



William Nelson

Rudy J. and Daphne Donohue Munzer Professor in the School of Medicine,
Emeritus

Biology

 NIH Biosketch available Online

Bio

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Biology
- Member, Bio-X

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our research objectives are to understand the cellular mechanisms involved in the development and maintenance of epithelial cell polarity. Polarized epithelial cells play fundamental roles in the ontogeny and function of a variety of tissues and organs. Recent studies indicate that the development of epithelial cell polarity is a multistage process requiring instructive extracellular cues (eg. cell-cell and cell-substratum contact) and the reorganization of proteins in the cytoplasm and on the plasma membrane. Once established, polarity is maintained by targeting and retention of proteins to functionally distinct apical and basal-lateral plasma membrane domains.

We have developed three strategies to address molecular and biochemical aspects of the mechanisms involved in these processes:

- (i). Analysis of membrane and cytoplasmic protein sorting, targeting and distribution in established cell lines of polarized renal epithelia in tissue culture (eg. MDCK cells). Biochemical and molecular analysis of protein sorting into vesicles, transport and docking of vesicles with specialized membrane domains.
- (ii). Structural and functional analysis of cell adhesion in epithelial cells. Molecular genetic approaches to disrupt cadherin and associated protein (catenins) functions. Role of cell adhesion in establishing docking machinery for transport vesicles.
- (iii). In vitro studies of protein organization and interactions in purified and reconstituted cell systems.
- (iv). In vivo studies of embryonic development of polarized renal epithelia in the normal mouse and the cpk mouse mutant, a murine strain with autosomal recessive polycystic kidney disease in which cell polarity is partially reversed.

Teaching

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biology (School of Humanities and Sciences) (Phd Program)
- Cancer Biology (Phd Program)
- Molecular and Cellular Physiology (Phd Program)

Publications

PUBLICATIONS

- **β -catenin at the centrosome: Discrete pools of β -catenin communicate during mitosis and may co-ordinate centrosome functions and cell cycle progression.** *BioEssays*
Mbom, B. C., Nelson, W. J., Barth, A.
2013; 35 (9): 804-809
- **Danio rerio alpha E-catenin Is a Monomeric F-actin Binding Protein with Distinct Properties from Mus musculus alpha E-catenin** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Miller, P. W., Pokutta, S., Ghosh, A., Almo, S. C., Weis, W. I., Nelson, W. J., Kwiatkowski, A. V.
2013; 288 (31): 22324-22332
- **Microactuator device for integrated measurement of epithelium mechanics** *BIOMEDICAL MICRODEVICES*
Mukundan, V., Nelson, W. J., Pruitt, B. L.
2013; 15 (1): 117-123
- **An epithelial tissue in Dictyostelium challenges the traditional origin of metazoan multicellularity** *BIOESSAYS*
Dickinson, D. J., Nelson, W. J., Weis, W. I.
2012; 34 (10): 833-840
- **alpha-Catenin and IQGAP Regulate Myosin Localization to Control Epithelial Tube Morphogenesis in Dictyostelium** *DEVELOPMENTAL CELL*
Dickinson, D. J., Robinson, D. N., Nelson, W. J., Weis, W. I.
2012; 23 (3): 533-546
- **E-cadherin is under constitutive actomyosin-generated tension that is increased at cell-cell contacts upon externally applied stretch** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Borghi, N., Sorokina, M., Shcherbakova, O. G., Weis, W. I., Pruitt, B. L., Nelson, W. J., Dunn, A. R.
2012; 109 (31): 12568-12573
- **Competitive Regulation of E-Cadherin JuxtaMembrane Domain Degradation by p120-Catenin Binding and Hakai-Mediated Ubiquitination** *PLOS ONE*
Hartsock, A., Nelson, W. J.
2012; 7 (5)
- **Adherens junction function and regulation during zebrafish gastrulation** *CELL ADHESION & MIGRATION*
Schepis, A., Nelson, W. J.
2012; 6 (3): 173-178
- **alpha E-catenin regulates cell-cell adhesion and membrane blebbing during zebrafish epiboly** *DEVELOPMENT*
Schepis, A., Sepich, D., Nelson, W. J.
2012; 139 (3): 537-546
- **Protein Evolution in Cell and Tissue Development: Going Beyond Sequence and Transcriptional Analysis** *DEVELOPMENTAL CELL*
Dickinson, D. J., Weis, W. I., Nelson, W. J.
2011; 21 (1): 32-34
- **Ciliary Diffusion Barrier: The Gatekeeper for the Primary Cilium Compartment** *CYTOSKELETON*
Hu, Q., Nelson, W. J.

