

PROBE LIBRARY CONSTRUCTION

GOVERNMENT FUNDING

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in the invention.

FIELD

The present invention generally relates to systems and methods for producing
nucleic acids.

BACKGROUND

Custom-synthesized, oligonucleotide probes have emerged as a powerful tool for
the identification and isolation of specific nucleic acid targets via hybridization.
Applications for such hybridization probe sets range from next generation sequencing—
where such probes are used to enrich or deplete samples for specific nucleic acid
15 targets—to imaging of fixed samples—where fluorescently labeled hybridization probes
allow the direct measurement of the number and spatial organization of the targeted
species.

There are now a wide range of commercial sources for such probes. Such probes are
often made by synthesizing each oligonucleotide member using standard solid phase
20 synthesis methods. Unfortunately, this limits both the number of probes within a single
set and the number of unique sets, due to the requirement that each oligonucleotide
member must be individually and separately synthesized.

Recent advances in array-based synthesis of oligonucleotides by several companies
have reduced the cost of producing oligonucleotides. However, these approaches also
25 result in 1000-fold less oligonucleotide probes than is required for a single hybridization
reaction, thus limiting their usefulness. Accordingly, improvements in oligonucleotide
production are needed.

SUMMARY

The present invention generally relates to systems and methods for producing
30 nucleic acids. The subject matter of the present invention involves, in some cases,
interrelated products, alternative solutions to a particular problem, and/or a plurality of
different uses of one or more systems and/or articles.

In one aspect, the present invention is generally directed to a method. The method, in accordance with one set of embodiments, includes amplifying at least some of a plurality of oligonucleotides using real-time PCR to produce amplified oligonucleotides, transcribing *in vitro* at least some of the amplified oligonucleotides to
5 produce RNA, reverse transcribing the RNA to produce transcribed DNA, and selectively degrading the RNA relative to the transcribed DNA.

In another set of embodiments, the method includes simultaneously amplifying at least some of a plurality of oligonucleotides in a common solution using PCR to produce amplified oligonucleotides, transcribing *in vitro* at least some of the amplified
10 oligonucleotides to produce RNA, reverse transcribing the RNA to produce transcribed DNA, and selectively degrading the RNA relative to the transcribed DNA.

In yet another set of embodiments, the method includes acts of providing a plurality of oligonucleotides having an average length of between 10 and 200 nucleotides and including at least 100 unique oligonucleotide sequences, producing amplified
15 oligonucleotides comprising one of the plurality of oligonucleotides and a promoter using real-time PCR, transcribing at least some of the amplified oligonucleotides to produce RNA using an RNA polymerase, reverse transcribing the RNA to produce DNA using a primer comprising a signaling entity, and chemically reducing the RNA.

The method, in still another set of embodiments, includes acts of providing a
20 plurality of oligonucleotides having an average length of between 10 and 200 nucleotides and including at least 100 unique oligonucleotide sequences, producing amplified oligonucleotides in a common solution comprising one of the plurality of oligonucleotides and a promoter using PCR, transcribing at least some of the amplified oligonucleotides to produce RNA using an RNA polymerase, reverse transcribing the
25 RNA to produce DNA using a primer comprising a signaling entity, and chemically reducing the RNA.

In another aspect, the present invention encompasses methods of making one or more of the embodiments described herein, such as oligonucleotides, including but not limited to modified oligonucleotides such as those described herein (e.g., labeled with a
30 signaling entity). In still another aspect, the present invention encompasses methods of using one or more of the embodiments described herein, for example, such as

oligonucleotides, including but not limited to modified oligonucleotides such as those described herein (e.g., labeled with a signaling entity).

Other advantages and novel features of the present invention will become apparent from the following detailed description of various non-limiting embodiments of the invention when considered in conjunction with the accompanying figures. In cases
5 where the present specification and a document incorporated by reference include conflicting and/or inconsistent disclosure, the present specification shall control. If two or more documents incorporated by reference include conflicting and/or inconsistent disclosure with respect to each other, then the document having the later effective date
10 shall control.

BRIEF DESCRIPTION OF THE DRAWINGS

Non-limiting embodiments of the present invention will be described by way of example with reference to the accompanying figures, which are schematic and are not intended to be drawn to scale. In the figures, each identical or nearly identical
15 component illustrated is typically represented by a single numeral. For purposes of clarity, not every component is labeled in every figure, nor is every component of each embodiment of the invention shown where illustration is not necessary to allow those of ordinary skill in the art to understand the invention. In the figures:

Fig. 1 illustrate the production of DNA probes, in accordance with one set of
20 embodiments; and

Fig. 2 illustrates a template molecule produced in accordance with one embodiment of the invention;

Fig. 3 lists optimized primers from the *E. coli* transcriptome, in another embodiment of the invention; and

25 Fig. 4 shows various probes in accordance with yet another embodiment of the invention.

DETAILED DESCRIPTION

The present invention generally relates to systems and methods for producing nucleic acids. In some aspects, relatively large quantities of oligonucleotides can be
30 produced, and in some cases, the oligonucleotides may have a variety of different sequences and/or lengths. For instance, a relatively small quantity of oligonucleotides may be amplified to produce a large amount of nucleotides. In one set of embodiments,

oligonucleotides may be amplified using PCR, then transcribed to produce RNA. The RNA may then be reverse transcribed to produce DNA, and optionally, the RNA may be selectively degraded or removed, relative to the DNA. In one set of embodiments, the oligonucleotides may be chemically modified. These modifications may include, but are not limited, to the adding of fluorescent dyes or other signaling entities.

U.S. Provisional Patent Application Serial No. 62/031,062, filed July 30, 2014, entitled "Systems and Methods for Determining Nucleic Acids," by Zhuang, *et al.* is incorporated herein by reference in its entirety. A copy is provided herein as Appendix A.

In one aspect, the present invention is generally directed to *in vitro* methods of amplifying a plurality of oligonucleotides. In some cases, relatively large numbers of unique oligonucleotides within a plurality of oligonucleotides may be amplified. For instance, a plurality of oligonucleotides to be amplified may include 10, 100, 1,000, or more unique sequences.

In addition, in some embodiments, the oligonucleotides may be amplified without selective amplification of some oligonucleotides over others, e.g., due to competitive effects. Although some drift may occur, it is desired that the relative ratios of the oligonucleotides within a plurality of oligonucleotides stay substantially the same after amplification, at least for some applications. However, in many amplification techniques, due to differences in binding or affinity of different oligonucleotides, some oligonucleotides may be amplified to a greater degree than others, and thus, specific techniques need to be utilized to reduce or eliminate this problem, for example, by separately amplifying each of the oligonucleotides before combining them together to form the plurality of oligonucleotides. In contrast, as is discussed herein, in certain embodiments, a plurality of oligonucleotides can be amplified without causing substantial alterations or changes in the ratios of the oligonucleotides, without requiring separation of the oligonucleotides, separate growth of the oligonucleotides, or other cumbersome techniques.

Referring now to Fig. 1, one example of an embodiment of the invention is now illustrated. In this figure, a plurality of oligonucleotides 10 is provided. This may include 1, 10, 100, 1,000, 10,000, 100,000, or any other suitable number of unique oligonucleotide sequences. Of course, more than one copy of any particular unique

oligonucleotide may also be present as well within the plurality of oligonucleotides. The unique oligonucleotides may have the same or different lengths. In some cases, the plurality of oligonucleotides have an overall average length (number average or arithmetic mean) of less than 200 nt (nucleotides), although longer average lengths are also possible in some embodiments.

The plurality of oligonucleotides may initially be amplified, using PCR (polymerase chain reaction) or another suitable oligonucleotide amplification method, to produce a plurality of amplified oligonucleotides. In some cases, PCR may be used to generate thousands to millions of copies per oligonucleotide within the plurality of oligonucleotides. In some embodiments, the plurality of oligonucleotides may be amplified while still contained in a common solution, for instance, without requiring separation of the oligonucleotides prior to amplification, e.g., as is required in certain techniques such as emulsion PCR.

Within a common solution, while it is possible that different oligonucleotides of the plurality of oligonucleotides may be amplified at different rates (e.g., leading to non-uniform amplification of the plurality of oligonucleotides, and the potential loss of complexity or species within the plurality of oligonucleotides during amplification), in certain embodiments, this can be reduced or minimized through the use of various oligonucleotide structures and/or through the use of certain types of PCR techniques, as is discussed herein.

As an example, in one set of embodiments, the plurality of oligonucleotides may all be chosen to minimize competitive effects, e.g., as caused by differences in binding or affinity of the oligonucleotides to reagents within the common solution or the preferential enzymatic amplification of some sequence features. For example, in one set of embodiments, the plurality of oligonucleotides may be chosen to have similar lengths and/or sequences.

As is shown in Fig. 1, the plurality of oligonucleotides may each contain one or more index regions on one or both ends of the oligonucleotides that can be recognized by certain reagents. In some cases, the oligonucleotides of the plurality of oligonucleotides may have one or more index regions to which suitable primers can interact with in order to allow PCR or other amplification to occur. In some

embodiments, these index regions can be used to selectively produce DNA probes only from subset of the plurality of oligonucleotides 10.

These index regions can also be used in some instances to add additional sequences to that of the plurality of oligonucleotides, e.g., as is shown in Fig. 1, oligonucleotide 11 may include an index region 15, to which a sequence 17 containing a T7 promoter can bind and be introduced into the amplified oligonucleotides (e.g., as region 23). Various sequences may thus be applied to the plurality of oligonucleotides that include a portion able to bind an index region. In some cases, if substantially all of the plurality of oligonucleotides contain similar or identical index regions, the relative affinities or binding to the index regions of the oligonucleotides by enzymes such as polymerases may be substantially similar or identical, which may allow for relatively uniform amplification to occur. The plurality of oligonucleotides may also contain other different regions that can be varied to produce a plurality of unique oligonucleotides, e.g., region 12. These regions can vary in terms of length and/or sequence, etc.

In some embodiments, the amount of amplification that occurs may be carefully controlled by monitoring the PCR amplification reaction, e.g., using techniques such as real-time PCR. This may occur, for example, using oligonucleotides having common index regions, substantially similar lengths and/or sequences, etc., including those previously discussed, or with other suitable pluralities of oligonucleotides. For instance, in some embodiments, the PCR reaction may be monitored by illuminating the solution containing the oligonucleotides with suitable light and determining the amount of fluorescence that is present, which can be related to the DNA present within the sample. Techniques for monitoring PCR reactions, such as real-time PCR methodologies, are known to those of ordinary skill in the art. The PCR reaction can also be controlled, in some embodiments, by controlling the amount and/or concentration of nucleotides and/or cofactors that are present.

After amplification, the plurality of amplified oligonucleotides 20 may be transcribed to produce a plurality of RNAs 30, as is shown in the example of Fig. 1. This may be performed, for example, by exposing the amplified oligonucleotides to a suitable RNA polymerase, such as T7 RNA polymerase, that can transcribe the oligonucleotides to produce corresponding RNA. The amount of RNA production can be controlled in

some embodiments by controlling the amount and/or concentration of nucleotides and/or cofactors that are present as well as the duration of the *in vitro* transcription reaction.

The plurality of RNAs 30, may then be used to produce additional amounts of DNA 40, e.g., by using reverse transcription. For example a suitable enzyme, such as reverse transcriptase, may be used to perform the reverse transcription. In some cases, primers may be used to facilitate transcription, and in some embodiments, the primers may also be used to attach additional entities to the DNA. For example, signaling entities may be attached, as is shown with signaling entity 48 in Fig. 1. Alternatively, additional nucleic acid sequences can also be attached, which can serve to recruit additional oligonucleotides via Watson-Crick base-pairing. The amount of DNA that is produced can be controlled, for example, by controlling the amount and/or concentration of nucleotides and/or cofactors that are present as well as the duration and temperature of the reverse transcription reaction.

In some embodiments, multiple copies of DNA may be produced from each RNA molecule. In addition, optionally, the RNA may then be removed or selectively degraded, relative to the DNA, for example, through alkaline hydrolysis, enzymatic digestion, or other techniques.

Accordingly, in certain aspects, the present invention is generally directed to systems and methods of amplifying a plurality of oligonucleotides. In one set of embodiments, relatively large quantities or masses of oligonucleotides can be produced as is discussed herein, e.g., at least about 10^{-3} pmol, at least about 10^{-2} pmol, at least about 10^{-1} pmol, at least about 10^0 pmol, at least about 10^1 pmol, at least about 10^2 pmol, at least about 10^3 pmol, etc. In addition, in some embodiments, the plurality of oligonucleotides may be substantially diverse. For example, the plurality of oligonucleotides may include at least about 10^1 , at least about 10^2 , at least about 10^3 , at least about 10^4 , at least about 10^5 , or at least about 10^6 unique sequences of oligonucleotides, even after amplification to the amounts discussed above. (It should also be noted that a plurality or population of oligonucleotides may include more than one copy of a given unique oligonucleotide sequence.) In contrast, certain prior art techniques are able to amplify large numbers of unique oligonucleotides, but to only small quantities or masses (e.g., to amounts of around 10^{-3} pmol or less), or are able to

produce large quantities or masses of oligonucleotides, but only for 1 or a few unique sequences (e.g., less than 10 sequences).

As discussed, in certain embodiments, a plurality of oligonucleotides, which may include a plurality of unique sequences of oligonucleotides such as those described
5 above, may be amplified without substantial selective amplification of some oligonucleotide sequences over others, e.g., due to competitive effects, unlike in many prior art techniques. Although some drift may occur during the amplification process, the drift may be relatively small. For example, in certain embodiments, the ratios or percentages of a representative unique oligonucleotide sequence, relative to the starting
10 overall population, on the average, may change upon amplification by no more than about 10%, no more than about 8%, no more than about 6%, no more than about 5%, no more than about 4%, no more than about 3%, no more than about 2%, no more than about 1%, etc., relative to the starting ratio or percentage of the oligonucleotide sequence, prior to amplification. However, it should be noted that the oligonucleotide
15 sequence itself, prior to any amplification, may also exhibit some variability, which is not included in the above numbers.

The unique oligonucleotides within a plurality of oligonucleotides may have the same or different lengths. If more than one unique oligonucleotide is present, then the unique oligonucleotides may independently have the same or different lengths. For
20 example, in some cases, a plurality of oligonucleotides may have an average length (number average) of at least 5, at least 10, at least 15, at least 20, at least 25, at least 30, at least 35, at least 40, at least 50, at least 60, at least 65, at least 75, at least 100, at least 125, at least 150, at least 175, at least 200, at least 250, at least 300, at least 350, at least 400, or at least 450 nucleotides. In some cases, the average length may be no more than
25 500, no more than 450, no more than 400, no more than 350, no more than 300, no more than 250, no more than 200, no more than 175, no more than 150, no more than 125, no more than 100, no more than 75, no more than 60, no more than 65, no more than 50, no more than 55, no more than 45, no more than 40, no more than 35, no more than 30, no more than 20, or no more than 10 nucleotides. Combinations of any
30 of these are also possible, e.g., the average length may be between 10 and 30 nucleotides, between 20 and 40 nucleotides, between 5 and 50 nucleotides, between 10 and 200 nucleotides, or between 25 and 35 nucleotides, between 10 and 300 nucleotides, etc.

In one set of embodiments, any suitable technique may be used to amplify the plurality of oligonucleotides. In some cases, for each oligonucleotide to be amplified, at least about 100, at least about 300, at least about 500, at least about 1,000, at least about 3,000, at least about 5,000, at least about 10,000, at least about 30,000, at least about 50,000 at least about 100,000, at least about 300,000, at least about 500,000, at least about 1,000,000 copies, at least about 3,000,000 copies, at least about 5,000,000 copies, at least about 10,000,000 copies, at least about 30,000,000 copies, at least about 50,000,000 copies, or at least about 100,000,000 copies of the oligonucleotide may be produced using any of the amplification techniques discussed herein (e.g., including PCR amplification, *in vitro* transcription etc.). As discussed, in some cases, the amplification may occur without substantial selective amplification of some oligonucleotide sequences over others.

Any suitable technique may be used to generate the plurality of oligonucleotides. For example, the plurality of oligonucleotides may be synthetically produced, grown within a cell, grown on a substrate (e.g., in an array), or the like. Techniques for producing oligonucleotides are known to those of ordinary skill in the art. The plurality of oligonucleotides may also be computationally designed in some embodiments.

In one embodiment, the oligonucleotides may be amplified using PCR (polymerase chain reaction). In some cases, the oligonucleotides may be amplified while contained in a common liquid or solution. This is to be contrasted with certain PCR techniques, such as emulsion PCR or digital PCR, which requires separation of the oligonucleotides, e.g., into separate compartments or droplets, prior to amplification so as to prevent relatively selective amplification of certain oligonucleotides from occurring. However, surprisingly, it has been found that such separation is not required, and other techniques (such as is described herein) may be used to prevent or reduce selective amplification while keeping the oligonucleotides together within a common solution.

As mentioned, in some cases, by using certain oligonucleotide structures and/or certain types of PCR techniques, the amount of selective amplification that may occur may be reduced or eliminated. For instance, in one set of embodiments, oligonucleotides are chosen to minimize competitive effects. For instance, the oligonucleotides may have substantially the same lengths, and/or share identical or similar portions or regions.

For example, in one set of embodiments, the oligonucleotides may have a distribution of lengths such that no more than about 10%, no more than about 5%, no more than about 3%, or no more than about 1% of the oligonucleotides has a length that is less than about 80% or greater than about 120%, less than about 90% or greater than about 110%, or less than about 95% or greater than about 105% of the overall average length of the plurality of nucleotides.

In another set of embodiments the oligonucleotides may share one or more regions, such as index regions, that are identical or substantially similar. The oligonucleotides sharing index or other regions may have substantially the same lengths, as discussed above, or different lengths. In some embodiments, the oligonucleotides may comprise at least two index regions that each are identical or substantially similar, surrounding a variable region having different nucleotide sequences, and optionally, different lengths. For example, the oligonucleotides may include, in sequence, a first region that is identical or substantially similar to the other oligonucleotides, a second region that is not identical, and optionally, a third region that is identical or substantially similar to the other oligonucleotides. In some embodiments, competition of oligonucleotides may be controlled by using oligonucleotides selected to reduce amplification bias. For instance, in some cases, groups of oligonucleotides that have similar compositions may be amplified together.

In some cases, the index regions may have a length of greater than 5, 7, 10, 12, 14, 16, 18, or 20 nucleotides, and/or have a length of less than 30, 28, 25, 22, 20, 18, 16, 14, 12, or 10 nucleotides. For instance, the regions that are identical or substantially similar may have a length of between 18 and 22 nucleotides. The regions may be identical, or differ by no more than 1, 2, 3, 4, or 5 nucleotides (consecutively or non-consecutively) within the region.

In certain embodiments, primer sequences may be added to facilitate the PCR reaction. For example, the primer sequence may include sequences substantially complementary to a region within the oligonucleotides, e.g., an index region. A variety of such sequences suitable for PCR or *in vitro* transcription may be readily obtained commercially.

In some embodiments, the primer sequence may also include other sequences, e.g., promoter sequences or other sequences that may be added to the oligonucleotide

during PCR amplification, such as is shown in Fig. 1 with a T7 promoter. Accordingly, oligonucleotides comprising the original sequence and one or more promoter sequences may be produced in certain cases. Besides the T7 promoter, other suitable promoters that may be used include, but are not limited to, T3 promoters or SP6 promoters. Such
5 promoters may be useful, for example, to facilitate transcription to produce RNA, as is discussed in more detail below. In addition, in some embodiments, more than one promoter may be added.

