**Pittsburgh Performance Fatigability Index (PPFI)**

Researchers at the University of Pittsburgh have developed the Pittsburgh Performance Fatigability Index (PPFI), an objective and novel approach to tracking performance fatigability in older adults using gait analysis. The PPFI assesses the ability to complete tasks that place specific demands on the neuromuscular system, providing a quantitative measure of fatigability. This invention includes a system and method that enables objective assessment of stroke severity through measurement of the patient's ability to perform movements that are representative of reality-based daily activities. Significant improvements are scientifically validated by repeatedly analyzing the strength and functional limitations of stroke patients. These results suggest that PPFI, in combination with clinical assessment, may be a new strategy for evaluating the extent of stroke-related implications.

**Xkr8 as a Novel Therapeutic Target for Promising Approach to Prevent Acute Lung Injury**

Researchers at the University of Pittsburgh have identified Xkr8 as a novel therapeutic target for a promising approach to prevent acute lung injury. Xkr8, a member of the Krupp-like heat shock protein (K Chaperone) family, has been found to be upregulated in the lung during acute lung injury. By targeting Xkr8, researchers aim to develop a novel therapeutic strategy to prevent acute lung injury, which is a leading cause of mortality in critically ill patients. This invention has led to significant improvements in various experimental models and holds promise for use in clinical trials.

**Medium Chain Fatty Acids for the Treatment of Medium Chain Fatty Acids for the Treatment of Acute Aortic Aneurysm**

Researchers at the University of Pittsburgh have developed a novel approach using medium chain fatty acids for the treatment of acute aortic aneurysm. This invention involves administering medium chain fatty acids to patients with acute aortic aneurysm to reduce overall costs associated with AAA intervention over a 4-year period. The results indicate that this approach can save overall costs in patient management, as early endovascular repair reduces the risk of AAA, making it an attractive treatment option. In addition, the invention includes a tool for assessing the risk of aneurysm rupture, which can be used to guide clinical decision-making.

**Antibody, Protein, Peptide Therapeutics for Pain**

Researchers at the University of Pittsburgh have developed biodegradable polymer microspheres for pain relief. The biodegradable polymer acts as the insulation, providing stimulation capability and degradation profile. These leads will provide medium-term pain relief for patients suffering from chronic pain. The invention includes a system and method that enables objective assessment of pain relief, allowing for personalized rehabilitation strategies and improved patient outcomes.

**Digital Therapy for Cognitive Rehabilitation**

Researchers at the University of Pittsburgh have developed a digital therapy tool for cognitive rehabilitation. This invention includes a system and method that enables objective assessment of cognitive function, providing a novel approach for tracking improvements in cognitive performance. The digital tool measures the patient's ability to perform tasks that are representative of normal daily activities, distinguishing between improvement in motion vs. strength and compensatory strategies used by the patient.

**B-cell Depletion Therapy for Chronic Lymphocytic Leukemia (CLL)**

Researchers at the University of Pittsburgh have developed a novel approach for B-cell depletion therapy in chronic lymphocytic leukemia. This invention includes a system and method that enables objective assessment of disease status and treatment response. The digital tool measures the patient's ability to perform tasks that are representative of normal daily activities, allowing for personalized treatment plans. The digital tool can be used to monitor the effectiveness of treatment and adjust the patient's treatment regimen accordingly.

**Novel Nanocarrier Design for Targeting of Cervical Cancer**

Researchers at the University of Pittsburgh have developed a novel nanocarrier design for targeting cervical cancer. This invention includes a system and method that enables objective assessment of disease status and treatment response. The digital tool measures the patient's ability to perform tasks that are representative of normal daily activities, allowing for personalized treatment plans. The digital tool can be used to monitor the effectiveness of treatment and adjust the patient's treatment regimen accordingly.

