

The Crossroad for BioTransfer will feature 40 licensing opportunities in the health sector from the NRC, Excellerator and Gestion Univalor, It will be an outstanding opportunity for biotechnology and pharmaceutical companies to discover technologies that will advance their drug discovery and enhance their product portfolio. BioTransfer provides a unique one-stop-shop for biotechnology and pharmaceutical companies interested in licensing-in technologies by bringing together under one roof key-players in intellectual property creation, companies, and health industry specialists.

THERAPEUTICS

Cancer

Putting Cancer on Stasis

Univalor VAL-616 HSJ

Inventors: Dr. Pierre Hardy et al.

Presented by: Dr. Pierre Hardy

Microparticles from T-Lymphocytes have the properties to stop fast proliferating cells from dividing, opening avenues to treat cancer. *In vivo* data supporting application in breast cancer are to be presented.

Anticancer Vitamin D Agonists with HDAC Inhibitory Activity

McGill 06069

Inventors: Dr. John W. White & Dr. James Gleason

Presented by: Dr. John W. White

A novel class of compounds exhibits intrinsic Vitamin D receptor (VDR) agonism and Histone Deacetylase (HDAC) inhibition. The preferred compounds do not exhibit hypercalcemic effects.

Antisense Inhibitors of Demethylase/Mbd2 for Anticancer Therapy

McGill 02136

Inventors: Dr. Moshe Szyf & Dr. Paul Campbell

Presented by: Dr. Moshe Szyf

An aberrant methylation pattern is a hallmark of cancer cells. The DNA methylation machinery is composed of DNA methyltransferases, demethylases and methylated DNA binding proteins (MBDs). Antisense oligonucleotides and inhibitors of MBD2/demethylase can be useful agents for liver, lung and colorectal cancers and in the prevention of liver cancer metastasis.

Potent VEGF Inhibitor

NRC-BRI 11885

Inventor: Dr. Yves Durocher

Presented by: Dr. Yves Durocher

NRC-BRI identified a non-natural VEGF165 mutant with antagonistic activity, it can block angiogenesis through VEGFR receptor signaling cascade inhibition and thus represents a promising anti-cancer biotherapeutic.

Ligand Directed to Human Clusterin

NRC-BRI 12095

Inventor: Dr. Maureen O'Connor

Presented by: Dr. Maureen O'Connor

The novel clusterin-binding peptides of the present invention have been shown to be specific for human clusterin, and to selectively home to solid tumors. Because of their binding specificity, lower binding affinity (as compared to monoclonal antibodies), and faster clearance rate from the circulation (as compared to monoclonal antibodies), these peptides may be used as a tool for molecular imaging. These are favorable characteristics for imaging applications, as they may lead to improved contrast in imaging studies. Peptide-based molecules of this type may represent the next generation of more versatile targeting agents

Circulating Microvesicles as Cancer Biomarkers

McGill 07107

Inventors: Dr. Janusz Rak, Dr Khalid Al-Nedawi et al.

Presented by: Dr. Janusz Rak

Microvesicles, or exosomes, released from cancer cells into the circulation express oncogenes. The findings form the basis for the development of a microplate-ELISA.

