

TITLE	i
APPROVAL PAGE	ii
PLAGIATION-FREE STATEMENT PAGE	iii
FOREWORD	iv
TABLE OF CONTENTS	vi
LIST OF TABLES	viii
LIST OF IMAGES.....	ix
Abstract.....	x
ABSTRACT	1
CHAPTER I INTRODUCTION	2
1.1 Background	2
1.2 Problem Formulation	6
1.3 Research Objectives	6
1.4 Research authenticity	6
1.5 Research benefits	8
CHAPTER II LITERATURE REVIEW	9
2.1 Spermatozoa sexing basis	9
2.2 Reproductive and Spermatozoa Characteristics of Cattle	10
2.3 Percoll density gradient	12
2.4 Molecular verification using Duplex-PCR	14
2.5 Molecular verification using Real time PCR (qPCR).....	16
2.6 Cow Limousine	19
2.7 Theoretical Foundation	21
2.8 Hypothesis	22
CHAPTER III RESEARCH METHODOLOGY	24
3.1 Research Location and Time	24
3.2 Research sample	24
3.3 Research Tools	24
3.4 Research Material	25
3.5 Research Method	25



3.6 Data Analysis.....	36
3.7 Research flow	37
CHAPTER IV RESULTS AND DISCUSSION.....	39
4.1 Macroscopic Quality of limousine cow semen before sexing	39
4.2 Microscopic Quality of limousine cow semen before sexing.....	41
4.3 Sexing with Percoll Density Gradient Centrifugation	47
4.4 Molecular verification by duplex-PCR	54
4.5 Molecular verification by quantitative PCR (qPCR).....	59
CHAPTER V CLOSING CONCLUSIONS & SUGGESTIONS 6.....	3
5.1 Conclusion	63
5.2 Suggestion	63
REFERENCES	64
LIST OF APPENDICES	69
APPENDIX 1. Information on the Eligibility of Research Ethics.....	69
APPENDIX 2. Results of Calculation of Macroscopic Quality of Spermatozoa Before Sexing	70
APPENDIX 3. Results of Spermatozoa Microscopic Quality Calculations Before Sexing	71
APPENDIX 4. Spermatozoa Quality Calculation Results After Sexing	72
APPENDIX 5. Calculation Results of Cq Value (Cycle Quantitative) in Qpcr	73
APPENDIX 6. PLP1 and SRY	74