

Alicia Arneson  
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## PERSONAL STATEMENT

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Motivated, competent graduate student seeking a laboratory rotation to compliment my studies from September 26<sup>th</sup> through October 21<sup>st</sup>, 2022.

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## EDUCATION

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| <b>M.S. Animal and Poultry Sciences</b><br><i>Virginia Polytechnic Institute and State University, Blacksburg, VA</i> <ul style="list-style-type: none"><li>• Concentration: Reproductive Physiology</li><li>• GPA: 4.00</li><li>• Thesis: Evaluating the impact of heat stress and altered glycemic state on plasma <math>\gamma</math>-Aminobutyric Acid (GABA) in lactating Holstein cows</li></ul> | May 2021 |
| <b>Graduate Certificate – Applied Statistics</b><br><i>Virginia Polytechnic Institute and State University, Blacksburg, VA</i> <ul style="list-style-type: none"><li>• GPA: 4.00</li></ul>   | May 2021 |
| <b>B.S. Animal and Poultry Sciences</b><br><i>Virginia Polytechnic Institute and State University, Blacksburg, VA</i> <ul style="list-style-type: none"><li>• GPA: 3.97</li></ul>  | May 2019 |
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## RESEARCH EXPERIENCE

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### **Heat Stress-Induced Subfertility in Dairy Cattle: Consequences of Altered Insulin and Glucose Concentrations | Dr. Michelle Rhoads**

*January 2019 – May 2021*

Independently designed and executed a sub-project for my master's thesis, while managing a team of 35+ undergraduate research assistants.

- Created a practical and relevant data collection plan
- Performed analyses to verify consistency of environmental treatment
- Developed and assessed linear mixed models using SAS
- Performed animal husbandry procedures as well as long term jugular catheter placement, tail blood collections, epidural injection administration, transrectal ultrasound, transport of cattle from fields through chute and head gate
- Managed protocol for blood and follicular fluid processing using centrifuge, as well as storage
- **Using ELISA to measure bovine plasma GABA and insulin concentrations in response to heat stress and euglycemic/ hypoglycemic clamps - Master's Thesis Project**

### **Human continuous glucose monitors for measurement of glucose in dairy cows | Dr. Michelle Rhoads**

*March 2021 – May 2021*

Performed and monitored glucose tolerance testing in Holstein cows using both conventional methods and continuous glucose monitors intended for human use.

- Assisted with project set up and execution, including placement of long-term jugular catheters, administration of glucose bolus, animal husbandry, and sample processing
- Developed and executed full analysis plan to evaluate sensor accuracy, practicality, and useful life
- Designed effective graphics to communicate results of analyses in the limited space of a short communication-type publication

### **Evaluation of tryptophan requirement in first cycle laying hens | Dr. Michael Persia**

*October 2018 – May 2019*

Monitored and recorded experimental conditions and applied precision-feeding treatment protocols for 240 laying hens.

- Performed daily husbandry and data collection for 240 hens in the peak stage of egg production
- Collected, entered, and cleaned project data
- Determined tryptophan requirement using single slope broken line regression analysis

### **Anti-proliferative and anti-inflammatory estrogen receptor modulators | Dr. Jatinder Josan**

*January 2017 – June 2017*

Planned and performed the synthesis of all necessary chemical precursors to produce a novel drug to treat breast cancer. Used complex analytical technologies to determine purity of the precursors.

- Carefully documented all laboratory work to ensure reproducibility
- Gained proficiency in use of NMR and LC-MS machinery, as well as in various methods in chemical synthesis and analysis
- Quickly mastered new software required for interpreting chemical analysis
- Troubleshoot sources of error and variability in synthetic processes

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## RELEVANT WORK EXPERIENCE

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### **Center for Biostatistics and Health Data Science**

*May 2022 – present, Monday – Friday 8-4*

- Updated and debugged a shiny app to produce annual summary reports for the American Statistical Association's Council of Chapters Governing Board (COCGB)
  - Produced membership trend graphs and will present at the annual COCGB meeting at the Joint Statistical Meeting August 2022
- Revised full set of biostatistics learning materials for undergraduate interns
- Developed and taught a four course mini-series to undergraduate interns on communication in statistical collaborations topics

### **Statistical Applications and Innovations Group (SAIG) Collaborator**

*May 2021 – present, Monday - Friday, varying hours*

- Counseled university research clients in statistical analysis for research projects and assisted in performing exploratory and predictive analyses for corporate clients
- Created part of a short course for university affiliates about Linear Mixed Models

#### Various Entomology Projects

- Developed and refined a workflow for fitting, testing, and result interpretation of GLMMs in R that is useable by clients not familiar with R.

