平成１８年度大学院医学研究科（１回目）

医学・生物学一般試験（問題用紙１枚、解答用紙２枚）

以下の４問題から２問題を選択して解答しなさい。１問題につき１枚の解答用紙を使用すること。紙面不足の場合は裏面使用も可。

１．アスベスト暴露による腫瘍発生が大きな社会問題になっています。次の問に答えなさい。

（１）人はどの様にしてアスベストに暴露し、その結果どの様な障害がどの様な経過をたどって発生するか。

（２）WHOでは 1973 年にヒトへの発がん性が発表され、その後数度にわたってヒトへの発がん性が明確であることが世界に発信されてきました。それにも関わらず、日本では最近アスベストによる腫瘍発生がクローズアップされてきた理由についてあなたの意見を書きなさい。

２．　生体は環境因子からの影響に対しその恒常性維持のために種々の方法で機能の調節をしている。調節には神経性調節機構と液性調節機構とあるが、それぞれの調節機構に見られる長所短所を挙げながら、両調節機構について考察しなさい。

３．ヒトゲノムの解明に伴い、医学における遺伝子情報を利用した研究や医療が盛んに進められるようになった。ゲノム情報および個人情報の取り扱いに関する規定が定められた。次の文章は、平成１６年１２月２８日に告示された『ヒトゲノム・遺伝子解析研究に関する倫理指針』の改正案の基本方針である。ここで述べられている「個人情報」とはいかなるものであり、何故保護が必要であるかについて論じなさい。

基本方針

本指針は、遺伝情報が得られる等のヒトゲノム・遺伝子解析の特色を踏まえ、すべてのヒトゲノム・遺伝子解析研究に適用され、研究現場で遵守されるべき倫理指針として策定されたものである。本指針は、人間の尊厳及び人権が尊重され、社会の理解と協力を得て、研究の適正な推進が図られることを目的とし、次に掲げる事項を基本方針としている。

（１）人間の尊厳の尊重

（２）事前の十分な説明と自由意思による同意（インフォームド・コンセント）

（裏面あり）

（3）個人情報の保護の徹底
（4）人類の知的基盤、健康及び福祉に貢献する社会的に有益な研究の実施
（5）個人の人権の保障の科学的又は社会的利益に対する優先
（6）本指針に基づく研究計画の作成及び遵守並びに独立の立場に立った倫理審査委員会による事前の審査及び承認による研究の適正の確保
（7）研究の実施状況の第三者による実地調査及び研究結果の公表を通じた研究の透明性の確保
（8）ヒトゲノム・遺伝子解析研究に関する啓発活動等による国民及び社会の理解の増進並びに研究内容を踏まえて行う国民との対話

4．「医療における人権」について、以下の3設問中、2設問を選んで答えなさい。
（1）医療事故の立場から「医療における人権」はどのように考えるか。
（2）インフォームドコンセントの立場から「医療における人権」はどのように考えるか。
（3）電子カルテシステムの立場から「医療における人権」はどのように考えるか。

平成１８年度大学院医学研究科（１回目）
外国語試験問題・解答用紙（日本人）

受験番号

1．以下の文を読み、問に答えよ。

In their well-known 1981 review on the causes of cancer in the United States, Doll and Peto estimated that around one-third of deaths from cancer could be attributed to diet and were therefore, in principle, preventable. Epidemiological evidence continues to support this general conclusion, but in contrast to cardiovascular disease, for which the link to nutrition is now generally recognized, the relationship between diet and cancer has made much less impact on both policy-makers and the general public. One reason for this is the absence of any single hypothesis on which to build a dietary strategy for cancer prevention; this itself is a reflection of the complexity of human diets and the obvious fact that cancer is not a single disease. Although there has been huge progress in our understanding of the molecular basis of many cancers in recent years, most of the new knowledge has been deployed in the search for new therapies rather than to understand the role of nutrition in their causation. Nevertheless, the mechanisms linking diet to cancer can be understood and exploited for prevention as much as for treatment, and there are sound scientific and strategic reasons to focus such research on carcinomas of alimentary tract.

