



International Goat Association

Newsletter, October 2021

- [Announcement – 2021-2026 IGA Board of Directors](#)
- [Don't forget to register now for](#)

INSIDE THIS ISSUE:

- [the IGA virtual conference, November 16, 2021](#)
- [Obituary – Alejandro Salvador Cáceres](#)
- [Of browse, goats, and men: Contribution to the debate on animal traditions and cultures](#)
- [Submissions – Frontiers journal – Small Ruminant Breeding in the Age of Genomics](#)
- [Goat Science book has reached 30,000 downloads!](#)

- [Initial assessment report of the Gambian livestock sector](#)
- [Former ABCF fellow's research is conserving and improving indigenous goats in the Democratic Republic of Congo](#)
- [Genetic Selection for Resistance to Gastrointestinal Parasitism in Meat Goats and Hair Sheep through a Performance Test with Artificial Infection of *Haemonchus contortus*](#)
- [Development of innovative tools for the detection and control of caprine arthritis encephalitis virus](#)

Announcement – 2021-2026 IGA Board of Directors

We want to thank all our members who voted during our recent election. The ballot contained an excellent group of candidates. We are proud to announce the results to our members first. The IGA Board of Directors for 2021 to 2026 will be:

- Dr. Anastasio Argüello
- Dr. Noemí Castro Navarro
- Dr. Arthur Goetsch
- Dr. Hervé Hoste
- Dr. Sándor Kukovics
- Dr. Paula Menzies
- Dr. Davinia Sánchez Macías

- Dr. Chryss Onwuka
- Dr. Juan Felipe Torres-Acosta
- Dr. Yoko Tsukahara
- Dr. Carina Visser
- Dr. Yingjie Zhang

During a recent virtual meeting, the new Board met and elected:

- Noemí Castro Navarro as President
- Carina Visser as Vice-President
- Yingjie Zhang as Vice-President
- Yoko Tsukahara as Secretary Treasurer

- Paula Menzies as Assistant Secretary-Treasurer
- Yan Landau as Editor-in-Chief

The new Board appointed Dr. Hector Andrade-Montemayor as an additional Board member to help support their efforts. Additionally, Dr. Beth Miller will return to the Board as Past President.

Thank you again for your participation and your continued support of IGA.

[Learn more about our Board](#)

Don't forget to register now for the IGA virtual conference, November 16, 2021

"Goats of the World and World of Goats Emerging from the Shadow of COVID-19"

The IGA virtual conference is almost here!

If you are an IGA member, then registration is **FREE**. Registration is €25 for non-IGA members. Currently, an IGA membership is \$55 (about €47).

Save €25 (about \$29) and join IGA today.

[Join IGA Now](#)

Goat breeding, as part of the livestock sector is a key contributor to food security, nutrition and livelihoods, especially for the world's most vulnerable populations. Since the global outbreak of COVID-19 in 2020, the world's goat production and the life of the farmers have been severely affected. The aim

Mexico City	New York	Rio de Janeiro	Paris
7 am	8 am	9 am	2 pm
Dar es Salaam	Istanbul	New Delhi	Beijing
4 pm	4 pm	6:30 pm	9 pm

of the conference is to investigate the negative impacts (current and potential) of the pandemic e.g. reduced access to animal feeds, inputs and services; reduced processing capacities; compromised storage and conservation options; difficulties in inland and international transportation; animal health problems because of reduced testing and diagnostic capacity; lack of animal disease control programmes. Reports will be delivered on national and regional levels (by Country Repre-

sentatives and Regional Directors of IGA), hoping to get a global overview by the end of the conference. The organisers would be more than happy to see some actions, how to mitigate the impact of COVID-19 on the goat sector.

[Register Now](#)

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Obituary – Alejandro Salvador Cáceres

We are sorry to inform you that Alejandro Salvador Cáceres, IGA's Country Representative in Venezuela, has passed away. Alejandro struggled for several years with colon cancer, which he fought tirelessly. He moved to Spain to receive better medical treatment. In September, we received the news of his death. His passing fills us all with sadness.

