

SEPTEMBER 2022

VOLUME 1

THE PAW PRINT

A WEEKLY DIGEST OF RUST COLLEGE CAMPUS NEWS



INSIDE THE PAW PRINT

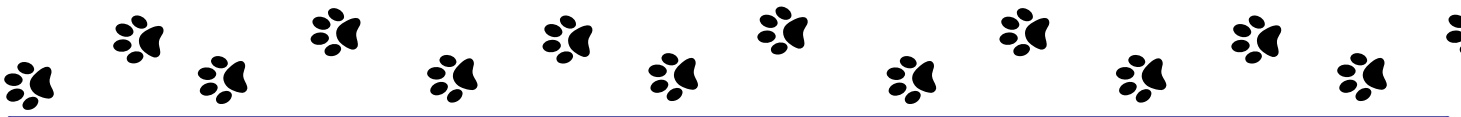
SAVE THE DATE
P. 2

FOUNDERS' PARADE SIGN UP
P. 5

MOTIVATION STATION
P. 9

Happy HBCU Week!

RUSTCOLLEGE.EDU



What A Weekend



North MS Greek Picnic



North MS Greek Picnic



North MS Greek Picnic

Pancakes with the President

The first Student Leaders' Forum of the year



SAVE THE DATE



SEPTEMBER 19-20
MIDTERMS (8-WEEKS)

SEPTEMBER 22
LAST DAY TO WITHDRAW

SEPTEMBER 20 - 23
HBCU WEEK

SEPTEMBER 21
MARSHALL COUNTY
COUNSELORS' BRUNCH

SEPTEMBER 21
PEACE DAY

SEPTEMBER 24
LATIN FEST

Javian Bogan
September 14

Mechickia Brooks
September 22

Joi Wise
September 17

Happy Birthday

Miah Bertrand
September 29

Send your name and birthday to publicrelations@rustcollege.edu to be added to the Bearcat Birthday Calendar!

RUST COLLEGE

HBCU WEEK

SEPTEMBER 20-23

TUESDAY

HBCU PRIDE DAY
Dress in your favorite HBCU apparel

WEDNESDAY

50 SHADES OF BLUE
Dress in your BEST BLUE attire

THURSDAY

Throwback Thursday
Dress in the attire from the era you were born in

FRIDAY

Best Friend Friday (BFF)
Dress in the same outfit as your bestie

STOP BY THE WELCOME CENTER TO TAKE PICTURES!



YOU DID THAT, BEARCAT!

Respirable Particles Following the Discharge of Firearms Impact Cardiorespiratory Health

Tianna L. Smith¹, Emmanuel R. Hodges², Samuel C. Smith², Courtney Roper², and James A. Stewart¹, Jr.
¹Mississippi INBRE Research Scholar, Rust College, Holly Springs, MS 38635
²University of Mississippi School of Pharmacy, Dept. of BioMolecular Sciences, University, MS 38677

UNIVERSITY OF MISSISSIPPI
 Division of Biomedical Sciences

Mississippi INBRE
 Endowment of Biomedical Research Excellence

ABSTRACT

Health effects have been demonstrated to occur as a result of exposure to air pollution, known as particulate matter (PM_{2.5}). For areas to be considered to require a specific source of PM_{2.5}, with or from the discharge of firearms or GSR, GSR contains and releases various particles, including lead (Pb), copper (Cu), aluminum (Al), silicon (Si), and iron (Fe). Individuals that frequent or are employed at shooting ranges, outdoor areas and other areas that have higher exposures to metals and organo compounds due to the elevated base component present. Despite the best practices for the shooting range activities, there is an urgent need for exposure characterization in the outdoor areas and indoor recreational venues. The purpose of this research was to determine if the PM_{2.5} from firearm discharge exceeds outdoor air quality standards to prompt cardiorespiratory concerns of all high-recreation areas performed and analyzed using a Colson GSR (100 ppm) was immediately administered to the mice with saline spray as the control. The mice were exposed to GSR for 24 hours and then sacrificed for analysis. The mice were exposed to GSR for 24 hours and then sacrificed for analysis. The mice were exposed to GSR for 24 hours and then sacrificed for analysis. The mice were exposed to GSR for 24 hours and then sacrificed for analysis.