In one set of embodiments, more than one sequence containing a PCR primer may be used, e.g., to amplify different subsets of the plurality of oligonucleotides. If
10 more than one primer-containing sequence is used, the PCR primers contained on each of them may be the same or different. Examples of suitable PCR primers include those described herein. Thus, for example, in one set of embodiments, for example, the plurality of oligonucleotides may include different subpools having different index regions or other regions as discussed above, which may be selectively amplified through
15 the use of an appropriate sequence including a PCR primer. Any suitable number of subpools may be created for a plurality of oligonucleotides. For example, at least 1, 2, 4, 10, 20, 96, 100, or 192 subpools of the plurality oligonucleotides may be selective amplified, through the use of specific PCR primers.

Thus, in some cases, the oligonucleotides may be formed into “pools” or groups
20 or sets of oligonucleotides within the plurality of oligonucleotides that share one or more common features, such as an index region or other identical sequence. For instance, the common feature in a group or set of oligonucleotides may have an identical sequence of nucleotides of at least 5, 7, 10, 12, 14, 16, 18, or 20 nucleotides, and/or less than 30, 28, 25, 22, 20, 18, 16, 14, 12, or 10 nucleotides. For instance, the common region that is
25 identical or substantially similar in a group of oligonucleotides may have a length of between 18 and 22 nucleotides. The common regions may be identical, or differ by no more than 1, 2, 3, 4, or 5 nucleotides (consecutively or non-consecutively) within the region. In some embodiments, each group or pool may contain two (or more) unique index regions that are not used in any other pool, e.g., to reduce the contamination of off-
30 target amplified products from the amplification products of another.

In certain embodiments, PCR amplification may be monitored, and controlled to reduce or minimize selective amplification. For example, in one set of embodiments,

real-time PCR techniques may be used. In some embodiments, the extent of the PCR reaction may be monitored or controlled, for example, by illuminating the solution containing the oligonucleotides with suitable light and determining the amount of fluorescence that is present to monitor the PCR reaction. Accordingly, for example, the reaction conditions may be controlled such that the oligonucleotides react in conditions that minimize the amount of selective amplification, for example, by providing an excess of nucleotides, ions (e.g., Mg^{2+}), enzyme, etc. Once the oligonucleotide concentrations have reached the point where competitive effects may start to occur, the reaction may be stopped before significant selective amplification begins.

After amplification as discussed above, the amplified oligonucleotides may then be transcribed to produce RNA. Further amplification may also occur in this step. For instance, in some cases, each oligonucleotide can be used to produce, on the average, at least about 50, at least about 100, at least about 300, at least about 500, at least about 1,000, at least about 3,000, at least about 5,000, at least about 10,000, at least about 30,000, at least about 50,000 at least about 100,000, at least about 300,000, at least about 500,000 or at least about 1,000,000 transcribed RNA molecules. In some cases, the mass of RNA that is produced may be at least about 10, at least about 20, at least about 30, at least about 50, at least about 100, at least about 200, at least about 300, or at least about 500 times the mass of the oligonucleotides. Thus, for example, one microgram of oligonucleotides may be converted into at least 10 micrograms, at least 30 micrograms, or at least 100 micrograms of RNA.

In one set of embodiments, transcription may occur *in vitro* by exposing the amplified oligonucleotides to a suitable RNA polymerase. A variety of RNA polymerases are available commercially, including T7, T3, or SP6 RNA polymerases. Other non-limiting examples of RNA polymerases include RNA polymerase I, RNA polymerase II, RNA polymerase III, RNA polymerase IV, or RNA polymerase V. The RNA polymerase may arise from any suitable source, e.g., bacteria, viruses, or eukaryotes. In some embodiments, more than one RNA polymerase may be used. In addition, as previously discussed, in some embodiments, the amplified oligonucleotides may include promoter sequences, such as one or more of T7, T3, or SP6 promoter sequences, that can be used to facilitate the transcription process. Those of ordinary skill

in the art will be aware of suitable conditions for causing transcription *in vitro* using RNA polymerases.

In some embodiments, the total amplification bias may be reduced by changing the relative amount of amplification produced by the PCR and the *in vitro* transcription.

5 For example, the PCR can be used to produce smaller amounts of DNA than are typically produced in a PCR, to reduce the amplification bias of this process. However, this reduced yield can be compensated in some cases by increasing the duration of the *in vitro* transcription reaction.

The RNA may, in turn, be reverse transcribed to produce DNA. In one set of
10 embodiments, reverse transcription may occur by exposing the RNA to a suitable reverse transcriptase enzyme. In some cases, the reverse transcriptase may be a viral reverse transcriptase, e.g., M-MLV reverse transcriptase, AMV reverse transcriptase, or the like. A variety of reverse transcriptase enzymes are commercially available. Those of ordinary skill in the art will be aware of suitable conditions for causing reverse
15 transcription to occur.

In certain embodiments, reverse transcription may be facilitated through the use of primer-containing sequences, e.g., containing primers for reverse transcription. In some cases, the primer-containing sequences may contain other sequences or entities as well, although this is not necessarily a requirement. The primer-containing sequences
20 may be added at any suitable point, e.g., just before starting transcription reaction. Suitable transcription primers for conducting reverse transcription may be obtained commercially.

In one set of embodiments, the primer-containing sequence may be incorporated into the DNA during production of the DNA by the reverse transcriptase. In some cases,
25 the primer-containing sequence may contain other entities, and/or sequences suitable for attaching other entities (e.g., on the 5' or 3' ends, internally, etc.). For instance, the primer-containing sequence may contain a non-nucleic acid moiety, such as a digoxigenin moiety, a biotin moiety, etc. located on the 5' end, the 3' end, internally, or the like. In some cases, the signaling entity that can be subsequently detected or
30 determined may be introduced to the DNA. For instance, the signaling entity may be fluorescent, or a specific nucleotide sequence that can be determined, e.g., enzymatically. Examples of signaling entities are discussed in more detail below.

In some cases, the RNA may be purified prior to reverse transcription. However, it should be noted that purification is not required, and in other embodiments, the RNA may be reverse transcribed to form DNA without any intermediate purification steps. If the RNA is purified, it may be purified using any suitable technique, e.g., by passing the
5 RNA over a suitable column to remove oligonucleotides.

Optionally, in some embodiments, the RNA may be separated from the DNA or the DNA may be purified in some fashion. For example, the RNA may be selectively degraded, relative to the DNA. In one set of embodiments, the RNA may be degraded relative to the DNA by alkaline hydrolysis. For instance, the pH of the solution may be
10 raised to at least about 8, at least about 9, at least about 10, etc. Any suitable alkaline may be used to raise the pH. In some cases, after degradation of the RNA, the pH may also be lowered, e.g., to about 7, to about 7.4, to physiological conditions, or the like. In some cases, techniques such as enzymatic degradation can be used to selectively degrade RNA, relative to DNA. The DNA may also be purified using techniques such as column
15 purification, ethanol precipitation, and/or solid-phase reversible immobilization techniques. In addition, in some cases, the DNA may be concentrated, e.g., through evaporation techniques.

In addition, techniques such as those described above may be scaled-up or “numbered-up” to produce larger quantities of material. For example, a process may be
20 repeated using multi-well techniques or by simultaneously running multiple reactions in parallel, etc. to produce larger quantities or masses of oligonucleotides. As a non-limiting example, in one embodiment, processes such as those discussed herein may be performed using multiple wells of a microtiter plate (e.g., having 96, 384, 1536, wells, etc.) to increase output.

25 The DNA may be used for a variety of purposes, in different embodiments of the invention. For example, in certain embodiments, the DNA may be hybridized to nucleic acid species in liquid samples, e.g., extracted from a variety of biological sources, including human. In some cases, the DNA may be used to physically separate one set of nucleic acids from another, or as primers for PCR or reverse transcription.

30 In addition, as previously discussed, in certain aspects, signaling entities are incorporated into DNA in some embodiments. The signaling entities may be determined for a variety of purposes. For example, the DNA that is produced may be used as a

biological probe, and the signaling entities may be determined in some fashion, e.g., quantitatively or qualitatively, to determine a characteristic or feature of the probe. Examples include, but are not limited to, the position of the probe, the activity of the probe, the concentration of the probe, or the like.

5 In some cases, signaling entities within a sample may be determined, e.g., spatially, using a variety of techniques. In some embodiments, the signaling entities may be fluorescent, and techniques for determining fluorescence within a sample, such as fluorescence microscopy or confocal microscopy, may be used to spatially identify the positions of signaling entities within a cell. In some cases, the positions of the entities
10 within the sample may be determined in two or even three dimensions.

 In some embodiments, the spatial positions of the signaling entities may be determined at relatively high resolutions. For instance, the positions may be determined at spatial resolutions of better than about 100 micrometers, better than about 30 micrometers, better than about 10 micrometers, better than about 3 micrometers, better
15 than about 1 micrometer, better than about 800 nm, better than about 600 nm, better than about 500 nm, better than about 400 nm, better than about 300 nm, better than about 200 nm, better than about 100 nm, better than about 90 nm, better than about 80 nm, better than about 70 nm, better than about 60 nm, better than about 50 nm, better than about 40 nm, better than about 30 nm, better than about 20 nm, or better than about 10 nm, etc.

20 There are a variety of techniques able to determine or image the spatial positions of entities optically, e.g., using fluorescence microscopy. In some cases, the spatial positions may be determined at super resolutions, or at resolutions better than the wavelength of light. Non-limiting examples include STORM (stochastic optical reconstruction microscopy), STED (stimulated emission depletion microscopy), NSOM
25 (Near-field Scanning Optical Microscopy), 4Pi microscopy, SIM (Structured Illumination Microscopy), SMI (Spatially Modulated Illumination) microscopy, RESOLFT (Reversible Saturable Optically Linear Fluorescence Transition Microscopy), GSD (Ground State Depletion Microscopy), SSIM (Saturated Structured-Illumination Microscopy), SPDM (Spectral Precision Distance Microscopy), Photo-Activated
30 Localization Microscopy (PALM), Fluorescence Photoactivation Localization Microscopy (FPALM), LIMON (3D Light Microscopical Nanosizing Microscopy), Super-resolution optical fluctuation imaging (SOFI), or the like. See, e.g., U.S. Pat. No.

7,838,302, issued November 23, 2010, entitled “Sub-Diffraction Limit Image Resolution and Other Imaging Techniques,” by Zhuang, *et al.*; U.S. Pat. No. 8,564,792, issued October 22, 2013, entitled “Sub-diffraction Limit Image Resolution in Three Dimensions,” by Zhuang, *et al.*; or Int. Pat. Apl. Pub. No. WO 2013/090360, published
5 June 20, 2013, entitled “High Resolution Dual-Objective Microscopy,” by Zhuang, *et al.*, each incorporated herein by reference in their entirety.

In addition, the signaling entity may be inactivated in some cases. For example, in some embodiments, a first secondary nucleic acid probe containing a signaling entity may be applied to a sample that can recognize a first read sequence, then the first
10 secondary nucleic acid probe can be inactivated before a second secondary nucleic acid probe is applied to the sample. If multiple signaling entities are used, the same or different techniques may be used to inactivate the signaling entities, and some or all of the multiple signaling entities may be inactivated, e.g., sequentially or simultaneously.

Inactivation may be caused by removal of the signaling entity (e.g., from the
15 sample, or from the nucleic acid probe, etc.), and/or by chemically altering the signaling entity in some fashion, e.g., by photobleaching the signaling entity, bleaching or chemically altering the structure of the signaling entity, etc.). For instance, in one set of embodiments, a fluorescent signaling entity may be inactivated by chemical or optical techniques such as oxidation, photobleaching, chemically bleaching, stringent washing
20 or enzymatic digestion or reaction by exposure to an enzyme, dissociating the signaling entity from other components (e.g., a probe), chemical reaction of the signaling entity (e.g., to a reactant able to alter the structure of the signaling entity) or the like.

In some embodiments, various nucleic acid probes (including primary and/or secondary nucleic acid probes) may include one or more signaling entities. If more than
25 one nucleic acid probe is used, the signaling entities may each be the same or different. In certain embodiments, a signaling entity is any entity able to emit light. For instance, in one embodiment, the signaling entity is fluorescent. In other embodiments, the signaling entity may be phosphorescent, radioactive, absorptive, etc. In some cases, the signaling entity is any entity that can be determined within a sample at relatively high
30 resolutions, e.g., at resolutions better than the wavelength of visible light. The signaling entity may be, for example, a dye, a small molecule, a peptide or protein, or the like. The signaling entity may be a single molecule in some cases. If multiple secondary nucleic

acid probes are used, the nucleic acid probes may comprise the same or different signaling entities.

Non-limiting examples of signaling entities include fluorescent entities (fluorophores) or phosphorescent entities, for example, cyanine dyes (e.g., Cy2, Cy3, Cy3B, Cy5, Cy5.5, Cy7, etc.), Alexa Fluor dyes, Atto dyes, photoswitchable dyes, photoactivatable dyes, fluorescent dyes, metal nanoparticles, semiconductor nanoparticles or “quantum dots”, fluorescent proteins such as GFP (Green Fluorescent Protein), or photoactivatable fluorescent proteins, such as PAGFP, PSCFP, PSCFP2, Dendra, Dendra2, EosFP, tdEos, mEos2, mEos3, PAmCherry, PAtagRFP, mMaple, mMaple2, and mMaple3. Other suitable signaling entities are known to those of ordinary skill in the art. See, e.g., U.S. Pat. No. 7,838,302 or U.S. Pat. Appl. Ser. No. 61/979,436, each incorporated herein by reference in its entirety.

As used herein, the term “light” generally refers to electromagnetic radiation, having any suitable wavelength (or equivalently, frequency). For instance, in some embodiments, the light may include wavelengths in the optical or visual range (for example, having a wavelength of between about 400 nm and about 700 nm, i.e., “visible light”), infrared wavelengths (for example, having a wavelength of between about 300 micrometers and 700 nm), ultraviolet wavelengths (for example, having a wavelength of between about 400 nm and about 10 nm), or the like. In certain cases, as discussed in detail below, more than one entity may be used, i.e., entities that are chemically different or distinct, for example, structurally. However, in other cases, the entities may be chemically identical or at least substantially chemically identical.

In one set of embodiments, the signaling entity is “switchable,” i.e., the entity can be switched between two or more states, at least one of which emits light having a desired wavelength. In the other state(s), the entity may emit no light, or emit light at a different wavelength. For instance, an entity may be “activated” to a first state able to produce light having a desired wavelength, and “deactivated” to a second state not able to emit light of the same wavelength. An entity is “photoactivatable” if it can be activated by incident light of a suitable wavelength. As a non-limiting example, Cy5, can be switched between a fluorescent and a dark state in a controlled and reversible manner by light of different wavelengths, i.e., 633 nm (or 642nm, 647nm, 656 nm) red light can switch or deactivate Cy5 to a stable dark state, while 405 nm green light can

switch or activate the Cy5 back to the fluorescent state. In some cases, the entity can be reversibly switched between the two or more states, e.g., upon exposure to the proper stimuli. For example, a first stimuli (e.g., a first wavelength of light) may be used to activate the switchable entity, while a second stimuli (e.g., a second wavelength of light) may be used to deactivate the switchable entity, for instance, to a non-emitting state. Any suitable method may be used to activate the entity. For example, in one embodiment, incident light of a suitable wavelength may be used to activate the entity to emit light, i.e., the entity is “photoswitchable.” Thus, the photoswitchable entity can be switched between different light-emitting or non-emitting states by incident light, e.g., of different wavelengths. The light may be monochromatic (e.g., produced using a laser) or polychromatic. In another embodiment, the entity may be activated upon stimulation by electric field and/or magnetic field. In other embodiments, the entity may be activated upon exposure to a suitable chemical environment, e.g., by adjusting the pH, or inducing a reversible chemical reaction involving the entity, etc. Similarly, any suitable method may be used to deactivate the entity, and the methods of activating and deactivating the entity need not be the same. For instance, the entity may be deactivated upon exposure to incident light of a suitable wavelength, or the entity may be deactivated by waiting a sufficient time.

Typically, a “switchable” entity can be identified by one of ordinary skill in the art by determining conditions under which an entity in a first state can emit light when exposed to an excitation wavelength, switching the entity from the first state to the second state, e.g., upon exposure to light of a switching wavelength, then showing that the entity, while in the second state can no longer emit light (or emits light at a much reduced intensity) when exposed to the excitation wavelength.

In one set of embodiments, as discussed, a switchable entity may be switched upon exposure to light. In some cases, the light used to activate the switchable entity may come from an external source, e.g., a light source such as a laser light source, another light-emitting entity proximate the switchable entity, etc. The second, light emitting entity, in some cases, may be a fluorescent entity, and in certain embodiments, the second, light-emitting entity may itself also be a switchable entity.

In some embodiments, the switchable entity includes a first, light-emitting portion (e.g., a fluorophore), and a second portion that activates or “switches” the first

portion. For example, upon exposure to light, the second portion of the switchable entity may activate the first portion, causing the first portion to emit light. Examples of activator portions include, but are not limited to, Alexa Fluor 405 (Invitrogen), Alexa Fluor 488 (Invitrogen), Cy2 (GE Healthcare), Cy3 (GE Healthcare), Cy3B (GE Healthcare), Cy3.5 (GE Healthcare), or other suitable dyes. Examples of light-emitting portions include, but are not limited to, Cy5, Cy5.5 (GE Healthcare), Cy7 (GE Healthcare), Alexa Fluor 647 (Invitrogen), Alexa Fluor 680 (Invitrogen), Alexa Fluor 700 (Invitrogen), Alexa Fluor 750 (Invitrogen), Alexa Fluor 790 (Invitrogen), DiD, DiR, YOYO-3 (Invitrogen), YO-PRO-3 (Invitrogen), TOT-3 (Invitrogen), TO-PRO-3 (Invitrogen) or other suitable dyes. These may be linked together, e.g., covalently, for example, directly, or through a linker, e.g., forming compounds such as, but not limited to, Cy5-Alexa Fluor 405, Cy5-Alexa Fluor 488, Cy5-Cy2, Cy5-Cy3, Cy5-Cy3.5, Cy5.5-Alexa Fluor 405, Cy5.5-Alexa Fluor 488, Cy5.5-Cy2, Cy5.5-Cy3, Cy5.5-Cy3.5, Cy7-Alexa Fluor 405, Cy7-Alexa Fluor 488, Cy7-Cy2, Cy7-Cy3, Cy7-Cy3.5, Alexa Fluor 647-Alexa Fluor 405, Alexa Fluor 647-Alexa Fluor 488, Alexa Fluor 647-Cy2, Alexa Fluor 647-Cy3, Alexa Fluor 647-Cy3.5, Alexa Fluor 750-Alexa Fluor 405, Alexa Fluor 750-Alexa Fluor 488, Alexa Fluor 750-Cy2, Alexa Fluor 750-Cy3, or Alexa Fluor 750-Cy3.5. . Those of ordinary skill in the art will be aware of the structures of these and other compounds, many of which are available commercially. The portions may be linked via a covalent bond, or by a linker, such as those described in detail below. Other light-emitting or activator portions may include portions having two quaternized nitrogen atoms joined by a polymethine chain, where each nitrogen is independently part of a heteroaromatic moiety, such as pyrrole, imidazole, thiazole, pyridine, quinoine, indole, benzothiazole, etc., or part of a nonaromatic amine. In some cases, there may be 5, 6, 7, 8, 9, or more carbon atoms between the two nitrogen atoms.

In certain cases, the light-emitting portion and the activator portions, when isolated from each other, may each be fluorophores, i.e., entities that can emit light of a certain, emission wavelength when exposed to a stimulus, for example, an excitation wavelength. However, when a switchable entity is formed that comprises the first fluorophore and the second fluorophore, the first fluorophore forms a first, light-emitting portion and the second fluorophore forms an activator portion that switches that activates or “switches” the first portion in response to a stimulus. For example, the switchable

entity may comprise a first fluorophore directly bonded to the second fluorophore, or the first and second entity may be connected via a linker or a common entity. Whether a pair of light-emitting portion and activator portion produces a suitable switchable entity can be tested by methods known to those of ordinary skills in the art. For example, light of
5 various wavelength can be used to stimulate the pair and emission light from the light-emitting portion can be measured to determined wither the pair makes a suitable switch.

