Emerging Researchers National (ERN) Conference in STEM

Co-sponsored by the
American Association for the Advancement of Science *(AAAS) and*
NSF Division of Human Resource Development *(HRD),*
Directorate for Education and Human Resources *(EHR)*

Abstract Submission Guidelines

Abstract Submission Deadline

All poster and oral abstracts **MUST** be submitted through the abstract submission process by **Midnight (PST) on Friday, October 2, 2015.**

The link to the abstract submission process is located at: ***http://www.emerging-researchers.org/student-abstract-submission-process/***

*****Abstracts sent by mail, FAX, or via email WILL NOT BE ACCEPTED*****

Student Eligibility

The conference is open to students who:

- Are currently registered in an undergraduate or graduate program at a U.S. college or university; and
- Have conducted undergraduate or graduate research in science, technology, engineering, or mathematics (STEM).

Presentation Schedule

All poster and oral presentations will be scheduled for Friday, February 26th and Saturday, February 27th.

Criteria for Abstract Acceptance

All abstracts **MUST INCLUDE** the following:

- Hypothesis or statement about the problem being investigated and why the research is important;
- Methods and controls;
- Results and discussion of findings;
- Conclusions, future research, and key references;
- Acknowledgement of funder(s); and
- Faculty approval.

Accepted poster and oral abstracts will be listed in the Conference Program Book. Cash awards will be given for the top poster and oral presentations for each STEM category. Undergraduate and graduate students will be reviewed in separate award categories. Awards will be announced during the conference at the closing banquet on **Saturday, February 27, 2016.**

Abstract Categories

Abstracts can be submitted in the following broad STEM categories:

- Biological Sciences
- Chemistry and Chemical Sciences
- Computer Sciences and Information Management
- Ecology, Environmental, and Earth Sciences
- Mathematics and Statistics
- Nanoscience
- Physics
- Science and Mathematics Education
- Social, Behavioral, and Economic Sciences
- Technology and Engineering

Submission of abstracts for review **must also** adhere to the following guidelines:

1. Only **one (1)** poster or oral abstract can be submitted per student. However, a student may be listed as a co-author on a second abstract.
2. **Students working in the same lab must independently submit original abstracts. Identical abstracts submitted by different students will be automatically rejected.**
3. **The primary author will present the project during the conference. NO co-presentations allowed.**
4. Approval must be obtained from all co-authors listed on the abstract. Failure to do so will result in the immediate rejection of the abstract.
5. Students must obtain approval from faculty advisor(s)/research mentor(s) before submitting the abstract. Failure to do so will result in the immediate rejection of the abstract.
6. Abstracts must be written **by the student** and **reviewed by the faculty or research mentor.**
7. Abstracts must adhere to the highest quality standards, with correct grammar, spelling and sentence structure, i.e., with editing and proofreading prior to submission.

A guide to developing the abstract and a sample abstract are included at the end of these guidelines.

Abstract Review Process

All abstract submissions will be reviewed for:

- Originality and innovation;
- Scientific content supported by quantitative information and references;
- Merit of the research;
- Quality of written content; and
- Adherence to guidelines and format.

Abstracts will be reviewed by a panel of scientists in the appropriate STEM discipline and according to the criteria presented in these guidelines.

All abstract review decisions are final. Because of the timeline, there is no appeals process or opportunity to resubmit once an abstract is rejected.

Once accepted, the conference staff will group abstracts with similar themes in the conference oral or poster sessions. The presentation session schedule is FINAL and session times cannot be changed.

Abstracts will be rejected for one or more of the following reasons:

1. **No Hypothesis or Statement of the Problem:** When the reason for conducting the research is not clearly explained or the proposed question(s) are not clearly explained.
2. **No Methods:** Explanations of the methods are not clearly presented or appear to be inappropriate.
3. **No Results/Insufficient Data Presented:** The investigators failed to show either evidence of the results or the status or the outcome(s) of their research. Insufficient data are presented to support conclusion(s).
4. **No Conclusion or Expected Outcomes/Future Research:** The investigators failed to describe the conclusions or expected outcomes of their research with regard to their hypothesis.

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 the notification process**. Author should notify AAAS with changes in email addresses or other contact information. (Contact information is provided on the ERN Conference website.)

Abstract acceptance notifications will be emailed by Friday, November 13, 2015.

