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本研究藉由微衛星遺傳標記了解目前臺灣登錄山羊族群的基因多樣性，以黑山羊 238 頭為標的。使用國際農糧組織建置之山羊微衛星標記檢測平台所提供之 16 組引子，分析黑山羊 族群的遺傳多樣性。其檢測結果顯示其期望異質度介於 0.024 至 0.813，平均為 0.535，觀測 異質度則介於 0.000 至 0.882，平均為 0.525，多態性訊息含量介於 0.231 至 0.773，其平均 為 0.567；在此 16 組微衛星標記中，有 11 組其有高多態性訊息含量 (PIC>0.5)。本研究 結果顯示此 11 組微衛星標記能有效偵測臺灣黑山羊族群之遺傳多樣性，未來可進一步了解 黑山羊族群之遺傳結構與親緣關係。

關鍵語：黑山羊、遺傳多樣性、微衛星標記

The genetic diversity analysis with microsatellite markers of Taiwan registered goats-Black goat populations

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This study was conducted to elucidate the genetic diversity of registered goats in Taiwan, and a total of 238 heads of black goats were involved in this study. Sixteen FAO-approved microsatellite markers were applied to analyze the genetic diversity of black goat populations. The results showed that the  $H_o$  values ranged from 0.000 to 0.882 and had a mean value of 0.525. The importance of  $H_e$  values were 0.024 to 0.813 and had a mean value of 0.535. The PIC was estimated with a mean of 0.567 and ranged from 0.231 to 0.773. Eleven of 16 microsatellite markers indicated highly informative (PIC > 0.5). The results showed that based on these 11 microsatellite markers, the genetic diversity of black goat populations could be monitored, and the genetic structure and phylogenetics

would be analyzed in the future.

Key Words: Black goats, Genetic diversity, Microsatellite markers

93. 即時聚合<sup>37238</sup>;鏈鎖反應鑑定本土肉雞與蛋雞 OCX-32- exon4 單點突變基因型初探

93. 即時聚合<sup>37238</sup>;鏈鎖反應鑑定本土肉雞與蛋雞 OCX-32- exon4 單點突變基因型初探

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孵化率對家禽業具重要經濟意義，因其對雞產量與市場雞隻供給量具顯著影響；而雞產量與孵化蛋之蛋殼厚度有關。Ovocalyxin-32基因（OCX-32）定位在雞隻第9號染色體上。QTL分析顯示，OCX-32家族基因之SNPs與產蛋性狀有關。本研究旨在發展OCX-32-exon4 點突變之即時聚合<sup>37238</sup>;鏈鎖反應檢測法，並探討該SNP與商用土雞和蛋雞產蛋性狀，蛋殼厚度和孵化率之關係。隨機抽取商業<sup>32418</sup>;羽土雞、烏骨雞與龍門蛋雞各50隻，進行DNA萃取與基因型鑑定。初步結果顯示，僅紅羽土雞具g.6144T>C多態性；其中C基因頻率為0.67。將進一步進行蛋殼厚度與孵化率關聯性分析，以確認其影響性與供作早期選種之可能性。

關鍵語：蛋殼厚度、孵化率、Ovocalyxin-32基因、即時聚合<sup>37238</sup>;鏈鎖反應

Preliminary study on SNP genotyping with real-time PCR for OCX-32-exon4 in native broiler and layer

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Hatchability is of economic importance to the poultry industry due to its significant impact on chick yield and the supply of chicken to the market, which is related to the thickness of the eggshell of hatching eggs. Ovocalyxin-32 gene was mapped on chromosome 9 of chicken. QTL analysis showed that SNPs of ovocalyxin-32 family genes were associated with egg production traits. The objectives of the present study were to detect OCX-32-exon4 point mutation by developing real-time PCR method, and to investigate the association between this SNP and egg production traits, eggshell thickness and hatchability, in commercial native chicken and layer. Commercial pedigreed Red Feather Native chicken, Silkie and Lohmann layers were randomly sampled for DNA extraction and genotyping with 50 birds per breed. Preliminary result indicated that only red-feather native chickens showed g.6144T>C polymorphisms with allelic frequency of C being 0.67. The effect of this mutation point on eggshell thickness and hatchability will be further investigated to confirm the potential application on early selection program.

Key Words: Eggshell thickness, Hatchability, Ovocalyxin-32 gene, Real-time PCR

#### 94. 即時聚合 $\beta$ -actin; 鏈鎖反應檢測豬UBE3C基因點突變多態性之基因型分析

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肌間脂肪含量 (IMF, %) 為影響肌肉柔嫩度、多汁性、氣味及風味關鍵因子之一。研究指出, 杜洛克豬隻泛素蛋白連接 $\beta$ -actin; (ubiquitin protein ligase E3C, UBE3C) AA基因型者背最長肌之IMF (%) 顯著較AG型者為高 ( $5.963 \pm 0.339$  vs.  $4.169 \pm 0.555\%$ , P G基因型鑑定與IMF (%) 測定。初步結果顯示, 在檢測之三個國際商業豬種族群, 均無多態性。公系豬杜洛克種以野生型A交替基因為主 (基因頻率0.95), 而母系藍瑞斯與約克夏豬種, 則均為突變型G交替基因。然黑豬樣本中, 野生型A交替基因頻率為0.65。UBE3C基因該突變點基因型與黑豬背最長肌IMF含量之關係, 仍待進一步釐清。