As a non-limiting example, Cy3 and Cy5 may be linked together to form such an entity. In this example, Cy3 is an activator portion that is able to activate Cy5, the light-emission portion. Thus, light at or near the absorption maximum (e.g., near 532 nm light
10 for Cy3) of the activation or second portion of the entity may cause that portion to activate the first, light-emitting portion, thereby causing the first portion to emit light (e.g., near 647 nm for Cy5). See, e.g., U.S. Pat. No. 7,838,302, incorporated herein by reference in its entirety. In some cases, the first, light-emitting portion can subsequently be deactivated by any suitable technique (e.g., by directing 647 nm red light to the Cy5
15 portion of the molecule).

Other non-limiting examples of potentially suitable activator portions include 1,5 IAEDANS, 1,8-ANS, 4-Methylumbelliferone, 5-carboxy-2,7-dichlorofluorescein, 5-Carboxyfluorescein (5-FAM), 5-Carboxynaphthofluorescein, 5-Carboxytetramethylrhodamine (5-TAMRA), 5-FAM (5-Carboxyfluorescein), 5-HAT
20 (Hydroxy Tryptamine), 5-Hydroxy Tryptamine (HAT), 5-ROX (carboxy-X-rhodamine), 5-TAMRA (5-Carboxytetramethylrhodamine), 6-Carboxyrhodamine 6G, 6-CR 6G, 6-JOE, 7-Amino-4-methylcoumarin, 7-Aminoactinomycin D (7-AAD), 7-Hydroxy-4-methylcoumarin, 9-Amino-6-chloro-2-methoxyacridine, ABQ, Acid Fuchsin, ACMA (9-Amino-6-chloro-2-methoxyacridine), Acridine Orange, Acridine Red, Acridine Yellow,
25 Acriflavin, Acriflavin Feulgen SITSA, Alexa Fluor 350, Alexa Fluor 405, Alexa Fluor 430, Alexa Fluor 488, Alexa Fluor 500, Alexa Fluor 514, Alexa Fluor 532, Alexa Fluor 546, Alexa Fluor 555, Alexa Fluor 568, Alexa Fluor 594, Alexa Fluor 610, Alexa Fluor 633, Alexa Fluor 635, Alizarin Complexon, Alizarin Red, AMC, AMCA-S, AMCA (Aminomethylcoumarin), AMCA-X, Aminoactinomycin D, Aminocoumarin,
30 Aminomethylcoumarin (AMCA), Anilin Blue, Anthrocyl stearate, APTRA-BTC, APTS, Astrazon Brilliant Red 4G, Astrazon Orange R, Astrazon Red 6B, Astrazon Yellow 7 GLL, Atabrine, ATTO 390, ATTO 425, ATTO 465, ATTO 488, ATTO 495, ATTO 520,

ATTO 532, ATTO 550, ATTO 565, ATTO 590, ATTO 594, ATTO 610, ATTO 611X, ATTO 620, ATTO 633, ATTO 635, ATTO 647, ATTO 647N, ATTO 655, ATTO 680, ATTO 700, ATTO 725, ATTO 740, ATTO-TAG CBQCA, ATTO-TAG FQ, Auramine, Aurophosphine G, Aurophosphine, BAO 9 (Bisaminophenyloxadiazole), BCECF (high
5 pH), BCECF (low pH), Berberine Sulphate, Bimane, Bisbenzamide, Bisbenzimidazole (Hoechst), bis-BTC, Blancophor FFG, Blancophor SV, BOBO -1, BOBO -3, Bodipy 492/515, Bodipy 493/503, Bodipy 500/510, Bodipy 505/515, Bodipy 530/550, Bodipy 542/563, Bodipy 558/568, Bodipy 564/570, Bodipy 576/589, Bodipy 581/591, Bodipy 630/650-X, Bodipy 650/665-X, Bodipy 665/676, Bodipy FL, Bodipy FL ATP, Bodipy FL-
10 Ceramide, Bodipy R6G, Bodipy TMR, Bodipy TMR-X conjugate, Bodipy TMR-X, SE, Bodipy TR, Bodipy TR ATP, Bodipy TR-X SE, BO-PRO -1, BO-PRO -3, Brilliant Sulphoflavin FF, BTC, BTC-5N, Calcein, Calcein Blue, Calcium Crimson, Calcium Green, Calcium Green-1 Ca^{2+} Dye, Calcium Green-2 Ca^{2+} , Calcium Green-5N Ca^{2+} , Calcium Green-C18 Ca^{2+} , Calcium Orange, Calcofluor White, Carboxy-X-rhodamine (5-
15 ROX), Cascade Blue, Cascade Yellow, Catecholamine, CCF2 (GeneBlazer), CFDA, Chromomycin A, Chromomycin A, CL-NERF, CMFDA, Coumarin Phalloidin, CPM Methylcoumarin, CTC, CTC Formazan, Cy2, Cy3.1 8, Cy3.5, Cy3, Cy5.1 8, cyclic AMP Fluorosensor (FiCRhR), Dabcyl, Dansyl, Dansyl Amine, Dansyl Cadaverine, Dansyl Chloride, Dansyl DHPE, Dansyl fluoride, DAPI, Dapoxyl, Dapoxyl 2, Dapoxyl
20 3' DCFDA, DCFH (Dichlorodihydrofluorescein Diacetate), DDAO, DHR (Dihydorhodamine 123), Di-4-ANEPPS, Di-8-ANEPPS (non-ratio), DiA (4-Di-16-ASP), Dichlorodihydrofluorescein Diacetate (DCFH), DiD - Lipophilic Tracer, DiD (DiIC18(5)), DIDS, Dihydorhodamine 123 (DHR), DiI (DiIC18(3)), Dinitrophenol, DiO (DiOC18(3)), DiR, DiR (DiIC18(7)), DM-NERF (high pH), DNP, Dopamine, DTAF,
25 DY-630-NHS, DY-635-NHS, DyLight 405, DyLight 488, DyLight 549, DyLight 633, DyLight 649, DyLight 680, DyLight 800, ELF 97, Eosin, Erythrosin, Erythrosin ITC, Ethidium Bromide, Ethidium homodimer -1 (EthD-1), Euchrysin, EukoLight, Europium (III) chloride, Fast Blue, FDA, Feulgen (Pararosaniline), FIF (Formaldehyd Induced Fluorescence), FITC, Flazo Orange, Fluo-3, Fluo-4, Fluorescein (FITC), Fluorescein
30 Diacetate, Fluoro-Emerald, Fluoro-Gold (Hydroxystilbamidine), Fluor-Ruby, FluorX, FM 1-43, FM 4-46, Fura Red (high pH), Fura Red/Fluo-3, Fura-2, Fura-2/BCECF, Genacryl Brilliant Red B, Genacryl Brilliant Yellow 10GF, Genacryl Pink 3G, Genacryl

Yellow 5GF, GeneBlazer (CCF2), Gloxalic Acid, Granular blue, Haematoporphyrin, Hoechst 33258, Hoechst 33342, Hoechst 34580, HPTS, Hydroxycoumarin, Hydroxystilbamidine (FluoroGold), Hydroxytryptamine, Indo-1, high calcium, Indo-1, low calcium, Indodicarbocyanine (DiD), Indotricarbocyanine (DiR), Intrawhite Cf, JC-1, 5 JO-JO-1, JO-PRO-1, LaserPro, Laurodan, LDS 751 (DNA), LDS 751 (RNA), Leucophor PAF, Leucophor SF, Leucophor WS, Lissamine Rhodamine, Lissamine Rhodamine B, Calcein/Ethidium homodimer, LOLO-1, LO-PRO-1, Lucifer Yellow, Lyso Tracker Blue, Lyso Tracker Blue-White, Lyso Tracker Green, Lyso Tracker Red, Lyso Tracker Yellow, LysoSensor Blue, LysoSensor Green, LysoSensor Yellow/Blue, Mag Green, 10 Magdala Red (Phloxin B), Mag-Fura Red, Mag-Fura-2, Mag-Fura-5, Mag-Indo-1, Magnesium Green, Magnesium Orange, Malachite Green, Marina Blue, Maxilon Brilliant Flavin 10 GFF, Maxilon Brilliant Flavin 8 GFF, Merocyanin, Methoxycoumarin, Mitotracker Green FM, Mitotracker Orange, Mitotracker Red, Mitramycin, Monobromobimane, Monobromobimane (mBBr-GSH), 15 Monochlorobimane, MPS (Methyl Green Pyronine Stilbene), NBD, NBD Amine, Nile Red, Nitrobenzoxadidole, Noradrenaline, Nuclear Fast Red, Nuclear Yellow, Nylosan Brilliant Iavin E8G, Oregon Green, Oregon Green 488-X, Oregon Green, Oregon Green 488, Oregon Green 500, Oregon Green 514, Pacific Blue, Pararosanine (Feulgen), PBFI, Phloxin B (Magdala Red), Phorwite AR, Phorwite BKL, Phorwite Rev, Phorwite 20 RPA, Phosphine 3R, PKH26 (Sigma), PKH67, PMIA, Pontochrome Blue Black, POPO-1, POPO-3, PO-PRO-1, PO-PRO-3, Primuline, Procion Yellow, Propidium Iodid (PI), PyMPO, Pyrene, Pyronine, Pyronine B, Pyrozal Brilliant Flavin 7GF, QSY 7, Quinacrine Mustard, Resorufin, RH 414, Rhod-2, Rhodamine, Rhodamine 110, Rhodamine 123, Rhodamine 5 GLD, Rhodamine 6G, Rhodamine B, Rhodamine B 200, Rhodamine B 25 extra, Rhodamine BB, Rhodamine BG, Rhodamine Green, Rhodamine Phallicidine, Rhodamine Phalloidine, Rhodamine Red, Rhodamine WT, Rose Bengal, S65A, S65C, S65L, S65T, SBFI, Serotonin, Sevron Brilliant Red 2B, Sevron Brilliant Red 4G, Sevron Brilliant Red B, Sevron Orange, Sevron Yellow L, SITS, SITS (Primuline), SITS (Stilbene Isothiosulphonic Acid), SNAFL calcein, SNAFL-1, SNAFL-2, SNARF 30 calcein, SNARF1, Sodium Green, SpectrumAqua, SpectrumGreen, SpectrumOrange, Spectrum Red, SPQ (6-methoxy-N-(3-sulfopropyl)quinolinium), Stilbene, Sulphorhodamine B can C, Sulphorhodamine Extra, SYTO 11, SYTO 12, SYTO 13,

SYTO 14, SYTO 15, SYTO 16, SYTO 17, SYTO 18, SYTO 20, SYTO 21, SYTO 22, SYTO 23, SYTO 24, SYTO 25, SYTO 40, SYTO 41, SYTO 42, SYTO 43, SYTO 44, SYTO 45, SYTO 59, SYTO 60, SYTO 61, SYTO 62, SYTO 63, SYTO 64, SYTO 80, SYTO 81, SYTO 82, SYTO 83, SYTO 84, SYTO 85, SYTOX Blue, SYTOX Green, SYTOX Orange, Tetracycline, Tetramethylrhodamine (TAMRA), Texas Red, Texas Red-X conjugate, Thiadiazinecarbocyanine (DiSC3), Thiazine Red R, Thiazole Orange, Thioflavin 5, Thioflavin S, Thioflavin TCN, Thiolyte, Thiozole Orange, Tinopol CBS (Calcofluor White), TMR, TO-PRO-1, TO-PRO-3, TO-PRO-5, TOTO-1, TOTO-3, TRITC (tetramethylrhodamine isothiocyanate), True Blue, TruRed, Ultralite, Uranine B, Uvitex SFC, WW 781, X-Rhodamine, XRITC, Xylene Orange, Y66F, Y66H, Y66W, YO-PRO-1, YO-PRO-3, YOYO-1, YOYO-3, SYBR Green, Thiazole orange (interchelating dyes), or combinations thereof.

In some aspects, the nucleotides can be used to study a sample, such as a biological sample. For instance, the nucleotides may be used to determine nucleic acids within a cell or other sample. The sample may include a cell culture, a suspension of cells, a biological tissue, a biopsy, an organism, or the like. The sample may also be cell-free but nevertheless contain nucleic acids. If the sample contains a cell, the cell may be a human cell, or any other suitable cell, e.g., a mammalian cell, a fish cell, an insect cell, a plant cell, or the like. More than one cell may be present in some cases.

The nucleic acids to be determined may be, for example, DNA, RNA, or other nucleic acids that are present within a cell (or other sample). The nucleic acids may be endogenous to the cell, or added to the cell. For instance, the nucleic acid may be viral, or artificially created. In some cases, the nucleic acid to be determined may be expressed by the cell. The nucleic acid is RNA in some embodiments. The RNA may be coding and/or non-coding RNA. Non-limiting examples of RNA that may be studied within the cell include mRNA, siRNA, rRNA, miRNA, tRNA, lncRNA, snoRNAs, snRNAs, exRNAs, piRNAs, or the like. In some embodiments, for example, at least some of the plurality of oligonucleotides are complementary to a portion of a specific chromosome sequence, e.g., of a human chromosome.

In some cases, a significant portion of the nucleic acid within the cell may be studied. For instance, in some cases, enough of the RNA present within a cell may be determined so as to produce a partial or complete transcriptome of the cell. In some

cases, at least 4 types of mRNAs are determined within a cell, and in some cases, at least 3, at least 4, at least 7, at least 8, at least 12, at least 14, at least 15, at least 16, at least 22, at least 30, at least 31, at least 32, at least 50, at least 63, at least 64, at least 72, at least 75, at least 100, at least 127, at least 128, at least 140, at least 255, at least 256, at least 500, at least 1,000, at least 1,500, at least 2,000, at least 2,500, at least 3,000, at least 4,000, at least 5,000, at least 7,500, at least 10,000, at least 12,000, at least 15,000, at least 20,000, at least 25,000, at least 30,000, at least 40,000, at least 50,000, at least 75,000, or at least 100,000 types of mRNAs may be determined within a cell.

In some cases, the transcriptome of a cell may be determined. It should be understood that the transcriptome generally encompasses all RNA molecules produced within a cell, not just mRNA. Thus, for instance, the transcriptome may also include rRNA, tRNA, etc. In some embodiments, at least 5%, at least 10%, at least 15%, at least 20%, at least 25%, at least 30%, at least 40%, at least 50%, at least 60%, at least 70%, at least 80%, at least 90%, or 100% of the transcriptome of a cell may be determined.

The determination of one or more nucleic acids within the cell or other sample may be qualitative and/or quantitative. In addition, the determination may also be spatial, e.g., the position of the nucleic acid within the cell or other sample may be determined in two or three dimensions. In some embodiments, the positions, number, and/or concentrations of nucleic acids within the cell (or other sample) may be determined.

One non-limiting example of such a system may be found in U.S. Provisional Patent Application Serial No. 62/031,062, filed July 30, 2014, entitled "Systems and Methods for Determining Nucleic Acids," by Zhuang, *et al.* incorporated herein by reference in its entirety.

The following documents are each incorporated herein by reference in their entireties: U.S. Pat. No. 7,838,302, issued November 23, 2010, entitled "Sub-Diffraction Limit Image Resolution and Other Imaging Techniques," by Zhuang, *et al.*; U.S. Pat. No. 8,564,792, issued October 22, 2013, entitled "Sub-diffraction Limit Image Resolution in Three Dimensions," by Zhuang, *et al.*; and Int. Pat. Apl. Pub. No. WO 2013/090360, published June 20, 2013, entitled "High Resolution Dual-Objective Microscopy," by Zhuang, *et al.* In addition, U.S. Provisional Patent Application Serial No. 62/031,062,

filed July 30, 2014, entitled “Systems and Methods for Determining Nucleic Acids,” by Zhuang, *et al.* is incorporated herein by reference in its entirety.

The following examples are intended to illustrate certain embodiments of the present invention, but do not exemplify the full scope of the invention.

5

EXAMPLE 1

This example illustrates high-throughput hybridization construction of DNA probes, according to certain embodiments of the invention.

Overview. This protocol uses complex libraries of oligonucleotides as templates for the enzymatic construction of large quantities of single-stranded DNA molecules that
10 can be chemically labeled and which are designed to be hybridized to specific sets of nucleic acid targets that can vary significantly in complexity, i.e. the number of unique target sequences. The use of this protocol involves several basic steps: 1) computational design and optimization of a set of oligonucleotide sequences that will serve as the hybridization regions on the sample of interest; 2) computational design and optimization
15 of a large set of short oligonucleotide sequences to serve as highly specific PCR primers; 3) computational construction of the template molecules; 4) synthesis of the template molecules to create the template library; 5) selection of a sub-set of *in vitro* template molecules from a template library via PCR; 6) *in-vitro*-transcription-based amplification of the *in vitro* template molecules into RNA, which serves as the final template for the
20 hybridization probes; 7) reverse transcription of the RNA back into DNA using chemically-modified primers; 8) removal of the RNA via alkaline hydrolysis; and 9) purification of the chemically-modified ssDNA molecules, called probes in this example. These steps are discussed in detail below.

Construction of Probes. Selection of Hybridization Regions. The software
25 OligoArray 2.0 was used to design a large set of potential hybridization regions in the *E. coli* transcriptome in this example. Briefly, this software selects hybridization regions that lie within user-specified ranges for length and melting temperature. This software also screens for off-target hybridization as well as potential secondary structure. This software was used to generate hybridization regions of 30-nt length, a melting-
30 temperature range of 80-85 °C, a GC content of between 50-60%, and a secondary structure melting threshold and cross-hybridization-melting temperature of 75 °C using all annotated, transcribed mRNAs in *E. coli* (K-12 mg1655; NC90013.2).

Design of Hundreds of Orthogonal Primers. The general hybridization probe set may require far fewer unique sequences than is provided in the complex sets of oligonucleotides typically generated by array-based synthesis—the *oligopool*. To exploit this disparity in complexity and significantly lower the cost per experiment, this example
5 uses a method to embed a large number of unique template sets within a single oligopool. Briefly, each template molecule was flanked by a unique pair of PCR primers common only to the template molecules for all probes within a given set. To facilitate the embedding of hundreds of unique probe template sets within a single oligopool, a protocol was created for constructing hundreds of orthogonal PCR primers.

10 Specifically, the protocol starts by truncating the members of an existing library of 240,000, semi-orthogonal, 25-mer oligonucleotides to 20-nt length and selecting oligos on parameters optimal for PCR: a narrow range of predicted melting-temperature (65-70 °C) and GC content (50-60%); the absence of contiguous runs of the same base longer than 4, i.e. AAAA; and the presence of a 3' GC-clamp, i.e. 2-3 G/C within the
15 final 5 nt. BLAST was then run with these optimized primers against all annotated RNAs in the *E. coli* transcriptome as well as the T7 promoter (TAATACGACTCACTATAGGG) (SEQ ID NO. 1) and a common priming region (P9: CAGGCATCCGAGAGGTCTGG) (SEQ ID NO. 2) and potential primers with hits to the transcriptome with 12-nt or longer of homology, or with a hit of any length within 3-
20 nt of the 3' end of the potential primer, were removed. Finally, the remaining primers were screened for homology to each other, again using BLAST. Any primer with longer than 11-nt of homology or with any homology within 3-nt of the 3' end of another primer was removed. These cuts reduced the original 240,000 oligos to 198 highly optimized primers for the *E. coli* transcriptome. The final set of 198 primers are listed in
25 Fig. 3.

