

# Immune Banking: Exploiting Pre-Existing Humoral Responses to Enhance Efficacy of New Vaccines

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## Technology description

### Background:

Memcine Pharma Inc. is developing a novel, Universal Vaccine technology, Immunoplexing, for the development of an intranasal influenza vaccine available to the general population, and to elderly, infants, immunocompromised, and other groups previously ineligible for the current intranasal flu vaccine.

This Flu Vaccine will protect against seasonal strains of influenza by engaging and activating both arms of the immune system. This technology will enable the rapid distribution of flu vaccine to large populations.

Immunoplexing enhances the immune response to vaccine components by targeting them for immune recognition by the body's natural defenses. This is in contrast to conventional vaccine enhancers, which function by inducing general inflammation. Immunoplexes' targeting of immune components limits the side-effects associated with conventional enhancers.

While important for developing this intranasal Flu Vaccine, the Immunoplex technology is a platform technology invented to enable the rapid development of more efficacious, safer vaccines.

### Chemical Composition:

The Immunoplexing Technology consists of a defined antibody recognition element (ARE) readily recognized by a mass produced monoclonal Ab. The epitope tag is the linear immunodominant peptide from polio virus VP-1 protein. This peptide has been used for decades as a portion of the polio vaccine. The Ab that recognizes the ARE is being developed through genetic means. Importantly, because of the composition of Immunoplex vaccines, they can be administered by multiple routes (intranasal, subcutaneous, epicutaneous, etc...), and each route tested for optimal immune response.

### Intentions:

The invention of Immunoplexing and related IP has been filed by The Univ. of Iowa Research Foundation. The initial scientific concept and proof-of-principle experiments were funded by a \$546,877 federal ARRA grant in 2009. Memcine Pharmaceuticals Inc. was founded by the inventors in 2010 to further develop and commercialize the invention. The inventors have received an additional \$76,015 in commercialization funding since 2010.

While Immunoplexing is a platform technology capable of improving the efficacy and safety of any vaccine, Memcine Pharmaceuticals Inc. will utilize the technology to develop an influenza vaccine with

broad protection capabilities. Upon completion, Memcine will use this technology to develop vaccines for unmet medical needs such as Hepatitis C Virus and tuberculosis infection.

## Application area

- 1) Create an effective intranasal vaccine delivery system
- 2) Improve responses to current vaccines
- 3) Rapidly develop new vaccines to emerging diseases
- 4) Develop vaccines for unmet medical needs
- 5) Reduce the number of boosters needed in current vaccines

## Advantages

An Immunoplex Flu vaccine will increase safety of vaccines by using a natural enhancer of immune responses. As an Immunoplex vaccine can be administered intranasally, we can increase patient compliance while reducing production of hazardous biomedical waste (needles and syringes). Companies will be able to produce safer vaccines with higher efficacy in an efficient, cost-effective way.

## Institution

[University of Iowa](#)

联系我们



叶先生

电话：021-65679356

手机：13414935137

邮箱：yeyingsheng@zf-ym.com