National Institute Of Health Technology Transfer Office ,United States

The NIH Office of Technology Transfer evaluates, protects, markets, licenses, monitors, and manages the wide range of NIH and FDA discoveries, inventions, and other intellectual property as mandated by the Federal Technology Transfer Act and related legislation. To accomplish its mission, OTT oversees patent prosecution and negotiates and monitors licensing agreements. OTT performs similar functions for patenting and licensing activities for the Food and Drug Administration (FDA), another component of the Department of Health and Human Services (HHS). Other major functions within OTT include the development of technology transfer policies for NIH and with the other two major research components of HHS (FDA and the Centers for Disease Control and Prevention [CDC]) and the implementation of decisions by the Technology Transfer Policy Board.

Services

NIH and its Role in Technology Transfer

It is impossible to overstate the untapped potential that technology transfer represents. To understand why, consider the many steps involved in medical breakthroughs. Today, most important developments in medical science typically begin in laboratories, such as the discovery of specific new biological molecules, processes, or pathways, or innovative applications of existing knowledge. In most cases, these discoveries in and of themselves have limited effect beyond meeting a fairly narrow research goal.

Their real impact for public health generally comes after several more significant steps - including further R&D, testing, approval by appropriate regulatory bodies (such as the FDA), manufacturing, and distribution. OTT carries out its technology transfer mandate by retaining title to inventions developed in NIH#s intramural laboratories and licensing these inventions to private entities to ensure use, commercialization, and public availability. In a similar way, extramural recipients of NIH funds, such as universities, are allowed to seek patent protection for inventions arising from their NIH-funded basic research and license the rights to private entities to promote commercialization.

Over the last 20 years, NIH has executed thousands of license agreements. These licenses transfer NIH and FDA inventions to the private sector for further research and development and potential commercialization that can lead to significant public health benefits. At OTT, we#re always open to ways to make technology transfer a more user-friendly process. We are committed to seeing that the public has ongoing access to newer and more effective health care products and procedures.

- **Sector :**Technology Transfer

Team

- STEVEN FERGUSON, Deputy Director, Licensing & Entrepreneurship

Novel Anti-Hiv Compounds (Peptides Or Peptide Mimetics)

Sector : Biotechnology

The subject invention describes a new class of compounds (such as peptides or mimetics) that target viral RNAs and inhibit viral life cycle through blocking the viral recognition process. More specifically, these compounds are the first against an RNA Target as currently there is no clinical drug against any RNA targets in treatment of any types of human disease.

Description

Moreover, in contrast to all market available anti-HIV drugs that are complicated by the development of resistance and substantial side-effect, these compounds would unlikely develop any side effects because of its very high specificity against only viral RNA. In addition, these compounds may be further linked to a detectable label. Thus, these compounds have the potential to be used as a new class of systemic drug for the treatment of HIV infection and to be developed to diagnostic kit/devices.

Primary Benefits

- No current anti-HIV drug targets against the viral nuclear export activity
- High binding affinity
- Permeability of cell membrane because they are positively charged
- No side effects because of its very high specificity only to viral RNAs

Development Status

- **Stage of Development :** Prototype
- **Time to Market :** 1-3 year

Market & Competition

- HIV therapeutics
- Diagnostic

Potential Sectors	Potential Regions
Medical	United States
Healthcare	

Interest In

Collaboration Opportunity:

The National Cancer Institute is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate or commercialize Novel Anti-HIV Using Peptides or Peptide Mimetics. For collaboration opportunities, please contact John D. Hewes, Ph.D. at john.hewes@nih.gov.

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A Novel T Cell Therapy Against Patient-Specific Cancer Mutations

Sector : Biotechnology

This invention is a novel T cell therapy against cancer mutations that are patient specific. Scientists at the National Institutes of Health have developed a method to identify T cells that specifically recognize immunogenic mutations expressed only by cancer cells.

Description

Human cancers contain genetic mutations that are unique to each patient. Some of the mutated peptides are immunogenic, can be recognized by T cells, and therefore, may serve as therapeutic targets. The inventors identified cancer-specific mutations from a patient with widely metastatic cholangiocarcinoma by sequencing tumor samples and comparing with normal cells.

Using tandem minigene constructs encoding all of the mutations expressed by a patient’s tumor, the inventors identified T cells that recognized the immunogenic mutations from the same patient. These mutation-reactive T cells have the potential to eliminate the cancer cells while sparing normal tissues since normal tissues do not express the mutations. The inventors expanded these mutation-reactive T cells in vitro, and infused a highly pure population of these T cells back into the same patient. The patient experienced tumor regression when she was treated with this approach.