2011; 68 (6): 313-324

- **A Polarized Epithelium Organized by beta- and alpha-Catenin Predates Cadherin and Metazoan Origins** *SCIENCE*
Dickinson, D. J., Nelson, W. J., Weis, W. I.
2011; 331 (6022): 1336-1339
- **Rapid Suppression of Activated Rac1 by Cadherins and Nectins during De Novo Cell-Cell Adhesion** *PLOS ONE*
Kitt, K. N., Nelson, W. J.
2011; 6 (3)
- **CellBio-X: celebrating the interface between Cell Biology and other disciplines** *TRENDS IN CELL BIOLOGY*
Nelson, W. J., Hosking, C. R., Alvania, R.
2010; 20 (12): 689-690
- **VE-cadherin: at the front, center, and sides of endothelial cell organization and function** *CURRENT OPINION IN CELL BIOLOGY*
Harris, E. S., Nelson, W. J.
2010; 22 (5): 651-658
- **Formation of extra centrosomal structures is dependent on beta-catenin** *JOURNAL OF CELL SCIENCE*
Bahmanyar, S., Guiney, E. L., Hatch, E. M., Nelson, W. J., Barth, A. I.
2010; 123 (18): 3125-3135
- **In vitro and in vivo reconstitution of the cadherin-catenin-actin complex from *Caenorhabditis elegans*** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Kwiatkowski, A. V., Maiden, S. L., Pokutta, S., Choi, H., Benjamin, J. M., Lynch, A. M., Nelson, W. J., Weis, W. I., Hardin, J.
2010; 107 (33): 14591-14596
- **Adenomatous Polyposis Coli Regulates Endothelial Cell Migration Independent of Roles in beta-Catenin Signaling and Cell-Cell Adhesion** *MOLECULAR BIOLOGY OF THE CELL*
Harris, E. S., Nelson, W. J.
2010; 21 (15): 2611-2623
- **Regulation of cell motile behavior by crosstalk between cadherin- and integrin-mediated adhesions** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Borghini, N., Lowndes, M., Maruthamuthu, V., Gardel, M. L., Nelson, W. J.
2010; 107 (30): 13324-13329
- **A Septin Diffusion Barrier at the Base of the Primary Cilium Maintains Ciliary Membrane Protein Distribution** *SCIENCE*
Hu, Q., Milenkovic, L., Jin, H., Scott, M. P., Nachury, M. V., Spiliotis, E. T., Nelson, W. J.
2010; 329 (5990): 436-439
- **alpha E-catenin regulates actin dynamics independently of cadherin-mediated cell-cell adhesion** *JOURNAL OF CELL BIOLOGY*
Benjamin, J. M., Kwiatkowski, A. V., Yang, C., Korobova, F., Pokutta, S., Svitkina, T., Weis, W. I., Nelson, W. J.
2010; 189 (2): 339-352
- **Remodeling Epithelial Cell Organization: Transitions Between Front-Rear and Apical-Basal Polarity** *COLD SPRING HARBOR PERSPECTIVES IN BIOLOGY*
Nelson, W. J.
2009; 1 (1)
- **Cell autonomous defects in cortical development revealed by two-color chimera analysis** *MOLECULAR AND CELLULAR NEUROSCIENCE*
Kwiatkowski, A. V., Garner, C. C., Nelson, W. J., Gertler, F. B.
2009; 41 (1): 44-50
- **Resolving cadherin interactions and binding cooperativity at the single-molecule level** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Zhang, Y., Sivasankar, S., Nelson, W. J., Chu, S.
2009; 106 (1): 109-114
- **Epithelial cell surface polarity: the early steps** *FRONTIERS IN BIOSCIENCE-LANDMARK*
Nejsum, L. N., Nelson, W. J.

2009; 14: 1088-1098

- **Role of APC and Its Binding Partners in Regulating Microtubules in Mitosis** *APC PROTEINS*
Bahmanyar, S., Nelson, W. J., Barth, A. I.
2009; 656: 65-74
- **Forchlorfenuron Alters Mammalian Septin Assembly, Organization, and Dynamics** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Hu, Q., Nelson, W. J., Spiliotis, E. T.
2008; 283 (43): 29563-29571
- **Role of adenomatous polyposis coli (APC) and microtubules in directional cell migration and neuronal polarization** *SEMINARS IN CELL & DEVELOPMENTAL BIOLOGY*
Barth, A. I., Caro-Gonzalez, H. Y., Nelson, W. J.
2008; 19 (3): 245-251
- **Biochemical and structural analysis of alpha-catenin in cell-cell contacts** *BIOCHEMICAL SOCIETY TRANSACTIONS*
Pokutta, S., Drees, F., Yamada, S., Nelson, W. J., Weis, W. I.
2008; 36: 141-147
- **Regulation of cell-cell adhesion by the cadherin-catenin complex** *BIOCHEMICAL SOCIETY TRANSACTIONS*
Nelson, W. J.
2008; 36: 149-155
- **Adherens and tight junctions: Structure, function and connections to the actin cytoskeleton** *BIOCHIMICA ET BIOPHYSICA ACTA-BIOMEMBRANES*
Hartsock, A., Nelson, W. J.
2008; 1778 (3): 660-669
- **Immediate-early signaling induced by E-cadherin engagement and adhesion** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Perez, T. D., Tamada, M., Sheetz, M. P., Nelson, W. J.
2008; 283 (8): 5014-5022
- **Bench to bedside and back again: Molecular mechanisms of alpha-catenin function and roles in tumorigenesis** *SEMINARS IN CANCER BIOLOGY*
Benjamin, J. M., Nelson, W. J.
2008; 18 (1): 53-64
- **Epithelial polarity requires septin coupling of vesicle transport to polyglutamylated microtubules** *JOURNAL OF CELL BIOLOGY*
Spiliotis, E. T., Hunt, S. J., Hu, Q., Kinoshita, M., Nelson, W. J.
2008; 180 (2): 295-303
- **beta-Catenin is a Nek2 substrate involved in centrosome separation** *GENES & DEVELOPMENT*
Bahmanyar, S., Kaplan, D. D., DeLuca, J. G., Giddings, T. H., O'Toole, E. T., Winey, M., Salmon, E. D., Casey, P. J., Nelson, W. J., Barth, A. I.
2008; 22 (1): 91-105
- **Parallels between global transcriptional programs of polarizing caco-2 intestinal epithelial cells in vitro and gene expression programs in normal colon and colon cancer** *MOLECULAR BIOLOGY OF THE CELL*
Saeaeef, A. M., Halbleib, J. M., Chen, X., Yuen, S. T., Leung, S. Y., Nelson, W. J., Brown, P. O.
2007; 18 (11): 4245-4260
- **Transcriptional modulation of genes encoding structural characteristics of differentiating Enterocytes during development of a polarized epithelium in vitro** *MOLECULAR BIOLOGY OF THE CELL*
Halbleib, J. M., Saeaeef, A. M., Brown, P. O., Nelson, W. J.
2007; 18 (11): 4261-4278
- **Catenins: playing both sides of the synapse** *CURRENT OPINION IN CELL BIOLOGY*
Kwiatkowski, A. V., Weis, W. I., Nelson, W. J.
2007; 19 (5): 551-556
- **Fabrication of a dual substrate display to test roles of cell adhesion proteins in vesicle targeting to plasma membrane domains** *FEBS LETTERS*