RESULTS

Element (SEM)	BC		R		F		S	
	Conc.	CS	Conc.	CS	Conc.	CS	Conc.	CS
Al (µg/m ³)	189.83	0.08 (0.06)	3.18 (3.79)	1.41 (0.56)	0.80 (0.33)	2.18 (0.30)	0.48 (0.11)	0.11 (0.01)
Cu (µg/m ³)	277.63	0.20 (0.16)	1.75 (1.69)	1.72 (1.37)	2.82 (3.34)	6.18 (0.40)	3.27 (0.04)	

Table 1. Elemental analysis of GSR collected on the filter in the air around the shooter (µg/m³) and one intratracheal dose per mouse (0.50 µg/mouse), respectively. Lead (Pb) is the only metal with outdoor regulations (0.15 µg/m³) and was found to be 1% higher than standard for Pb. There are no outdoor regulations for other metals found in GSR, which were found to be significantly elevated including black carbon (BC) that is known to cause adverse health effects.

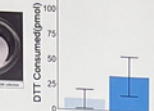


Figure 3. Oxidative Potential for GSR. Collected GSR was analyzed for rate of consumption of diethylenetriamine (DTT). Increased DTT consumption or increased oxidative stress potential was elevated with more firearm discharge scenarios (single shot vs. triple shot). GSR collected for studies were the result of 500 shots and represents increased risk for oxidative stress and resulting adverse health effects.

RESEARCH GOALS

- Goal 1:** Generate a database of physical and chemical properties of the collected respirable portion of particles emitted during the discharge of firearms.
 - Goal 2:** Determine in vivo cardiorespiratory responses following exposure to GSR.
 - Goal 3:** Identify inflammatory and oxidative stress markers changed in the heart and lung following exposure to GSR.
- Hypothesis:** PM_{2.5} from GSR causes oxidative stress and inflammation to promote cardiorespiratory complications.

METHODS

Sample collection and sample analysis of GSR from 9 mm pistols. Collection occurred during University of Mississippi Police Department firearms certification using personal PM_{2.5} samplers positioned on upper shoulder near breathing zone (Roper). One intratracheal administration of GSR (PM_{2.5} 1000 µg/mouse). Pre- and post 24 hour exposure measurements of left and right ventricles were performed. Treatment groups included: Saline Control and GSR. Two different genotypes of mice were used for mechanistic studies: 1) C57BL/6J RAGE Wildtype (RWT) and 2) C57BL/6J RAGE Knockout (RKO) (Roper/Stewart). Euthanasia of mice. Collection of heart and lung tissues for evaluation of inflammation and oxidative stressors by western blot analysis (Stewart).

Body Weight (g)	Physiological Parameters (µL/min)		Lung Weight (mg)
	Pre-Exposure	Post-Exposure	
RAGE WT Saline	31.1 (2.8)	124.1 (7.7)	208.0 (9.9)
RAGE WT GSR	29.9 (2.3)	122.0 (8.4)	204.9 (32.8)
RAGE KO Saline	29.1 (2.8)	123.8 (11.8)	207.1 (1.9)
RAGE KO GSR	31.4 (2.8)	124.1 (13.9)	207.8 (10.5)

Table 2. Physiological parameters including body weight (g), ventilatory weight (mg), and lung weight (mg) were taken at 24 hours post exposure. There were no significant differences between mouse genotypes and/or treatment groups.

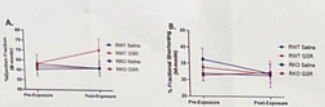


Figure 2. Left and right ventricular functional Doppler data. LVEDV (µL) is a measure of the blood that is ejected out of the heart (Normal=60%). LVEDP was elevated in RWT-GSR indicating possible increase ventricular stiffness as a result of GSR. RVEDV (µL) is a measure of the heart's muscular contractility (Normal=50%). RVEDP was unchanged in all groups. Cardiac Output (CO) is a measure blood ejected during contraction (Normal=20 µL/min). CO was unchanged in all groups.

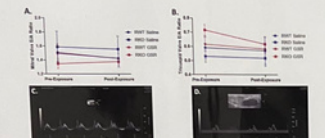


Figure 5. Protein Expression in the heart and lungs probed for A) Interleukin-6 (IL-6; 21 kDa), B) Interleukin-1β (IL-1β; 17 kDa), and C) Caspase-3 stained blot for even loading (image taken from α-tubulin on blot). Western blot analysis of proteins showed increased expression of IL-6 in the lungs of RWT-GSR mice. IL-1β was increased in the hearts of RWT-GSR mice. No observable changes occurred in RKO-GSR mice compared to Saline Controls. Results indicate a differential increase in inflammatory stressors after GSR exposure.