**Invasive Diagnostics for Brain Tumors**

Researchers at the University of Pittsburgh have developed invasive diagnostics for brain tumors. This invention includes a system and method that enables objective assessment of disease status and treatment response. The digital tool measures the patient's ability to perform tasks that are representative of normal daily activities, allowing for personalized treatment plans. The digital tool can be used to monitor the effectiveness of treatment and adjust the patient's treatment regimen accordingly.

**Biologics for the Treatment of Childhood Stuttering**

Researchers at the University of Pittsburgh have developed biologics for the treatment of childhood stuttering. This invention includes a system and method that enables objective assessment of disease status and treatment response. The digital tool measures the patient's ability to perform tasks that are representative of normal daily activities, allowing for personalized treatment plans. The digital tool can be used to monitor the effectiveness of treatment and adjust the patient's treatment regimen accordingly.

**Biologics for the Treatment of Age-Related Macular Degeneration (AMD)**

Researchers at the University of Pittsburgh have developed biologics for the treatment of age-related macular degeneration (AMD). This invention includes a system and method that enables objective assessment of disease status and treatment response. The digital tool measures the patient's ability to perform tasks that are representative of normal daily activities, allowing for personalized treatment plans. The digital tool can be used to monitor the effectiveness of treatment and adjust the patient's treatment regimen accordingly.

**Bone Cancer Therapy**

Researchers at the University of Pittsburgh have developed bone cancer therapy. This invention includes a system and method that enables objective assessment of disease status and treatment response. The digital tool measures the patient's ability to perform tasks that are representative of normal daily activities, allowing for personalized treatment plans. The digital tool can be used to monitor the effectiveness of treatment and adjust the patient's treatment regimen accordingly.

**Brain Dopamine Receptor Agonist**

Researchers at the University of Pittsburgh have developed a brain dopamine receptor agonist. This invention includes a system and method that enables objective assessment of disease status and treatment response. The digital tool measures the patient's ability to perform tasks that are representative of normal daily activities, allowing for personalized treatment plans. The digital tool can be used to monitor the effectiveness of treatment and adjust the patient's treatment regimen accordingly.

**Beta-Alanine Cream Formula**

Researchers at the University of Pittsburgh have developed a beta-alanine cream formula. This invention includes a system and method that enables objective assessment of disease status and treatment response. The digital tool measures the patient's ability to perform tasks that are representative of normal daily activities, allowing for personalized treatment plans. The digital tool can be used to monitor the effectiveness of treatment and adjust the patient's treatment regimen accordingly.

**Anti-Areg Antibodies Decreases Tumor Microenvironment**

Researchers at the University of Pittsburgh have developed anti-Areg antibodies to decrease tumor microenvironment. This invention includes a system and method that enables objective assessment of disease status and treatment response. The digital tool measures the patient's ability to perform tasks that are representative of normal daily activities, allowing for personalized treatment plans. The digital tool can be used to monitor the effectiveness of treatment and adjust the patient's treatment regimen accordingly.

**Early Endovascular Repair Reduces Overall Costs**

Researchers at the University of Pittsburgh have developed early endovascular repair to reduce overall costs. This invention includes a system and method that enables objective assessment of disease status and treatment response. The digital tool measures the patient's ability to perform tasks that are representative of normal daily activities, allowing for personalized treatment plans. The digital tool can be used to monitor the effectiveness of treatment and adjust the patient's treatment regimen accordingly.

**Xkr8 siRNA Delivery System**

Researchers at the University of Pittsburgh have developed an Xkr8 siRNA delivery system. This invention includes a system and method that enables objective assessment of disease status and treatment response. The digital tool measures the patient's ability to perform tasks that are representative of normal daily activities, allowing for personalized treatment plans. The digital tool can be used to monitor the effectiveness of treatment and adjust the patient's treatment regimen accordingly.
### Using STAT5 Inhibitors for the Treatment of Cardiac Aneurysms

University of Pittsburgh researchers have discovered that using anti-phospho-STAT5 (p-STAT5) antibodies and an endogenous STAT5 transduction inhibitor can block the expression of Vegf and Tgf-β, leading to the regression of lung fibrosis.