#### Bat Lure Success Project

- Assisted the client with fitting negative binomial GLMMs and interpretation of the results in an Information Theory framework.
- Performed model averaging to gain insight from multiple viable models

#### Tick Presence Likelihood Project

- Designed mixed logistic regression models with periodic terms to investigate how several variables influence the seasonal likelihood of finding a newly discovered invasive species of tick
- Overcame modeling challenges resulting from sparsity in the data set

#### Employment Agency Project

- Identified data quality issues and potentially important variables for modeling a client's likelihood of successful program completion in a data set with 107 variables and 160,000+ observations

- Collaborated with an interdisciplinary team of 15+ people with diverse backgrounds, located globally

### Graduate Teaching Assistant

September 2019 – May 2021, 20 hrs/ week

- Communicated complex physiological processes to an undergraduate audience
- Provided mentorship and remedial tutoring sessions for students

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### COMPUTER SKILLS

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#### Languages

- Proficient in: R, Python 3, SAS
- Familiar with: MATLAB

#### Software

- JMP, SAS Studio, R Studio, R Markdown, Prism GraphPad, Microsoft Office (Word, PowerPoint, Excel), Google Drive, Microsoft Teams, Zoom, Jupyter Notebook, JupyterLab

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### ABSTRACTS AND PUBLICATIONS

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- **Abstract: Impact of heat stress and glycemic state on plasma  $\gamma$ -aminobutyric acid (GABA) in lactating Holstein cows (ADSA 2021 Conference)**
- Cagasova, K., Devi, S. R., Arneson, A., Fox, N., Srinivasan, S., Carlson, K., ... & Josan, J. (2017, August). **Anti-proliferative and anti-inflammatory estrogen receptor modulators**. In ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY (Vol. 254). 1155 16TH ST, NW, WASHINGTON, DC 20036 USA: AMER CHEMICAL SOC.
- M.K.H.Byrd, A.G.Arneson, D.R.Soffa, J.W.Stewart, M.L.Rhoads. January 2022. **Human continuous glucose monitors for measurement of glucose in dairy cows**. JDS Communications 3(1):78-83.
- A N Cumbie, A M Whitlow, A Arneson, Z Du, G Eastwood. **The Distribution, Seasonal Abundance, and Environmental Factors Contributing to the Presence of the Asian Longhorned Tick (*Haemaphysalis longicornis*, Acari: Ixodidae) in Central Appalachian Virginia**, *Journal of Medical Entomology*, Volume 59, Issue 4, July 2022, Pages 1443–1450, <https://doi.org/10.1093/jme/tjac067>
- JW Stewart, AG Arneson, MKH Byrd, VM Negrón-Pérez, HM Newberne, RR White, SW El-Kadi, AD Ealy, RP Rhoads, ML Rhoads. In Press. **Comparison of production-related responses to hyperinsulinemia and hypoglycemia induced by clamp procedures or heat stress of lactating dairy cattle**. J Dairy Sci.
- **Short-term consumption of the mycotoxin zearalenone by pubertal gilts causes persistent changes in the histoarchitecture of reproductive tissues**. – submitted for review March 2022

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### AWARDS AND HONORS

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- **Volunteer of the Year**, 2021, Virginia Tech Statistical Applications and Innovations Group
- **Outstanding First Year Physics Student**, Emory and Henry College
- **Maury A. Hubbard Scholarship**, Virginia Tech
  - Based on academic merit, interest in poultry, and character. Student selected by Dr. Paul Siegel
- **Richard G. & Ann L. Saacke Undergraduate Scholarship**, Virginia Tech
  - For future potential for excellence in reproductive physiology

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## PROFESSIONAL MEMBERSHIPS

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- American Association for the Advancement of Science
- American Society of Animal Science
- American Dairy Science Association
- The Wildlife Society

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## OTHER SKILLS AND ACTIVITIES

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### **Deployable Volunteer | Near Southwest Virginia Medical Reserve Corps**

Assist public health agencies with various initiatives, including mass COVID-19 vaccination events

- Communicate with vaccine clinic participants to gather necessary health history data in a methodical manner
- Cooperative use of google sheets to input patient data simultaneously with other volunteers

### **Proficient in Spanish**

- 8 years of Spanish coursework
- Volunteer medical translator for the Migrant Health Network Health Fair 2016