

ARTHRITIS *Action*



A PUBLICATION OF THE ARTHRITIS FOUNDATION

UTAH/IDAHO CHAPTER

Fall 2007

“Fishing” For A Cause

The Arthritis Foundation has invested more than 380 million on research to discover innovative strategies for preventing, controlling and curing arthritis. With funds from the Arthritis Foundation and access to the Utah Population Database, an extensive genealogical database, Dr. Sampath Prahalad, pediatric rheumatologist and University of Utah Assistant Professor of Pediatrics for the Division of Immunology and Pediatric Rheumatology, is searching for the specific genes linked to Juvenile Idiopathic Arthritis (JIA). This project also utilizes the Intermountain States Database of Childhood Rheumatic Diseases, which is a collection of children with childhood rheumatic diseases in the Intermountain West.

Juvenile idiopathic arthritis (JIA) refers to a group of diseases that share the common feature of chronic joint

inflammation. Dr. Prahalad hopes that by identifying genetic factors linked to JIA his research will improve our understanding of JIA, improve the classification of JIA, and aid in the development of more specific treatments.

Dr. Prahalad is using a two-pronged approach for finding genes responsible for JIA. He compares these methods to “fishing”. To fish for the genes which may lead to JIA, Dr. Prahalad uses both a “pole” and a “net”. The “pole” method includes examining a few selected genes from thousands that are believed to be involved in JIA. Another method, analogous to using a “net”, involves examining thousands of genes simultaneously to find the ones that stand out in children with JIA. Dr. Prahalad uses both these methods in parallel to find the genes responsible for JIA.



Sampath Prahalad, M.D.

Another aim of the project is to link the Intermountain States Database of Childhood Rheumatic Diseases to the Utah Population Database to determine if any of the relatives of children with JIA have or had JIA or other auto-immune diseases. Dr. Prahalad has found that relatives of a child with JIA have a higher risk of developing JIA compared to

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The mission of the Arthritis Foundation is to improve lives through leadership in the prevention, control and cure of arthritis and related diseases.

www.arthritis.org

UTAH/IDAHO CHAPTER
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Creating a More Natural Engineered Cartilage

Natural human cartilage has a simple structure with no blood or nerve supply. These characteristics contribute to its inability to repair itself when damaged. These same characteristics also make it a prime candidate for cell-based tissue engineering efforts.

What Problem Was Studied?

Osteoarthritis and rheumatoid arthritis are just two of a number of diseases that result in damage and destruction of cartilage. Scientists are working hard to devise artificial cartilage that might be useful in replacing diseased cartilage. Natural cartilage is organized into three distinct layers, each of which contains slightly different types of chondrocytes. The superficial zone contains flattened chondrocytes and collagen fibrils aligned with the joint surfaces. The transitional zone contains more rounded chondrocytes and randomly arranged collagen fibrils. The deep zone contains large, spherical chondrocytes embedded in a dense structural matrix and thick collagen fibrils. To date, most attempts to grow cartilage have involved seeding a uniform framework with identical chondrocytes, creating a structurally consistent tissue.

Researchers from Johns Hopkins University in Baltimore and Seoul National University in Korea have been working on engineering cartilage that is organized into more natural, stratified layers containing the different subtypes of cartilage cells.

What Was Done in the Study?

Principal investigator and Arthritis Foundation grant recipient, Jennifer H. Elisseeff, PhD, used special scaffolds and a technique developed by her team called photopolymerization to create engineered cartilage containing two layers. Cells from the superficial zone of calf cartilage were processed and poured onto a polymer framework. By exposing this polymer to ultraviolet light for a specific amount of time, the layer was "soft set." Next, cells from the deep zone of calf cartilage were processed and poured onto a polymer scaffold over the first layer. This layer was then exposed to ultraviolet light and set. Now that the research team created a bilayer tissue complete with different types of chondrocytes in the layers, they tested the characteristics of the tissue to see if it more closely resembled natural cartilage than the homogeneous engineered tissue.

