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 recently ranked in the Top 20 of American Universities for technology transfer by the prestigious Milken Institute. With 114 new utility patents issued in 2016, USF ranks fifth among American public universities and 11th among universities worldwide in generating new U.S. patents, according to the National Academy of Inventors (NAI) and Intellectual Property Owners Association (IPO). This past year, the university had a record 133 license and option agreements, ranking 9th nationally among individually reporting schools (comparison to the most recent available published data – AUTM 2015 survey). USF also had 9 new startup companies in FY 2016, and has facilitated the formation of 50 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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**A Mucosal 2-5 Oligoadenylate Synthetase DNA Vaccine for Respiratory Syncytial Virus**
*An Intrasinal IFN-g 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-g gene transfer therapy
State of Technology: In vitro

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**An Intranasal Gene Cocktail Chitosan Vaccine Against Respiratory Syncytial Virus**

*Intranasal Chitosan DNA Nanosphere*

**USF Tech ID# 01B052**
**US Patent Number:**

Therapeutic Indication: Vaccine
Mechanism of Action: Intranasal gene transfer using chitosan nanospheres
State of Technology: In vivo

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**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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**Activity of New N-Acylated Ciprofloxacin Derivatives Against Facultative Intracellular Bacteria**

*A Novel Method Against Bartonella Henselae and Francisella Tularensis*

**USF Tech ID# 10A019**
**US Patent Number:** 8,143,398

Therapeutic Indication: Antibacterial
Mechanism of Action: Inhibition of DNA gyrase
State of Technology: In vitro
**University of South Florida**

**Anti-Bacterial**

### γ-AApeptides as Novel Antimicrobial Peptidomimetics
*Can be Used to Treat Clinically Relevant Strains of Resistant Microbes*

**USF Tech ID# 11B149**
**US Patent Number:** 9,499,587

- **Therapeutic Indication:** Antibacterial, Antimicrobial
- **Mechanism of Action:** Disruption of microbial protein-protein interactions
- **State of Technology:** *In vitro*

### Inhibitors of CTX-M beta-Lactamases for New Antibiotic Development
*Novel Inhibitor Scaffolds Against CTX-M Beta-Lactamases that May be Used as the Basis for Developing New Antibiotics*

**USF Tech ID# 11B156**
**US Patent Number:** 9,556,131

- **Therapeutic Indication:** Antibiotic development
- **Mechanism of Action:** CTX-M β-lactamases target drug resistant organisms
- **State of Technology:** *In vitro*

### 2,4-Diaminoquinazolines as Anti-Bacteria
*Novel Antimicrobials Against Methicillin Resistant Staphylococcus Aureus*

**USF Tech ID# 12A036**
**US Patent Number:** 8,906,918

- **Therapeutic Indication:** Antimicrobial
- **Mechanism of Action:** 2, 4 Diaminoquinazoline analogues
  - Staphylococcal infections
- **State of Technology:** *Preclinical*

### 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 bloodstream 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

### Novel Targeted PEGylated Liposome Conjugated with siRNA and Four Anti-Tubercular Drugs for the Treatment of Mycobacterium Infection

**Novel Anti-TB Liposomes Capable of Encapsulating Common Clinical anti-TB drugs and Able to be Coated with TGF-β1 siRNA**

**USF Tech ID#** 14B126  
**Patent Pending**  
**Therapeutic Indication:** Treatment of mycobacterium infection  
**Mechanism of Action:** Anti-TB liposomes  
**State of Technology:** In vitro

### 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

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**AA = Antimicrobial Agent**

**Structure A**

**Structure B**

\[ R = CH_3, sBu \]
\[ R' = 2-ClPh \]
\[ R'' = CH_3, pentyl, hexyl \]

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**The morphology and size distribution of the liposomal nanoparticles as observed by SEM and TEM.**

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**A) Leishmania donovani**  
**B) Enterobacte spp**  
**C) Methicillin-resistant Staphylococcus aureus**  
**D) Acinetobacter**

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

*Novel Antimicrobials Demonstrating Bioactivity Against L. Donovani Parasite*

**USF Tech ID# 15B123**

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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**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**

**MIC of C3ZPNPs against co-culture of E. coli BAA-2471 and E. faecium 1449: 1.302 mg/mL**

**MIC of C1ZPNPs against co-culture of E. coli BAA-2471 and E. faecium 1449: 0.781 mg/mL**
Pseudomonas Aeruginosa LpxD Constructs for Studying Protein-Ligand Interactions
Two Novel Protein Constructs of Pseudomonas Aeruginosa LpxD

