BUILDING INTELLECTUAL CAPACITY AND INDEPENDENT RESEARCHERS THROUGH ACADEMIC RESEARCH CAREER ENHANCEMENT, ENRICHMENT & DEVELOPMENT

Investigator Mentoring Guide

SCTRIMH
South Carolina Translational Research Improving Musculoskeletal Health

PHASE I

September 2018- July 2023

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SC TRIMH PHASE I – INVESTIGATOR MENTORING GUIDE

Building Intellectual Capacity and Independent Researchers through Academic Research Career Enhancement, Enrichment and Development.

A goal of NIH COBRE SC TRIMH is to train and mentor junior investigators to develop independent NIH funded research careers in musculoskeletal health research and related fields, and recruit new and/or established investigators to increase their competitiveness as NIH funded investigators. Using a mentoring team approach including senior scientists, administrators and clinicians, TRIMH investigators develop a roadmap and timeline to attain NIH independent researcher status. They are individually guided through NIH proposal development and submission, peer-review process and clinical and peer collaboration among others.

SC TRIMH Project Funding and Eligibility

TRIMH investigators are comprised of Junior Project, Pilot Project, Fast Forward, and Discovery project leaders (Table 1). In addition to extensive mentoring, SC TRIMH provides funding to project leaders at different amount level and funding period based on level of expectations for each. Investigators are selected following a competitive process identifying the appropriateness of the proposed research for future NIH R01 funding. In addition, their motivation, engagement and determination to secure NIH independent investigator status are taken into consideration. The use of TRIMH research cores must be clearly included in the research plan. At the end of their funding period, all project leaders continue receiving mentoring, research core access, and collaboration.

Table 1. SC TRIMH Funded Projects

SC TRIMH Projects	Peer-review Process	Funding Period	Goal and Amount of Funding
Junior Project	EC, EAC, NIH	3+ years	To develop NIH R01 application focused on clinically relevant research. $150K/yr
Pilot Project	EC, EAC, NIH	<3 years	To provide mentored research experiences for investigators who may become candidates to replace JPLs who have transitioned. <$50,000/yr
Discovery Project	EC, EAC	<1 year	To explore the feasibility of projects that might become collaborative R01s, NIH RPG, or centers. $25,000
Fast Forward Project	EC	<1 year	To generate critical preliminary data for a planned NIH submission or resubmission of an extramural grant application within six months. $10,000

Junior Project Leaders (JPLs) cannot be PD/PI of any prior/current external peer-reviewed NIH R01 research grant or equivalent. Any other roles are acceptable as well as PD/PI for NIH R03, R15, R21, and mentored NIH K awards except K99/R00 and non-mentored K awards. Non-NIH seed and career development grants are also acceptable for eligibility. The program provides an average of three years of TRIMH support to JPLs.

A JPL transitions from the program when independent status is achieved after three years, or earlier. The following milestones are transition justifications:

- PD/PI of NIH R01 or major NIH research grant
- External peer-reviewed R01 equivalent grants (NSF, DoD, DOE, AHA, foundations, some industry) with a strong publication record and major academic accomplishments.

Following NIH Guidelines, the EC reserves the right to discontinue junior investigator funding at anytime if milestones and progress are not attained.

Once JPLs have attained the independent research status, they transition to the role of official mentor for research cores based on their expertise. They may be provided with transitional funding support if needed, available and approved by the EAC.

Expectations from Investigators

All funded investigators are expected to actively participate in all TRIMH monthly meetings and practice collegiality. All data and information discussed at these meetings are confidential and are not to be discussed outside of the SC TRIMH membership group without explicit permission from the investigators involved in the research. These meetings provide an exceptional mechanism for investigators to present and discuss ongoing work, present publications and grant plans prior to their submission, and initiate additional collaborations.

All manuscripts and presentations should acknowledge the SC TRIMH. (This work was supported by **P20 GM121342**). Additionally, Clemson grant/contract applications through InfoEd should cite the Clemson University SC TRIMH Center **(#0948**) during the internal application routing process.