The hypothesis that "overnutrition" increases the risk of bowel cancer is supported by studies within the populations of the developed world, where overconsumption of energy, low levels of physical activity high body mass index, and abdominal obesity are strong independent risk factors for colorectal carcinomas, much as they are for insulin resistance and cardiovascular disease. A similar link to obesity has been established for esophageal adenocarcinoma, once the rarest form of cancer of the esophagus but now advancing rapidly throughout North America and Western Europe.

What do we know about the links between gut-related cancer progression and diet? Although mutagens are present in foods and facets at low concentrations, there is little evidence that the adverse effects of diet on alimentary cancers in the West are caused by food-borne carcinogens that can be identified and eliminated from the food chain. It seems more plausible that the Western gut becomes vulnerable to neoplasia because of adverse metabolic factors, such as pro-inflammatory agents produced by adipose tissue, and because of low intakes of anticarcinogens from plant foods. The chronic use of aspirin and other nonsteroidal anti-inflammatory drugs significantly reduces the risk of colorectal and esophageal cancers, perhaps by inhibiting the expression of pro-inflammatory enzymes in precancerous tissues. Both diseases are also less common among consumers of diets rich in fruits and vegetables, which harbor a huge variety of biologically active secondary metabolites such as glucosinolates and flavonoids, which may act synergistically in the human diet.

There are profound and fascinating biological problems to be solved in the search for the links between nutrition and cancer, and the human digestive tract is likely to prove an immensely rewarding focus for future research. Meanwhile, carcinomas of the gut are among the most common causes of morbidity and death from cancer in developed world. The role of weight, lack of exercise, and inadequate consumption of plant foods in their etiology needs to be more widely acknowledged and publicized.
(Form Ian T. Johnson, Cancers of the gut and Western ills. Editorial. Science 307, 2005)

問１　癌と食事との関連が注目されにくいのはなぜか。著者が挙げている理由を２つ書きなさい。

①

②

問２　結腸直腸癌の独立した危険因子は何か。文中で挙げられている因子を４つ書きなさい。

①　　②

③　　④

問３　西欧人の消化管が癌に対して脆弱になる機序はどのように考えられるか。述べられている機序を２つ書きなさい。

①

②

問４　結腸直腸癌および食道癌の発生を予防する可能性のある食物は何か。また、その機序に関与している可能性のある物質はなにか。文中で挙げられている食物および物質をそれぞれ、２つずつ書きなさい。

食物①　　②

物質①　　②

問５　ここで述べられていること事が事実であるとすると、今後、どのような研究が有望と考えるか。具体的な研究テーマを２つ提案しなさい。

①

②

平成１８年度大学院医学研究科（１回目）
外国語試験問題・解答用紙（日本人）

受験番号

２．下記の文章を読み、設問に日本語で答えなさい。

Asbestosis is a disease that develops after prolonged exposure to airborne asbestos fibers. There is no cure for asbestosis. This disease results in scarring of the lung tissue and is associated with certain types of cancer including *mesothelioma*.

Asbestos occurs naturally in the environment. Asbestos minerals break down into long, rod-shaped fibers. These fibers are very sturdy and do not evaporate, dissolve, burn, or react significantly with most chemicals. These unique features made asbestos a popular choice among many manufacturers to be used in making home building products, insulating and fire proofing material, brake pads and transmission parts for cars. Recognizing the health risks associated with these compounds, in 1989 the EPA placed a ban on all new uses for asbestos.

People with prolonged exposure to asbestos fibers may get asbestosis. Generally, these are occupational exposures for people who work in the home building, mining, and textile manufacturing fields. Small asbestos particles can float around in the air for long periods of time before they settle to the ground and many of the particles get inhaled and get stuck in the lung. The longer a person is around these particles and breathing them into their lungs, the greater the chance of developing asbestosis.

