Advancing USF Innovation

Therapeutics

Oncology
Drug Delivery
Antimicrobials
Diagnostics
The Technology Transfer Office (TTO) was established in 1990 to facilitate the commercialization of university intellectual property, including patents and copyrights.

The TTO works with researchers and students in every college to ready new inventions for the patenting process and potential licensing opportunities. TTO’s work allows for a sustained focus on transferring cutting-edge research and innovation to the commercial marketplace, generating revenue and diversifying the economy.

Our office has a knowledgeable and professional staff with specialized backgrounds, who work in collaborative teams in the areas of marketing, patent prosecution and licensing to direct the movement of new ideas, discoveries and innovation into the commercial and public sectors. TTO endeavors to educate and promote innovation, the result of which is products, jobs and technologies utilized in the public interest.

USF was ranked in the Top 20 of American Universities for technology transfer by the prestigious Milken Institute. With 116 new utility patents issued in 2017, USF ranks fifth among American public universities and 12th among universities worldwide in generating new U.S. patents, according to the National Academy of Inventors (NAI) and Intellectual Property Owners Association (IPO). In FY 2018, the university had 127 license and option agreements. USF also had 10 new startup companies in FY 2018, and has facilitated the formation of 51 startup companies in the last 5 years. TTO endeavors to educate and promote innovation, the result of which is products, jobs and technologies utilized in the public interest.

[http://www.usf.edu/research-innovation/pl/]
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**Clostridium Inhibitors**

*A Natural Clostridium Difficile Treatment Method Isolated from an Antarctic Coral*

**USF Tech ID# 18B138**

*Patent Pending*

Therapeutic indication: Anti-bacterial

Mechanism of action: Alcyopterosin and Alcyopterosin E

State of Technology: *In vitro*

**Technology Description**

USF researchers have identified Alcyopterosin and Alcyopterosin E from an undescribed Antarctic deep-sea coral, which are capable of inhibiting *Clostridium difficile* infections at low nanomolar concentrations. These bioactive compounds have exhibited specific inhibition of *Clostridium difficile* bacteria in laboratory settings. Due to their novelty, these compounds have the potential to be developed as new drug candidates, reducing the need to treat this infection with current antibiotics. Alcyopterosin and Alcyopterosin E also exhibited inhibition towards *Leishmania donovani* and HeLa cancer cells.

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**Strategy to Increase Anti-Viral, Anti-Microbial and Anti-Fungal Defense**

*SINES with Complementary Sequences for Potential Targeting*

**USF Tech ID# 18A080**

*Patent Pending*

Therapeutic indication: Anti-viral, anti-microbial and anti-fungal defense

Mechanism of action: Transcribed SINEs with complementary genomes to use in future vaccines

State of Technology: Compositions

**Technology Description**

Researchers at the University of South Florida have identified a series of novel SINES and antisense SINES which target viral, bacterial and fungi genomes for the degradation and/or inhibition of translation and replication. These SINEs are also able to induce an innate immune response. Furthermore, in vitro transcribed SINEs may be used in future vaccines against viral, microbial, fungal, and parasitic infections.
**Novel Bis-Cyclic Guanidines as Potent Membrane-Active Antibacterial Agents with Therapeutic Potential**

Small Molecular Antibacterial Agents that Manifest Antibacterial Activity Against Several Resistant Bacterial Strains

**USF Tech ID# 17B105**  
**Patent Pending**

Therapeutic indication: Anti-bacterial  
Mechanism of action: Bis-cyclic guanidines  
State of Technology: In vitro

**Technology Description**

Scientists at USF have designed novel bis-cyclic guanidine compounds that kill bacteria by compromising their cell membranes. Their mechanism of action is analogous to that of HDPs (host-defense peptides). Recently, HDPs have surfaced as an alternative approach to fight bacterial resistance. Furthermore, these compounds exhibited excellent in vivo activity in methicillin-resistant Staphylococcus aureus (MRSA) infected mice. Even after 14 consecutive passages of bis-guanidines, there was no risk of MRSA developing resistance against these compounds.

**A Mucosal 2-5 Oligoadenylate Synthetase DNA Vaccine for Respiratory Syncytial Virus**

An Intranasal IFN-γ Gene Transfer Therapy that is Effective in the Treatment of Respiratory Syncytial Virus (RSV)

**USF Tech ID# 01A046**

US Patent Number: 7,354,908; 8,293,717 & 8,802,647

Therapeutic Indication: Treatment of RSV  
Mechanism of Action: IFN-γ gene transfer therapy  
State of Technology: In vitro

**N-Thiolated 2-Oxazolidinones: A New Class of Anti-Bacterial Drug**

Highly Potent Antibiotics Against Drug-Resistant Microbes

**USF Tech ID# 05A047; 06A017; 06B096; 07B118**

US Patent Number: 8,703,963; 7,482,467; 7,332,611; 8,722,937; 9,096,635; 7,846,920 & 8,404,671

Therapeutic Indication: Antibiotic  
Mechanism of Action: Beta-lactam antibiotics  
State of Technology: In vitro
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Anti-Bacterial

**Novel Solutions for the Prophylaxis of Catheter-Related Bloodstream Infections**

*Heparin-Compatible Solution which Prevents and Treats Vascular Catheter-Related Bloodstream Infections*

**USF Tech ID# 12A057**
**US Patent Number:** 9,125,959

**Therapeutic Indication:** Vascular catheter-related infections
**Mechanism of Action:** An alternative alcohol preparation
**State of Technology:** In vitro

**Multi-Action Antibiotic Prodrugs**

*Novel Antibiotic Compositions*

**USF Tech ID# 12B156**
**US Patent Number:** 9,339,574

**Therapeutic Indication:** Bacterial infection
**Mechanism of Action:** Beta-lactamase inhibitor and antibiotic
**State of Technology:** In vitro

**Novel Antibacterial Agents**

*Antimicrobial Agents Effective Against ESKAPE Pathogens*

**USF Tech ID# 14A010**
**US Patent Number:** 9,782,388

**Therapeutic Indication:** Anti-bacterial
**Mechanism of Action:** Inducing membrane stress and interfering with DNA repair pathways
**State of Technology:** Preclinical

**Anti-Infecive Agents with Novel Chemical Scaffolds**

*A Series of New Compounds for the Potential Treatment of Leishmaniasis and ESKAPE Bacterial Pathogens*

**USF Tech ID# 15A051**
**US Patent Number:** 9,737,509

**Therapeutic Indication:** Effective against Leishmania donovani and ESKAPE pathogens
**Mechanism of Action:** Hsp90 inhibitors
**State of Technology:** In vitro
**Prodrug Approach for 4(1H)-Quinolones and Similar Compounds to Improve Oral Bioavailability**

**Effective Prodrug Approach to Treat Malaria**

**USF Tech ID# 16A011**

**Patent Pending**

Therapeutic indication: Prodrug approach for Malaria

Mechanism of action: Increases the aqueous solubility of ELQ-300 and other 4(1H)-quinolones

State of Technology: In vivo

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**New Antimicrobials From an Epigenetics Based Fungal Metabolite Screening Program**

**Novel Antimicrobials Demonstrating Bioactivity Against L. Donovani Parasite**

**USF Tech ID# 16A006**

**Patent Pending**

Therapeutic Indication: Antimicrobial bioactivity against L. donovani

Mechanism of Action: Bioactivity of the *Phomopsis* sp. Fungus

State of Technology: In vitro

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**Phophonate Compounds a Broad-Spectrum Beta-Lactamase Inhibitors**

**Broad Spectrum Beta-Lactamase Inhibitors**

**USF Tech ID# 16A006**

**Patent Pending**

Therapeutic Indication: Bacterial Infection

Mechanism of Action: Beta-lactamase inhibitor

State of Technology: In vitro

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**A Method of Mitigating Drug Resistant Bacteria**

**A Novel Invention to Mitigate Drug-Resistant Bacteria from Nosocomial Infections in Hospitals and in Food**

**USF Tech ID# 15A098**

**Patent Pending**

Therapeutic Indication: Anti-microbial

Mechanism of Action: A combination of chitosan and ZnO

State of Technology: In vitro

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**Minimum Inhibitory Concentration (MIC) Test of synergism of Chitosan and ZnO against multidrug resistant fecal flora and their wild type counterparts.**