USF Tech ID# 16B133
Patent Pending

Therapeutic Indication: Analysis of interactions between protein and small molecule/peptide ligands
Mechanism of Action: X-ray crystallography
State of Technology: Compositions

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

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

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

Migration of S. mutans through a section of placental tissue.
B: S. mutans bacteria.
D: Disrupted and digested collagen fibrils

A compound which may be used as a ligand for LpxD.
Characterizing the Antimicrobial Activity of N2,N4-Disubstituted Quinazoline-2,4-Diamines towards Multidrug Resistant 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

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

Novel Inhibitors of Efflux Pumps of Multi-Drug Resistant Bacterial Pathogens

USF Tech ID# 16B146
Patent Pending

Therapeutic Indication: A treatment against multidrug resistant bacterial pathogens
Mechanism of Action: Efflux Pump Inhibitor
State of Technology: In vitro

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

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: Antibacterial
Mechanism of action: Bis-cyclic guanidines
State of Technology: In vitro
Piperazino-Substituted 4(1H)-Quinolones Targeting Erythrocytic and Exoerythrocytic Stages of Malaria

Optimized 4(1H)-Quinolones for Treatment of Malaria

**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.

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 *niglenia fowleri*

**State of Technology:** In vitro

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
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*

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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

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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

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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*
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

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

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

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

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

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

Contact us: 3802 Spectrum Blvd., Suite 100 Tampa, FL 33612 - 813.974.0994 patents@research.usf.edu | http://www.research.usf.edu/pl
**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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**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
**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

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**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

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**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

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**Hemolix - Mobile Technology for Hemolysis Detection**

*A Novel Mobile Application Able to Detect Hemolysis in Under an Hour Without Sample Pre-Processing*

**USF Tech ID# 14B138**

**US Patent Number:** 9,547,899

**Therapeutic Indication:** Hemolysis detection

**Mechanism of Action:** Hemoglobin level in plasma is determined by a camera based on color

**State of Technology:** Prototype

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**Various Hemoglobin concentrations (left) compared to water (right).**

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**Cross-sectional scanning electron microscope image of sol-gel niobia-PEI.**

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**Cross-sectional scanning electron microscope image of sol-gel niobia-PEI.**

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**Cross-sectional scanning electron microscope image of sol-gel niobia-PEI.**
### Simultaneous Sample Manipulation and Sensing Using Surface Acoustic Waves

**Therapeutic Indication:** Biomarker detection  
**Mechanism of Action:** Removes nonspecifically bound proteins from the surface of biosensors  
**State of Technology:** Prototype  

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

### MicroRNAs Modulating Immunity and Inflammation

**Therapeutic Indication:** Cancer diagnoses and therapeutics  
**Mechanism of Action:** miRNA  
**State of Technology:** In vivo  

**USF Tech ID# 07A058**  
**US Patent Number:** 9,089,589 & 8,415,096

### Micro-Activity Enhanced Surface Acoustic Wave Devices

**Therapeutic Indication:** Enhanced sensitivity and lower power consumption of surface acoustic wave devices  
**Mechanism of Action:** Surface Acoustic Wave (SAW) devices  
**State of Technology:** Prototype  

**USF Tech ID# 08A001**  
**US Patent Number:** 8,089,196

### Identification of DNA Segment Involved in Chromosome Rearrangements

**Therapeutic Indication:** Cancer diagnostics and treatments  
**Mechanism of Action:** Statistical analysis and associated algorithm  
**State of Technology:** In vitro  

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

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**An illustration of Hexagonal Surface Acoustic Waves (SAW) Device Schematic.**

**Meshed \( \lambda/2 \times \lambda/2 \times \lambda/2 \) Micro-cavity SAW Device**

**Arrows indicating location of fusion genes by microscopic method.**
PKC δII 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

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

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

RNA extracted by RT-PCR with primers specific for PKCδVIII.
### 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

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### Hemolysis Sensor

**A Sensor Capable of Detecting Hemolysis Levels in Whole Human Blood Samples**

**USF Tech ID# 12A091**  
**Patent Pending**

- **Therapeutic Indication:** Analyses and quantitative measurements of blood samples
- **Mechanism of Action:** Separation of plasma from whole blood for analysis
- **State of Technology:** Prototype

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### Detecting Blood Coagulation On-Chip

**A Low Cost Method to Determine the Speed of Blood Coagulation in Patients with Blood Clotting Disorders**

**USF Tech ID# 12B102**  
**US Patent Number:** 9,297,816

- **Therapeutic Indication:** Medical devices for blood coagulation
- **Mechanism of Action:** On-chip optical sensor based on back reflection
- **State of Technology:** Prototype

