★★★ ＜第35回知的財産翻訳検定試験【第17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．以下の文章を日本語に翻訳して下さい。

The very low levels of endogenous DNA remaining in most ancient specimens has precluded the shotgun sequencing of many interesting samples due to cost. For example, ancient DNA (aDNA) libraries derived from bones and teeth often contain <1% endogenous DNA, meaning that the majority of sequencing capacity is taken up by environmental DNA. Thus much of the cost associated with sequencing low endogenous DNA sample provides no human genome data. As a result, many ancient DNA samples are considered unsuitable for sequencing because the data yield is low compared to the resources required. Thus there is a need in the art to increase endogenous DNA yield in low endogenous DNA samples and specifically to increase the percent of endogenous DNA being sequenced when sequencing low endogenous DNA samples.
Recent developments in DNA extraction have provided lower cost next-generation sequencing techniques to the point that the field of paleogenetics has transitioned from focusing on PCR-amplified mitochondrial DNA and Y-chromosomal markers to shotgun sequencing of the whole genome. However, shotgun sequencing can yield less than desirable results when sequencing low endogenous DNA samples due to the low percentage of endogenous DNA in the overall sample material.

問２. ***(START)***から***(END)***まで２か所を日本語に翻訳して下さい。
(START)
“Alternative scaffold” refers to a single chain protein framework that contains a structured core associated with variable domains of high conformational tolerance. The variable domains tolerate variation to be introduced without compromising scaffold integrity, and hence the variable domains can be engineered and selected for binding to a specific antigen.
(END)

"Antibody-dependent cellular cytotoxicity", "antibody-dependent cell-mediated cytotoxicity" or “ADCC" refers to the mechanism of inducing cell death that depends upon the interaction of antibody-coated target cells with effector cells possessing lytic activity, such as natural killer cells (NK), monocytes, macrophages and neutrophils via Fc gamma receptors (Fc ^R) expressed on effector cells.

(START)
"Antibody-dependent cellular phagocytosis" or "ADCP" refers to the mechanism of elimination of antibody-coated target cells by internalization by phagocytic cells, such as macrophages or dendritic cells.
“Antigen” refers to any molecule (e.g., protein, peptide, polysaccharide, glycoprotein, glycolipid, nucleic acid, portions thereof, or combinations thereof) capable of being bound by an antigen binding domain or a T-cell receptor that is capable of mediating an immune response.
Exemplary immune responses include antibody production and activation of immune cells, such as T cells, B cells or NK cells. Antigens may be expressed by genes, synthetized, or purified from biological samples such as a tissue sample, a tumor sample, a cell or a fluid with other biological components, organisms, subunits of proteins/antigens, killed or inactivated whole cells or lysates.
(END)

問３．　以下は、ある特許明細書の実施例の一部です。次項の図４を参照しながら***(START)***から***(END)***までの部分を日本語に翻訳して下さい。

Brightfleld microscopy: BLI and ST were cultured as described above $1x10^6$ CFU BLI or ST were resuspended in PBS and incubated with or without 50 µg Sal4 for 30 min and then washed twice with PBS. Cells were either concentrated and smeared on a glass slide, or incubated for 30 min with at a 1:1 mix of BLI:ST, then concentrated and smeared. ... Finally, smears were saturated with safranin for 30 s, rinsed, and then viewed under 1000x total magnification with oil using brightfleld microscopy.

(START)
As illustrated in FIG. 4, different adherence properties can be achieved by growing or activating different bacteria with different HMO molecules or glucose. *B. Longum* and *B. infantis* to closely related species may need to be treated differently to increase adherence and effectiveness for persistence or colonization in establishing or re-establishing a niche in a microbial community. In FIG. 4, BLI shows increased adherence to the co-culture with the addition of SIgA when first grown on glucose (3.5e6 CFU increased adherence, p=0.0168)(A) or LNnT (7.5e5 CFU, p=0.0164) (B), and BLL showed increased adherence to colonocytes with SIgA association only when first grown on 2′FL (4e3 increase, p=0.024) (C). A regression plot of lactose-grown LR (D) had increased adherent bacteria with increased association with SIgA (slope =37.7). BLI (E) showed similar correlation when grown on lactose (slope=4.6e3). Slope units are adherent CFU per % population associated with SIgA, and p value on regression plots indicate if the slope is not zero.
(END)

<注釈>
*HMO は human milk oligosaccharide の略である。
*SIgA は secretory immunoglobulin A の略である。
*BLI は Bifidobacterium longum subsp. infantis の略である。
*LNnT は lacto-N-neotetraose の略である。
※答案ではこれらの略語をそのまま使用してよい。