Usage of research cores is strongly encouraged, must be sought and documented. Core usage (***past, present and future***) must be reported using a Google document. This information is used for annual report to the NIH. https://docs.google.com/spreadsheets/d/1rS9Xkv5onyBKxtUrOCMGZREs0HAu76W0QNStXDt1NfM/edit?usp=sharing.

Submission of grant proposals to the NIH must be included in all investigators' roadmap and short term plans. Development of NIH R01 application must be emphasized. Applications to other funding agencies are also encouraged and should be included in all plans.

In addition, Junior and Pilot Project investigators are expected to:

- Secure approval from the EC for a roadmap and timeline for publications and grant applications.
- Regularly meet with the EC members to present and discuss experimental plans, progress toward completing aims, and seek support to assure completeness of applications before submission to NIH.
- Discuss and plan usage of the scientific research cores with core directors for grant submission and research activities.

- Communicate regularly with mentoring team to discuss progress towards goals and submit mandatory quarterly mentoring report to the EC.
- Frequently communicate with CAC members to assure clinical significance of research.
- Attend and participate at SC TRIMH monthly meetings for networking, development as independent researchers, grantsmanship and grant application and review mechanisms, and academic leadership.
- Submit progress report for monthly meetings (see monthly report form resource).
- Publish regularly in the peer-reviewed literature in high impact journals and assure NIH public access compliance for publications reporting, and report monthly to SC TRIMH research outcomes in their individual research group (grant submitted, manuscripts published, awards, conference presentations, etc.).
- Provide to the EC semi-annual progress reports for internal and external reviews (EAC) consisting of roadmap progresses, checklist and mentor reports.
- Submit annual evaluation package including the progress report for RPPR, NIH biosketch, roadmap progress, checklist, and mentor reports (see semiannual report form resource)..
- Submit competitive R01 application or equivalent by the first NIH cycle of year 3 (preferably end of second year) of COBRE funding.

Annual evaluation of JPLs and PPLs will be conducted by the External Advisory Committee upon recommendation from the EC (Figure 1).

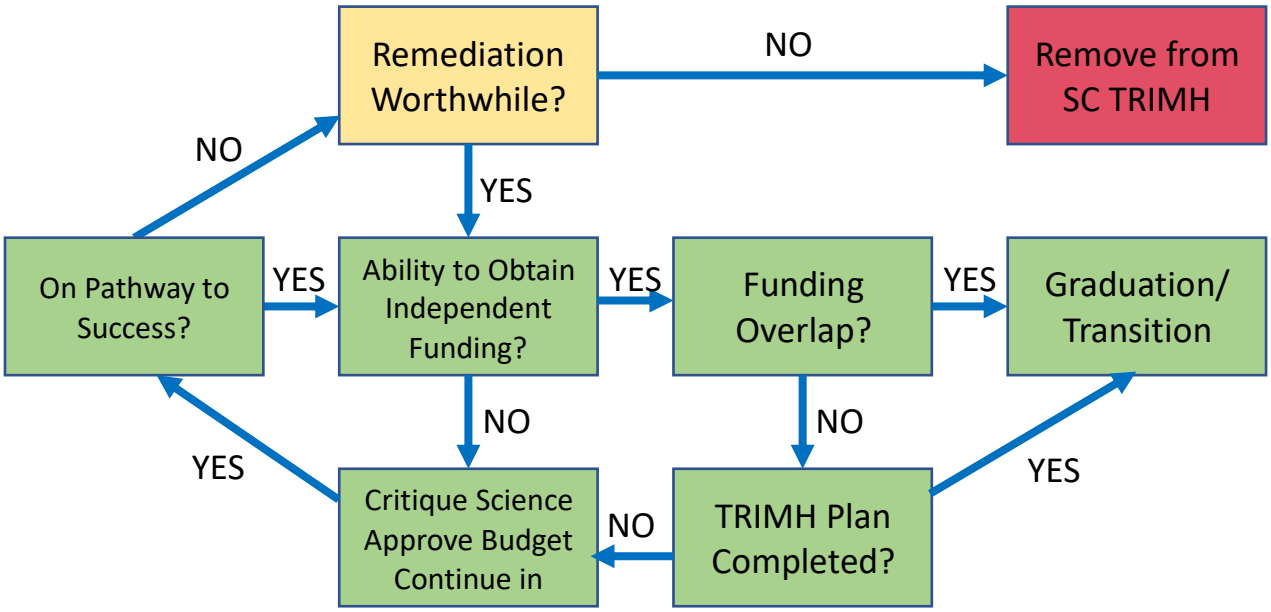

Figure 1. Flowchart of annual review of JPLs by EC and EAC.