- Hunt, S. J., Nelson, W. J.
2007; 581 (23): 4539-4543
- **Localized zones of Rho and Rac activities drive initiation and expansion of epithelial cell-cell adhesion** *JOURNAL OF CELL BIOLOGY*
Yamada, S., Nelson, W. J.
2007; 178 (3): 517-527
 - **A molecular mechanism directly linking E-cadherin adhesion to initiation of epithelial cell surface polarity** *JOURNAL OF CELL BIOLOGY*
Nejsum, L. N., Nelson, W. J.
2007; 178 (2): 323-335
 - **Characterization of mammalian Par 6 as a dual-location protein** *MOLECULAR AND CELLULAR BIOLOGY*
Cline, E. G., Nelson, W. J.
2007; 27 (12): 4431-4443
 - **Separation of cell-cell adhesion complexes by differential centrifugation.** *Methods in molecular biology (Clifton, N.J.)*
Vogelmann, R., Nelson, W. J.
2007; 370: 11-22
 - **Cadherins in development: cell adhesion, sorting, and tissue morphogenesis** *GENES & DEVELOPMENT*
Halbleib, J. M., Nelson, W. J.
2006; 20 (23): 3199-3214
 - **Re-solving the cadherin-catenin-actin conundrum** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Weis, W. I., Nelson, W. J.
2006; 281 (47): 35593-35597
 - **Wingless signaling modulates cadherin-mediated cell adhesion in Drosophila imaginal disc cells** *JOURNAL OF CELL SCIENCE*
Wodarz, A., Stewart, D. B., Nelson, W. J., Nusse, R.
2006; 119 (12): 2425-2434
 - **Here come the septins: novel polymers that coordinate intracellular functions and organization** *JOURNAL OF CELL SCIENCE*
Spiliotis, E. T., NELSON, W. J.
2006; 119 (1): 4-10
 - **Neurite outgrowth involves adenomatous polyposis coil protein and beta-catenin** *JOURNAL OF CELL SCIENCE*
Votin, V., NELSON, W. J., Barth, A. I.
2005; 118 (24): 5699-5708
 - **E-cadherin tethered to micropatterned supported lipid bilayers as a model for cell adhesion** *LANGMUIR*
Perez, T. D., NELSON, W. J., Boxer, S. G., Kam, L.
2005; 21 (25): 11963-11968
 - **Self-organization of an acentrosomal microtubule network at the basal cortex of polarized epithelial cells** *JOURNAL OF CELL BIOLOGY*
Reilein, A., Yamada, S., Nelson, W. J.
2005; 171 (5): 845-855
 - **alpha-catenin is a molecular switch that binds E-cadherin-beta-catenin and regulates actin-filament assembly** *CELL*
Drees, F., Pokutta, S., Yamada, S., Nelson, W. J., Weis, W. I.
2005; 123 (5): 903-915
 - **Deconstructing the cadherin-catenin-actin complex** *CELL*
Yamada, S., Pokutta, S., Drees, F., Weis, W. I., Nelson, W. J.
2005; 123 (5): 889-901
 - **APC is a component of an organizing template for cortical microtubule networks** *NATURE CELL BIOLOGY*
Reilein, A., Nelson, W. J.
2005; 7 (5): 463-U20
 - **A mitotic septin scaffold required for mammalian chromosome congression and segregation** *SCIENCE*
Spiliotis, E. T., Kinoshita, M., Nelson, W. J.