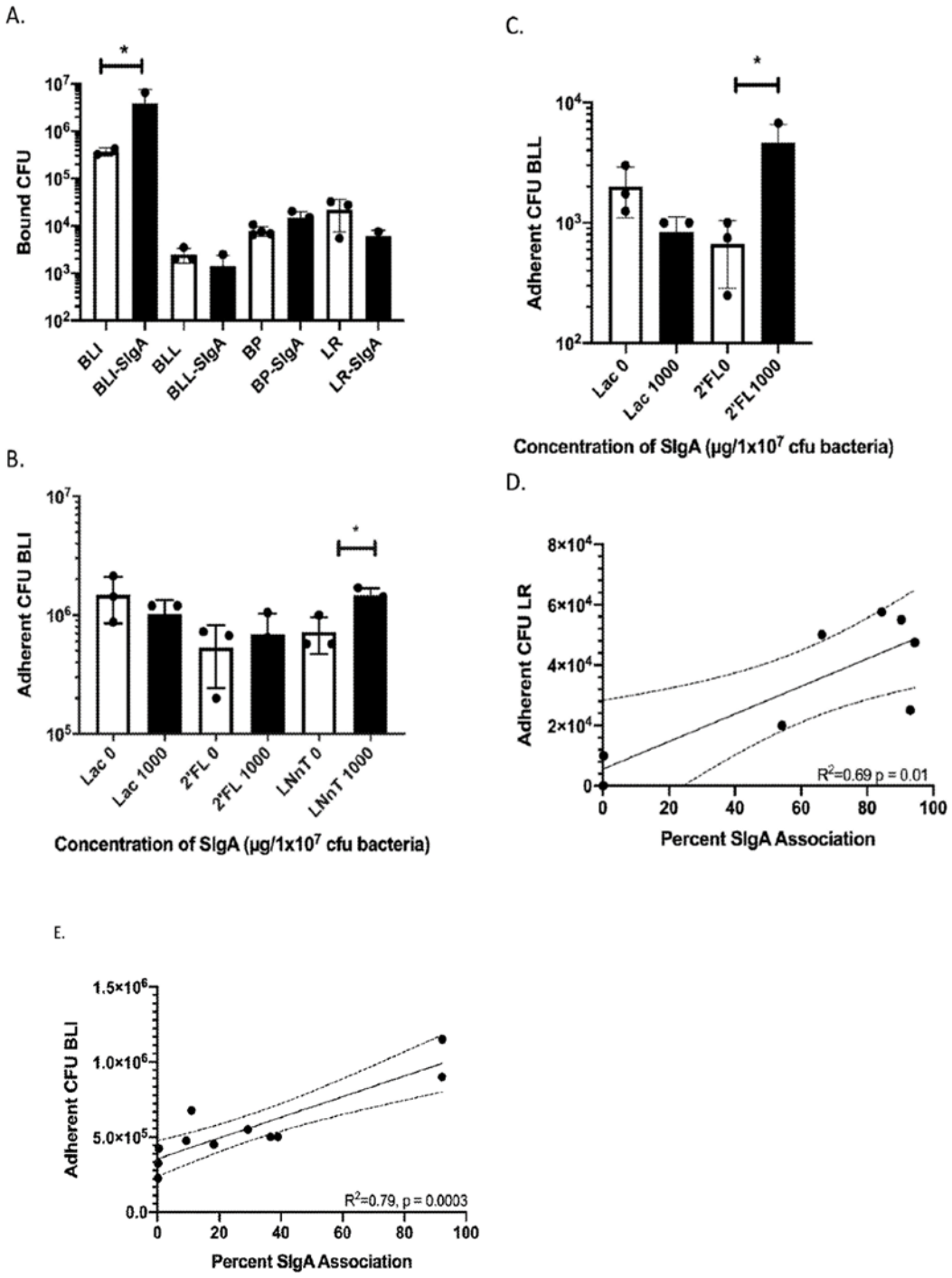
A.
Bound CFU
BLI
BLI-SIgA
BLL
BLL-SIgA
BP
BP-SIgA
LR
LR-SIgA
B.
Adherent CFU BLI
Lac 0
Lac 1000
2'FL 0
2'FL 1000
LNnT 0
LNnT 1000
Concentration of SIgA (µg/1x10^7 cfu bacteria)
C.
Adherent CFU BLL
Lac 0
Lac 1000
2'FL0
2'FL1000
Concentration of SIgA (µg/1x10^7 cfu bacteria)
D.
Adherent CFU LR
R²=0.69 p = 0.01
Percent SIgA Association
E.
Adherent CFU BLI
R²=0.79, p = 0.0003
Percent SIgA Association

FIGURE 4

問４．以下は、ある特許出願の請求の範囲の一部です。請求項１、２及び５を日本語に翻訳して下さい。

1. A method for analyzing genetic information, the method comprising:
obtaining a genetic sequence from an organism; and
aligning, using a processor coupled to a tangible memory subsystem, the genetic sequence to one or more of a plurality of known sequences from a plurality of different species stored as a reference graph comprising objects in the tangible memory subsystem, wherein matching homologous segments of the known sequences are each represented by a single object in the reference graph, and further wherein each of the plurality of different species has at least a majority of least one chromosome represented by a path through the reference graph.

2. The method of claim 1, further comprising providing a report that includes a description of an aspect of the organism based on a result of the aligning step.

5. The method of claim 2, wherein the aspect of the organism included in the report comprises an identity of the organism.