The Travel Award Application Process is a SEPARATE PROCESS

Complete ERN travel award application process information is available on the ERN Conference website at *http://www.emerging-researchers.org/travel-awards/.*

*****The deadline to apply for a travel award is MIDNIGHT (PST) on Friday, October 2, 2015.**
*****Travel awards will be announced on or before Friday, November 13, 2015.**

Abstract Development Guide and Sample Abstract

1.) ABSTRACT TITLE: **The ABSTRACT TITLE should be no longer than 100 characters, including punctuation and spaces.**

TITLE : The Science of Education, Life, and the Computer Era

2.) ABSTRACT PRIMARY AUTHOR AND ABSTRACT PRESENTER:

The PRIMARY AUTHOR is the person submitting and presenting the abstract.

PRIMARY AUTHOR: John Doe

3.) PRIMARY AUTHOR'S INSTITUTION:

The PRIMARY AUTHOR'S INSTITUTION should be the institution where the student is currently enrolled.

PRIMARY AUTHOR'S INSTITUTION: HRD University

4.) CO-AUTHOR(S):

Approval must be obtained from all co-authors listed on the abstract. Failure to do so will result in the immediate rejection of the abstract.

Co-Authors are NOT PERMITTED to co-present with the Primary Author. NO co-presentations are allowed during the conference.

*****If there is no co-author, students may leave this field blank.**

CO-AUTHOR(S): Jane Doe, Howard University, DC; Mary Doe, Morgan State University, MD ; James Doe, Savannah State University, GA

5.) ABSTRACT INFORMATION:

2500 character limit, INCLUDING spaces and punctuation.
All abstracts MUST include the following:

- **Hypothesis statement and why the research is important**
- **Methods and controls**
- **Results**
- **Conclusions and future research questions**

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.

*****Your abstract should NOT include EMBEDDED IMAGES or CHARTS AND GRAPHS.*****

IF YOUR ABSTRACT INCLUDES SYMBOLS, NOTATIONS, OR MATHEMATICAL EQUATIONS, WE ASK THAT YOU ALSO UPLOAD A COPY OF THE ABSTRACT IN WORD FORMAT DURING THE SUBMISSION PROCESS. THE WORD DOCUMENT SHOULD NOT INCLUDE EMBEDDED IMAGES (.jpegs) or CHARTS AND GRAPHS.

6.) ACKNOWLEDGEMENT OF FUNDER(S):

Students must list the funder(s) of their research project. If there is more than one funder, each funder should be listed separately.

> **Funder Acknowledgement(s):** This study was supported, in part, by a grant from NSF/AAAS awarded to John Doe PhD, Director for the Center of Biotechnology and Biomedical Sciences, HBCU-UP University, Washington, DC 20002.

7.) ABSTRACT APPROVED BY:

ALL ABSTRACTS must be approved by the student's faculty advisor or mentor. The name of the faculty advisor or mentor will be listed in the ERN Conference Program Book.

> **Faculty Advisor/Mentor:** Fake Advisor, fakeadvisor@email.org

PRINTED ABSTRACT SAMPLE

After all of the pieces of the abstract have been compiled, a sample of the completed abstract printed in the ERN Conference Program Book is provided below:

> **Support for the Inverse of Bergmann's Rule in Slevin's Bunchgrass Lizard**
>
> **Ivan V. Monagan, Jr., Virginia State University**
> Co-Author(s): Christian d'Orgeix, Virginia State University, VA
>
> 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.
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> References: Angilletta, M.J., Niewiarowski, P.H., Dunham, A.E., Leache, A.D. & Porter, W.P. 2004. Bergmann's Clines in Ectotherms: Illustrating a Life-History Perspective with Sceloporine Lizards. American Naturalist. 164(6):168-183.
> Ashton, K.G. & Feldman, C.R. 2003. Bergmann's Rule in Nonavian Reptiles: Turtles Follow It, Lizards and Snakes Reverse It. Evolution, 57:1151-1163.
> Bergmann, C. 1847. Uber die Verhaltnisse der Warmeokonomie der Thiere zu ihrer Grosse. Gottinger Studien, 3:595-708.
>
> **Funder Acknowledgement(s):** I thank K. Robinson and P. Scott for help in the field. L. Kennedy and R. Cogan at the National Audubon Society Appleton-Whittell Research Ranch provided logistic support. I also thank A. Ansari and P. Kaseloo for their help. Funding was provided by an NSF/ HBCU-UP grant to C. d'Orgeix.
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> **Faculty Advisor/Mentor:** Christian d'Orgeix, cdorgeix@vsu.edu