

**AWARD NUMBER:** CDMRPL-19-0-PR181212P1

**TITLE:** Biopsychosocial Mechanisms of Chronic Pain Recovery and Maintenance

**PRINCIPAL INVESTIGATOR:** Dr. Rasha Hammamieh

**CONTRACTING ORGANIZATION:** Walter Reed Army Institute of Research (WRAIR)  
Bethesda, MD

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| <b>4. TITLE AND SUBTITLE</b><br><br>Biopsychosocial Mechanisms of Chronic Pain Recovery and Maintenance   |                    |                                 |                                   | <b>5a. CONTRACT NUMBER</b><br>CDMRPL-19-0-PR181212P1 |  |
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| <b>6. AUTHOR(S)</b><br>Krista Highland, PhD<br>Rasha Hammamieh, PhD<br><br>E-Mail: krista.highland.ctr@usuhs.edu  |                    |                                 |                                   | <b>5d. PROJECT NUMBER</b>                            |  |
|   |                    |                                 |                                   | <b>5e. TASK NUMBER</b>                               |  |
|   |                    |                                 |                                   | <b>5f. WORK UNIT NUMBER</b>                          |  |
| <b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b><br><br>Walter Reed Army Institute of Research (WRAIR)<br>DVCIPM, 4301 Jones Bridge Rd, 28-201, Bethesda, MD<br>Uniformed Services University, Bethesda, MD  |                    |                                 |                                   | <b>8. PERFORMING ORGANIZATION REPORT NUMBER</b>      |  |
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| <b>13. SUPPLEMENTARY NOTES</b>  |                    |                                 |                                   |  |  |
| <b>14. ABSTRACT</b><br>This study seeks to understand the mechanisms that sustain or resolve chronic pain within a biopsychosocial framework. The objective of the present study is to identify biopsychosocial markers of chronic pain maintenance (Maintained) and recovery/improvement (Improved). |                    |                                 |                                   |  |  |
| <b>15. SUBJECT TERMS</b><br>None listed.  |                    |                                 |                                   |  |  |
| <b>16. SECURITY CLASSIFICATION OF:</b>  |                    |                                 | <b>17. LIMITATION OF ABSTRACT</b> | <b>18. NUMBER OF PAGES</b>                           | <b>19a. NAME OF RESPONSIBLE PERSON</b>           |
| <b>a. REPORT</b>  | <b>b. ABSTRACT</b> | <b>c. THIS PAGE</b>             |                                   |  | <b>19b. TELEPHONE NUMBER</b> (include area code) |
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## 1. INTRODUCTION:

Many military service members, veterans, and their family members have chronic pain; which in turn, negatively impacts quality of life, retention, and readiness. Though many studies show how people develop chronic pain, less is known about how people recover from it. To improve chronic pain management, the goal of this study is to understand how emotional, social, and biological factors predict who recovers from chronic pain and who does not. Samples and self-report data of 150 individuals (50 chronic pain maintained, 50 chronic pain improved, 50 controls) will be analyzed to identify biopsychosocial markers that predict chronic pain resolution.

## 2. KEYWORDS:

Chronic pain, biomarkers, microRNA, integrative pain management

## 3. ACCOMPLISHMENTS:

### What were the major goals of the project?

#### **CY19 Goals**

Functionality tests of integrated firmware and software (complete)

#### **CY20 Goals**

Obtain IRB approval (complete)

Obtain Biobank sample request forms (complete)

Complete agreements (complete)

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#### **Remaining goals on hold due to COVID 19 Pandemic:**

#### **CY20 Goals**

Identify psychosocial/behavioral factors distinguishing groups

#### **CY21 Goals**

All samples banked, aliquoted, and analyzed

Manuscript preparation on blood biomarkers

#### **CY22 Goal**

Manuscript preparation on salivary biomarkers

### What was accomplished under these goals?

- An agreement between DVCIPM and WRAIR was completed.
- **NEW:** Established a relationship with the Duke University Murdock Study, in which we will be able to receive 50 control samples with the required data. Therefore, we only need to obtain specimens and data on 50 improved versus maintained.
- Updated Regulatory Documentation completed with USAMRAA HRPO

#### **Milestones listed below are ON HOLD due to COVID-19 Pandemic:**

Milestone 2: Identification of psychosocial and behavioral factors distinguishing groups [original target date 1MAY2020]

Milestone 3: All samples banked and aliquoted. [original target date 1MAY2021]

Milestone 4: Manuscript on the biopsychosocial predictors of chronic pain maintenance and recovery. Depending on results, there will likely be a need to divide results into 2-3 manuscripts.

