★★★ ＜第33回知的財産翻訳検定試験【第16回英文和訳】＞ ★★★
≪１級課題 -バイオテクノロジー-≫

【解答にあたっての注意】

１．問題の指示により和訳してください。

２．解答語数に特に制限はありません。適切な箇所で改行してください。

３．課題文に段落番号がある場合、これを訳文に記載してください。

４．課題は４題あります。それぞれの課題の指示に従い、４題すべて解答してください。

問１． ***(START)***から***(END)***までを和訳してください。

(START)

In particular, the adaptive human immune system is comprised of B-cells and T-cells. During T-cell and B-cell development these cells express unique heterodimeric receptors that are used for recognition of pathogens. Each of these receptor chains is generated by a somatic rearrangement process that joins different segments of the TCR and BCR genes and creates a novel gene. This joining process is imprecise with insertion of nontemplated nucleotides (N nucleotides) in the junction site, as well as 3′- and 5′-nucleotide deletion from the germline genes participating in the rearrangement. This region of random nucleotide insertion or deletion referred to as the third complementarity-determining region (CDR3). The resulting CDR3 have a unique nucleotide sequence that is specific to that particular B or T-cell and all its progeny. Hence, the clonotypic nature of the receptors. The CDR3 is the portion of these receptors that is most involved in interactions with intact soluble antigens (B-cells) or intracellular processed antigens presented as immunogenic peptides loaded in MHC molecules (T-cells). Given the ability to generate large amounts of data, what is needed in the art are improved systems and methods for analyzing such data.

(END)

＊注釈：TCR は T-cell receptor の略である。BCR は B-cell receptor の略である。MHC は major histocompatibility complex の略である。

問２．***(START)***から***(END)***までを和訳してください。
(START)
In some embodiments, a set or sets of more than one unique non-random all DNA first primer is used such that multiple regions of the target nucleic acid are amplified. This is often referred to in the art as multiplex amplification because multiple different amplification products are produced in a single reaction. The set or sets of target-specific primers of the invention may comprise a set of related sequences for hybridizing to a set of related genes, introns, exons, splice variants and the like. For example, the annealing sequences may hybridize to nucleic acid encoding serine/threonine kinases or their complement. In some cases, the annealing sequences may be randomized at certain positions and specific at other positions, such that they may hybridize to more than one member of a set of homologous target nucleic acids.
The all-DNA first primer may be annealed to a target nucleic acid and extended using a polymerase to generate a first primer extension product. In some cases, the polymerase may comprise no, or substantially no, strand displacement activity, for example to avoid whole genome or transcriptome amplification. In other cases, a polymerase may be chosen that possesses a substantial amount of strand displacement activity, for example to enable whole genome or transcriptome amplification.
(END)

問３．以下は、ある特許明細書の実施例８の最初の５段落になります。
(START)から***(END)***までの部分を日本語に訳してください。

Example 8: Discovery and Characterization of Anti-EpCAM Aptamers
(START)In this Example, an aptamer to EpCAM identified using the technique in the Example above is characterized. After selection for a pool of EpCAM binding aptamers as described above, the aptamer library was sequenced using the Ion Torrent standard protocol (Life Technologies, Carlsbad, Calif.). Lead candidates were selected as those

having (a) high abundant motifs across all read sequences with full expected length product and (b) strong secondary structure (FIG. 7B).

Aptamers were selected for EPCAM protein conjugated to MicroPlex beads in competition with SSX4, SSX2, PBP, KLK2, and SPDEF recombinant proteins. A portion of the aptamers was selected in initial rounds against EpCAM that was attached to an Fc tag, and after round 8 the selection was switched to EPCAM with a Histidine tag. Another portion of the aptamers was selected in initial rounds against EpCAM that was attached to a Histidine tag, and after round 8 the selection was switched to EPCAM with an Fc tag. Methods of using Fc and histidine tags for protein purification and capture are known to those of skill in the art. ***(END)***

Aptamer Characterization

CAR003 is an aptamer candidate identified using the above methodology. As an RNA aptamer, CAR003 with alternate tail sequence has the following RNA sequence (SEQ ID NO. 5)

5′-auccagagug acgcagcagu cuuuucugau ggacacgugg uggucuagua ucacuaagcc accgugucca-3′

CAR003 was further characterized. EpCAM aptamer CAR003 is modified as desired by attachment of a biotin moiety on the 5′-end or 3′-end. The biotin can be used to bind the aptamer using a streptavidin-biotin system, e.g., for labeling, capture and/or anchoring. FIG. 7B illustrates the optimal secondary structure of CAR003 with a minimum free energy (ΔG) of −30.00 kcal/mol. For purposes of illustration, the aptamer is shown as an RNA aptamer (SEQ ID NO. 5) corresponding to the CAR003 DNA sequence (SEQ ID NO. 4).

問４．以下は、ある登録された特許の請求項１になります。全体を日本語に訳してください。

1. A local analgesia and pain relief treatment process for stimulating nerves to deactivate TRPV1 or TRPV2 positive nerve cells, comprising steps of:

A) generating pulses of infrared light with a diode laser,

B) directing said pulses to illuminate a target skin region containing at least one or more TRPV1 or TRPV2 positive nerve cells, to deliver laser energy to the target skin region producing measurable temperature increases in the skin surface temperature in response to each pulse defining for each pulse a maximum skin surface temperature,

C) monitoring the skin surface temperature of the target skin region with an infrared temperature sensor, and

D) controlling said diode laser to produce multiple laser pulses with duration of between 50 and 200 ms and repetition rates between 0.1 and 4 pulses per second and with pulse energies chosen to apply sufficient heat energy in the target skin region to maintain the maximum surface temperature of the target skin region at approximately 70 ^{o}C to 75 ^{o}C for at least nine seconds, producing controlled pain in the target skin region to thereby deactivate the TRPV1 or TRPV2 positive nerve cells to provide local analgesia or pain relief to the illuminated skin region.