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In This Issue 本期主題

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OPINION PAPERS 評論文章

中國植物基因工程研究進展

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中國植物基因工程經歷了過渡、起步和發展的階段。本世紀七十年代中期至八十年代中期，中國科研人員進行了大量的基因組DNA的遺傳轉化研究，有些研究獲得了一些具有穩定遺傳的突變品系。但是，這種基因組DNA轉移法難於實現定向改造或改良生物性的目標。因而這一時期為中國植物基因工程的過渡期。八十年代後期至九十年代初期，一些研究人員開始進行單個基因的遺傳轉化研究，並在1989年取得突破。比如，中國科學院微生物所田波等人將衛星互補DNA單體基因導入煙草，獲得了抗黃瓜花葉病毒的轉基因煙草植株。中國科學院遺傳研究所朱立煌等人將龍葵Atrazine抗性基因導入大豆葉綠體基因組中，獲得抗除草劑Atrazine的轉基因大豆植株。因而這一時期為中國植物基因工程研究的起步時期。此後，中國植物基因工程進入了一個比較快速的發展時期。迄今，中國科研人員成功地運用了幾乎全部現有植物遺傳轉化方法，並且創立了花粉管通道法、超聲波轉化法及離子束介導法，運用了近百個目的基因(包括抗病、抗細菌、抗真菌、抗蟲、抗除草劑、抗逆、品種改良、延熟保鮮、基因工程雄性不育、編碼藥用蛋白等基因)，在近五十種植物上獲得了轉基因植株，其中有十多種轉基因植物進入了田間試驗。

在**植物抗蟲基因工程**方面，中國獨立人工合成構建了蘇雲金芽孢杆菌晶體蛋白(Bt)基因，並已成功地將它們轉入中國長江流域和華北棉區的主栽品種中，獲得了抗蟲能力在80%以上的轉基因棉花品系13個，即將進行一定規模的試種示範。轉Bt基因的甘藍、水稻、煙草等還處在實驗階段。此外，中國還分離和克隆了豇豆胰蛋白酶抑制劑等7個不同類型的抗蟲基因，並已將它們導入煙草、棉花、水稻等植物中。在**植物抗病毒基因工程**方面，田波等人構建了CMV衛星RNA的cDNA單體及雙體克隆，獲得了抗CMV的多種工程作物。中國科學院遺傳研究所陳正華等(1996)將燕菁花病毒外殼蛋白(CP)基因導入甘藍油菜獲得了抗該病毒的轉基因植株。北京大學陳章良等(1997)獲得了抗CMV的轉基因蕃茄植株。此外，其他抗病毒策略也取得了一定進展。在**植物抗菌基因工程**方面，中國農業科學院賈士榮實驗室已將CecropinB等抗菌肽基因導入中國七個馬鈴薯主栽品種(系)中，獲得了四個比起始品種的抗青枯病性能提高1—3級的株系。中國科學院遺傳研究所田文忠等(1997)將抗菌肽B基因導入水稻栽培品種中，轉基因水稻植株增強了對水稻白葉枯病和細條病的抗性。此外，朱立煌等與美國Ronald等人合作從水稻中分離到水稻白葉枯病抗性基因(Xa21)，目前已導入水稻粳稻品種中。孫勇如等(1996)分離到兔防御素(defensin)基因並獲得了對煙草青枯病有一定抗性的轉基因煙草植株。在**植物抗逆基因工程**方面，中國科學院遺傳研究所陳受宜從事植物抗逆基因工程多年，已克隆了脯氨酸合成酶(ProA)、山菠菜甜菜鹼醛脫氫酶(BADH)及果聚糖合成酶等耐鹽相關基因，通過轉山菠菜BADH基因，獲得了耐鹽的苜蓿、草莓、煙草及水稻。在**植物雜種優勢利用的基因工程**方面，中國科研人員已將花藥特異表達的啟動子和RNA酶Barnase基因導入煙草(李勝國等1995)、芝麻(陳占寬等1996)和小麥(傅榮昭等1997)，並獲得了相應的基因工程雄性不育煙草和小麥植株。預計今後四、五年內中國植物雜種優勢利用的基因工程將會有重大突破。在**植物基因工程安全管理**方面，中國國家科委於1993年12月正式頒布了《基因工程安全管理辦法》，農業部於1996年7月正式頒布了《農業生物基因工程安全管理實施辦法》。該《實施辦法》包括六章三十六條。其中條例之一規定了從事基因工作的單位應根據基因工程工作的安全等級，分類分級申報，經審查批准後方能進行相應的工作。條例還規定，外國研制的農業生物遺傳工程體及其產品在中國境內進行中間試驗、環境釋放或商品化生產，必須持有該國允許進行同類工作的證書，方可按實施辦法所規定的程序進行申請，否則不予受理。這些《條例》的貫切執行，必將促進中國植物基因工程的健康發展。

