血漿蛋白（plasma protein）是一種非肉類來源蛋白質，血漿蛋白受熱後會變性形成凝膠，而其凝膠能力可依保水力來判斷。影響血漿蛋白形成凝膠的因子有血漿濃度、加熱時間及溫度、氯化鈉濃度等。本報告在探討不同的加熱溫度、時間、pH，血漿蛋白和 NaCl 的濃度對於血漿蛋白凝膠的保水力及顯微構造的影響。

結果顯示，血漿蛋白的變性溫度是 55°C。當溫度於 75-77°C 時，凝膠保水力最佳；加熱溫度及時間增加時，凝膠保水能力下降。在 pH9 時，血漿蛋白凝膠之顯微構造有分佈均勻的細緻孔洞；加熱至 75°C 時，水分失重約只有 10%。血漿濃度的添加量至少要 4% 才會開始形成凝膠；添加 NaCl 至 4-5%時，蛋白質分子逐漸被鹽析而使凝膠保水性下降。

2. 請將下列一段英文譯成中文

Gene expression is controlled by both positive and negative regulatory mechanisms. In positive control mechanisms, the product of a regulator gene, a activator, is required to turn on the expression of the structural gene. In negative control mechanisms, the product of a regulator gene, a repressor, is necessary to turn off the expression of the structural gene. Activators and repressors regulate gene expression by binding to regulator protein binding sites adjacent to the promoters of structural genes. Whether or not the regulator proteins can bind to their binding sites depends on the presence or absence of small effector molecules that form complexes with the regulator proteins. The effector molecules are called inducers in inducible systems and co-repressors in repressible systems.

3. 解釋下列名詞

3a. Steer
3b. Lard
3c. Mastitis
3d. Runt
3e. Poultry
3f. Welfare
3g. Immunology
3h. Esophagus
3i. Salmonella
3j. Calf
Bush’s no-win choice

[For the longest time, we have been told that George W. Bush is a different kind of leader. He runs the White House like a sleek business. The nerdy allnight debates in the Clinton West Wing Dormitory have ended. The adults are in charge now, we are told, and they are guided by simple, moderate principles that blend compassion with conservatism.

Why does federal funding matter? Since a lab in Virginia has already created made-to-order embryos for stem-cell research, and another in Massachusetts is cloning embryos for the same purpose, it’s hard not to wonder: Is federal money really necessary? No matter what Bush decides, stem-cell research is sure to continue. But federal funding would dramatically change the scope of this research, widening the circle of scientists involved and most likely accelerating the rate at which cures are found.]

If president Bush says:

Yes. The floodgates would open. Right now most scientists steer clear of stem-cell research because they have to: if any part of their lab receives federal money (and most do), they can’t touch his research. If that changes, hundreds of labs across the country, including medical powerhouses like those at Harvard and M.I.T., would probably begin work on stem cells. Scientists would be able to share findings freely and review one another’s conclusions. The government could choose to regulate how embryos are cultivated, handled and ultimately destroyed. Treatments would probably come sooner. Of course, there are no guarantees: it’s been 18 years since the government said an AIDS vaccine would soon be in hand. (50%)

No. Research would proceed but only in the handful of labs willing to fund it on their own. These labs are subject to minimal oversight. They rarely consult with one another, research doesn’t get peer-reviewed, and studies may be unknowingly (and unnecessarily) duplicated. Many of the nation’s top scientists who would otherwise lead the research effort would remain on the sidelines. And commercial pressures could make private labs focus more on research that might turn a profit than on studies that advance general knowledge. Says James Thomson, the stem-cell pioneer: “Industry and other countries will go forward. The field will progress without federal funding, but very, very slowly.” (50%)

