

C4 Technology Selection at BIO 2010

Cardiovascular disease

Technology	Market Opportunity	
Novel pharmaceutical-based approach to the control of plasma homocysteine (Hcy) levels in renal patients	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
Biomarkers for heart failure and death	· a novel biomarker panel for predicting heart failure and death in an acute coronary syndrome population	M

Cancer

Technology	Market Opportunity	
Serum biomarker for research in genetically engineered prostate cancer mouse models	A serum tumor biomarker for monitoring the progression of prostate cancer (CaP) in animal models. Preclinical data provided by this system could 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)	A novel apparatus and method for preparing frozen tissue specimens for thin sectioning outside the cryostat, its 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 novel approach to the treatment of cancer silences the 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 composition of hyaluronan (HA) fragments and/or agents are 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
Oncolytic viral therapy	· viral therapy for the destruction of cancerous cells	M
Targeting collagen synthesis for the treatment of malignant tumours	· a small molecular weight chemical compounds that effectively inhibits a collagen-specific chaperone protein that is essential for normal collagen biosynthesis.	M

Diabetes

Technology	Market Opportunity
Biomarker Panel for the Detection and Diagnosis of Type 1 Diabetes	This biomarker panel could detect and diagnosis Type 1 diabetes. The biomarker panel is based on the expression profile of specific cytokines and chemokines. L
Micro RNA as a therapeutic agent in diabetic retinopathy and Other diabetic complications	<ul style="list-style-type: none"> · a group of naturally occurring Micro RNA molecules are altered in diabetic retina · opportunity to develop a novel class of therapeutic compounds combating diabetic retinopathy W

Infectious Disease

Technology	Market Opportunity
Anti-Colonization 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 vivo studies have been performed G
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>Chlamydomphila pneumoniae</i> , enabling the development of potent, selective antimicrobial agents. M
Electrochemical biosensor for the detection of HIV Enzymes	<ul style="list-style-type: none"> · the detection of HIV enzymes at nanomolar levels using ferrocene (Fc)-conjugated peptides on gold microelectrodes · chip-based approach will provide an easy-to-use and low cost alternative to existing HIV detection methods. W
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
Respiratory syncytical virus inhibitor	<ul style="list-style-type: none"> · a peptide mimetic inhibitor that blocks RNA polymerase formation and inhibits RSV replication <i>in vitro</i> · clinically useful as lead compounds for the development of RSV therapeutics M

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Novel Non-ribosomal peptides from <i>Staphylococcus aureus</i>	<ul style="list-style-type: none"> · New target that is critical to the virulence of <i>S. aureus</i>. · Precise control over the virulence network of <i>S. aureus</i> or anti-virulence strategies may lead to a new class of drugs for the treatment of <i>S. aureus</i>. 	M
Oncolytic viral therapy	<ul style="list-style-type: none"> · a method to custom design the immune response against the oncolytic virus · therapeutic vaccination of either life threatening cancer or infectious disease. 	M

Inflammation

Technology	Market Opportunity	
Immunomodulation using RNA interference	These methods for manipulating the immune system use 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	These methods treat 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	These autoantigenic peptides could be used 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 new approach to the treatment of rheumatoid arthritis, dubbed “tolerogenic vaccination,” uses 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 to improve sepsis induced cardiovascular problems	<ul style="list-style-type: none"> · a recombinant therapeutic protein to decrease mRNA and protein levels of TNF-α in the myocardium during sepsis 	L

Research Tools

Technology	Market Opportunity	
Mouse Model for Metabolic Syndrome	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	G
Bioassay for the detection of homologous recombination products	A bioassay has been developed to detect 3' extension products of homologous recombination in mammalian cells. Homologous recombination is important in the repair of DNA double strand breaks, reducing cancer risk. This bioassay can be used to determine the efficiency of homologous recombination in a person, leading to uses in diagnostics and in therapeutic drug screening.	G
Novel neurodevelopmental animal model of schizophrenia	This animal model shows several behavioral and neuropathological features of schizophrenia. It would be useful for identifying, developing, screening and testing new therapeutic agents for the treatment of schizophrenia.	L

Other

Sector	Technology	Market Opportunity	
Anticoagulant	Novel anticoagulant complexes	This family of covalent serpin-glycosaminoglycan complexes has maximal anticoagulant activities but have reduced adverse clinical side-effects typically associated with glycosaminoglycans.	M
Assisted Reproduction	Non-invasive test of oocyte quality	· innovative, real-time test of oocyte quality, applicable to assisted conception treatments, that does no harm to the oocyte itself	W
Fetal health	Detection of early changes in fetal EEG due to asphyxia with acidemia during labour	· correlating the patterns of electroencephalogram (EEG) and fetal heart rate signals	L
Gastric	Probiotics as modulators of gastric acid secretion	· a suppressant/modulator of gastric acid secretion that will provide better control of symptoms of acid related diseases or where acid is a contributing factor in pathophysiology.	M

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Imaging	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
Skeletal	Treating periprosthetic fractures of the femur	· 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
Stem Cells	Novel strategy in manipulation of stem cell fate specification	· 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 siRNA-containing organ storage and reperfusion solution could be used in transplantation. It contains 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
Wound Healing	Inhibition of scar formation in wound healing and internal organ fibrosis	A treatment to prevent excessive fibroplasias during wound healing and thus prevent scar formation.	M

Veterinary and Agriculture

Technology

Market Opportunity

Enviropig	· Pigs with the ability to utilize efficiently phytate phosphorus (P) that is present in plant feed ingredients · Reduce environmental impact of hog farming	G
Genetic methods to reduce boar taint in entire male pigs	· Increased feed efficiency · Reduced need for castration · Improved pork taste	G
Vaccine for necrotic enteritis in poultry	· effective at protecting chickens against both moderate and severe challenge by <i>C. perfringens</i> infection	G

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Reagentless biosensor to detect Mycotoxins	This reagentless sensor can detect mycotoxins in mould contaminated crops. It is based on exploiting the strong electrophilic nature of mycotoxins to effect an electrochemical change on a conducting polymer.	G
Recombinant omega-3 fatty acids	Omega-3 fatty acids, in particular EPA and DHA, are highly sought for their wide range of physiological and clinical effects. These bacterial genes are capable of generating recombinant EPA and DHA in a variety of bacterial species.	G
Mint plant with anti-inflammatory properties	This plant is inexpensive, source of rosmarinic acid for use as a food antioxidant. In addition, in vivo horse trials are underway using a tea made from the mint for the treatment of inflammation.	G
Diagnostic marker for hemangiosarcoma in dogs	Hemangiosarcoma is an incurable and common form of cancer in dogs older than six years. Approximately 1 in 30 dogs will develop HSA. It is almost impossible to detect it during early development using traditional diagnostic tools.	G
Campylobacter vaccine	<i>Campylobacter spp.</i> is a common foodborne pathogen. This vaccine is in development for use in humans, and has had success in primates in pre-clinical studies (published). It also has potential veterinary uses.	G
Novel antigen for avian influenza vaccines	A novel antigen on the hemagglutinin of H5 Avian Influenza Virus which can be used to improve the protection of avian influenza vaccines for poultry.	G
Enhanced growth and survival of embryos for aquaculture	A new method to treat fish embryos to increase their rate of growth and development. This method can also be modified to screen compounds that have positive or negative effects on embryo development.	G
Inducible plant promoters	Plant promoters from alfalfa that are strongly inducible by harvest or by some hormones. Can be useful in plants or in tissue culture. Possible use in energy or fiber crops.	G