CTTC
Center for Technology Transfer & Commercialization

Vanderbilt University

RESEARCH TOOLS

Catalogue

ANTIBODIES

Target	Description	Tech ID
ARF(p19)	Anti-p19 ARF antibody	VU0433
ARVCF	Anti-Armadillo repeat gene deleted in velo-cardiofacial syndrome monoclonal antibody	VU0002
c-Myc	Anti-MYC Phospho-T244 Rabbit Polyclonal Antibody	VU15176
FAK	Focal adhesion kinase polyclonal antisera	VU0123
FSP1	Anti-Fibroblast Specific Protein 1 rabbit polyclonal antibody	VU1013
Kaiso	Anti-Kaiso mouse monoclonal antibody	VU0223
LAT-1	Anti-human Large Neutral Amino Acid Transporter rabbit polyclonal antibody	VU0563
Myc	Myc antigens	VU9953
Pdx-1	Anti-mouse Pancreatic and Duodenal Homeobox Gene-1 rabbit polyclonal antibody	VU0775
Rab25	Anti-rabbit Rab25 mouse monoclonal antibody	VU1110
TcdA	Anti-Clostridium difficile Toxin A (c-terminal) mouse monoclonal antibody	VU1060

HUMAN ANTIBODIES

Target	Description	Tech ID
Poxviruses	Human monoclonal antibodies to poxviruses	VU14137
HIV	Human Monoclonal Antibodies that Neutralize HIV	VU15008
Dengue Virus	Human monoclonal antibodies to Dengue Virus. Dengue antibodies clones: 1F4, 2D22, 5J7 & 1C19	VU14177
Hepatitis C	Human Monoclonal Antibodies to Hepatitis C Viruses	VU15011
Noroviruses	Human Monoclonal Antibodies to Noroviruses	VU15009
RSV and MPV	Human Monoclonal Antibodies to Paramyxoviruses (RSV, MPV or Both)	VU15006
Rift Valley Fever Virus	Human Monoclonal Antibodies to Rift Valley Fever Virus	VU15010
Influenza	Human Monoclonal Antibodies to Unusual Influenza Strains	VU15007

ANIMAL MODELS

Target	Description	Tech ID
anti-insulin B cells	These mice provide a means to detect the presence of anti-insulin B cells in type 1 diabetes	VU15160
CHT	Mouse Model for Cardiovascular/Autonomic Disorders	VU08110
CK19	Mice with inducible Cre-ERt replacing Cytokeratin 19 coding region	VU0989
DP1	Floxed Prostaglandin D2 receptor alleles	VU0690
eNOS	Endotheal nitric oxide synthase null mice (db/db background)	VU0984
EP2	Prostaglandin E receptor-2 EP2 null mice on C57BL/6 background	VU9914
EP4	Prostaglandin E2 receptor 4 liver and kidney specific knockout mice	VU0650
GluN2B	This GluN2B floxed mouse (also called NR2B, glutamate receptor 2B) allows for targeted deletion of the GluN2B subunit of NMDA receptors in specific cells or at specific times during development, juvenile, or adult stages. C57BL6/J background	VU14117
HB-EGF	Pancreas specific trangenic mice overexpressing either transmembrane Heparin-binding EGF-like growth factor or secreted HB-EGF	VU1192
human-SC-N5A	Mice Expressing Homozygous Human SCN5A (the canonical Cardiac Sodium Channel) for the Study of Long QT Syndrome, on a C57 and 129sv background	VU15066
INS1	Insulin promoter driven insulin-luciferase transgenic mouse (CD-1 background)	VU06118
Ins2	Insulin 2-Akita heterozygous mice (DBA/2J strain)	VU0792
KCC2b (Slc12a5)	KCC2b (Slc12a5) global knockout heterozygous mice on a C57BL/6J background. The Slc12a5 gene has alternative promoters which produce isoforms starting with exon 1a (5-10% total expression) and exon 1b (90-95% expression). Since exon 1b was targeted, the mouse is not a global KO of KCC2 but a hypomorphic mouse, still expressing 5-10% protein. It is a global KCC2b KO mouse. Heterozygous animals develop spontaneous seizures in cages. This increases with age. Their brain is hyperexcitable. Homozygous	VU15017
minK	Potassium voltage-gated channel subfamily E member 1 null mice	VU0012
NF1	Neurofibromatosis Type 1 Mouse Model	VU13078
PCSK9	These mice express human proprotein convertase subtilisin/kexin type 9 (PCSK9), a protein that controls plasma cholesterol levels. C57BL/6 background	VU13072