Inventors

Paul Robbins (NCI)
Yong-Chen Lu (NCI) .
Eric Tran (NCI)
Steven Rosenberg (NCI)

Primary Benefits

• This patient-specific therapy has the potential application to most epithelial cancers, which account for about 90% of cancer deaths in the United States.
• Personalized mutation-specific T cells recognize mutations harboring tumor cells only and spare normal tissues. This therapy has no tissue toxicities comparing to traditional chemotherapy and radiotherapy.
• The infusion of a highly pure population of these mutation-specific T cells may maximize therapy and result in regression of all target lesions.

Development Status

- **Stage of Development :** Proof of Concept
- **Time to Market :** 1-3 year

Market & Competition

• Personalized immunotherapy with mutation-reactive T cells for mediating tumor

regression in patients with immunogenic mutations.
• Mutation-reactive T cell therapy especially beneficial for cancer patients refractory to other therapies.
• A research tool to identify patient-specific immunogenic mutations in the tumor.

Development Stage

• Early-stage
• In vitro data available
• In vivo data available (human)
• Ex vivo data available

Potential Sectors	**Potential Regions**
Biotechnology	United States
Medical	

Interest In

The National Cancer Institute, Surgery Branch, is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate or commercialize T-cell therapy against cancer mutations. For collaboration opportunities.

A Novel Demodulation System In X-Ray Imaging

Sector : Healthcare

In various x-ray imaging methods, including scattering correction and phase contrast imaging, intensity modulation in space is introduced into the projection images by the use of masks, gratings, or apertures. The present invention relates to a process to demodulate the modulation.

Description

The current demodulation processes are either to remove the modulation pattern through digital processing or to move the modulation pattern on the detector in a series of images that requires mechanical movements of a component and tends to lose some information of the imaged object. The demodulation of the present invention can be realized with a relative movement between the projected image of the sample and the modulation pattern without having to move the modulation pattern. The demodulated images are free of the modulation pattern and have better clarity.

Primary Benefits

Competitive Advantages

* Better clarity for images
* Simplify the demodulation method

Development Status

- **Stage of Development :** Proof of Concept
- **Time to Market :** 1-3 year

Market & Competition

Potential Commercial Applications

Clinical diagnostic
Research tools
Security inspections

Potential Sectors	Potential Regions
Medical	United States
Techniques	EU

Interest In

The National Heart, Lung, and Blood Institute is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate or commercialize the technology.

Monitoring The Effects Of Sleep Deprivation Using Neuronal Avalanches

Sector : Healthcare

Investigators at the National Institute of Mental Health have discovered a novel method for monitoring the effects of sleep deprivation on brain activity. Sleep deprivation has been known to adversely affect basic cognitive abilities, such as object recognition and decision making, even leading to hallucinations and epileptic seizures.

Description

This invention measures the degree of sleep deprivation and decrease in behavioral performance directly from resting brain activity. A deviation from optimal avalanche parameters correlates with duration of wakefulness and decrease in performance.

Inventors:
• Dietmar Plenz (NIMH)
• Oren Shriki (NIMH)
• Giulio Tononi

Primary Benefits

• Continuously monitors brain activity
• Non-invasive

Development Status

- **Stage of Development :** Prototype
- **Time to Market :** 1-3 year

Market & Competition

• Monitor wakefulness, reaction time
• Potential application for monitoring sleep-deprived first-responders (e.g., military, EMT, etc.)

Potential Sectors	Potential Regions
Biotechnology	United States
Healthcare	

Interest In

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Novel Method And Kit Using Monoclonal Antibodies For More Sensitive Detection Of Dengue Virus

Sector : Medical

CDC investigators have developed a versatile method and monoclonal antibodies for detection of primary and secondary DENV infection. The antibodies specifically bind to heat-denatured NS1, allowing the addition of a heat denaturation step which greatly improves sensitivity of the detection assay. The assay was validated using actual dengue patient samples.

Description

Following primary dengue virus (DENV) infection, non-structural protein 1 (NS1), a dengue-specific glycoprotein, is present in blood and is easily detected by various assays. However, for any infection thereafter (secondary infection), bioavailability of the glycoprotein greatly reduces sensitivity of DENV detection. Since secondary DENV infection is a risk factor for developing hemorrhagic fever, there is increasing need for more sensitive detection at this stage.

Primary Benefits

- More sensitive DENV detection better for secondary infection.
- Novel antibodies and methods can be applied to existing kits to increase sensitivity and ease of use.

Development Status

- **Stage of Development :** Prototype
- **Time to Market :** 1-3 year

Market & Competition

Use of novel antibodies and methods for development of more sensitive diagnostics for primary and secondary DENV infection, including immunofluorescence assays, enzyme-linked immunosorbent assays, lateral flow assays and microsphere-based assay systems.

Potential Sectors	Potential Regions
Healthcare	United States
Biotechnology	EU

Interest In

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