

平成18年度大学院医学研究科（2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. 日本では“がん”による死亡がトップが続けています。下記の3問に答えなさい。
 - 1) トップになった原因はどのように考えますか。
 - 2) “がん”の原因について大きなウエートを占めているものを5つ掲げなさい。
 - 3) “がん”撲滅が国の医療費削減の原動力となります。あなたの“がん撲滅”のストラテジーを述べなさい。
2. 医学におけるES細胞(Embryonic Stem Cell)の利用や応用とその限界について述べよ。
3. ヒトゲノムの解明に伴い、医学生物学の様々な研究分野が活性化され、新しい試みも進められるようになった。また、このような流れの中で多くの倫理的な問題も話題となっている。

次のどちらかについて論じなさい。

 - 1) ヒトゲノム解明に伴って新しく始まった研究分野。
 - 2) ヒトゲノム解明に伴って起こった倫理的問題。
4. 医療における倫理について
 - 1) 患者側の立場から記せ
 - 2) 医療側の立場から記せ

1. 次の文章を読み、以下の設問に答えなさい。

Recent natural catastrophes have catapulted climate into the headlines again. As we witness the devastation wreaked by Hurricane Katrina, we are also reminded of numerous floods, droughts, and storms seen across the world in recent years. Are these linked to climate change? Questions about climate change, its global effects, and whether and how we can tackle this issue can no longer be avoided. Fortunately, at the G8 Summit 2005 in Scotland, the leaders of the world's major industrialized nations agreed on the need to reduce carbon emissions; and although there is argument about the mechanism and timing, the case for moving to a low-carbon economy is essentially won. But we are faced with a rapidly changing global economy. As developing countries industrialize — China and India in Asia and Brazil and Mexico in Latin America — greenhouse gas-related climate stresses are expected to increase. At the same time, the environments, economies, and societies of the least-developed countries, such as those in Africa, are the most vulnerable to climate change because their ability to adapt is poor. (A) Reaching international agreement on actions to minimize the dangerous impacts of climate change requires not only negotiations among developed nations but dialogue with the developing world. (B) How do we involve these developing countries in the ongoing climate change discussion, and (C) what information is needed to inform both developing-country policies and international decisions?

Local scientists could help formulate developing-country perspectives on climate change by conducting regional climate model experiments. These are essentially high-resolution weather forecast models that are used to calculate the environmental impacts of predicted changed weather patterns. (D) Only when there are estimates of the economic and social impacts of changes in flood and drought frequency can possible increases in global mean temperature be translated into estimates of changes in food security and livelihoods. Scientists in the developing countries concerned are best placed to undertake these detailed local analyses. This work would also provide incentives to governments to maintain the long-term climate data sets that are needed for verification of climate simulations at the present levels of greenhouse gas concentrations.

Technologies to run modeling experiments are now being made available to scientists in developing countries. But this initial technical capacity is of little use without the human scientific capacity to design and interpret the experiments. Creating this expertise is a long process that, for each individual, requires continual personal development in a vibrant research environment. There is strong argument for concentrating scientists at centers of excellence in the developing world. When Canoe Nobre directed the Brazilian Center for Weather Forecasting and Climate Research in the 1990s, he initiated collaborations with experts in the United Kingdom and United States, building a critical mass of local expertise. As a result, Brazil now includes climate change in its long-term planning for economic and land use development.

Early in 2005, speakers at a Royal Society meeting in London indicated that climate change is likely to increase the frequency of crop failure in Africa. Other research presented this month at the British Association's Festival of Science in Dublin warned that (E) an extra 50 million people will be at risk of hunger by 2050, and the majority of these will be in Africa. This alarming forecast begs for an Africa-based research program to investigate the possible impacts of regional climate change.

This need to strengthen climate change research in the developing world can be filled by establishing regional centers of excellence in developing countries and arranging training, staff exchanges, and shared research projects with developed nations. The Global Environment Facility, which provides grants to developing countries for projects that benefit the environment, has a mandate to address the issue of climate change. It is well placed to fund this initiative by either financing new institutions or strengthening and expanding existing organizations. The African Centre of Meteorological Application for Development, a pan-African center located in Niger, is one clear candidate for this role.