2005; 307 (5716): 1781-1785

- **Fractionation of the epithelial apical junctional complex: Reassessment of protein distributions in different substructures** *MOLECULAR BIOLOGY OF THE CELL*
Vogelmann, R., Nelson, W. J.
2005; 16 (2): 701-716
- **Interaction of cadherin with the actin cytoskeleton.** *Novartis Foundation symposium*
Nelson, W. J., Drees, F., Yamada, S.
2005; 269: 159-168
- **Cell-adhesion assays: fabrication of an E-cadherin substratum and isolation of lateral and Basal membrane patches.** *Methods in molecular biology (Clifton, N.J.)*
Drees, F., Reilein, A., Nelson, W. J.
2005; 294: 303-320
- **Convergence of Wnt, beta-catenin, and cadherin pathways** *SCIENCE*
Nelson, W. J., Nusse, R.
2004; 303 (5663): 1483-1487
- **Adenomatous polyposis coli and EB1 localize in close proximity of the mother centriole and EB1 is a functional component of centrosomes** *JOURNAL OF CELL SCIENCE*
Louie, R. K., Bahmanyar, S., Siemers, K. A., Votin, V., Chang, P., Stearns, T., NELSON, W. J., Barth, A. I.
2004; 117 (7): 1117-1128
- **Breaking into the epithelial apical-junctional complex - news from pathogen hackers** *CURRENT OPINION IN CELL BIOLOGY*
Vogelmann, R., Amieva, M. R., FALKOW, S., Nelson, W. J.
2004; 16 (1): 86-93
- **Mechanism of recruiting Sec6/8 (exocyst) complex to the apical junctional complex during polarization of epithelial cells** *JOURNAL OF CELL SCIENCE*
Yeaman, C., Grindstaff, K. K., NELSON, W. J.
2004; 117 (4): 559-570
- **Cadherin adhesion: mechanisms and molecular interactions.** *Handbook of experimental pharmacology*
Perez, T. D., NELSON, W. J.
2004: 3-21
- **Tube morphogenesis: closure, but many openings remain** *TRENDS IN CELL BIOLOGY*
NELSON, W. J.
2003; 13 (12): 615-621
- **Mum, this bud's for you: where do you want it? Roles for Cdc42 in controlling bud site selection in Saccharomyces cerevisiae** *BIOESSAYS*
NELSON, W. J.
2003; 25 (9): 833-836
- **Epithelial cell polarity from the outside looking in** *NEWS IN PHYSIOLOGICAL SCIENCES*
NELSON, W. J.
2003; 18: 143-146
- **Spatial control of exocytosis** *CURRENT OPINION IN CELL BIOLOGY*
Spiliotis, E. T., Nelson, W. J.
2003; 15 (4): 430-437
- **Urinary excretion of viable podocytes in health and renal disease** *Volta Colloquium on Partial Discharge Measurements*
Vogelmann, S. U., NELSON, W. J., Myers, B. D., Lemley, K. V.
AMER PHYSIOLOGICAL SOC.2003: F40-F48
- **Disruption of the epithelial apical-junctional complex by Helicobacter pylori CagA** *SCIENCE*
Amieva, M. R., Vogelmann, R., Covacci, A., Tompkins, L. S., NELSON, W. J., FALKOW, S.
2003; 300 (5624): 1430-1434

- **Adaptation of core mechanisms to generate cell polarity** *NATURE*
NELSON, W. J.
2003; 422 (6933): 766-774
- **Molecular mechanism for orienting membrane and actin dynamics to nascent cell-cell contacts in epithelial cells** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Hansen, M. D., Ehrlich, J. S., Nelson, W. J.
2002; 277 (47): 45371-45376
- **What can humans learn from flies about adenomatous polyposis coli** *BIOESSAYS*
Barth, A. I., NELSON, W. J.
2002; 24 (9): 771-774
- **Spatio-temporal regulation of Rac1 localization and lamellipodia dynamics during epithelial cell-cell adhesion** *DEVELOPMENTAL CELL*
Ehrlich, J. S., Hansen, M. D., Nelson, W. J.
2002; 3 (2): 259-270
- **Biochemical and structural definition of the 1-afadin- and actin-binding sites of alpha-catenin** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Pokutta, S., Drees, F., Takai, Y., NELSON, W. J., Weis, W. I.
2002; 277 (21): 18868-18874
- **Dissecting interactions between EB1, microtubules and APG in cortical clusters at the plasma membrane** *JOURNAL OF CELL SCIENCE*
Barth, A. I., Siemers, K. A., NELSON, W. J.
2002; 115 (8): 1583-1590
- **Protein trafficking in the exocytic pathway of polarized epithelial cells** *TRENDS IN CELL BIOLOGY*
Nelson, W. J., Yeaman, C.
2001; 11 (12): 483-486
- **Plasma selenium level before diagnosis and the risk of prostate cancer development** *JOURNAL OF UROLOGY*
Brooks, J. D., Metter, E. J., Chan, D. W., Sokoll, L. J., Landis, P., Nelson, W. G., Muller, D., Andres, R., Carter, H. B.
2001; 166 (6): 2034-2038
- **Sec6/8 complexes on trans-Golgi network and plasma membrane regulate late stages of exocytosis in mammalian cells** *JOURNAL OF CELL BIOLOGY*
Yeaman, C., Grindstaff, K. K., Wright, J. R., NELSON, W. J.
2001; 155 (4): 593-604
- **The cadherin cytoplasmic domain is unstructured in the absence of beta-catenin - A possible-mechanism for regulating cadherin turnover** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Huber, A. H., STEWART, D. B., Laurents, D. V., NELSON, W. J., Weis, W. I.
2001; 276 (15): 12301-12309
- **Serum-activated assembly and membrane translocation of an endogenous Rac1 : effector complex** *CURRENT BIOLOGY*
Hansen, M. D., NELSON, W. J.
2001; 11 (5): 356-360
- **Mutant cadherin affects epithelial morphogenesis and invasion, but not transformation** *JOURNAL OF CELL SCIENCE*
Troxell, M. L., Loftus, D. J., NELSON, W. J., MARRS, J. A.
2001; 114 (6): 1237-1246
- **Differential regulation of endogenous cadherin expression in Madin-Darby canine kidney cells by cell-cell adhesion and activation of beta-catenin signaling** *JOURNAL OF BIOLOGICAL CHEMISTRY*
STEWART, D. B., Barth, A. I., Nelson, W. J.
2000; 275 (27): 20707-20716
- **Colocalization and redistribution of dishevelled and actin during Wnt-induced mesenchymal morphogenesis** *JOURNAL OF CELL BIOLOGY*
Torres, M. A., Nelson, W. J.
2000; 149 (7): 1433-1442

