



# Summer Program for Academic Research in Cancer

Harikrishna Nakshatri, BVSc., PhD





# Purpose

- To convert a successful summer research program previously funded through a CURE supplement from NCI into an extramurally funded summer research program.
- Provide summer research opportunities for first year medical students



INDIANA UNIVERSITY  
**MELVIN AND BREN SIMON  
COMPREHENSIVE CANCER CENTER**



# Metrics from the CURE program used as a justification

Table 1: Outcome Data of SRP Trainees 2010-2019. Only college students are shown.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
# of SRP trainees	18	1	8	9	9	9	4	5	5	12
Still enrolled in 4-Yr Univ.	0	0	0	1	0	4	1	4	5	12
Earned 4-Yr degree	18	1	8	8	9	5	3	1	TBD	TBD
Pursuing MD	1	0	2	0	2	3	2	1	TBD	TBD
Pursuing PhD	1	0	3	0	2	2	TBD	TBD	TBD	TBD
Science-related employment	11	1	1	6	3	1	1	TBD	TBD	TBD
Other employment	5	0	2	2	2	TBD	TBD	TBD	TBD	TBD



# Specific aims; first submission:

**Aim 1: Provide mentored, high-quality, cancer-focused research experiences to undergraduate students and to first year medical students to prepare them for cancer-related fields:**

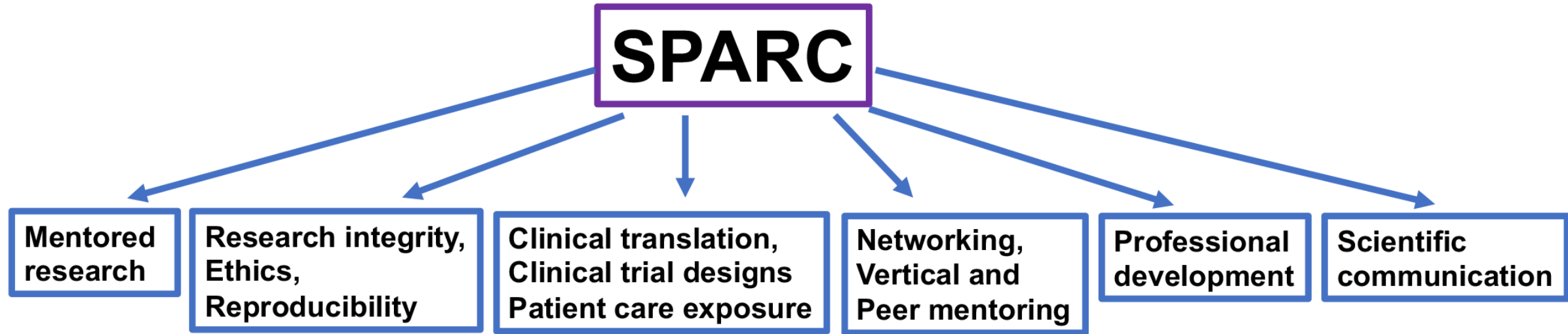
**Requested 15 undergraduate student and five medical student slots**

**Aim 2: Implement a comprehensive evaluation plan for the program to ensure the program is meeting benchmarks and achieving milestones**

**Proposed a mixed-method evaluation plan and included an analyst with expertise in evaluation education as a Co-I**



# Broad Programmatic activities



Included a Table with all other summer programs on campus and clearly indicated that none focuses on cancer  
Another table describing weekly didactic activities





# Other elements in the grant

- Criteria for selection of trainees
- List of mentors with their funding, research area and mentoring history (we listed 32 mentors for 20 trainees)
- Detailed data collection and evaluation

Activities	Indicators	Data Collection Method
<b>Goal 1: Successfully engage undergraduate students in cancer-focused research in preparation for a career in science, medicine and other cancer-related fields</b>		
<ul style="list-style-type: none"> <li>• Student and mentor matching</li> <li>• Engagement in laboratory research</li> <li>• Research skill sessions</li> <li>• Journal clubs</li> <li>• Compliance training</li> <li>• Community engagement</li> <li>• Poster/oral presentations</li> <li>• Engagement in research outside of SPARC</li> <li>• Pre- and Post- SPARC cancer knowledge quiz</li> </ul>	<ul style="list-style-type: none"> <li>• Student program completion</li> <li>• Acquisition of research-specific skills</li> <li>• Acquisition/honing of soft skills (communication, critical thinking, ethical behavior and decision-making, teamwork etc.)</li> <li>• Expressed interest/appreciation of cancer science and research</li> <li>• Increased cancer knowledge</li> <li>• Research publications</li> </ul>	<ul style="list-style-type: none"> <li>• Student survey</li> <li>• Mentor survey</li> <li>• Self-reflection essays</li> <li>• Student research progress and final reports</li> <li>• Pre- and post-test communication evaluation</li> <li>• Tracking through ORCID number and EVAL</li> <li>• Cancer knowledge quiz results</li> </ul>
<b>Goal 2: Increase the number of MDs pursuing research or career in oncology or becoming physician scientists</b>		
<ul style="list-style-type: none"> <li>• Student and mentor matching</li> <li>• Engagement in laboratory research</li> <li>• Research skill sessions</li> <li>• Journal clubs</li> <li>• Compliance training</li> <li>• Community engagement</li> <li>• Poster/oral presentations</li> <li>• Engagement in research outside of SPARC</li> <li>• Pre- and post-SPARC cancer knowledge quiz</li> </ul>	<ul style="list-style-type: none"> <li>• Completing elective medical oncology clerkship in fourth year</li> <li>• Applicant for Wright (any cancer type) and Hester (pediatric) fellowship offered by IUSCCC for 2<sup>nd</sup> and 3<sup>rd</sup> medical students</li> <li>• Increased cancer knowledge</li> <li>• Acceptance to cancer-related internship/residency programs</li> <li>• Pursuing academic track</li> </ul>	<ul style="list-style-type: none"> <li>• Annual student survey</li> <li>• National Clearinghouse data</li> <li>• Academic records</li> <li>• Tracking through ORCID number and EVAL</li> <li>• Cancer knowledge quiz results</li> </ul>