If required, more primers could be generated using established techniques to create a larger set of initial oligonucleotides, or by relaxing the stringency of the cuts described above. Finally, by changing the transcriptome used to screen the primers, this approach can also be generalized to the generation of optimal index primers for any
30 organism.

Template Construction. To design the template libraries used to create our probe sets, the desired RNA targets were first selected to be stained simultaneously. Individual

template molecules were designed by concatenating the following sequences: i) the first of two unique primers for the appropriate mRNA group, ii) the common primer P9, iii) the site for the nicking enzyme Nb.BsmI, iv) the reverse complement of the hybridization region to the target, v) the reverse complement of the nicking enzyme Nb.BsrDI, and vi) the reverse complement of the second unique primer for the given mRNA group. Fig. 2 demonstrates this organization. Multiple probe template sets were combined into large oligopools and these pools were synthesized via CustomArray.

Fig. 2 shows an example template sequence containing a probe the mRNA, *acnB*. Underlined at the beginning is the sequence of the first primer, not underlined is the common P9 priming site, then underlined is the Nb.BsmI site, not underlined is the reverse complement to the hybridization region for *acnB*, next underlined is the reverse complement of the Nb.BsrDI site, and the final not underlined portion is the second unique primer. This template is one of 736 used to create probes to stain all mRNAs expressed in the copy number range of 1-10 per cell transcribed from the *E. coli* genomic locus corresponding to base pairs 1-100 kb. See Fig. 4 for the sequences of the 736 probes.

Index PCR. The template for specific probe sets were selected from the complex oligopool via limited-cycle PCR. 0.5 to 1 ng of the complex oligopool was combined with 0.5 micromolar of each primer. The forward primer matched the priming sequence for the desired sub set while the reverse primer was a 5'concatenation of this sequence with the T7 promoter. To avoid the generation of G-quadruplets, which can be difficult to synthesize, the terminal Gs required in the T7 promoter were generated from Gs located at the 5' of the priming region where appropriate. All primers were synthesized by IDT. A 50 microliter reaction volume was amplified either using the KAPA real-time library amplification kit (KAPA Biosystems; KK2701) or via a homemade qPCR mix which included 0.8X EvaGreen (Biotum; 31000-T) and the hot-start Phusion polymerase (New England Biolabs; M0535S). Amplification was followed in real time using Agilent's MX300P or Biorad's CFX Connect. Individual samples were removed before the plateau in amplification, often at concentrations about 10-fold lower than would correspond to this plateau, to minimize distortion of template abundance due to over-amplification. Individual templates were purified with columns according to the

manufacturer's instructions (Zymo DNA Clean and Concentrator; D4003) and eluted in RNase-free deionized water.

Amplification via *in vitro* transcription. The template was then amplified via *in vitro* transcription. Briefly, 0.5 to 1 micrograms of template DNA was amplified into
5 100 to 200 micrograms of RNA in a single 20-30 microliter reaction with a high yield RNA polymerase (New England Biolabs; E2040S). Reactions were supplemented with 1X RNase inhibitor (Promega RNasin; N2611). Amplification was typically run for 2 to 4 hours at 37 °C to maximize the yield. The RNA was not purified after the reaction and was either stored at -80 °C or immediately converted into DNA as described below.

10 Reverse Transcription. 1-2 nmol of fluorescently-labeled ssDNA probe was created from the above *in vitro* transcription reactions using the reverse transcriptase Maxima H- (Thermo Scientific; EP0751). This enzyme was used because of its higher processivity and temperature resistance, which allowed the conversion of large quantities of RNA into DNA within small volumes at temperatures that disfavor secondary
15 structure formation. The unpurified RNA created above was supplemented with 1.6 mM of each dNTP, 1-2 nmol of fluorescently labeled P9 primer, 300 units of Maxima H-, 60 units of RNasin, and a final 1X concentration of the Maxima RT buffer. The final 75 microliter volume was incubated at 50 °C for 60 minutes.

Strand Selection and Purification. The template RNA in the reaction above was
20 then removed from the DNA via alkaline hydrolysis. 75 microliters of a solution of 0.25 M EDTA and 0.5 N NaOH was added to each reverse transcription reaction, and the sample was incubated at 95 °C for 10 minutes. The reaction was immediately neutralized by purifying the ssDNA probe with a modified version of the Zymo Oligo Clean and Concentrator protocol. Specifically, the 5-microgram capacity column was
25 replaced with a 100- microgram capacity DNA column as appropriate. The remainder of the protocol was run according to the manufacturer's instructions. Probe was eluted in 100 microliter RNase-free deionized water and evaporated in a vacuum concentrator. The final pellet was resuspend in 10 microliter RNase-free water and stored at -20 °C. Denaturing poly-acrylimid gel electrophoresis and absorption spectroscopy revealed that
30 this protocol typically produces 90-100% incorporate of the fluorescent primer into full length probe and 60-75% recovery of the total fluorescent probe. Thus, without exceeding a 150-microliter reaction volume, this protocol can be used to create ~2 nmol

of fluorescent probe. The small reaction volumes were conducive to the use of high-throughput fluid handling techniques and significantly lower the cost of this reaction as compared to alternative approaches. Thus, 24-96 probes could be constructed in parallel, with minimal hands-on time, across two days, for a final cost of ~\$14 per 2 nmol of each probe set.

While several embodiments of the present invention have been described and illustrated herein, those of ordinary skill in the art will readily envision a variety of other means and/or structures for performing the functions and/or obtaining the results and/or one or more of the advantages described herein, and each of such variations and/or modifications is deemed to be within the scope of the present invention. More generally, those skilled in the art will readily appreciate that all parameters, dimensions, materials, and configurations described herein are meant to be exemplary and that the actual parameters, dimensions, materials, and/or configurations will depend upon the specific application or applications for which the teachings of the present invention is/are used. Those skilled in the art will recognize, or be able to ascertain using no more than routine experimentation, many equivalents to the specific embodiments of the invention described herein. It is, therefore, to be understood that the foregoing embodiments are presented by way of example only and that, within the scope of the appended claims and equivalents thereto, the invention may be practiced otherwise than as specifically described and claimed. The present invention is directed to each individual feature, system, article, material, kit, and/or method described herein. In addition, any combination of two or more such features, systems, articles, materials, kits, and/or methods, if such features, systems, articles, materials, kits, and/or methods are not mutually inconsistent, is included within the scope of the present invention.

All definitions, as defined and used herein, should be understood to control over dictionary definitions, definitions in documents incorporated by reference, and/or ordinary meanings of the defined terms.

The indefinite articles “a” and “an,” as used herein in the specification and in the claims, unless clearly indicated to the contrary, should be understood to mean “at least one.”

The phrase “and/or,” as used herein in the specification and in the claims, should be understood to mean “either or both” of the elements so conjoined, i.e., elements that are conjunctively present in some cases and disjunctively present in other cases. Multiple elements listed with “and/or” should be construed in the same fashion, i.e., “one
5 or more” of the elements so conjoined. Other elements may optionally be present other than the elements specifically identified by the “and/or” clause, whether related or unrelated to those elements specifically identified. Thus, as a non-limiting example, a reference to “A and/or B”, when used in conjunction with open-ended language such as “comprising” can refer, in one embodiment, to A only (optionally including elements
10 other than B); in another embodiment, to B only (optionally including elements other than A); in yet another embodiment, to both A and B (optionally including other elements); etc.

As used herein in the specification and in the claims, “or” should be understood to have the same meaning as “and/or” as defined above. For example, when separating
15 items in a list, “or” or “and/or” shall be interpreted as being inclusive, i.e., the inclusion of at least one, but also including more than one, of a number or list of elements, and, optionally, additional unlisted items. Only terms clearly indicated to the contrary, such as “only one of” or “exactly one of,” or, when used in the claims, “consisting of,” will refer to the inclusion of exactly one element of a number or list of elements. In general,
20 the term “or” as used herein shall only be interpreted as indicating exclusive alternatives (i.e. “one or the other but not both”) when preceded by terms of exclusivity, such as “either,” “one of,” “only one of,” or “exactly one of.” “Consisting essentially of,” when used in the claims, shall have its ordinary meaning as used in the field of patent law.

As used herein in the specification and in the claims, the phrase “at least one,” in
25 reference to a list of one or more elements, should be understood to mean at least one element selected from any one or more of the elements in the list of elements, but not necessarily including at least one of each and every element specifically listed within the list of elements and not excluding any combinations of elements in the list of elements. This definition also allows that elements may optionally be present other than the
30 elements specifically identified within the list of elements to which the phrase “at least one” refers, whether related or unrelated to those elements specifically identified. Thus, as a non-limiting example, “at least one of A and B” (or, equivalently, “at least one of A

or B,” or, equivalently “at least one of A and/or B”) can refer, in one embodiment, to at least one, optionally including more than one, A, with no B present (and optionally including elements other than B); in another embodiment, to at least one, optionally including more than one, B, with no A present (and optionally including elements other than A); in yet another embodiment, to at least one, optionally including more than one, A, and at least one, optionally including more than one, B (and optionally including other elements); etc.

It should also be understood that, unless clearly indicated to the contrary, in any methods claimed herein that include more than one step or act, the order of the steps or acts of the method is not necessarily limited to the order in which the steps or acts of the method are recited.

In the claims, as well as in the specification above, all transitional phrases such as “comprising,” “including,” “carrying,” “having,” “containing,” “involving,” “holding,” “composed of,” and the like are to be understood to be open-ended, i.e., to mean including but not limited to. Only the transitional phrases “consisting of” and “consisting essentially of” shall be closed or semi-closed transitional phrases, respectively, as set forth in the United States Patent Office Manual of Patent Examining Procedures, Section 2111.03.

What is claimed is:

CLAIMS

1. A method, comprising:
amplifying at least some of a plurality of oligonucleotides using real-time
5 PCR to produce amplified oligonucleotides;
transcribing *in vitro* at least some of the amplified oligonucleotides to
produce RNA;
reverse transcribing the RNA to produce transcribed DNA; and
selectively degrading the RNA relative to the transcribed DNA.
10
2. The method of claim 1, wherein the plurality of oligonucleotides have an average
length of between 10 and 200 nucleotides.
3. The method of any one of claims 1 or 2, wherein the plurality of oligonucleotides
15 includes at least 10 unique oligonucleotide sequences.
4. The method of any one of claims 1-3, wherein the plurality of oligonucleotides
includes at least 100 unique oligonucleotide sequences.
- 20 5. The method of any one of claims 1-4, wherein the plurality of oligonucleotides
includes at least 1,000 unique oligonucleotide sequences.
6. The method of any one of claims 1-5, wherein the plurality of oligonucleotides
includes at least 10,000 unique oligonucleotide sequences.
25
7. The method of any one of claims 1-6, wherein the plurality of oligonucleotides
includes at least 100,000 unique oligonucleotide sequences.
8. The method of any one of claims 1-7, wherein the unique oligonucleotide
30 sequences each comprise a first region that is identical in the unique
oligonucleotide sequences, and a second region that is not identical in the unique
oligonucleotide sequences.

9. The method of claim 8, wherein the unique oligonucleotide sequences each comprise a third region that is identical in the unique oligonucleotide sequences, wherein the second region separates the first region and the third region.
- 5
10. The method of any one of claims 1-9, wherein amplifying at least some of the plurality of oligonucleotides comprises exposing at least some of the plurality of oligonucleotides to primer-containing sequences.
- 10 11. The method of claim 10, wherein at least some of the primer-containing sequences further comprises a promoter, whereby the promoter is added to at least some of the amplified oligonucleotides.
12. The method of any one of claims 1-10, wherein at least some of the amplified oligonucleotides contain a promoter.
- 15
13. The method of any one of claims 11 or 12, wherein the promoter is a T7 promoter.
- 20 14. The method of any one of claims 11 or 12, wherein the promoter is a T3 promoter.
15. The method of any one of claims 11 or 12, wherein the promoter is a SP6 promoter.
- 25
16. The method of any one of claims 1-15, wherein at least some of the plurality of oligonucleotides comprise at least a first set of oligonucleotides having a first common index region, and a second set of oligonucleotides having a second common index region distinguishable from the first common index region.
- 30
17. The method of claim 16, comprising amplifying the first set of oligonucleotides but not the second set of oligonucleotides.

18. The method of any one of claims 16 or 17, wherein the plurality of oligonucleotides comprises at least 2 sets of oligonucleotides having distinguishable common index regions.
- 5
19. The method of any one of claims 16-18, wherein the plurality of oligonucleotides comprises at least 4 sets of oligonucleotides having distinguishable common index regions.
- 10
20. The method of any one of claims 16-19, wherein the plurality of oligonucleotides comprises at least 10 sets of oligonucleotides having distinguishable common index regions.
- 15
21. The method of any one of claims 16-20, wherein the plurality of oligonucleotides comprises at least 20 sets of oligonucleotides having distinguishable common index regions.
- 20
22. The method of any one of claims 16-21, wherein the plurality of oligonucleotides comprises at least 96 sets of oligonucleotides having distinguishable common index regions.
- 25
23. The method of any one of claims 16-22, wherein the plurality of oligonucleotides comprises at least 100 sets of oligonucleotides having distinguishable common index regions.
24. The method of any one of claims 16-23, wherein the plurality of oligonucleotides comprises at least 192 sets of oligonucleotides having distinguishable common index regions.
- 30
25. The method of any one of claims 1-24, wherein amplifying at least some of the plurality of oligonucleotides comprises producing amplified oligonucleotides

comprising one oligonucleotide of the plurality of oligonucleotides and a promoter.

- 5 26. The method of any one of claims 1-27, wherein transcribing at least some of the amplified oligonucleotides comprises a mass of RNA that is at least 100-fold greater than the mass of amplified oligonucleotides.
- 10 27. The method of any one of claims 1-26, wherein transcribing at least some of the amplified oligonucleotides comprises exposing the amplified oligonucleotides to an RNA polymerase.
28. The method of claim 27, wherein the RNA polymerase is a T7 RNA polymerase.
29. The method of claim 27, wherein the RNA polymerase is a T3 RNA polymerase.
- 15 30. The method of claim 27, wherein the RNA polymerase is a SP6 RNA polymerase.
- 20 31. The method of claim 27, wherein the RNA polymerase is RNA polymerase I, RNA polymerase II, RNA polymerase III, RNA polymerase IV, or RNA polymerase V.
- 25 32. The method of claim 27, wherein the RNA polymerase is a viral RNA polymerase.
- 30 33. The method of any one of claims 1-32, wherein transcribing at least some of amplified oligonucleotides to produce RNA comprises producing, on average, at least 10 RNA copies of each of the amplified oligonucleotides.
34. The method of any one of claims 1-33, wherein transcribing at least some of amplified oligonucleotides to produce RNA comprises producing, on average, at least 100 RNA copies of each of the amplified oligonucleotides.

35. The method of any one of claims 1-34, wherein transcribing at least some of amplified oligonucleotides to produce RNA comprises producing, on average, at least 1,000 RNA copies of each of the amplified oligonucleotides.
- 5
36. The method of any one of claims 1-35, wherein transcribing at least some of amplified oligonucleotides to produce RNA comprises producing, on average, at least 10,000 RNA copies of each of the amplified oligonucleotides.
- 10
37. The method of any one of claims 1-36, wherein reverse transcribing the RNA comprises exposing the RNA to a reverse transcriptase.
38. The method of claim 37, wherein the reverse transcriptase is a viral reverse transcriptase.
- 15
39. The method of any one of claims 1-38, wherein reverse transcribing the RNA to produce transcribed DNA occurs without first purifying the RNA from components used to produce the RNA.
- 20
40. The method of any one of claims 1-39, further comprising purifying the RNA from components used to produce the RNA prior to reverse transcribing the RNA to produce transcribed DNA.
- 25
41. The method of any one of claims 1-40, wherein reverse transcribing the RNA to produce transcribed DNA comprises reverse transcribing the RNA to produce transcribed DNA using a sequence containing a transcription primer.
- 30
42. The method of claim 41, wherein the sequence containing a transcription primer is incorporated into the transcribed DNA.
43. The method of any one of claims 41 or 42, wherein the sequence containing a transcription primer further comprises a biotin moiety.

44. The method of any one of claims 41-43, wherein the sequence containing a transcription primer further comprises a digoxigenin moiety.
- 5 45. The method of any one of claims 41-44, wherein the sequence containing a transcription primer further comprises a fluorophore.
46. The method of any one of claims 41-45, wherein the sequence containing a transcription primer further comprises a non-nucleic acid moiety.
- 10 47. The method of any one of claims 41-46, wherein the sequence containing a transcription primer further comprises a signaling entity attached thereto.
48. The method of claim 47, wherein the signaling entity is fluorescent.
- 15 49. The method of any one of claims 47 or 48, wherein the signaling entity is photoswitchable between a first state able to emit light at a first wavelength, and a second state not able to emit light at the first wavelength.
- 20 50. The method of any one of claims 47-49, wherein the signaling entity is photactivatable.
51. The method of claim 47, wherein the signaling entity is a nucleic acid sequence.
- 25 52. The method of claim 51, wherein the additional nucleic acid sequence is able to hybridize selectively to a second nucleic acid sequence containing an additional signaling entity via Watson-Crick base-pairing.
53. The method of any one of claims 1-52, wherein selectively degrading the RNA
30 relative to the transcribed DNA comprises chemically reducing the RNA.

54. The method of any one of claims 1-53, wherein selectively degrading the RNA relative to the transcribed DNA comprises exposing the RNA to a pH of at least about 9.
- 5 55. The method of any one of claims 1-54, wherein selectively degrading the RNA relative to the transcribed DNA comprises subjecting the RNA to alkaline hydrolysis.
56. The method of any one of claims 1-55, wherein selectively degrading the RNA
10 relative to the transcribed DNA comprises enzymatically digesting the RNA.
57. The method of any one of claims 1-56, wherein the transcribed DNA is substantially single-stranded.
- 15 58. The method of any one of claims 1-57, wherein the steps are performed in the order recited.
59. The method of any one of claims 1-58, further comprising purifying the transcribed DNA.
20
60. The method of claim 59, comprising purifying the transcribed DNA by column purification.
61. The method of any one of claims 59 or 60, comprising purifying the transcribed
25 DNA by ethanol precipitation.
62. The method of any one of claims 59-61, comprising purifying the transcribed DNA by solid-phase reversible immobilization.
- 30 63. The method of any one of claims 1-62, further comprising concentrating the transcribed DNA.

64. The method of claim 63, comprising concentrating the transcribed DNA via evaporation.
- 5 65. The method of any one of claims 1-64, wherein the plurality of oligonucleotides is computationally designed.
66. The method of any one of claims 1-65, wherein the plurality of oligonucleotides is synthetically produced.
- 10 67. The method of any one of claims 1-66, wherein the plurality of oligonucleotides arises from a cell.
68. The method of any one of claims 1-67, wherein the plurality of oligonucleotides is produced on a substrate.
- 15 69. The method of claim 68, wherein the plurality of oligonucleotides is produced in an array on a substrate.
70. The method of any one of claims 1-69, further comprising separating a subset of the DNA.
- 20 71. The method of any one of claims 1-70, wherein each oligonucleotide of a subset of the oligonucleotides comprises an index portion that is identical.
- 25 72. The method of any one of claims 1-71, wherein each transcribed DNA of a subset of the oligonucleotides comprises an index portion that is identical, the method further comprising separating the subset of the transcribed DNA based on the identical index portions.
- 30 73. A method, comprising:
simultaneously amplifying at least some of a plurality of oligonucleotides in a common solution using PCR to produce amplified oligonucleotides;

transcribing *in vitro* at least some of the amplified oligonucleotides to produce RNA;

reverse transcribing the RNA to produce transcribed DNA; and
selectively degrading the RNA relative to the transcribed DNA.