SUMMARY

- GSR had toxic levels of metals and black carbon, which were significantly elevated above outdoor air regulations.
- Intratracheal administration of one dose of GSR caused acute changes in % ejection fraction in RWT mice. Heart function in RKO mice were not greatly affected by GSR exposure.
- Increases in ejection fraction may indicate changes in heart contractility.
- Multiple firearm discharges results in an increased oxidative potential and thus, three mice.
- Exposure to 500 shots in a typical chamber firing scenario should produce pronounced oxidative stress effects.
- Gene expression of inflammatory and oxidative stressors in the heart and lungs were upregulated when GSR was intratracheally administered to mice.
- RKO mice appeared to be resistant to inflammatory and oxidative stress caused by GSR when western blot protein analysis was performed.
- Further studies will need to be performed to determine mechanism.

ACKNOWLEDGEMENTS

This work was supported by the Mississippi Oak Network of Biomedical Research Excellence and by the Departments of BioMolecular Sciences in the University of Mississippi School of Pharmacy.



TIANNA SMITH

was selected to receive the **Mississippi IDEa Network of Biomedical Research Excellence (INBRE) Research Scholars Award**. The Mississippi INBRE, organized by professors at Univ. of Southern Mississippi, is a network of colleges and universities, designed to build a biomedical research infrastructure in Mississippi. Dr. J. Zhu introduced Ms. Smith to this organization and was accepted to participate in a 10-week summer community-based research internship for Mississippi and Louisiana college students at the Department of Biomolecular Sciences at the University of MS (Ole Miss). Tianna did excellent research experiments and posted her research results. She is the first person to receive this award at Rust College. **Congratulations Tianna!**

YOU DID THAT, BEARCAT!

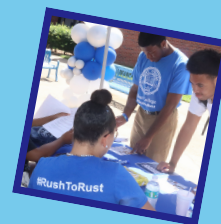


#BLUETUESDAY

Media Social

Bearcats, how was the first #BlueTuesday of the year? Let us know in the comments on our social media pages!

Join us **Sept. 27** for #BlueTuesday on the Plaza!



Join us **Sept. 27** for the next #BlueTuesday on the Plaza!

Prepare for Your Teaching Career with the

PRAXIS

Tests

The Division of Education requires all students to complete the **Praxis I test** after being admitted into the Education program.

Students must **complete and pass the Praxis II test** in order to graduate from the program.

SCHEDULE YOUR TEST

SCAN HERE TO SCHEDULE YOUR TEST


SCAN HERE TO APPLY FOR A VOUCHER

or visit www.ets.org/praxis or visit www.ets.org/praxis/register/fees/waivers

IN ORDER TO RECEIVE A VOUCHER

You will need proof of enrollment from the Registrar's Office and proof of eligibility from the Financial Aid Office

For More Information
Contact Mrs. Ashleigh Pirtle at apirtle@rustcollege.edu or ext. 4981



The Historical Role of Rust College Students in the Social Justice Movement in 1960's

Thursday, September 29th 2:00 pm
Doxey Auditorium

FEATURING:

- **Dr. Leslie Burl McLemore, Rust College c/o 1964**
- **Dr. William D. Scott, III, Rust College c/o 1966**
- **Dr. Roy L. DeBerry, Jr.**
- **Mr. Larry Rubin**

#ByTheirFruits



PEACE DAY - SEPT. 21

Join Active Minds in the BMC Hallway at 12:15pm!



RUST COLLEGE PRESENTS THE 156TH

FOUNDERS' PARADE



BANDS

CHEER SQUADS

GREEK ORGANIZATIONS

MOTORCYCLE CLUBS

COMMUNITY ORGANIZATIONS

SATURDAY, NOVEMBER 12, 2022

LINEUP STARTS AT 9AM / PARADE STARTS AT 11AM

FOR MORE INFORMATION, CALL 662-252-8000 EXT. 4915

[Click Here to Register your Campus Organization](#)

HAPPENING ON THE HILL



THE ATHLETIC ARENA

Stay Connected



VOLLEYBALL HOME GAME SCHEDULE



SEPTEMBER 20 @ 5PM
VS. LEMOYNE-OWEN

OCTOBER 7 @ 5PM
VS. DILLARD UNIVERSITY

OCTOBER 2 @ 1PM
VS. PHILANDER SMITH

OCTOBER 13 @ 6PM
VS. TOUGALOO

OCTOBER 18 @ 6PM
VS. CROWLEY'S RIDGE

SAVE THE DATE MIDNIGHT MADNESS

OCTOBER 20, 2022 | 9PM
KINZELL LAWSON GYMNASIUM



HAPPENING ON THE HILL

OFFICE OF STUDENT ACTIVITIES + CAMPUS ENRICHMENT PRESENTS

BARBERSHOP TALK

SEPT. 26
8PM
BCS HEARD AUDITORIUM

OPEN TO MALE STUDENTS ONLY

SAVE THE DATE

RUST COLLEGE
DAY OF  GIVING


NOVEMBER 12, 2022



Division of Science and Mathematics presents

MEET & GREET

For STEM Majors and
Aspiring STEM Majors

**Wednesday
September 28**

Hamilton Science Building
Electronic Classroom
4:00pm - 4:45pm

You are invited to come & bond with
Science, Technology, Engineering &
Math students through interactive &
engaging extra curriculum activities.

