

北海道立農業試験場報告

第 123 号

Embryo sexing by loop-mediated isothermal amplification of trace target DNA
sequences in cattle and water buffaloes

(微量DNA 配列の等温DNA増幅法による牛と水牛の胚の性別判定)

平成20年10月

北海道立畜産試験場

ABBREVIATIONS

| | |
|-------------------------------------|---|
| AI | artificial insemination |
| BRY | bovine repeat Y-associated |
| BSA | bovine serum albumin |
| CIDR | controlled internal drug release |
| COCs | cumulus-oocyte complexes |
| DMEM | Dulbecco's modified Eagle medium |
| DMSO | dimethyl sulfoxide |
| DNA | deoxyribonucleic acid |
| dNTP | deoxyribonucleotide triphosphate |
| FCS | fetal calf serum |
| FISH | fluorescence <i>in situ</i> hybridization |
| FSH | follicle stimulating hormone |
| G6PD | glucose 6-phosphate dehydrogenase |
| h | hour(s) |
| HEPES | 4-(2-hydroxyethyl) piperazine-1-ethanesulfonic acid |
| H-Y | histocompatibility-Y |
| IU | international units |
| LAMP | loop-mediated isothermal amplification |
| min | minute(s) |
| NT | nuclear transfer |
| PBS | phosphate buffered saline |
| PCR | polymerase chain reaction |
| PGF _{2α} | prostaglandin F _{2α} |
| PK-TW | proteinase K-tween 20 |
| rBuRY | river buffalo repeat Y-associated |
| sec | second(s) |
| rRNA | ribosomal ribonucleic acid |
| sBuRY | swamp buffalo repeat Y-associated |
| TALP | tyrode supplemented with albumin, lactate, and pyruvate |
| TCM-199 | tissue culture medium-199 |
| Tris | tris (hydroxymethyl) aminomethane |

Embryo sexing by loop-mediated isothermal amplification of trace target DNA sequences in cattle and water buffaloes *

(微量DNA 配列の等温DNA増幅法による牛と水牛の胚の性別判定)

北海道職員 博士 (獣医学) 平山博樹 **

CONTENTS

| | |
|---|----|
| GENERAL INTRODUCTION | 1 |
| Chapter 1 Sexing of cattle (<i>Bos taurus</i>) embryos using LAMP | |
| Introduction | 4 |
| Materials and methods | 4 |
| Results | 8 |
| Discussion | 9 |
| Summary | 10 |
| Chapter2 Sex chromosomal chimerism analysis in heterosexual twin female calves by LAMP | |
| Introduction | 12 |
| Materials and method | 12 |
| Results | 14 |
| Discussion | 17 |
| Summary | 18 |
| Chapter3 Sexing of water buffalo (<i>Bubalus bubalis</i>) embryos using LAMP | |
| Introduction | 19 |
| Materials and methods | 19 |
| Results | 22 |
| Discussion | 24 |

| | | |
|------------------------|-------|----|
| Summary | | 26 |
| SUMMARY AND CONCLUSION | | 27 |
| ACKNOWLEDGEMENTS | | 28 |
| REFERENCE | | 28 |
| 要約 | | 33 |

* 北海道大学学位審査論文 (PhD thesis, Hokkaido University)

** 北海道立畜産試験場