Roadmap and Milestones

JPL and PPL performance assessment will involve:

- PhD student and postdoc mentoring to establish a productive team
- Peer-reviewed publications (number and journal impact factor)
- Conference proceedings (peer-review, number, impact of the conference)
- Meeting presentations (poster, podium)
- Invited talks
- New grant submissions
- New grant awards
- New collaborations
- Honors/awards
- Service as an ad hoc reviewer
- Tenure and Promotion

A roadmap (plan and strategy) to secure independent investigator status with NIH R01 funding will be developed by each investigator in collaboration with their mentoring team and the EC. The EC in collaboration with the mentoring team will assure that their career development plans are utilized and will document achievements or lack of progress for a yearly recommendation to the EAC.

Mentoring team

Each JPL and PPL is provided with a mentoring team consisting of one primary mentor in the discipline and two secondary mentors including a clinician. TRIMH is committed to Enhance Mentoring and Faculty Development through a rigorous program that uses a formative 360° style evaluation process to benefit both mentor and mentee. Knowing that junior faculty will perform their best in the short term, as well as long term, when provided with optimum mentoring, a new approach to mentoring is implemented. Mentors are trained about the best practices, approaches, and resources for mentoring. Mentoring is performed by a team of clinicians, engineers, and scientists to achieve a complete perspective. The diversity of mentoring, plus evaluation and improvement of mentoring, will enhance mentor & JI professional development.

Mentor Training Resources:

1) "Optimizing the Practice of Mentoring" from the National Research Mentoring Network (https://nrmnet.net/) [modules that cover mentoring models, mentor roles and responsibilities, structure and dynamics of the mentoring relationship, and strategies for facilitating, and addressing challenges to the mentoring process.]
2) Mentor Training | Clinical and Translational Science Institute - University of Minnesota (umn.edu) (Mentoring Action Plan as well as access to a toolkit containing helpful resources that will be utilized.)
3) TRIMH Mentoring Coaching Events:
   a. **SC TRIMH NIH 101 Workshop and Proposal Development Program.**
      - Grantsmanship and developing hypothesis driven research
      - Identifying alternative research directions and avoiding problems with specific aims
      - Teaching effective written communication
      - Understanding the NIH review process

   b. Leadership and Professional Development
      - Multi-tasking and setting priorities as an academician
      - What is critical thinking and can it be taught?
      - Mentoring experimental planning

- Mentoring laboratory management
- Manuscript preparation and publishing
- Optimizing seminar presentations
- Training in responsible conduct of research
- Mentoring career development at every stage
- Tenure and promotion processes
- Reproducibility of data and new NIH transparency and rigor standards.

Mentor-Mentee (Junior Investigator) Expectations

Mentor Expectations

Availability	Meet with faculty and participate in SCTRIMH research program activities.
Advisor/Facilitator	Help and guide faculty to meet research goals to attain independent status.
Advocacy	Support faculty in development of their profession and career
Honesty	Provide objective and constructive feedback.
Role Model	Set example of ethics, values and professional practices
Networking	Help faculty to meet their research goals by helping establish a professional network with experts (create contacts and introductions)
Knowledge	Be aware of NIH policies and grantsmanship as well as university practices to advise faculty.

Junior Investigator (JI) Expectations

Commitment	Participate actively in mentoring relationship and TRIMH activities.
Responsibility	Accept full responsibility for their academic career development and goal of attaining independent investigator status within three years of TRIMH support.
Proaction	Take initiative in seeking help and feedback from the mentors.
Responsiveness	Be open and listen to mentors' advice and suggestions.
Follow Through	Implement feedback and complete tasks.
Honesty	Communicate honestly and efficiently with mentors
Respect	Respect mentors and appreciate their mentoring.