# Review feedback on A0

Impact Score: 25

Comments:

- Overly ambitious
- Some requirements for a 10 weeks program is not well-justified
- Possible overlap with other summer programs
- Limited engagements between the participants
- 23 mentors for 20 trainees
- Not clear to what extent the program differs from IMPRS program (our current summer program for medical students)
- Not clear whether residential option is available to all trainees
- Program may be disproportionate among the trainee class- helping more undergraduate students than medical students
- Unclear how the program will be integrated for the benefit of all.
- \$ amount in institutional commitments is unclear
- More details and perhaps more specialized mentor training is needed



INDIANA UNIVERSITY

**MELVIN AND BREN SIMON COMPREHENSIVE CANCER CENTER**

# A1 revision

Response to critique:

Related to medical students.

- 1) The current IMPRS is not cancer focused and NHLBI T35 funds 32 students out of 375 medical students per year
- 2) We have created an Oncology elective for fourth year medical students such that SPARC serves as a pipeline
- 3) Increased number of medical student slot from 5 to 10 so that the program is even.

Related to potential overlap with other programs:

- 1) Summer programs are highly competitive with 790, 458, and 921 applications for 18, 53, and 68 slots in 2020, 2021, and 2022
- 2) Added more mentors (provided biosketch of 64 mentors making it 3:1 ratio)

Program integration and unnecessary components:

- 1) Developed program events that includes both sets of trainees allowing vertical mentoring
- 2) IDP was removed from the requirement
- 3) CITI training modules are tailored to research projects

Institutional commitment:

- 1) Included letter from the Dean stating that 5% PI's salary will be covered.
- 2) Included exact \$ amount- \$20,000 from the School and \$85,000 per year from the Cancer Center





# A1 review

Impact score: 15

All criterion scores were in 1-2 range

Comments: Minor weaknesses

- 1) Too ambitious
- 2) Unclear benefit of combining undergraduates and medical students
- 3) Insufficient planning regarding the integration of two groups in educational activities.
- 4) No indication of diversity in faculty mentors

Concluding comment: Nonetheless, this program has a high impact of guiding these students toward careers in cancer-related fields.

Got the funding notice on 9/13/2023

No budget cuts

\$1,435,785 for five years



INDIANA UNIVERSITY

**MELVIN AND BREN SIMON COMPREHENSIVE CANCER CENTER**

# **R25-YES- Educational Pathways for Cancer Research (EPCR)**

Uniqueness: In partnership with School of Education to develop Curriculum development workshop for Middle School Teachers

**Goal 1: Prepare middle level teachers and informal educators to provide their students with the prerequisite knowledge and dispositions toward medical research**

**Goal 2: Provide high school teachers with integrated laboratory research experience and curriculum development opportunities to enhance their biology and cancer-related teaching skills and to help create excitement in their students for science-related careers**

**Goal 3: Provide mentored, high-quality, cancer-focused research experiences to graduating high school and early undergraduate students from underrepresented backgrounds to prepare them for science, medicine, or cancer-related fields**

Included letters of support from various organizations including Superintendents of two school districts, teacher organizations and the city



INDIANA UNIVERSITY

**MELVIN AND BREN SIMON COMPREHENSIVE CANCER CENTER**

# Review feedback on A0

Impact score: 18

Criterion scores range: 1-3

Minor weaknesses:

- Insufficient detail for some elements of approach
- Brief laboratory experience for high school teachers
- No consideration to High School Juniors
- Long-term tracking of program participants is not well-delineated
- Teacher recruitment, training and retention could be more developed
- Unclear whether teachers receive stipend for participation



INDIANA UNIVERSITY

**MELVIN AND BREN SIMON COMPREHENSIVE CANCER CENTER**

# Response to Review

- Provided examples of model lessons for middle school and high school teachers
- Explained why High School Juniors are not included: Year around school system with shorter summer breaks.
- Alternative programs for High School Juniors using Philanthropic support.
- Clarified about stipend to teachers and reason for short laboratory experience
- Included housing options for teachers to accommodate teachers from rural districts
- Provided more details on how we are tracking students.

## A1 review outcome

Impact score: 13

Received funding notice on 9/19/2023 for \$1,942,322.00 for five years period



INDIANA UNIVERSITY

MELVIN AND BREN SIMON COMPREHENSIVE CANCER CENTER



INDIANA UNIVERSITY

# MELVIN AND BREN SIMON COMPREHENSIVE CANCER CENTER

[cancer.iu.edu](http://cancer.iu.edu)

**NCI**

**Comprehensive  
Cancer Center**

A Cancer Center Designated by the  
National Cancer Institute



National  
Comprehensive  
Cancer  
Network®

**Member Institution**