Current portfolio as of 090712

CURRENT CIRM TRANSLATIONAL PORTFOLIO

CANCER: HEMATOLOGIC MALIGNANCY				
AWARD #	**PROGRAM**	**GOAL***	**DISEASE/INJURY**	**APPROACH**
DR1-01430	Disease Team I	IND	AML, CLL	A monoclonal antibody (anti-ROR1) and a small molecule (JAK2 inhibitor) tageting CLL and AML cancer stem cells,respectively
DR1-01485	Disease Team I	IND	AML	Monoclonal antibody against CD47 – "Don't eat me" antigen that is expressed on leukemia stem cells and inhibits their phagocytosis by macrophages
TR2-01789	Early Translation II	DC	CML	Small molecule pan BCL-2 inhibitor targeting cancer stem cells
TR2-01816	Early Translation II	DC	AML, ALL	Small molecule inhibitor of BCL6 targeting cancer stem cells
CANCER: SOLID TUMORS				
AWARD #	**PROGRAM**	**GOAL***	**DISEASE/INJURY**	**APPROACH**
DR2-05309	Disease Team Therapy Development	IND, Ph I	Melanoma	Autologous HSC genetically modified to produce an anti-tumor T cell receptor and a PET reporter gene
DR1-01477	Disease Team I	IND	Colon, ovarian cancers, glioblastoma	Small molecules specific for each of two drug targets in cancer stem cells
DR1-01421	Disease Team I	IND	Glioblastoma	Allogeneic hNSC line to target tumor, engineered ex vivo to deliver carboxylesterase to locally convert CPT-11 to more potent SN-38
TR2-01791	Early Translation II	DC	Glioblastoma	Tumor homing by hMSC genetically engineered to produce replication competent retrovirus encoding a suicide gene
TR3-05641	Early Translation III	DC	Glioblastoma	A mixture of autologous central memory T cells engineered to each express a chimeric antigen receptor (CAR) targeting one of three proteins on glioma-initiating cancer stem cells
NEUROLOGIC DISORDERS: INJURY				
AWARD #	**PROGRAM**	**GOAL***	**DISEASE/INJURY**	**APPROACH**
DR1-01480	Disease Team I	IND	Stroke	Allogeneic hESC-derived NSC line alone or in combination with matrix
DR2-05736	Disease Team Therapy Development	IND	Spinal Cord Injury (cervical)	Allogeneic neural stem cells
TR3-05628	Early Translation III	DC	Spinal Cord Injury	hESC-derived neural stem cells in a scaffold
TR3-05606	Early Translation III	DCF	Spinal Cord Injury	hESC-derived inhibitory interneurons
TR2-01767	Early Translation II	DCF	Traumatic Brain Injury	Allogeneic hESC-derived NSC
TR2-01785	Early Translation II	DCF	Spinal Cord Injury (conus medullaris, cauda equina)	hESC-derived motor and autonomic precursor neurons
NEUROLOGIC DISORDERS: NEURODEGENERATIVE DISEASE				
AWARD #	**PROGRAM**	**GOAL***	**DISEASE/INJURY**	**APPROACH**
DR2-05320	Disease Team Therapy Development	IND, Ph I	ALS	Allogeneic neural progenitor cells genetically modified with GDNF
DR2-05416	Disease Team Therapy Development	IND	Alzheimer's Disease	Neural stem cell transplantation for neuroprotection
DR2-05415	Disease Team Therapy Development	IND, Ph I	Huntington's Disease	MSC genetically engineered to express BDNF
DR1-01471	Disease Team I	IND	ALS	Allogeneic hESC-derived astrocyte precursors delivered into spinal cord (delivery device)
TR1-01245	Early Translation I	DC	Alzheimer's Disease	Allogeneic hESC-derived NSC or hESC-derived NSC genetically modified with a beta-amyloid degrading enzyme or a transcription factor that promotes neuronal differentiation for transplantation
TR1-01257	Early Translation I	DC	Huntington's Disease	Allogeneic hMSC engineered ex vivo to express siRNA targeting mutant huntingtin mRNA. Injected intracranially
TR2-01841	Early Translation II	DC	Huntington's Disease	Allogeneic hESC-derived neural stem or progenitor cells for transplantation
TR1-01267	Early Translation I	DC	Parkinson's Disease	The best of either hNSC derived from tissue, ESC, or iPSC or hVM (ventral mesencephalon) precursors derived from ESC, NSC or tissue
TR2-01856	Early Translation II	DC	Parkinson's Disease	Allogeneic hPSC-derived dopaminergic neurons
TR3-05603	Early Translation III	DC	Autoimmune Disease / Multiple Sclerosis	Human pluripotent stem cell-derived neural progenitor cells
TR3-05617	Early Translation III	DC	Autoimmune Disease / Multiple Sclerosis	Small molecule that acts on oligodendrocyte precursors in the CNS to induce differentiation to oligodendrocytes to stimulate remyelination
TR3-05676	Early Translation III	DCF	ALS	Small molecule that corrects proposed aberrant RNA "signature" in iPSC- derived neurons from patients with defects in RNA processing
TR3-05577	Early Translation III	DCF	Alzheimer's Disease	Small molecule identified through screens on purified hiPSC-derived brain cells from patients that have rare and aggressive hereditary forms of Alzheimer's Disease
TR3-05669	Early Translation III	DCF	Alzheimer's Disease	Small molecule for neuroprotection & neurogenesis identified using hESC-derived neural precursors
TR2-01778	Early Translation II	DCF	Parkinson's Disease	Small molecule modulator of neuroinflammation identified by screening on astrocytes/microglial from patient derived iPSC