5

74. The method of claim 73, wherein the plurality of oligonucleotides have an average length of between 10 and 200 nucleotides.

10

75. The method of any one of claims 73 or 74, wherein the plurality of oligonucleotides includes at least 10 unique oligonucleotide sequences.

76. The method of any one of claims 73-75, wherein the plurality of oligonucleotides includes at least 100 unique oligonucleotide sequences.

15

77. The method of any one of claims 73-76, wherein the plurality of oligonucleotides includes at least 1,000 unique oligonucleotide sequences.

20

78. The method of any one of claims 73-77, wherein the plurality of oligonucleotides includes at least 10,000 unique oligonucleotide sequences.

79. The method of any one of claims 73-78, wherein the plurality of oligonucleotides includes at least 100,000 unique oligonucleotide sequences.

25

80. The method of any one of claims 73-79, wherein amplifying at least some of the plurality of oligonucleotides comprises exposing at least some of the plurality of oligonucleotides to primer-containing sequences.

30

81. The method of claim 80, wherein at least some of the primer-containing sequences further comprises a promoter, whereby the promoter is added to at least some of the amplified oligonucleotides.

82. The method of any one of claims 1-80, wherein at least some of the amplified oligonucleotides contain a promoter.
83. The method of any one of claims 81 or 82, wherein the promoter is a T7 promoter.
- 5 84. The method of any one of claims 81 or 82, wherein the promoter is a T3 promoter.
85. The method of any one of claims 81 or 82, wherein the promoter is a SP6 promoter.
- 10 86. The method of any one of claims 73-85, wherein at least some of the plurality of oligonucleotides comprise at least a first set of oligonucleotides having a first common index region, and a second set of oligonucleotides having a second common index region distinguishable from the first common index region.
- 15 87. The method of claim 86, comprising amplifying the first set of oligonucleotides but not the second set of oligonucleotides.
- 20 88. The method of any one of claims 86 or 87, wherein the plurality of oligonucleotides comprises at least 2 sets of oligonucleotides having distinguishable common index regions.
89. The method of any one of claims 86-88, wherein the plurality of oligonucleotides comprises at least 4 sets of oligonucleotides having distinguishable common index regions.
- 25 90. The method of any one of claims 86-89, wherein the plurality of oligonucleotides comprises at least 10 sets of oligonucleotides having distinguishable common index regions.
- 30

91. The method of any one of claims 86-90, wherein the plurality of oligonucleotides comprises at least 20 sets of oligonucleotides having distinguishable common index regions.
- 5 92. The method of any one of claims 86-91, wherein the plurality of oligonucleotides comprises at least 96 sets of oligonucleotides having distinguishable common index regions.
- 10 93. The method of any one of claims 86-92, wherein the plurality of oligonucleotides comprises at least 100 sets of oligonucleotides having distinguishable common index regions.
- 15 94. The method of any one of claims 86-93, wherein the plurality of oligonucleotides comprises at least 192 sets of oligonucleotides having distinguishable common index regions.
- 20 95. The method of any one of claims 73-94, wherein amplifying at least some of the plurality of oligonucleotides comprises producing amplified oligonucleotides comprising one oligonucleotide of the plurality of oligonucleotides and a promoter.
- 25 96. The method of any one of claims 73-95, wherein transcribing at least some of the amplified oligonucleotides comprises a mass of RNA that is at least 100-fold greater than the mass of amplified oligonucleotides.
- 30 97. The method of any one of claims 73-96, wherein transcribing at least some of the amplified oligonucleotides comprises exposing the amplified oligonucleotides to an RNA polymerase.
98. The method of claim 97, wherein the RNA polymerase is a T7 RNA polymerase.
99. The method of claim 97, wherein the RNA polymerase is a T3 RNA polymerase.

100. The method of claim 97, wherein the RNA polymerase is a SP6 RNA polymerase.
- 5 101. The method of claim 97, wherein the RNA polymerase is RNA polymerase I, RNA polymerase II, RNA polymerase III, RNA polymerase IV, or RNA polymerase V.
- 10 102. The method of claim 97, wherein the RNA polymerase is a viral RNA polymerase.
- 15 103. The method of any one of claims 73-102, wherein transcribing at least some of amplified oligonucleotides to produce RNA comprises producing, on average, at least 10 RNA copies of each of the amplified oligonucleotides.
- 20 104. The method of any one of claims 73-103, wherein transcribing at least some of amplified oligonucleotides to produce RNA comprises producing, on average, at least 100 RNA copies of each of the amplified oligonucleotides.
- 25 105. The method of any one of claims 73-104, wherein transcribing at least some of amplified oligonucleotides to produce RNA comprises producing, on average, at least 1,000 RNA copies of each of the amplified oligonucleotides.
- 30 106. The method of any one of claims 73-105, wherein transcribing at least some of amplified oligonucleotides to produce RNA comprises producing, on average, at least 10,000 RNA copies of each of the amplified oligonucleotides.
107. The method of any one of claims 73-106, wherein reverse transcribing the RNA comprises exposing the RNA to a reverse transcriptase.
108. The method of claim 107, wherein the reverse transcriptase is a viral reverse transcriptase.

109. The method of any one of claims 73-108, wherein reverse transcribing the RNA to produce transcribed DNA occurs without first purifying the RNA from components used to produce the RNA.
- 5
110. The method of any one of claims 73-109, further comprising purifying the RNA from components used to produce the RNA prior to reverse transcribing the RNA to produce transcribed DNA.
- 10
111. The method of any one of claims 73-110, wherein reverse transcribing the RNA to produce transcribed DNA comprises reverse transcribing the RNA to produce transcribed DNA using a sequence containing a transcription primer.
- 15
112. The method of claim 111, wherein the sequence containing a transcription primer is incorporated into the transcribed DNA.
113. The method of any one of claims 111 or 112, wherein the sequence containing a transcription primer further comprises a biotin moiety.
- 20
114. The method of any one of claims 111-113, wherein the sequence containing a transcription primer further comprises a digoxigenin moiety.
115. The method of any one of claims 111-114, wherein the sequence containing a transcription primer further comprises a fluorophore.
- 25
116. The method of any one of claims 111-115, wherein the sequence containing a transcription primer further comprises a non-nucleic acid moiety.
117. The method of any one of claims 111-116, wherein the sequence containing a transcription primer further comprises a signaling entity attached thereto.
- 30
118. The method of claim 117, wherein the signaling entity is fluorescent.

119. The method of any one of claims 117 or 118, wherein the signaling entity is photoswitchable between a first state able to emit light at a first wavelength, and a second state not able to emit light at the first wavelength.
- 5
120. The method of any one of claims 117-119, wherein the signaling entity is photactivatable.
121. The method of claim 120, wherein the signaling entity is a nucleic acid sequence.
- 10
122. The method of claim 121, wherein the additional nucleic acid sequence is able to hybridize selectively to a second nucleic acid sequence containing an additional signaling entity via Watson-Crick base-pairing.
- 15
123. The method of any one of claims 73-122, wherein selectively degrading the RNA relative to the transcribed DNA comprises chemically reducing the RNA.
124. The method of any one of claims 73-123, wherein selectively degrading the RNA relative to the transcribed DNA comprises exposing the RNA to a pH of at least
- 20
- about 9.
125. The method of any one of claims 73-124, wherein selectively degrading the RNA relative to the transcribed DNA comprises subjecting the RNA to alkaline hydrolysis.
- 25
126. The method of any one of claims 73-125, wherein selectively degrading the RNA relative to the transcribed DNA comprises enzymatically digesting the RNA.
127. The method of any one of claims 73-126, wherein the transcribed DNA is
- 30
- substantially single-stranded.

128. The method of any one of claims 73-127, wherein the steps are performed in the order recited.
- 5 129. The method of any one of claims 73-128, further comprising purifying the transcribed DNA.
130. The method of claim 129, comprising purifying the transcribed DNA by column purification.
- 10 131. The method of any one of claims 129 or 130, comprising purifying the transcribed DNA by ethanol precipitation.
132. The method of any one of claims 129-131, comprising purifying the transcribed DNA by solid-phase reversible immobilization.
- 15 133. The method of any one of claims 73-, further comprising concentrating the transcribed DNA.
134. The method of claim 133, comprising concentrating the transcribed DNA via evaporation.
- 20 135. The method of any one of claims 73-134, wherein the plurality of oligonucleotides is computationally designed.
- 25 136. The method of any one of claims 73-135, wherein the plurality of oligonucleotides is synthetically produced.
137. The method of any one of claims 73-136, wherein the plurality of oligonucleotides arises from a cell.
- 30 138. The method of any one of claims 73-137, wherein the plurality of oligonucleotides is produced on a substrate.

139. The method of claim 138, wherein the plurality of oligonucleotides is produced in an array on a substrate.
- 5 140. The method of any one of claims 73-139, further comprising separating a subset of the DNA.
141. The method of any one of claims 73-140, wherein each oligonucleotide of a subset of the oligonucleotides comprises an index portion that is identical.
- 10 142. The method of any one of claims 73-141, wherein each transcribed DNA of a subset of the oligonucleotides comprises an index portion that is identical, the method further comprising separating the subset of the transcribed DNA based on the identical index portions.

ABSTRACT

The present invention generally relates to systems and methods for producing nucleic acids. In some aspects, relatively large quantities of oligonucleotides can be produced, and in some cases, the oligonucleotides may have a variety of different
5 sequences and/or lengths. For instance, a relatively small quantity of oligonucleotides may be amplified to produce a large amount of nucleotides. In one set of embodiments, oligonucleotides may be amplified using PCR, then transcribed to produce RNA. The RNA may then be reverse transcribed to produce DNA, and optionally, the RNA may be selectively degraded or removed, relative to the DNA. In one set of embodiments, the
10 oligonucleotides may be chemically modified. These modifications may include, but are not limited, to the adding of fluorescent dyes or other signaling entities.

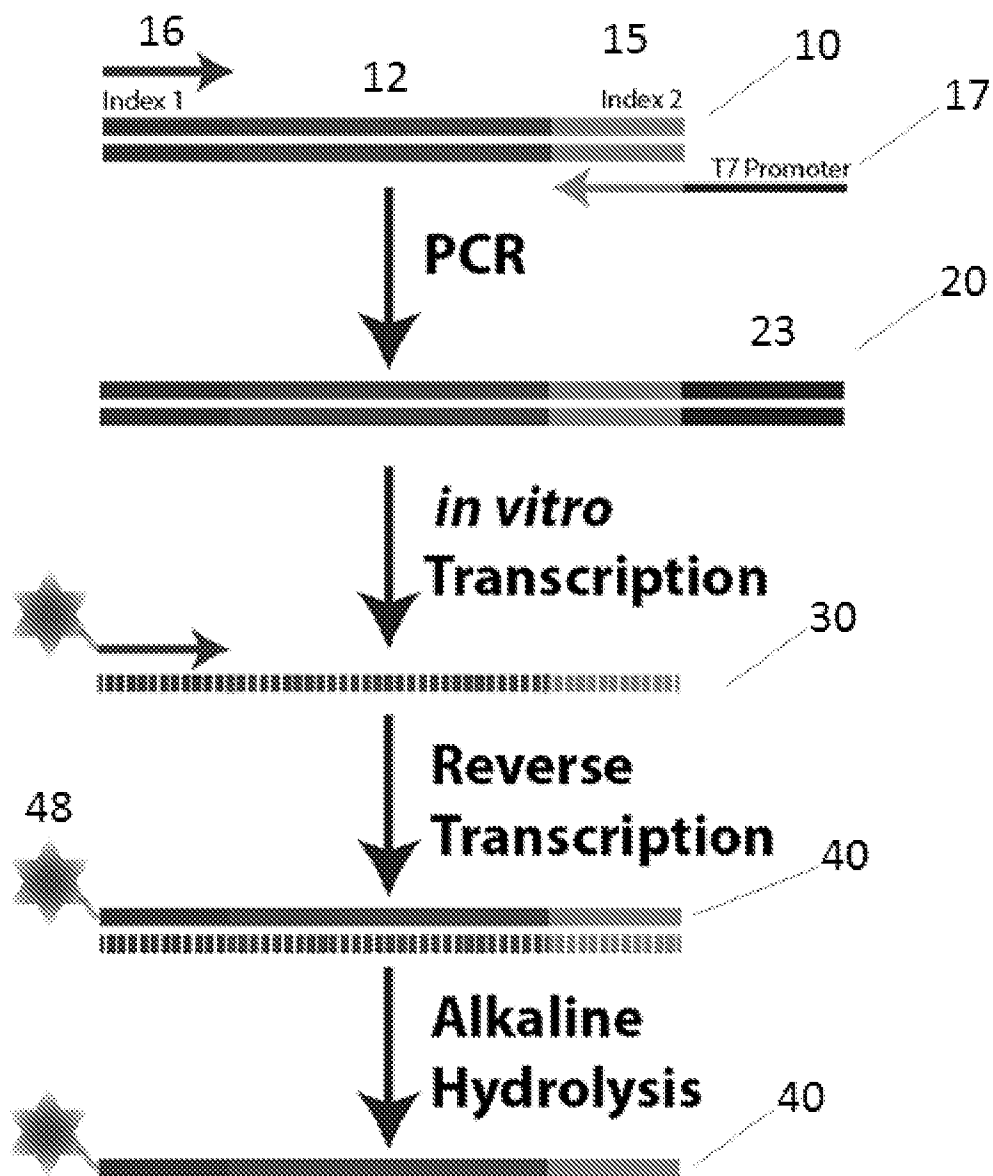


FIG. 1

ACAACCGCGTGTTACAAGGCCAGGCATCCGAGAGGTCTGGGAATGCC
AGCAGCTCTACAAGTGCGGCCATTGTTCATTGCGCTTCTCCGGAAC
ATTAGC (SEQ ID NO: 3)

FIG. 2

FIG. 3

>bc25mer_8982-20 CGGTAGGACCCTACACATCC	>bc25mer_69827-20 GTGCGATTGTCACATGTGCT	>bc25mer_218789-20 GACCCGGGAGTTATGATACG
>bc25mer_37497-20 TGTGGCGCCTAACCATACAC	>bc25mer_85616-20 GGCTTGTCTCAATTATCCG	>bc25mer_235702-20 CTCGGGTAGGCTATCTCCAA
>bc25mer_48272-20 GACACCGAGCTAGAATTCGG	>bc25mer_90788-20 CCCACGTGACTTGACTTCTC	>bc25mer_239358-20 CTGCAGGTGCTCTAGATGGA
>bc25mer_96434-20 TGTCTTGGGTCTCTTACGG	>bc25mer_108211-20 CCTCTACATGCTCCGGATCC	>bc25mer_5878-20 GTCCAGGCTCGTCTTCTCGA
>bc25mer_135960-20 TATCACGTGAGGCTCCGTGT	>bc25mer_113656-20 GAATAGTAACCCGGTCGCAA	>bc25mer_9018-20 CTTACCTGAGCGCAGTTCGA
>bc25mer_217459-20 GTCTACGGATCCTTGCGTGT	>bc25mer_121326-20 TGGGCCACTAGTCTTCGCTA	>bc25mer_9904-20 GTTGTTGATCCCTCCACCA
>bc25mer_5177-20 ACGGGTACATTGGATCCACT	>bc25mer_123881-20 CGGCACGTACCCTTTACAGG	>bc25mer_10475-20 CGGCAGAGGATAATCCTAGC
>bc25mer_7835-20 AAGACGTGGTCCACCCTGAT	>bc25mer_138428-20 GATCAGTGAGCCTCACCAAG	>bc25mer_11594-20 GGGAGTCCGGATGTTAGTGC
>bc25mer_13747-20 TGCCAGGTCCACTACTTGGG	>bc25mer_140203-20 TGGTATGTGAGCTCTTTGGG	>bc25mer_12189-20 CGCATCTATGCTCCGCTTAC
>bc25mer_14156-20 GACCCGAAGGAGAATGCAAA	>bc25mer_159878-20 AGAGTCACGCATACTTGGA	>bc25mer_14363-20 AACGCGCTACCCAATTCTAG
>bc25mer_14649-20 ATGTCGTCTCTCAGGGCTTT	>bc25mer_163235-20 GGGTCAGGCGTCATAGATTG	>bc25mer_16178-20 TACTGGACGATTCCCAGCTG
>bc25mer_16849-20 AAGGGCGGAAGCACTCTCTT	>bc25mer_184954-20 AGAATGTGGAGGACATGTGG	>bc25mer_17067-20 AGCGTCGTACCCAGTTAAGC
>bc25mer_25227-20 TGGTCCCGCATTGTACCTT	>bc25mer_188166-20 TCGGACTGTGAGACATTTCC	>bc25mer_18548-20 GAGATTCACGCCCTCATGAG
>bc25mer_45585-20 AAGTCCGTCTGCTAAGCCAT	>bc25mer_192833-20 ATCAAATGCCTCGGTCGTTG	>bc25mer_20080-20 CCGCTAGCGTTACCTCTACC
>bc25mer_46295-20 CTTCCAGAGTCCTGGCATGA	>bc25mer_193757-20 GCAATGCTATGCTGGGACAA	>bc25mer_20601-20 CCACACCGTATGCATTTCTG
>bc25mer_46396-20 TCTAACGAGCTCCGTGGTTG	>bc25mer_199694-20 ATGGAGGCCGTTCTCTGACA	>bc25mer_26252-20 CCTTAGCGCACAAAGAGACG
>bc25mer_55377-20 CCTGGGCAGGAAACAACACT	>bc25mer_200273-20 GCAGATGGGTGCATTCATTC	>bc25mer_28353-20 GTCCTGATGGCTTTCTCACG
>bc25mer_57092-20 GCGCACACCTTAGTCATAGC	>bc25mer_208214-20 TATGCACTCTGCGGATGACC	>bc25mer_30927-20 GGTCGTCCGGTAGATCATTGC

