

試験時間 60分

## 【注意事項】

1. 試験監督による解答始めの指示があるまで、この問題冊子の中を見てはいけません。
2. 試験時間は60分です。
3. 解答は解答用紙に記入しなさい。
4. 試験監督の指示により、問題冊子と解答用紙に受験番号及び氏名を記入しなさい。
5. 試験中に問題冊子の印刷不鮮明、ページの落丁・乱丁及び解答用紙の汚れ等に気づいた場合は、手を高く挙げて試験監督に知らせなさい。
6. 試験終了後、問題冊子と解答用紙はともに机上に置いておくこと。持ち帰ってはいけません。

下記の英文は、科学誌に掲載された記事(“Scientists are using AI to dream up revolutionary new proteins”)の冒頭である。この英文を読んで問1、2に答えなさい。

Huge advances in artificial intelligence mean researchers can design completely original molecules in seconds instead of months.

In June, South Korean regulators authorized the first-ever medicine, a COVID-19 vaccine, to be made from a novel protein designed by humans. The vaccine is based on a spherical protein ‘nanoparticle’ that was created by researchers nearly a decade ago, through a labour-intensive trial-and-error-process.

Now, thanks to gargantuan advances in artificial intelligence (AI), a team led by David Baker, a biochemist at the University of Washington in Seattle, reports in *Science* that it can design such molecules in seconds instead of months.

Such efforts are a part of a scientific sea change, as AI tools such as DeepMind’s protein-structure-prediction software AlphaFold are embraced by life scientists. In July, DeepMind revealed that the latest version of AlphaFold had predicted structures for every protein known to science. And recent months have seen an explosive growth in AI tools — some based on

AlphaFold — that can quickly dream up completely new proteins. Previously, this had been a painstaking pursuit with high failure rates.

“Since AlphaFold, there’s been a shift in the way we work with protein design,” says Noelia Ferruz, a computational biologist at the University of Girona, Spain. “We are witnessing very exciting times.”

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注) regulator 規制当局者 / first-ever medicine 初めての薬 / COVID-19 vaccine COVID-19用のワクチン / labour-intensive 大きな労働力を要する / gargantuan 巨大な / Science 著名な科学誌 / sea change 大転換 / DeepMind ディープマインド社 / AlphaFold 人工知能を利用してタンパク質の立体構造を決めるソフトウェア / painstaking 骨の折れる

問1 上記の記事を250文字以内の日本語で要約しなさい。

問2 AIを利用することにより、生命科学研究が飛躍的に進むと期待されています。このような研究をさらに進めるためには何が必要だと思いますか。250文字以内の日本語で書きなさい。