ANIMAL MODELS (CONT.)

Target	Description	Tech ID
PDX	PDX-lacZ knock-in mouse	VU9847
PERK	Floxed Endoplasmic Reticulum Kinase (Perk) mice	VU11135
Renin/ Angiotensin	This mouse model for inducible hypertension was created by cloning the cytochrome p4501A1 promoter upstream of renin2, followed by an internal ribosome entry site, and the mouse angiotensin gene. Inducible by IC3. C57Bl/6 background	VU15021
Scn1a	This is a unique genetically modified strain that models Dravet syndrome, a severe infant-onset epileptic encephalopathy. They are maintained on a pure 129S6/SvEvTac genetic background to facilitate genetic studies	VU15070
SERT	Tissue specific expression of Serotonin Transporter in transgenic mouse	VU0906
Slc5a7	A Bacterial Artificial Chromosome (BAC) containing the mouse choline transporter Slc5a7 gene was used to make transgenic mice. Mice show elevated choline transporter and acetylcholine levels and increased treadmill endurance	VU15068
Sox10	This mouse line drives HIGH levels of Cre throughout the timecourse of development from the earliest initiation of Sox10 expression and appears to label all neural crest derivatives. Moreover because the transgene is driven by Sox10 regulatory regions its expression can be restricted in a cell type specific manner to neural crest stem cell progenitors, glial cells, melanocytes or neuroendocrine cells of adrenal. C3HeB/FeJ background	VU14070
Sox10, tamoxifen-regulated	This mouse line permits temporal control of Cre action. Most lines have Cre expression that is always on. In this case by the addition of tamoxifen one can control when Cre acts. Moreover because the transgene is driven by SoxlO regulatory regions its expression can be restricted in a cell type specific manner to neural crest stem cell progenitors, glial cells, melanocytes or neuroendocrine cells of adrenal	VU14071
SVCT2	This sodium-ascorbate co-transporter 2 (SVCT2) transgenic mouse model allows one to selectively increase intracellular vitamin C, which is otherwise tightly restricted. C57BL/6 background	VU14003

PROTEIN AND PEPTIDES

Target	Description	Tech ID
Calprotectin	Recombinant heterodimers of S100A8/S100A9 (calprotectin) with biological activity	VU13038
PKA, PKG	Purified bovine cAMP and cGMP dependant protein kinases	VU9837
Staphylocoagulase	Purified staphylocoagulase fragment (1-325)	VU0923

IMAGING

Target	Description	Tech ID
"Click" chemistry background reduction agent	"Click" chemistry background reduction agent	VU13087
Cerulean	Variants of Cyan Fluorescent Protein with Improved Fluorescent Properties	VU0427
Label for Glycans Including Chondroitin Sulfate	Chemical analogs of N-acetylgalactosamine enable researchers to track the biosynthesis of chondroitin sulfate along with other glycans. Incorporation of these metabolic labeling reagents enable tracking of neurodevelopmental processes in a zebrafish model system. Notably, the metabolic label can be detected post vivo using a standard "click" chemistry reaction	VU13064
Near-Infrared Dye	Fluorescent labels having near-infrared (NIR) emission wavelengths have the ability to penetrate tissue deeper than other emission wavelengths, providing enormous potential for non-invasive imaging applications. This novel NIR dye (4-Sulfonir) for multichannel imaging enables in vivo imaging of multiple targets due to its large Stokes shift. 4-Sulfonir with its unique large Stokes shift and wide excitation spectrum could be used in parallel with other NIR dyes for imaging two molecular events simultaneously in one target	VU0784