Mentoring Hallmarks, prior to achieving extramural funding by mentee:

- Timely meetings between the mentee-mentor
- Timely critique of draft grants or draft manuscripts by mentor and timely submission by mentee
- Improved scores and reviewer comments on extramural grant submissions
- Positive comments by the mentor/mentee about each other and the mentoring relationship
- Increase in number and quality of publications by mentee and mentor
- Evidence of increased networking and recognition of the mentee :
  - invitations to present research at meetings and seminars at other institutions
  - invitations to review manuscripts and grants
  - invitations to host, or participate in hosting, symposiums

EVALUATION RESOURCES

Checklist and associated material (list of publications, grant proposals submitted and funded, updated biosketch, quartely mentoring reports to be uploaded in Box (individual folder for each JPL and PPL) for semi-annual evaluation.

FORM 1- Roadmap Checklist

Name:_____

ROAD MAP CHECKLIST	YES	NO*	In Progress
Roadmap and timeline for publications and grant applications approved by EC	☐	☐	☐
Regular meetings with Mentors	☐	☐	☐
Quarterly mentoring Reports uploaded in Box	☐	☐	☐
Regular meeting with EC members	☐	☐	☐
Updated scientific Core Usage documentation in Google	☐	☐	☐
Attendance at SC TRIMH Montly Meeting	☐	☐	☐
Progress report presentation at monthly meeting (twice/yr)	☐	☐	☐
Manuscripts submitted for publicarion	☐	☐	☐
Manuscripts published	☐	☐	☐
NIH Compliance for published manuscripts	☐	☐	☐
R01 application submission	☐	☐	☐
Invited talks	☐	☐	☐
Conference proceedings	☐	☐	☐
Awards	☐	☐	☐

*Provide justification/explanation below

FORM 2

ROADMAP PLAN – TEMPLATE

	YEAR 1				YEAR 2				YEAR 3			
TASK	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Meet with EC to develop timeline												
Confirm mentoring team												
Meet with EC to review roadmap and proposal development												
Submit manuscript												
TBD												
TBD												
TBD												
TBD												
TBD												
TBD												
Submit R01 application to NIH												

Investigator Name:_____ Date:_____

EC Approved_____ Date:_____

Mentor Approved_____ Date:_____

FORM 3- Quarterly Mentoring Evaluation Form

Mentor Name:_____

Mentee Name:_____

Part 1: Survey

Directions: Click one selection box ☒ per question which best describes your opinion regarding your Mentee.

	Mentoring Criteria	N/A	YES	NO	MAYBE	DON'T KNOW
1.	Was your mentee *easy to approach* and talk with?	☐	☐	☐	☐	☐
2.	Did/does your mentee consider your advice and accept encouragement from you with respect to his/her goals and objectives?	☐	☐	☐	☐	☐
3.	Did/do the two of you meet regularly?	☐	☐	☐	☐	☐
4.	Did/do you find the meetings productive?	☐	☐	☐	☐	☐
5.	Did /does your mentee send you an agenda prior to meetings?	☐	☐	☐	☐	☐
6.	Did/do you solicit your mentee's thoughts and opinions when making suggestions or recommendations?	☐	☐	☐	☐	☐
7.	Did you help your mentee identify tangible steps to meet your goals and objectives?	☐	☐	☐	☐	☐
8.	Did you connect your mentee with to other professionals who could "fill in the gaps" in areas where you might be less skilled?	☐	☐	☐	☐	☐
9.	Did your mentee stay engaged and invested in meeting the relationship objectives?	☐	☐	☐	☐	☐
10.	Were you satisfied with the mentoring relationship?	☐	☐	☐	☐	☐
11.	Did you and your mentee complete the goals planned?	☐	☐	☐	☐	☐
12.	Were you happy with the frequency of meetings?	☐	☐	☐	☐	☐
13.	Did the relationship meet your expectations?	☐	☐	☐	☐	☐
14.	Is your mentee engaged in SC TRIMH development activities?	☐	☐	☐	☐	☐
15.	Does your mentee actively share progression on publication and grant writing plans?	☐	☐	☐	☐	☐

Part 2: Your personal statements about your mentee (OPTIONAL).