Developing countries need to become more engaged and empowered in the international negotiations on managing global climate change. This should be done quickly if we are to outrun the pace of that change.

(Modified from Chris Huntingford and John Gash: Editorial, Science 2005)

設問 1. (A) Reaching international agreement on actions to minimize the dangerous impacts of climate change requires not only negotiations among developed nations but dialogue with the developing world. と書かれているが、“the dialogue with the developing world” が必要な理由として著者らが述べている理由を2つ挙げよ（日本語で）。

(1)

(2)

設問 2. (B) How do we involve these developing countries in the ongoing climate change discussion? この疑問に対する答えを著者らはどのように述べているか（日本語で）。

設問 3. (C) What information is needed to inform both developing-country policies and international decisions? この疑問に対する答えを著者らはどのように述べているか（日本語で）。

設問 4. (D) Only when there are estimates of the economic and social impacts of changes in flood and drought frequency can possible increases in global mean temperature be translated into estimates of changes in food security and livelihoods. この文章を日本語に訳しなさい。

設問 5. (E) An extra 50 million people will be at risk of hunger by 2050, and the majority of these will be in Africa. この事態を避けるためにわれわれは何ができるか。あなた自身の考えを述べなさい。

2 下記の文章を読み、設問に答えなさい。

Toshiaki Yamashita cannot get up by himself, nor can he speak. He receives nourishment through a tube that goes directly into his stomach.

A ceremony for Coming-of-Age Day is to be held this week at Akebono Gakuen, a day-care center (a) severely disabled children in Tokyo's Setagaya Ward. The official holiday fell on Monday this year.

Yamashita is one of two young people at Akebono Gakuen who are reaching adulthood this year. Throughout his 20 years of life, Yamashita has demonstrated steady mental development. (b) anyone teaching him, he has learned to signal his wish to watch television by turning his eyes to the TV set and uttering a cry. When a video he is watching nears the end, he cries out to let his family know.

He flashes a smile (c) anyone he meets (d) the first time. He then nods his head and blinks several times at his parents. This is his way of saying, "See, I've greeted a stranger politely."

Physically, Yamashita has deteriorated over the years. He was able to wriggle around on his belly or back (e) a child, but he cannot do this anymore. His inability to clear phlegm (f) himself is becoming a real health concern.

His mother, Kinuko, said: "I am grateful (g) him (for) all these years he has been with me. It is not easy caring (h) him, but he is everything I live for."

Akiko Iwaki celebrated her coming of age at Akebono Gakuen six years ago. Her mother, Setsuko, showed me a photo taken (i) that occasion. Akiko looks a little shy in her red kimono.

"I told her she was a big girl now, and she smiled back," Setsuko recalled. "She really looked (j) an adult woman."

Since none of the Akebono Gakuen youngsters can make a speech on Coming-of-Age Day, talks are given instead by their parents. Every year, new accounts are added of what it means to live with disabled children for 20 years.

The Asahi Shimbun, Jan. 9 (IHT/Asahi: January 10,2006)

問1. 文中の (a) ~ (j) に最も適当な単語を答えなさい。

- | | | | |
|-------|-------|-------|-------|
| (a) | (b) | (c) | (d) |
| (e) | (f) | (g) | (h) |
| (i) | (j) | | |

問2 Toshiaki Yamashita(山下寿明さん)の身体的な健康状態はどのように変化していますか？具体的に述べられている部分を引用し、日本語で答えなさい。

問3 問題文に書かれている内容についての感想を英語 150 単語以内で述べなさい。

1. 次の文章を読み、以下の設問に答えなさい。

最近、新たな専門家像として「反省的实践家」が提示されている。これは専門家の専門性とは、活動過程における知と省察それ自体にあるとする考え方であり、思考と活動、理論と実践という二項対立を克服した専門家モデルである。反省的实践家の知を①捉える鍵は、「行為の中の知」「行為の中の省察」「状況との対話」という三つの概念である。

ショーンは、実践に②携わる専門家の知を日常活動の遂行に埋めこまれた、あるいは活動を行う対象の中に埋めこまれた無意識の知としてとらえ、マイケル・ポラニーが呼ぶところの暗黙知をひきつつ、(A)それを「行為の中の知」という概念で説明する。「行為の中の知」は行為とともに構成されるダイナミックなものであり、楽器の演奏に見られるような感触、探りを入れた時の③手触りといった身体的感覚をも含むものである。

