

AWARD NUMBER: W81XWH-22-1-0409

TITLE: Trial of the Thrombin-Derived Peptide TP508 for Healing a Combined Radiation + Burn Injury

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14. ABSTRACT: This project aligns with the FY21 Military Burn Research Program Idea Development Award focus area of burns in the polytrauma patient with radiation-induced injury. Interventions are needed to optimize healing and return to duty following concomitant injury with burns and radiation. We will test the novel thrombin-derived peptide TP508 in a murine model of combined injury (non-lethal radiation plus contact burn). Prior work demonstrates that TP508 administration improves healing of skin wounds and bone fractures in animals and humans. TP508 has safely administered to ~600 human patients. Although burn wound healing is delayed when coupled with radiation exposure, our preliminary data suggest that normal wound healing can be achieved with TP508 administration. We will now utilize a murine model of sub-lethal radiation followed by contact burn to test TP508 on healing wounds. This work may provide care solutions by accelerating wound healing, preventing burn wound conversion, and restoring normal healing processes when burns occur with radiation exposure.					
15. SUBJECT TERMS NONE LISTED					
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1. INTRODUCTION:

Interventions are needed to optimize healing and return to duty following concomitant injury with burns and radiation. We are testing the novel thrombin-derived peptide TP508, which improves healing of skin wounds and bone fractures, in a murine model of combined injury (non-lethal radiation plus contact burn). Although burn wound healing is delayed when coupled with radiation exposure, our preliminary data suggest that normal wound healing can be achieved with TP508 administration. This work may provide care solutions by accelerating wound healing and preventing burn wound conversion.

2. KEYWORDS:

Radiation, burns, burn wound, conversion, wound, murine, polytrauma

3. **ACCOMPLISHMENTS:** The PI is reminded that the recipient organization is required to obtain prior written approval from the awarding agency Grants Officer whenever there are significant changes in the project or its direction.

What were the major goals and objectives of the project?

- A) Establish contract with Chrysalis 100%
- B) Protocol Development 80%
- C) Hire staff 25%
- D) Obtain IACUC approval 0%
- E) Establish radiation dose and time to assess burn wound progression 0%
- F) Test TP508 in murine model 0%
- G) Data Analysis (to occur following completion of data collection) 0%
- H) Maintain accurate and responsible budget – 50%
- I) Publish research data 0%
- J) Prepare for pre-IND meeting with the FDA 0%
- K) Hold pre-IND meeting with the FDA 0%

What was accomplished under these goals?

- A) Established contract with Chrysalis
- B) Animal Use Protocol under development
- C) Technician identified; screened and interviewed candidates for post-doctoral research fellow position.

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?

If this is the final report, state "Nothing to Report."

Describe briefly what you plan to do during the next reporting period to accomplish the goals and objectives.

Obtain IACUC approval for the protocol, submit to ACURO, hire staff

4. **IMPACT:** *Describe distinctive contributions, major accomplishments, innovations, successes, or any change in practice or behavior that has come about as a result of the project relative to:*

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

If there is nothing significant to report during this reporting period, state "Nothing to Report."

Describe how findings, results, techniques that were developed or extended, or other products from the project made an impact or are likely to make an impact on the base of knowledge, theory, and research in the principal disciplinary field(s) of the project. Summarize using language that an intelligent lay audience can understand (Scientific American style).

Nothing to report

What was the impact on other disciplines?

If there is nothing significant to report during this reporting period, state "Nothing to Report."

Describe how the findings, results, or techniques that were developed or improved, or other products from the project made an impact or are likely to make an impact on other disciplines.

Nothing to report

What was the impact on technology transfer?

If there is nothing significant to report during this reporting period, state "Nothing to Report."

Describe ways in which the project made an impact, or is likely to make an impact, on commercial technology or public use, including:

- *transfer of results to entities in government or industry;*
- *instances where the research has led to the initiation of a start-up company; or*
- *adoption of new practices.*

Nothing to report

What was the impact on society beyond science and technology?

If there is nothing significant to report during this reporting period, state "Nothing to Report."

Describe how results from the project made an impact, or are likely to make an impact, beyond the bounds of science, engineering, and the academic world on areas such as:

- *improving public knowledge, attitudes, skills, and abilities;*
- *changing behavior, practices, decision making, policies (including regulatory policies), or social actions; or*
- *improving social, economic, civic, or environmental conditions.*

Nothing to report

5. **CHANGES/PROBLEMS:** The Project Director/Principal Investigator (PD/PI) is reminded that the recipient organization is required to obtain prior written approval from the awarding agency Grants Officer whenever there are significant changes in the project or its direction. If not previously reported in writing, provide the following additional information or state, "Nothing to Report," if applicable:

Changes in approach and reasons for change

Describe any changes in approach during the reporting period and reasons for these changes. Remember that significant changes in objectives and scope require prior approval of the agency.

Nothing to report

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

Describe problems or delays encountered during the reporting period and actions or plans to resolve them.

There are several delays that have held up progress:

1. Labor market challenges – delayed hiring of highly qualified personnel, limited number of candidates
2. Administrative changes affecting contracting processes
3. Retirement of Co-I / leadership changes in that department – had to identify new coinvestigator and re-establish access to needed equipment, etc.

Changes that had a significant impact on expenditures

Describe changes during the reporting period that may have had a significant impact on expenditures, for example, delays in hiring staff or favorable developments that enable meeting objectives at less cost than anticipated.

