



# SRI LANKA ASSOCIATION FOR LABORATORY ANIMAL SCIENCE

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## PRESIDENT'S MESSAGE

The common marmoset:  
A feasible non-human primate  
model for biomedical research



It gives me great pleasure to be able to write this message for the 5<sup>th</sup> newsletter of SLALAS and would like to thank the membership for electing me as the President for 2015. The SLAAS is committed to promote the ethical use of animals among the laboratory Animal Science community of Sri Lanka. Although many studies are conducted in Sri Lanka on indigenous and other alternative systems of medicine, we are yet to produce a drug of our own for chronic diseases like diabetes mellitus, hypertension, arthritis or cancer. It is essential to determine the activity of any new drug on a primate model prior to clinical trials.

With the growth of biotechnology-derived products and gene therapies, the use of non-human primates has, by necessity, also increased since these are often the only relevant species that provide an adequate safety assessment. Nevertheless, there is a growing public call for minimizing their use now and in the future. Utilizing, the more primitive marmoset species may provide the optimal compromise.

In this President's Message I wish to share my knowledge gathered regarding a lower order primate which is used extensively in biomedical research. I am grateful for the CALAS (Canadian Association for Laboratory Animal Science) for giving me the opportunity to participate in the workshops at their Annual Sessions. Marmosets belong to the primate family Callitrichidae. The

Callitrichidae comprises several species; however, only the common marmoset (*Callithrix jacchus*) is routinely used

in laboratory research. This is a New World primate, native to northeastern Brazil and regulatory authorities worldwide recognize the use of marmosets in biomedical research. Since they are one of the more primitive, non-human primate species and the most phylogenetically distant from humans, their use requires less ethical justification than the larger Old World primates.

These are the smallest of the anthropoid primates where the common marmosets weigh approximately 350 g (comparable with a large rat) on average. These monkeys are primarily arboreal animals that have claws that allow them to cling vertically. The animals use this form of locomotion and posture frequently.

Like humans, but unlike many other nonhuman primates, marmosets live in families and this stable and compact social grouping, combined with the marmoset's small adult body size and tractability makes this monkey the least expensive primate to maintain in a biomedical laboratory.

Early sexual maturity and high reproductive efficacy allow fast breeding capacities and therefore continuous animal

supply. This primate matures by 18 months to two years of age, produces the next generation of offspring by three years of age, adult females give birth to 3-5 offspring per year and adults reach old age by 8 years.

Due to hematopoietic chimerism, marmosets but not Old World Monkeys give birth to immunologically identical twins, which facilitate matched control study designs. The absence of herpes virus B (Macacine herpes virus 1) in New World Monkeys, a virus that is highly lethal to man and commonly found in Asiatic macaques, contributes to a relative easy management of marmoset colonies.

Marmosets are typically fed commercially available diets (pelleted commercially prepared biscuits, canned diet, or gelatin-based diet) formulated for New World Monkeys. An extremely wide variety of supplements (e.g., fresh vegetables, nuts, insects, yogurt, peanut butter) should be generally provided, either daily or at a minimum of two to three times per week. Animals are typically fed each morning and again in the afternoon.

Straightforward training procedures can readily prepare common marmosets living in male-female pairs, families, and social groups for a variety of laboratory procedures. With such training, marmosets can generally be handled for painless or minor procedures without sedation.





Marmosets are used as a non-rodent species in preclinical toxicology and safety studies. The close homology to humans makes the marmoset a suitable translational model for the human metabolism, enzyme structure and pharmacodynamic effect. Furthermore, the high homology of marmoset and human immunological structures provides ground for predictive translational models of human diseases, e.g., to test new human specific biopharmaceuticals that do not find their target(s) in non-primate species.

The European Union distinguishes six nonclinical categories where experiments using marmosets may be conducted; biological studies of a fundamental nature, research, development and quality control of products and devices for human medicine, dentistry and for veterinary medicine, toxicological and other safety evaluations, diagnosis of disease as well as in education and training.

The ability of the marmoset to be utilized in fundamental biology, pharmacology (pharmacodynamics and pharmacokinetics) and toxicology studies allows for a strong interconnected relationship between these disciplines, leading to a reduced number of animals used with a more complete data set at a lower cost (e.g. there is no need to repeat dose ranging studies, there are less pharmacokinetic/toxicokinetic animals required, less material is required and development time is reduced).

The common marmoset model will be further discussed at the 3<sup>rd</sup> Annual Scientific Sessions of SLALAS on 28-29<sup>th</sup> January 2016 at University of Sri Jayewardenepura.

*Professor Sugandika Suresh*

## Upcoming World Events in Laboratory Animal Research and Alternative techniques

**Event:** Organ-On-A-Chip Europe

**When:** April 5-6, 2016

**Where:** Cambridge, UK

**Website:** <http://selectbiosciences.com/conferences/index.aspx?conf=OOACE2016>

**Event:** 20th Congress of the European Society for Alternatives to Animal testing

**When:** September 2016

**Where:** Linz, Austria

**Event:** Asian Federation of Laboratory Animal Science Associations (AFLAS)

**When:** Early November 2016 (Dates yet to finalyse)

**Where:** Singapore

**Website:** <http://selectbiosciences.com/conferences/index.aspx?conf=OOACE2016>

**Event:** Asian Congress 2016 on Alternatives and Animal Use in the Life Science

**When:** November 15-18, 2016

**Where:** Karatsu, Saga, and Fukuoka, Japan

**Website:** [http://www.asas.or.jp/jsaae/pdf/asian\\_congress2016.pdf](http://www.asas.or.jp/jsaae/pdf/asian_congress2016.pdf)

**Event:** 10<sup>th</sup> World Congress on Alternatives and Animal Use in the Life Sciences

**When:** September 2017

**Where:** Seattle, Washington

**Website:** [http://www.altex.ch/resources/U4U4\\_WC10\\_AD.pdf](http://www.altex.ch/resources/U4U4_WC10_AD.pdf)

**Event:** 53rd Congress of the European Societies of Toxicology -EUROTOX 2017

**When:** October 13 2017

**Where:** Bratislava, Slovakia

**Website:** <http://www.eurotox2017.com>

*Reported By Professor Mangala Gunatilake*



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