NEUROLOGIC DISORDERS: PEDIATRIC				
AWARD # / *APPLICATION #*	**PROGRAM**	**GOAL***	**DISEASE/INJURY**	**APPROACH**
TR2-01844	Early Translation II	DC	Spinal Muscular Atrophy	Small molecule that increases SMN1 gene product in patient iPSC-derived motor neurons
TR2-01832	Early Translation II	DCF	Canavan Disease	Autologous iPSC-derived neural or oligodendrocyte progenitors, genetically modifed to correct mutant aspartoacylase (ASPA) gene
TR2-01814	Early Translation II	DCF	Autism Spectrum Disorder (ASD)	Neurons from ASD (and control) iPSC for phenotype screening, assay development and validation, drug screening and biomarker identification
TR2-01749	Early Translation II	DCF	Refractory epilepsy	hESC-derived progenitors of GABAergic inhibitory neurons analogous to those in medial ganglionic eminence
TR3-05476	Early Translation III	DC	Lysosomal Storage Disease	Immune matched human neural stem cells transplantation subsequent to hematopoietic stem cell transplantation
EYE DISEASE				
AWARD #	**PROGRAM**	**GOAL***	**DISEASE/INJURY**	**APPROACH**
DR2-05739	Disease Team Therapy Development	IND, Ph I/IIa	Retinitis Pigmentosa	Allogenic retinal progenitor cells (DC from TR2-01794)
DR1-01444	Disease Team I	IND	Age-related macular degeneration (dry form)	Allogeneic functionally polarized hESC-derived RPE monolayers on synthetic substrate implanted sub-retinally
TR1-01219	Early Translation I	DC	Age-related macular degeneration (dry form)	Autologous iPSC-derived RPE (generated without integrating vectors)
TR1-01272	Early Translation I	DC	Age-related macular degeneration (dry form)	Autologous adult SC (CMZ) or iPSC-derived RPE +/- ex vivo engineering to express negative regulators of complement cascade
TR2-01794	Early Translation II	DC	Retinitis Pigmentosa	Allogenic retinal progenitor cells
TR2-01768	Early Translation II	DCF	Corneal Injury	Ex vivo expansion of corneal epithelial stem/progenitor cells, also known as limbal stem cells
HIV/AIDS				
AWARD #	**PROGRAM**	**GOAL***	**DISEASE/INJURY**	**APPROACH**
DR1-01431	Disease Team I	IND	AIDS Lymphoma	Autologous HSC transduced ex vivo with a lentiviral vector engineered to express an shRNA against CCR5 & a fusion inhibitor. IV administration after myeloablation
DR1-01490	Disease Team I	IND	AIDS Lymphoma	Autologous HSC transduced ex vivo with non-integrating vector engineered to express a zinc finger nuclease targeting CCR5. IV administration after myeloablation
TR2-01771	Early Translation II	DC	AIDS Lymphoma	Autologous HSC genetically modified with multiple anti-HIV resistance genes and a drug resistance gene
DIABETES & COMPLICATIONS				
AWARD #	**PROGRAM**	**GOAL***	**DISEASE/INJURY**	**APPROACH**
DR1-01423	Disease Team I	IND	Diabetes: Type 1	Allogeneic hESC-derived pancreatic cell progenitors in a device implanted subcutaneously that matures in vivo to beta cells that secrete insulin in response to glucose. Transient immunosuppression
TR2-01787	Early Translation II	DC	Chronic Diabetic foot ulcers	Allogenic hMSC on a dermal regeneration scaffold
BLOOD DISORDERS				
AWARD #	**PROGRAM**	**GOAL***	**DISEASE/INJURY**	**APPROACH**
DR2-05365	Disease Team Therapy Development	IND, Ph I/II	Conditioning regimen for allogeneic HSC transplantation for X-SCID	MAb that depletes endogenous HSC
DR1-01452	Disease Team I	IND	Sickle Cell Disease	Autologous HSC, genetically corrected ex vivo by lentiviral vector mediated addition of a hemoglobin gene that blocks sickling. IV administration after myeloablation
TR1-01273	Early Translation I	DC	Fanconi Anemia, XSCID	Autologous iPSC-derived HSC genetically corrected by homologous recombination
TR3-05535	Early Translation III	DC	SCID-A	Autologous HSC genetically corrected ex vivo by lentiviral vector mediated delivery of the Artemis gene
BONE DISORDERS				
AWARD #	**PROGRAM**	**GOAL***	**DISEASE/INJURY**	**APPROACH**
DR2-05302	Disease Team Therapy Development	IND, Ph I/II	Osteoporosis	Synthetic molecule, LLP2A-Ale, to enhance homing of endogenous bone marrow MSCs to bone surface
TR2-01821	Early Translation II	DC	Spinal fusion	Autologous adult perivascular stem cells and an osteoinductive protein on a FDA-approved acellular scaffold
TR2-01780	Early Translation II	DCF	Osteoporosis-related vertebral compression fractures	MSC in combination with PTH (parathyroid hormone)