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### 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

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Left: trimetric view of device with the fiber optic.  
Middle: a red blood cell (6-8µm), as compared to the membrane.  
Right: cross-sectional view of device.
**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 Indicator: Early stage ovarian cancer identification  
Mechanism of Action: Lysophospholipids as biomarkers  
State of Technology: Clinical samples

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

**USF Tech ID# 16A034**  
Patent Pending

Therapeutic Indicator: Ovarian cancer detection  
Mechanism of Action: Urinary RHAMM levels  
State of Technology: Clinical samples

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**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 Indicator: Breast and prostate cancer detection  
Mechanism of Action: Natriuretic peptide receptor A  
State of Technology: In vitro

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**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 Indicator: Ovarian cancer  
Mechanism of Action: Genetic screening process  
State of Technology: In vitro

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*Formalin Fixed Paraffin Embedded FFPE Sample*
**Micro-RNA Profiles Associated with Endometrial Cancer Development and Response to Cisplatin and Doxorubicin Chemotherapy**

*Title: 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*  

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**Gene Expression Signature for Predicting Response to Treatment in Colon Cancer**

*Title: Genes that could Help to Distinguish Between Responders and Non-Responders to the First Line of Chemotherapy Treatment for Systemic Colorectal Cancer*

*USF Tech ID#: 07B074*

Patent Pending

Therapeutic indication: Chemotherapy for colorectal cancer

Mechanism of action: A whole genome microarray analysis on extracted RNA from biopsies

State of Technology: *Clinical samples*  

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**Identification of Bif-1/Endophilin B1 as a Cancer Diagnostic Marker**

*Title: 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*  

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**PKC-iota as a Predictor of Prostate Carcinogenesis**

*Title: Methods for Detecting and Treating Prostate Tumorigenesis and Neuroblastoma with use of Protein Kinase C-iota (PKC-iota)*

*USF Tech ID#: 07B111*

*US Patent Number: 9,078,915*

Therapeutic indication: Prostate and neuroblastoma treatment

Mechanism of action: Measurement of PKC-iota levels with Western Blot

State of Technology: *Clinical samples*  

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Contact us: 3802 Spectrum Blvd., Suite 100 Tampa, FL 33612 - 813.974.0994 patents@research.usf.edu | http://www.research.usf.edu/pl
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

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

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
State of Technology: In vitro

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

Preparation of Thermoreversible Gel

20% w/v AFL+DOX Gel
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

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

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

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

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
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

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 tumor cells 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*

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*

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*

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*
**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

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**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

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**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

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**Methods of Treatment Using Apo-2L/TRAIL and LAQ824 Synergistic Combination**

**USF Tech ID# 02B079**  
**US Patent Number:** 7,786,170

- **Therapeutic Indication:** Acute myeloid leukemia
- **Mechanism of Action:** Histone deacetylase inhibitors
- **State of Technology:** Clinical data
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

**Nanomolar Efficacy**

**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

### 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
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

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
Does Little or No Damage to Healthy Cells and Tissues

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

Therapeutic Indication: Multiple
Mechanism of Action: Specifically targets Bcl-xL
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

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
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

PKC-iota in Prostate Cancer
Differentiate Between Benign and Cancerous Lesions and Treatment of Prostate Tumor

USF Tech ID# 07B111, 09B141
US Patent Number: 8,603,758; 9,078,915

Assay Type: Protein, Western blot
Data Available: Clinical samples

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

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
**RGD Mimetic y-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

**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

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Screening of Anti-Cancer Drugs for Colorectal Cancer
Optimizing Colorectal Adenocarcinoma Treatment with Drug Screening

**USF Tech ID# 16A035**
**Patent Pending**

**Therapeutic Indication:** Colorectal cancer

**Mechanism of Action:** Mithramycin A, epirubicin and daunorubicin inhibit growth of human colorectal cancer cells on 3D cell cultures

**State of Technology:** In vitro

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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

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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
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
### A Method of Modulating Immunosenescence

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

**USF Tech ID# 11B188**

**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.

### Methods of Treatment with POP2

**Peptide Based Therapy to Treat Inflammation and Immunity Related Diseases**

**USF Tech ID# 05A026**

**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**

**Therapeutic Indication:** Inflammatory diseases

**Mechanism of action:** Inhibition of inflammatory protein expression

**State of Technology:** In vivo
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*

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**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*

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**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*

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**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*
University of South Florida

Immune and Inflammatory

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**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*

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**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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**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*
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
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*

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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*

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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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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*
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*

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

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