總之，中國植物基因工程研究十年來雖已取得長足進展，但也存在一些問題和不足，主要是具有創新性的基礎研究不足，政府對科研的投資強度還很低。

Genetic Manipulation Regulations at the Chinese University of Hong Kong

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A general definition of 'genetic manipulation' is any experiment involving the construction and/or propagation of viral, cells or organisms of novel genotypes which are: either unlikely to occur in nature, or likely to pose a hazard to public health or to the environment.

Countries such as the UK, the US and Australia have well entrenched but continually modified regulatory infra-structures. In general, the following guidelines exist.

- Small scale: applies to work involving less than 10 litres of cell culture, and plants and animals housed in single facilities
- Large scale: covers work with more than 10 litre cultures, and plants and animals housed in large facilities
- For the planned release of recombinant DNA organisms

There are no prescriptive regulations per se in Hong Kong. Therefore, at the Chinese University, regulations of the above countries are adopted. All genetic manipulation experiments would be assessed even to the extent of ensuring rodent and pest control, or ensuring no like-plants are nearby. This is normally done by the Chief Laboratory Safety Officer, and in some cases in conjunction with a member of the Safety Advisory Committee - Biological. This may involve face to face discussions with the Principal Investigator in the laboratory where the work is to take place. Provision exists for outside independent opinions to be obtained.

The only work that can be properly undertaken is what is termed Physical Containment 2 (PC2) for certain bacteria and viruses, which with a few extra precautions is roughly equivalent to Biosafety Level 2 as defined in the Australian/New Zealand standard[1]. PC3 which includes some very virulent or multi-drug resistant bacteria can seldom be satisfactorily achieved, and thus only limited work can be undertaken.

Concerning decontamination and waste disposal, we have been examining the problems for the last 18 months. The practice of having this type of waste trucked across Hong Kong in peak traffic to be buried in landfills needs some intensive consideration by all parties involved. In Australia not so long ago, a six-lane highway was closed for several hours when there was a biological waste mishap involving a reputable licensed biomedical waste contractor.

Of further concern is that wastes from genetic manipulation work often should not be moved off-site. For example in the US, New York State is moving to encourage the universities and similar such waste producers to have their own small two chamber high temperature incinerators. We are proposing to install a small, batch method, two chamber waste incinerator on site. We have had a number of interesting, constructive and fruitful meetings with Environmental Protection Department officers.

Hong Kong is moving into the next century to be a leader in research, thus the internationally accepted Good Laboratory Practice standards need to be followed. To attract outside partners, quick provision of genetic manipulation guidelines and internationally accepted waste destruction techniques would be of great assistance to Hong Kong research and to the biotechnology industry.

[1]*Australian/New Zealand Standard. Safety in Laboratories. Part 3: Microbiology. Published by Standards Australia and Standards New Zealand (1995).*

The bioethics of transgenic activities

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What are transgenic activities?

Transgenic activities involve the transfer of genetic material into the genomes of animals and plants. The animals and plants receiving the foreign genetic material are therefore called 'transgenic'. In this article I am going to focus on transgenic animals only.