CELL LINES

Target	Description	Tech ID
Anti-estrogen resistance in breast cancer	These are MCF-7, MDA361, HCC1428 and ZR751 human breast cancer cells lines adapted to become hormone independent after prolonged maintenance in culture in estrogen-free conditions. They are extensively characterized as described in Miller et al. (J Clin Invest 120:2406-13, 2010; Cancer Discovery 1:338-51, 2011)	VU13037
ClC-1	HEK-293 cells with stable expression of human skeletal muscle chloride channel	VU0416
HCC2429	HCC2429 human lung cancer cell line	VU11126
HDAC-3	MEF cell line derived from histone deacetylase-3 conditional knockout mice	VU0836
HERG	CHO-K1 cells with stable expression of human heart potassium channel. This cell line has robust and very consistent cell-to-cell HERG activity without detectable endogenous ionic currents, making it ideal to use in preclinical drug screening	VU0918
HPET	Human prostate epithelial/hTERT(HPET 1,5,11,13) cell lines derived from patient tumors	VU07102
Human sodium channel beta 1 and beta 2 subunits	HEK-293 cell line stably expressing human sodium channel beta 1 and beta 2 subunits. This cell line expresses the two human sodium channel accessory subunits needed for robust expression of sodium channel protein	VU14113
Immortalized mouse epididymal cell lines	These cell lines were derived from transgenic mice overexpressing temperature sensitive simian virus 40 large T-antigen gene. Useful for studying the regulation of tissue-specific gene expression. May be used to identify epididymal-specific transcription factors involved in expression of specific proteins in the epididymis. Cell line PC1 is from proximal caput, DC1, DC2, and DC3 cell lines are from the distal caput	VU14144
KCC2	HEK-293 cell line overexpressing neuronal potassium chloride co-transporter	VU1002
Nav1.1	Cell line with stable expression of mutant human voltage gated sodium channel 1.1 (R1648H)	VU12015
Nav1.1	HEK cells with stable expression of human brain sodium channel Nav1.1 and subunits SCN1A, 1B & 2B. The cells are valuable for drug screening for CNS acting drugs and as a negative control for PNS acting drugs	VU1006
Nav1.2	Cell line with stable expression of human sodium channel Nav1.2, SCN1B, and SCN2B	VU1102
Nav1.3	HEK-293 cells with stable expression of human sodium channel Nav1.3, and SNC1B, SCN2B accessory subunits	VU11154
Nav1.4	Rat voltage-gated sodium channel protein type 4 alpha cDNA and stable cell line	VU12167

CELL LINES (CONT.)

Target	Description	Tech ID
Nav1.5	HEK-293 with stable expression of human sodium channel Nav1.5	VU0459
NET	HEK293 cell line expressing human norepinephrine transporter proteins	VU05103
Prostate cancer	Primary human fibroblasts derived from prostate cancer tissue and normal tissue	VU12017
ROSA-26	Mouse embryonic stem cells with floxed ROSA-26 gene	VU1140
SERT	HEK293 cell line with stable expression of drosophila serotonin re-uptake transporter	VU9714
SERT	HEK-293 cells stably-Transfected with Human Serotonin Transporter (hSERT)	VU14139
SkM1	HEK-293 cells with stable expression of human skeletal muscle sodium channel-1	VU0415
VDJ recombinase	B53 CHO cell line with inducible VDJ recombinase expression	VU03101
CIC-4	HEK-293 cells with stable expression of human chloride channel-4. The cells enable high throughput screening of compounds that modulate chloride channel activity	VU0414

SCREENING ASSAYS

Target	Description	Tech ID
Cell Cycle	Screening assay for molecules that alter cell cycle rhythm	VU10127
Respiratory Syncytial Virus	Luciferase reporter system for detection of RSV in vitro and in vivo	VU0894