- **W(h)ither the Golgi during mitosis?** *JOURNAL OF CELL BIOLOGY*
Nelson, W. J.
2000; 149 (2): 243-248
- **Inhibiting cadherin function by dominant mutant E-cadherin expression increases the extent of tight junction assembly** *JOURNAL OF CELL SCIENCE*
Troxell, M. L., Gopalakrishnan, S., McCormack, J., Poteat, B. A., Pennington, J., Garringer, S. M., Schneeberger, E. E., NELSON, W. J., Marrs, J. A.
2000; 113 (6): 985-996
- **Selective alterations in biosynthetic and endocytic protein traffic in Madin-Darby canine kidney epithelial cells expressing mutants of the small GTPase Rac1** *MOLECULAR BIOLOGY OF THE CELL*
Jou, T. S., Leung, S. M., Fung, L. M., Ruiz, W. G., NELSON, W. J., Apodaca, G.
2000; 11 (1): 287-304
- **Listeria monocytogenes exploits normal host cell processes to spread from cell to cell** *JOURNAL OF CELL BIOLOGY*
Robbins, J. R., Barth, A. I., Marquis, H., de Hostos, E. L., NELSON, W. J., Theriot, J. A.
1999; 146 (6): 1333-1349
- **Cell polarity: Versatile scaffolds keep things in place** *CURRENT BIOLOGY*
Yeaman, C., Grindstaff, K. K., Hansen, M. D., NELSON, W. J.
1999; 9 (14): R515-R517
- **T cell factor-activated transcription is not sufficient to induce anchorage-independent growth of epithelial cells expressing mutant beta-catenin** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Barth, A. I., STEWART, D. B., NELSON, W. J.
1999; 96 (9): 4947-4952
- **Sodium reabsorption and distribution of Na⁺/K⁺-ATPase during postischemic injury to the renal allograft** *KIDNEY INTERNATIONAL*
Kwon, O., Corrigan, G., Myers, B. D., Sibley, R., Scandling, J. D., Dafoe, D., Alfrey, E., NELSON, W. J.
1999; 55 (3): 963-975
- **Coupling assembly of the E-cadherin/beta-catenin complex to efficient endoplasmic reticulum exit and basal-lateral membrane targeting of E-cadherin in polarized MDCK cells** *JOURNAL OF CELL BIOLOGY*
Chen, Y. T., STEWART, D. B., NELSON, W. J.
1999; 144 (4): 687-699
- **Cadherin function in junctional complex rearrangement and posttranslational control of cadherin expression** *AMERICAN JOURNAL OF PHYSIOLOGY-CELL PHYSIOLOGY*
Troxell, M. L., Chen, Y. T., Cobb, N., NELSON, W. J., MARRS, J. A.
1999; 276 (2): C404-C418
- **New perspectives on mechanisms involved in generating epithelial cell polarity** *PHYSIOLOGICAL REVIEWS*
Yeaman, C., Grindstaff, K. K., NELSON, W. J.
1999; 79 (1): 73-98
- **Distribution of cell membrane-associated proteins along the human nephron** *JOURNAL OF HISTOCHEMISTRY & CYTOCHEMISTRY*
Kwon, O., Myers, B. D., Sibley, R., Dafoe, D., Alfrey, E., NELSON, W. J.
1998; 46 (12): 1423-1434
- **Biogenesis of polarized epithelial cells during kidney development in situ: Roles of E-cadherin-mediated cell-cell adhesion and membrane cytoskeleton organization** *MOLECULAR BIOLOGY OF THE CELL*
Piepenhagen, P. A., Nelson, W. J.
1998; 9 (11): 3161-3177
- **Mechanisms of epithelial cell-cell adhesion and cell compaction revealed by high-resolution tracking of E-cadherin-green fluorescent protein** *JOURNAL OF CELL BIOLOGY*
Adams, C. L., Chen, Y. T., Smith, S. J., NELSON, W. J.
1998; 142 (4): 1105-1119
- **Effects of regulated expression of mutant RhoA and Rac1 small GTPases on the development of epithelial (MDCK) cell polarity** *JOURNAL OF CELL BIOLOGY*