**Processing of Phomopsis sp. to extract antimicrobial compounds**

**Latent Nucleophile**

**Activated Nucleophile**

**low pH**

**Minimum Inhibitory Concentration (MIC) Test of synergism of Chitosan and ZnO against multidrug resistant fecal flora and their wild type counterparts.**

**Processing of Phomopsis sp. to extract antimicrobial compounds**

**Latent Nucleophile**

**Activated Nucleophile**

**low pH**
**A Novel Vaccine Against Invasive Bacteria**

*The Activity of Bacterial Collagenase has Been Utilized to Develop a Novel Vaccine to Fight Against Streptococci Infection*

**USF Tech ID# 16A108**

Patent Pending

Therapeutic indication: Vaccine
Mechanism of action: Bacterial collagenase activity
State of Technology: *In vitro*

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**Antimicrobial Activity of N2,N4-Disubstituted Quinazoline-2,4-Diamines towards Acinetobacter baumannii**

*Novel Quinazoline Compounds Exhibit Strong Antibacterial Activity Against Multi-Drug Resistant A. Baumannii*

**USF Tech ID# 16B144**

Patent Pending

Therapeutic Indication: A treatment against *Acinetobacter baumannii*
Mechanism of Action: Bactericidal Dihydrofolate Reductase Inhibitors
State of Technology: *In vivo*

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**Migration of *S. mutans* through a section of placental tissue**

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**Tetrazole-Based Scaffolds as Broad-Spectrum Beta-Lactamase Inhibitors**

*Potent β-Lactamase Inhibitor*

**USF Tech ID# 16A040**

Patent Pending

Therapeutic indication: Bacterial Infection
Mechanism of action: Beta-lactamase inhibitor
State of Technology: *In vitro*

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**Darwinolide, A Selective Inhibitor of MRSA Biofilms from the Antarctic Sponge Dendrilla Membranosa**

*Novel Antibiofilm Agents for MRSA Treatment*

**USF Tech ID# 16A052**

Patent Pending

Therapeutic indication: Anti-biofilm-specific antibiotics
Mechanism of action: Inhibits MRSA biofilm
State of technology: *In vitro*
**Anti-Bacterial**

**The Development of Novel Anti-Resistance Agents Targeting the Efflux Pumps of Multi-Drug Resistant Bacterial Pathogens**

*Novel Inhibitors of Efflux Pumps of Bacterial Pathogens*

**USF Tech ID# 16B146**

**Patent Pending**

Therapeutic indication: Multidrug resistant bacterial pathogens

Mechanism of action: Efflux Pump Inhibitor

State of Technology: *In vitro*

![Graph showing inhibition of bacterial growth](image)

**Multivalent Immunogens Against Clostridium Difficile**

*Three Multivalent Protein Vaccine Candidates for Clostridium Difficile Infection*

**USF Tech ID# 17A057**

**Patent Pending**

Therapeutic indication: Vaccine

Mechanism of action: The vaccines target both *C. difficile*’s method of infection and intrinsic toxin

State of Technology: *In vivo*

![Graph showing survival of animals](image)

**Non-Toxigenic *Clostridium Difficile* Spores for Use in Oral Vaccination**

*Effective Against Both Clostridium Difficile Toxins and Colonies*

**USF Tech ID# 17A102**

**Patent Pending**

Therapeutic indication: *C. difficile* vaccine

Mechanism of action: Non-toxigenic *C. difficile* strains carrying toxin fragments

State of Technology: *In vivo*

![Graph showing percent survival](image)

**Antimicrobial Analogue of Gramicidin S**

*Synthesized Analogue of a Natural Product Gramicidin S*

**USF Tech ID# 18A083**

**Patent Pending**

Therapeutic indication: Anti-bacterial

Mechanism of action: Gramicidin S analogues against gram positive and negative bacteria

State of Technology: *In vitro*
Leishmania Inhibitors
A Metabolite for the Treatment of Leishmaniasis

**USF Tech ID# 18B140**
Patent Pending

Therapeutic Indication: *Leishmania donovani* infections
Mechanism of Action: A metabolite derived from an Antarctic marine coral
State of Technology: *In vitro*

**Technology Description**
USF researchers have identified a novel metabolite derived from an Antarctic marine coral that shows promise as a new treatment option for leishmaniasis infections. Antarctic marine invertebrates are being investigated for their natural chemical protective mechanisms used against predators. This natural product chemistry is ideal for new drug development efforts. The identified metabolite has exhibited specific inhibition of *Leishmania donovani* parasites in laboratory settings. Furthermore, the compound also exhibited inhibition towards *Clostridium difficile* and HeLa cancer cells.

Transfection Vector for Pathogenic Amoebae and Use Thereof
A Novel Genetic Tool to Discover Drug Targets

**USF Tech ID# 17A009**
Patent Pending

Therapeutic Indication: Vector for transfection
Mechanism of Action: Electroporation system as reverse genetic approach to unveil novel drug targets and virulence factors in amoebae
State of Technology: *In vitro*

**Technology Description**
Researchers at the University of South Florida have developed a transfection vector as a novel genetic tool for a reverse genetic approach to unveil virulence factors and potential drug targets within these microbes. Identification of three independent selectable markers, hygromycin, puromycin and bleomycin for *N. fowleri* would allow for multiple transfection rounds with different genes. Especially, after the protozoan parasite was found to have natural resistance to neomycin. Transfection of amoeba has been difficult and this innovative technology would be a solution.
Piperazino-Substituted 4(1H)-Quinolones Targeting Erythrocytic and Exoerythrocytic Stages of Malaria
Optimized 4(1H)-Quinolones for Treatment of Malaria

USF Tech ID# 16A012
Patent Pending

Therapeutic Indication: Malaria
Mechanism of Action: Effective treatment that targets erythrocytic and exoerythrocytic stages of malaria
State of Technology: In vivo

Technology Description
Researchers at the University of South Florida have discovered an effective treatment that targets erythrocytic and exoerythrocytic stages of malaria. Resistance to current treatments is a mounting problem and the WHO states that without new therapeutics, all the strides made in reducing the deaths from the disease could be reversed owing to resistance of parasite strains to many of the common treatments.

Researchers have begun to optimize old antimalarial agents or drugs to find a solution to this issue. Adhering to this strategy, USF researchers have optimized a series of antimalarial piperazine-substituted 4(1H)-quinolones. The optimization invention increases the solubility and bioactivity of the compounds making them highly efficacious against erythrocytic and exoerythrocytic stages of malaria.

Design and Immunogenicity of a Novel Synthetic Antigen of the Plasmodium
A Novel Synthetic Vaccine for Malaria

USF Tech ID# 11B116
US Patent Number: 8,784,832; 9,120,869

Therapeutic Indication: Malaria
Mechanism of Action: Elicits an immune response directed against the blood stage of malarial parasite Plasmodium vivax
State of Technology: Preclinical

4(1H)-Quinolones Having Anti-Malarial Activity with Reduced Chemical Resistance
Novel Compound Having Antimalarial Activity for Treatment and Prevention of the Disease

USF Tech ID# 11B171
US Patent Number: 8,877,752

Therapeutic Indication: Malaria
Mechanism of Action: Effective inhibition/elimination of at least one of the stages of the malarial lifecycle
State of Technology: Preclinical
Inhibitors of Oxidase Virulence Factor Protect Against Pathogenic Amoebas
_Inhibitors of Nfa-1 Protein for the Treatment and Prevention of Amoebic Infections_

**USF Tech ID# 14A014**
**US Patent Number:** 9,492,455; 9,655,901

**Therapeutic indication:** Amoebic infections
**Mechanism of action:** Inhibits Nfa-1 protein found in pathogenic amoeba and _nigleria fowleri_
**State of Technology:** _In vitro_

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Treatment For the Disease Visceral Leishmaniasis
_Novel Compounds Isolated from Antarctic Sponge Display Bioactivity Against Leishmania Donovani_

