

Promising Bioscience Discoveries Funded

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DENVER — National Jewish Health researchers have been awarded more than \$400,000 in grants to help develop promising bioscience discoveries into new products, services and businesses. The state of Colorado's Bioscience Discovery Evaluation Grant Program awarded grants for work on potential new therapies for pulmonary fibrosis, autoimmune disease, cancer and arthritis. Funds awarded by the state are matched by National Jewish Health.

The 2011 Proof-of-Concept grants awarded by Bioscience Discovery Evaluation Grant Program:

Joint Aspirate Facilitator Device

Investigator: Richard Meehan, MD

Dr. Meehan has been awarded \$38,900 to develop a prototype of a device designed to facilitate the aspiration and injection of joints. Primary care physicians, orthopedists and rheumatologists routinely draw fluid out of joints and inject medication into them to help them diagnose and treat arthritis and other diseases. They also frequently inject medicine into joints. Dr. Meehan's invention should make it easier to perform safe and less painful joint aspirations and injections. It consists of a flexible material that wraps around a joint. A bladder inside the material can be inflated to move fluid to an opening in the where fluid can be withdrawn or medication injected. Dr. Meehan was granted a U.S. Patent ([#7,468,048](#)) for his invention. [Press release.](#)

A Novel Compound For Pseudomonas Biofilm Disruption

Investigator: Jerry Nick, MD

Dr. Nick has been awarded \$79,811 to synthesize and screen various molecules to find ones that can destroy molecular scaffolding that can make Pseudomonas bacterial infections extremely difficult to treat in cystic fibrosis patients, wearers of contact lenses, and burn victims. Dr. Nick has already shown this strategy can work and is now seeking unique molecules with superior stability and bioavailability. The proposed product will serve as an adjuvant to available antibiotics, to prevent or disrupt the Pseudomonas biofilm in early stages of development, and improve efficacy of conventional treatment.. Dr. Nick has a patent pending for his invention. [Press release.](#)

Therapeutic Small Molecule Inhibitors to Treat Pulmonary Fibrosis

Investigator: David W.H. Riches, PhD

Dr. Riches has been awarded \$91,000 to identify therapeutic molecules capable of blocking molecular pathways that could stop scar-formation in idiopathic pulmonary fibrosis. Idiopathic pulmonary fibrosis (IPF) is a fatal lung disease with no effective treatment that kills approximately 45,000 American every year. Fibroblasts normally secrete collagen to help hold wounds together so that tissue repair can proceed. In IPF, however, fibroblasts in the lung continue producing collagen, which forms scar tissue, long after they should have died. Dr. Riches will search for molecules that will restore a cell suicide pathway. The identification of such molecules could pave the way for an innovative therapeutic approach to the treatment of IPF, and possibly colon and pancreatic cancers. Dr. Riches has a patent pending for his invention.

BCMA-Fc Chimeras as Therapeutics for Autoimmunity

Investigators: Gongyi Zhang, PhD, and John Cambier, PhD

Drs. Zhang and Cambier have been awarded \$99,832 to develop proteins that could inactivate B cells involved in B-cell mediated diseases such as lymphoma, leukemia, rheumatoid arthritis, lupus and organ-transplant rejection. The researchers will build on Dr. Zhang's discovery of the crystal structure of the B cell stimulator BAFF bound to cell-surface receptors to rationally design a molecule to disrupt this binding. National Jewish Health has been awarded two patents ([#6.475.987](#) and [#7.825.089](#)) for related inventions.

Generation of Bispecific Antibodies for Targeting Autoimmune-Associated B Cells

Investigators: Philippa Marrack, PhD, and Anatoly Rubtsov, PhD

Drs. Marrack and Rubtsov have been awarded \$77,810 to design antibodies that will target a specific population of cells that produce autoantibodies. Drs. Marrack and Rubtsov recently reported the discovery of autoimmune-associated B cells (ABCs) and have applied for a patent on the method of depleting the ABCs to treat autoimmune disease. If the designed antibodies can cause the depletion of ABCs, the product could be modified for use in humans and become a powerful new tool for the treatment of a variety of autoimmune diseases. [Press release](#)

Combining Pro-Oxidant Effects to Kill Cancer Cells

Investigators: Remy Kachadourian, PhD, and Brian J. Day, PhD

Drs. Kachadourian and Day have been awarded \$29,649 to develop new and more efficient methods of reducing extracellular concentrations of the antioxidant glutathione to sensitize cancer cells to chemotherapy and radiation. The strategy may significantly impact cancer treatment by allowing the use of smaller treatment doses, therefore resulting in better patient tolerance and compliance. The project can potentially lead to the commercialization of a library of compounds that would be used in individualized medicine against cancer.

National Jewish Health is the leading respiratory hospital in the nation. Founded 122 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 patients 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](#).

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