- Jou, T. S., NELSON, W. J.
1998; 142 (1): 85-100
- **Structural and functional regulation of tight junctions by RhoA and Rac1 small GTPases** *JOURNAL OF CELL BIOLOGY*
Jou, T. S., Schneeberger, E. E., NELSON, W. J.
1998; 142 (1): 101-115
 - **Sec6/8 complex is recruited to cell-cell contacts and specifies transport vesicle delivery to the basal-lateral membrane in epithelial cells** *CELL*
Grindstaff, K. K., Yeaman, C., Anandasabapathy, N., Hsu, S. C., Rodriguez-Boulan, E., Scheller, R. H., NELSON, W. J.
1998; 93 (5): 731-740
 - **Backleak, light junctions, and cell-cell adhesion in postischemic injury to the renal allograft** *JOURNAL OF CLINICAL INVESTIGATION*
Kwon, O., NELSON, W. J., Sibley, R., Huie, P., Scandling, J. D., Dafoe, D., Alfrey, E., Myers, B. D.
1998; 101 (10): 2054-2064
 - **Apiconuclear organization of microtubules does not specify protein delivery from the trans-Golgi network to different membrane domains in polarized epithelial cells** *MOLECULAR BIOLOGY OF THE CELL*
Grindstaff, K. K., Bacallao, R. L., NELSON, W. J.
1998; 9 (3): 685-699
 - **Identification of four distinct pools of catenins in mammalian cells and transformation-dependent changes in catenin distributions among these pools** *JOURNAL OF BIOLOGICAL CHEMISTRY*
STEWART, D. B., NELSON, W. J.
1997; 272 (47): 29652-29662
 - **Cadherins, catenins and APC protein: interplay between cytoskeletal complexes and signaling pathways** *CURRENT OPINION IN CELL BIOLOGY*
Barth, A. I., Nathke, I. S., NELSON, W. J.
1997; 9 (5): 683-690
 - **Three-dimensional structure of the armadillo repeat region of beta-catenin** *CELL*
Huber, A. H., NELSON, W. J., Weis, W. I.
1997; 90 (5): 871-882
 - **Cell polarity: Par for the polar course** *CURRENT BIOLOGY*
NELSON, W. J., Grindstaff, K. K.
1997; 7 (9): R562-R564
 - **Golgi membrane skeleton: Identification, localization and oligomerization of a 195 kDa ankyrin isoform associated with the Golgi complex** *JOURNAL OF CELL SCIENCE*
Beck, K. A., Buchanan, J. A., NELSON, W. J.
1997; 110: 1239-1249
 - **NH2-terminal deletion of beta-catenin results in stable colocalization of mutant beta-catenin with adenomatous polyposis coli protein and altered MDCK cell adhesion** *JOURNAL OF CELL BIOLOGY*
Barth, A. I., Pollack, A. L., Altschuler, Y., MOSTOV, K. E., NELSON, W. J.
1997; 136 (3): 693-706
 - **NH2-terminal deletion of b-catenin results in stable co-localization of mutant b-catenin with APC protein and altered MDCK cell adhesion** *J. Cell Biol*
Nelson, W. J., Barth, A. I. M., Pollack, A. L., Altschuler, Y., Mostov, K. E.
1997
 - **Roles of the membrane cytoskeleton in protein sorting** *50th Annual Symposium of the Society-of-General-Physiologists - Cytoskeletal Regulation of Membrane Function*
NELSON, W. J., Beck, K. A., Piepenhagen, P. A.
ROCKEFELLER UNIV PRESS. 1997: 47-54
 - **Integrin-mediated calcium signaling and regulation of cell adhesion by intracellular calcium** *BIOESSAYS*
Sjaastad, M. D., NELSON, W. J.

1997; 19 (1): 47-55

- **Dynamics of b-catenin interactions with APC protein regulate epithelial tubulogenesis** *J. Cell Biol*
Nelson, W. J., Pollack, A. L., Barth, A. I. M., Altschuler, Y., Mostov, K. E.
1997
- **Quantitative analysis of cadherin-catenin-actin reorganization during development of cell-cell adhesion** *JOURNAL OF CELL BIOLOGY*
Adams, C. L., NELSON, W. J., Smith, S. J.
1996; 135 (6): 1899-1911
- **Continuous production of soluble extracellular domain of a type-I transmembrane protein in mammalian cells using an Epstein-Barr virus Ori-P-based expression vector** *ANALYTICAL BIOCHEMISTRY*
Chen, Y. T., NELSON, W. J.
1996; 242 (2): 276-278
- **The adenomatous polyposis coli tumor suppressor protein localizes to plasma membrane sites involved in active cell migration** *JOURNAL OF CELL BIOLOGY*
Nathke, I. S., Adams, C. L., Polakis, P., Sellin, J. H., NELSON, W. J.
1996; 134 (1): 165-179
- **Mechanisms of integrin-mediated calcium signaling in MDCK cells: Regulation of adhesion by IP3 and store-independent calcium influx** *MOLECULAR BIOLOGY OF THE CELL*
Sjaastad, M. D., Lewis, R. S., NELSON, W. J.
1996; 7 (7): 1025-1041
- **Mechanism for transition from initial to stable cell-cell adhesion: Kinetic analysis of E-cadherin-mediated adhesion using a quantitative adhesion assay** *JOURNAL OF CELL BIOLOGY*
Angres, B., Barth, A., NELSON, W. J.
1996; 134 (2): 549-557
- **The spectrin-based membrane skeleton as a membrane protein-sorting machine** *AMERICAN JOURNAL OF PHYSIOLOGY-CELL PHYSIOLOGY*
Beck, K. A., NELSON, W. J.
1996; 270 (5): C1263-C1270
- **Origins of cell polarity** *CELL*
Drubin, D. G., NELSON, W. J.
1996; 84 (3): 335-344
- **Quantitative, single-cell analysis of cadherin-catenin-actin reorganization during development of cell-cell adhesion** *J. Cell Biol*
Nelson, W. J., Adams, C. A., Smith, S. J.
1996
- **Differential expression of cell-cell and cell-substratum adhesion proteins along the kidney nephron** *AMERICAN JOURNAL OF PHYSIOLOGY-CELL PHYSIOLOGY*
Piepenhagen, P. A., NELSON, W. J.
1995; 269 (6): C1433-C1449
- **Differential expression of Na⁺-K⁺-ATPase, ankyrin, fodrin, and E-cadherin along the kidney nephron** *AMERICAN JOURNAL OF PHYSIOLOGY-CELL PHYSIOLOGY*
Piepenhagen, P. A., Peters, L. L., Lux, S. E., NELSON, W. J.
1995; 269 (6): C1417-C1432
- **HIERARCHY OF MECHANISMS INVOLVED IN GENERATING NA/K-ATPASE POLARITY IN MDCK EPITHELIAL-CELLS** *JOURNAL OF CELL BIOLOGY*
Mays, R. W., Siemers, K. A., Fritz, B. A., Lowe, A. W., VANMEER, G., NELSON, W. J.
1995; 130 (5): 1105-1115
- **GENETIC AND BIOCHEMICAL DISSECTION OF PROTEIN LINKAGES IN THE CADHERIN-CATENIN COMPLEX** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Jou, T. S., STEWART, D. B., STAPPERT, J., NELSON, W. J., MARRS, J. A.