**USF Tech ID# 14B109**
**Patent Pending**

**Therapeutic indication:** Visceral Leishmaniasis
**Mechanism of action:** Selective inhibitors of _L. donovani_
**State of Technology:** _In vitro_

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Next Generation Plasmodium Vivax Vaccine
_Synthetic Antigen-Based Vaccine for Malaria_

**USF Tech ID# 15B166**
**Patent Pending**

**Therapeutic indication:** Malaria
**Mechanism of action:** Elicits a broadly neutralizing immune response based on the ligand domain of _Plasmodium vivax_
**State of Technology:** _In vivo_

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Epigenetic Modification of Fungi and Uses Thereof
_Anti-Leishmanial Dinorsestertepene from a Mangrove Endophytic Fungus_

**USF Tech ID# 18B137**
**Patent Pending**

**Therapeutic indication:** _Leishmania donovani_ infections
**Mechanism of Action:** A dinorsestertepene isolated from an endophytic fungus of a mangrove plant
**State of Technology:** _In vitro_
**Methods for Prevention and Treatment of Respiratory Syncytial Virus (RSV) Infection**

*Targeting Specific RSV Genes with siRNA to Suppress RSV Replication*

**USF Tech ID# 97B046, 03B105**  
**US Patent Number:** 9,089,590

**Therapeutic indication:** RSV infection  
**Mechanism of action:** Suppresses RSV gene replication  
**State of Technology:** In vitro

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**Delta-9 Tetrahydrocannabinol as an Inhibitor of Herpes Viruses**

*Method of Treating Gamma Oncogenic Herpes Viruses*

**USF Tech ID# 04B089**  
**US Patent Number:** 8,697,095

**Therapeutic Indication:** Herpes virus infection  
**Mechanism of Action:** Inhibitor of gamma herpes virus replication  
**State of Technology:** In vitro

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**Effective Therapeutics Against Viral Infections**

*Novel Stereospecific, Heterocyclic Compounds for Influenza*

**USF Tech ID# 07B120**  
**US Patent Number:** 8,318,804

**Therapeutic indication:** RSV infection  
**Mechanism of Action:** Effectively treats cells infected by single-stranded RNA viruses  
**State of Technology:** In vitro

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**Method for Synthesis of Effective Therapeutics Against Viral Infections**

*Novel Nitro-ester Compounds with Potent Anti-Viral Activity*

**USF Tech ID# 07B121**  
**US Patent Number:** 8,236,853

**Therapeutic indication:** RSV infection  
**Mechanism of Action:** Contacting the cell having RSV infection with the novel compound effectively treated the cell  
**State of Technology:** In vitro

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Co-localization of RSV and ICAM-1 on epithelial cell surface

10 µg/mL THC  5 µg/mL THC  2.5 µg/mL THC

1.5 µg/mL THC  0.6 µg/mL THC  DMSO solvent

No Treatment  7.5 µg/ml No Virus  15µg/ml

Virus Only  7.5 µg/ml  7.5 µg/ml

R3

H

SO2Ph

H

Ph

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Peptide for the Treatment of Respiratory Syncytial Virus Infection
*Novel Micellar Nanoparticles with Inhibitor Peptides*

**USF Tech ID# 12B111**  
**US Patent Number:** 9,556,236

- **Therapeutic indication:** RSV Infection  
- **Mechanism of action:** Binding HR2 domain of RSV fusion protein  
- **State of technology:** *In vivo*

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**Improved Immunogenicity for Attenuated Respiratory Syncytial Virus Vaccines**
*RSV Vaccines with Improved Immunogenicity*

**USF Tech ID# 14B139**  
**Patent Pending**

- **Therapeutic Indication:** RSV infection  
- **Mechanism of Action:** Increasing levels of type I and type III interferons  
- **State of Technology:** *In vivo*

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**Antigenome Clone of Respiratory Syncytial Virus Subgroup B**
*Simple, Rapid Assay Test to Investigate Antiviral Therapies*

**USF Tech ID# 14B141**  
**Patent Pending**

- **Therapeutic Indication:** RSV diagnostic  
- **Mechanism of Action:** Antigenome cDNA for use in RSV reverse genetics to rapidly identify vaccinated individuals  
- **State of Technology:** *In vitro*

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**A Method of Preventing and Treating HIV**
*siRNAs for Protection Against HIV-1 Infection*

**USF Tech ID# 16A102**  
**Patent Pending**

- **Therapeutic Indication:** HIV infection  
- **Mechanism of Action:** Gene silencing, using vector-driven expression of siRNAs  
- **State of Technology:** *In vivo*
GAS5 IncRNA Biomarker Signature for Prediction and Management of Diabetes
Biomarker for Early Detection/Diagnosis of Pre-Diabetes and Diabetes Management

USF Tech ID# 14B152
Patent Pending

Therapeutic Indication: Early diabetes detection
Mechanism of Action: GAS5: A RNA-based biofluid marker
State of Technology: In vitro

Technology Description
Researchers at the University of South Florida have identified GAS5, an RNA-based biofluid marker for prediction and management of diabetes. GAS5 is a long non-coding RNA that has been found to have markedly reduced levels in serum from diabetic patients. Testing has demonstrated that GAS5 directly affects multiple insulin-responsive genes related to glucose metabolism and uptake. This study also establishes GAS5 as a circulating biomarker in blood, saliva and urine for early detection and diagnosis of pre-diabetes, and in diabetes control. The invention is non-invasive and can be efficiently incorporated into standard care for diabetes.

Gold Nanowires Based Microfluid Device for the Detection of Blood Analytes and Disease Biomarkers
Ultra-Sensitive Detection of Analytes for Efficient Clinical Analysis

USF Tech ID# 06A062
US Patent Number: 8,349,604

Therapeutic Indication: A microfluidic sensing device
Mechanism of Action: Ultra-sensitive detection of analytes such as cortisol and other biomarkers
State of Technology: Prototype

Simultaneous Sample Manipulation and Sensing Using Surface Acoustic Waves
Biomarker Detection for Diseases Using SAWs

USF Tech ID# 07A008
US Patent Number: 7,878,063

Therapeutic Indication: Biomarker detection
Mechanism of Action: Removes nonspecifically bound proteins from the surface of biosensors
State of Technology: Prototype
Identification of DNA Segment Involved in Chromosome Rearrangements
A New Web Based Tool for Biomedical Researchers

**USF Tech ID# 08A032**
**US Patent Number:** 8,352,194

**Therapeutic Indication:** Cancer diagnostics and treatments

**Mechanism of Action:** Statistical analysis and associated algorithm

**State of Technology:** In vitro

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PKC II Specific Polyclonal Antibody
Specific Antibodies to Two Isoforms of Protein Kinase C Delta (PKCδ)

**USF Tech ID# 08B088**
**Patent Pending**

**Therapeutic Indication:** Neurogenesis and cancer

**Mechanism of Action:** Antibodies for PKCδ II

**State of Technology:** In vitro
Human Protein Kinase C Delta VIII Isoform as a Biomarker in Neurodegenerative Diseases Such as Alzheimer’s Disease and in Neuronal Cancers

**PKCδVIII Expression is an Indicator of the Levels of On-Going Apoptosis in Neurons**

**USF Tech ID# 09B136**
**Patent Pending**

Therapeutic Indication: Alzheimer’s disease and neuronal cancer detection

Mechanism of Action: Protein Kinase C (PKC) δVIII

State of Technology: *In vivo*

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**A Method of Profiling MicroRNAs**

_A Novel microRNA (miRNA) Quantification Method to Profile the Expression Levels of miRNAs Using an Universal Probe and an Universal RT-Primer (UPR)_

**USF Tech ID# 10A016**
**US Patent Number:** 9,493,825

Therapeutic Indication: RNA detection

Mechanism of Action: A universal probe and RT-primer

State of Technology: *In vitro*

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**Using Human Herpesvirus 6 for Cloning and Sequencing Subtelomere Sequences of Mammalian Genomes**