Alejandro supported IGA's work as our Venezuela country representative despite his illness. Fortunately, we have his last presentation recorded. We wish to thank him and his family for his years of service. The goat culture of South America has lost a great professional.

"Situación de la ganadería caprina em Venezuela" – February 9, 2021

https://www.youtube.com/watch?v=Vzx_PQraOFQ



Cordial saludo, lamento mucho informarles que ya no nos acompañará nuestro representante país Venezuela, Alejandro Salvador. Alejandro, hace ya varios años padecía un cáncer de colon con el cual luchó incasablemente hasta llegar a trasladarse a España para tener mejor tratamiento médico. Hoy la noticia de su fallecimiento llena de tristeza el equipo IGA Suarmérica.

Agradezco si es posible una nota oficial de condolencia que podamos publicar en redes. Aquí les envío algún texto de sugerencia

Alejandro Salvador, acompañó y apoyó en la labor IGA como representante país Venezuela, a pesar de su enfermedad. Afortunadamente tenemos grabada su última presentación con nosotros. Sólo me queda decir gracias a él y a su familia, por apoyarlo. Hoy la caprina cultura de Suramérica pierde un gran profesional. https://www.youtube.com/watch?v=Vzx_PQraOFQ

Of browse, goats, and men: Contribution to the debate on animal traditions and cultures

Written by S.Y. Landau, F.D. Provenza

Abstract

Much circumstantial evidence has accumulated for ape culture, based on observations of the transfer of adult expertise to novices, typically juveniles. Controlled experiments have ruled out environmental or genetic explanations for these social learning propensities. This acumen might not be unique to primates. Here, we identify feeding behaviours susceptible to social transmission, refute possible non-social (genetic, environmental) explanations, and assess if the patterns of social learning are conducive to traditions or even cultures in domesticated goats. We claim that not only has domestication not eroded social intelligence, but that managerial constraints and in particular nutritional constraints imposed after domestication have encouraged the development of goat traditions and cultures. Following domestication, the contribution of browse rich in plant secondary com-

pounds (PSCs) to goat nutrition has increased due to humans providing browse as fodder and restricting goats to habitats dominated by browse. Social learning has been essential for goats to acquire safe and nutritionally wise foraging behaviours in PSC-rich environments. Genetics can contribute to alleviating the deleterious effects of PSCs, but matrilineal traditions are essential for learning to use PSC-rich plants for nutritional and medicinal benefits, including learning feeding sequences that alleviate the deleterious effects of PSCs. In utero conditioning, perinatal microbiome colonization, and milk flavors contribute to passive maternal learning of feeding behaviours. Active learning from the mother is of major importance before weaning, whereas individual learning of food avoidance and preference is important after weaning. We contend that matrilineal learning, both in passive and active forms, is the basis of traditions in goat feeding behaviours. Residual, yet flexible, group-bonding of goats

based on matrilineal idiosyncrasies helps to explain how these behaviours persist in different goat cultures. Finally, in stable groups, goats develop affinity and affiliative relationships. They rely on licking, social grooming and body contact to decrease the frequency of agonistic interactions, including social mediation of conflicts. Goats also learn from humans and mother-dependent docility can pre-dispose offspring to learn from humans. In summary, goats have a high level of social intelligence necessary to function within complex and dynamic social and biophysical environments, a condition deemed essential for the existence of cultures. To our knowledge this is the first compilation of evidence showing traditions and cultures in domestic animals.

