

Biomedical Technologies – Animal Health



**TECHNOLOGY
MANAGEMENT**

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	Indication	Target	Therapeutic Description	Stage of Development	Patents	Faculty
Oncology/ Angiogenesis	Oncology	BET Bromodomain Inhibitors	BET proteins are involved in transcriptional and cell cycle regulation.	In vitro data characterized but awaiting in vivo validation.	Provisional application	Greg Thatcher & Rui Xiong
	Melanoma, Mantle Cell Lymphoma	Epigenetics: HDAC	Highly potent selective HDAC6 Inhibitors	Nexturastat series is the most advanced oncology validated HDAC inhibitor confirmed in melanoma animal models	Patents Pending	Alan Kozikowski
Neurology	Charcot Marie Tooth (CMT), Autism, Neuroprotection	HDAC6	Nanomolar inhibitors of HDAC6 highly selective over other HDACs	Compounds were dosed into transgenic models of CMT and successfully blunted the disease in a transgenic animal model	1 - US Patent 10,227,295; 2 - pending; 3 - pending	Alan Kozikowski
	Parkinson's, Other Synucleinopathies	Protein Kinase C or Src-Family Tyrosine Kinase	Utilized a demonstrator compound inhibitors of protein kinase C mu and Src family tyrosine kinase	Early stage in vitro studies	US Patent 8,618,063	Scott Brady
	Schizophrenia, Autism, Addiction	Human 5HT2c; Serotonin Receptor	Compounds with superior safety and efficacy profile over FDA approved molecule; target is highly validated. These compounds may induce weight loss.	Compounds were characterized for preclinical assessment safety and PK profiling package, and are being evaluated for other CNS indications	US Patents 8,492,591 8,754,132	Alan Kozikowski
Metabolic	Type 1 Diabetes	Antigen specific regulatory T-cells	Bispecific antibody targeted to GLUT2 and CTLA4	Validated in NOD diabetes mouse model	US Patents 8,822,649 9,221,911 10,072,081	Bellur Prabhakar
	Obesity	Human 5HT2c Serotonin Receptor	Compounds with superior safety profile over Lorcaserin (a FDA approved weight loss drug by Arena) and excellent efficacy against target receptor	Compounds were thoroughly characterized for preclinical assessment safety and PK profiling package, and are being evaluated for other CNS indications	US Patents 8,492,591, 8,754,132	Alan Kozikowski
Cardio-Pulmonary	Thrombosis, sepsis	Von Willebrand factor	Inhibitory peptide	In vitro and early in vivo studies	US Patent 9,796,757	Richard Minshall

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Anti-Infectives	TB	Multiple	Macrolides and small molecule antibiotics	In vitro validation	US Patent 9,090,667 CH, JP, KR, EP Patents Pending	Scott Franzblau
	TB and Cystic Fibrosis Pathogens	Multiple	Small molecule therapeutics	Animal data available for best lead molecule against XDR and MDR TB	PCT converted	Alan Kozikowski William Bishai Laurent Kremer
	Ebola	Ebola virus	Small molecule anti-virals	In vitro validation	Provisional filed	Rui Xiong, Lijun Rong, Irina Gaisina
	HIV	Reverse Transcriptase	Novel compounds from natural sources that inhibit HIV viral replication	Validated in viral assays	US Patent Pending UK, EP and GE Patents Issued IIA-UIC not lead	Lijun Rong Djaja Soejarto HongJie Zhang
	Dental Caries/Biofilm inhibition	Bacterial pathogens that produce a biofilm matrix	Cerium (IV) nanoparticles that behave as biofilm inhibitors against the bacteria but not lethal to the cells at lower concentration.	Early stage, in vitro validation and cell toxicity evaluation	US Patent Pending	Russell Pesavento
Immunology	Asthma, Eosinophilic Esophagitis	CCR3, eosinophils	Peptide therapeutic to compete against Eotaxin and other chemokines as a treatment for asthma	In vivo experiments in eosinophil mouse model	Patent Pending US, EP, CA	Steven Ackerman & Vadim Gaponenko
	Rheumatoid Arthritis	TLR5	Human mAb that targets TLR5 to effectively alleviate joint swelling and bone destruction	Ex-vivo data in human synovial fluid and RA mouse model	Provisional Application	Shiva Shahrara
	Rheumatoid Arthritis, Inflammatory Bowel Disease, Ulcerative colitis	Epigenetics: HDAC6	HDAC6 Selective Inhibitors: nanomolar and sub nanomolar inhibitors of HDAC6	Potent HDAC6 inhibitors successfully prevented cardiac organ transplant rejection in rodent model; also prevented experimentally induced ulcerative colitis in rodents	Patents Pending	Alan Kozikowski

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Ophthalmology	Dry eye, retinopathy, angiogenesis	VEGF Activation	Fusion peptide inhibitor based on Histaminesm. Applications in wound healing, metal ion chelation, anti-inflammatory effects and angiogenesis	In vitro data, In vivo data in mouse	PCT Patent Pending	Vinay Aakalu
	DNAase	Dry eye disease	Tear deficient dry eye disease	Phase I/II human clinical trial completed	Nationalized PCT Issued US 9,867,871	Sandeep Jain
	Reporposed FDA approved therateutic	Dry eye disease	Novel Target in Eye	Investigator initiated IND	Provisional filed	Sandeep Jain
	Corneal Scarring, Ocular Angiogenesis	PAX 6	MEK inhibitors can limit the corneal scarring, opacification and neovascularization in severe corneal injury and disease	in vivo murine model	Provisional filed	Ali Djalilian
Drug Delivery	Drug Delivery	Non-specific	FDA-approved biomaterials employed in proprietary micelle nano-particle	Very extensive animal validation	Provisional filed	Hayat Onyuksel
	Drug Delivery	HSV-1 and HSV-2	DECON particles	In vivo mouse data	Provisional filed	Deepak Shukla Teja Yadavalli
	Drug Delivery	Non-specific	Toroidal-spiral design allows for two different drugs to be released at two different rates	No animal data to date	US Patents 8,852,645 9,974,839	Ludwig Nitsche Ying Liu
	Drug Delivery	Non-specific	Nano-hybrid delivery system for anticancer, anti-viral and anti-angiogenic agents	No animal data to date	US Patent 9,168,225	Seungpyo Hong
	Drug Delivery	Varies	In vivo bioengineered exosome to create function/target specific and content release controlled exosome cargo	Preliminary proof of concept in rat calvarial defect model	PCT Patent Pending	Sriram Ravindran