_Potential for Designing Strategies for Intervening in Certain Diseases_

**USF Tech ID# 10A026**
**Patent Pending**

Therapeutic Indication: Cloning and sequencing chromosomes

Mechanism of Action: *Human herpes virus 6* (HHV-6)

State of Technology: *In vitro*

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**Novel PCR Target for the Detection of Salmonella Species: Outer Membrane Porin F (ompF)**

_Highly Specific and Sensitive Outer Membrane Porin F Gene as a PCR Target for Salmonella Detection_

**USF Tech ID# 10A076**
**US Patent Number:** 8,895,248 & 9,410,212

Therapeutic Indication: Detection of Salmonella species

Mechanism of Action: Real time PCR

State of Technology: *In vitro*
Salivary Biomarkers Associated with Glycemic Control and Oral Health

*Increased Salivary Inflammation Burden is Associated with Decreased Glycemic Control and Oral Health*

**USF Tech ID# 13B141**  
**US Patent Number:** 9,753,041

Therapeutic Indication: Glucose screening methods  
Mechanism of Action: Saliva analysis  
State of Technology: Clinical samples

Niobia-Based Sorbents and Methods for Phosphopeptide Enrichment, and Synthesis of the Same

*A High Sensitivity Method to Extract and Enrich Phosphorylated Peptides from Phosphoproteins*

**USF Tech ID# 17A099**  
**Patent Pending**

Therapeutic Indication: Early disease detection  
Mechanism of Action: Phosphorylated peptides obtained from phosphoproteins  
State of Technology: Laboratory tested
Identification of Bif-1/Endophilin B1 as a Cancer Diagnostic Marker 
*Increased Bif-1 Protein Expression in High-Grade Prostatic Intraepithelial Neoplasia (PIN) in a Subset of Prostate Cancer*

**USF Tech ID# 07B105**  
**US Patent Number:** 8,309,311 
Therapeutic indication: Early state prostate cancer detection  
Mechanism of action: Bif-1 expression  
State of Technology: *In vivo*

Micro-RNA Profiles Associated with Endometrial Cancer Development and Response to Cisplatin and Doxorubicin Chemotherapy 
*A Method for Predicting Chemoresponse of a Population of Cancer Cells*

**USF Tech ID# 07A028**  
**US Patent Number:** 8,257,919 
Therapeutic indication: Chemotherapeutics  
Mechanism of action: miRNA expression profile comparisons  
State of Technology: *In vitro*

Lysophosphatidylcholine Testing for Ovarian Cancer Recurrence 
*A Diagnostic and Screening Method to Identify Ovarian Cancer and Classification of the Early Stage*

**USF Tech ID# 03A035**  
**US Patent Number:** 7,964,408 
Therapeutic Indication: Early stage ovarian cancer identification  
Mechanism of Action: Lysophospholipids as biomarkers  
State of Technology: Clinical samples

PKC-iota as a Predictor of Prostate Carcinogenesis 
*Methods for Detecting and Treating Prostate Tumorigenesis and Neuroblastoma with use of Protein Kinase C-iota (PKC-i)*

**USF Tech ID# 07B111**  
**US Patent Number:** 9,078,915 
Therapeutic indication: Prostate and neuroblastoma treatment  
Mechanism of action: Measurement of PKC-i levels with Western Blot  
State of Technology: Clinical samples
FFPE-Based Genomic Signatures that Predict Ovarian Cancer Chemotherapy Response
A Novel Genetic Screening Process to Identify Genes that Contribute to Chemotherapeutic Responsiveness in Ovarian Cancer

**USF Tech ID# 07B149**
**US Patent Number:** 8,603,758

Therapeutic indication: Ovarian cancer  
Mechanism of action: Genetic screening process  
State of Technology: In vitro

Detection of Ovarian Cancer by Elevated Urinary Levels of RHAMM
Detects Ovarian Cancer in Early and Late Stages

**USF Tech ID# 16A034**

Therapeutic indication: Ovarian cancer detection  
Mechanism of action: Urinary RHAMM levels  
State of Technology: Clinical samples

Natriuretic Peptide Receptor as a Biomarker for Cancer
NPRA Can be Considered as a Progression Marker for Breast and Prostate Cancer

**USF Tech ID# 10A015**  
**Patent Pending**

Therapeutic indication: Breast and prostate cancer detection  
Mechanism of action: Natriuretic peptide receptor A  
State of Technology: In vitro

Detection of Ovarian Cancer by Elevated Urinary Levels of RHAMM
Detects Ovarian Cancer in Early and Late Stages

**USF Tech ID# 16A034**

Therapeutic indication: Ovarian cancer detection  
Mechanism of action: Urinary RHAMM levels  
State of Technology: Clinical samples

LIN28B as Biomarker Propranolol Sensitive Tumors
A Newly Identified Mechanism by which Propranolol Induces Infantile Hemangioma Involution

**USF Tech ID# 17B156**  
**Patent Pending**

Therapeutic indication: Infantile hemangioma treatment  
Mechanism of action: Modulation of LIN28B/Let-7 signaling by propranolol  
State of Technology: In vitro
New Drug Delivery System: Niosomes Encapsulating Drugs in a Hydrogel
For Optimal Drug Bioavailability

USF Tech ID# _06A010
Patent Pending

Therapeutic Indication: Drug delivery matrix
Mechanism of Action: Surfactant vesicles
State of Technology: In vitro

Technology Description
Researchers at the University of South Florida have designed a functionalized polyamidoamine PAMAM dendrimer for the effective delivery of ShRNA-encoding DNA in combination with pioglitazone encapsulated cyclodextrin. The delivery method is noninvasive topical approach, which is known to be the easiest way to deliver therapeutics to the eye. The PAMAM dendrimer was selected for its good physicochemical properties and its ability to facilitate endosomal escape through its internal secondary and tertiary amines the so called "proton sponge" effect.

Method of Delivering Genes and Drugs to a Posterior Segment of an Eye
Nanoformulations to Deliver Drugs and Genes to the Posterior Eye

USF Tech ID# _18B149
Patent Pending

Therapeutic Indication: Nanoformulations for optic drug delivery
Mechanism of Action: Effective and non-invasive topical administration
State of Technology: In vivo

Reverse Cholesterol Transport with Modified Nanoparticles

Materials and Methods to Reduce LDL Cholesterol
Functionalized Magnetic Nanoparticles with an Enzyme and an LDL Antibody

USF Tech ID# _06A043, _06B094
US Patent Number: 7,892,553

Therapeutic Indication: High cholesterol
Mechanism of Action: LDL conjugated nanoparticles that bind with LDL cholesterol
State of Technology: In vivo

Contact us: 3802 Spectrum Blvd., Suite 100 Tampa, FL 33612 - 813.974.0994 patents@research.usf.edu | http://www.research.usf.edu/pl
Nanoparticles to Enhance Antibiotic Delivery and Performance
Polyacrylate Nanoparticles for The Delivery of Antibiotics

**USF Tech ID# 06A053**
**US Patent Number:** 8,110,678; 8,470,958; 8,414,926

**Therapeutic Indication:** Encapsulation of antibiotics

**Mechanism of Action:** Microemulsion polymerization as a means to easily prepare aqueous solutions

**State of Technology:** Compositions

Targeted Drug Delivery to Lungs
Sertoli Cells as Carriers of Anti-Cancer Drugs

**USF Tech ID# 08A011**
**US Patent Number:** 9,161,901

**Therapeutic Indication:** Encapsulation of anticancer medicine

**Mechanism of Action:** Sertoli cells have the ability to self-immunoprotect, thus can be introduced intravenously to the host without rejection

**State of Technology:** In vivo

Liposomal Nanoparticle Encapsulation Improves Bioavailability of Epigallocatechin-3-Gallate (EGCG)
Improving the Bioavailability of EGCG for Alzheimer’s and HIV-Associated Dementia

**USF Tech ID# 09A045**
**US Patent Number:** 8,906,414

**Therapeutic Indication:** Alzheimer’s Disease and HIV-associated dementia

**Mechanism of Action:** EGCG effectively modulates amyloid precursor protein

**State of Technology:** In vivo

Poly (Vinyl Benzoate) Nanoparticles for Molecular Delivery
Biodegradable Nanoparticles as Molecular Carriers