活動の流れの中で、瞬時に生じては消えゆく④束の間の探求としての思考を、「行為の中の省察」と呼ぶ。これは、行為の後に立ち止まって振り返る思考「行為についての省察」ではない。行為の過程の中の思考にこそ、専門家としての実践的思考の特徴をみるのである。(B)これは必ずしも言語の媒介を必要とせず、行為者自身にとっては即興的で無自覚的なものである。

そして、この「行為の中の省察」の一つとして「状況との対話」が起こる。ある状況の中で関わる対象に対し、なんらかの⑤驚きや不確かさを感じることもある。そこでこの不確かさを解決すべく新たな状況を形づくりながら、また(C)それを評価する探求が行われる。状況に「ついでに」対話ではなく、まさに関わっている状況「と」対話することによって次の活動がつくられていくのである。

(Donald A. Schön. 専門家の知恵：反省的实践家は行為しながら考える。佐藤 学、秋田喜代美訳、ゆるみ出版、2003年より改変)

設問1. 漢字にふりがなをつけなさい。

①捉える	()える
②携わる	()わる
③手触り	()り
④束の間	()の間
⑤驚き	()き

設問2. 「(A) それ」とは何を指すか、5文字で書きなさい。

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設問3. 「(B) これ」とは何を指すか、7文字で書きなさい。

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設問4. 「(C) それ」とは何を指すか、5文字で書きなさい。

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設問5. 「状況との対話」と「状況についての対話」の違いを説明しなさい。

2 下記の文章を読み、設問に答えなさい。

喫煙は、癌や循環器疾患をはじめとする多くの疾病のリスクを上昇させます。そのため、世界中で様々なたばこ対策の取り組みが行われています。(A)、こうしたたばこ対策の有効性を実証的に調べた研究は、それほど多くありません。(B)、意外なことに、癌の中でも胃癌のリスクが、喫煙によって上がるのか否かについては、まだ結論が得られていません。そこで今回は、これらの問題を取り上げた2件の論文を紹介します。

たばこ対策の評価

第一の論文は、米国における州レベルでのたばこ対策の有効性を評価した、無作為割付のない地域介入研究です(J Natl Cancer Inst 95:1681-1691、2003年11月19日号)。1991年、米国のNCI(National Cancer Institute)は、米国51州(コロンビア特別行政区を含む)全部を対象にたばこ対策の効果を調べる、ASSIST(American Stop Smoking Intervention Study)と呼ばれる研究プロジェクトを立ち上げました。

51州のうち17州を介入群、34州を対照群に割り付けました。介入群に対して、州ごとに年間平均140万ドルの資金助成を行い、たばこ対策の強化を推進させました。この研究一つのために、総額で1億1400万ドルの助成が行われました。州レベルでのたばこ対策として、次の4点が強化されました。(職場や公共施設などの)無煙環境の拡大、たばこ広告の規制、たばこの販売制限、たばこ税の増税によるたばこ商品の値上げ。(C)この研究では、喫煙者個人に対する支援ではなく、州民全体を対象とする行政的・社会的施策を強化推進したわけです。

結果の評価として、介入前(1992-93年)と介入後(1998-99年)の時期で、18歳以上の成人の喫煙率を比べました。すると、対照群34州の喫煙率は、24.4%から22.3%へ、2.1%低下しました。一方、介入群17州の喫煙率は、25.2%から22.2%へ、3.0%低下しました。つまり、成人喫煙率は、対照群でも介入群でも低下していましたが、その低下の割合は、対照群よりも介入群のほうが1%ほど大きいという結果でした。

1%の喫煙率の差というのは、あまり大きな差ではないのは確かです。(D)、この1%の差を喫煙者の人数に換算すると、全米で約28万人に相当します。つまり、〈A〉たばこ対策が取られていれば、全米で28万人の喫煙者の減少が見込まれたこととなります。

米国全土を介入群と対照群の2グループに分け、莫大な資金助成によって長期の介入を行い、その効果を評価する。そうした壮大な社会的実験が、(行政機関ではなく)NCIという研究機関の主導によって行われていることに興味を覚えました。

