

C4 Technology Selection at BIO 2009

Agriculture

Technology	Market Opportunity	
EnviroPig™ — Pigs with the ability to utilize efficiently phytate phosphorus (P) that is present in plant feed ingredients	<ul style="list-style-type: none"> · Reduce environmental impact of hog farming · Reduce cost of hog farming 	G
Genetic methods to reduce boar taint in entire male pigs	<ul style="list-style-type: none"> · Increased feed efficiency · Reduced need for castration · Improved pork taste 	G
Vaccine for necrotic enteritis in poultry	<ul style="list-style-type: none"> · effective at protecting chickens against both moderate and severe challenge by <i>C. perfringens</i> infection 	G
Reagentless biosensor to detect Mycotoxins	Many crops that support the growth of mould can become contaminated by mycotoxins. The invention is a reagentless sensor based on exploiting the strong electrophilic nature of mycotoxins to effect an electrochemical change on a conducting polymer.	G

Cardiovascular disease

Technology	Market Opportunity	
Novel pharmaceutical-based approach to the control of plasma homocysteine (Hcy) levels	Elevated plasma Hcy levels have been identified as an emerging risk factor for cardiovascular disease. This invention concerns the administration of Mesna (Sodium 2 Mercaptoethanesulfonate) to ESRD patients on dialysis. ESRD patients are known to be refractory to conventional treatment options.	L
Therapeutic factors for stabilizing blood vessels and preventing hemorrhage, and promoting angiogenesis following ischemia	<ul style="list-style-type: none"> · Post ischemia repair · Prophylactic mitigation of hemorrhage · Augments natural mechanisms 	R

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Cancer

Technology	Market Opportunity	
Serum biomarker for research in genetically engineered prostate cancer mouse models	This invention relates to the first serum tumor biomarker for monitoring the initiation and progression of prostate cancer (CaP) in animal models. Preclinical data available from the use of this system is expected to greatly assist in early evaluations of the safety and efficacy of new treatments or drugs for human CaP.	L
Single stage freezing and embedding system for tissue histopathological procedures (MOHS)	The invention relates to a novel apparatus and method for the preparation of frozen tissue specimens for thin sectioning outside the cryostat. Uses include MOHS for surgical excision of skin cancer and other histopathological procedures requiring the efficient and timely processing of tissues with irregular or difficult to section surfaces (e.g., biopsies).	L
siRNA strategy for the treatment of cancer through silencing of genes involved in tumor protection	This invention relates to a novel approach to the treatment of cancer involving the silencing of genes for expression of indoleamine 2,3-dioxygenase (IDO) using siRNA. IDO is an immune suppressive molecule believed to be a critical factor in protecting tumors from immune attack.	L
Compositions Affecting Hyaluronic Acid Activity for the Treatment of Cancer and Wound Healing	This invention relates to specific compositions of hyaluronan (HA) fragments and/or agents useful for cancer treatment or wound healing. One aspect includes compositions comprising HA fragments of a specific size that have beneficial effects on wild-type cells and a second aspect concerns novel peptides that bind HA, interfering with its binding to HA receptors.	L
Novel Protein Translation Inhibitor	<ul style="list-style-type: none"> · Cancer treatment · Therapeutics for proliferative diseases 	R

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Diabetes

Technology	Market Opportunity	
Novel disposable contact lens based glucose biosensor	· disposable contact lens biosensor for the continuous, non-invasive monitoring of physiological glucose for diabetic patients	W
Bone marrow derived cells that stimulate pancreatic regeneration in Type II Diabetes	· Promote endogenous islet cell repair · Autologous transplantation of stem cells without preculturing · Drug discovery platform · Blood Glucose/Insulin Control	W
Biomarker Panel for the Detection and Diagnosis of Type 1 Diabetes	This invention relates to the development of a new biomarker panel for the detection and diagnosis of Type 1 diabetes. The biomarker panel is based on the expression profile of specific cytokines and chemokines	L

Diagnostics

Technology	Market Opportunity	
University of Guelph Laboratory Services www.uoguelph.ca/labserv	· Accredited analytical and biological testing for food and food safety, environment, veterinary, microbiology, regulatory and agrochemical	G
Clinical Test for Uterine Receptivity	· Fertility clinics · Diagnostic labs	G

Imaging

Technology	Market Opportunity	
99mTc cysteine-rhenium colloid	This invention relates to methods for the preparation and clinical use of a novel radiolabelled colloid. The colloid has proven effective as a radiotracer for SLN scintigraphy in breast cancer and holds promise for further development in bone marrow, liver/spleen RES scanning and lung aerosol applications.	L
True video-rate stereo videomicroscopy	This invention allows 3-D imaging of a living and moving specimen at true video rates from several distinct angles simultaneously at diffraction limited spatial resolution.	M