>bc25mer_32240-20 AGAGCCGGTATGATCCATCG	>bc25mer_65782-20 TCTCCGAAGATCCGATATCG	>bc25mer_96522-20 GGCGTTCCATCGAAACTCTA
>bc25mer_32875-20 CCGGACGAAGGTTGATATCC	>bc25mer_66426-20 GATGCAGGGCCTAATTAACG	>bc25mer_96896-20 GGCCATCGACTTAGATTCCA
>bc25mer_39270-20 ACCCGGTACCTGTTATCACG	>bc25mer_68963-20 TGACGCGGCTAAATACTGAC	>bc25mer_97519-20 GGTGCTCCTGCCATTATAGG
>bc25mer_40398-20 ATCCCGTCTCGTTCTATGGG	>bc25mer_70828-20 GCAATGCACGCTCTCCTAGT	>bc25mer_100107-20 TGTCGACGTGCGGAAAGTAG
>bc25mer_41429-20 CAGGTGAGGGTCTCTCCTTC	>bc25mer_71011-20 TGGCGTCAGATGGATTAGGA	>bc25mer_100109-20 GCCGCACGAGTATGCTACTG
>bc25mer_42283-20 CCTTATGGAACGTGATGCC	>bc25mer_71626-20 GTTGGCGGGAGACTAAGAAG	>bc25mer_100502-20 TGCTGCCGCTTACTACTGCT
>bc25mer_43506-20 GGCTGGGCATACATAGACCT	>bc25mer_72701-20 TCGCGTCTCGTCCTTCTACC	>bc25mer_102626-20 TAGCACTCTTCTGGCCATCG
>bc25mer_45853-20 AGTGCGGCTATTACCGGAT	>bc25mer_79345-20 CGGTCACGTCGGAAATAACC	>bc25mer_103544-20 CGGTAATCGGTTACCCAGTG
>bc25mer_47706-20 TGATAACGTCCGCTCGTTGA	>bc25mer_79641-20 ATTAACGGGCCAGGTTACTG	>bc25mer_108258-20 TTTAGTGCCTGGCTCCGTTG
>bc25mer_54028-20 TACATCGTTGAGGCCCGTTT	>bc25mer_81698-20 ATTGTATGGAGGCGCCCTAT	>bc25mer_109838-20 GGAGTTACAGCCACTTTCGG
>bc25mer_54772-20 CGTTGTGGCATCAGCTAGAG	>bc25mer_82313-20 GCCAGCTTTCGAAGATTCAG	>bc25mer_114408-20 GTGTGGACGGAACCTGACAA
>bc25mer_55112-20 ACTGGCCCACACACTTACCT	>bc25mer_83004-20 ACAACCGCGTGTTACAAGGC	>bc25mer_115589-20 CACACGTGGAATTGTTCTGC
>bc25mer_57695-20 ATCGGGTCACGGAATATGAC	>bc25mer_83517-20 GCTAATGTTTCCGGAGAAGC	>bc25mer_116534-20 CTTGATACATGGAGGGCGACT
>bc25mer_58256-20 CGTAGGTTACAGATTTGCG	>bc25mer_83687-20 GAAGTATCCGGCATCACAGC	>bc25mer_116605-20 AATCCGGTGTACAGGTTCCC
>bc25mer_59008-20 TAGGGCACGAGAAGGTATCC	>bc25mer_85062-20 TCGTTACGGACTTTCACGAC	>bc25mer_121894-20 AGGTGCGACGATATACACCA
>bc25mer_61977-20 ACTAGCTTGTATCGCCGGAT	>bc25mer_87436-20 GCCATTCTGACATACCCAGA	>bc25mer_123748-20 ACTGCATATGACCGCTGCAA
>bc25mer_63426-20 CGGCGGTTTGATATTCGAAG	>bc25mer_90109-20 GTATTTGAACCGGCCAGCTG	>bc25mer_125347-20 CCTTCCATTAGCCGAGATCA
>bc25mer_63840-20 GCCGAGTGTTATGAGCAAG	>bc25mer_95782-20 GGTTGTGGGCCATATCCAAT	>bc25mer_125541-20 GACGCGAGGAGTGATCGACT

>bc25mer_126017-20 CGACCCCTCACACATTTGGGT	>bc25mer_149885-20 AAGCGGTCGTGGTTTATACC	>bc25mer_175501-20 GCAGTGCGGGTAGATACGCT
>bc25mer_126439-20 CGCTCCCGTATTCTTCTGTG	>bc25mer_150249-20 GCCACCTTGTATGGTATCGA	>bc25mer_180358-20 AGGCGTGGGTAGCAACGTAT
>bc25mer_128324-20 CAGGGATAGTCAGGCCAGTG	>bc25mer_150996-20 TAATGCTTAGGCCCGTCGGT	>bc25mer_180797-20 GCTCATTGGACTTTCTCCCA
>bc25mer_130576-20 CGTAATGAGTGCTTCGCCAT	>bc25mer_153952-20 GACGCGACGGATTATTTAGG	>bc25mer_181432-20 AAGGACCACGTATCTGCATG
>bc25mer_132438-20 CTCGTCTCGTGGAACACATG	>bc25mer_156264-20 GGTCGCGCCCATATATAAGG	>bc25mer_181702-20 ATCTGATAGTGCCGCGACGT
>bc25mer_133420-20 TATGCTGGGCAGTAATCAGG	>bc25mer_156364-20 TGACTACGGTTGGGTGCATC	>bc25mer_182418-20 TGACCTGCACGGATAGTAGG
>bc25mer_133575-20 GCATCTCGTAGCATCCTGCT	>bc25mer_157007-20 TCAGGCGCTCATTGTATGTC	>bc25mer_182774-20 GTTATTCGCAGTCCTTGGGT
>bc25mer_134218-20 AGTATGGTACCGGGAACAGC	>bc25mer_160860-20 GTAGATACTCCCGGCCCGAA	>bc25mer_183321-20 GTGCAGTGTGCTTAAATCCG
>bc25mer_136989-20 ACCATTCTCGCAACTCGCTA	>bc25mer_161471-20 GCAGCACTTAGGGCAGCATC	>bc25mer_188636-20 CGCGGGTGTTAAATAAGGAC
>bc25mer_137798-20 CGTGGGCGAAGTACTTGGTC	>bc25mer_163904-20 CGCGGGAACCATATTAGGAA	>bc25mer_189039-20 GCGAGGCGTGGTAATAGTCA
>bc25mer_138338-20 CCGGACGTCTTCGATAATGC	>bc25mer_164195-20 GATCCATGGCCAGTTCGTAT	>bc25mer_190422-20 CAAGGCGCAAACATAGACAG
>bc25mer_139329-20 TGATGCTCTTTGCAGTTCCG	>bc25mer_164787-20 GTGCGCCAAAGGACTTAGTG	>bc25mer_191525-20 GGAACAAGGGCGTCTATGTC
>bc25mer_139807-20 ATGCCGGTCATAACAGTGTC	>bc25mer_166664-20 GATCCCGCTATTCACCGATT	>bc25mer_193359-20 GCAGTGCGGATAAGCTACAC
>bc25mer_140760-20 TGGTGGCTCGTTATCACAAG	>bc25mer_167568-20 GCATAGATGGTTCACCCGTA	>bc25mer_193734-20 AGAGATGCGTGTAGGCGATT
>bc25mer_141708-20 TCTGAAGCGTGGCCATTACC	>bc25mer_169085-20 GTCTATAAGCCGCGCTGCAA	>bc25mer_194512-20 CCCTTTCGAGCTAAGTTTGG
>bc25mer_141799-20 CATATGCCGGACATTCAGCT	>bc25mer_170764-20 GCGGAGTATGCCATCATGAG	>bc25mer_196660-20 CCTTAAGCAACCCGTCGATG
>bc25mer_142929-20 ACTAATGGTCCTGCGGCATA	>bc25mer_171455-20 TGCCGCGATCATCTACTATG	>bc25mer_197001-20 TTGCTCGTGACTGAACAACG
>bc25mer_146048-20 GGTGCCGTGTTGCATGTAAG	>bc25mer_174112-20 GACCGGGTATTCGACGTCAT	>bc25mer_197794-20 GGTCGTGCGTATAAGCCTCA