**USF Tech ID# 10B116**
**Patent Pending**

**Therapeutic Indication:** Molecular delivery of antibiotics

**Mechanism of Action:** Pluronic F68

**State of Technology:** In vitro
Graphene Hydrogel Matrix for the Differentiation of Mesenchymal Stem Cells

**Biocompatible Three-Dimensional Matrix**

**USF Tech ID# 12A022**

**US Patent Number:** 9,433,682; 9,434,926

**Therapeutic Indication:** Matrix for monitoring stem cell viability

**Mechanism of Action:** Stem cells differentiate into chondrocytes, osteocytes and adipocytes on hydrogels

**State of Technology:** In vivo

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Manganese Oxide-Coated Nanoparticles for Delivery of Genes and siRNA into Brain

**Nasal Drug Delivery Directly to the Brain**

**USF Tech ID# 11A020**

**US Patent Number:** 9,375,400

**Therapeutic Indication:** Delivery of therapeutic genes to the CNS

**Mechanism of Action:** Mn oxide-coated nanoparticle utilizes the capacity of manganese to be taken up by nerve terminals

**State of Technology:** In vivo

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Manganese Oxide Lipid Nanoparticles for Use as a T1 MRI Contrast Agent and Gene Delivery Agent

**Novel Theranostics for Lung Disease**

**USF Tech ID# 12A024**

**Patent Pending**

**Therapeutic Indication:** Lung cancer

**Mechanism of Action:** Manganese oxide lipid nanoparticles

**State of Technology:** In vitro

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**Multilayered Multimodal Magnetic Micelles Nanoparticles (4M-NPs) for MRI and Gene Delivery**

**Theranostics Approach to Treat Diseases**

**USF Tech ID# 11B152**

**US Patent Number:** 9,439,978

**Therapeutic Indication:** Cancer-tumor cells

**Mechanism of Action:** Super paramagnetic iron oxide nanoparticles

**State of Technology:** In vitro

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**TEM images showing uptake and intracellular distribution of 4M-NPs:DNA.**

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**AVG SWELLING RATIO**

**TIME (hour)**

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**Mn Oxide Coated nanoparticles for the delivery of genes and siRNA into the brain by nasal insufflation.**

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**Graphene Hydrogel Matrix for the Differentiation of Mesenchymal Stem Cells**

**Biocompatible Three-Dimensional Matrix**

**USF Tech ID# 12A022**

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**State of Technology:** In vitro

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Graphene Based Theranostics for Tumor Targeted Drug/Gene Delivery and Imaging
Multifunctional System for the Treatment and Diagnosis of Cancer

**USF Tech ID# 13A032**
**US Patent Number:** 9,675,714

**Therapeutic Indication:** Cancer tumor cells
**Mechanism of Action:** Imaging and treatment with graphene nanoparticles
**State of Technology:** In vitro

A Platform for Selective Intracellular Delivery by the Growth Factor Mediated Macropinocytosis Pathway
Flexible and Selective Intracellular Delivery

**USF Tech ID# 13B158**
**US Patent Number:** 9,616,138

**Therapeutic Indication:** Delivery of therapeutic proteins and genes
**Mechanism of Action:** Selective targeting of receptors that are overexpressed in tumors
**State of Technology:** In vitro

Controllable Drug Internalization by Self-Assembly of Estrogen Anchored Cyclodextrin Supramolecule in the Delivery of Doxorubicin Prodrug into Breast Cancer Cells
Can be Used as an Effective Drug Delivery System that has a Higher Targeting Efficiency

**USF Tech ID# 14A001**
**Patent Pending**

**Therapeutic Indication:** Breast cancer therapeutic
**Mechanism of Action:** Cyclodextrin vectors with functionalized estrogens and doxorubicin prodrug
**State of Technology:** In vitro

Enhanced Targeted Drug Delivery System Via Chitosan Hydrogel and Chlorotoxin
A Drug Delivery System that Allows the Tumor-Targeting Drug Chlorotoxin to be Entrapped Internally

**USF Tech ID# 14A034**
**US Patent Number:** 9,522,114

**Therapeutic Indication:** Cancer treatment
**Mechanism of Action:** Nanoparticle vesicles embedded in a chitosan hydrogel
**State of Technology:** In vitro

Greater specific interaction between hydrogel (green) and ovarian carcinoma (OV2008) was exhibited compared to normal ovarian cells (MCC).
**Menthol-Based Nanoparticles for Drug Delivery**
*Chiral Drug Delivery Vehicles*

**USF Tech ID# 14A062**
**US Patent Number:** 9,533,051

Therapeutic Indication: Drug delivery against infections
Mechanism of Action: Menthol-based polyacrylate nanoparticles
State of Technology: *In vitro*

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**Novel MKT-077 Nanoparticles for Treatment of Alzheimer’s Disease, Neurodegenerative Diseases, and Cancer**
*Nanoparticles that can Overcome the Renal Toxicity and BBB Transport Issues Associated with Drug Delivery to the Brain*

**USF Tech ID# 14B120**
**Patent Pending**

Therapeutic Indication: Neurodegenerative disease and cancer treatment
Mechanism of Action: MKT-077 nanoparticles that can transport a drug through the BBB
State of Technology: *In vitro*

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**Afobazole Nanoparticles Formulation for Enhanced Therapeutics**
*A Novel Nanoparticle Formulation of the Drug Afobazole with Blood Brain Barrier Permeability*

**USF Tech ID# 14B134**
**Patent Pending**

Therapeutic Indication: Diseases of the CNS
Mechanism of Action: A nanoparticle carrier encapsulating afobazole
State of Technology: *In vitro*

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**Triamcinolone Acetonide Nanoparticles in Thermoreversible Gels for Enhanced Therapeutics**
*A Novel Treatment for Age-Related Macular Degeneration*

**USF Tech ID# 15A101**
**Patent Pending**

Therapeutic Indication: Age related macular degeneration treatment
Mechanism of Action: A loteprednol etabonate-encapsulated PEGylated PLGA nanoparticle based drug delivery system
State of Technology: *In vitro*
Ciprofloxacin-Based Polyacrylate Nanoparticle Emulsions for Antibiotic Applications
Drug Delivery and Protection of Antibiotic Agents from Enzymatic and Chemical Degradation

**USF Tech ID# 17B159**
Patent Pending

**Therapeutic Indication:** Antibiotic applications

**Mechanism of Action:** A bioactive antibacterial homopolymer

**State of Technology:** *In vitro*

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Evaluation of VEGF and HIF Suppression of a Thermoreversible Gel Containing Aflibercept and Doxorubicin
A Dual Drug Delivery System

**USF Tech ID# 17A031**
Patent Pending

**Therapeutic Indication:** Treatment of posterior segment ocular diseases

**Mechanism of Action:** Anti-HIF agent doxorubicin and the anti-VEGF agent Aflibercept

**State of Technology:** *In vitro*

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Formulation and Characterization of a Nano-particle Drug Delivery System Containing Digoxin and Corticosteroids
A Dual Drug Delivery System

**USF Tech ID# 17A036**
Patent Pending

**Therapeutic Indication:** Treatment of posterior segment ocular diseases

**Mechanism of Action:** Anti-HIF agent digoxin and corticosteroid Triamcinolone Acetonide

**State of Technology:** *In vitro*

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Nanoparticle Delivery System for Diseases Associated with Major Basement Membrane Components of Blood Vessels Accessible from the Blood Stream
Perfluorocarbon Nanoparticles for Drug Delivery and Early Detection Methods

**USF Tech ID# 18A112**
Patent Pending

**Therapeutic Indication:** Drug-delivery system that targets the basement membrane

**Mechanism of Action:** Perfluorocarbon nanoparticles

**State of Technology:** *In vivo*
LRBA in Colorectal Cancer and Crohn’s Disease
Simple Blood Test Using PBMCs

USF Tech ID# 01A016
US Patent Number: 7,704,963; 8,440,395
Assay Type: mRNA or protein
Data Available: Clinical samples

