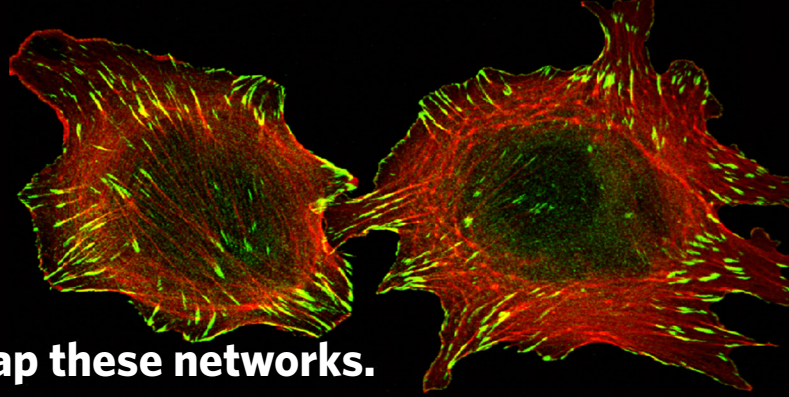


Cellular networks are the basis of human health & disease.



Our aim is to fully map these networks.

Graduate Programs

Biochemistry (MSc, PhD)

Cell & Developmental Biology (MSc, PhD)

Dental Sciences (MSc, PhD)

Microbiology & Immunology (MSc, PhD)

Neuroscience (MSc, PhD)

Zoology (MSc, PhD)



Research Strengths & Facilities

The sequencing of the human genome has generated a 'parts list' that members of the CELL Research Group are using to construct cellular networks that underpin tissue structure and function. Therefore, these processes form the basis of human health and, when dysfunctional, human disease. The experimental tools being used to construct these networks are cell

biology, multi-modal microscopic imaging, molecular genetics, proteomics and bioinformatics together with cell culture, tissue engineering, model organisms and transgenic animals.

The experiments are being carried out in a highly collaborative multidisciplinary environment in which **21 scientists** are working with more than 80 trainees and research assistants to address fundamental questions at the interface of science and medicine that cannot be answered in classical, single discipline environments.
<http://celldevelopment.ubc.ca/>

Fundamental questions being addressed by the group include:

- How do cells receive and translate signals that regulate tissue-specific gene expression?
- How do cells transport their gene products to the appropriate destination within a tissue?
- How do cells interact during the generation of specific tissues?
- How do cells respond to and integrate signals from other cells?

Specific Diseases and Processes Addressed by CELL Research Group labs:

- Metabolic, Developmental and Reproductive Diseases: macromolecular trafficking, membrane structure, nuclear transport, cell-cell junctions
- Nervous System Diseases: stem cell development, neuronal path-finding, glial cell communication, synaptogenesis, fetal alcohol syndrome, hormonal imprinting
- Musculoskeletal Diseases: stem cell niche development, muscle organization, arthritis
- Cancer Metastasis: cell adhesion, migration and invasion; colon, brain, lymphoid, thyroid, breast and ovarian cancer progression

Major research themes:

1-How signals move within cells

Drs. Allan, Pante, Church, Gold, Loewen, Matsuuchi, Bamji, Gordon

2-How signals move between between cells

Drs. Matsuuchi, Naus, O'Connor, Viau, Weinberg, Gordon

3-How cells interact with each other

Drs. Bamji, Auld, Vogl, Naus, O'Connor, Moukhles, Gordon

4-How cells interact with extracellular matrix

Drs. Tanentzapf, Moukhles, Moerman, Nabi, Roskams

5-How cells move within and between tissues

Drs. Nabi, Roskelley, Richman, Roskams, Gold, Church, Matsuuchi

6-How cellular compartments and membranes are organized

Drs. Loewen, Auld, Nabi, Pante, Moerman

7-How stem cells develop

Drs. Roskams, Allan, Richman, Tanentzapf

8-How cells are organized into tissues

Drs. Moukhles, Roskelley, Richman, Roskams, Vogl

9-How tissues communicate with each other

Drs. Viau, Weinberg, Roskelley, Gordon



a place of mind

THE UNIVERSITY OF BRITISH COLUMBIA

Life Sciences Institute

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Our goal is to understand the mechanisms that direct cellular function and interactions during development and to determine how these interactions may be disturbed in a wide range of diseases.

RECENT PUBLICATIONS:

Xie X. and Auld V. (2011). Integrins are necessary for the development and maintenance of the glial layers in the *Drosophila* peripheral nerve. *Development* 138:3813-3822.

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Freeman SA, Lei V, Dang-Lawson M, Mizuno K, Roskelley CD, Gold MR. (2011). Cofilin-Mediated F-Actin Severing Is Regulated by the Rap GTPase and Controls the Cytoskeletal Dynamics That Drive Lymphocyte Spreading and BCR Microcluster Formation. *J Immunology* 187: 5887-5900.

Naus CC, Laird DW. (2010). Implications and challenges of connexin connections in cancer. *Nature Reviews Cancer* 10:435-441.

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Noël G, Stevenson S, Moukhles H. (2011). A high throughput screen identifies chemical modulators of the laminin-induced clustering of dystroglycan and aquaporin-4 in primary astrocytes. *PLoS One* 6:e17559.

Shankar J, Messenberg A, Chan J, Underhill TM, Foster LJ, Nabi IR. (2010). Pseudopodial actin dynamics control epithelial-mesenchymal transition in metastatic cancer cells. *Cancer Research* 70: 3780-3790.

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Cohen S, Marr AK, Garcin P, Panté N. (2011). Nuclear envelope disruption involving host caspases plays a role in the parvovirus replication cycle. *J Virol.* 85:4863-74.

Petit A, Sanders AD, Kennedy TE, Tetzlaff W, Glattfelder KJ, Dalley RA, Puchalski RB, Jones AR, Roskams AJ. (2011). Adult spinal cord radial glia display a unique progenitor phenotype. *PLoS One* 6:e24538.

Gordon MD, Scott K. (2009). Motor control in a *Drosophila* taste circuit. *Neuron* 61:373-384.

Ellis SJ, Pines M, Fairchild MJ, Tanentzapf G.J. (2011). In vivo functional analysis reveals specific roles for the integrin-binding sites of talin. *Cell Sci.* 124:1844-56.

Hill MN, McLaughlin RJ, Bingham B, Shrestha L, Lee TT, Gray JM, Hillard CJ, Gorzalka BB, Viau V. (2010). Endogenous cannabinoid signaling is essential for stress adaptation. *PNAS* 107: 9406-9411.

Young JS, Guttman JA, Vaid KS, Vogl AW. (2009). Cortactin (CTTN), N-WASP (WASL), and clathrin (CLTC) are present at podosome-like tubulobulbar complexes in the rat testis. *Biol. Reprod.* 80:153-161.

Hellemans KG, Verma P, Yoon E, Yu WK, Young AH, Weinberg J. (2010). Prenatal alcohol exposure and chronic mild stress differentially alter depressive- and anxiety-like behaviors in male and female offspring. *Alcohol Clin. Exp. Res.* 34:633-645.

Graduate Studies Admission

UBC Faculty of Graduate Studies establishes common minimum academic requirements. One of the major academic requirements for LSI graduate programs is having a research supervisor.

Contact

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website: grad.lsi.ubc.ca

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