關鍵語: 豬、泛素蛋白連接 $\beta$ -actin;、即時聚合 $\beta$ -actin; 鏈鎖反應

Genotypic analysis of single nucleotide polymorphism on UBE3C gene in commercial pigs by Real-time PCR platform

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Intramuscular fat content (IMF, %) is one of the key factors relating to pork tenderness, juiciness, odor, and flavor. Research reported that significantly higher IMF (%) of the longissimus dorsi muscle (LD) was found in Duroc pigs with AA genotype than those of AG type ( $5.963 \pm 0.339$  vs.  $4.169 \pm 0.555\%$ , P G genotyping and IMF (%) measured. Preliminary results showed no polymorphisms in the three international commercial breeds were observed. The paternal breed, Duroc, was dominated by the wild-type A allele with a frequency of 0.95, while no wild-type allele was found in samples from the maternal breeds, Landrace, and Yorkshire. However, in the black pig samples, the frequency of the wild-type allele A was 0.65. The relationship between the point mutation genotype of UBE3C gene and the IMF content of LD in black pigs remains to be further elucidated.

Key Words: Pig, UBE3C gene, Real-time PCR

#### 102. 台灣土雞近親品率台畜一號公雞之精子品質分析

#### 102. 台灣土雞近親品率台畜一號公雞之精子品質分析

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為探討台灣土雞近親品率台畜一號四個近親品率公雞的精子品質，本研究應用電腦輔助精子分析儀與流式細胞儀，分析台灣土雞近親品率台畜一號四個品率候選公雞之精子品質。四個近親品率 L7、L9、L11 及 L12 候選公雞之平均精子濃度（109/mL）分別為 4.269、4.291、3.341 及 3.340，精子活力分別為 85.5、79.3、87.3 及 87.3%，向前活動之精子活力分別為 50.7、48.2、55.6 及 55.6%，存活率分別為 83.6、86.0、82.0 及 82.0%。本研究所得的結果可作為此四個近親品率繁殖與推廣的資訊，同時亦可提供土雞選育族群率譜繁殖的參考。

關鍵語：土雞、精子品質分析、受精率、孵化率

Analysis of sperm quality in roosters of Taiwan native chicken Taizhu No. 1 inbred lines

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In order to investigate the sperm quality of roosters in four inbred lines (L7, L9, L11, and L12) of Taiwan native chicken Taizhu No. 1, computer-assisted sperm analysis and flow cytometer were used in this study to analyze semen of the four lines candidate roosters for sperm quality. The average sperm concentrations (109/mL) of the four inbred line L7, L9, L11 and L12 candidate roosters were 4.269, 4.291, 3.341, and 3.340, respectively, and the sperm motility was 85.5, 79.3, 87.3, and 87.3%, progressive motility were 50.7, 48.2, 55.6, and 55.6%, respectively, and viability were 83.6, 86.0, 82.0, and 82.0%. The results obtained in this study can be used as the information for breeding and promotion of the four inbred lines, and can also provide a reference for the pedigree breeding population of native chickens.

Key Words: Native chicken, Sperm quality analysis, Fertilization rate, Hatchability

#### 140. 應用新穎精子功能參數於種公豬精子耐凍性之評選

#### 140. 應用新穎精子功能參數於種公豬精子耐凍性之評選

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研究顯示冷凍保存對公豬精子造成損害，應用新穎精子功能參數測定可用作篩選公豬個體 是否其備精子耐凍性外亦可檢測出質量差的冷凍豬精液。因此本研究目的為應用新穎精子 功能參數於種公豬個體問精子耐凍性進行分析外並指出精子損傷的潛在指標，以評選繁殖 性能耐凍公豬、排除質差冷凍豬精及冷凍配方改善，試驗結果顯示不同公豬個體問冷凍傷 害主要造成精子活動力及存活力的下降，在耐

凍性不佳之個體公豬在精液解凍前後顯現精子活力下降 37.0%、前向運動性下降 22.1%、存活力下降 24.0%及精子頭帽完整性下降 8.3 %、精子 DNA 完整性下降 1.9%及氧化傷害增加 2%，顯示公豬間其精子耐凍能力存在個體 差異。綜上所述，在進行精液冷凍保存前對耐凍性評估和精子耐凍評選將有利於使用冷凍 解凍的公豬精液產品進行人工授精並可得到合理的生育成績。

關鍵語：公豬、精子、耐凍性、流式細胞儀、精子新穎參數

Application of novel sperm function in assessment of the freezability of boar ejaculates

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Damage to boar sperm from cryopreservation is known to result in reduced motility, viability and litter size. Novel sperm function assays were used to detect poor quality frozen porcine semen prior to use and thus improve AI success. The purpose of this study was using novel sperm function assessment to characterize cryopreserved boar spermatozoa. Low freezability boar showed about 37.0% motility decrease, 22.1% progressive motility decrease, 24.0% sperm viability decrease and 8.3 % acrosome integrity decrease, 1.9% intact DNA decrease and 2% of oxidative stress increased after frozen-thawed were observed. In summary, freezable ejaculates assessment and sperm selection before starting the cryopreservation process will benefit the artificial insemination with frozen-thawed boar sperm products and can provide reasonable fertility outcomes.

Key Words: Boar, Sperm, Freezability, Flow cytometry, New sperm parameter