The long, rod-shaped asbestos fibers act sort of like a needle and stick into the lung tissue when they are inhaled. The body knows that these particles are not supposed to be there, so it sends in certain cells called macrophages to get rid of the asbestos fibers. The macrophage tries to engulf the fiber. However, because of the needle-like shape of the asbestos fiber, the macrophage is popped in the process. When the macrophage bursts and spills it contents, a tiny amount of scar tissue is formed. As scar tissue accumulates over time, the lungs become stiff. It is important to know that this disease has a very slow rate of progression and it can be 20-30 years after exposure before any symptoms are noticed.

People who have been exposed to asbestos have an increased risk of getting cancer. One type of cancer in particular that is associated with asbestos exposure is mesothelioma. Mesothelioma is a rare cancer that occurs in the lining of the lungs (or the lining of other organs). Most cases of mesothelioma are linked to asbestosis.

Treatment for asbestosis is centered around treating symptoms as they occur. Because of the way this disease effects the lungs, good bronchial hygiene will be needed for anyone diagnosed with asbestosis. Anyone diagnosed with asbestosis should guard against lung infections and quit smoking as well. Other therapies that may be needed include supplemental oxygen, bronchodilators, steroids, chest percussion and postural drainage, antibiotics, and more. Your doctor will know which treatments are needed to take care of your particular symptoms.

問１　上記文章に於いて述べられている「asbestos が産業界で広く用いられていた理由」を列挙しなさい。

問２　上記文章では、asbestosis の治療法についてどのように述べられているか簡略に説明しなさい。

問３　上記文章述べられている、治療法以外の asbestosis の特徴を簡略に説明しなさい。

平成１８度大学院医学研究科（１回目）
外国語試験問題・解答用紙（外国人-英 語）

受験番号

1．Read the following document and answer the questions below!

In their well-known 1981 review on the causes of cancer in the United States, Doll and Peto estimated that around one-third of deaths from cancer could be attributed to diet and were therefore, in principle, preventable. Epidemiological evidence continues to support this general conclusion, but in contrast to cardiovascular disease, for which the link to nutrition is now generally recognized, the relationship between diet and cancer has made much less impact on both policy-makers and the general public. One reason for this is the absence of any single hypothesis on which to build a dietary strategy for cancer prevention; this itself is a reflection of the complexity of human diets and the obvious fact that cancer is not a single disease. Although there has been huge progress in our understanding of the molecular basis of many cancers in recent years, most of the new knowledge has been deployed in the search for new therapies rather than to understand the role of nutrition in their causation. Nevertheless, the mechanisms linking diet to cancer can be understood and exploited for prevention as much as for treatment, and there are sound scientific and strategic reasons to focus such research on carcinomas of alimentary tract.

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There are profound and fascinating biological problems to be solved in the search for the links between nutrition and cancer, and the human digestive tract is likely to prove an immensely rewarding focus for future research. Meanwhile, carcinomas of the gut are among the most common causes of morbidity and death from cancer in developed world. The role of weight, lack of exercise, and inadequate consumption of plant foods in their etiology needs to be more widely acknowledged and publicized.
(Form Ian T. Johnson, Cancers of the gut and Western ills, Editorial, Science 307, 2005)

Q1 Why is the relationship between diet and cancer gathering less attention? Raise two reasons mentioned in the document!

①

②

Q2 What are the independent risk factors for colorectal carcinoma? List four factors that are mentioned in the document!

① ②

③ ④

Q3 What makes the gut of Western peoples vulnerable to cancer? Raise two plausible mechanisms mentioned in the document!

①

②

Q4 What kinds of foods may reduce the risk for colorectal and esophageal cancers and what kinds of substances could involve in the mechanism of reduction?

Food ① ②

Substance ① ②

Q5 According to this document, what kinds of research are worthwhile? Propose two possible future studies to your mind!

①

②

平成１８度大学院医学研究科（１回目）
外国語試験問題・解答用紙（外国人-英 語）

受験番号

2. Read the following sentences and answer the questions.

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Q1. What are the reasons why asbestos was widely used in industries?

Q2. Explain the basic policy of the treatment for asbestosis within 30 words.

Q3. What are the characteristics of the medical history and symptoms of asbestosis?