The first successful transgenic animal was created in the early 1980's, since then transgenic technology has become very popular due to its wide applications. The majority of the experiments have been performed with mice. Two types of transgenic mice can be made: (1) by microinjection of foreign DNA into fertilized oocytes before transferring them to a foster mother; (2) by gene targeting in which DNA is introduced into embryonic stem cells first, the 'transgenic' embryonic stem cells are then injected into the blastocysts which are subsequently transferred to a foster mother. Transgenic mice born from the first method have the foreign DNA integrated randomly into the genome, those made by the second method have the DNA inserted into a controlled genomic target site. The large majority of transgenic mice are produced for research purposes. However, a lot of the experiments originally intended for understanding basic science or basic mechanisms of diseases can be exploited by research and development enterprise for drug testing and even gene therapy.

Several companies and farms in Australia, New Zealand and the US have successfully applied transgenic technology to agriculture and produced transgenic pigs and goats. In these cases the transgenic animals are usually produced by microinjection of foreign DNA into a fertilized oocyte. The purpose of the transgenic farm animals is usually for improving meat quality and generally growth quality of the variety or breed. Transgenic goats are often used to produce protein products of pharmaceutical value in the milk. The latest development of transgenic farm animals is to produce animals with 'humanized' organs as a source for organ transplantation into patients. This type of xenotransplantation is still very much in the experimental stage.

Who will judge whether transgenic activities are justified?

Most transgenic work, if not all, will have to satisfy certain regulations and legislation set out in their respective communities. Experiments with live animals in most western countries are under strict scrutiny by government bodies. In Hong Kong, tertiary institutions are required by research grant committees to ensure that research projects involving live animals have satisfied certain ethical standards. However, most of the ethical standards, set out locally or worldwide, are focused on the experimental processes, animal sufferings, and the type and number of animals involved. The issue of genetic manipulation of live animals falls into a grey area. What are the genes being manipulated and from what species (e.g. humans vs. other animals) are they obtained? Are there any limitations in manipulating human genes in transgenic activities? What phenotypes are expected from the transgenic animals generated? What kinds of disease models are being produced and are they worthwhile? When transgenic animals are used as bioreactor, are the products made more effectively by transgenesis compared with other processes? Is the generation of transgenic animals justified on scientific, social and ethical grounds? How many generations and varieties of transgenic animals will be maintained and will the transgenic varieties be stored? There can be many more questions asked but at present, it is mainly up to the principal investigators, the scientists themselves, to offer answers. Many of these questions are outside the ethical guidelines and are not necessarily judged officially.

Are animal organs acceptable?

One clinical application of transgenic work is to produce organs which can escape rejection by the human immune system for organ transplantation. The supporting force for xenotransplantation research arises from the worldwide shortage of human organs. While some scientists may be overwhelmed with the technological and clinical breakthrough promised by xenotransplantation, the very important question of whether the concept of having an animal organ in a human body is ethically and socially acceptable is not yet resolved. For instance, the Chinese are used to using the idiom of "wolf's heart, dog's lung" to describe someone immoral and irresponsible, how would they look at a human being literally walking around with an animal organ inside?

Conclusion

At the moment, different countries have their own sets of rules on transgenic activities, and it is not difficult to go through the loopholes of the regulations by breaking experimental processes into parts, to perform some steps in one place, and other steps in another. In view of the impact and potential of transgenic work, it is important that rules and regulations be worked out by scientists and legislators worldwide so that researchers will have universal standards to check up. Ultimately, whether particular experiments are ethically acceptable or not always lies with the conscience of the research scientist. To educate the scientific community on ethical values is the most effective way to avoid human disaster.