喫煙と胃癌リスク

続く第二の論文は、喫煙と胃癌リスクとの関連を調べた、ヨーロッパの前向きコホート研究です(Int J Cancer 107:629-634、2003年11月20日号)。1991年から98年にかけて、ヨーロッパ10カ国の25-70歳の男女47万229人を対象に、喫煙や食生活の状態を調べました。その後平均5年間の追跡調査を行ったところ、274人が新たに胃癌に罹患しました。

その結果、昔から吸わない非喫煙者の胃癌発生率と比べて、調査の時点で喫煙していた現在喫煙者の発生率は1.79倍高くなりました。1日の喫煙本数が多いほど、また、喫煙を始めてからの年数が長いほど、リスクが高まる傾向がありました。(E)、調査の時点ですでにやめていた喫煙中断者の胃癌発生率は、非喫煙者の1.08倍で有意差はありませんでした。

喫煙と胃癌との関係については、これまでも相当数の研究が行われてきました。その多くでは、喫煙による胃癌リスクの上昇を示唆する結果でした。ただし、喫煙者は非喫煙者よりも(胃癌リスクを下げると思われる)野菜や果物の摂取量が少ない傾向が一般にあります。これまでの研究の多くでは、〈イ〉十分に考慮されてきませんでした。今回の論文は、ヨーロッパの大規模な集団を対象に、こうした問題を考慮した解析を行った点が特徴です。胃癌が、「たばこ関連癌」の一つとして国際的に認知される日も、遠くないかもしれません。

(引用：メディカル朝日2004年1月号 疫学者によるワールドレビュー 13 たばこのリスク)

平成18年度大学院医学研究科（2回目）

受験番号

外国語試験問題・解答用紙（外国人-日本語） 2/2

Q1 文中の(A)～(E)に最も適当と思われる単語を答えなさい。

- (A) (B) (C)
(D) (E)

Q2 下記の漢字の読みを「ひらがな」で書きなさい。

- | | |
|--------------|--------------|
| 1. 喫煙 () | 2. 循環器疾患 () |
| 3. 無作為割付 () | 4. 介入群 () |
| 5. 莫大 () | 6. 罹患 () |
| 7. 行政機関 () | 8. 発生率 () |
| 9. 解析 () | 10. 疫学者 () |

Q3 設問文中の<ア>、<イ>の部分を補い文章を完成させなさい。

<ア>

<イ>

Q4 設問文を読み、その感想を150字以内で書きなさい。

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

Recent natural catastrophes have catapulted climate into the headlines again. As we witness the devastation wreaked by Hurricane Katrina, we are also reminded of numerous floods, droughts, and storms seen across the world in recent years. Are these linked to climate change? Questions about climate change, its global effects, and whether and how we can tackle this issue can no longer be avoided. Fortunately, at the G8 Summit 2005 in Scotland, the leaders of the world's major industrialized nations agreed on the need to reduce carbon emissions; and although there is argument about the mechanism and timing, the case for moving to a low-carbon economy is essentially won. But we are faced with a rapidly changing global economy. As developing countries industrialize — China and India in Asia and Brazil and Mexico in Latin America — greenhouse gas-related climate stresses are expected to increase. At the same time, the environments, economies, and societies of the least-developed countries, such as those in Africa, are the most vulnerable to climate change because their ability to adapt is poor. (A) Reaching international agreement on actions to minimize the dangerous impacts of climate change requires not only negotiations among developed nations but dialogue with the developing world. (B) How do we involve these developing countries in the ongoing climate change discussion, and (C) what information is needed to inform both developing-country policies and international decisions?

Local scientists could help formulate developing-country perspectives on climate change by conducting regional climate model experiments. These are essentially high-resolution weather forecast models that are used to calculate the environmental impacts of predicted changed weather patterns. (D) Only when there are estimates of the economic and social impacts of changes in flood and drought frequency can possible increases in global mean temperature be translated into estimates of changes in food security and livelihoods. Scientists in the developing countries concerned are best placed to undertake these detailed local analyses. This work would also provide incentives to governments to maintain the long-term climate data sets that are needed for verification of climate simulations at the present levels of greenhouse gas concentrations.