5. 請將下列英文譯成中文

Domestic goats are seasonally polyestrous and their breeding activity is influenced by photoperiod. Although there are many similarities in the reproductive patterns of sheep and goats, there are distinct genetic and anatomical differences, as well as differences in the physiology of their reproductive processes. The diploid number of chromosomes is 60 for the goat as compared to 54 for the sheep. Goats and sheep are thought to have evolved from a common ancestor, which probably had 60 chromosomes. The Barbary sheep, thought to represent an intermediate link between sheep and goats, has 58 chromosomes. Mating between rams and does or between male goats and ewes may result in fertilization; however, these intergeneric embryos do not develop to term. Similarly, the intergeneric transfer of embryos between sheep and goat is not successful due to maternal rejection, which occurs as the placenta begins to develop.
Conjugated linoleic acid (CLA) is a naturally occurring anticarcinogen found in milk fat and body fat of ruminants. Although CLA is an intermediate in ruminal biohydrogenation of linoleic acid, we hypothesized that its primary source was from endogenous synthesis. This would involve Δ⁹-desaturase and synthesis from trans-11 18:1, another intermediate in ruminal biohydrogenation. The first experiment supplied lactating cows (n=3) with trans-11 18:1 by abomasal infusion and examined the potential for endogenous synthesis by measuring changes in milk fat CLA. By d 3, infusion of trans-11 18:1 resulted in a 31% increase in concentration of cis-9, trans-11 CLA in milk fat, demonstrating that an active pathway for endogenous synthesis of CLA exists. The second experiment examined the quantitative importance of endogenous synthesis of CLA in lactating cows (n=3) by abomasally infusing a putative stimulatory (retinal palmitate) or an inhibitor (sterculic oil) of Δ⁹-desaturase. Infusion of retinol palmitate had no influence on milk fatty acid desaturation, and yield of CLA in milk fat was not altered. However, sterculic oil infusion decreased the concentration of CLA in milk fat by 45%. Consistent with Δ⁹-desaturase inhibition, the sterculic oil treatment also altered the milk fat concentration of other Δ⁹-desaturase products as indicated by the two- to threefold increase in the ratios of 14:0 to 14:1, 16:0 to 16:1 and 18:0 to cis-18:1. Using changes in the ratio of 14:0 to 14:1 as an indication of the extent of Δ⁹-desaturase inhibition with the sterculic oil treatment, an estimated 64% of the CLA in milk fat was of endogenous origin. Overall, results demonstrate that endogenous synthesis of CLA from trans-11 18:1 represented the primary source of CLA in milk fat of lactating cows.

問題 以下中文或英文作答皆可

6a. 試寫出該研究之題目。
6b. 寫出該研究最重要之關鍵字五個。
6c. 本摘要中您為何處可能出錯？請將之更正。
6d. 該研究之結論為何？

7. 請翻譯下述文章

About 15 soybean proteins were shown to be recognized by sera of soybean-sensitive patients with atopic dermatitis. Three of them were identified as major allergens and designated as Gly m Bd 60K, Gly m Bd 30 K, and Gly m Bd 28K, respectively. Gly m Bd 60K is an alpha subunit of beta-conglycinin well known as a major soybean storage protein. Gly m Bd 30K is also known as a soybean oil-body-associated glycoproteins with a molecular weight of 34,000, a major allergen of house dust mite, classified under the papain super family. Gly m Bd 28K is a vicilin-like glycoproteins with a molecular weight of 26,000, a minor component fractionated into 7S globulin fraction. The reduction of allergenicity of soybean has been developed with respect to the above-mentioned major three allergens as the targets by the use of the combined techniques of a chemical breeding, a physico-chemical treatment, and an enzymatic digestion. Among the three allergens, the alpha subunit of beta-conglycinin and Gly m Bd 28K were eliminated from soybean seeds by the development of a mutant line. The strongest allergen, Gly m Bd 30K, was almost completely removed by a salting-out technique and a centrifugation under the limited pH and ionic
strength and alternatively by an enzymatic digestion. By the application of these procedures, several hypoallergenic soybean products have been made to evaluate their usefulness by a challenge test for soybean-sensitive patients.

8. 解释下述文章

*Preslaughter handling*

In general, genetic liability for PSE is thought to be of more importance than environmental factors. Consequently, efforts by the meat industry to improve meat quality should certainly include the identification of producer herds delivering a high incidence of PSE. Furthermore, measures can be taken to reduce the amount of stress during the time of transport and delivery to the slaughter-house. These measures include, for instance, feed withdrawal prior to transport, avoiding mixing of foreign groups, and good facilities and management for loading and unloading at the farm and abattoir. Frequently, the effect of such measures is more clear in the reduction of transport deaths, than in an improvement of ultimate meat quality (*Lend-Jers, 1974; Nielsen, 1979*).

Under commercial conditions, slaughtering immediately after arrival has been shown to increase PSE compared with a resting period in lairage (*Verdijk, 1974; Moss, 1980; Augustini, 1983*). Therefore, a good adjustment of the supply of pigs to the slaughter-rate, allowing pigs to “rest” for at least 2-4 hr, is important. Various suggestions for improvement of the lairage conditions have also been presented (*Verdijk, 1974; Smulders et al., 1982*).

Minimizing the excitement and physical exercise during the transition from the lairage to stunning area, as well as minimizing muscle contractions and struggling at stunning, appear to be of great importance. In the classical study of *Bendall (1966)* it was already shown that the amount of stimuli reaching the muscle at the time of death, is an important factor for PSE, since they directly affect levels of energy rich phosphates and their subsequent breakdown.