遺傳工程的生命倫理

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遺傳工程技術的發展，一日千里。現在，我們已可以將遺傳基因，嵌進幾乎任何的生物體內。科研人員應用有關技術，製造出特性更符合人類所需的轉基因生物（transgenic organism），或令一些生物成為生物反應器（bioreactor），不斷生產有用的物質，供人使用。

透過遺傳技術所製造的產品，價廉物美，理應受大眾歡迎。可是，社會上一部份人士，一直反對製造和培育轉基因生物。這些人又以美國的J.Rifkin為表表者。他曾對生物技術公司，提出各種訴訟，並成功阻延若干研究的進行。

為甚麼一些人會反對製造轉基因生物？概括地可分兩方面；一種看法是認為遺傳法術本身，便是不要得的。將外來的基因嵌入一物種內，不啻是違反「種瓜得瓜，種豆得豆」千古不易之理。近一世紀，因科技發達，人類已對環境生態，造成極大的損害。現在，我們應重新過着簡樸而與自然諧協的生活。遺傳技術的出現，使人類擁有更強的控制生命的手段，加深萬物以人為中心的概念。用遺傳技術所造的產品，更與自然相去萬里。另一方面，打破物種之間的限制，又顯示出人類的自大，妄想扮演上帝製造生命的角式。

持有以上觀念的人，包括近年湧現的自然主義者，與及有宗教信仰的人士。這種從根本上反對遺傳工程的論點，自有其背後的理據。我們只能指出，物質文明的進步，莫不是透過干預自然而來。數千年來，人類不斷優化各種生物，以為己用。今天，我們所吃到的糧食，所飼養的牲畜，其遺傳基因的組合，和原始的品種，已有很大的差異。遺傳工程，只不過是提供了一種改良生物的新途徑。面對人口增加，資源減少和追求理想生活的本能，若要人類放棄這利器，恐怕是緣木求魚。較實際的做法，是如何發揮其利和減低其害而已。人類利用遺傳技術，的確更能隨心所欲的將生物改造，甚至使一生物帶有其它物種的特性；例如，科研人員已成功製造含有魚類耐寒基因的蕃茄和含有人類蛋白質的家畜。這種改變，也不過是在已有的基礎上變，並不是無中生有。因此，這並不背離上帝要人類管理世上萬物的概念；虔誠的教徒，暫時仍未須過慮。

另一種看法，則承認遺傳工程是改善物質文明的利器；不過，正如一艘駛進陌生水域的船，要每步留心，否則隨時會引發災難。遺傳工程所產生的問題，因着不同事件而異。但若不包括將此技術用於人類所產生的問題，個人認為以下列數項為大宗：

(一) 若任由遺傳工程生物散布四野，可能會影響自然生態

帶有分解污染物基因的細菌，可用於去除廢水中的化合物；含抗菌、抗蟲害基因的植物，可以提高作物的產量和減少農藥的用量。不過，若大量使用這些細菌或植物，它們會否影響生態的平衡？一九八三年，美國的J. Rifkin反對試驗噴灑一種缺結冰基因細菌於植物上。他的理由是這種細菌或會影響正常的降雪。這個實驗，結果要到一九八七年才可進行。至今，雖然加州的天氣並沒有受到影響，但這也反映出我們對散播遺傳生物所引發的後果，其實所知甚少，若認真論証，可以花上不少時間。

遺傳工程生物是否會逸出野外，不受控制的生長？我們有好些例子，指出釋放一些貌似無害的生物，會引起意想不到的後果；其中一例，就是英國殖民者，將兔子引入澳洲，造成無窮的後患。帶有外來基因的生物，它們會不會有生存的優勢，漸漸取代某些野生的品種？它們的基因，會不會轉移到其它的生物內？這些過程所需時間，或許很長，我們實在不能否定其可能性。

最後，人們很擔心帶有抗性的植物會誘發病蟲害的進化。經驗說明，利用抗生素殺滅細菌，似乎是一場打不贏的仗。有些病菌，已演變成差不多沒有抗生素可以對付。如此類推，有關的病害，會不會很快的產生抵抗力，令遺傳工程植物無用武之地？到時，這些病害，也將更難用傳統方法對付。科研人員，於是想出將數個抗病的基因，同時殖入植株內，用以推延病害出現抗性。

(二) 消費者不能避免不用遺傳工程產品

遺傳工程技術製成的藥物，已被醫院廣泛使用。病人一般也不會探究該等藥物的來源。反而，消費者對使用遺傳技術製造的食物頗有戒心，怕它不夠「自然」。當然，我們可以沿用上文的論據，指出事實上已沒有真正的自然品種。不過，想深一層，其實消費者是不想購買一些以「不自然」方法培育的東西，例如市場上的打針雞和用動物蛋白餵飼的牛隻，害怕吃了會有不良的後果。