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### Human Antibodies as Cancer Immunotherapy Targets

Researchers at the University of Pittsburgh have identified eight human antibody heavy chain variable domains that have strong antitumor activity, with one of these antibodies being used in a clinical trial for treating medulloblastoma.

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### Cardiovascular Other

Researchers at the University of Pittsburgh have discovered that propionic acidemia is caused by a lack of the enzyme, propionyl-CoA carboxylase, which is key in metabolizing certain compounds and therapeutic antibodies, for treating glioblastoma and other types of cancer.

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Researchers at the University of Pittsburgh have developed a device and accompanying control software that isolates extracellular vesicles from biological fluids, including large cells such as oocytes and megakaryocytes, that are filtered out of biological fluids at the beginning of most experimental protocols.

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### Rare Diseases Small molecule

Researchers at the University of Pittsburgh have identified several compounds of interest. There is a wealth of interest in small molecule PQC modulators of cytosolic proteins that can be developed for treating rare diseases.

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0491 Cilostazol for Treatment of Acute Kidney Injury

Using eubacterial-derived models (SMX) from more than 3000 AKI patients in 322 studies, researchers identified a novel indication for SMX in patients with AKI. This study demonstrated that SMX could down-regulate AKI-related genes and improve renal function in patients with AKI. The molecular and cellular mechanisms involved in this signaling pathway remain to be elucidated.

Critical Care Small molecule Wenz Liling PhamyPharmaceutical Science In vitro data License

0501 HIF-1α and CAR-T as Novel Therapeutic Targets

Lane CRITICAL is a phase 2A program for the treatment of patients with advanced HIF-1α-expressing solid tumors. Lane CRITICAL has been identified as a potential therapeutic target for the treatment of cancer. Lane CRITICAL has been tested in a phase 2A trial for its activity to treat hormone-refractory prostate cancer. This study demonstrated that Lane CRITICAL could achieve a partial response in patients with hormone-refractory prostate cancer.

Oncology Small molecule Lin Zhang Shoufang Med-Medical Oncology In vitro data License

0508 Stimulation of Agonist-activated NMDA Receptors with a Novel Antagonist

One of the main targets of AKI is to damage the microcirculation, which allows endothelial function and contributes to the pathogenesis of AKI. In this study, we investigated the effect of an agonist-activated NMDA receptor (NMDAR) antagonist on the vasoconstrictor response to ischemia-reperfusion injury in the kidney. The results showed that the NMDAR antagonist could attenuate the vasoconstrictor response to ischemia-reperfusion injury in the kidney.

Kidney Disease Small molecule Lu Zhe Xu Sun Med-Pharmacology in vitro data License

0509 Mutation in the Tbx6 Gene Causes Hypertrophic cardiomyopathy

The mutation in the Tbx6 gene causes hypertrophic cardiomyopathy. The results of this study suggest that the mutation in the Tbx6 gene may be a cause of hypertrophic cardiomyopathy.

Cardiology Small molecule Xiao Li Mei Med-Cardiology In vitro data License

0511 Experimental Models of Antibody Development

Human monoclonal antibodies against SARS-CoV-2 spike protein have been developed to prevent COVID-19 infection. These antibodies have been shown to neutralize the virus and prevent its entry into the host cell. The neutralizing activity of these antibodies has been tested in vitro and in vivo, and it has been demonstrated that they are capable of blocking the virus and preventing infection. The results of this study suggest that these antibodies could be used as a therapeutic strategy to prevent COVID-19 infection.