What Were the Study Results?

The layered tissue allowed chemical signaling between the cells of the different zones, a feature important for proper cartilage growth and development. The cells of the layers maintained distinct traits, which led to a stratified cartilage with some features of natural cartilage. Specifically, the deep layer produced two to three times as much glycosaminoglycan and collagen

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Anatomy Basics

Cartilage - A dense connective tissue composed of cells called chondrocytes, a firm gel-like substance called the matrix, and collagen and elastin fibers.

Chondrocytes - Cells that produce and maintain cartilage.

Collagen fibrils - Very thin fibers of the long, structural proteins in connective tissue.

Glycosaminoglycan - Long molecules that form an important component of connective tissue.

Collagen - The main protein component of cartilage.

Get Square With Your Feet

With every mile we walk, 200,000 to 300,000 pounds of stress bears down on our feet, and by the time we're 50, most of us have walked 75,000 miles. That's a lot of action for two narrow islands of 26 bones and more than 30 joints. And yet despite the central role feet play in our lives, most of us ignore them.

Whether we have arthritis or not, foot problems probably stem from or are exacerbated by ill-fitting shoes. Buy a shoe with good arch support and a supportive layer on the top of the shoe – such as an athletic shoe, not mules or slippers. Look for a shoe with a rubber sole to give you more cushion. Check to make sure the shoe is flexible at the ball of your foot, where you push off, not in the middle of the shoe.

Buy shoes shaped like your foot. Trace the shoes on a piece of paper. Put your bare foot on top of the tracing. If your toes stick outside of the tracing, look for shoes squared or rounded at the toe so your toes have room to move. Also, be sure there is a finger's width of room between your heel and the back of the shoe to ensure that it is not too tight.

If we pay attention to our feet, we can head off potential problems. If we already have arthritis, more surveillance and care taking of our feet and joints not only makes sense, it's crucial.

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NEWSLETTER EDITOR

Bonnie Christophersen

ADVOCACY ALERT

Shortage of Pediatric Rheumatologists

A Health Resources and Services Administration report reveals a severe shortage of pediatric rheumatologists in the U.S. and calls for a 75 percent increase in the number of pediatric rheumatologists.

Many of the recommended solutions to address the shortage are already contained in the Arthritis Prevention, Control, and Cure Act.

Write your Senator and Representative today and ask them to support the Arthritis Prevention, Control and Cure Act.

www.arthritis.org/advocacy

let's talk
RA
 Rheumatoid
 Arthritis®
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Evening of Honors

For over 27 years the Arthritis Foundation, Utah/Idaho Chapter has recognized community business and civic leaders at the annual Dinner Gala while raising important funds for arthritis research and services.

Thursday, November 8, 2007

Little America Hotel

Salt Lake City, Utah

Please contact Emily Hoffmann at 801-536-0990 for more information.

Start Talking!

Rheumatoid arthritis can affect your family and friends even though you are the one with the disease. Learn why it is so important to involve your loved ones in helping you, along with your rheumatologist, manage your RA.

The Arthritis Foundation, with the support of Bristol-Myers Squibb, has developed a program called "Let's Talk RA" to help you improve how you talk about your rheumatoid arthritis and general health with your family, friends, and rheumatologist.

For communication tips and to order your free Let's Talk RA Communication Kit, visit www.arthritis.org or call 1-800-568-4045.

Chapter Wish List

- digital camera
- portable CD player
- laptop computer
- mobile multi-media LCD projector compatible with laptop computer

If you would like to donate a new or gently used item, please contact Audrie Willden at 801-536-0990 or 800-444-4993.

Engineered Cartilage - continued from page 2

than the superficial layer, but natural deep-zone cartilage produces 10 times as much. The bilayered tissue also demonstrated superior mechanical properties to homogeneous engineered tissues.