為了給消費者自由的選擇，現在商人一般都將帶有外來基因的食品加上標籤。在英國售賣的遺傳工程蕃茄製造的茄漿，就有清楚標記。因為價格便宜，並且漿液較濃，甚受消費者歡迎。不過，我們應如何看待一些與遺傳工程「沾上邊」的食物？例如利用遺傳技術製造的凝乳酶（chymosin）來生產芝士，或製造含有這些芝士的薄餅。一九九三年英國的Genetic Modification and Food Use倫理委員會，就提出一個「抓緊重點」的原則，即只需標籤一些會引起大眾關注的食物而不用考慮所有經遺傳工程生物處理或製造的食物。當然，何謂「會引起大眾關注」，有時是很難說得清的。在社會上，總有些人士或團體，會對食物的成份有很嚴格的要求；例如有些素食者會認為不能接受薄餅含有魚類抗寒基因的蕃茄。有些宗教人士或會認為吃了含人類遺傳因子的牛肉，在某個

意義上是吃了人。美國的Monsanto公司，就因拒絕將含有抗殺雜草藥基因的大豆和普通大豆分開，受到輿論的責難。可預見，會有愈來愈多含遺傳工程物質的產品在市場出售，消費者會不會難以避免購買這些物品？

(三) 遺傳工程生物的權益沒有保障

自古以來，人類便利用雜交選擇的辦法，來改造各種動植物。遺傳工程，提拱了一種新的育種手段；一方面提高了成功率，另一方面又打破了物種基因不能交換的限制。但是，科研人員有沒有考慮過轉基因生物的生理會不會受外來基因的影響和受到不必要的痛苦？在這方面，又以家畜等高等動物格外受到關注。

其實，經過多年的選種，今天的家畜已大異於前。而且，有很多並不是生長得很健康的。例如，現在的肉雞，有很多因為過重，不能正常步行，也影響了心臟功能。奶牛也因為乳房過大，令其後腳不勝負荷。因此，維護動物權益人士對利用遺傳技術改造動物甚有戒心。轉基因動物，涉及使一動物製造異體蛋白。研究人員，常常都不能預知這些外來蛋白是否會有不良的影響。八十年代，研究人員嘗試將生長激素(growth hormone) 基因嵌入豬、羊體內，以促進生長。可是，這些動物的死亡率十分高，而且不少患上風濕、糖尿等疾病。

當然，轉基因動物也能為人類帶來很多好處。最近，蘇格蘭羅斯林研究院 (Roslin Institute) 的科研人員，成功製造奶水含蛋白質因子九 (factor IX) 的轉基因羊，他們並估計只要十頭轉基因羊，就可以滿足世界對某種藥物的需求。科研人員，也試圖改變豬隻的器官，使它們不受人類免疫系統的排斥。我們應如何平衡人類需要和動物的權益？有一種看法，是我們應盡量避免使動物痛苦。八十年代末，哈佛大學由Du Pont公司資助，製造了一種很易患癌的轉基因鼠，受到世界各地關注動物權益人士的抨擊。他們認為要一種生物注定生腫瘤，是不人道的。不過，正如上文所述，很多時候，研究人員是很難預先估計外來基因的影響。因此，往往只好就着每項研究的結果來處理。

無論喜歡與否，人類已進入了遺傳工程的時代。在不久將來，超級市場貨架上會有愈來愈多利用遺傳技術生產的貨物。此外，本文並未涉及遺傳技術施用於人類的情況，如人類基因組的分析、基因治療、遺傳病的探測等。遺傳技術在這些範籌，也帶出特有的問題。因此，就如電腦和核能等對人類發展有深遠影響的發明一樣，遺傳工程已超越科學研究，進而衝激着社會不同傳統價值觀念。從事教育的人士，應積極帶領年青一代從不同角度了解遺傳工程，消除只是因為不了解而產生的偏見和誤會。而且，只有通過在不同層面的思考和討論，才能找到適當的因應之道，使人類物質和精神文明同時得以進步。

