induced permeability transition by Bcl-2 is antagonized by Drp1 and hFis1. Molecular and Cellular Biochemistry, 272:187-199.
7. Annis, M.G., Soucie, E.L., Dlugosz, P.J., Jorge A Cruz-Aguado, Penn, L.Z., Leber, B., Andrews. D.W., (2005) Bax forms multi-spanning monomers that oligomerize to permeabilize membranes during apoptosis. EMBO J., 24:2096-103.
8. Dlugosz, P.J., Billen, L., Annis, M.G., Zhu, W., Zhang, Z., Lin, J., Leber, B. and Andrews, D.W., (2006) Bcl-2 changes conformation to inhibit Bax oligomerization. EMBO J., 25:2287-96.
9. Tan, C., Dlugosz, P.J., Peng, J., Zhang, Z., Lapolla, S.M., Andrews D.W., and Lin, J., (2006) Auto-activation of the apoptosis protein Bax increases mitochondrial membrane permeability and is inhibited by Bcl-2. J. Biol. Chem. 281:14764-75.
10. Mainprize, I.L., Beniac, D.R., Falkovskaia E., Cleverley R.M., Gierasch L.M., Ottensmeyer F.P., and Andrews, D.W., (2006) The Structure of E. coli Signal Recognition Particle Revealed by Scanning Transmission Electron Microscopy. Mol Biol. Cell., 17:5063-74.
11. Fiebig, A., Hollerbach, C. Leber, B., and Andrews, D.W., (2006) Bcl-XL is ten times more potent and qualitatively different from Bcl-2 at inhibiting apoptosis. BMC Cancer 6:213 [Highly Accessed].
12. Henderson, M.P.A., Hwang Y.T., Dyer, J.M., Mullen, R.T. and Andrews D.W. (2006) The Carboxyl-Terminus of Cytochrome b5 Confers Endoplasmic Reticulum Specificity by Preventing Spontaneous Insertion into Membranes, Biochem. J. 401:701-9.
13. Peng J., Tan C., Roberts G.J., Nikolaeva O., Zhang, Z., Lapolla S.M., Primorac S., Andrews, D.W., and Lin J. (2006) tBid elicits a conformational alteration in membrane-bound Bcl-2 such that it inhibits Bax pore formation, J. Biol. Chem. 281:35082-11.
14. Xu, L., Kong, D., Zhu, L., Zhu, W., Andrews, D.W., and Kuo, T.H., (2007) Suppression of IP3-mediated calcium release and apoptosis by Bcl-2 involves the participation of protein phosphatase 1. Mol. Cell Biochem. 295:153-65.
15. Henderson, M.P.A., Billen, L.P., Kim, P.K., Andrews, D.W. (2007), Cell free analysis of tail-anchor protein targeting to membranes, Methods, 41:427-38.
16. Satsoura. D., Leber, B., Andrews, D.W., Fradin, C., (2007) Circumvention of fluorophore photobleaching in fluorescence fluctuation experiments: a beam scanning approach. ChemPhysChem. 8:834-48.
17. Leber, B., Lin, J., Andrews, D.W., (2007) Embedded together: The Life and Death Consequences of the Interaction of Bcl-2 Proteins with Membranes, Apoptosis, 12:897-911.
18. Keita, M., Leblanc, C., Andrews D.W. and Ramanathanan. S., (2007) GIMAP5 regulates mitochondrial integrity from a distinct subcellular compartment. Biochem. Biophys. Res. Comm., 361:481-6.
19. Criollo, A., Maiuri, M.C., Vitale, I., Fiebig, A, Andrews D.W., Molgo J., Diaz, J., Lavandero, S., Harper, F., Pierron, G., di Stefano, D., Rizzuto, R., Szabadkai, G., and Kroemer, G., (2007) Regulation of autophagy by the inositol trisphosphate receptor. Cell Death and Differentiation 14:1029-1039.
20. Billen L.P., Kokoski C.L., Lovell J.F., Brian Leber, and **Andrews, D.W.** (2008) Bcl-XL inhibits membrane permeabilization by competing with Bax. PLoS Biol 6(6): e147. doi:10.1371/journal.pbio.0060147. Featured in a mini-review by Marie Hardwick in the same issue; and in Research Highlights, Nature Immunology, August 2008, 9:837.
21. Liangyou Wang, Fansen Kong, Candis L. Kokoski, **David W. Andrews**, Chengguo Xing, (2008) Development of dimeric modulators for anti-apoptotic Bcl-2 proteins. Bioorganic & Medicinal Chemistry Letters 18:236-240.
22. Lovell, Jonathan F., Billen, Lieven P., Bindner, Scott, Shamas-Din, Aisha, Fradin, Cecile Leber, Brian and **David W. Andrews**. Membrane Binding by tBid Initiates an Ordered Series of Events Culminating in Membrane Permeabilization by Bax. Submitted.
23. Le Lam; Xiuying Hu; Zackie Aktary; **David W Andrews**; Manijeh Pasdar. Tamoxifen and ICI 182,780 increase Bcl-2 levels and inhibit growth of breast carcinoma cells by modulating PI3K/Akt/ERK and IGF-1R pathways independent of ERα. BREA3529R. Accepted Breast Cancer Research and Treatment October 17, 2008.