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Infectious Disease

Technology	Market Opportunity	
Bacterial drug targets for the prevention and treatment of staphylococcus aureus infections	<ul style="list-style-type: none"> · Technology platform · Gram positive pathogen · Hospital related infection · Antibiotic resistance · Drug screening and diagnostics · Bacterial iron uptake 	W
Immunoglobulin — compositions and methods for passive immunity	This invention relates to the topical administration of human immunoglobulin compositions (IgA, IgM, IgG) in the prevention of microbial infections. Applications include antibody therapies for reducing inflammatory tissue damage and the rejection of biomaterials and transplants due to infection.	L
Cyclic histatin peptide antifungal agent	<ul style="list-style-type: none"> · Antifungal · Anti-infectives 	W
Vaccine for otitis in children	<ul style="list-style-type: none"> · Novel polysaccharide antigens · Immunogens have demonstrated immunogenicity in humans · Easily adapted to existing vaccine protocols for children 	G
Novel probiotic extracts	<ul style="list-style-type: none"> · extracts from probiotic bacteria that have shown to prevent infection by harmful bacteria such as E. coli and Salmonella. · both in vitro and in vivostudies have been performed 	G
Method to boost immune responses	<ul style="list-style-type: none"> · a unique prime:boost regimen and associated delivery vectors · immune boosting capability of this virus has been demonstrated to be superior to the gold standard, recombinant vaccinia vector 	M
Diagnosing susceptibility to West Nile virus	· genes that are significantly correlated with neuroinvasive disease like West Nile Virus and an individual's susceptibility	M
Peptidomimetic inhibitor for <i>Pseudomonas aeruginosa</i> infection of cells	<i>Pseudomonas</i> is a leading cause of pneumonia in immunocompromised patients. This is a peptide capable of preventing the association of key proteins and thereby inhibiting secretion in <i>P. aeruginosa</i> . As a result of preventing secretion, the peptide inhibits subsequent infection of cells in vitro.	M
Inhibitor of <i>Chlamydomphila pneumoniae</i> replication	· a viable therapeutic target within <i>Chlmydophila pneumoniae</i> , enabling the development of potent, selective antimicrobial agents.	M

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Activation of antibiotic production in streptomyces	· novel efficacious method to treat current antibiotic resistant bacteria	M
Novel therapeutic for influenza	· a peptidomimetic which prevents the association of key proteins involved in influenza virus replication	M
Novel agent displays significant anti-viral and anti-tumour properties	· delivery of a known bacterial associated protein induces a potent anti-viral response <i>in vitro</i> and <i>in vivo</i>	M

Inflammation

Technology

Market Opportunity

Immunomodulation using RNA interference	This invention relates to methods for manipulating the immune system using small interfering RNA (siRNA). Potential applications include the development of organ storage/reperfusion solutions and treatments for a broad range of disease indications (e.g., rheumatoid arthritis, cancer).	L
Preventing IL-2 mediated inflammation in epithelial cells	This invention relates to new methods for treating inflammatory injury mediated by the activity of interleukin 2 (IL-2) on non-T cells, such as epithelial cells, expressing IL-2 receptors (IL-2R). Blocking of IL-2R in epithelial cells has clinical utility in transplantation and the treatment of inflammatory bowel disease (IBD).	L
Novel Autoantigenic Peptides for Use in the Diagnosis and Treatment of Rheumatoid Arthritis	This invention concerns the discovery of autoantigenic peptides useful for the development of diagnostic assays and therapeutic products for rheumatoid arthritis. These novel peptides were created by the substitution of one amino acid for another at specific positions within peptides commonly found within the joints.	L
Treatment of rheumatoid arthritis using RNA interference	This invention relates to a new approach to the treatment of rheumatoid arthritis through “tolerogenic vaccination” with siRNA-modified dendritic cells. Tolerogenic vaccination could prove to be a powerful new approach to the treatment of rheumatoid arthritis and other autoimmune-related disorders.	L
A Therapeutic Protein for Improvement of Reduced Cardiovascular Function due to Sepsis	· a recombinant therapeutic protein to decrease mRNA and protein levels of TNF- α in the myocardium during sepsis	L

Medical Devices

Technology	Market Opportunity
Handheld platform for audiology and speech language pathology applications	<ul style="list-style-type: none"> · Hearing loss testing and screening · Wireless audiometry · Speech language pathology diagnosis <p style="text-align: right;">W</p>
Swallowing air-pulse therapy system	<ul style="list-style-type: none"> · Dysphagia diagnosis and treatment. · Stroke rehabilitation · Speech language pathology <p style="text-align: right;">W</p>
Device for rapid knee assessments	<ul style="list-style-type: none"> · an inexpensive, easy-to-use device to diagnose the health of a human joint, notably the knee. <p style="text-align: right;">M</p>
Detection of early changes in fetal EEG due to asphyxia with acidemia during labour	<ul style="list-style-type: none"> · correlating the patterns of electroencephalogram (EEG) and fetal heart rate signals <p style="text-align: right;">L</p>