**SCIENCE
TECHNOLOGY
ENGINEERING
MATH**
Event



HAPPENING ON THE HILL





NATIONAL FOOTBALL LEAGUE TO HOST 3RD ANNUAL MADDEN NFL X HBCU TOURNAMENT WITH FINALISTS TO COMPETE DURING SUPER LVII WEEK FOR A CHANCE AT CASH AND PRIZES

The National Football League today announced registration is now open for the third annual EA SPORTS™ Madden NFL x HBCU Tournament designed to reach students attending Historically Black Colleges and Universities (HBCUs) that have a passion for gaming and football. This year's tournament is intended to maintain the tradition of providing students at HBCUs a chance to not only compete but to learn the intricacies of the business of sports through practical learning and job shadowing experiences at the NFL, during Super Bowl LVII week in Glendale, Arizona.

Last year, HBCU student player participation tripled from the previous year and the NFL is focused on even greater participation this year by adding additional online qualifiers and a women's bracket to reflect the growing segment of women gamers. This would be the first-ever women's bracket for an EA or Madden tournament, and it is open for anyone to opt-in to play.

All registered students will receive a chance to compete in one of several online qualifiers offered with the top fourteen finalists advancing to a live finals broadcasted from Glendale, AZ, home of Super Bowl LVII. Additionally, over \$70,000 in cash, travel and prizes will be awarded from the NFL and NFL partners including: STARTER (G-III Apparel Group), New Era Cap LLC, FANATICS, SOAR, Igloo Products Corp., Zipchair, Fan Creations, Sporticulture, Rico Industries, Inc., and Zippo.

ONLINE QUALIFIER SCHEDULE:

**OCTOBER 15 - KICKOFF QUALIFIER | OCTOBER 20 | OCTOBER 23 - WOMEN'S BRACKET
OCTOBER 27 | NOVEMBER 5 | NOVEMBER 11 | NOVEMBER 13**

The finals will air on the NFL YouTube channel Saturday, February 11, 2023, at 3 p.m. ET. For more information about the Madden NFL 23 x HBCU Tournament, visit HBCUTournament.NFL.com.



BEARCATS DURING NEW STUDENT ORIENTATION AUG. 2022

MOTIVATION STATION

MAGICAL
THINGS
HAPPEN
INSIDE US
WHEN WE
DECIDE TO
LOVE
OURSELVES.

- ANONYMOUS





MANDATORY MEETING

FIRST-YEAR STUDENTS
(FRESHMEN & TRANSFERS)

THURSDAY
SEPTEMBER 22
8:30PM
BCS HEARD AUDITORIUM

RUST COLLEGE

**September is
Campus Safety
Awareness Month**

**Sign up for Bearcat Alerts
to stay informed!**

**Text @PawsUp01 to 81010
to sign up**

Safety & Compliance ext. 4881



OnyxCare Health, LLC will
offer free vaccinations
and boosters on
Friday, September 23, 2022,
from **8am-12 noon** in the
Student Rec Center.



THE PAW PRINT

A WEEKLY DIGEST OF RUST COLLEGE CAMPUS NEWS



MARY LESUEUR <i>Exec. Dir. of Public Relations</i> MLESUEUR@RUSTCOLLEGE.EDU	ANGELICA OWENS <i>Marketing Coordinator</i> AOWENS@RUSTCOLLEGE.EDU	GINO PETERSON <i>Digital Media Specialist</i> GPETERSON@RUSTCOLLEGE.EDU	TORRES BELL <i>Blackboard Administrator</i> TBELL2@RUSTCOLLEGE.EDU
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SHARE YOUR NEWS WITH OUR TEAM!

To have your area/organization/department/division news published, submit a PR Request to our team at [RustCollege.edu/public-relations!](https://RustCollege.edu/public-relations)

Faculty & Staff
PR/Marketing Request



Student
PR/Marketing Request



Facility
Requests



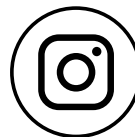
STAY CONNECTED!



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REACH OUT TO US AT ANY TIME!



662-252-8000 ext. 4012



publicrelations@rustcollege.edu



Welcome Center - 1st Floor
McCoy Administration Bldg.