CARTILAGE DISORDERS				
AWARD #	**PROGRAM**	**GOAL***	**DISEASE/INJURY**	**APPROACH**
TR1-01216	Early Translation I	DC	Focal cartilage defect, osteoarthritis	iPSC- or ESC-derived chrondrocyte progenitors implanted into chrondral defect or injected into OA joint
TR2-01829	Early Translation II	DC	Osteoarthritis	Optimized small molecule of lead molecule PRO1 that induces chrondrocyte differentiation of resident hMSC
TR3-05709	Early Translation III	DCF	Articular cartilage defects	Autologous adult (dermis isolated) stem cell-derived tissue engineered product
CARDIOVASCULAR DISEASE				
AWARD #	**PROGRAM**	**GOAL***	**DISEASE/INJURY**	**APPROACH**
DR2-05735	Disease Team Therapy Development	Ph II	Heart dysfunction after MI/Chronic heart failure	Allogeneic cardiac-derived stem cells following large myocardial infarctions (MI)
DR2-05423	Disease Team Therapy Development	IND, Ph I	Critical limb ischemia	Allogeneic MSC engineered to express VEGF delivered by intramuscular injection
DR1-01461	Disease Team I	IND	Heart dysfunction after MI/Chronic heart failure	Allogeneic cardiac-derived stem cells following large myocardial infarctions (MI)
DR2-05394	Disease Team Therapy Development	IND	End stage heart failure with LVAD	Allogeneic hESC-derived cardiomyocytes
TR3-05556	Early Translation III	DC	Cardiovascular Disease	hESC-derived cardiomyocytes seeded in a tissue engineered patch
TR3-05593	Early Translation III	DC	Cardiovascular Disease	Direct reprogramming of endogenous cardiac fibroblasts into functional cardiomyocytes by gene transfer
TR3-05626	Early Translation III	DC	Cardiovascular Disease	Allogeneic human bone marrow-derived MSCs embedded in a biological scaffold
TR3-05559	Early Translation III	DCF	Cardiovascular Disease	hESC-derived cardiomyocytes genetically modified to evade allogeneic immune rejection
TR3-05568	Early Translation III	DCF	Cardiovascular Disease	Multipotent vascular progenitors derived by direct conversion of somatic cells
TR3-05687	Early Translation III	DCF	Cardiovascular Disease - Danon disease	Small molecule leads identified by correction of autophagy on Danon patient iPSC-derived lines
LIVER DISEASE				
AWARD #	**PROGRAM**	**GOAL***	**DISEASE/INJURY**	**APPROACH**
TR2-01857	Early Translation II	DC	Liver Disease (acute liver failure and as a bridge following large liver resections)	Allogeneic genetically modified hESC-derived hepatocytes
TR3-05488	Early Translation III	DCF	Liver Disease, Congenital	Human amniotic epithelial cell-derived hepatic cells
TR3-05542	Early Translation III	DCF	Liver Disease, Chronic	Human induced hepatocyte-like cells
SKELETAL MUSCLE DISORDERS				
AWARD #	**PROGRAM**	**GOAL***	**DISEASE/INJURY**	**APPROACH**
DR2-05426▼	Disease Team Therapy Development▼	DC	Duchenne muscular dystrophy	Combination therapy of an antisense oligonucleotide that promotes exon skipping and a drug that enhances its efficiency
TR2-01756	Early Translation II	DCF	Duchenne muscular dystrophy	Autologous skeletal muscle precursor cells derived from human iPSC genetically modifed to correct the dystrophin gene
TR3-05501	Early Translation III	DCF	Age-related Muscle Atrophy	Autologous human muscle stem cells rejuvenated and expanded ex vivo using a combined bioengineering and small molecule treatment
OTHER DISORDERS				
AWARD #	**PROGRAM**	**GOAL***	**DISEASE/INJURY**	**APPROACH**
DR1-01454	Disease Team I	IND	Skin Disease: Epidermolysis bullosa	Epidermal sheets from expanded autologous genetically corrected (to express wild type COL7A1) iPSC-derived keratinocytes
TR1-01249	Early Translation I	DC	Multiple: Bone fractures, wound healing, heart disease, stroke	Recombinant Wnt in a sustained release formulation to stimulate endogenous stem cells to repair tissue
TR3-05569	Early Translation III	DC	Urinary Incontinence	Autologous iPSC-derived smooth muscle precursor cells and smooth muscle cells, potentially delivered in a matrix

***The Project Goal is:**

IND - file a complete IND with the FDA

DC - achieve a development candidate ready for IND-enabling preclinical development

DCF - show feasibility of a potential development candidate by achieving initial proof of concept

▼ = Indicates grant was converted from a Disease Team Therapy Development award into an Early Translation award