1. 請將下段文章譯成中文

Number born alive (NBA) and litter weaning weight (LWT) can be influenced by many factors, including environment, parity, age at farrowing, lactation length, and genetic merit as well as number of pigs after transfer (NAT) and weaning age (MNAGE) for LWT. The objectives of this study were to estimate adjustment factors for NBA and LWT using all effects in the model and to refine parity effects by including age of the sow in parity 1 (P1) and parity 2 (P2). The models used included fixed effects of contemporary groups and parity/age class, random direct genetic and permanent environment effects, as well as the fixed effects of NAT and WNAGE for LWT. A large effect due to age of the sow at breeding within P1 and P2 was found and new adjustments were found to differ from previous studies.

2. 請說明下列文章之大意

Prebiotics, particularly oligosaccharides, apparently can be used alone to modify the intestinal flora, particularly in the large intestine. Since prebiotics tend to enhance growth of *Bifidobacterium* species in the intestine, a product containing a prebiotic and a selected strain of *Bifidobacterium* species could enhance beneficial effects for the host. This might improve the control of intestinal pathogens or bacteria that create malodors in livestock waste.

3. 請將下列一段英文譯成中文

DNA replication-initiation proteins are expressed in cancer cells, whereas some of these proteins are not expressed in nonproliferating normal cells. Therefore, replication-initiation proteins may present attractive targets for anticancer therapy. Using selected antisense oligodeoxynucleotides and small interfering RNA molecules targeted to the mRNA encoding the DNA replication-initiation proteins hCdc6p, hMcm2p, and hCdc45p, we show that the target genes could be effectively and specifically silenced and that, consequently, DNA replication and cell proliferation were inhibited in cultured human cells. In addition, silencing of these genes resulted in apoptosis in both p53-positive and -negative cancer cells but not in normal cells: cancer cells entered an abortive S-phase, whereas normal cells arrested mainly in G(1) phase. Our studies are the first to suggest that inhibiting the expression of selective replication-initiation proteins is a novel and effective anticancer strategy.
4. 研究論文之題目及摘要 Effect of the live weight gain of steers during winter grazing on digestibility, acid-base balance, blood flow, and oxygen consumption by splanchnic tissues during adaptation and subsequent feeding of a high-grain diet:

Ten multicatherized steers were used in a completely random design to determine the effect of previous BW gain on blood flow, acid-base balance, and oxygen consumption across portal-drained viscera and liver of growing beef steers fed a high-grain diet. Treatments were high (1.31 ± 0.09 kg/d) or low (0.68 ± 0.07 kg/d) daily BW gain during an 82-d winter wheat pasture grazing period and a subsequent 37-d transition period. Blood flow, blood gas measurements, and oxygen consumption were determined on d 0, 14, 28, 42, and 64 of a high-grain finishing period. Compensatory growth was evident in low-gain steers; ADG (1.50 vs. 1.11 kg/d, \( P < 0.05 \)) and gain efficiency (0.221 vs. 0.109 kg/kg, \( P < 0.01 \)) were greater from d 14 through 28 than for high-gain steers. Arterial base tended (\( P < 0.12 \)) to be greater in low-gain than in high-gain steers, whereas calculated \( \text{HCO}_3^- \) (mmol/L; \( P < 0.20 \)) did not differ between treatments. Arterial \( \text{O}_2 \) concentration was not different (\( P < 0.97 \)) between treatments but increased (\( P < 0.001 \)) with increasing days on feed. Portal blood flow increased with days on feed (\( P < 0.001 \)) but did not differ (\( P < 0.34 \)) between treatments. Hepatic blood flow scaled to metabolic BW was 19.7% greater (\( P < 0.02 \)) in low-gain than in high-gain steers. Across the feeding period, \( \text{O}_2 \) consumption and \( \text{CO}_2 \) flux by PDV, liver, and total splanchnic tissue (TST) did not differ (\( P < 0.33 \)) between treatments. However, TST \( \text{O}_2 \) consumption (mmol/[h•kg BW\(^{0.75} \)]) tended (\( P < 0.12 \)) to be greater in low- than in high-gain steers. Compensating steers’ arterial blood acid-base measurements did not change with days on feed, indicating that they were not more susceptible to metabolic acidosis than high-gain steers. However, steers that had lower BW gain before high-grain feeding exhibited increased hepatic blood flow and TST \( \text{O}_2 \) consumption (metabolic BW basis) during the finishing period compared with high-gain steers. Greater hepatic blood flow and energy expenditure by TST of previously restricted steers might have facilitated compensatory growth (Hersom et al., 2003; J. Anim. Sci. 81:3130-3140)

試問
4a. 該論文在何種刊物何時登刊？作者有幾位？誰是第一作者？
4b. 該試驗之目的為何?
4c. 在該試驗中，利用何種方法來達成該試驗之目的？
4d. 其試驗結果如何？
4e. 其試驗結果如何應用於實際之飼養管理？
5. 請譯成中文。

The protein mass of the body, like the adipose mass, is in a continuous state of flux, with tissues constantly being catabolized and resynthesized. The overall rate of degradation is precisely regulated in much the same manner as protein synthesis.

6. Please read through the article below and answer the questions following it.

The receptor tyrosine kinases (RTKs) are transmembrane polypeptides. The members of the RTK family share common structural and functional feature. The RTKs could be divided into three structural regions: a N-terminal extracellular ligand-binding segment, a short transmembrane $\alpha$-helix and a C-terminal intracellular portion with a protein tyrosine kinase domain. With the exception of the insulin receptor, all RTKs are single polypeptide chains which transverse the membrane once. Upon binding to their corresponding growth factors, RTKs initiate a complex series of intracellular reactions. By now more than 50 RTKs have been identified, including the receptors for EGF, NGF, PDGF, insulin and many other growth factors. Another type of cell surface receptors includes the protein serine/threonine kinase receptors, which phosphorylate serine or threonine, rather than tyrosine, residues on their substrate proteins. The receptors for TGF-$\beta$ family have been revealed to be protein-serine/threonine kinases.

6a. Please scheme the basic structure of a RTK.
6b. Which amino acid residues would be phosphorylated by the intracellular domain in the RTK?
6c. From the description above, which receptors could be dimmers?
6d. Do you agree that all the receptors for growth factors are the members of RTK?