



# Does Size Really Matter?

## Chemistry Research at Private Liberal Arts and Public State Universities



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### Introduction

To what degree does the nature of research depend on the nature of the institution at which it is carried out? Technical power and program focus are driven by interest and funding within an institution, but what about the fundamental goals associated with undergraduate research? This poster compares undergraduate chemistry research at two very different institutions.

Carroll University (CU), private, liberal arts college, and the University of Wisconsin, Madison (UW), public state university, are located 100 km apart. CU is a teaching-intensive university while UW is a research-intensive university

Number of:	Carroll University	UW- Madison
Students	2,600 undergraduate 124 graduate	29,000 undergraduate 9,100 graduate
	67% female	48% female
Total FT Faculty	118	2,017
Chemistry FT Faculty	6	60
Undergraduate chemistry majors	112	180
Undergraduate chemistry students doing research in Fall 2010	17 (100% of senior majors)	70 (44% of junior and senior majors)

### Comparative Student Perspectives

Carroll University	UW-Madison
All students are "entitled" to participate in research	Finding a research position is very competitive and the majority of students do not participate in undergraduate research
It is the faculty's responsibility to develop research projects	Students must seek out a group that will allow them to work
Research is a graduation requirement	Research is not required for graduation

### Comparative Faculty Perspectives

Carroll University	University of WI – Madison
The primary responsibility of faculty is <b>teaching</b> . Teaching load is 24 contact hours per year	The primary responsibility of faculty is <b>research</b> . Teaching load is 5 – 10 contact hours per year
Faculty are removed from the cutting edge of their field due to lack of time and low institutional value	Faculty must be at the cutting edge of their field
Support student who wish to attend graduate school, but have nothing invested in that decision.	Desire students to move onto graduate school. Some actively recruit REU students to attend UW

### Comparative Research Expectations

Carroll University	University of WI – Madison
Projects are modest and usually do not lead to peer-reviewed publication	Projects are a part of a larger program with publication a major goal
Projects are supervised by faculty	Projects are supervised by graduate student
Projects specifically designed and assessed as formative experiences for students	Quality of experience crucially dependent on time investment of graduate student

### Carroll University Undergraduate Chemistry Research Programs (with number involved in Fall 2010 given in parenthesis)

- Pioneer Scholar Program (2)** – University summer research program that pairs a faculty member and a student. Program provides: student stipend of \$3000, faculty stipend of \$1500, \$500 for supplies and \$500 for student travel to regional or national meeting.
- Thronson International Research Program (4)** – funds chemistry/biochemistry teams of one faculty and two students to travel internationally for three months in summer. We have agreements at two universities in Australia, one in New Zealand, one in Ireland, one in Northern Ireland, two in Scotland and one in England.
- Local off-campus research partnerships (1)**
- NSF – REU program (1)** available at many US universities
- On-campus research during the academic year (9)**

### Pioneer Summer Scholar Awards since 2007

Art	2	4.9%
Biology	15	36.6%
Chemistry / Biochemistry	9	22.0%
Communication	2	4.9%
Computer Science	1	2.1%
English	5	12.2%
Exercise Science	1	2.4%
History	1	2.4%
Modern Languages	1	2.4%
Nursing	1	2.4%
Psychology	3	7.3%
Total	41	

### Conclusions

- Are student perspectives different?**  
80% of Carroll students believe they should be required to complete a research project, but only about less than 50% would participate in research if it was not required.
  - Carroll students tend to be less motivated to participate in research projects.
- Are research experiences different?**
  - Projects at CU are designed specifically for undergraduates
  - Undergraduates at UW are placed onto ongoing projects
  - Projects at CU give students a better opportunity to see the broader problem
  - CU provides many programs / locations for undergraduate research

CU offers a variety of research programs that provide appropriate experiences for students with a range of academic abilities. UW provides cutting edge research opportunities that primarily benefit graduate school bound students.

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