>bc25mer_198508-20
CGGATGGTCTTCGTTTAACC

>bc25mer_198891-20
GGCACGGTGGCTAGTAACGA

>bc25mer_200581-20
GCCGGCCCAACTGATAGTAG

>bc25mer_200721-20
TCGACTTCGGTCACCTTTCC

>bc25mer_206382-20
CGGGTCGATACTTTCCTCGT

>bc25mer_207645-20
GTGCCGTGTGTAATATCCGA

>bc25mer_210956-20
CGCGCCTGGAATAACTCCTA

>bc25mer_210958-20
GTCAGGGAACCGTTTCTTCA

>bc25mer_210961-20
CTTGTCATGTACCCGAATGG

>bc25mer_211638-20
CGACCTGGCTACGTAGAACC

>bc25mer_211770-20
CTAGCTAAAGGGCCGTGCGT

>bc25mer_213351-20
AAGTATTAGCGCGGCAACGT

>bc25mer_213506-20
GGTTGCGTGCCACTTAAAGC

>bc25mer_216161-20
GGAGGTTGCGTTGTACTGCA

>bc25mer_216486-20
GTTGTCGTCTCCATCGGTT

>bc25mer_218887-20
GGGACGGAACCTACACATGTG

>bc25mer_221408-20
GATCCATCCTGATTGAGGGT

>bc25mer_222754-20
CTTCATGGTACCGGTTGAGA

>bc25mer_223329-20
TCGGTTCGGCTGTAAGGATAC

>bc25mer_224422-20
ATTGCACGAGGTCAGAGTCG

>bc25mer_225143-20
GCTTAGATCCGCTCGCTACG

>bc25mer_227128-20
CGGCTGGCCTACTGTAGAGA

>bc25mer_227360-20
GCAACATGACCTGTCATCGC

>bc25mer_228435-20
GGCCGCACGATATATTTGAC

>bc25mer_229488-20
CAGCCGGGCCATAATAGTTG

>bc25mer_229709-20
TGCGGTGGACCTATTATCCT

>bc25mer_229929-20
CCTGCGTTAGGCAATCCATC

>bc25mer_230898-20
GTGGGCTCTTCGAAGTAACC

>bc25mer_233755-20
GCCGTGGACCACTAAAGTTC

>bc25mer_234401-20
GCTTAAGTCATGGGCGCATC

>bc25mer_236515-20
ACAGGTTAGTTCCGCGCACT

>bc25mer_237582-20
GGCGTGGCATTTAGACTACC

>bc25mer_238816-20
ACTACGGCCAACAACCAACA

>bc25mer_238839-20
GTTGACAAGGCTCTGTACGG

>bc25mer_239304-20
TTGTTCTCTTGCCGGTCGAT

>bc25mer_239849-20
GTTGATCGTAGCCAATTCGG

FIG. 4

Exp-1_acnB-73_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGCAGCTCTACAAGTGC GGC CATTTGGTT
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-191_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTTCGCGATAGCAGCCAGGA AGCCTGCTT
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-671_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAGCGGGAACCTTTCTGTT GCAGAGCTT
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-2404_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCCAGTTCGCGAGAAGCCAG GAAGACATT
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-1307_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGTGTGGCAGAAAGACTGCA TCACCAGGT
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-779_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCCGCGTTTGTTCGGCACAT GTGGAATAT
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-1343_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGTGCGTGTTCACGTCAACTG GCTTCGGAT
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-1961_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CATCTGCATCGGCTTCCAGCA GCTCAGGAT
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-2131_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCAGCACGGAAGTGACCGAT GTTGGTCAT
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-2039_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CATCCGGGTGCTTCGGAGCAC ACAGGATTG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-2262_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATACGCGCACCCTCTTACCG AAGACGCTG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-2542_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCGGCTTTCTCGGTGACTG AGAAAGCTG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-2369_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGTACCCAGACGGTTCGGGA AGTTACGGG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-1811_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTTGTTTCAGCTTGATGGTAC AACCGCGG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-428_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CATCCGCCAGGACTGCATAA CCTGCTTCG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-744_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCCATAAACACAGAACGGAG TTAGTGGCG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-393_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCGTTGCCTGCTTTCGCTTTC TCTTCTACG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-530_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGGTGCCGAGAAAGGTCAT CGGTGTTAG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-1378_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCGCCACGTTTCATAATGAA GTCCGGCAG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-2170_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGTCGGCAACTGACCTTTATG CGCATCCAG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_acnB-943_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGTTCGCCGGTTTCGTGGTT ACGCACTTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-1881_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCGCCGTAACTTCCGCGATC ATCCACTTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-634_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTGATCGGACCAACAACACC AGGCTGGTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-1224_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGGTGGTGTCTGGGAACCT ACAGAAGTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-1768_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGACGCATCGGTAGCTCAAA GGCCTGCTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-2473_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCTACCTGCGCCACGTAGGT CTGGTACTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-1005_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATACGGCCACCAGCACGCACT TCATCAATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-352_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCGAACATCAGCAGCGTGTG AGAAAGTGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-2002_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AATATCCGCCAGATCGATGTC GATCACTGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-2088_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AACACTTCGTGATCTTCTCA CCCTGTACC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-1681_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTGCCTTTCTTCAACGGT CAGCAGACC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-1916_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCATGCCCTGAATACGACGTT CCAGGGTAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-1478_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGAACCGGGTATGGGAGTCAC CACCGGTAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-706_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGAAGAACCCGTACCAACAAC GTCACCGAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-897_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGTCAATCACGTCGCCCATG TTCAGGTTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-1515_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCAGACCAGAACCCGCCGGG AAAGAGATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-1581_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTGAAGCGCACCAGAACGGAT TCCGGCATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-2226_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCTTCTTCGGTCAACTGTGCG GCGTCCATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-2297_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGTTACCCATACACAGGGAAC AGCCAGGGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-1733_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCAGATCCGGCAGACCTTCAA TTTCCAGGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-305_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAGTTTGGCATCATCCAGCG CGTCGATCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-1266_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCCAGGCACGCCAGGTCTTTC AGTTTCATCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-1040_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTTGGTGGTCAGGCCACGCC CGATAATCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-1646_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGATCGCATACAGCGGAATAG CGTGTACCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-848_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCAGTGACCCGCGTCTTCCA TCGTGTTAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-1436_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCAGCAGCATACGGTTCAGCC AGGAGTGAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_acnB-1105_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCTCTCAGCGACATCTTTCGC CTGACGGAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-646_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGTTTCAAGGTCGCCGCCAG TTTCTGTTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1951_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACGGTGCTGGAACACCGGC ATAGAAGTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1354_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGTCCCGTTGATACCAACAGC ATAACCTGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-686_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGAAACGGGCATAACCGCGAT CCAGATAGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1189_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGAACACGTTGGGTATCGGT ATCGACAGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1410_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGGTGAAGTACGGGTTGGTT ACCGACAGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-857_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACAGCTACCCCGGCTCGATCT TAGTCAGCT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1490_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGTTGGTATAGTCGGACAGGT CGGCGTCAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-85_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGACACGCTGAAGGCCCTTC GAAATGAAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-564_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGGAAATGAGAGATCAGTTCG TCGGTGGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-508_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTGCTGGATTTAGCTGACAC ACCTTCCTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-967_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTCGGCATCGTTAATTTCCGG CATCGACTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1989_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACTGCTTTCGGACCAATGGTA TTGACTGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1224_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCTTG TAGACGACATCAACC TGGTCCGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1787_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TATCCGATCCAGGAATGGTCA CTTTACCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-50_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCACTACGAACCTTCAGCAC CGTATACGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1101_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGCCATGCACCTTCATCTGA CGCATTTCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1560_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCCAGACCTGCACGCAGCGAG TTATATTCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-2382_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AACTGGAAGTGTCTGCCTTG TCTCCATCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-145_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCTTCATCATTAACCGTGC GCCTGTGCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1700_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCCAACCATAGTTGAACGTGA AGTCGTCCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-2299_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCATTGTAATGCGATACCCGC AGACATACG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-611_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATTTACGATCGCTACCACGT TCCACCACG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-2229_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGGCTGGAATCCCAGTTTGT TCCCAAACG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-423_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGCTGGCGTATATTTACCG ACGCTGTAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-2095_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCGCCTACAGCATCATCCGA TTTACACAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-721_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCTGGCGTCAGACTGACCTG GGTAGAGTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-2059_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCGCCGTCTGAGTCGCACA TTCGTAATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1857_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACAACCCATTTGTGATCGTCA TCGATCGGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1630_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCCATAGAGTACAGATAACG CCACATCGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1260_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATACCAAAGTTGAAGCTACCG GTGTTGCGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1445_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TATAGAAGAGACGACCACCGA GGCTTACGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-892_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTCATCTTCCATCTTGTCAC TTTGGTGCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1029_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGATCTTACGCACGTAGAAA CGGTTACCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1066_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGGACGGCATCTTTCGAGGT ATCGTTACC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1154_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGAAGCCCAGACGATTACAGC GCTCCTTAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1751_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGACACGTGAACCATCTGTG GGAAGTAAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-15_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGCTAAACAGCAGCGACGCT ATGAGCAAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1595_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GAGGCTGCATGTTGGACAGG AGTTATGTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1525_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGGAAGCCCAACGTCACGTC TGTACCATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-2024_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGGATCATAATTACTGGCCT GATGCGGGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1665_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AAGCTGTTATCCTGATCAGAG GTGCTCGGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-234_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCTGAACCAGAAGGTATCA CCATCACGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1911_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGCATCTCTTGGCCCTAAA CCATCACCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-1318_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAGTTATCCTGCTGCACACC AGCCTGGAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-932_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGGATAGGCATAACCATAGC GACCGAGAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-803_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAAGGTTGCCGCTCACTTCAA CGCCAGAAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_bamA-199_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGAACATCCTCAAAGTTGCC GGTAGCAAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_btuF-721_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGTGGGCTTGACGTTCAA CAGTCACT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_btuF-764_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCTGTGAAAGCGCATTACAGA GCTGTTGTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_btuF-418_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTGCGCTTCAATTGCGCGTA CTGATCCAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_btuF-143_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGCTTGTGAGGATAGTCGG AATAGCTGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_btuF-637_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGGAATTTGGTCCGCTCCGCC TGTAAATGAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_btuF-595_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGAGCGTGCTAACACCTGTT CCGGCTAAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_btuF-240_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCATTACCTCCACGCCAGGCA ATCACCAGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_btuF-87_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCAAAGGCAAGTTCAGTGTT GCGGGAGAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_can-349_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GATATCGCGGATATGCAGCAG CCAGTTGTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_can-202_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCAGTTCAGGTCAGTGTGAAT GACCAGGTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_can-167_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CATTACGGTGAACAAAGAGTT CGCCCGGCT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_can-630_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTGTGGTTGGCGTGTTCAGC TTGAGGTTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_can-132_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGGTTAAACGTTCTGCAGGA ACGCGACTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_can-434_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCTGTTCCATGACGTTTCAGTT CACACAAGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_can-237_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCGAGTACATCCACTGCATAC TGAACCACG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_can-480_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGTTTCCACGCTGATTGCATA ATGGTGGAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_can-595_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCCGTGACGGTAACGTTGCTC AAGGGTTTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_can-279_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGCCGCAACCGTAGTGGCCA CAGATAATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_can-559_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGTGGCGGTAACATCCAGATC ACGCAGCAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_cdsA-414_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TAATGATTCTCGTCATAGTGC CAGGCCGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_cdsA-37_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGAAACAACGCCGCGATGAC GACGGGTAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_cdsA-87_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCAGCATGCAGACCACCAGC GTTACAATG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_cdsA-319_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGAGTTACGCCAGATTGCTGC GGAACCTGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_cdsA-247_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGAAGCCCAAAGTGAGATTTC AACCCAGCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_cdsA-809_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTAACAACAAGCAAGCAAAGA CCGGTACCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_cdsA-449_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGATCATGACATAGAGCAGCC ATATTGCGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_cdsA-749_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TACCACCGTGTCTTGAATTA AATGACCGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_cdsA-490_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTTGCCAAACATATATGCGCC GGAGTCAGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_cdsA-575_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGCTGCAGTAGCAGTCCAC CGATAAAGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_cdsA-700_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGCTTAAACATACTCTCGGT CAGATCGCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_cdsA-179_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCATCAGCGCCAACAATAACC CGCATAACA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_cdsA-618_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGACGTCGAGATTCGCCAC ATGCCATAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_cdsA-282_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGCACCAGCAATAGCGCGACA ATCCACCAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_cdsA-665_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGAGGCTAACGCTGCGACAA TAGAGCAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_dapD-653_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GAACGCGACCGTAGTGGATT CGCCGGTTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_dapD-93_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGGAATCCAGCAGGGCGATC ACCTGATT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_dapD-384_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTGCCCTCATCAACATATGCG CCGATGTTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_dapD-148_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAACCACTGATGCGTCACCA CTGACCGTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_dapD-51_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTAACGGTGTCTGCATTGGCT GCGTGATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_dapD-724_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AACCGCACAGTAGAGGCTGTA TTTGCCATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_dapD-794_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGTCGATGGTACGCAGCAGTT CGTTAATGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_dapD-613_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AATACGGGTGCTCTGACCAAT GTATACGCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_dapD-540_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACTTCAGAGCGCGCGCCGATG AAGCAATTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_dapD-348_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GACGGCATCAGCAGGTGTTA CGGGCAATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_dapD-257_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTGCTCGTAGTCGGCAATT TCATCGGCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_dapD-292_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGGCACAACCGGGAAGCCTTC TTTCTGGAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_dapD-419_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACAAGAACCAGCGTCGCCC AGGTATCAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ddlB-302_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGGTAAACCGGCACCTTGCC ATAGAAGTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ddlB-95_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGTGACAGGATACGCGTCAA TACCGCCTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ddlB-814_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCTGTGGCTGGTCATACCCGG TGAGGTATT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ddlB-766_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGTCCATCGCTGTCCAGCAT AACGTCAAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ddlB-614_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCGCCTCATAATCATAGAAGG TTCCGGACG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ddlB-726_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCTTTGCAACCTAACGTCGTC CATGCTTTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ddlB-168_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGCGACCGTGATGCGCGATA AACACTTTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ddlB-435_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GACATTCACACTGGAACCT TCGCGGCTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ddlB-559_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTCTTACCCGAGTATCGCAAC CGTGAACCT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ddlB-394_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AACCGGCAACCCAGAGCAGA AATTTCTGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ddlB-691_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TAATGCCTGCAAATTGGCCTC TTGTGACGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ddlB-259_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCCATTGAAAGCGCAGATGC CATCACTCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ddlB-891_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TAGTCCGCCAGTTCCAGAATT CGTACTACC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ddlB-133_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCCATCGACTTCAGTTGCGT CACGTCGAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ddlB-55_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGCTAACACCGCTGCGCCAGA ATTCAGAGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ddlB-224_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGTATAAGGCAAGCCCATCA GCTCGAGCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-1219_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACGTTGTTCACTACCACGCC CTGATCTTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-703_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTTCAGGTTAACCAGCGCACC ACCGGAGTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-1114_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGCAGTTCAGGTTACGTT AACCTGCTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-948_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCAGCGGAGGAATTAGGCAGA ACCTGGCTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-13_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACTCAGAGCCAGTGCACTCAG TGCTAATGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-1184_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGTTGCTCATCTCAGCGCCTT CAATGCCGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-1359_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGAATGTTGAGTGCCAGCACA GACGGTTTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-319_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCGGAACCCAGCGCCATGAA TTTCTGTTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-1149_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATGGAGCTGGAATCAACCTGA TTCTGGCTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-852_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATAATACCCAGCTCACCGCGT TTCACCTGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-1015_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGCAAAGCTGCTGATCGGCTT ACCGTTACG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-904_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGGGCGTCAACTTTCATCGC TTTCGCCAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-86_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCATCTGCTGGGCTGTCGTTG CTGAAGAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-603_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGCGCAGAGACAATCCCGGAA GTTACCGTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-481_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGGTTCTGGATTGGATCAG CGCGATATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-741_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGTGCGAGGATCGCGGTGTTG ATACCGATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-1394_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACTGCATTAACAGGTAGATGG TGCTGTCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-371_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAACAACGTGGTTGTTGGTGA CGACATAGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-411_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGCCATCGTCTAGTTGAAC TTAATGACC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-141_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGTTAATGCTGACCACTGAA GGCATCACC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-1294_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACTGCCTGCTGGTTCGCGCC AATAATCAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-528_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGCGCAGTGCATCAGAATCC GCCATCTTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-565_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCAAACGGGTTACCAATCGC TACGGTGTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-177_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGCATACGCGCGTATTAACG GTTGTGCTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-1076_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCAGTAAGCCCAGGGTCAGTT TGCTGCCTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-446_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGGATCTTTGCCAACCATCT TCGCGTCGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-258_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGGCAGAACGGAGAGCTCTGG AACGGAGAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-223_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGGCAGAACGGAGAATCATC ACCGAAGAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_degP-48_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCGTTGCAGAGAGCGGAGAT AACGCCAAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_erpA-158_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGATGGTCATATCGCCTTCGT TCACCTGAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_erpA-63_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGATTCGGGTTATCTTCGTCA GCGATCAGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_erpA-314_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGATACTAAAGGAAGAACCGC AACCCGAGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_erpA-28_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AACTTTGTTGGCTGCTGCGTC GGTAAACTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_erpA-238_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCTTCGGTATAATCAACGGA ACCGCCGAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_erpA-277_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCGTTCCGGTTGGTCCAGAT GAAACGAGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_erpA-123_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AAGGTGAAACCATACTGGAAG CCGCTGCAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-409_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCCTGCAACTTCAGGCCATT CAGATAGTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-599_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGTCTGGAACAGGCTGTGAC TACCGGCTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-529_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCTGACCATATTAACAGGCC GCCAGGACT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1514_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACCACCACGCCAGGTAACT GTTTGTCAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1253_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGTCGTAACCAACAGGCGT TGATGTCAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-490_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTAAAGCACGGAACCGGGCC ACGCATAAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-176_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGTAGCAGACTGTCGCCCG CAATAGTTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1471_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGTCCCGCAACGCGGTTAAG AGATTCTTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1799_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGCTTTCGCTTCGATTCTA CGCCACGTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1183_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTCGATATCGCCAGTGGCAA CTTGCTCTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1100_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TACGTGCCAGATAATGGCCTT TATCCGCTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1029_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCGGAGCAGACGCCGTAACCA TAAACGCTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1871_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGGTAGTATCGGTGGTGATT CCGCATCGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1218_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATACGCATAAAGTCGACACCG GTCAGCAGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-264_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GACTTCGGCTGATGCAGCGCC ATCTCTTCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1323_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCGGATCTTTGGCATTGAAG TCGAAATCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-2129_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACGATCGAACAGGTTGTAA CATGCAGCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-873_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCATTAAGTCTGTGCGCAGA CGCTTACCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-455_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCGTTCCAGCATATACGGGT CAATGACCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1693_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATACACGGCACCAGTAACCTAC AATCGGACG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1435_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAGTCATAACGACCGCCTAG GGTGACCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1600_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCATCCTTCCCACTTGCGA AGAAGGTTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-118_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCAGGTGCAGCGGTAACGGT GATAGTGTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-939_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AATTCGTGATCGAAGCTGTAG CCGACCATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-2167_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GAAGCAGCCATAAGTGTTAAA GCAGCTGGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-2029_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCCCACTTTAAAGGAGTTAGC CGGATCACC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-2215_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTAGAAACGGAAGGTTGCGGT TGCAACGAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1288_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACCGGATTGTACAGATTGAG CAGTGGCAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-734_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCAGGTGAACGCCGGTGCAA TAGCATAAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-664_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCAAGACCGGTCAGGCGATA AGAGTAAAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1399_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCCCACTGCGCCTGATCCTG AACATAAAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-2084_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCATGCCGACTCGCGCCAGAT CATAACGTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-309_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTACCAACAGAGACCCCGGC GTGTAGCTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-358_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCAAAGCCGGAATGATCAG GTGGTCATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-564_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGAACCTTTTCAGCGGTTCCG GTGGTCGGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-47_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCTAACCGCTGTGGCTACTA CAACTGCGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-82_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGTTCAACCGCTGCCTGTGC ATAAACAGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-796_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCGGTTCCGGCTCGTTCTG GAAGTAAGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-699_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCTTCTGACCTTTCTGTGG GCATTGGCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-980_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGCAAAGCGCAGGTTCTGAC GCACAGTAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1764_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCTCGCCACCTTCAACCGAG AAGAAGGAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuA-1966_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGCGTCAGACCTGAAAGCGG ACCGTCAAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuC-257_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GAGGAAGCTGCTGCGGCAAAT AAGCCACTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuC-536_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGACAGCACATCAACCTGGT GGGCGATAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuC-133_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GAGCAGAGTGATTTACCAGA ACCGTTGTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuC-720_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCCATCGGGATGCCATAATC ATTTGAGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuC-221_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAAACGCTTTGCTGCTCCAGC TTTCCAGCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuC-639_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGCGCAGGGCGACCAGATAA TCACAGTAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuC-310_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCACGGGTAAACGACCAATCGC CACCAGTTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuC-500_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGAGGTCGGTTCGTCGAGCA ACAGACAAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuC-95_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GACCGGTCACTTTCCCGGCAG GAAAGGTTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuC-578_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAATGACCGTCAGGCCACGCT CCTGACTTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuC-45_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTGCGCCCGGCACACGAAAG GAGATATTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuC-431_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GACGTTCCGCCAGAGAGAC TATCGACCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_fhuC-680_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCATAATTTCCGAGGCGTTC CCTGAGCAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_folK-321_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TAGTGCGGAACGGTCAGGCGT TCAGTATTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_folK-16_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGAGAGGCCAGATTGCTGCC TATGGCAAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_folK-281_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TACCAAACAGCATGATGTCGA GATCCAGCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_folK-391_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCAGGAAACACCAACTCCGG CGCGATTTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_folK-148_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACGGCTGCGTTTAAAGTAATC GGGTTGATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_folK-80_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGTAAGAATGTGGCTTTCAG GGATATCGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_folK-183_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGTAGCTCTTCAGGTGCAAGA GAGGTTTCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_folK-356_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGGCCACAGCATAAATCCAC GATTCTTCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_folK-230_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTTGCGGACGCGACCTTGCT GCAATTCAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-866_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCTCGATCACCTCTGCCAGTG TCTGACGTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-608_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACCGATATCGACGACGCAGA CACCCAGTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-721_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGCGTGCCAAAGGCGTAAGC GATATCACT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-43_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TACTAAAGCGGCAACCTTCGC GGTACCAAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-429_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCACGCCGAAAGTCCTACC GGATTCTTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-475_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCCATATCGTTGTGACATGT GATCAGGTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-264_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGCACCATACCAATTCATTG TGGCAGCTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-117_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCTTTATCCATACCACGCGAC GGGCAGCTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-393_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCCTGATAGTCAATCGCATAC TCTTGC GGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-679_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCAGCATAAGGAATTACCTT AGTGTGGCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-1136_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACTCTTTCCATAGTGAAGCA ATCCCACCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-1095_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TACGGCTCCTGAGCATAATCC GTTAAACCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-82_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCAATGATATTGACCATACC GTCGGGCAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-526_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGTTGGTCAACTTTCAGCCC ACAACGTTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-196_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGACAATCTGCCATCAATTC TGCCTGGTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-907_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TATCTCTTCGTTGACCAGGTT GAGCAGCTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-768_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCCAGCGCACAAACCGTGGCGA ACTTTAATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-562_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAATACCGAATAACTTGATGC CAGTCCGGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-1040_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCACTTGCGTATGAAACACGC GCTGAGCAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-1221_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCAGCCAACTATTGAGTCGC TTGATCCAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-998_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTGATCTGCGCTGCGCCAC CGGTAAATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsA-161_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCGTTGTACGCACTTGACCA CGGATTCCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsQ-423_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGTTCTGGCGGCACGCTGAAG GTATTTCTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsQ-464_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTCCGGGCCATACAGCATTG GAAGCACCT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsQ-500_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTTCGCGATAGCCCTGCAACA CTTTCATTGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsQ-773_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTTGCTGAGTAGATTCCTCTG GCGGCAAGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsQ-216_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCCAATGCCAGGATCGACTGC CGGATATCG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsQ-290_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TAATCCACGGCAGGCGTTGTT CTATTTGCG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsQ-251_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGTTGACATCCTGGGTCATAA AGGTACCCG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsQ-589_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCGTTATTACGCGTCAACTG CCAGGAACG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsQ-47_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAGACGCGTTCCATTATTGC GGCAGAAAG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsQ-554_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGTACATCGCCGTTCTTCA GAGTAAATC
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsQ-702_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGTAGCTAATCCGTTTGCCA TCGGTTTGC
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsQ-388_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTCTACCATATGTTGATCATT CCACCGCGC
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsQ-329_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCAATTCATCAGGCCACTGCT TTCTGACGC
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsQ-738_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGCCTACTGCCGCTCCAGAG TCATAACGC
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsQ-181_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGTGTGTAATGGCGTTCACC GGTCAACAC
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsQ-12_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCTTCTTCGCTGTTTCGCGTG TTCAGAGCA
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsZ-829_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGCAAATGCACGGATGGTGT ACCTACCGT
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsZ-552_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGCACAGCGCCTTTCAGTACA TCGTTCGCT
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsZ-864_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGAGAAGTACCGATAACCACA GTCGCGTTG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsZ-969_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGCTGAACCTGCTTATTGGTC ACCAGAGTG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsZ-899_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGTTACGCGCAGCTCGTCAT TCATATCCG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsZ-505_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGGGAGATACCGCGGCCAG AACTTTCAG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsZ-742_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCGCCAGACAGGTGATATC TTCCAGCAG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsZ-781_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGGTCGAAGCCCGCGTGAT GTTAACCAG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsZ-934_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGGACGTTTGCCATGCCGAT ACCTGTGCG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsZ-706_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGAGATAGCCATTTACAGCAG TTCTTCCGC
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ftsZ-291_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCACCACCATACCCGCAGCA ATAAAGACC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsZ-326_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTACGCGACGACTGGTGCTG CACCTGTAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsZ-182_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGCGCCAGTCCTTTGGTGA TACCGCTAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsZ-1069_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCAGTTTGCGGCGCATTGTC ATTCACGAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsZ-622_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CATTACGGTGCGTACGTCTGC AAAGTCCAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsZ-587_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCAAACCCGGACGAGTAATCA GTTCAGCGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsZ-377_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGAAAGGCTTAGTGACGACAG CAACGGTCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsZ-27_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGACGCCGATGACTTTAATC ACCGCGTCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsZ-1004_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCATCCCATGCTGCTGGTAGC GATCCATCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsZ-470_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGTCGTTCCGGATAGTGATCA GAGAGTCCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsZ-118_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGCGCTTGTCATCGGTATT TACCGCGAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ftsZ-77_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTCAATGCGCTCGCGCACCA TGTGTTCAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-965_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GACCCGGTTTGGTGCTGGCA TATTGCTTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-820_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CATCACTTCCGGCGAAGCGGT TTCTGCTTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-1189_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGGTGCCAGGAGTTTGGCGA GTTAAAGGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-785_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CATGATAAGAGACACCACGGC AGGTTACGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-1154_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGTGTTCTGTCAGACGGGATTG CGTTCCGAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-1502_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGGAACCACAGTTCGCCAT TACGACGAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-368_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACCGCTAATCAGCAGTGCGA CCACCAGTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-1447_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCCGGAGCGTAAATAACTGG CACTTTCTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-644_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCCCACTTTAATCGGCGTCA CTTTCATTGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-1975_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGCTGGCTGTTTACATGGCAG ACCAAATGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-877_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AATCGCAATCAGTCGACCATC ATTGACCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-930_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTGAGCACGCCTTTATTGGCG AAGGTTTCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-1616_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACATATCCGCACCGCTCAAAT CTTTCGTCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-542_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGTTATCGGCGTTAATTTGTT TCAGCGGCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-23_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGGCTGTTAGCGTGACGAGTA ATCGTCGCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-2325_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TAGTCGCCATCTTCGTACCA AATGAACCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-126_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGAGCATCAAGGCCAGCG ATAGGGTAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-403_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGCGGATCGTTAAATCCGGC CCAGGTACG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-679_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGGCGCTGGTGAGCGGTACA CAGGTAAAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-1729_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTTACCCGGGAAGACCAGCGT ACCCTGTTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-1000_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCGGTGATAATCGGTGGCGA AGTCGGTTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-1387_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGTGCCGGAAGATCCATGTC CCACAGGTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-1240_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGTACGCCCCATCGGCAGATA GACCAGATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-728_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGGATCGTAATGCCATTTCT CTTTGCCGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-2362_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTACTTCACATCATCCGGCAG CGCATAAGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-1352_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GAACGGTCTGGTAGCTCCACG CCAGTTTCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-2290_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCTGCGGAGATCACCACATA CTGCTTACC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-2159_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGCCGTAGCGGCGATAAACA GCACGTTAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-2255_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTCATAGGTCATTGGCGTAG CCTGACCAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-1789_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGCAATCGCCACTTCACGATT TGGATCAAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-247_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGAGTCAGCGCCCAGAAGTC GAAACCAAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-1940_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGAACGGGTTGAGCGTGACAC CATAACGTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-2194_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCGTTGCTCATGTTGTAAGC GCGCAGGTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-603_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGATCGTTCGGCTGCTTACA TCGCCAGTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-76_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GACCAGCCAGCTCCGCCAAT GAGTAGATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-1682_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGCCTTCATAGCGCATCTGGT GGAACATCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-507_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGTTGACCTTCCTGATTACGA CCATAGGCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-2048_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCTGCGGCGTACCAATACGTT TCTTCCACA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-1839_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAGGACCACGCGGGATCAGT TTCGAAACA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-2113_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCCGCCAGCATCGGCATACC CATATTGAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-298_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GACAAACGGCAGGATCAGCCA GATGCCGAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_gcd-1066_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GATCACGCCAGACGTTTCGCG GGTGAGAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_guaC-112_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACGCCGACAGCTCTGACC TGAATGTTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_guaC-407_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGCTTTCGAACGAACTGCA CGAAGTGTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_guaC-148_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGTGCCTACGGTGTCCATATT TCGGCGAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_guaC-458_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACCAGTCACTACGTTACCAG CACAAATGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_guaC-351_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAAACGAAGTTTAAATGCCGGG TTCAGGTCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_guaC-760_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AAATTCTCGCGTTCTCCTC AACGATGCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_guaC-39_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGAGTGGAGCGTTTAGGGCGG ATGAGAACG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_guaC-641_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGGTGCAGCCACCATCGCTGA CGATCATTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_guaC-499_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AACGATATCGGCACCTGAGAG GATAAGCTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_guaC-989_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTGTTCTGACACGAATAA ACGTGGTGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_guaC-74_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATTGACGTTCCAGTTCAACAT CGGAACGGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_guaC-541_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GACGCGAGTTGTACAAACAGA ACCTGGGCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_guaC-811_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCAACGTGACGTTTCATCGC AGACTCGGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_guaC-598_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCAGCATCGGCACATTCGAT TACCGCAGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_guaC-302_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGAAATCCGCATCAGACGTAC CGGTAGAAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-416_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGCAGTCAGCGTGACCATGGT AACACCCCT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-298_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACCATATCCATGGTCGGGAC CAGTTCGGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-996_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCTTCTCTGCCGCTTCCAGC AGACCTTCT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-250_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACTTCCATTTCCGTTGGTGC ACCAAAGCT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-628_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GAACTCTGGCAGCGCGGAAC ACAGTTACAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-961_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGTGTGTGTCAGCTCATCCAG CGTTTCGTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-1211_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TATTGATATCTTCATGCTGT GCGCCACGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-708_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCTACGCGGAAACCGGTCATC ACTTCATCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-120_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTGCCATCAACATCGTACAGA TAAGCGCCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-762_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGAGGCAGGTTAAATCTGGC ACTACGCCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-547_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTCAAATGCGGCGCGTACAGA AGCCAGATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-1249_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAACTTCGCAAACACCCGACG TGCAGCATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-1113_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCTTAAAGCGTTCCACGTCA CAGGCCATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-500_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGGTATATTTGGCGAAATCTG CCGGAACGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-333_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTCATGGTCGTTCACTGCGG GAGTTCACC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-830_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAGCGCATCCATTACATCAC GACGACCAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-1171_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCTTCAAACGCTGACGGTGC CAGGTAAAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-923_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCTGCGGACTTCATTACAGC AGGCGAAAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-888_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCATCGCAATCGGGTTACCG GAAAGCGTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_hemL-1040_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TACCGAACATGCCGCAACGT GGTTAACGA
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_hemL-452_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTAACGTGAGTGCGCCAGAAC CGGCTTTCA
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_hemL-593_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGCCACCGCTCGACGATAA TACAGGCAA
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_hpt-483_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGATATACGGCAGATGACGG TAACGCTGT
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_hpt-80_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCATATCGCTGCCGTGTCTT TGTAACGCT
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_hpt-330_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGTTTCGCGCAGGCTTAAGATC TCACGCACT
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_hpt-153_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCATGAGATACCTGAACCTCA CGGCACAGG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_hpt-365_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTTTATCCAGCAGCGTACAAA TCGCCAGCG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_hpt-400_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AAATTCTACGGGACGTTTAC TTCACGACG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_hpt-271_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCTTACAATCAGCACGTC CTTGCCACG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_hpt-189_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGCTACCGTAGCTGGAGGCG GTCATAAAG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_hpt-447_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCAATGCCGTAACCCACCACA AACTCATCC
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_hpt-115_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AAACATAAATGAGCCACGCAG CAGACCCAC
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_hpt-41_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GACGACCCAGTTCGGCGATAC GCGCTTTAA
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ispU-376_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGTATTTCCCGGTGTAGCGC TTCAGATTT
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ispU-339_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGTTCTTGCAAACGCGAGTTA AAGCGACTG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ispU-304_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCAATAATACGCAGACGCAC GTTATGTCC
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ispU-180_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AAGGCATACAGCGTTAACGCC TCAATACCG
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ispU-411_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCACCGTAGTTCCGCCGAATA TTCAGCGTC
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ispU-486_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCTGATCTGTTGCAGGTTT CCTTGCTGC
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ispU-106_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGCTTTATGCCAAAGGCACG AATCTTCCC
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ispU-446_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAGTTGCCTGACTCCCTGGA CTATATCCC
CATTGC GCTTCTCCGGAAACATTAGC