[READ MORE](#)

Submissions – Frontiers journal – Small Ruminant Breeding in the Age of Genomics

Submission Deadline: 31 January 2022

About this Research Topic

The significance and importance of small ruminants and their breeding for humankind are diverse and cannot be overestimated. Since domestication, sheep and goats have been a source of valuable food products (milk, meat) and warm wool/leather clothes and shoes that protect from cold weather. They also served as sacred animals in early religious rituals and celebrations and accompanied nomads and traders in their long migrations and travels. Sheep wool contributed to building empires and advancing industrial revolutions. In the past and at present, small ruminant products provide many people living in extreme poverty with essential nutrients, supplying them with everyday necessities and ensuring a traditional lifestyle (e.g., pastoralism) for many ethnic groups.

Implementation of high-throughput arrays and next generation sequencing approaches has unlocked an era of genomic investigation in small ruminants, addressing various research aims, from deepening knowledge on the origin and genetic connections of worldwide sheep and goat breeds to understanding the mechanisms underlying the formation of economically important traits and tremendous natural resilience of small ruminants.

This Research Topic aims to embrace various research aspects of using molecular genetics and genomic technol-

ogies as applied in small ruminant breeding. We invite small ruminant investigators and specialists to share their unique experience and views and discuss research solutions, limitations, and conclusions relevant to sheep and goat breeding. We hope that the proposed collection of articles will address advances in genetic and genomic investigations in small ruminants in order to fill in blank spaces for a better understanding of the complex organization of sheep and goat genomes and to ensure the future progress and sustainable management of these important domestic animals and their genetic resources.

In this Research Topic, we welcome Original Research articles, Brief Research Reports, and Reviews covering (but not limited to) the following topics:

- Genomic assessment of local sheep and goats breeds;
- Domestication history as inferred from genomic studies;
- Aspects and challenges of application of genomic technologies (SNPs and other markers, gene expression, whole genome and transcriptome sequencing, GWAS, candidate genes, etc.) in conservation and breeding of domestic and wild small ruminants;
- Unlocking the sources and traces of probable introgression from wild relatives into domestic sheep and goat resources inhabiting hybrid zones;
- Genome-wide association studies

for economically important traits;

- Genomic signatures of selection in domestic and wild small ruminant species;
- Adaptation of sheep and goats to diverse environments and feed sources;
- Genetics of disease resistance in small ruminant species;
- Significance of genomic technologies in sheep and goat breeding to face unpredictable climate changes;
- Prospects for marker assisted selection in small ruminant breeding and production.

Keywords: Small ruminant breeding, sheep, goat, genetic polymorphic markers, genomics, SNP genotyping, whole genome and transcriptome sequencing, candidate genes, diversity, domestication history, genomic footprints of selection, adaptation, disease resistance, marker assisted selection

Important Note: All contributions to this Research Topic must be within the scope of the section and journal to which they are submitted, as defined in their mission statements. Frontiers reserves the right to guide an out-of-scope manuscript to a more suitable section or journal at any stage of peer review.

[Author Guidelines](#)

[Participate](#)

Goat Science book has reached 30,000 downloads!

Congratulations once again to Sándor Kukovics and the entire team!

The book he edited, Goat Science, remains very popular. Chapters within the book were downloaded more than 30,000 times impacting researchers worldwide.

View the [Performance Metrics](#) for this book from IntechOpen.



Initial assessment report of the Gambian livestock sector

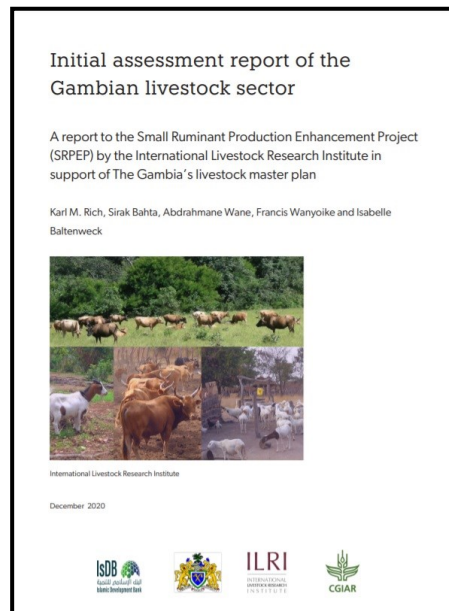
A report to the Small Ruminant Production Enhancement Project (SRPEP) by the International Livestock Research Institute in support of The Gambia's livestock master plan