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COMMENTS 意 見

The Fever on Dolly in China

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After the scientific report of Dolly in *Nature* reached the mainland, the State Science and Technology Commission held an expert meeting chaired by a deputy minister to assess the implications of Dolly on human cloning from the social, ethical and legal perspectives in March 1997. The Ministry of Public Health, Professor Chen Minzhang chaired another similar expert meeting and I was there. Since then, there have been hundred of articles in newspapers and journals. Many programs debating the issue have also been broardcast on television. I was a panel discussion member in two programs produced by the government sponsored TV station, the Central TV Station. Recently, I have taken part in a forum at the Chinese University of Political and Law Sciences. Thousand of students and teachers attended with great interest and they raised all kinds of questions. Now the debate is still going on.

Editor's note: *Several articles on euthanasia have been published in Volume 2, number 1. We are pleased to receive the following article that provides further information on the attitude and practice of euthanasia in China.*

Euthanasia: Freer in China than in the Western Countries

Lin Yu, Chinese Traditional Medical College of Jangxi
and
Zanning Zhang, Nanjing Railway Medical College

In Western countries, euthanasia is strongly opposed by religion. So, legislation on euthanasia goes slowly. Only a few countries such as Holland has legalized it. On the other hand, it is freer to put euthanasia, especially passive euthanasia into effect in China.

We have encountered a case in a rural hospital in China. A female patient suffered from epidemic hemorrhagic fever. After seven days in hospital, due to some mental disorder caused by the disease, her relatives concluded that she would not be cured, so they insisted to bring her home. The hospital could do nothing but let them go, and the doctors had got to keep the treatment at the patient's home. At last, the patient recovered.

In 1987, a doctor in Jingxi stopped the treatment of a patient who had cancer to the advanced stage, without the consent of the patient and his relatives. The relatives brought an action against the doctor, but the court exempted the doctor from any punishment. In fact, a lot of incurable patients are refused by hospitals. The rate of death is a measure for the quality of a hospital. So, it is not unusual that hospitals are reluctant to accept patients with incurable disease.

Besides economic concern of the hospital, there is an important ethical reason for dying patients not staying in hospital. People traditionally consider death at an old age as a great happiness such as marriage and giving birth, as death is named 'white happiness' and marriage 'red happiness'. It is a custom to bring the dying home and wait for death. The one who dies at home becomes a home ghost and the one who dies outside is named wild ghost. A wild ghost is not allowed to return home and reunite with his relatives. The above mentioned woman was brought home as his husband feared that his wife would become a wild ghost.

How about active euthanasia in China? An authoritative explanation given by "science of criminal law" in college textbook states that "Euthanasia is an action of depriving one's life by getting permission. It is harmful to the society and constitutes wilful murder. If the action is asked by the victim to relieve suffering, this just means that the offender is less dangerous to the society and may be used for reducing punishment at court". However, in judicial practice, active euthanasia is paying little attention to.

In 1986, a senior doctor's mother in Nanchang city suddenly fell into a coma with brain hemorrhage and did not recover. The doctor injected her mother with overdose wintermin and let she died. Since nobody brought a lawsuit against her, nothing had happened.

In July, 1986 in Shanxi Province, there was the first case of euthanasia that turned out in court. A dead woman's daughters brought the law suit against a doctor and their brother. It was believed that the judicial department was reluctant to go into such a business. One forceful evidence was that the judicial department had irrefutable evidence in another similar case but it did not investigate further. After six years of litigation, the defendants were quitted of a crime.

In another example, a doctor carried out active euthanasia on his father, who had advanced staged cancer, after repeatedly asked by his parents. Nevertheless, he was not punished (*China Youth Newspaper*, December, 1988).

