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Conference Report

Abstracts of the 25th International Colloquium on Animal Cytogenetics and Genomics (25th ICACG), 26–29 June 2024, Naples, Italy

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1. Introduction

The 25th International Colloquium on Animal Cytogenetics and Genomics is dedicated to the memory of Dr. James (Jim) Womack, a pioneer in gene mapping, especially in cattle. The meeting opened with an obituary presented by Prof. Penny Riggs, a former student at Texas A&M University (TAMU) and now a professor in the same department.

The meeting was organized into 10 sessions, beginning with General Opening Session 1, which featured three main lectures highlighting the fields of animal cytogenetics and genomics. As expected, among the 83 accepted abstracts for publication, those related to animal genomics were more prevalent than those focused solely on cytogenetics. However, several abstracts combined the two disciplines (Cytogenomics) to provide a deeper understanding of animal genomes and to better identify latent chromosome abnormalities related to fertility. Various genomic approaches were reported in several abstracts, aimed at improving the selection of animals for productive traits, disease resistance, and animal biodiversity.

Given the numerous abstracts on water buffalo (river type), a specific session was dedicated to this species, which is particularly important in Eastern, South American, and Mediterranean countries. Nonetheless, research on a wide range of animal species, including domestic and non-domestic animals, non-mammalian vertebrates, and invertebrates, was also presented. Special attention was given to the posters, which were displayed throughout the meeting. Additionally, 15 of the posters, selected by the chairpersons of the poster session, are presented and discussed on the final day. Five posters received awards. All abstracts underwent peer review, and only a few required corrections or modifications. In conclusion, the colloquium featured 13 lectures (L), 27 oral communications (O), and 43 posters (P). Each presentation was numbered according to the congress program. Special thanks to the editorial staff of the "Biology and Life Science Forum" journal for their assistance with the abstract's review and editing.

2. Dr. James (Jim) Womack Obituary

O1—Gene Mapping Is Good for You!—Remembering Dr. James E. Womack

Penny K Riggs and Womack Lab Former Students
Texas A&M University, College Station, TX, USA; riggs@tamu.edu (P.K.R.)

A true pioneer in the field of comparative animal genomics, Prof. Jim Womack (30 March 1941–13 August 2023) is remembered for his remarkable career, scientific achievements, and mentorship of 50 doctoral students and countless additional graduate students, post-doctoral scientists, and visiting scholars. Jim completed a Bachelor of Science degree at

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offering deeper insights and more efficient solutions for the ongoing challenge of livestock health monitoring.

7.2. O13—Effect of Dietary Hermetia illucens Oil on Bovine Genome Stability: A Sister Chromatid Exchange (SCE) Study

Alfredo Pauciullo [1,2,*], Giustino Gaspa [1], Viviana Genualdo [2], Cristina Rossetti [2], Angela Perucatti [2], Lara Rastello [3], Mathieu Gerbelle [4], Alessandro Galli [5], Côme Guidou [6], Christophe Trespeuch [6], Laura Gasco [1] and Manuela Renna [3]

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Hermetia illucens (HI) oil, extracted from black soldier fly larvae, represents a sustainable alternative to traditional fat sources in bovine feeding. However, its impact on bovine genome stability was never investigated. Sister chromatid exchange (SCE) is a biological indicator of genomic instability, useful to assess the effect of genotoxic agents. This study aimed to evaluate the effect of HI oil inclusion in the feed ration on bovine genome stability by analyzing SCE in vitro.

Twenty-six Valdostana Red Pied cows fed mixed hay *ad libitum* were divided into two balanced groups that received isonitrogenous and isoenergetic concentrates containing a conventional lipid source, palm oil (control group), or HI oil at 3% as fed (case group). Peripheral blood lymphocytes were cultured in vitro for conventional (normal cultures) and 5′-bromodeoxyuridine (BrdU) incorporation; the latter was added 26 h before harvesting at a final concentration of 10 μg/mL to obtain preparations for the SCE test. Slides obtained from both normal cultures were karyotyped by GTG banding, whereas the BrdU-treated cultures were stained for 10 min with acridine orange (0.01% in buffer phosphate), washed with distilled water, and mounted in P-buffer. Three time points were analyzed: zero time (T0—no HI oil inclusion), 30 days (T1), and 50 days (T2) after the start of the experimental feeding.

Cows were all karyologically normal (2n = 60,XX). A total of 2882 metaphases were counted for the SCE test. Statistical analysis using the Student's *t*-test showed no significant differences in SCE frequency between the control and case groups at T0 (6.84 ± 0.15 vs. 6.72 ± 0.14; $p = 0.53$) and T1 (6.28 ± 0.12 vs. 6.27 ± 0.12; $p = 0.89$). However, after 50 days (T2), a significant reduction in SCE frequency was observed in the case compared to the control group (5.73 ± 0.11 vs. 6.29 ± 0.12; $p = 0.002$).

In conclusion, results suggest that the tested dietary HI oil inclusion level does not have a negative effect on bovine genome stability in vitro. The reduction in SCE frequency in the case group appears to be a putative protective effect of the HI feed inclusion on genome stability, although further studies and other genotoxic tests are needed to confirm this trend.

7.3. O14—A Screening Methodology of the Cell Nuclei Based on Functional Status of the Chromatin in Ziphius cavirostris

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