



Medical Student Research at the John A. Burns School of Medicine (JABSOM): The Research Interest Group

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In medical education, the role of research is not well understood. Institutions greatly differ in the amount of emphasis placed on medical research. While most institutions believe that medical student research is an important part of medical education, generalization is difficult because of the differences in the types of research experiences available to students.¹ Some medical schools offer research as summer electives; others mandate a more extensive and formal research experience.^{2,3} Some focus on primary care; others focus on translational science.^{4,6} A consistent observation is that student involvement in research during medical school has a positive effect on students' educational experience.⁶⁻⁸ This article describes student research at John A. Burns School of Medicine (JABSOM) and the students' efforts to support it.

JABSOM has a tradition of primary-care oriented clinical education and community outreach. Additionally, there are opportunities for students to pursue academic endeavors.⁹ Since the implementation of Problem Based Learning (PBL) in 1989, JABSOM students have had the option to conduct research through an elective course. During the terms of Dr. Edwin Cadman as dean (1999 to 2005) the amount of biomedical research at JABSOM increased dramatically. This was reflected by a ten-fold increase in NIH grants.¹⁰ In accordance, a greater emphasis was placed on research in the medical student curriculum.

In 1999, a group of students led by Bill Johnson, MS I, created a course dedicated to research. Their goal was to ensure that all students had exposure to research. This effort resulted in the establishment of a summer course between the first and the second year known as the Student Research Project. In this required course, a student identified an active researcher, initiated a research project, and participated in one or more research projects. The Student Research Project was recently replaced by elective research opportunities to provide the students with more flexibility. Concurrently, a fourth year student, Thomas Sanford, began an "interest group" to support student research. In the fall of 2009, the JABSOM Research Interest Group was founded.

The initial objective was to increase first year student involvement in research. The most common barrier to early involvement in research was a lack of awareness of research opportunities at JABSOM. To help resolve this issue, information available through past student experiences, on-line resources, and data from the Office of Medical Education was compiled into a single database of JABSOM Principle Investigators (PI). The database was searchable by PI, subject, or specialty. The database was distributed to all students who expressed interest in research. A mentorship program was established whereby first year students were paired with a fourth year student who was knowledgeable about research at JABSOM. The efforts to involve students early have resulted in many positive

student-researcher relationships. Some of the projects JABSOM students are conducting with JABSOM researchers include:

- Ras Pathways in Non-Melanoma Skin Cancer
- Dysnatremias and Fluid Volume as Predictors of Mortality in the Intensive Care Unit
- Retinopathy and Neonates
- Own the Bone (Osteoporosis)
- Hepatitis B core antibody in Renal Transplant Patients
- Effect of education and minimization of narcotic use on postoperative pain, following elective breast augmentation surgery
- Six2 Gene expression in nephrogenesis of fetal mice

The second objective was to support research-related educational activities. With the guidance of a faculty mentor, Dr. Steven Ward from the Institute of Biogenesis Research, a new lecture series titled the "Translational Research Seminar" was initiated. Two researchers were invited to each seminar: an expert in laboratory science and a clinician. Different perspectives of the two speakers promoted lively discussions about the current technical issues and the clinical relevance of novel diagnostic and therapeutic agents. The seminars were well-attended and positive feedback from lecturers, faculty, and students was received. The Research Interest Group also began collaborating with a group of first year students who began a journal club. Finally, a repository of extramural research opportunities for summer internships and year-long research fellowships was developed.

The Research Interest Group recently conducted an informal internet survey to identify areas where improvement may be necessary in the future. The survey consisted of 10 questions relating to the attitudes of students toward research, resources, as well as the productivity of research experiences. The survey was sent to all 252 JABSOM students and 83 students responded (35%). Most students reported experience with research prior to enrolling at JABSOM (83%), and the majority (70%) reported conducting research at JABSOM. The rate of participation in research was disproportionate to other measures of academic productivity: 27% of students report presenting research at an academic conference and 24% are listed as a co-author on a publication with a JABSOM researcher. Of the students who had not conducted research (N=25), lack of time (N=10) and lack of resources (N=9) were the most common reasons cited. Four of the responders (7%) reported that they were not interested in research. Forty-two percent of JABSOM students reported that they did not have adequate research-related resources. So, it appears that students are generally interested in research, but do not feel they have the resources to find research that interests them.

The experiences during the first year of the Research Interest Group have solidified the positive aspects of students as research advocates. Student participation in research can be an important part of a complete medical education. Most students who conduct research in medical school report improved understanding of research fundamentals and improved proficiency in critically evaluating the literature.^{11,12} Furthermore, students who have exposure to comprehensive research projects during medical school are more likely to conduct research in the future, and are more likely to specialize in the area of their research.^{4,13} The authors neither seek to mandate any specific type of research experience, nor to create interest in research where none currently exists. It is noted that most JABSOM students were involved in research prior to medical school, and the authors believe that vast majority have an innate interest in research. The primary purpose of the Research Interest Group is to serve as a repository of resources to guide students so that they may conduct research in their area of interest. Students have expressed that there is a need for more clinical and populational research. Moving forward, a top priority will be to increase the students' understanding of the clinical and populational research currently being conducted in Hawaii so that more opportunities in this domain can be created. Furthermore, in the tradition of JABSOM, the Research Interest Group will work to increase the opportunities available for research in primary care and community outreach.

In JABSOM's problem-based learning (PBL) curriculum, students rely on each other to contribute to each other during small tutorial sessions. Consequently, a student-led group may be effective in supporting student research at JABSOM. However, faculty participation is vital for any student research experience. Research creates an opportunity to connect students and faculty members in a way that will benefit both parties. Faculty are invited to view the website (www.jabsom-rig.com) and faculty researchers interested in working with students are encouraged to contact the authors. Students who were able to complete meaningful research projects during medical school can attest to the substantial impact that faculty have made on the students' journey to become physicians.

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***Hawaiian proverb:
“If you plan for a year, plant kalo.
If you plan for ten years, plant koa.
If you plan for one-hundred years, teach the children.”***