

Virginia State University
Annual Undergraduate Research Conference

Guidelines for Abstract Submission

Poster and Oral Abstract Submission Deadline

All poster and oral abstracts **MUST** be submitted through the abstract submission website by **Friday, February 18, 2022 (12:00 Midnight Pacific Standard Time)**.

The abstract submission and conference registration website is located at

<https://www.vsu.edu/research/undergraduate-research/conference-workshops.php>

If you encountered any problem in registering or submitting the abstract, please contact Amber Dollete at (804) 524-2479 or e-mail to adollete@vsu.edu.

******Abstract sent by e-mail, Fax or via e-mail will not be accepted******

Student Eligibility

The student oral/poster competition will be opened to students who:

- are currently registered as an undergraduate student (sophomore, junior, or senior) at a U. S. college or university)
- are registered as a student conference participant
- have conducted undergraduate research

Presentations Schedule (Tentative)

| | | Friday, April 1, 2022 |
|-----------------------------|------------------|--|
| Registration | | 8:00 AM – 9:00 AM |
| Oral Presentations | Engineering Bldg | 9:20 AM – 12:00 Noon 9:20 AM – 12:00 Noon 9:20 AM – 11:40 AM |
| Poster Presentations | Gateway | 2:00 PM – 4:00 PM |

Criteria for Abstract Acceptance

All abstracts **must not exceed 250 words and must include** the following:

- Hypothesis statement and why the research is important;
- Methods and controls;
- Results;
- Conclusions and future research recommendations

ALL ABSTRACTS must be approved by the student's research/faculty advisor or mentor. The name of the research/faculty advisor or mentor will be listed in the Conference Proceedings.

If your abstract contains symbols, notations, or mathematical equations, we ask that you forward your abstract submission confirmation e-mail to hbcu_urc@vsu.edu and attached a copy of your abstract in word.

Accepted poster and oral abstracts will be listed in the Conference Proceedings.

Abstract Acceptance Notifications

Once an abstract has been received by the conference staff, the most efficient means of communication and notification of status will be by email. **Therefore, it is very important that a valid and current email address be on record for all students and faculty/mentors to help speed up the notification process.** Author should notify VSU Office for Undergraduate Research with changes in email addresses or other contact information.

Abstract acceptance notifications will be emailed on or before March 11, 2022. If you have not received your notification of acceptance by March 11, 2022, please check your e-mail junk folder before contacting the VSU Undergraduate Research Office by e-mail (hbcu_urc@vsu.edu or to adollete@vsu.edu).

Abstract Sample

Bergmann's rule is an ecogeographic principle postulating an intraspecific increase in body size with increasing latitudes or increasing elevation, each correlating with decreasing environmental temperatures. The influence of body size on thermoregulation is the primary physiological basis for this rule. A decreased surface area to volume ratio of larger body size increases an animal's ability to retain heat and sustain internal temperature. There is general support for this rule in homeotherms (e.g., birds and mammals) which maintain body heat through metabolism. The application of Bergmann's rule to ectotherms (e.g., reptiles) which acquire heat via thermoregulation, remains controversial. Larger body size in ectotherms should be selected in cooler environments because of the increased time necessary for heat absorption to carry out daily functions when compared to smaller sized conspecifics.

However, research on a number of spiny lizards (genus *Sceloporus*) show support for Bergmann's rule. We use Slevin's bunchgrass lizard, *Sceloporus slevini*, a species that occurs at both high and low elevations to test the hypothesis that ectotherms should show a reversed size relationship than the one hypothesized by Bergmann's rule. Body size measurements to the nearest 0.01 mm were taken using digital calipers from five populations from high, mid-range and low elevations in southeastern Arizona. Body size at different elevations was compared using a one-way ANOVA and pairwise differences in means were evaluated using Tukey's multiple comparison tests (when the overall ANOVA's were significant). Our findings demonstrate a significant size difference between high and low elevation populations. The mean body size (snout-vent length) of individuals at higher elevations was significantly smaller than conspecifics at lower elevations ($F_{4,100}=5.40$, $p=0.001$). These results indicate an inverse correlation to Bergmann's rule. Rapid thermoregulation in ectotherms, achieved by decreased body size and increased surface to volume ratio, supports a physiological explanation for this phenomenon. Future research involves understanding the interaction of factors such as sexual selection on male body size and female fecundity, factors that may help explain why all ectotherms don't follow the inverse of Bergmann's rule.