C. Research Support

Ongoing Support

950-203767 (PI: Andrews) 07/2008-07/2015
Canada Research Chairs program (Tier 1)
CRC in Membrane Biogenesis
Salary Award
Role: PI

Evotec (PI: Andrews) 01/2008-01/2012
PerkinElmer Instruments
High Content Screening of Live Cells
The goal of this project is to develop new screening methodologies for image based screens of live eukaryotic cells.
Role: PI

FRN 10490 (PI: Andrews) 07/2005-06-2010
Canadian Institutes of Health Research
Protein Transport Into and Across Cellular Membranes
Biochemical analysis of the mechanisms by which proteins are assembled into membranes and how organelles retain a distinct protein composition. Current emphasis is on the biogenesis, sorting and assembly of tail-anchor membrane proteins.
Role: PI

FRN 12517 (PI: Andrews) 04/2005-03/2010
Canadian Institutes of Health Research
Interaction of Bcl-2 Family Apoptosis Regulatory Proteins with Cellular Membranes
Analysis of the protein:protein interactions of Bcl-2 family proteins in mitochondrial outer membranes and in the endoplasmic reticulum. Biophysical and cell biology methods are being used to examine the molecular mechanisms by which Bcl-2 family proteins regulate membrane permeability.
Role: PI

W81XWH-07-1-0333 (PI: Andrews and Penn) 06/2007-06/2009
United States Army/DOD Breast Cancer Initiative
High-Content FRET-FLIM Screening for Inhibitors of Oncogenic Transcription by c-Myc in Breast Cancer
The goal of this project is to set up a FRET-FLIM based screen to identify small molecules that inhibit the interaction of c-Myc and TRRAP.
Role: Co-PI

07MAY00330 (PI: Andrews) 09/2007-09/2008
Ontario Institute for Cancer Research
Small Molecule Modulators of Bcl-2 Family Proteins
The goal of this project is the identification of small molecules that bind to Bcl-2 family proteins and change their function. We are using high throughput screening of small molecule libraries to identify inhibitors of tBid and Bax.
Role: PI

Completed Research Support (Last 3 Years)

018548 (PI: Penn) 04/2007-03/2008
Canadian Breast Cancer Research Alliance
Identification of Small Molecule Inhibitors of cMyc Oncogenic Transcription in Breast Cancer Using BiFC High Content Screening
The goal of this project is to use protein complementation to screen for small molecule inhibitors of the interaction of c-Myc and TRRAP.
Role: Co-Investigator

FRN 161934 (PI: Fang) 01/2007-01/2008
Canadian Institutes of Health Research
Development of a Multiplexing Confocal Fluorescence Lifetime Imaging Microscope
Proof of principle demonstration that a microlens array can be used with a streak camera to multiplex the measurement of fluorescence lifetimes in an image.
Role: Co-Investigator

CIHR PEP1 (PI: Andrews) 11/2005-07/2006
Canadian Institutes of Health Research
Public Engagement Pilot
Create awareness of CIHR funded research in the Hamilton area, included bill board advertisements and a public lecture.
Role: PI

FRN 126438 (PI: Fradin) 07/2004-07/2006
Canadian Institutes of Health Research
Optical Methods for Detecting the Progression of Apoptosis
Examine the stoichiometry of Bax and tBid in pores in liposomes using fluorescence fluctuation and neutron scattering techniques.
Role: Co-Investigator

14289 001 (PI: Andrews) 07/2003-06/2006
National Cancer Institute of Canada
Cytoplasmic O-Glycosylation of E-Cadherin in Tumorigenesis and Metastasis
Examine the functional importance of cytoplasmic O-glycosylation of E-cadherin and beta-catenin in tumorigenesis. Identify the sites on the proteins that are modified and determine whether the modification is reciprocal with phosphorylation.
Role: PI