Polyphenol Proteasome Inhibitors, Synthesis, and Methods of Use
Multiple Compositions and Methods Covered Including EGCG

USF Tech ID# 03A003
US Patent Number: 7,767,711; 8,058,310; 8,563,607; 9,399,631; 7,358,383
Therapeutic Indication: Breast cancer
Mechanism of Action: Inhibition of proteasomal chymotrypsin activity
State of Technology: Compositions

Compositions: Peptidomimetic Inhibitors of STAT Activity for Cancer Therapy
Small Molecule Stat3 Inhibitor Induces Tumor-Specific Cell Death

USF Tech ID# 03A014
US Patent Number: 7,342,095; 7,842,671
Therapeutic Indication: Breast and lung cancer
Mechanism of Action: Target tumor cells and Inhibit Stat3 activity
State of Technology: In vitro modeling

Compositions: Platinum Complexes for Inhibiting Tumor Cell Proliferation
STAT3 Signaling in Malignant Cells is Inhibited, Causing Apoptosis, While Cells with No Evidence of Active STAT3 are Little Affected

USF Tech ID# 03A027
US Patent# Number: 7,977,381; 8,455,543
Therapeutic Indication: Wide variety of cancers
Mechanism of Action: Identifies STAT3 activity causing apoptosis
State of Technology: In vivo modeling
Methods of Treatment Using LAQ824 and PKC412
Synergistic Combination

USF Tech ID# 03B062
Therapeutic Indication: Acute myeloid leukemia
Mechanism of Action: Histone deacetylase inhibitors
State of Technology: Clinical data

Platinum Complexes as Novel Stat3 Inhibitor
Anti-Tumor Effects through Inhibition of Stat3 Signaling, Biological Activity, and Immune-Modulatory Function

USF Tech ID# 03B065
US Patent Number: 7,238,372; 7,763,585; 8,598,230
Therapeutic Indication: Cancer treatment
Mechanism of Action: Platinum compounds ISSCPA-1 and ISSCPA-7
State of Technology: In vivo

Platinum Complexes and Methods for Cancer Treatment
New Platinum Complexes with Cancer Specific Activity

USF Tech ID# 03B100
US Patent Number: 7,759,510; 8,247,445; 7,566,798
Therapeutic Indication: Cancer treatment
Mechanism of Action: Platinum IV complex
State of Technology: In vivo

Compositions: Palmerolide A Cytotoxic Macrolides
Structural Recognition of STAT SH2 Domains

USF Tech ID# 04A002
US Patent Number: 7,625,885; 8,669,376; 9,394,270
Therapeutic Indication: Melanoma
Mechanism of Action: Inhibition of V-ATPase at nm concentrations
State of Technology: In vitro
Methods of Treatment: with Cyclic GMP
Effectively Inhibits Human Cancer Growth in Athymic Mice

**USF Tech ID# 04B068**
US Patent Number: 8,759,317
Therapeutic Indication: Pancreatic, breast, prostate, lung
Mechanism of Action: Interferes with DNA synthesis
State of Technology: *In vitro and in vivo mouse data*

Methods of Treatment with Dendroaspsis Natriuretic Peptide
Treats Aggressive Cancer w/o Chemotherapeutic Side Effects

**USF Tech ID# 06B082**
US Patent Number: 7,825,092
Therapeutic Indication: Solid malignancies including glioblastoma
Mechanism of Action: Interferes with DNA synthesis-isolated from the venom of the Green Mamba snake
State of Technology: *In vitro and in vivo mouse data*

Prostate Cancer Therapy and Sensitivity Prediction
Cyclin-Dependent Kinase Inhibitors (CDKI) Induce Apoptosis of Prostate Cancer Cells

**USF Tech ID# 04B114**
US Patent Number: 9,063,142; 8,716,299
Therapeutic Indication: Prostate cancer
Mechanism of Action: Targets cancer cells by mediating P53 and XIAP proteins
State of Technology: *In vitro*

SH2 STAT3/STAT1 Peptidomimetics as Novel Anticancer Drugs
Comprehensive Series of Phosphopeptidomimetic Probes that Display Selective Inhibition of Specific STAT Isoform Homodimerization

**USF Tech ID# 06B135**
US Patent Number: 8,153,596
Therapeutic Indication: All cancer types
Mechanism of Action: Disruption of STAT proteins
State of Technology: *Compositions*
Substrate Mimetic Inhibitors of Akt as Anticancer Drugs
Oncogenic Prevention and Treatment Using Substrate Inhibitors to Block the Effects of the Akt Protein

**USF Tech ID# 06B137**
US Patent Number: 8,822,524; 9,453,049

Therapeutic Indication: All cancer types
Mechanism of Action: Akt Protein Inhibition
State of Technology: Compositions

Method of Activating Natural Killer Cells
Mediation of NK Cells by Administering Broad Acting Phosphatase Inhibitor

**USF Tech ID# 07A042**
US Patent Number: 8,399,510

Therapeutic indication: All cancer types
Mechanism of action: Trigger tumor cell lysis by delivering a sufficient signal to NK cells in the form of sodium orthovanadate, SHP specific inhibitor
State of Technology: In vitro

Methods of Treatment: Novel Therapeutic Target
Targets Protein Kinase C iota in Cancer

**USF Tech ID# 07B094**
US Patent Number: 8,461,192; 8,716,266

Therapeutic Indication: Neuroblastoma, glioma, breast cancer
Mechanism of Action: Blocks catalytic activity of protein kinase C-iota
State of Technology: Clinical samples

Compositions: Modulating Bcl-2 Proteins
Tumor Selective Apoptosis Inducing Agents

**USF Tech ID# 08A013**
US Patent Number: 8,524,947

Therapeutic Indication: Multiple cancer types
Mechanism of Action: Specifically targets Bcl-xL and triggers apoptosis
State of Technology: In vitro modeling
Methods of Treatment with Tipifarnib

**Evokes ER Stress**

**USF Tech ID# 08B089**

**US Patent Number:** 8,362,033

**Therapeutic Indication:** All cancer types

**Mechanism of Action:** Stimulates calcium channel Orai3

**State of Technology:** *In vitro modeling*

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**Proteasome Inhibitors Having Chymotrypsin-Like Activity**

**Novel Proteasome Inhibitors for Cancer Therapy**

**USF Tech ID# 09A033**

**US Patent# Number:** 8,466,157

**Therapeutic Indication:** All cancer types

**Mechanism of Action:** Selective apoptosis of malignant cells

**State of Technology:** *In vitro*

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**PKC-iota: A Method to Predict Neuroblasotma Carcinogenesis**

**Differentiates Between Benign and Cancerous Lesions and Treatment of Prostate Tumor**

**USF Tech ID# 09B141**

**Patent Pending**

**Assay Type:** Protein, Western blot

**Data Available:** *Clinical samples*

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**Compositions: Plastic Antibody for Atrial Natriuretic Peptide**

**High Affinity and Selectivity to ANP**

**USF Tech ID# 11A027**

**Patent Pending**

**Therapeutic Indication:** Solid malignancies including metastatic disease

**Mechanism of Action:** Attenuate NPRA binding to endogenous ANP

**State of Technology:** *In vitro data*
Effective Treatment of Esophageal Adenocarcinoma Using Triciribine and Related Compounds
A Novel Formulation of Triciribine and Related Compounds with Reduced Toxicity

**USF Tech ID# 11A069**
**US Patent Number:** 9,150,604

**Therapeutic Indication:** Esophageal adenocarcinoma
**Mechanism of Action:** Triciribine and triciribine phosphate cause regression of the esophageal adenocarcinoma
**State of Technology:** In vivo

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A Novel PKC-iota Inhibitor for the Treatment of Glioma
Effective Anti-Tumor Therapy that Inhibits Multiple Targets

**USF Tech ID# 11B123**
**US Patent Number:** 8,716,266

**Therapeutic Indication:** Cancer; Glioma tumors
**Mechanism of Action:** PKC-iota inhibitor
**State of Technology:** Clinical Samples

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RGD Mimetic γ-AA Peptides and Methods of Use
Y-AA Peptides for the Diagnosis and Treatment

