A fast and simple method for the polymerase chain reaction-based sexing of livestock embryos

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ABSTRACT. Embryo sexing is a powerful tool for livestock producers because it allows them to manage their breeding stocks more effectively. However, the cost of supplies and reagents, and the need for trained professionals to biopsy embryos by micromanipulation restrict the worldwide use of the technology to a limited number of specialized groups. The aim of this study was to couple a fast and inexpensive DNA extraction protocol with a practical biopsy approach to create a simple, quick, effective, and dependable embryo sexing procedure. From a total of 1847 sheep and cattle whole embryos or embryo biopsies, the sexing efficiency was 100% for embryo biopsies, 98% for sheep embryos, and 90.2% for cattle embryos. We used a primer pair that was common to both

species and only 10% of the total extracted DNA. The whole protocol takes only 2 h to perform, which suggests that the proposed procedure can be readily applied to field conditions. Moreover, in addition to embryo sexing, the procedure can be used for further analyses, such as genotyping and molecular diagnosis in preimplantation embryos.

Key words: Embryo sexing; HotShot; Alkaline lysis; Preimplantation embryo diagnosis; PCR