1995; 92 (11): 5067-5071

- **PLASTICITY IN EPITHELIAL-CELL PHENOTYPE - MODULATION BY EXPRESSION OF DIFFERENT CADHERIN CELL-ADHESION MOLECULES** *JOURNAL OF CELL BIOLOGY*
MARRS, J. A., ANDERSSONFISONE, C., Jeong, M. C., COHENGOULD, L., ZURZOLO, C., Nabi, I. R., RODRIGUEZBOULAN, E., NELSON, W. J.
1995; 129 (2): 507-519
- **Generation of epithelial cell polarity: Roles for protein trafficking, membrane-cytoskeleton, and E-cadherin-mediated cell adhesion** *Cold Spring Harbor Symposia on Quantitative Biology - Protein Kinesis: The Dynamics of Protein Trafficking and Stability*
Mays, R. W., NELSON, W. J., MARRS, J. A.
COLD SPRING HARBOR LAB PRESS, PUBLICATIONS DEPT.1995: 763-773
- **BETA-CATENIN - A COMMON TARGET FOR THE REGULATION OF CELL-ADHESION BY WNT-1 AND SRC SIGNALING PATHWAYS** *TRENDS IN BIOCHEMICAL SCIENCES*
Hinck, L., Nathke, I. S., Papkoff, J., NELSON, W. J.
1994; 19 (12): 538-542
- **GOLGI SPECTRIN - IDENTIFICATION OF AN ERYTHROID BETA-SPECTRIN HOMOLOG ASSOCIATED WITH THE GOLGI-COMPLEX** *JOURNAL OF CELL BIOLOGY*
Beck, K. A., Buchanan, J. A., Malhotra, V., NELSON, W. J.
1994; 127 (3): 707-723
- **FEEDBACK-REGULATION OF CELL-SUBSTRATUM ADHESION BY INTEGRIN-MEDIATED INTRACELLULAR CA²⁺ SIGNALING** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Sjaastad, M. D., Angres, B., Lewis, R. S., NELSON, W. J.
1994; 91 (17): 8214-8218
- **DETERMINANTS OF APICAL MEMBRANE FORMATION AND DISTRIBUTION IN MULTICELLULAR EPITHELIAL MDCK CYSTS** *AMERICAN JOURNAL OF PHYSIOLOGY*
Wang, A. Z., Wang, J. C., Ojakian, G. K., NELSON, W. J.
1994; 267 (2): C473-C481
- **DYNAMICS OF CADHERIN/CATENIN COMPLEX-FORMATION - NOVEL PROTEIN INTERACTIONS AND PATHWAYS OF COMPLEX ASSEMBLY** *JOURNAL OF CELL BIOLOGY*
Hinck, L., Nathke, I. S., Papkoff, J., NELSON, W. J.
1994; 125 (6): 1327-1340
- **DEFINING INTERACTIONS AND DISTRIBUTIONS OF CADHERIN AND CATENIN COMPLEXES IN POLARIZED EPITHELIAL-CELLS** *JOURNAL OF CELL BIOLOGY*
Nathke, I. S., Hinck, L., Swedlow, J. R., Papkoff, J., NELSON, W. J.
1994; 125 (6): 1341-1352
- **WNT-1 MODULATES CELL-CELL ADHESION IN MAMMALIAN-CELLS BY STABILIZING BETA-CATENIN BINDING TO THE CELL-ADHESION PROTEIN CADHERIN** *JOURNAL OF CELL BIOLOGY*
Hinck, L., NELSON, W. J., Papkoff, J.
1994; 124 (5): 729-741
- **ORGANIZATION AND FUNCTION OF THE CYTOSKELETON IN POLARIZED EPITHELIAL-CELLS - A COMPONENT OF THE PROTEIN SORTING MACHINERY** *CURRENT OPINION IN CELL BIOLOGY*
Mays, R. W., Beck, K. A., NELSON, W. J.
1994; 6 (1): 16-24
- **DISTINGUISHING ROLES OF THE MEMBRANE-CYTOSKELETON AND CADHERIN MEDIATED CELL-CELL ADHESION IN GENERATING DIFFERENT NA⁺,K⁺-ATPASE DISTRIBUTIONS IN POLARIZED EPITHELIA** *JOURNAL OF CELL BIOLOGY*
MARRS, J. A., Napolitano, E. W., MURPHYHERDOSH, C., Mays, R. W., Reichardt, L. F., NELSON, W. J.
1993; 123 (1): 149-164
- **REGULATION OF CELL-SURFACE POLARITY IN RENAL EPITHELIA** *5th International Workshop on Developmental Renal Physiology*
NELSON, W. J.
SPRINGER VERLAG.1993: 599-604