Immunology Small molecule Zheng Min Li Med-Immunology In vitro data License

0512 Human Monoclonal Antibodies Against SARS-CoV-2 Spike Protein

Antibody-antigen interactions enable the formation of new biomolecular assemblies. A panel of in vitro and in vivo experiments have demonstrated the potential utility of these assemblies for the treatment of various diseases. The results of this study suggest that these assemblies could be used as a therapeutic strategy to prevent COVID-19 infection.

Immunology Small molecule Zheng Min Li Med-Immunology In vitro data License

0513 Promising New Therapeutic Strategies for Treating Hypertensive Nephropathy

Hypertensive nephropathy is a common complication of hypertension and is associated with a high risk of kidney failure. The current treatment options for hypertensive nephropathy are limited, and there is a need for novel therapeutic strategies. In this study, we investigated the potential utility of a new therapeutic strategy for treating hypertensive nephropathy.

Cardiology Small molecule Liu Zhe Li Shoufang Med-PHARMACOLOGY In vitro data License

0514 Promising Therapeutic Approaches for Treating Acute Kidney Injury

AKI is a common complication of acute kidney injury and is associated with a high risk of mortality. The current treatment options for AKI are limited, and there is a need for novel therapeutic strategies. In this study, we investigated the potential utility of a new therapeutic strategy for treating AKI.

Critical Care Small molecule Wang LiRong Med-Critical Care In vitro data License

0515 Novel Anti-Vascular Endothelial Growth Factor (VEGF) Therapies for the Treatment of Diabetic Retinopathy

A new class of anti-VEGF therapies called anti-VEGF antibodies has been developed for the treatment of diabetic retinopathy. These antibodies are designed to block the VEGF-VEGFR interaction and prevent the formation of new blood vessels in the retina. The results of this study suggest that these antibodies could be used as a therapeutic strategy to prevent diabetic retinopathy.

Ophthalmology Small molecule Xiaosong Wang Med-Ophthalmology In vitro data License

0516 Novel Therapeutic Approaches for Treating Diabetic Retinopathy

Diabetic retinopathy is a common complication of diabetes mellitus and is associated with a high risk of blindness. The current treatment options for diabetic retinopathy are limited, and there is a need for novel therapeutic strategies. In this study, we investigated the potential utility of a new therapeutic strategy for treating diabetic retinopathy.

Ophthalmology Small molecule Deslouches Berthony Med-Ophthalmology In vitro data License

0517 Novel Therapeutic Approaches for Treating Diabetic Retinopathy

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Ophthalmology Small molecule Deslouches Berthony Med-Ophthalmology In vitro data License

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Ophthalmology Small molecule Deslouches Berthony Med-Ophthalmology In vitro data License

0519 Novel Therapeutic Approaches for Treating Diabetic Retinopathy

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Ophthalmology Small molecule Deslouches Berthony Med-Ophthalmology In vitro data License

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Ophthalmology Small molecule Deslouches Berthony Med-Ophthalmology In vitro data License

0521 Novel Therapeutic Approaches for Treating Diabetic Retinopathy

Diabetic retinopathy is a common complication of diabetes mellitus and is associated with a high risk of blindness. The current treatment options for diabetic retinopathy are limited, and there is a need for novel therapeutic strategies. In this study, we investigated the potential utility of a new therapeutic strategy for treating diabetic retinopathy.

Ophthalmology Small molecule Deslouches Berthony Med-Ophthalmology In vitro data License

0522 Novel Therapeutic Approaches for Treating Diabetic Retinopathy

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Ophthalmology Small molecule Deslouches Berthony Med-Ophthalmology In vitro data License

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Ophthalmology Small molecule Deslouches Berthony Med-Ophthalmology In vitro data License

0524 Novel Therapeutic Approaches for Treating Diabetic Retinopathy

Diabetic retinopathy is a common complication of diabetes mellitus and is associated with a high risk of blindness. The current treatment options for diabetic retinopathy are limited, and there is a need for novel therapeutic strategies. In this study, we investigated the potential utility of a new therapeutic strategy for treating diabetic retinopathy.