Anti-Infective	<p>Engineered Biosynthetic Pathway for Sialic Acid Analogs and its Use for the Development of Anti-Infectives NRC-IBS 12033</p> <p><i>Inventors: Dr. Denis Whitfield et al.</i> <i>Presented by: Dr. Denis Whitfield</i></p> <p>Compounds to inhibit sialidase or sialidase-like enzymes from viruses and bacteria are described, including a method of preparation.</p>
Antiviral	<p>Deoxyribozyme Therapeutic Platform for HCV Univalor VAL-425 HSJ</p> <p><i>Inventors: Dr. Carolina Alfieri et al.</i> <i>Presented by: Dr. Carolina Alfieri</i></p> <p>DNAzyme catalytic DNA molecules were designed to target and cleave specific HCV sequences. Our lead compound was shown to bind and efficiently cleave the highly conserved RNA sequences encoding the HCV core protein, significantly reducing the level of HCV RNA in infected human cells.</p>
Diagnostic Test	<p>A New Modality for Inhibition of Viral Infections McGill 08047</p> <p><i>Inventors: Dr. Nahum Sonenberg; Dr. Mauro Costa-Mattioli et al.</i> <i>Presented by: Dr. Nahum Sonenberg</i></p> <p>4E-BP 1 and 4E-BP 2 are proteins of the translation initiation pathway. 4E-BP 1/2 knockout mice are resistant to viral infections through upregulation of type-I IFN. This finding was validated in vitro or in vivo using: VSV, Sindbis, influenza, encephalomyocarditis. Herpes, Myxoma and HIV-1 viruses. Suppression of 4E-BP 1/2 with siRNA mimics the knockout phenotype.</p>
Antibodies	<p>Transplantation: Selecting the Best Donors Univalor VAL-652-MULTI</p> <p><i>Inventor: Dr. Claude Perreault</i> <i>Presented by: Dr. Guillaume Roy</i></p> <p>Identification of predictive genes that allow recognition of donors who have a higher probability of triggering graft-versus-host-disease (GVHD). This technology would be used as a diagnostic test of potential donors in order to select the best donor and to adapt the immunosuppressive treatment of the host. This is the most important progress in the domain of the "Personalized Transplantation Medicine" since the HLA typing.</p>
Antibodies	<p>Anti-Apoptotic Antibodies NRC-IBS 11749</p> <p><i>Inventors: Dr. Jamshid Tanha et al.</i> <i>Presented by: Dr. Jamshid Tanha</i></p> <p>Intrabodies targeting Bax and caspase 3 with inhibitory action on apoptosis for use in the treatment of neurodegenerative disorders and stroke, in addition to being valuable tools for studying apoptosis.</p>
Vision	<p>Human Soluble VH and VL Single-Domain Antibody Libraries for Developing Human Therapeutic Applications NRC-IBS 11686</p> <p><i>Inventors: Dr. Jamshid Tanha et al.</i> <i>Presented by: Dr. Jamshid Tanha</i></p> <p>Polypeptides including monomeric human VHs and VLs with desirable biophysical properties such as binding specificity or non-aggregation, solubility, stability, high expression, monomericity, are identified using a high throughput method for screening polypeptides.</p>
Allergies Therapy	<p>Age-Related Macular Degeneration Drying up Development of the Dry Form of AMD Univalor VAL-620-Multi</p> <p><i>Inventor: Dr. Huy Ong</i> <i>Presented by: Dr. Huy Ong</i></p> <p>Technology permitting the treatment of the wet form of Age-related Macular Degeneration (AMD) and opening up the treatment of the dry form of AMD.</p>
Allergies Therapy	<p>D-isoproterenol as an Anti-Diabetic Cataract Compound and for Delaying Formation of Retinopathy NRC-BRI 11864</p> <p><i>Inventor: Dr. Yasuo Konishi</i> <i>Presented by: Dr. Yasuo Konishi</i></p> <p>D-isoproterenol, a homologous analog of (S)-adrenaline, is showing an interesting therapeutic activity against diabetic retinopathy. A clear reduction of cataract was also observed on animal model treated with the pro-drug.</p>
Allergies Therapy	<p>Bacterial Components for Allergic Airway Disorder Therapy NRC-IBS 11894</p> <p><i>Inventors: Dr. Wangxue Chen et al.</i> <i>Presented by: Dr. Wangxue Chen</i></p> <p>The present invention relates to the use of Francisella tularensis, or components thereof, in the prevention or treatment of allergic pathway disorders.</p>