Nothing to report

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

Describe significant deviations, unexpected outcomes, or changes in approved protocols for the use or care of human subjects, vertebrate animals, biohazards, and/or select agents during the reporting period. If required, were these changes approved by the applicable institution committee (or equivalent) and reported to the agency? Also specify the applicable Institutional Review Board/Institutional Animal Care and Use Committee approval dates.

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: List any products resulting from the project during the reporting period. If there is nothing to report under a particular item, state “Nothing to Report.”

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

Report only the major publication(s) resulting from the work under this award.

Journal publications. *List peer-reviewed articles or papers appearing in scientific, technical, or professional journals. Identify for each publication: Author(s); title; journal; volume; year; page numbers; status of publication (published; accepted, awaiting publication; submitted, under review; other); acknowledgement of federal support (yes/no).*

Nothing to report

Books or other non-periodical, one-time publications. *Report any book, monograph, dissertation, abstract, or the like published as or in a separate publication, rather than a periodical or series. Include any significant publication in the proceedings of a one-time conference or in the report of a one-time study, commission, or the like. Identify for each one-time publication: Author(s); title; editor; title of collection, if applicable; bibliographic information; year; type of publication (e.g., book, thesis or dissertation); status of publication (published; accepted, awaiting publication; submitted, under review; other); acknowledgement of federal support (yes/no).*

Nothing to report

Other publications, conference papers, and presentations. *Identify any other publications, conference papers and/or presentations not reported above. Specify the status of the publication as noted above. List presentations made during the last year (international, national, local societies, military meetings, etc.). Use an asterisk (*) if presentation produced a manuscript.*

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

List the URL for any Internet site(s) that disseminates the results of the research activities. A short description of each site should be provided. It is not necessary to include the publications already specified above in this section.

- **Technologies or techniques**

Identify technologies or techniques that resulted from the research activities. In addition to a description of the technologies or techniques, describe how they will be shared.

Nothing to report

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

Identify inventions, patent applications with date, and/or licenses that have resulted from the research. State whether an application is provisional or non-provisional and indicate the application number. Submission of this information as part of an interim research performance progress report is not a substitute for any other invention reporting required under the terms and conditions of an award.

Nothing to report

- **Other Products**

Identify any other reportable outcomes that were developed under this project. Reportable outcomes are defined as a research result that is or relates to a product, scientific advance, or research tool that makes a meaningful contribution toward the understanding, prevention, diagnosis, prognosis, treatment, and/or rehabilitation of a disease, injury or condition, or to improve the quality of life. Examples include:

- data or databases;
- biospecimen collections;
- audio or video products;
- software;
- models;
- educational aids or curricula;
- instruments or equipment;
- research material (e.g., Germplasm; cell lines, DNA probes, animal models);
- clinical interventions;
- new business creation; and
- other.

Nothing to report

7. PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS

What individuals have worked on the project?

Provide the following information for: (1) PDs/PIs; and (2) each person who has worked at least one person month per year on the project during the reporting period, regardless of the source of compensation (a person month equals approximately 160 hours of effort). If information is unchanged from a previous submission, provide the name only and indicate "no change."

Name: Celeste Finnerty
Project Role: PD/PI
Researcher Identifier (e.g. ORCID ID): 0000-0002-7443-750X
Nearest person month worked: 1 (10% effort)

Contribution to Project: Dr. Finnerty has written the IACUC protocol, written the job description for hiring the post-doctoral research fellow, interviewed candidates for the post-doc position, organized meetings with Chrysalis and with Dr. Toliver-Kinsky, and served as the point of contact for establishing the contract with Chrysalis.

Funding Support:

Name: Tracy Toliver-Kinsky
Project Role: PD/PI
Researcher Identifier (e.g. ORCID ID):
Nearest person month worked: 1 (1% effort)

Contribution to Project: Dr. Toliver-Kinsky has discussed the project and worked on the IACUC protocol with Dr. Finnerty.

Funding Support:

Has there been a change in the active other support of the PD/PI(s) or senior/key personnel since the last reporting period?
If there is nothing significant to report during this reporting period, state "Nothing to Report."

If the active support has changed for the PD/PI(s) or senior/key personnel, then describe what the change has been. Changes may occur, for example, if a previously active grant has closed and/or if a previously pending grant is now active. Annotate this information so it is clear what has changed from the previous submission. Submission of other support information is not necessary for pending changes or for changes in the level of effort for active support reported previously. The awarding agency may require prior written approval if a change in active other support significantly impacts the effort on the project that is the subject of the project report.

Nothing to report

What other organizations were involved as partners?

If there is nothing significant to report during this reporting period, state “Nothing to Report.”

Describe partner organizations – academic institutions, other nonprofits, industrial or commercial firms, state or local governments, schools or school systems, or other organizations (foreign or domestic) – that were involved with the project. Partner organizations may have provided financial or in-kind support, supplied facilities or equipment, collaborated in the research, exchanged personnel, or otherwise contributed.

Provide the following information for each partnership:

Organization Name: Chrysalis BioTherapeutics, Inc

Location of Organization: (if foreign location list country) Galveston, TX

Partner’s contribution to the project (identify one or more)

- Financial support;
- In-kind support (e.g., partner makes software, computers, equipment, etc., available to project staff);
- Facilities (e.g., project staff use the partner’s facilities for project activities);
- **Collaboration** (e.g., partner’s staff work with project staff on the project);
- Personnel exchanges (e.g., project staff and/or partner’s staff use each other’s facilities, work at each other’s site); and
- Other.

8. SPECIAL REPORTING REQUIREMENTS

COLLABORATIVE AWARDS: N/A

QUAD CHARTS: N/A

9. APPENDICES: N/A