

Different laboratory mouse strains show distinct coronary artery patterns

Fernández M.C.^{1,2}, López-García A.^{1,2}, Lorenzale M.¹, Sans-Coma V.^{1,2}, Durán A.C.^{1,2}, Fernández B.^{1,2}

¹Department of Animal Biology, Faculty of Science, University of Málaga, Spain

²Biomedical Research Institute of Málaga (IBIMA), University of Málaga, Spain

The C57BL/6 (BL/6) mouse strain is one of the most common models in research involving laboratory animals, particularly on studies of the cardiovascular system. It has been reported (*Fernandez B, et al. J Anat 2008 212(1):12-18*) that this strain presents an unusual coronary artery (CA) pattern, including congenital CA anomalies, which are clinically relevant in humans. The aim of the present study was to elucidate whether this pattern is strain-specific or appears in other mouse populations.

We used stereomicroscopy, scanning electron microscopy, light microscopy, and a corrosion cast technique in 597 adult mice belonging to three inbred strains (BL/6, Balb/c, DBA/2), three outbred stocks (CD1, OF1, NMR1), two hybrid lines (129sv x BL/6, CD2F1) and wild mice.

Lock-like ostium was only detected in BL/6 mice, whereas left septal artery, accessory ostium, high take-off, intramural course, and solitary ostium of one CA in aorta were present in different laboratory strains and in wild mice.

However, each mouse population showed a specific incidence of these coronary conditions.

These results should be taken into account when studying the murine coronary system, especially in CA occlusion experiments and in studies on cardiovascular development involving murine mutant lines. In addition, we propose that several laboratory mouse strains may serve as appropriate animal models to study several clinically relevant human congenital anomalies of the CAs. Our results suggest that some of these CA anomalies are subject to a simple mode of inheritance.

This work was supported by P10-CTS-6068 and PI-0888-2012.