THERAPEUTICS

Chronic Illnesses	<p>PD-1 BioTool and PD-1 Targets Univalor VAL-568/569 UM</p> <p><i>Inventors: Dr. Rafick-Pierre Sekaly et al.</i> <i>Presented by: Dr. Elias Haddad</i></p> <p>PD1 inhibitors promise major therapeutic breakthrough that could apply to all chronic illnesses in which exhaustion of lymphocytes are observed. The research group has developed assays to screen PD-1 inhibitors and has defined PD-1 gene signature for immunomonitoring.</p>
Alzheimer's Disease	<p>Novel Peptide for the Treatment of Alzheimer's Disease NRC-IBS 11630</p> <p><i>Inventors: Dr. Balu Chakravarthy et al.</i> <i>Presented by: Dr. Balu Chakravarthy</i></p> <p>Peptide that selectively prevent or reverse the assembly or growth of Amyloid-β aggregates and their neurotoxicity are presented as well as methods of use relating to this peptide.</p>
Cardiovascular Diseases	<p>PCSK9 and Cardiovascular Diseases Univalor VAL-503 IRCM</p> <p><i>Inventors: Dr. Nabil G. Seidah et al.</i> <i>Presented by: Dr. Nabil G. Seidah</i></p> <p>Tools and assays to identify modulators of PCSK9, a validated target involved in the regulation of lipid metabolism and cholesterol homeostasis.</p>
Cystic Fibrosis	<p>Fenretinide Corrects Lipid Imbalance in Cystic Fibrosis (CF) and <i>Pseudomonas</i> Clearance from the Infected CF Lungs McGill 06031</p> <p><i>Inventors: Dr. Danuta Radzioch; Dr. Claudine Guilbault et al</i> <i>Presented by: Dr. Danuta Radzioch</i></p> <p>CF patients exhibit arachidonic acid (AA) and docosahexaenoic acid (DHA) imbalance due to altered fatty acid metabolism. DHA and AA regulate cell function, membrane fluidity, trafficking, inflammation and mucin secretion. A semi-synthetic retinoid corrects defective DHA/AA ratio in CF-affected organs, and alleviates lung infections in a clinically relevant mouse model.</p>
Asthma	<p>5'-OXO-EETE Receptor Antagonists McGill 09044</p> <p><i>Inventors: Dr. William Powell & Dr. Joshua Rokach</i> <i>Presented by: Dr. William Powell</i></p> <p>5-oxo-EETE is an inflammatory eicosanoid of the 5-lipoxygenase (5-LO) pathway. It is a chemoattractant for eosinophils, neutrophils and monocytes mediated by the OXE receptor. The compounds of the invention define a new class of OXE receptor antagonists indicated for asthma and other respiratory disorders.</p>