In June 1988, the *Liberation Daily of Shanghai* reported that Euthanasia quietly emerges in Shanghai'. In the same year, *Peking Youth Newspaper* reported that Infant euthanasia was continuously carried out'. In July 1988, *China Youth Newspaper* also reported with a striking headline: Euthanasia is quietly undertaken. In February 1990, *Peking Daily* published an article 'She died by euthanasia'. It reported the process of death of the vice dean in a computer center of the Chinese Academy of Sciences. The article said, she was happy and she accomplished her wish'. In June 1992, an article 'Why do I let my mother died in euthanasia?' was published in the front page of a Guangzhou newspaper.

Nothing happened after the above cases were reported. If euthanasia means murder, this phenomenon is beyond imagination. This indicates euthanasia has been accepted by the Chinese society and the judicial department. Even though no legislation has been passed, euthanasia, in fact, has been recognized in the form of informal or common law.

MESSAGES 消 息

More News on Dolly

Dolly the sheep, the world's first clone of a differentiated mammalian cell, continues to make headlines:

(1) Dr. Ian Wilmut, the scientist who cloned Dolly announced in a conference at Kentucky, USA in February that "There is remote possibility that the cell used to produce Dolly came from a foetus rather than from the adult. Foetal cells can be present in the circulatory system of some animals during pregnancy". Nevertheless, in July, a Japanese group lent support to the possibility of cloning from adult cells by claiming that a cow implanted with 'eggs' from adult cells has given birth to two twin calves.

(2) Mating with a ram, Dolly has given birth to a lamb called Bonnie in April. The birth is regarded as vital to the commercialization of the nuclear transfer technique that produced Dolly. It shows the normal physiology of the clone and it may be necessary to expand the founder animals by conventional breeding, not by cloning.

US Senate Rejects Ban on Human Cloning

After Dr. Richard Seed had announced that he planned to open a clinic to perform human cloning, a republican proposed a bill to ban human cloning in February but was defeated in the Senate. The politicians said cloning experimentation has its scientific value and should not be completely banned.

New executive committee of the Hong Kong Bioethics Association

The executive committe for 1998-99 has just been formed. Members include:

Chairman	Dr. AU Kit-Sing (區結成)
Vice-Chairman:	Dr. SHAW Pang-Chui (邵鵬柱)
Secretary:	Dr. YU Kam-Por (余錦波)
Treasurer:	Dr. LIU Nga-Chee (廖雅慈)
Executive members:	Dr. CHIU Siu-wai (趙紹惠)
	Dr. YUEN Kar-ngai (阮嘉毅)

新應用倫理研究中心

中國社會科學院應用倫理研究中心於1995年10月成立。該中心是研究現實倫理問題並推進實踐倫理指導的學術團體，致力於喚起人們對人類在社會發展與科技進步中所面臨的重要倫理問題的關注與討論，並探討解決這些問題的途徑和方法。中心之《通訊》於98年4月出版。

中心的主要目標：推動應用倫理的理論研究；推動應用倫理的教育和實踐活動；推動倫理學研究者與實際工作者的對話；推動應用倫理學的學術交流。

中心的主要研究領域：經濟倫理；生命倫理；環境倫理；科技倫理。

中心名譽主任：邱仁宗　中國社會科學院研究員

中心主任：陳　筷　中國社會科學院研究員

新刊物

《中外醫學哲學》是一份具國際學術水準的生命倫理學和醫學哲學的中文季刊，由 Swets & Zeittinger Publishers出版，香港浸會大學應用倫理學研究中心和美國 The Journal of Medicine & Philosophy, Inc.贊助，在香港製作和印刷，向全球發行。創刊號在1998年2月出版。

此刊物為主題期刊，每一期致力於探討生命、性別、健康、疾病、痛苦、衰老和死亡等方面的一個主題，專注於東西對比研究。每期將用一半篇幅登載精選於美國《醫學與哲學期刊》的相同主題論文的中文譯文，另一半篇幅則用於發表中文學術新作。

《徵求會員》

香港生命倫理學會在九六年底成立，目的是推廣本地及華人社區對生命倫理的關注。學會現公開招收會員，誠邀對生命倫理有興趣的朋友加入。有興趣者，請與學會秘書余錦波聯絡。

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預告…

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