**USF Tech ID# 12A016**
**US Patent Number:** 9,234,007

**Therapeutic Indication:** Cancer
**Mechanism of Action:** Binds integrin αvβ3
**State of Technology:** In vivo modeling

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Novel Therapeutic for Cancer Detection and Treatment
Graphene Quantum Dot Nanoparticles as Anti-Cancer Drug Carriers and Imaging Agents

**USF Tech ID# 14A052**
**Patent Pending**

**Therapeutic Indication:** All cancer types
**Mechanism of Action:** Quantum dot nanoparticles carry anti-cancer drugs to the target site and enable real-time imaging and detection of small tumors
**State of Technology:** In vitro
Method for Treating Prostate Cancer
Protein Kinase C Inhibitors, ACPD and ICA-1, for Prostate Cancer

**USF Tech ID# 15A067**
*Patent Pending*

**Therapeutic Indication:** Prostate cancer  
**Mechanism of Action:** Inhibits PKC-ι and PKC-ζ which are heavily expressed in prostate cancer cells and mediate apoptosis  
**State of Technology:** *In vitro*

Protein Acyl Transferase Inhibitor
Novel Protein Palmitoyltransferases for the Treatment of Various Cancers

**USF Tech ID# 15B115**
*Patent Pending*

**Therapeutic Indication:** All cancer types  
**Mechanism of Action:** Inhibition of protein palmitoyltransferases that modify Ras oncogene protein  
**State of Technology:** *In vitro*

Combinatorial Therapies for Pancreatic Cancer Treatment
Combinatorial Cancer Treatment with Fendiline and Tivantinib

**USF Tech ID# 16A022**
*Patent Pending*

**Therapeutic Indication:** Pancreatic cancer  
**Mechanism of Action:** Co-treatment of pancreatic cancer cells with Fendiline and Tivantinib for increased apoptosis of these cells  
**State of Technology:** *In vitro*

A Method of Treating Malignant Melanoma Using Atypical Protein Kinase C Inhibitors
Novel Application of DNDA, ICA-1, ACPD, and Compound-50 in the Apoptosis of Malignant Melanoma

**USF Tech ID# 16A071, 16B182, 16B200**
*Patent Pending*

**Therapeutic indication:** Malignant melanoma  
**Mechanism of action:** Inhibition of PKC-ι and PKC-ζ which are overexpressed in metastasized melanocytes  
**State of Technology:** *In vivo*
A Method of Treating Colorectal Cancer Using Atypical Protein Kinase C Inhibitors
Effective Blockage of Colorectal Cancer Cell Growth and Proliferation via aPKC inhibition

USF Tech ID# 16A098, 16B196
Patent Pending

Therapeutic Indication: Colorectal cancer
Mechanism of Action: Inhibition of atypical protein kinase C
State of Technology: In vitro

MBD2 Inhibitor Discovery Through Protein Intrinsic Disorder Prediction, Molecular Docking, Molecular Dynamics Simulation, and In Vitro & In Vivo Tests
An Attractive Strategy for Cancer Therapy via Inhibition of MBD2/3 and p66α

USF Tech ID# 16A107
Patent Pending

Therapeutic Indication: All cancer types
Mechanism of Action: Inhibition of MBD2/3 and p66α interaction
State of Technology: In vivo

Method of Targeting Oncolytic Viruses to Tumors
Targeting Tumor Cells with Selective and Effective Oncolytic Virus

USF Tech ID# 16B149
Patent Pending

Therapeutic Indication: Lung cancer
Mechanism of Action: Oncolytic virotherapy
State of Technology: In vitro

Press-Pulse: A Therapeutic Strategy for the Metabolic Management of Cancer
Cancer Therapy Through Inducing Chronic Stress on Tumor Cell Energy Metabolism

USF Tech ID# 16B192
Patent Pending

Therapeutic indication: All cancer types
Mechanism of action: “Press Pulse” disturbances
State of Technology: Methods

MBD2 Configurations

“Hot spots” show that stem cells loaded with RSV migrated to lungs with tumors.
Small Molecule Compounds and Peptidomimetics as In-Vivo Inhibitors and Activators of Tumor Suppressor PTEN Protein in Human Cells

Modulation of PTEN Activity in-vivo for the Treatment of Cancers and Neurological Diseases

**USF Tech ID# 17A011**
Patent Pending

Therapeutic Indication: All cancer types
Mechanism of Action: Activation/inhibition of dysregulated PTEN via small molecules
State of Technology: *In vitro*

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One-Bead-Two-Compound Macroyclic Library and Methods of Preparation and Use

Drug Screening Library for Identification of Compounds Involved in Various Types of Cancer

**USF Tech ID# 17A046**
Patent Pending

Therapeutic Indication: All cancer types
Mechanism of Action: Targeting receptor tyrosine kinase (RTK)
State of Technology: Compositions

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Bio-Active Flavonoid Apigenin Improves Anti-PD-L1 Immunotherapy Responses in Pancreatic Cancer

A Combination Immunotherapy Strategy

**USF Tech ID# 17A069**
Patent Pending

Therapeutic Indication: Pancreatic cancer
Mechanism of Action: A bio-active flavonoid termed Apigenin
State of Technology: *In vivo*

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Combination of Actinomycin-D and Telmisartan as a Treatment for Lung Cancer Stem Cells

A Method of Potentiating Localized Lung Cancer Therapy

**USF Tech ID# 18A010**
Patent Pending

Therapeutic Indication: Lung cancer stem cell treatment
Mechanism of Action: Actinomycin-D and Telmisartan
State of Technology: *In vivo*
A Method of Modulating Immunosenescence

**Novel Therapeutics for Treatment of Chronic Lung Inflammation (CLI)**

**USF Tech ID# 11B188**

**US Patent Number:** 9,550,992

**Therapeutic Indication:** Chronic lung inflammation

**Mechanism of Action:** Inhibition of myeloid derived suppressor cells

**State of Technology:** In vivo

**Technology Description**

Researchers at the University of South Florida have developed a novel use of an miRNA142 to regulate the differentiation of a heterogeneous group of cells termed as myeloid derived suppressor cells (MDSCs). These cells are known to accumulate in pathological conditions like cancers, infections and non-infectious triggers that elicit an inflammatory signal.

Our inventors have proposed an axis of Chronic Lung Inflammation (CLI) involving miRNA-regulated expression of IL-6 in MDSCs (MIM axis of CLI) that initiates a self-perpetuating inflammatory cascade. This targeted delivery of miRNA-nanoparticles to MDSCs to redirect differentiation and alter immunity from ‘suppressor’ to ‘responder’ mode may be harnessed to develop novel therapeutics for chronic lung inflammation in the elderly.

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**Therapeutic Target for Allergy Treatment**

**Inhibition of CB2 Receptor Expression to Alleviate Allergies**

**USF Tech ID# 08A026**

**US Patent Number:** 8,541,386 & 8,735,073

**Therapeutic Indication:** Allergy symptom relief

**Mechanism of Action:** Suppression of IgE antibody production

**State of Technology:** In vivo

**Technology Description**

Researchers at the University of South Florida have identified the gene promoter for CB2 in B cells as well as the mRNA products for both mice and humans. These RNA sequences are unique to B cells and thus make for highly specific targets for the treatment of allergies while decreasing the likelihood of off target effects. This invention could lead to potent new therapeutics for the elimination of allergy symptoms.
Methods of Treatment with POP2
Peptide Based Therapy to Treat Inflammation and Immunity Related Diseases

USF Tech ID# 05A026
US Patent Number: 9,163,071

Therapeutic indication: NFκB regulated cancers; inflammatory and immunity diseases
Mechanism of action: Negative regulator of NFκB
State of Technology: In vitro modeling

Inflammatory Disease Treatment with siRNA
Novel siRNA Target for Treatment of Asthma, RSV Infection, and Other Inflammatory Diseases

USF Tech ID# 06A040
US Patent Number: 8,071,565

Therapeutic indication: Asthma, Allergy, Hay Fever
Mechanism of action: CB2 Receptor Agonist
State of Technology: In vivo