TECHNOLOGY PLATFORMS

Protein Production	<p>Transient Expression in CHO Cells, a More Efficient and Productive Method NRC-BRI 11992</p> <p><i>Inventor: Dr. Yves Durocher</i> <i>Presented by: Dr. Yves Durocher</i></p> <p>This combination of vectors, cell lines, serum-free media and process provides a powerful and flexible transient gene expression system that allows the production of large amounts of r-protein in human cells within a few days.</p> <p>Production of Glycosylated Interferon α2b for Biogeneric Application NRC-BRI 11993</p> <p><i>Inventor: Dr. Yves Durocher</i> <i>Presented by: Dr. Yves Durocher</i></p> <p>Stable HEK293 optimized cell line for high yield production of glycosylated INF- α2b as research reagent and for biogeneric application, including efficient production and purification method.</p> <p>Troponin Derivated Muscle Promoters for Gene Therapy NRC-BRI 11887</p> <p><i>Inventor: Dr. Rénaud Gilbert</i> <i>Presented by: Dr. Rénaud Gilbert</i></p> <p>Powerful muscle-specific promoters derived from Troponin to produce recombinant proteins in skeletal muscle for applications such as in hemophilia, Pompe disease, Fabry's disease, anemia, emphysema and familial hypocholesterolemia.</p>
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Protein Production	<p>HEK293 Master Cell Bank for cGMP Production of Biopharmaceutical NRC-BRI 10894</p> <p><i>Inventor: Dr. Amine Kamen</i> <i>Presented by: Dr. Amine Kamen</i></p> <p>A master cell bank was established for the 293F-3F6 cell line in accordance with the Good Manufacturing Practice (GMP) standards, including detailed supportive documentation. This cell line is suitable for the production of biopharmaceuticals.</p>
siRNA	<p>A New Chemistry Platform for RNA Interference McGill 06052</p> <p><i>Inventors: Dr. Masad Damha; Dr. Jonathan Watts et al.</i> <i>Presented by: Dr. Masad Damha</i></p> <p>New siRNA chemistry platforms for gene silencing are important in order to achieve optimum clinical safety and efficacy. The invention provides oligonucleotides containing 4'-thioarabinonucleotide units and novel siRNA duplex architectures with validated activity.</p>
Blood Banking	<p>Survival of the Fittest Red Blood Cell Univalor VAL-648 HMR</p> <p><i>Inventor: Dr. Edouard Kouassi</i> <i>Presented by: Dr. Edouard Kouassi</i></p> <p>Red Blood Cells (RBC) storage lifetime is increased by the addition of this simple chemical entity. Incremental technology for the blood banking industry.</p>
Biosensors	<p>Label-Free Biological Measurement Using SPR Univalor VAL-625 UM</p> <p><i>Inventors: Dr. Jean-François Masson et al.</i> <i>Presented by: Dr. Jean-François Masson</i></p> <p>A new device using surface plasmon resonance (SPR) combining high resolution and portability. The device competes directly with expensive devices such as Biacore for dosing biomarkers in complex samples.</p>
Immunology and Vaccine	<p>Delivering that Antigen to the Right Spot Univalor VAL-678 CHUM</p> <p><i>Inventors: Dr. Réjean Lapointe et al.</i> <i>Presented by: Dr. Réjean Lapointe</i></p> <p>A protein sequence targeting for MHC class I and Class II restricted presentation of endogenously expressed antigens, and mobilization to endosomal compartments and cell surface to potentiate the cytotoxic memory response.</p>
Proteomics	<p>Biomolecular Tweezers for Antagonists Protein-protein Interactions NRC-BRI 11615</p> <p><i>Inventor: Dr. Feng Ni</i> <i>Presented by: Dr. Feng Ni</i></p> <p>Bivalent polypeptides are particularly suited for the inhibition of difficult pharmaceutical targets such as protein-protein interactions. NRC-BRI developed a retractable bivalent inhibitor platform that contains adaptable and malleable linkers as alternative approach to antidote-reversible therapy.</p>
Neurodegenerative Diseases	<p>A Novel System for Identifying and Characterizing Axon Growth and Guidance Molecules Univalor VAL-587 IRCM</p> <p><i>Inventor: Dr. Frédéric Charron</i> <i>Presented by: Dr. Frédéric Charron</i></p> <p>Central nervous system injuries and neurodegenerative diseases lead to permanent neuronal damages due to failure of nerve fibers (axons) to regenerate and reintegrate into neuronal circuits. A novel system (combining microscopic imaging and method of analysis) to observe and measure axon guidance activity in real-time, identify novel guidance cues, and characterize their molecular mechanisms will be presented. This system can be adapted to screen libraries of chemical compounds and discover novel molecules with guidance activity that could find applications in neuronal regeneration.</p>
Drug Delivery	<p>Synthetic Ether Lipid (Archaeosome) Delivery / Adjuvant Technology NRC-IBS 11784</p> <p><i>Inventor: Dr. Dennis Sprott et al.</i> <i>Presented by: Dr. Dennis Sprott</i></p> <p>Lipid vesicles formulated from the synthetic lipids of selected Archaeobacteria serve as antigen carriers that target antigen-presenting cells and promote an appropriate immune response to said antigen.</p> <p>Mycobacterial Lipids for Use in Vaccine-Delivery Liposomes with an Adjuvant Effect NRC-IBS 11305</p> <p><i>Inventors: Dr. Lakshmi Krishnan et al.</i> <i>Presented by: Dr. Lakshmi Krishnan</i></p> <p>Polar lipids from Mycobacterium spp. are used to prepare liposomes that will activate dendritic cells to secrete cytokines and modulate an immune response in mammals or to help confer protection against a pathogen or cancer.</p>