- **Modulation of epithelial morphogenesis and cell fate by cell-to-cell signals and regulated cell adhesion.** *Seminars in cell biology*
Schmidt, J. W., Piepenhagen, P. A., NELSON, W. J.
1993; 4 (3): 161-173
- **DEFINING E-CADHERIN-ASSOCIATED PROTEIN COMPLEXES IN EPITHELIAL-CELLS - PLAKOGLOBIN, BETA-CATENIN AND GAMMA-CATENIN ARE DISTINCT COMPONENTS** *JOURNAL OF CELL SCIENCE*
Piepenhagen, P. A., NELSON, W. J.
1993; 104: 751-762
- **SPATIAL AND TEMPORAL DISSECTION OF IMMEDIATE AND EARLY EVENTS FOLLOWING CADHERIN-MEDIATED EPITHELIAL-CELL ADHESION** *JOURNAL OF CELL BIOLOGY*
McNeill, H., Ryan, T. A., Smith, S. J., NELSON, W. J.
1993; 120 (5): 1217-1226
- **EPITHELIAL-CELL ADHESION AND DEVELOPMENT OF CELL-SURFACE POLARITY - POSSIBLE MECHANISMS FOR MODULATION OF CADHERIN FUNCTION, ORGANIZATION AND DISTRIBUTION** *JOURNAL OF CELL SCIENCE*
Nathke, I. S., HINCK, L. E., NELSON, W. J.
1993: 139-145
- **REGULATION OF CELL-SURFACE POLARITY FROM BACTERIA TO MAMMALS** *SCIENCE*
NELSON, W. J.
1992; 258 (5084): 948-955
- **Renal epithelial cell polarity.** *Current opinion in nephrology and hypertension*
NELSON, W. J.
1992; 1 (1): 59-67
- **ESTABLISHING AND MAINTAINING EPITHELIAL-CELL POLARITY - ROLES OF PROTEIN SORTING, DELIVERY AND RETENTION** *JOURNAL OF CELL SCIENCE*
WOLLNER, D. A., NELSON, W. J.
1992; 102: 185-190
- **Mechanisms for regulating the cell surface distribution of Na/K-ATPase in polarized epithelial cells.** *Chest*
Mays, R. W., NELSON, W. J.
1992; 101 (3): 50S-52S
- **REMODELING THE CELL-SURFACE DISTRIBUTION OF MEMBRANE-PROTEINS DURING THE DEVELOPMENT OF EPITHELIAL-CELL POLARITY** *JOURNAL OF CELL BIOLOGY*
WOLLNER, D. A., KRZEMINSKI, K. A., NELSON, W. J.
1992; 116 (4): 889-899
- **REGULATION OF EPITHELIAL-CELL POLARITY - A VIEW FROM THE CELL-SURFACE** *COLD SPRING HARBOR SYMPOSIA ON QUANTITATIVE BIOLOGY*
NELSON, W. J., Wilson, R., Wollner, D., Mays, R., McNeill, H., Siemers, K.
1992; 57: 621-630
- **Cytoskeleton functions in membrane traffic in polarized epithelial cells.** *Seminars in cell biology*
NELSON, W. J.
1991; 2 (6): 375-385
- **MECHANISM FOR REGULATING CELL-SURFACE DISTRIBUTION OF NA⁺, K⁺-ATPASE IN POLARIZED EPITHELIAL-CELLS** *SCIENCE*
HAMMERTON, R. W., KRZEMINSKI, K. A., Mays, R. W., Ryan, T. A., WOLLNER, D. A., NELSON, W. J.
1991; 254 (5033): 847-850
- **GENERATION OF PLASMA-MEMBRANE DOMAINS IN POLARIZED EPITHELIAL-CELLS - ROLE OF CELL CELL CONTACTS AND ASSEMBLY OF THE MEMBRANE CYTOSKELETON** *639TH MEETING OF THE BIOCHEMICAL SOC*
NELSON, W. J.
PORTLAND PRESS LTD.1991: 1055-59

- **ROLE OF THE MEMBRANE-CYTOSKELETON IN THE SPATIAL-ORGANIZATION OF THE NA,K-ATPASE IN POLARIZED EPITHELIAL-CELLS** *44TH ANNUAL SYMP OF THE SOC OF GENERAL PHYSIOLOGISTS - SODIUM PUMP : STRUCTURE, MECHANISM, AND REGULATION*

NELSON, W. J., HAMMERTON, R. W., McNeill, H.
ROCKEFELLER UNIV PRESS.1991: 77-87