Karl M. Rich, Sirak Bahta, Abdrahmane Wane, Francis Wanyoike and Isabelle Baltenweck

Study context

The Gambia is the smallest country in West Africa, spanning just 11,300 square kilometres, with a high population density (176 people per square kilometre). It shares a single 749-kilometre overland border with Senegal. About 57% of its population is reported to live in urban areas. The total population in The Gambia is expected to gradually rise in the next three decades to approximately 4.3 million people, requiring anticipative policies concerning both infrastructure development and food supply improvement (Nyoni et al. 2019).

The Gambia's economy relies heavily on the tourism and agriculture sectors.



The gross domestic product (GDP) grew by 6% in 2019 against a 6.5% growth in 2018, predominantly with an increase of 10% of services supported by wholesale and retail trade while the agriculture sector contracted by 10%

(World Bank 2020). The agriculture sector remains too dependent on weather conditions, predominantly traditional and is characterized by low input extensive system of husbandry. Moreover, the Gambian agricultural sector struggles to overcome its key long-term development challenges related to the country's undiversified economy, small internal market, limited access to resources, lack of skills necessary to build effective institutions, high population growth, lack of private-sector job creation and high rate of outmigration. More specifically, the agricultural sector suffers from a structural inability to produce more and better, respond to increasing demand for livestock products and sustain a better life from livestock. Agricultural productivity in The Gambia remains quite low and, in turn, has significant adverse implications for the economy.

[DOWNLOAD](#)

Former ABCF fellow's research is conserving and improving indigenous goats in the Democratic Republic of Congo

Written by Mwihaki Mundia

Livestock farming is an important source of income in rural households in African countries. Goats, which were one of the first animals to be domesticated in the continent, are especially important in the Democratic Republic of Congo (DRC) where they are kept by 75% of the rural population and provide up to 72% of the household income through the sale of meat, milk and live animals.

More than 4 million indigenous goats are kept by farmers in the DRC. These animals mainly fall under three local

breeds locally known as 'chèvre moyenne du Congo' or the small goat of Congo; 'chèvre du Kasai' or Kasai goat and the 'chèvre de Bandundu' or dwarf goat of Congo; which are spread across all three agro-ecological zones of the country. As in eastern Africa, goats in the DRC are raised in marginal areas where crop production is low.

Congolese Patrick Baenyi, a former Africa Biosciences Challenge Fund (ABCF) fellow at the Biosciences eastern and central Africa-International Livestock Research Institute (BeCA-ILRI) Hub aims to improve the liveli-



hoods of rural households in his country by conserving and improving indigenous goats through a better understanding of their genetic diversity and population composition.

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Are you an IGA member?

You can pay your membership online through the [IGA Store](#)

Now is a great time to join:

- IGA memberships are effective for 1 year from when you join.

- You can access [Small Ruminant Research](#) online.
- Participate in IGA projects, such as the IGA Consulting Group.
- Access to exclusive information, member documents, etc.
- Submit articles for publication in

the IGA Newsletter.

- Opportunities for leadership and participation in IGA committees.