Technologies to run modeling experiments are now being made available to scientists in developing countries. But this initial technical capacity is of little use without the human scientific capacity to design and interpret the experiments. Creating this expertise is a long process that, for each individual, requires continual personal development in a vibrant research environment. There is strong argument for concentrating scientists at centers of excellence in the developing world. When Canoe Nobre directed the Brazilian Center for Weather Forecasting and Climate Research in the 1990s, he initiated collaborations with experts in the United Kingdom and United States, building a critical mass of local expertise. As a result, Brazil now includes climate change in its long-term planning for economic and land use development.

Early in 2005, speakers at a Royal Society meeting in London indicated that climate change is likely to increase the frequency of crop failure in Africa. Other research presented this month at the British Association's Festival of Science in Dublin warned that (E) an extra 50 million people will be at risk of hunger by 2050, and the majority of these will be in Africa. This alarming forecast begs for an Africa-based research program to investigate the possible impacts of regional climate change.

This need to strengthen climate change research in the developing world can be filled by establishing regional centers of excellence in developing countries and arranging training, staff exchanges, and shared research projects with developed nations. The Global Environment Facility, which provides grants to developing countries for projects that benefit the environment, has a mandate to address the issue of climate change. It is well placed to fund this initiative by either financing new institutions or strengthening and expanding existing organizations. The African Centre of Meteorological Application for Development, a pan-African center located in Niger, is one clear candidate for this role.

Developing countries need to become more engaged and empowered in the international negotiations on managing global climate change. This should be done quickly if we are to outrun the pace of that change.

(Modified from Chris Huntingford and John Gash: Editorial, Science 2005)

Q1. The authors write (A) Reaching international agreement on actions to minimize the dangerous impacts of climate change requires not only negotiations among developed nations but dialogue with the developing world. Why is the dialogue with the developing world required for reaching the international agreement? Raise two reasons that the authors describe!

(1)

(2)

Q2. (B) How do we involve these developing countries in the ongoing climate change discussion? What is the authors' answer to this question?

Q3. (C) What information is needed to inform both developing-country policies and international decisions? What is the authors' answer to this question?

Q4. (D) Only when there are estimates of the economic and social impacts of changes in flood and drought frequency can possible increases in global mean temperature be translated into estimates of changes in food security and livelihoods. Rephrase this inverted sentence in a normal form!

Q5. (E) An extra 50 million people will be at risk of hunger by 2050, and the majority of these will be in Africa. To avoid this scenario, what can we do? Describe your own idea!

2 Read the following sentences and answer the questions below either in English or Japanese.

Toshiaki Yamashita cannot get up by himself, nor can he speak. He receives nourishment through a tube that goes directly into his stomach.

A ceremony for Coming-of-Age Day is to be held this week at Akebono Gakuen, a day-care center (a) severely disabled children in Tokyo's Setagaya Ward. The official holiday fell on Monday this year.

Yamashita is one of two young people at Akebono Gakuen who are reaching adulthood this year. Throughout his 20 years of life, Yamashita has demonstrated steady mental development. (b) anyone teaching him, he has learned to signal his wish to watch television by turning his eyes to the TV set and uttering a cry. When a video he is watching nears the end, he cries out to let his family know.

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His mother, Kinuko, said: "I am grateful (g) him (for) all these years he has been with me. It is not easy caring (h) him, but he is everything I live for."

Akiko Iwaki celebrated her coming of age at Akebono Gakuen six years ago. Her mother, Setsuko, showed me a photo taken (i) that occasion. Akiko looks a little shy in her red kimono.

"I told her she was a big girl now, and she smiled back," Setsuko recalled. "She really looked (j) an adult woman."

Since none of the Akebono Gakuen youngsters can make a speech on Coming-of-Age Day, talks are given instead by their parents. Every year, new accounts are added of what it means to live with disabled children for 20 years.

The Asahi Shimbun, Jan. 9 (IHT/Asahi: January 10,2006)

Q1. Answer the most appropriate word for the parentheses in the question sentences.

- | | | | |
|-------|-------|-------|-------|
| (a) | (b) | (c) | (d) |
| (e) | (f) | (g) | (h) |
| (i) | (j) | | |

Q2. What kinds of physical movements have become difficult for Mr. Yamashita?

Q3. Write down your impressions after reading the article within 150 English words.