

## ANTICIPATED ACQUISITION BY ILLUMINA, INC. OF PACIFIC BIOSCIENCES OF CALIFORNIA, INC.

### Summary of customer calls

1. The Competition and Markets Authority ('**CMA**') is investigating the anticipated acquisition by Illumina, Inc. ('**Illumina**') of Pacific Biosciences of California, Inc. ('**PacBio**') (the '**Proposed Merger**') under the merger control provisions of the Enterprise Act 2002.
2. In relation to this Proposed Merger, the CMA held telephone calls with twenty of Illumina or PacBio (together, '**the Parties**') customers during July and August 2019. The purpose of the calls was to enable the CMA to understand the market for DNA sequencing systems. These customers were from a range of different institutions (such as research institutes, academic institutions and pharmaceutical companies), and use sequencing systems for a number of different applications. This document provides an overview of comments made by customers.

### *How competition works*

3. Some customers said that they buy DNA sequencing instruments for a particular purpose. However, a greater number of customers said that DNA sequencing instruments are purchased on the basis of most user's needs, or for programmes of work, rather than for specific projects. Some customers said that, in some cases, there will be a trade-off between short and long read instruments. For example, if a customer is looking for unknown structural variation, they may trade-off the likelihood of picking up that structural variation with cost or throughput. However, other customers reported that they would always use an Illumina system first, primarily for cost reasons, and only use a long read system if the Illumina system could not provide the answer.

### *Switching*

4. Customers said that switching costs are significant, as a lot of infrastructure needs to be built around instruments, to prepare samples for

sequencing and handle the data generated. Consequently, switching instruments would involve considerable time and expense.

### ***Linked long read***

5. A few customers said that there are cases where they would use linked long read over native long read, or where they plan to do so in future, but, in general, customers said that linked long read is of lower quality to native long read. In addition, some customers said that linked long read may only currently be suitable for sequencing certain types of genomes, and some customers said that it is not necessarily cheaper than native long read, as the cost of native long read has declined in recent years.

### ***Performance of Sequel II***

6. All customers the CMA has spoken to who have had access to Sequel II have said its performance has met or exceeded their expectations.

### ***Competition between short and long read***

7. While some customers said that they only consider short read or long read when purchasing instruments or deciding which instrument to use for a given project, roughly half of the customers we spoke to said that short and long read are substitutable for at least some applications/use cases (often with trade-offs, for example around cost or throughput). Furthermore, a few customers noted areas where long read has already displaced short read in their work, for example:
  - (i) De novo assemblies can now be done using long read rather than a hybrid approach, and;
  - (ii) Some resequencing is now done using a hybrid approach rather than using only short read.

### ***Future role of long read***

8. Almost all customers said that long read technologies will be more prevalent in the future, and a large proportion of these said that this will be at the expense of short read technologies. This increasing prevalence of long read technologies appears to be true for a number of different applications. Customers also mentioned factors that could possibly limit the development of long read technologies. Only one customer said that

long read technologies will continue to be only used for niche applications in the future.

### ***Competitors***

9. Customers often mentioned ONT as a competitor to PacBio, and made comments suggesting that the choice between PacBio and ONT is closely balanced. ONT was mainly mentioned by customers in relation to competition with PacBio's systems but was also on occasion mentioned as a threat to Illumina.
10. Customers also often mentioned Beijing Genomics Institute as a competitor or potential competitor to Illumina, though many highlighted potential limitations to its growth, such as Intellectual Property disputes with Illumina.
11. Thermo Fisher and QIAGEN were mentioned less frequently by customers as competitors with the Parties and were sometimes described as niche.

### ***Bundling***

12. Some customers said that Illumina had previously engaged in bundling strategies and discounting models or gave examples. However, several customers said that while a bundle of short and long read instruments would be attractive to them, the more important factor for them was having the choice of preferred technology available. Customers therefore generally noted that any discount for any bundled offer would have to be significant for it to have an impact.

### ***Views on the merger***

13. Most customers said that they felt that PacBio's offering would improve under Illumina, either due to concerns about PacBio's current financial situation or due to Illumina's track record of acquiring and improving technology. Some customers said that ONT may find it more difficult to compete post-merger, and some customers said that Illumina could 'slow down' development of PacBio's technology, fail to develop PacBio's technology fully, or be slow to release new technology. Some customers had mixed views as they felt that there may be a loss of competition, but that Illumina may be well-placed to develop PacBio's technology.