

Introduction

The World Health Organization predicts that 26.4 million new cancer cases will be reported in 2030 alone [1]. Between 2010 and 2020, the number of patients receiving radiotherapy is expected to increase by 22% [2]. Assuming the current graduation rate of 140 residents/yr remains constant; the number of full-time equivalent radiation oncologists is expected to increase by only 2% [2]. The number of residents would have to increase to 280 per year for the years 2014 to 2019 to equal expected demand [2]. For these reasons, when considered in aggregate, it is necessary to establish an effective mentoring paradigm in radiological science not just for medical students (MS) but also for high school (HS) and college undergraduate (UG) students, to promote a greater general awareness of the study of oncology as well as its therapeutic implementation.

Methods

Research experience in the Dept. of Radiation Medicine provides full-time summer and/or all year round research educational experience to HS, UG, and MS interns. Interns are paired in a “near-peer” fashion; that is, a junior or less experienced student matched with a senior or more experienced student. Each student pair is subsequently matched with an experienced faculty scientist or preceptor. All interns spend a minimum of 10-12 wks working full-time in the preceptor’s laboratory. Preceptors are encouraged to involve interns as much as possible in all facets of

Methods

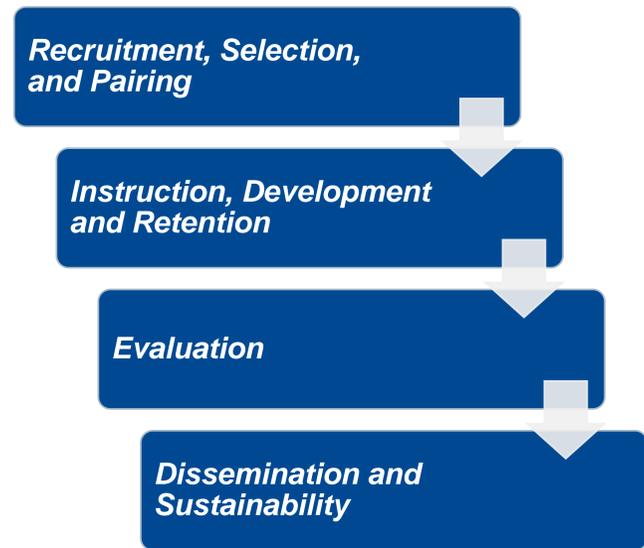


Figure 1. Program Life Cycle

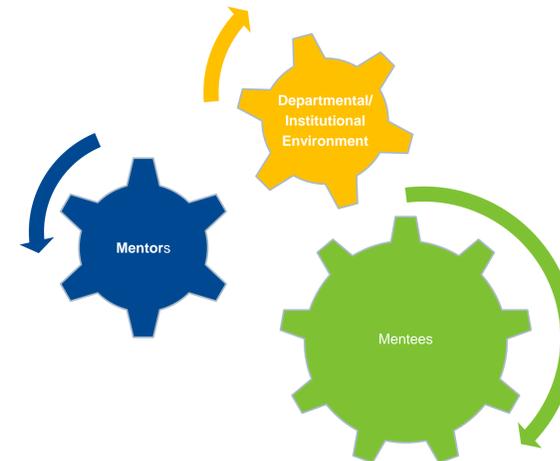


Figure 2. Program Core Elements

the research process, such as reading the relevant literature, participating in regularly scheduled lab meetings and journal clubs, research seminars as well as multidisciplinary tumor boards. Didactic sessions on how to conduct scientific research and program evaluation from learners will be a core of the program.

Results

- From 2007-2012, the Department has mentored & sponsored a total of 44 students, not including students in its graduate and postgraduate programs, or international students.
- A proud feature of the Department’s mentorship program is that HS interns, like their US and MS counterparts, are active participants who contribute significantly in the preparation of scientific abstracts for national and international conferences, as well as in the drafting of associated scientific manuscripts.
- While most HS interns typically start on short-term projects, they understand that research questions may not necessarily be answered in a limited time period.
- Eight of our HS students have co-authored at least one scientific abstract and/or peer-reviewed manuscript.
- Three of our HS students successfully competed in regional and/or national science fairs, one of our US interns was a laureate of the American Association of Physicist in Medicine Summer Research Fellowship.
- Two of our US interns have successfully earned college credits for their research.

Results

- Five of our MS participants have successfully secured competitive Research Medical Student Grant awards from the Radiological Society of North America.
- One of our MS was a Tartar Trust Fellow.

Conclusion

Based on the success of our current program, we plan to re-submit an R25 that will specifically meet the manpower goals for the NCI Cancer Education Grant Programs initiatives through the following specific aims:

Aim 1: To increase the number of students with interest in cancer and radiation research by identifying and selecting high school, undergraduate and medical students with strong interests in the biomedical, clinical, or epidemiologic aspects of cancer and emphasize the recruitment of women and underrepresented minorities into the program.

Aim 2: Create and implement a structured mentored research and educational experience with emphasis on radiological sciences, near-peer mentorship and dyadic mentorship.

References

- [1]. Boyle P *et al.*, eds. World Health Organization 2009.
- [2]. Smith BD *et al.* J Clin Oncol 2010;28:5160-5165.