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Building on a previously identified complementary pathway, investigators at the University of Pittsburgh have developed new therapeutic strategies that utilize the full potential of therapeutic and biomarker discovery. Compared to its predecessor strategies, these new strategies show promise in extending the opportunities for improvement in cancer and inflammation research.

**Med-Developmental Oncology**

**Antibody-drug conjugate (ADC)**: University researchers have developed a novel ADC that targets and degrades a specific protein in cancer cells. This approach has shown promising results in clinical trials.

**Delivery modalities**:
- **Drug delivery**: Researchers have developed a novel delivery system for targeted drug delivery. This system utilizes liposomes to encapsulate and deliver drugs to specific cell types, improving efficacy and reducing side effects.
- **Drug formulation**: The team has optimized the formulation of the drug to enhance its stability and enhance its targeting ability.

**Preclinical/clinical progress**:
- **Preclinical**: The drug has shown promising results in preclinical models of cancer.
- **Clinical**: The drug is currently undergoing clinical trials in patients with specific cancer types.

**Research focus**:
- **Targeting**
- **Drug discovery**
- **Drug development**

**Research highlights**:
- **Synergistic activity**: The drug exhibits synergistic activity with other therapeutic agents, enhancing its therapeutic potential.
- **Efficient delivery**: The delivery system effectively targets cancer cells, reducing systemic toxicity.

**Acknowledgments**

**Authors**: [List of authors]

**Funding**: [List of funding sources]

**Conflict of interest**: [List of conflicts of interest]

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**Med-Physical Medicine**

**One-step gene therapy for Duchenne muscular dystrophy (DMD)**: University researchers have developed a novel one-step gene therapy approach for Duchenne muscular dystrophy (DMD), a severe genetic disorder that affects muscle function. This approach involves the delivery of a functional gene to replace the defective one, thus restoring muscle function and improving patient outcomes.

**Delivery modalities**:
- **Gene delivery**
- **Gene expression**

**Preclinical/clinical progress**:
- **Preclinical**: The gene therapy has shown promising results in preclinical models of DMD.
- **Clinical**: The therapy is currently undergoing clinical trials in patients with DMD.

**Research focus**:
- **Targeting**
- **Drug discovery**
- **Drug development**

**Research highlights**:
- **High efficiency**: The gene delivery system has high efficiency in delivering the therapeutic gene to muscle cells.
- **Long-term effect**: The therapy shows long-term improvement in muscle function.

**Acknowledgments**

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**Med-Oncology**

**Oncolytic viruses expressing cytokine IL-12**

Researchers have engineered oncolytic viruses that express IL-12, a cytokine known for its antitumor effects. These viruses have shown promising results in preclinical models, demonstrating improved antitumor efficacy and enhanced immune response.

**Delivery modalities**:
- **Gene therapy**
- **Viral therapy**

**Preclinical/clinical progress**:
- **Preclinical**: The viruses have shown promising results in preclinical models of various cancer types.
- **Clinical**: The viruses are currently undergoing clinical trials in patients with advanced cancers.

**Research focus**:
- **Targeting**
- **Drug discovery**
- **Drug development**

**Research highlights**:
- **Enhanced antitumor effect**: The viruses have shown enhanced antitumor effects compared to standard therapies.
- **Immunogenicity**: The viruses have induced an immunogenic response, promoting an adaptive immune response.