Research Tools

Technology	Market Opportunity
Cell culture supplements for generating mature, functional, stabilized blood vessels <i>in vitro</i>	<ul style="list-style-type: none"> · Emulates natural vessel assembly · Generates complex and functional vessels · Applicable to 2D and 3D systems <p style="text-align: right;">R</p>
Phospho-antibody indicator for neurodegenerative disease – Amyotrophic Lateral Sclerosis (ALS)	<ul style="list-style-type: none"> · Phospho specific · Complements ALS screen as readout · Associated with plaque tangles · Western blot and Immuno <p style="text-align: right;">R</p>
Machine Learning System for Protein Folding Dynamics and Structure Determination	<ul style="list-style-type: none"> · Treats protein structure as a result of the dynamic folding process · Doesn't require explicit structure matches · Can handle proteins that may not adopt minimal energy configurations · Ability to interpolate and extrapolate between sequence structures
Mouse Model for Metabolic Syndrome	<p>A good research tool to test the effects of various drugs and nutraceuticals on prevention and/or progression of Metabolic Syndrome, diabetes, and other cardio-vascular diseases</p> <p style="text-align: right;">G</p>

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Skeletal

Technology	Market Opportunity
Diagnostic system for early stage Osteoarthritis	<ul style="list-style-type: none"> · Diagnosis and screening of early Osteoarthritis ^W · Identification of therapeutic targets · Stratification of patients for clinical trials
Treating Periprosthetic Fractures of the Femur	<ul style="list-style-type: none"> · a method and apparatus to gain rigid fixation to the femoral prosthesis at specific fixed anchoring points to allow bony healing and improve overall alignment of the prosthesis ^M
Relevant lubricant for implant wear testing	<ul style="list-style-type: none"> · a clinically relevant lubricant for in vitro testing of total joint replacement components ^K

Other

Sector	Technology	Market Opportunity
Allergies	SafeCall- Diagnosis of True Peanut Allergy	A diagnostic algorithm which includes a series of demographic and biological variables. This algorithm predicts true peanut allergy with high sensitivity and specificity. ^M
Allergies	Combination therapy to reduce systemic effects of anaphylaxis	<ul style="list-style-type: none"> · a combination therapy to reduce the severity of anaphylactic reactions both clinically and using biological markers of severity ^M
Anticoagulant	Novel anticoagulant complexes	<ul style="list-style-type: none"> · a family of covalent serpin-glycosaminoglycan complexes that have maximal anticoagulant activities but have reduced adverse clinical side-effects typically associated with glycosaminoglycans. ^M
Asthma	Molecular Mechanism of Bronchial Thermoplasty	<ul style="list-style-type: none"> · non-invasive pharmacological intervention to mimic the beneficial effects of Bronchial Thermoplasty. ^M

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Central Nervous System	Target, compounds and discovery system for limiting scarring and promoting regeneration following spinal cord injury	<ul style="list-style-type: none"> · Spinal cord injury/repair · Brain injury repair · Stroke repair · Acute or chronic therapy · Small molecule discovery 	R
Fibres	High performance protein fibers from hagfish slime	<ul style="list-style-type: none"> · Stiff, strong, and remarkably tough fibers 	
Kidneys and genito-urinary system	Peptides for prevention of pathological calcification	<ul style="list-style-type: none"> · Peptide therapeutics · Prevention of kidney stone formation · Prevention of atherosclerotic plaque · Prevention of dental plaque 	W
Manufacturing (Chiral compound biosynthesis)	Novel thermostable biocatalyst	<ul style="list-style-type: none"> · an enzyme that can be a potent biocatalyst for chiral compound synthesis in both laboratory and industrial-scale setting 	K
Schizophrenia	Novel neurodevelopmental animal model of schizophrenia	This invention relates to an animal model showing several behavioral and neuropathological features of schizophrenia. This animal model would be of interest to pharmaceutical companies involved in identifying, developing, screening and testing new therapeutic agents for the treatment of schizophrenia.	L
Stem Cells	Novel strategy in manipulation of stem cell fate specification	<ul style="list-style-type: none"> · methodology for regulating and inducing stem cell differentiation by altering the expression of a key protein that is naturally existing and participating in embryo development 	W
Transplantation	siRNA containing organ storage and reperfusion solution	This invention relates to novel siRNA-containing organ storage and reperfusion solutions for use in transplantation. Compositions contain siRNA directed towards the silencing of one or more genes or pathways that contribute to the immunogenicity, survival and/or viability of transplanted tissues, cells or organs.	L