

National Jewish Awarded Bioscience Discovery Grants

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DENVER — Five researchers at National Jewish Medical and Research Center have received funding from the state of Colorado intended to accelerate the translation of scientific discoveries into marketable healthcare products and services. The Bioscience Discovery Evaluation Grant Program distributed \$2 million to researchers throughout Colorado in this first-of-its-kind program. Recipient institutions are required to match the grants awarded to their researchers. The state awarded National Jewish researchers \$196,000. National Jewish will match this amount with operating funds and charitable donations so that the five researchers will receive a total of \$392,000.

"We are excited by the prospect of using the Bioscience grants to further the development of these research discoveries into potential therapies for respiratory and immunological diseases," said Brad Brockbank, Manager of Intellectual Property and Technology Commercialization at National Jewish. "Research of this kind is critical and difficult to fund using traditional sources such as NIH and foundations."

National Jewish grants and investigators are:

- **Inhaled antibodies for the treatment of airway hyperresponsiveness and inflammation.** Certain T cells can become the driving force of airway hyperresponsiveness, a cardinal symptom of asthma. Willi Born, PhD, has found that antibodies, which cause these T cells to commit suicide by binding to receptors on their surface, also function when they are inhaled. In this way, only T cells in the lungs and airways are affected, leaving an organism's disease-fighting ability intact. Research has been successful in mouse models. Dr. Born plans to use the Bioscience grant to evaluate this technology in a nonhuman primate animal model. \$110,000
- **Novel antioxidant therapies to treat chronic lung disease.** A number of lung diseases, including idiopathic pulmonary fibrosis, acute respiratory distress syndrome, and cystic fibrosis, are associated with abnormally low levels of the antioxidant glutathione in the lungs. Brian Day, PhD, has identified two compounds that stimulate glutathione production in cultured cells. Dr. Day hypothesizes that these compounds can be used to increase glutathione levels in the lungs, which will decrease the inflammation and provide a novel therapeutic approach to treating these lung diseases. The Bioscience grant will allow him to test his hypothesis in a mouse model. \$74,000
- **Heat-shock proteins to modify immune/inflammatory responses away from pro-allergic response.** Allergic diseases, including asthma, are believed to be the result of an imbalanced immune response, skewed away from what is known as Th1 in favor of a Th2 response. Heat shock proteins are produced by many cell types in response to a variety of environmental stressors and are associated with the generation of a Th1 immune response. Erwin Gelfand, MD, proposes to show that administration of one heat shock protein can reduce allergic reactions in a mouse model of allergic asthma by shifting the immune response away from Th2 toward Th1. \$96,000
- **A method for the prevention and treatment of pseudomonas biofilm infections in cystic fibrosis and contact lens.** Infections by the bacteria *Pseudomonas aeruginosa* are serious and often life-threatening events, which occur most frequently in the lungs of patients with cystic fibrosis, severe wounds and burns, and the eyes of contact lens wearers. The infection becomes particularly difficult, or impossible, to treat when the bacteria forms a biofilm, in which the

microbes are encased in a protective polysaccharide matrix. Jerry Nick , MD, has discovered a class of non-toxic compounds that appears to disrupt and even prevent the formation of *Pseudomonas* biofilms in the laboratory. He will use the Bioscience grant to evaluate similar compounds to find the most effective ones. He will then test those compounds on infected contact lenses, and in animal models of eye and skin infections. \$70,000

- **Use of soluble T-cell receptors to reduce inflammatory damage.** A relatively rare type of T cell, known as a gamma/delta T cell, plays an important role in regulating inflammatory responses. Gamma/delta T cells are activated after molecules bind to their T-cell receptors; some activated gamma-delta T cells promote inflammation while others inhibit it. Rebecca O'Brien, PhD, has developed a soluble form of a T-cell receptor normally found on T cells that promote inflammation. She hypothesizes that injecting the soluble T-cell receptor into a mouse can reduce inflammatory damage caused by a bacterial infection by binding to and soaking up all the molecules that would normally activate inflammation-promoting gamma/delta T cells. The Bioscience grant will allow her to test the hypothesis. \$42,000

National Jewish Health is the leading respiratory hospital in the nation. Founded 125 years ago as a nonprofit hospital, National Jewish Health today is the only facility in the world dedicated exclusively to groundbreaking medical research and treatment of children and adults with respiratory, cardiac, immune and related disorders. Patients and families come to National Jewish Health from around the world to receive cutting-edge, comprehensive, coordinated care. To learn more, visit the [media resources](#) page.

Media Resources

We have many faculty members, from bench scientists to clinicians, who can speak on almost any aspect of respiratory, immune, cardiac and gastrointestinal disease as well as lung cancer and basic immunology.

- [Accomplishments & Awards](#)
- [Annual Report](#)
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Media Contacts

Our team is available to arrange interviews, discuss events and story ideas.

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