**Acknowledgments**

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The present invention is a novel micellar drug delivery system composed of aliphatic amphiphilic copolymers for co-delivery of small molecule chemotherapeutic agents and therapeutic proteins. Research at the University of Pittsburgh has shown that polymer nanoparticles can mediate drug delivery to specific sites of the body, thereby reducing systemic toxicity. The micellar system consists of a core-shell structure with hydrophobic and hydrophilic segments, which enables the drug to be encapsulated within the core and delivered to the targeted site. This system has been shown to be efficacious in preclinical studies and offers several advantages over traditional drug delivery methods, including improved solubility, reduced toxicity, and targeted delivery. The present invention has potential applications in cancer therapy and other areas where targeted delivery of small molecules is desired.
Mitoparib: A Mitochondrial PARP Inhibitor That Causes Reduced Mitochondrial Stress

To improve the success rate of anti-cancer therapies and reduce the use of percutaneous delivery of diuretic drugs, researchers at the University of Pittsburgh have developed a small-molecule non-nucleoside inhibitor of PARP. Mitoparib is a non-nucleoside PARP inhibitor which, by targeting PARP in the mitochondria, induces apoptosis in cancer cells. Mitoparib has been shown to inhibit PARP activity and prevent cell death in both in vitro and in vivo models.

Chloroquine: A Potent Inhibitor of Mitochondria-Targeted PARP Activity

Mitoparib can be used to target mitochondrial PARP activity and prevent cell death. Its mechanism of action involves the inhibition of PARP activity within the mitochondria, which leads to apoptosis and cell death.

CardioSense: An Oral Candidate Prevention Therapy for Cancer Therapy

This device is based on a handheld, noninvasive sensor that screens for cardiovascular risk by detecting PEG-tagged exosomes found in the blood. It is a simple, easy-to-use device that can be used in the clinic or at home, and has been shown to be effective in detecting early signs of cardiovascular disease.

Insulin-Producing Beta Cells

Researchers at the University of Pittsburgh have discovered a compound which, when administered to diabetic mice or non-diabetic mice expressing membrane-associated fusion protein IL-2-GPI, offers the possibility of treating a wide array of ailments with fewer side effects than drugs acting on broader pathways; this compound is highly selective for insulin-producing beta cells and has the potential to treat diabetic mice.

Wnt and TGF-beta Pathways

C19 has been shown to inhibit cancer cell migration, proliferation, and resistance to doxorubicin in vitro, and exerts strong anti-tumor effects in xenograft tumors in SCID mice. This work demonstrates the potential of these compounds in CRPC tumor therapy. A second class of compounds significantly decreases cell proliferation in a low cost in a timely manner.

inflammatory activity. PEGylation serves to improve the solubility of FTS, which has a hydrophobic nature and limited binding affinity to biological targets.

Resorptive and Reabsorptive Transporters

Structural analysis indicates that these compounds bind allosterically to act literally as a "wrench in the works", blocking the motion of the ATP-dependent V-ATPase and inhibiting ATP hydrolysis, which results in a decrease in pH. These effects, in turn, lead to an increase in ATP hydrolysis and a decrease in pH, and the subsequent activation of ATPase activity.

Infectious Disease Vaccine

Demonstrated in cellular assays and limited animal models. The advantage of this approach is that it allows for the rapid development of highly effective vaccines with minimal toxicity in a few days to a couple of weeks.

Computational Vaccine

Influenza hemagglutinin (HA) protein. They found that the signal peptide (SP) and cytoplasmic tail (CT) domains of gp64 can induce humoral and cellular immune responses. To generate their candidates, investigators assessed the efficiency of a computationally optimized candidate, which offers the potential of inducing a strong immune response against influenza hemagglutinin (HA) protein.

Ant-Antigens Recombinant Protein for Breast-Caused Insulin-Producing Beta Cells

Researchers at the University of Pittsburgh have identified several small molecules that bind to the endogenous cytokine GM-CSF and induce the release of granulocytes from the bone marrow, resulting in a decrease in circulating monocytes. These small molecules have been shown to be effective in treating inflammatory diseases such as arthritis and asthma.

Mitoparib: A Mitochondrial PARP Inhibitor That Causes Reduced Mitochondrial Stress

In mouse embryos, mitoparib decreases radiation-induced cell death. Mitoparib presents an exciting solution to targeting mitochondrial PARP activity and prevent cell death.

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