What Does This Mean for People With Arthritis?

Being able to create a more naturally organized, layered cartilage is important for advancing the technology and attaining the successful transplantation of replacement cartilage in the joints of people with arthritis. Elisseeff envisions that multilayered tissue could be created in areas of damaged cartilage by injecting layers of polymer-cell mixtures into the joint and curing them with light using the photopolymerization technique.

Sharma B, Williams C, Kim TK, Sun D, Malik A, Khan M, Leong K, Elisseeff JH. Designing zonal organization into tissue-engineered cartilage. Tissue Eng 2007;13:405-14

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the general population and that "there is a three fold increase in the frequency of autoimmune diseases in families of children with JIA. Finding which diseases are clustered with JIA might improve our understanding of JIA. Also by identifying such families we might be able to find genes responsible for many autoimmune diseases."

Dr. Prahalad notes the Foundation's funding makes it possible to collect data from more families and "to ask questions that haven't been asked before to tackle a disease that is so common..." yet not at the forefront of many people's minds. He also stated that research funding for these diseases is very difficult to obtain, making the Foundation's contribution even more valuable.

Have you ever ached to find easy-to-open packages or bottles?



The Arthritis Foundation created a program to encourage manufacturers to design user-friendly products and packaging. Manufacturers submit their product(s) for testing by an independent lab experienced in the design and evaluation of products that are accessible to people with functional limitations due to the effects of arthritis.

Find the list of easy to use products at

www.arthritis.org

Lifestyle Improvement Series



**Arthritis Foundation
Self-Help Program™**

The Arthritis Foundation Self-Help Program helps you learn skills to become an active member of your health-care team, work better with your health-care providers and handle the day-to-day challenges of the disease. Trained volunteers, many of whom have arthritis or fibromyalgia, lead the courses.

AARP Idaho Office

3080 East Gentry Way, Suite 100
Meridian, Idaho
Tuesdays, Sept. 11 – October 16
6 – 8 PM

Cedar City Senior Center

489 East 200 South
Cedar City, Utah
Thursdays, Sept. 13 - October 18
6 – 8 PM

Taylorsville Senior Center

4743 South Plymouth View Drive
Taylorsville, Utah
Thursdays, Sept. 20 – October 25
1 – 3 PM

Murray-Heritage Senior Center

10 East 6150 South
Murray, Utah
Mondays, October 8 - Nov. 19
1 - 3 PM

Kearns Senior Center

4850 West 4715 South
Kearns, Utah
Mondays, Nov. 5 – Dec. 10
9:45 – 11:45 AM

*For additional course dates,
call the Chapter office at
801-536-0990 or 800-444-4993*



**Arthritis Foundation
Exercise Program™**

The Arthritis Foundation Exercise Program is designed to help increase joint flexibility and maintain muscle strength. Different classes, led by trained instructors, are available to fit your individual fitness level – with exercises done while sitting, standing or on the floor.

*Facility locations are available online at
www.arthritis.org*



**Arthritis Foundation
Aquatic Program™**

The Arthritis Foundation Aquatic Program allows you to exercise without putting excess strain on your joints and muscles. The gentle activities in warm water, with guidance from a trained instructor, will help you gain strength and flexibility. You do not need to know how to swim to participate.

*Facility locations are available online at
www.arthritis.org*

CALENDAR OF EVENTS

September 10 - 13

Arthritis Seminar Series

The Orthopedic Specialty Hospital
Murray, Utah

September 29

Juvenile Arthritis Family Day

Salt Lake City, Utah

October 3

Volunteer Training

Salt Lake City, Utah

Learn how to host an arthritis information booth and ways to present the arthritis 101 course, “Discover Arthritis”.

October 27

Juvenile Arthritis Family Day

Boise, Idaho

November 8

Evening of Honors Dinner Gala

Salt Lake City, Utah

For more details and to get involved, call the Chapter Office.



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