Novel Human Mast Cell Line and Uses
Human Mast Cell Line to Serve as Experimental Model of Mast Cell Activation in Immunology Studies and Other Research

USF Tech ID# 09A022
US Patent Number: 9,096,829

Therapeutic indication: Immunology; asthma treatment; biomolecule production
Mechanism of action: Isolated from umbilical cord blood; survive in culture without exogenous cytokines
State of Technology: In vitro

Method for Reducing Immunoglobulin E
Novel Allergy Treatment Using Gp1A

USF Tech ID# 11A075
US Patent Number: 9,289,421

Therapeutic indication: Asthma, Allergy, Hay Fever
Mechanism of action: CB2 Receptor Agonist
State of Technology: In vivo modeling
**LRBA: Pro-Inflammatory Marker and Therapeutic Strategy**
A Sensitive Biomarker and Effective Therapeutic Target for Inflammatory Diseases

**USF Tech ID# 13A010**
US Patent Number: 9,738,706

- Therapeutic Indication: Inflammatory diseases
- Mechanism of Action: Monitoring and modulation of LRBA levels
- State of Technology: Clinical data

**Novel Additive for Infant Formula to Enhance Infant Health**
Optimal Cytokines, Chemokines and Growth Factor (CCGF) Levels for Supplementation of Infant Formula

**USF Tech ID# 13A087**
US Patent Number: 9,345,249

- Therapeutic Indication: Breast feeding age infants
- Mechanism of Action: Addition of CCGF to breast milk/formula
- State of Technology: Compositions

**Cell-Selective Gene Editing**
Targets Specific Gene Regulation

**USF Tech ID# 15B161**
Patent Pending

- Therapeutic Indication: Patient-specific therapy
- Mechanism of Action: Addition of guide RNA to microRNA target sequences
- State of Technology: In vitro

**Synthetic Routes to Catechin Metabolites**
Methods for Synthesizing Catechin Compounds to Study their Biochemical Properties and Potential for Large Scale Synthesis

**USF Tech ID# 15B179**
Patent Pending

- Therapeutic Indication: Nutritional supplement
- Mechanism of Action: Synthetic production avoids need to isolate compounds from natural sources
- State of Technology: In vitro
**MicroRNA-based Therapy for Infantile Hemangioma**  
*Cutting Edge Therapy for the Treatment of Infantile Hemangioma and other Vascular Malformations*

**USF Tech ID# 16A043**  
Patent Pending

**Therapeutic Indication:** Infantile Hemangioma  
**Mechanism of Action:** Regulating expression of chromosome 19 miRNA cluster  
**State of Technology:** In vitro

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**Inhibition of the Auto-Inflammation Suppressor ISG15**  
*Triggers Preeclampsia*  
*Triggered by Blocking Trophoblast Migration and Invasion*

**USF Tech ID# 17A027**  
Patent Pending

**Therapeutic Indication:** Preeclampsia  
**Mechanism of Action:** Inducing ISG15 expression  
**State of Technology:** In vitro

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**Grp Inhibitors to Treat Steroid-Induced Ocular Hypertensions and Glaucomas**  
*Steroid Induced Changes Suppressed in the Eye*

**USF Tech ID# 17B176**  
Patent Pending

**Therapeutic Indication:** Prevents steroid-induced changes in the eye  
**Mechanism of Action:** A therapeutic to inhibit Grp194  
**State of Technology:** In vivo

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**Alda-1 Shields Endothelial Cells Against Oxidative Stress via Activation of ALDH2**  
*Target and Therapeutic Approach for Allergic Diseases via Preservation of the Mitochondria*

**USF Tech ID# 18A048**  
Patent Pending

**Therapeutic Indication:** Therapeutic for allergic diseases  
**Mechanism of Action:** Aldehyde dehydrogenase 2 (ALDH2) combats mitochondrial dysfunction  
**State of Technology:** In vitro
Chemokine Ligand 2 to Inhibit Abnormal Uterine Bleeding
Adjuvant Treatment to Reverse Long Acting Reversible Contraception (LARC) Inhibition of VSMC Proliferation

**USF Tech ID# 15A037**
**Patent Pending**

**Therapeutic Indication:** Abnormal Uterine Bleeding  
**Mechanism of Action:** Effectively inhibits uterine bleeding in women using LARC  
**State of Technology:** In vitro

**Technology Description**
Researchers at the University of South Florida have identified a molecule, the chemokine ligand 2 (CCL2), whose recombinant human protein form holds promise in preventing Abnormal Uterine Bleeding (AUB) in women using long-acting reversible contraception (LARC). Our inventors have found that two progestin agents used in LARCs reduce proliferation of endometrial vascular smooth muscle cells (VSMCs), resulting in the production of thin-walled hyper-dilated fragile microvessels that are prone to bleed. Further studies have determined that the administration of recombinant CCL2 reverses this LARC effect. This invention utilizes this knowledge in the development of pharmaceutical compositions that can inhibit AUB associated with use of LARCs. These novel agents can be administered prophylactically in dosage form for oral, injectable, or transdermal delivery. This adjuvant treatment has the potential to effectively reduce side effects in women using LARCs through improved contraceptive formulations.

**Compositions: N-Thiolated Beta Lactams**
Over 30 Novel Compositions of Matter

**USF Tech ID# 01A032**
**US Patent Numbers:** 7,026,472; 7,635,693

**Therapeutic indication:** Solid and blood malignancies  
**Mechanism of action:** Stimulate caspase activity  
**State of Technology:** In vitro

**Methods of Stimulating Immune Cells by STAT signaling**
Cellular Methods Using T-cells and Dendritic Cells

**USF Tech ID# 02B086**
**US Patent Number:** 7,638,122

**Therapeutic indication:** Breast cancer  
**Mechanism of action:** Inhibition of STAT3  
**State of Technology:** In vitro
SnoN/SkiL in Ovarian Cancer
Early Stage Detection

**USF Tech ID# 08B108**
**US Patent Number:** 8,211,646

Therapeutic indication: Ovarian cancer
Mechanism of action: mRNA
State of Technology: Cell lines

PKC-iota Inhibitor for the Treatment of Breast Cancer
Potent Chemotherapy Against Breast Cancer

**USF Tech ID# 10A080**
**US Patent Number:** 9,351,981

Therapeutic Indication: Breast cancer
Mechanism of Action: Inhibition of PKC-ι via ICA-1
State of Technology: Clinical samples

Effective Treatment of Ovarian Cancer Using Triciribine and Related Compounds
Treatment Based on the Discovery that Deregulation is Shown in a Number of miRNAs in Human Ovarian Cancer

**USF Tech ID# 11B113**
**US Patent Number:** 9,433,635; 8,906,869

Therapeutic Indication: Ovarian cancer
Mechanism of Action: Deregulation of Akt Kinase Expression
State of Technology: In vitro

A Method to Inhibit Ovarian Cancer Proliferation
Halt Ovarian Cancer Progression

**USF Tech ID# 14A088**
**US Patent Number:** 9,301,965

Therapeutic Indication: Ovarian Cancer
Mechanism of Action: Protein kinase C (PKC) Inhibitor
State of Technology: Preclinical
Estrogen Anchored Micelles for Co-Delivery of Paclitaxel and BH3-Mimetic Enhance Therapeutic Efficacy in Breast Cancer: A Proteomics Guided Nano-Therapeutic Discovery

Encapsulating Paclitaxel Increases Drug Potency and Minimizes Side Effects

**USF Tech ID# 14B158**
Patent Pending

- **Therapeutic Indication:** Breast cancer
- **Mechanism of Action:** Upregulation of Zinc Finger Protein 350
- **State of Technology:** *In vivo*

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**Prevention of Preterm Birth (PTB) by Inhibition of FKBP51 Increases Gestational Length and Reduces Infant Mortality**

**USF Tech ID# 17A001**
Patent Pending

- **Therapeutic indication:** Preterm birth
- **Mechanism of action:** Inhibition of gene FKBP51
- **State of Technology:** *In vivo*

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NPG nanoparticles observed along the cell membrane after 5 Minutes of treatment.

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