SHP Student Interns for Research and Scholarly Activities
Application of Project Proposal Form

Instructions:
Please fill out the form and return via email to Nipa Sahasrabuddhe
(ns1115@shp.rutgers.edu) by April 1, 2022. Please fill each box to the right of
each required field. If you are sending attachments, please ensure your contact
information is added to all your forms.

Faculty Contact Information:

<table>
<thead>
<tr>
<th>Date submitted:</th>
<th>March 30, 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty Name:</td>
<td>Laura Byham-Gray &amp; Suril Gohel</td>
</tr>
<tr>
<td>Department/Program:</td>
<td>Clinical and Preventive Nutrition Sciences/Health Informatics</td>
</tr>
<tr>
<td>Telephone number:</td>
<td>973.972.1605</td>
</tr>
<tr>
<td>E-mail:</td>
<td><a href="mailto:laura.byham.gray@rutgers.edu">laura.byham.gray@rutgers.edu</a></td>
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Project Detail:

<table>
<thead>
<tr>
<th>Project Title: (56 characters max)</th>
<th>Using Machine Learning (ML) Methods to Estimate Energy Expenditure (EE) in Stage 5 Chronic Kidney Disease</th>
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<tr>
<td>Hypothesis:</td>
<td>When compared to the criterion standard, disease-specific algorithms generated via ML will be a more precise estimate of energy expenditure (EE) than traditional statistical methods.</td>
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<tr>
<td>Description:</td>
<td>Of the several hundred variables available within the Rutgers Nutrition and Kidney Disease database, we will determine which ones are strongly correlated with the criterion standard of measured EE. Based on a priori selection criteria, these variables will be inputted into seven ML models published by Ponce et al, 2020 (doi: 10.1186/s12986-020-00519-y). The top three algorithms will be selected by assessing the root of mean square error (RMSE). These algorithms will then be compared with our best predictive model developed via traditional methods (Rutgers-Maintenance Hemodialysis Equation) using a modified Bland Altman analysis.</td>
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| Specific Student Responsibilities: | Under faculty supervision, the student will complete the following activities, including but not limited to:  
1. Completing CITI and research training requirements; student added to eIRB.  
2. Setting-up a regularly scheduled meetings to determine the analytical plan for conducting the seven ML methods with the PI and research team.  
3. Conducting the ML analyses and sharing findings with PI and research team.  
4. Working with PI and research team to assess the |
precision of these algorithms against the Rutgers-MHDE.

5. Work closely with the PI and research team for manuscript preparation for submission.

Start / end date of project: June 15-August 15, 2022

Educational:

WHAT OTHER EDUCATIONAL OPPORTUNITIES ARE AVAILABLE TO STUDENTS? (e.g., journal club, seminars, clinic, rounds)

The student will learn to work on a research team as well as the processes required for manuscript submission to peer-reviewed journal.

WHERE DO YOU PLAN TO PRESENT OR PUBLISH THE FINDINGS WITH THE STUDENT? (e.g., national or state meetings, newsletter or journal, SHP poster day)


Will submit the abstract to a professional conference:
American Society of Nephrology, National Kidney Foundation-Spring Clinical Meeting

CHECK ALL APPROPRIATE BOXES BELOW AND PROVIDE REQUESTED INFORMATION.

This project is: X clinical □ laboratory □ behavioral □ survey □ educational

X Other: please specify: secondary data analyses

X This project involves the use of human subjects (including chart review, retrospective studies and questionnaires).

Pending □ Approved X IRB Protocol Number Pro2020001656

IRB approval must be obtained by June 2022

Jane Ziegler 3/30/22

Signature of Department Chair Date

OR-For internal use

Form: (1)
Reviewed date: ______________
Date processed on website: ______________