Introducing the New ISWE Board Members

This past fall, ISWE members elected two new board members. Ratna Ghosal is taking on the role of Vice Chair of Memberships and Fundraising and Beth Roberts will be ISWE’s new Secretary. Read our new board members’ profiles below.

Ratna Ghosal, PhD, Vice Chair of Memberships and Fundraising
I am an Assistant Professor at the Biological and Life Sciences division, Ahmedabad University, Gujarat, India. I have more than 10 years of research experience on several projects related to the field of wildlife endocrinology. I am broadly trained as an ecologist and my lab works on various research questions that attempt to draw linkages between physiological mechanisms underlying animal behavior and their applications in the field of conservation biology. Since 2011, I have been intimately associated with the laudable work of ISWE. I am delighted to be on the ISWE board and look forward to strengthening the international membership of the society. I am also excited to explore new strategies to boost fundraising programs for ISWE.

Beth Roberts, MS, Secretary
I am the Senior Conservation Biologist at the Memphis Zoo. My research focuses on reproductive endocrinology and gamete biology of a wide array of species. Much of my work includes using non-invasive techniques to develop physiological assessments and analyses to support the reproductive and welfare management of the animals in our collection. [continued pg 2]
New ISWE Board Members (continued)

Beth Roberts: My current research projects include the development of assisted reproductive technologies for Louisiana pine snakes and exploring biomarkers of pregnancy in carnivores and hoof stock. I have been a member of the ISWE community since 2012 and find the conversations, research, and creative troubleshooting discussed over the ISWE listserv and during the conferences to be inviting, informative, and inspiring. I am excited to support the ISWE board in the role of secretary to help ensure the continued growth and development of the society.

Reminder:

ISWE Virtual Event
August 16th – 17th, 2021
Abstract submission opens February 1st, 2021. The best Student Member presentation wins Travel Grant to 8th ISWE Conference!

Guess Whose Poo?

Can you “guess whose poo”? Check out the picture below, and see if you can correctly identify the poo. [Answer page 5]

Photos from the Field

Sometimes you need to take a break from lion field work to celebrate with the Maasai communities! Katie Fowler, PhD student at University of Illinois at Chicago, studies the effects of human-lion conflict on lion physiology in the Ngorongoro Conservation area of northern Tanzania.

She is pictured here with Kope Lion’s Ilchokuti (lion custodians) who work to protect and monitor the lions while providing incentives for communities to tolerate lion presence.

The Ilchokuti also help Katie collect lion hair and feces to measure glucocorticoids and androgens in areas of varying levels of conflict.
**Lab in the Spotlight: South-East Zoo Alliance for Reproduction & Conservation (SEZARC)**

*Dr. Linda Penfold, Director of SEZARC, shares with us the lab’s multi-focus approach, including technique R&D and routine endocrine monitoring for zoos and aquariums to assist in solving reproduction problems for wildlife species.*

Tell us a little about your lab.

Dr. Penfold: Our focus is solving reproduction problems for zoos, aquariums and wildlife species. We have two labs, one at White Oak Conservation in Yulee, FL and one at the University of North Florida (UNF). Cayman Adams, Research Lab Manager, runs the White Oak lab which focuses on technique development, as well as weekly monitoring of Asian elephants and elasmobranch research. A large-scale bison project has also been conducted by Research Associate, Dr. Lara Metrione.

Kat Mowle runs the UNF lab which works closely with the White Oak Lab. UNF students are able to gain credit for volunteering with us. The enthusiastic students help us power through hundreds of fecal samples and love working on samples that contribute to ‘real life’ questions.

Each year we also participate in children’s STEM summer camps—it is great to see how engaged they become once they put on a lab coat!

What are some current projects?

Current projects include investigating Suprelorin and Improvest for contraception and aggression control in elasmobranchs, investigating glucocorticoids in bison, and monitoring hormonal control of estrus in white rhinos for artificial insemination. We have also seen a large increase in welfare monitoring in zoos, so there is a lot of assay validation for welfare monitoring.

What makes your lab unique?

Since we are an independent company, we are able to work with many institutions and with a large breadth of species—sometimes more than 90 species in a single year! This keeps things in the lab quite exciting. We work with big and small animals, from whale sharks to Perdido Key Beach mice. We do like to have fun in the lab too, and we keep a jar on the bench where we write down good things that happened to staff—a perfect assay, a funded grant, a kind comment, and then read them out at the end of the year. In Kat’s lab, you might be able to find a shark coworker or two!

Any recent publications?


Any funny stories from the lab?

While our least favorite lab days are when we process feces from fish eating carnivores, we joke about our favorite day as “spa day” when we are running koala fecals in the labs because the smell of eucalyptus floods the lab with a lovely fragrance.

Do you have a favorite species or hormone?

Testosterone is our favorite hormone. It gives us the least trouble with our assays and is usually straightforward to interpret in our profiles.

Any collaborations within ISWE?

We love collaborating and have been privileged to work alongside several ISWE colleagues in the past. Their insight and support is invaluable, and we are grateful to each and every one of them! Our big needs right now are understanding better ways for monitoring welfare in fish species.

Our “Lab in the Spotlight” feature highlights teams in the ISWE community. Want your lab to be in the spotlight? Email us at: iswe.socialmedia@gmail.com
Recent Publication Highlights

The “Publication Highlights” section offers brief summaries of recent publications by ISWE members. If you want to see your article in an upcoming newsletter, send us the citation and a photo showing your work in action. All submissions welcome (email: ISWE.socialmedia@gmail.com).

