RESEARCH GRANTS LAY SUMMARIES

Name: **Delesha M. Carpenter, PhD**
Award Type: New Investigator – NI
Amount: $50,000.00
Project Title: *Understanding how RA patients process conflicting information about DMARDs*
Institution: University of North Carolina at Chapel Hill
Mentor: Susan J. Blalock, PhD, MPH
Award Period: October 1, 2013 – September 30, 2015
Study Section: Clinical/Therapeutics/Outcomes
Disease Focus: Rheumatoid Arthritis

Lay Language Summary: Rheumatoid arthritis (RA) is an incurable, systemic, autoimmune disorder affecting about 1% of the US population. Current guidelines call for the aggressive treatment of early RA with disease-modifying antirheumatic drugs (DMARDs). Although adherence to DMARDs slows the progression of joint destruction and reduces functional impairment, DMARDs also are associated with undesirable side effects, such as nausea, hair loss, and secondary infections, which can decrease patients' willingness to fill DMARD prescriptions and adhere to DMARD therapy. Open and honest patient-provider communication can help RA patients make informed choices about DMARD treatment. However, when patients are prescribed a DMARD, they often supplement information given by physicians with information from other sources, including the internet, family, and friends. These additional sources may provide patients with misinformation about DMARDs. In fact, approximately 80% of RA patients have been exposed to conflicting medication information, defined as contradictory information about arthritis medications provided by two or more sources. Exposure to conflicting information has been associated with greater medication-related anxiety and worse medication adherence for RA patients. To date, no published studies have examined the effects of exposure to conflicting medication information on RA patients' DMARD prescription-filling and adherence behaviors over time. To address this knowledge gap, we propose a longitudinal study to better understand how RA patients react to and synthesize medication information from multiple sources to make DMARD-related decisions. The proposed study involves audiotaping 50 rheumatology office visits at which RA patients are prescribed a DMARD that they have not used previously. Patients will be interviewed immediately following the office visit to assess their recall of DMARD information provided by the rheumatologist (Aim #1). Then patients' DMARD information-seeking behavior and exposure to conflicting medication information will be assessed over a 1-week period (Aim #2). Last, we will explore whether exposure to

conflicting medication information predicts patient prescription filling behavior and DMARD adherence at 1-month follow-up (Aim #3). The data gathered for this study will be used as preliminary data for a next-step grant in which we will design and pilot an intervention to improve patient-rheumatologist communication about DMARDs. In addition to gathering preliminary data, the proposed study will serve as a feasibility test, allowing us to estimate patient participation and attrition rates and make necessary adjustments to recruitment procedures, the data collection protocol, and qualitative coding procedures for a larger grant.

Name: Uyen-Sa D.T. Nguyen, D.Sc, MPH
Award Type: New Investigator – NI
Amount: $50,000.00
Project Title: *The True Impact of Cardiovascular Risk Factors in Rheumatoid Arthritis*
Institution: University of Massachusetts Medical School
Mentor: Susan J. Blalock, PhD, MPH
Award Period: January 1, 2013 – December 31, 2014
Study Section: Clinical/Therapeutics/Outcomes
Disease Focus: Osteoarthritis

Lay Language Summary: Rheumatoid arthritis (RA) is a progressive disease associated with general inflammation, substantial illness, and shortened life span, primarily driven by heart disease (i.e., cardiovascular (CV) outcomes). Several established risk factors associated with CV outcomes (e.g., smoking and obesity) in the overall population have shown little or no association with CV outcomes in RA patients. Beyond the differences in the underlying biology and presence of RA-specific risk factors for CV outcomes, an alternative explanation for these unexpected results is a type of bias. This inherent bias occurs when we evaluate an effect of a risk factor of a disease outcome in those with a possible intermediate stage of the disease (e.g. studying smoking on risk of CV outcome in RA patients). To date, no study has methodologically investigated these paradoxical findings, leaving a crucial gap in knowledge on this important topic. Unless appropriate methods are used to ascertain the true impact of CV risk factors in people with RA, much research funds, time and effort may become depleted without providing appropriate evidence for clinical recommendations. Thus, we aim to use appropriate methods to overcome challenges associated with studying risk factors of CV outcomes (e.g., smoking) in RA patients in order to understand the true impact of these potentially modifiable risk factors. Specifically to evaluate the impact of smoking, we will use two large complementary databases (a prospective cohort and a general population database). Using appropriate statistical modeling, we will first evaluate the association before and after adjusting for the inherent bias. We will next evaluate the association between change in smoking status after RA diagnosis and the risk of CV outcomes. Finally, we will quantify the magnitude of the possible bias using a simulation study. The novel approach will provide the relevant evidence of smoking and CV risk in RA.

Name: **Kyla Shea, PhD**
Award Type: New Investigator – NI
Amount: $50,000.00
Project Title: *Vitamin K Nutritional Status and Osteoarthritis Progression in Older Adults*
Institution: Tufts University
Mentor: Stephen Kritchevsky, PhD
Award Period: July 1, 2011 – June 30, 2014
Study Section: Clinical/Therapeutics/Outcomes
Disease Focus: Osteoarthritis

Lay Language Summary: Osteoarthritis (OA) is the leading cause of physical disability in older age. Although OA symptoms can be treated, there is currently no proven therapy that reduces OA progression. Some studies have shown vitamin K insufficiency is associated with more hand and knee OA. However, it is not known if vitamin K status is associated with changes in OA symptoms and features. Vitamin Ks role in joint health has primarily been attributed to its function in the carboxylation of matrix gla protein (MGP). Vitamin K is required for MGP to inhibit cartilage calcification. In addition to MGP, several vitamin K-dependent proteins are found in joint tissue, so vitamin K may influence OA progression in several ways. This study will determine the association if vitamin K status is associated with knee OA progression in older black and white men and women. Vitamin K status will be measured in two ways - plasma concentrations of vitamin K and uncarboxylated MGP (ucMGP). Evidence is consistent with the idea that vitamin K and vitamin D nutritional status are mutually important to joint health, so the association between vitamin K and D insufficiency and OA progression will alsobe explored. It is important to understand vitamins K and D influence OA progression because intakes of these nutrients are modifiable and may represent a straightforward approach to reduce OA progression and related disability in older age.