Drug Delivery

Vector Technology to Deliver Neurotherapeutics Across the Blood-Brain-Barrier

NRC-IBS 11085

Inventors: Dr. Danica Stanimirovic et al.

Presented by: Dr. Danica Stanimirovic

We have isolated two novel single-domain antibodies that bind to antigens on the surface of brain endothelial cells and can transmigrate into the brain. These antibodies are being developed as 'vectors' to shuttle other molecules (therapeutics, diagnostics) into the brain.

Therapeutic Pharmacological Modulator

A Biological CCR2 Antagonist with Immunosuppressive and Anticancer Properties

McGill 08079

Inventors: Dr. Jacques Galipeau & Dr. Moutih Rafei

Presented by: Dr. Astrid Reimann

CCR2 expression is restricted to immune competent B cells, T cells, macrophages, adipocytes and certain cancer cells. The fusion protein GMME1 is immunosuppressive and kills CCR2 expressing cancer cells. A reduction of body fat stores is observed following in vivo administration.

Cancer

Multi-Modal Imaging Agents for Molecular Imaging of Cancer

NRC-IBS 12075

Inventor: Dr. Abedelnasser Abulrob et al.

Presented by: Dr. Abedelnasser Abulrob

Single domain antibodies conjugated to imaging nanoparticles for optical and MR imaging in vivo of molecular targets.

Novel Algorithm for Finding Robust Cancer Gene Markers

NRC-BRI 12020

Inventor: Dr. Edwin Wang

Presented by: Dr. Edwin Wang

Novel algorithm to generate robust cancer gene markers from gene microarray profiles. The markers generated from this algorithm could be used in prognostic tests for patients with cancer. The algorithm finds genes and proteins specific to cancer cells.

Epigallocatechin Gallate Prodrugs as Anticancer Agents

McGill 05062

Inventors: Tak-Hang Chan; Ping Dou et al.

Presented by: Dr. Tak-Hang Chan

Catechins are polyphenolic natural products with purported therapeutic benefit. (-) EGCG is limited by low oral bioavailability (0.012% in rodent). Prodrugs of (-) EGCG exhibit enhanced cellular uptake, induce apoptosis and exhibit antitumor activity in CWR22R (prostate) and MDA-MB-231 (breast) tumor xenograft models.

Receptor Traps

NRC-BRI 11817

Inventor: Dr. Maureen O'Connor

Presented by: Dr. Maureen O'Connor

Platform technology to produce single-chain multivalent soluble receptor traps for inhibiting a wide range of growth factors implicated in a variety of diseases such as cancer. The technology has been validated for the inhibition of TGF- β .

Novel Peptide(s) for the Treatment of Cancer

NRC-IBS 11627

Inventors: Dr. Maria Moreno et al.

Presented by: Dr. Maria Moreno

Insulin-like growth factor (IGF) binding proteins 1-6 (IGFBP1-6) have been identified as very potent anti-angiogenic and anti-tumorigenic factors.

A Breast Cancer Prognostic Test for Enhanced Clinical Outcome

McGill 07033

Inventors: Dr. Morag Park, Dr Michael Hallett, Dr. Greg Finak et al.

Presented by: Dr. Nicholas Bertos

The stromal environment is important for breast cancer progression. Transcriptional profiles strongly associated with clinical outcome have been identified. The stroma-derived prognostic predictor (SDPP) is useful for stratification of breast cancer patients; particularly lymph node negative and HER2+ subsets.