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Genetic Selection for Resistance to Gastrointestinal Parasitism in Meat Goats and Hair Sheep through a Performance Test with Artificial Infection of *Haemonchus contortus*

By Yoko Tsukahara, Terry A. Gipson, Steven P. Hart, Lionel Dawson, Zaisen Wang, Ryszard Puchala, Tilahun Sahlu and Arthur L. Goetsch

Simple Summary

Internal parasitism has been an important constraint to small ruminant production and anthelmintic resistance has become a worldwide issue. This study evaluated a 3-year genetic selection program through activities on-farm and a centralized performance test and also provided estimates of genetic parameters of growth and response to artificial infection with *Haemonchus contortus* by goats and sheep in the southcentral USA. Considerable species as well as breed differences were found in average daily gain and response to parasite infection. Average daily gain was greater for Boer than for Kiko and Spanish goats and slightly greater for Dorper than for St. Croix sheep. Infection level (number of eggs found in feces) of Spanish and St. Croix were relatively low each year, whereas that of Kiko and Dorper was lower after selection. An indicator of anemia (packed cell volume) did not always reflect infection level, which is probably reflective of differences among animals in resili-

ence and susceptibility to haemonchosis. Moderate to high heritabilities were found for growth performance and response to parasite infection for growing meat goat and hair sheep males under a standardized environmental that suggests considerable potential for genetic improvement through selection.

Abstract

Internal parasitism has been the leading cause of morbidity and mortality in small ruminants in many areas such as the southcentral USA. Among the different approaches and management practices to cope with internal parasitism, genetic selection for internal parasite resistance is recognized as one with considerable potential long-term impact. A central performance test with artificial infection of *Haemonchus contortus* for selection of growing meat goats and hair sheep for breeding to increase resistance to internal parasitism and on-farm selection of females was conducted for 3 years. The results varied considerably among breeds of goats and flocks of sheep. Spanish goats and St. Croix sheep maintained relatively low fecal egg count (FEC) each year, whereas for goats categorized as being of high

resistance and Dorper sheep FEC decreased with advancing year. Packed cell volume (PCV) and total serum immunoglobulin (Ig) levels were not strongly related to FEC. Genetic parameters varied between the two species, which might be related to previous selection pressure exerted for parasite resistance. Heritability of FEC was higher in goats than sheep. The genetic correlation between FEC and IgM and IgG was negative for both species, which suggests possible genetic association. Genetic and phenotypic correlations between ADG and FEC were nonsignificant for both species. In conclusion, different relationships of FEC and PCV between species require careful attention during selection and the lack of relationship between ADG and FEC suggests that selection of growing male meat goats and hair sheep for resistance to internal parasitism will not adversely affect growth performance.

Keywords: genetic selection; *Haemonchus contortus*; hair sheep; meat goats; genetic parameters

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Development of innovative tools for the detection and control of caprine arthritis encephalitis virus

Author(s): Deborah S. Finlaison, Peter D. Kirkland

Special thanks to Sandra Baxendell for bringing this report to our attention.

Caprine arthritis encephalitis (CAE) is an important disease in goats and can have a profound impact on dairy goat production. It usually presents as a slowly progressing, chronic debilitating disease of adult animals, but in some breeds severe, acute encephalitis may be encountered in kids at a very young age. CAEV infections can have a significant impact on animal welfare due to the chronic nature of the diseases that may develop (arthritis, pneumonia, mastitis), and economically results in decreased animal lifespan and produc-

tion, premature culling and trade restrictions.

CAE was first recognised in Australia in the 1980s, and while the current prevalence is unknown, it is present in dairy herds in all states. It is considered that the proportion of infected herds may now be much lower than 20 years ago, but with a trend towards larger, more intensively managed herds, the individual animal prevalence could rise quickly. Accreditation programs run in some states, and along with eradication activities, are voluntary in nature and not nationally coordinated.

This report evaluates different diagnostic tests and sample types from

naturally and experimentally infected animals to identify more cost-effective testing strategies that can be offered to the dairy goat industry in Australia. CAEV is an eradicable disease, and this research aims to support CAEV eradication at the individual herd and potentially national herd level.

Visit the AgriFutures website to download or purchase a copy
<https://www.agrifutures.com.au/product/development-of-innovative-tools-for-the-detection-and-control-of-caprine-arthritis-encephalitis-virus/>

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