NUCLEIC ACIDS AND PLASMIDS

Target	Description	Tech ID
Immunoglobin	This vector provides for stoichiometric expression of the heavy and light chains of IgG antibodies from one transcript for increased yields in mammalian cell antibody production	VU15109
Nav 1.5	Mammalian expression plasmids encoding mutant human voltage-gated sodium channel (NaV1.5) cDNA for use in heterologous expression studies. The plasmids encode versions of NaV1.5 with specific mutations identified in patients with congenital long-QT syndrome type 3 (LQT3 mutations)	VU14112
SCN1A	Heterologous expression systems for recombinant expression of human SCN1A polypeptides	VU0186

MASS SPECTROMETRY TOOLS

Target	Description	Tech ID
Hydrolytic surfactant for simplified mass spectrometry protein sample preparation	This surfactant agent extracts and solubilizes hydrophobic or other non-soluble proteins from a tissue or cell populations. The agent decreases sample preparation steps for the mass spectrometry or chromatography as it is readily hydrolyzed into non-surfactant molecules by a changes in pH, thus it does not require additional steps for removal	VU0159
Imaging mass spec sample preparation reagent	Polymeric gel to extract proteins and preserve their location in tissue sections	VU12134
Molecular Image Fusion software	Molecular Image Fusion is a software framework that can predict ion distributions in tissue. It accomplishes this by fusing data from two distinct technologies: imaging mass spectrometry (IMS) and microscopy	VU12169
Click Reagents	A number of sterols have been created and tested as surrogates for naturally occurring fatty acids or for adduction to proteins. They contain an alkyne tag which allows click chemistry to be used in conjunction with the biotin reagents for visualization and/or isolation of the adducted proteins	VU15031

RESEARCH USE SOFTWARE

The following software solutions are available at our e-commerce site, *VU-eInnovations:*

BCL::Commons™ (also known as the BioChemistry Library Project) is an object oriented C++ programming library. The library is designed to simulate biological molecules – proteins and peptides in particular – as well as small chemicals such as therapeutics. It comprises mathematical methods to evaluate the energy of these molecules in their natural environment.

The MFA Suite™ (Metabolic Flux Analysis Suite) is a software toolkit providing a powerful approach for quantifying the rates, or "fluxes", of intracellular metabolic pathways. The information generated from the MFA Suite of tools is useful for identifying pathway bottlenecks, elucidating network regulation, and quantifying the flow or fate of carbon within a biological system.

TagDock is an efficient rigid body molecular docking algorithm that generates three-dimensional models of oligomeric biomolecular complexes in instances where there is limited experimental restraint data to guide the docking calculations. Through "distance difference analysis" TagDock additionally recommends follow up experiments to further discriminate divergent (score-degenerate) clusters of TagDock's initial solution models.

Molecular Image Fusion: The Molecular Image Fusion system is a software framework that can predict ion distributions in tissue. It accomplishes this by fusing data from two distinct technologies: imaging mass spectrometry (IMS) and microscopy. IMS-generated molecular maps, rich in chemical information but having coarse spatial resolution, are combined with optical microscopy maps, which have relatively low chemical specificity but high spatial information.

The following software solutions are available for license by contacting our office:

Gene Expression Model Selector (GEMS): Gene Expression Model Selector (GEMS) is a system that constructs, in a supervised fashion, diagnostic and outcome prediction models from array gene expression data. Examples of such models are:
- models that detect cancer
- models that determine the correct subtype of cancer
- models that predict survival after treatment

Finally, GEMS provides estimates of the models' performance (e.g., accuracy) in future applications (i.e., when applied on patients not used to build the models but who come from the same patient population as the ones used to build the models), and allows users to run the models for individual patients.

For more information on any of the research tools in this catalogue, please contact CTTC@vanderbilt.edu or view our other technology portfolios here.