**What opportunities for training and professional development has the project provided?**

Nothing to Report

**How were the results disseminated to communities of interest?**

*Nothing to Report*

**What do you plan to do during the next reporting period to accomplish the goals?**

1. Continue to work with the Pain Registry Biobank administrators and scientist to obtain samples as soon as they become available. This includes the approval of the Pain Registry Biobank sample and data request. We are maintaining weekly communication with the Biobank leadership to ensure we are aware of when samples will become available.
2. Complete agreements and obtain samples from the Duke University Murdock Study
3. Amended all agreements and IRB documents with WRAIR to obtain samples and within the next year, we plan to have all samples transferred to WRAIR for analysis
4. Begin manuscript development

**4. IMPACT:**

**What was the impact on the development of the principal discipline(s) of the project?**

*Nothing to Report*

**What was the impact on other disciplines?**

*Nothing to Report*

**What was the impact on technology transfer?**

*Nothing to Report*

**What was the impact on society beyond science and technology?**

*Nothing to Report*

## 5. CHANGES/PROBLEMS:

### Changes in approach and reasons for change

*. Nothing to Report*

### Actual or anticipated problems or delays and actions or plans to resolve them

#### **No cost extension (NCE) was approved through 29 Sep 2023.**

The COVID19 Pandemic is having large impact on the timeline of this study, not only for obtainment of samples, but also the continued progress on other study aims and goals; as employee time and laboratory access will be limited (COVID-related studies are taking precedent in the current environment; as such, there will be a deluge of backlog items that the study team will need to complete once operations are back to normal). Though NMC-SD Pain Registry Biobank site was recruiting prior to the COVID19 Pandemic, recruitment was then halted at NMC-SD (Pain Clinic) due to COVID19 Pandemic. To mitigate these challenges, the PI has worked extensively with the Pain Registry Biobank to develop logistics for recruitment to enable fastidious recruitment into the Pain Biobank that target the samples needed for the present study, whenever the COVID19 Pandemic impact is no longer present. Moreover, the Biobank's WRNMMC recruitment site incurred significant challenges in recruiting both controls and cases due to the COVID-19 Pandemic. As a result and given the PI's excellent relationship with the WRNMMC Department of Research Programs, they discussed alternative recruitment strategies that could be used by any WRNMMC study, including the Biobank. As such, the research manager of the Biobank is now awaiting an amendment determination and signature to allow for "passive" recruitment (e.g., having a table in the hallway of the WRNMMC America building ground floor and in the different recruitment clinics, as well as leveraging a partial HIPAA waiver to be able to consent participants over the phone prior to their scheduled appointment. We have also established a relationship with the Duke University Murdock Study in order to obtain control biospecimens and data from their existing biobank repository, after agreements are complete. Obtaining control samples was the most difficult recruitment target for the Pain Biobank.

**Note:** due to the COVID19 Pandemic, study activities were placed on hold and then restarted, but at a much lower pace. As such, study funds have not been able to be used.

### Significant changes in use or care of human subjects, vertebrate animals, biohazards, and/or select agents

#### Significant changes in use or care of human subjects

*Nothing to Report*

#### Significant changes in use or care of vertebrate animals

*Nothing to Report*

#### Significant changes in use of biohazards and/or select agents

*Nothing to Report*

## 6. PRODUCTS:

- **Publications, conference papers, and presentations**

**Journal publications.**

*Nothing to Report*

**Books or other non-periodical, one-time publications.**

*Nothing to Report*

**Other publications, conference papers and presentations.**

*Nothing to Report*

- **Website(s) or other Internet site(s)**

*Nothing to Report*

- **Technologies or techniques**

*Nothing to Report*

- **Inventions, patent applications, and/or licenses**

*Nothing to Report*

- **Other Products**

*Nothing to Report*

## 7. PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS

Name: Krista Highland

Project Role: Co-PI

Research Identifier: NA

Nearest person month worked: 1.8

Contribution to Project: no change

Name: Germaine Herrera

Project Role: Protocol Coordinator

Research Identifier: NA

Nearest person month worked: 0

Contribution to Project: no change

Name: Mary Jo Lindl

Project Role: Research Activity Coordinator

Research Identifier: NA

Nearest person month worked: 0

Contribution to Project: no change

Name: Dr. Rasha Hammamieh  
Project Role: Current PI  
Research Identifier: NA  
Nearest person month worked:0  
Contribution to Project: no change

Name: Dr. Aarti Gautam  
Project Role: Project Co-I  
Research Identifier: NA  
Nearest person month worked:0  
Contribution to Project: no change

**Has there been a change in the active other support of the PD/PI(s) or senior/key person since the last reporting period?**

|  |
|--|
| Dr. Highland's active (and future active) support will not have any impact on the effort required for the present award. Dr. John Clifford, Former PI is no longer associated with this project. |
|--|

**What other organizations were involved as partners?**

*Nothing to Report*

## **8. SPECIAL REPORTING REQUIREMENTS**

**COLLABORATIVE AWARDS:**

**QUAD CHARTS:**

## **9. APPENDICES:**