**Impact of three commonly used blood techniques on the welfare of laboratory mice: taking the animal’s perspective**

Although there has been much work investigating the effect of sampling site on the quality and histological alterations of blood, little is known regarding how sampling sites impact animal welfare. In 1959, the 3R concept: Replacement, Refinement, and Reduction was adopted to minimize pain and distress for animals in biomedical research. However, testing the effect of stressors on laboratory animals in an objective and reliable manner is still needed. As such, Meyer et al., set out to define physiological and behavioral response stress parameters as a result of simple handling and general anesthesia (control groups), and utilizing three blood sampling sites (treatment groups) in the most frequently used animal in biomedical science: male C57BL/6J mice. The effect of these techniques had on individuals were assessed through documentation of pain measures via the Mouse Grimace Scale (MGS), home-cage behavior, nest building, exploratory activity, and development of neophobia.

Blood samples were collected as part of the treatment and at the time of sacrifice for assessment of plasma corticosterone concentrations. Similarly, fecal samples were collected to assay corticosterone metabolites for time-course analysis. Where applicable, single samples were taken from either the vena facialis (FVB), retrobulbar sinus (RBB), or tail vessel (TVB).

All treatment and control groups experienced an acute increase in plasma corticosterone concentration from baseline; however, the effect was not detectable after 24 hours. Interestingly, the FVB and RBB groups showed the longest activation and slowest recovery with elevated plasma concentrations continually detected at 75 minutes post procedure. The strongest behavioral changes were also observed in those mice sampled from either the vena facialis or retrobulbar sinus. In these groups, there was a significant decrease in exploration activity and nest building, and increased scores on the MGS. In addition, physiological changes were detected via fecal corticosterone metabolites serving as an indicator of a longer time-course of hypothalamic-pituitary-adrenal axis activation.

Results of this study greatly contribute to the Refinement component of the 3R concept. This work allows researchers to objectively choose best experimental practices that yield results while maintaining animal welfare standards for blood sampling techniques.


**Does variation in glucocorticoid concentrations predict fitness? A phylogenetic meta-analysis**

So many of us study an individual’s physiological response to their [external and internal] environment stressors that glucocorticoid (GC) studies commonly make up a full session at ISWE conferences. Much of our research interprets the relationships between individual variation in GC concentrations and well-being. Attempts to extrapolate results across populations and species has proven to be challenging. With a growth in research at the population level, Schoenle et al. conducted a phylogenetic meta-analysis to investigate how GC levels relate to fitness and how they vary with life history traits such as lifespan and the value of a reproductive bout. Their analyses included 59 publications about free-living vertebrates and integrated both observational studies and experimental manipulations. Separate meta-analyses were performed in R using package metaphor, for the different combinations of GC measurements (plasma baseline, plasma stress-induced, fecal metabolites, and experimental manipulations) and fitness criteria (survival or reproduction). The nuances of their multi-faceted results are too numerous to summarize here. However, Schoenle et al. concluded that life history context is crucial for understanding the relationships between GC concentrations and survival; longer-lived species, in particular, have a strongly negative association between survival and circulating GC concentrations. Further, plasma baseline and stress-induced GC levels had consistent negative relationships with reproductive success. The majority of the baseline and stress-induced studies were on birds. In contrast, the fecal glucocorticoid publications were predominantly on mammals, where no consistent relationships were found between GCs and either survival or reproductive success. This paper is an important read for anyone interested in learning more about the impacts of glucocorticoids on fitness parameters at the population and species levels. Schoenle et al. call for us to conduct more experimental studies that investigate the role of environmental gradients as well as life history stages and strategies on the GC-fitness relationship. Additionally, they demonstrate a need for more observational studies outside of the breeding season and about the relationship between GCs and survival, particularly in non-avian species. Our ISWE members are well-suited to help fill these knowledge gaps over the next decade.

Call for Papers

The open access journal *Animals* (ISSN 2076-2615) is currently compiling papers for two special issues:

“Advancing Welfare Science for Reptiles and Amphibians in Zoos and Aquariums”.

Detailed information can be found [HERE](#).

**Deadline: 31 December 2021**

“Assisted Reproductive Techniques and Germplasm Cryopreservation Applied to Wildlife”

Detailed information can be found [HERE](#).

**Deadline: 15 February 2022**

Guess Whose Poo?

This fecal was collected from a red-rumped agouti (*Dasyprocta leporina*). And what’s with the green hue?

Although the agouti is an herbivore, their diet is not responsible for the green color here. To identify fecal samples for this female, zookeepers fed her 0.5 ml of green food dye twice a day on various vegetable pieces. The fecal marker enabled them to distinguish between her feces and those of the male in the habitat. Fecal markers such as food dye and glitter enable scientists to conduct endocrine monitoring on group-living animals.

New ISWE Mini-Kits

Arbor Assays recently expanded their selection of ISWE mini-kits to include **corticosterone** and **17β-estradiol**!

Kits feature ISWE-generated and owned antibodies and conjugate, and standard stock solutions. Each kit is enough for 50 plates.

For further details see links below:

**ISWE007: Corticosterone**

**ISWE008: 17β-estradiol**

Save the Date for ISWE 8!

8th Meeting of the International Society of Wildlife Endocrinology

Location: Jim Corbett National Park, India

November 2022

Local hosts: Ahmedabad University, Ahmedabad
Center for Cellular & Molecular Biology, Hyderabad
Wildlife Institute of India, Dehradun

Theme:
Conservation & well-being of wildlife

Topic areas
1) Reproductive function
2) Integrative animal health
3) Long-term studies of wildlife
4) Biomarkers of physiologic stress
5) New techniques for applied endocrinology

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