Directions: Describe using your own words, whatever length you may need to express your answers.

1. Your Partnership
    a. What are/were two of the most beneficial development activities you did/ do?
    b. What is the most beneficial change you identified in yourself as a result of your relationship?

2. Personal Growth
    a. As the result of being a mentor, I've gained the following knowledge, skills, and/or attitude change:
    b. Other benefits I've received from this mentoring relationship:
    c. Something I plan to do or have done more of as the result of the relationship:

3. Our Relationship
    a. Ways, if any, this mentoring partnership could be more effective:
    b. Recommendations I'd make to other mentor-mentee pairs:
    c. General Comments on the mentoring initiative or partnership:

Part 3: Acknowledgement

The content of this report was discussed with the mentee. YES ☐ NO ☐

_____

Date

FORM 4

SEMI-ANNUAL EVALUATION REPORT

Investigator Name:_____

JPL ☐ **PPL** ☐

Report Date:_____

NB Months in SC TRIMH:_____

Last report date:_____

	Evaluation Criteria	**EC**			**EAC**		
		Exceeds	**Meet**	**Below**	**Exceeds**	**Meet**	**Below**
1.	Publications	☐	☐	☐	☐	☐	☐
2.	Proposal Submission/Award	☐	☐	☐	☐	☐	☐
3.	Proposal Development	☐	☐	☐	☐	☐	☐
4.	Mentorship (students, post-docs)	☐	☐	☐	☐	☐	☐
5.	Collaboration/networking	☐	☐	☐	☐	☐	☐
6.	Engagement in SC TRIMH	☐	☐	☐	☐	☐	☐
7.	Motivation for biomedical research	☐	☐	☐	☐	☐	☐
8.	Honors/awards	☐	☐	☐	☐	☐	☐
9.	Service - impactful on independent research career	☐	☐	☐	☐	☐	☐
10	Academic Promotion	☐	☐	☐	☐	☐	☐

EC RECOMMENDATION: Continue Funding without amendment

Continue Funding with amendment

Terminate

Transition/Graduation

Approved (SC TRIMH Director)/Date: _____

EAC RECOMMENDATION: Continue Funding without amendment

Continue Funding with amendment

Terminate

Transition/Graduation

Approved (EAC Chair)/Date:_____

FORM 5

SC TRIMH MONTHLY REPORTING Form

(Sent out on the 1st of each month, requested back on or before the 10th of the month)

Check applicable: ☐ JPL ☐ PPL ☐ Discovery Project ☐ Fast Forward Project

Last updated: _____

Report from: [Lastname, Firstname]_____

Project Title: [*Name of SC TRIMH-funded project, if applicable]*

1. Others/Team Involved in Research

Table Listing for the Number and Type of Participants

Name	Applied	Enrolled	Completed	Classification (High school/ Undergrad/ Graduate/ Postdoc/ Technician)	Underrepresented y/n

2. Publications (from June 1, 2020 forward) (Mrs. Evatt and Mr. Gallien will monitor Public Access Compliance)

Full Publication Citation (PUBMED Format with DOI)	In Press Y/N	Grant Cited Y/N	Public Access Compliance Yes/No

3. Grant Awards (Current Year: ☐ 8/1/20-7/31/21 ☐ 8/1/21-7/31/22 ☐ 8/1/22-7/31/23)

Funding Agency	Title	$ Amount (Current Year)	Award Year and # of Years	Total Cost - all Years	Fed Y/N	PHS Y/N	NIH Y/N

4. Grant Submissions

Title	Dollar Amount	Status (Under Review, Awarded, Not selected)	Date Submitted	Funding Agency	Project Dates	Grant PI	Role on Grant	% Effort	Fed Y/N	PHS Y/N	NIH Y/N

5. Presentations/Invited Talks

Co-Authors/Presenters	Title	Event	Date

6. Patents/Disclosures:

7. Other Wins (ex. popular press (please include URL), awards, student awards, etc.)
   a.
8. Comments to the Executive Committee or Information to Share (Optional)