Improved HIV Vaccines Through Ras Activation

Summary (1024-character limit)
The National Cancer Institute (NCI) Vaccine Branch, seeks research co-development or licenses for a novel method of improving HIV vaccine efficacy by activating Ras signaling. Upregulating the Ras pathway can improve an HIV patient’s immune response to anti-retroviral vaccines.

NIH Reference Number
E-062-2014

Product Type
- Therapeutics

Keywords
- Human Immunodeficiency Virus, HIV, Ras, Ras Pathway Activation, Immune Response, Franchini

Collaboration Opportunity
This invention is available for licensing and co-development.

Contact
- John D. Hewes
  NCI - National Cancer Institute
  240-276-5515
  John.Hewes@nih.gov

Description of Technology
Researchers at the National Cancer Institute (NCI) have developed a new method of improving the efficacy of vaccines in patients with human immunodeficiency virus (HIV) by activating Ras. This method can be used to develop more efficacious vaccine compositions by activating Ras before, during, or after vaccination. Additionally, the researchers discovered that modulation of the Ras pathways could be a predictive biomarker of protection against HIV. This novel method has been shown to effectively stimulate the Ras pathway and to improve vaccine protection from Simian Immunodeficiency Virus (SIV), a HIV animal model, in chimpanzees.

More than 30 million people are currently infected with HIV worldwide and it is estimated to increase by as much as 3 million new infections yearly. Although effective anti-retroviral therapies exist, millions still succumb to acquired immune deficiency syndrome (AIDS) every year, underscoring the need to develop new therapeutics to prevent the spread of this disease. Agents that have the potential to modulate immune response can improve the efficacy of vaccine candidates. Ras, a central regulatory molecule that
can be easily activated, is a potential target because it affects both the innate and adaptive immune responses.

The National Cancer Institute, Vaccine Branch, is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate or commercialize this method of improving HIV vaccine efficacy by activating the Ras pathway.

**Potential Commercial Applications**
- Treatment of HIV patients using vaccines in combination with Ras-activating agents
- Method to detect likelihood that an HIV vaccine composition will induce a protective immune response

**Competitive Advantages**
- Easy and affordable preparation
- Usable in combination with established vaccine compositions and treatments

**Inventor(s)**
Genoveffa Franchini (NCI), Shari N. Gordon (NCI), Monica Vaccari (NCI), Rafick Sekaly, Slim Fourati, Mark Cameron, Luca Schifanella (NCI), Melvin N Doster (NCI), Namal M Liyanage (NCI)

**Development Stage**
- Pre-clinical (in vivo)

**Publications**
Pegu P, et al. Antibodies with high avidity to the gp120 envelope protein in protection from simian immunodeficiency virus SIV(mac251) acquisition in an immunization regimen that mimics the RV-144 Thai trial. [PMID 23175374]

Van Rompay KK, et al. Attenuated poxvirus-based simian immunodeficiency virus (SIV) vaccines given in infancy partially protect infant and juvenile macaques against repeated oral challenge with virulent SIV. [PMID 15671796]

**Patent Status**
- **U.S. Provisional:** U.S. Provisional Patent Application Number 61/925,154, Filed 08 Jan 2014
- **U.S. Patent Filed:** U.S. Patent Application Number PCT/US/2015/010664, Filed 08 Jan 2015
- **U.S. Patent Filed:** U.S. Patent Application Number 15/110,400, Filed 07 Jul 2016

**Therapeutic Area**
- Infectious Diseases