Exp-1_ispU-655_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTCTTGTTTCATCGAAATCGGG CCAGAGAAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ispU-257_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCTATCGAGCGCCACACAA ACAGTTCCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_ispU-706_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCGCCGAAACGACGCTCTCG ATTAGCAAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_map-389_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCATGCGTAGCGCCAGGTACA GGCTTTCTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_map-151_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GAGGCAGGCAGAAACCGCGTG TTGTTCAAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_map-301_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGAGGTATCGCCGTGGAACC ATCTTTGAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_map-766_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTATTCGTCTGCGAGATTAT CGCCGGGAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_map-79_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GACGCCCGGTTTAACATACGG TTCGATCAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_map-187_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGAGATGCAAACGGATTTCGG ATAGCCGTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_map-114_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TAATCATTACAGATGCGATCC AGCTCGCCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_map-247_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCGCCATCTTTCAGCAGCTT AGCATCGTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_map-597_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGTTGACCATTGGCTCGATG GTGAACGTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_map-639_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCGTCCAGCCATCTTTCATG GTGCGGATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_map-731_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CATCCTTGCGTAGCGTCAGAA TTTCGCAGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_map-481_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCCGCAATATTCACGAACGAC GGAGAAGCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_map-516_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGCGGTTCTTCATGGAAGCCG CGACCAATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_map-562_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGGTTTCAGTACGACGTTGGT TTCACGGGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_map-446_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTTCGACAAATTTCTGAATCG CCGCACCGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_map-338_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCCCATGATGGTCGGCTTAC CGACGATAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-1945_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCCTGCGGGAAGCTCTGATA CAGCACTTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-146_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCTTACGCCCTTTGCCTTTGC CCTTACCTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-1588_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCAATTGGCGCATCCGCAAT CCACGTATT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-1167_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGCGGACGGGCACTCAACATG TCATAGAGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-1001_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGCTTAGCTCTTCTACCGGGC GACCAAAGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-861_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATGATCAGCGCCATGTAAGCT TCGTTCGCT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-1670_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCACCAGCATCACTCTGCCGC TTTCGCTAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-944_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGATTCGTTGTCCCGCTCT GACCGAGAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-2181_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGGCACCATAAGTTTGGTC GGCTGGTTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-1036_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTTCACCATACCGACTAACAG CGCCTGCTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-446_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGGACGGCGAATCATCTCAA TGCTGTTGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-1635_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGTCATCATTCTGCGGTGAC CAGACCTGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-1710_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGATTACCGTCGGCACGTTT ATCGAACGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-325_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGTGATGTCTGGCTCAAGATT GACCATTCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-1457_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAAACTGCGGCTCAGAACCTC CGACCATCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-896_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCTCAAGAATACGGTCTTTGC TGTAAACGCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-2493_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AACATATCCTTGATCCAACCG GCTACACCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-826_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAGTAAGAACGCTCGCTGGA GAGGAACAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-582_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATGGTGATCAGACGCGGATCA AGACGGAAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-617_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAAACAGACGCTGCTCACCGT TTGGCGAAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-363_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTCGCCTCCAGCAGCTTACC ATCTCGTTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-19_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGTCGGTTTCCCTTTGCGTCC AATTGGCTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-2425_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGCTGTTGCTGCGGTGAGA AGACTGATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-541_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGGTTGTTCTCCATATTGAC GATCGTCGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-1543_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGCTGGCTTAAGGCCGTGACA ATAAGTCGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-234_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCGAGATAAACGCCGTAATG GCGATCAGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-1128_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATAATCTGTTGCTGTTGCAGC AGACGCAGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-678_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGACGGTCTTCTGTGCCAGC AAAGTATCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-1377_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCGCTCAACTTACGCTGTTTC TTCAGTGCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-784_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGTTGCGTCAGCGTACTCGC ACCCTGTAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-2244_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACAAGATTCAGCGGCGTTGGC GTCTGGTTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-736_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTTTGCCAGCACCGCACGTCC GATTGAGTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-2117_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGCCGTCAATGCCGCCAAACC AGGTATCTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-2012_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCGTTGTACCACCTGCTGCA TGGTCCATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-282_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCAGGCAGTTGCCAGACCTTG CCATCAATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-2286_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGTCGTAGTCCACGCCATA TCTGCAATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-1422_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACTTCACCACTAAAGCGGTCG ACGACCACA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-1766_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTACGCCAGTTTAATCCAGG TCTCCGTAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-1241_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCTGCAGCTCCTGACGCACCA GTTGCAATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-1315_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTCCTGGGCCACCGAGTCAAA GGTAAGTAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-481_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGCACCTGTCTTCTTTACT GTCCGGGAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mrcB-2321_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCAAGATACGCATGCCACCGC TGCAAACA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mtn-253_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTCGTCGAGACAACGATATC GCCCACTTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mtn-323_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGCCGGACAGCCTGGTAACT GACCGTATT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mtn-366_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGGCCTCAGCGGCAGCGATC AGTTTATCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mtn-67_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTCGCAACCGCCGAGACTGAT AGTTTGACG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mtn-634_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CATCAGGCTGACTGTTTAGC GGCAACAGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mtn-183_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCACATCTGGCTTGCAGTGT TCCAACAGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mtn-448_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCCAGACCAACAGAACCGTT GATGAAAGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mtn-594_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCGAAGCTAAGATGAGACTGT TGATCGGCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mtn-669_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TAGCCATGTGCAAGTTTCTGC ACCAGTGAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mtn-559_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGAGATGGCGGTACGACAAC AACGGGGAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mtn-102_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCAACCTCGGTTCCATTCA GTGCGCGTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mtn-512_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CATGGGCGATTGCCGTGCTT CCATCTCTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mtn-137_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGCAGCGACTTTACCGATGC CCGATTCTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mtn-413_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCTAACAAATCAGGCCACGTA CAGCGTTAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_mtn-288_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAAATGCCGTGACATCCGCG TCGTGATAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-1430_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCTCCGGAGTTTGGCGTTCA GTTTGATT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-282_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGAATACGCGCTTCATGAGCG GCGACAATT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-1064_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTTAATGGTGGCGTCCACTT CCGTCGGGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-698_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTCGCGGTAACAATTCGCGGA TCACCGGAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-741_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCGGCATCTTCGCTGAAGCCG TAAGTCGTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-550_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGTGACAATCGCCACCATCGG TTGCAGATG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-597_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTCTCAAAGTCGCCCTGGTAG GTATCCATG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-402_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCTTCTGCGTAGATGCTGGAA ACCATCGCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-911_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TAGCCTCGTCGTCAATGCCCT CTTCCGTAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-156_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTCATTAAGTCTGCGTGACC GGATTTGGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-106_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGATAACCTTCATTGGCCG AACTTCGCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-994_l1-bc25mer_83004-20_l2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCATCACTGGCTCCAGCGG GAATTACCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-191_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGGGCGATGGTTGAAATAAA TCGTCGCAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-776_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGGGCCAATCTGCTGATAAT CTTCTACAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-1268_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACGTCCACGAATTGTGCGAC ACAGCGAAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-247_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTTATCGGCAGAAATCGCGCT GGAACAAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-1337_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGTTAATACCGGTGCCAGCA TCTCGGCTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-321_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCATTAACCTAGCCAGCATT TCGGCACGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-1214_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTCCGCCAGCCGATACACTT CCAGCATCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-515_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGATGCATCACTCTCATCTG CTTCCGGCAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_murC-1179_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTATCAACCTGCGTCAGCACA TTGGCGAAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panB-616_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CATCACGAGGATCTGCCCGTC AGTGACGTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panB-578_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAATGCCAATAACCGGGATCG CCAGTGCTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panB-304_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GACCATGTTAGCACCGGCACG CATAACCGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panB-62_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGGCGAAGCTATAGTCATAAG CGGTGATGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panB-653_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TAGGAATGTGACCGCCGGTAA TACCAAAGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panB-8_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGTA CTCTG CAGTAAGGAGA TGGTGGTGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panB-762_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGGA AACTGTGTTCTTCGCC GGATAACG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panB-490_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGCAGCTTCTAAGGCTAATGC ATCGCTGAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panB-727_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTCCACTTCAGCCATATACTG CCGCACAGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panB-386_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AACCTAAGTGACCACATACG GAACGGCAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panB-351_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTCAGCATTTGTACGGTTTCT ACCAGCCAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panB-180_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCAGTGTGGTAGGCGATATCG GCAACGGTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panB-242_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CATACGCCATAAACGGCAGGT CAGCCAGCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panB-113_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAGCGAATCGCCACCAGCA TGACGTAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panC-775_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAGGCGGCTACCAGAATTAC TGCCCGTTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panC-406_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GATGTCCGGCTGACCAGGTT GAACAGCTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panC-37_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTGCCTTCCATACGCAGGCG GCGAATTTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panC-226_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGTTTGTGTTAGTTCTCGCA GTCCTCCTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panC-297_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGTAAGTGTGGGTTTCAGTA CCGTTCGGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panC-565_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGTTGTTCGCCGTCAGATA ACCGTTACG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panC-76_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCGTGCAGGTTACCCATGGT AGGCACCAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panC-523_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGACCGTCTTTGGCGCGCAT AATTGGCAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panC-111_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGGCTTTGGCTTCGTCGACC AGCTTCATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panC-2_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCAGCAGCGGCAGGGTTTCGA TAATTAACA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panC-332_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACCTTCCAGCATGGTCGAAA GGCCAGGAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panD-26_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGCATGAGTCACTTTCACGC GGTGGAGTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panD-274_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAGGTGCGAGCTTCTTCATC TGGCATGGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panD-156_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCGCGATGGCATAAGTGGAG AAACGCTTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panD-63_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCCTGGTCAATGGCGCAAGAA CCTTCATAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panD-352_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCAAGCAACCTGTACCGGAAT CGCTTTCGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panD-239_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGCTGGCGATGATGACAATAT CGCCGACAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_panD-204_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGTGGGCCGCCGACCGTTA ACAGAAATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_pcnB-1007_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGAAAGCGTCGTGATAGGTCA GGCCGCTTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_pcnB-652_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGTTTCCGGGCTGATCGCAT ACCCAATTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_pcnB-1102_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGCAACTGCCAGATATCGCG GGTTAATGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_pcnB-920_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGAACGCCGGTTACGCGCA TATCGTTAT
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-1314_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCGGTGACGTTCTTCATCC AGCTCGTTG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-960_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCGTCTCCAGAGTGGGTAC CAGAACATG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-478_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATACAGGCTGTTGATAGTGAA ATCGCGGCG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-728_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTTTAAGCGATTCTTCAAACA GCGTGCCG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-767_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACAGCTTATAGGTTTCGTAAC CGTAGCCCG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-268_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCAGTTACGGAACAGTTTGGC CACCTGCTC
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-569_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTTCCGGGTTACCAATCAGAC GGATAACGC
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-1176_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCATAAGCCGCACGGAACCTTA GGATGCTCC
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-533_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCAGATCCTTCATGCCGCCAA CGTAATCAC
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-371_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGTCGCTGACGTTACCTTCGT GGTGTCCAC
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-336_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTCGCAACTTCGATAATCTCC GGGCCAAAC
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-168_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAACCAGCCAGGCTTCGTAT CCCGCTTTA
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-604_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGCAGCATACGTACCGGATC TTCACGGTA
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-1137_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CATGCGCGTTTACCCTGACGA CGGGACATA
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-885_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCGTATCGGTATTCTTCAGC ACCTGTTC
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-1211_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGTTACGCTCACTTCAGCTC GCAAGGCCA
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pcnB-824_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGTGAAGTAGCGGGTAATGG TCGGGAACA
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pyrH-497_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGGATCAGCGGTAACACGC CGTCAACTT
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pyrH-350_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCAACAGGCTGATAGCTTCTG CCCAGCTGT
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pyrH-551_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAGCACTTCGCTGTAAGTCA GTTGCTCGT
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pyrH-462_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCTTTCAGCACCACATCGGCT TCAATTTGC
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_pyrH-139_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCAATCACCAACCAACCTG AATACCCAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_pyrH-91_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTCCTGAGCCATACGATCCAG TATGCTTGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_pyrH-618_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGAATCGGTAATTATGGTCA CGAGCCAGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_pyrH-315_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCGCACACGCCATTCAATGGA ATAGCGGAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_pyrH-42_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTGCCCTGCAGAGCTTCGCCA CTAACCTTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_pyrH-425_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCAGGCAAGCTGCTGAGTCGG TGGTAAAGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_pyrH-390_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTACCTGTACCGGCGGAGAGG ATCACCACA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-723_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCATCGACTTTAACGATCCTG TCGCCTGCT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-959_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTGACGATGGCGTTGAACG GCCCATACT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-1068_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTGGCGATAGAGATCGGCCA CTGAGGTTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-565_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGTAAATCGAGCTTTACATC CCGCCGTTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-64_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGGGCAACCCAGAAATGACC AAATTCATG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-758_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCATCACAAGGTCACCCACT GCGTTAAGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-245_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TATTATTGAAGGCATGGTGGC GGAGTTCCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-866_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCGCTTTACCATTACCCGGTT TACTCTCCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-793_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TAACGCTAAGGATTTACCCGG GTTATCCCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-650_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAGTACAGGTTCAATTTGCG GCCCACGAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-1138_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTTCACGCTAATAAGCGCAAG AAACGGCAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-172_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCCAACGGGATCAGGGCGAT AACATATTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-913_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTCATCTGGCAAAGGAATGAC TTTCGGCTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-481_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GACCAACTGCAAACGCACGGC ATCCCAATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-530_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGCCAAATGGCGTACTGTAA TGGTGGTGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-1286_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTAACAGCACCAGCAGAATCG AGCCAATGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-1008_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCCAGCATACTGACCGTCAGC TTCATCAGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-25_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AAGTACACCCAGTCAACGAT GAACGAAGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-423_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGTTCCGTACCTGGTGCAATT TGTGCTCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-600_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCGGATCTTCTTTATCAGGC TCAACGCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-387_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCGAATTGGCTGCTATTTTCG CCAACCACC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-134_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCTTATCAGTTCCGCCCAGA GCGCCTTAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-99_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCTATTGAGAAACGCTCAACG CGAACACCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_rseP-299_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGAAGTTTGCAACCGGACCTG CCGCAATAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-907_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCCGTTACGTGGTGATCAG CATGATGTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-1073_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGTTCTGGATCTGCACACCTT CTTTCGCTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-77_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCATCTCCGGTTCCATGGCAT TGATGATGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-1859_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGTTGGCAATCGCTTTAGTCA CCCACGGGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-1760_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TACGCATCAGCGCATCTTCCA TCGACAGGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-2308_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGGTGCTCTTTCCACAGGGA GTCAAGCGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-2184_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCTCACGCAGCGTCTCTTCA TGCAGTTCT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-1703_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GACGACCAGAACGACCGCGCA ACTGTTAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-1535_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGCCTGCCAGCTACCACCGA GCACAATAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-1666_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGGGATTCGTGACGCTCGGT ACCGATGAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-2631_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACGGGCAAGGATCGTTACGT CCTACTTTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-2078_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TATCCCACATTTCTTCCAGCG ACTGTGGTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-610_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGAGTCCACTTCGTCCACCGA CGCATAGTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-247_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CATAACGCCGAGTAAC GTCGAAGTG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-1348_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GATGGAGATAGTACCCACCAG CACCGGCTG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-2427_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTCAACGACTCCAGCATCGCT GCAAACATG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-681_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTATACATTCCGAGCTGTCT TCTGCCGGG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-351_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGCACGCCTTTACCGGTTAGT GCGTTCAGG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-2500_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGTTGTTCCAGTCTCTCAAC CTCTTCAGG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-540_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTGTCGCGCAGGTAGTCAAAG CCGTATTCCG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-1121_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACAGACGGAAGTAGTTCTGGA AGGTGATCG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-2148_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTATCCAGCCACTCGGCAATT GGCAAATCG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-575_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TACGCTGTACAGTTCTTCAG GGCTGAACG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-1435_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCTTCGTTGGCGTGGAATTT GCGTTTACG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-454_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CATGCCCGCAGGTTGATACC GACAGTCAG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-1267_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCTTCAGTCATGTAGACCAG GTCCGGCAG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-853_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTCATCCATGATGCCCTCTTT CACCAGCAG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-955_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AACGATGTAGTCGACGTCACG GGTAACAG
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-763_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGAGAAGTGGCCTTCGCCCTG GAAGGTTTC
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-1500_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCACGACCCGCCATATTGGTC GCGATAGTC
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-2343_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGGTGGATACCCTGACGCAGA TAGTCCATC
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-1907_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCAGTTGCTTACGAATGTCTGA AGTTACGGC
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-2221_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTTACGCTGATACACTTCAT GGACTGCGC
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-1970_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACAGTTCTGTTACGCTGGGAGT AAATGGCGC
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-1821_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCTTCGCTGGCTTCATACCC AGTTTACGC
CATTGC GCTTCTCCGAAACATTAGC

Exp-1_secA-505_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGTACCGTAAGTGATGTCAGC TGCCTAAGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-1626_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCTGCTCCAGTACCGCATCG TGACGTACC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-1392_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATACCGGCTTTGGTCAGTTCTG TTTGACACC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-2005_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCTGTTAATGGTTTCTGCTCAC ATCGCTGAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-1231_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGAATCATTGGACGGTTGGT CGGAACAAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-282_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTACGCATTTCGGCGATGCAG CGTTCTGTTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-212_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TACCAAGACGCGCTTACTTG CCTCACGTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-2535_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGCAATTGCGCTAAACGCTCG GCTTCCATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-2273_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCATGACGCCTTTCTCGAAGT GACGCATCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-386_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CACGTTGCGCCAGGTAGTCGT TGACGGTAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-2570_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGCTGCAGATCGTCATCCT GATGGCTAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secA-1007_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCTGCATGGTACGACCGGTGT GTTCGTCAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secM-45_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCATCCCTAATAAGAGATGC GGCCAGAAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secM-346_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGCGCGCTGAGCGTATCCAG TAATGCAAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secM-174_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTCGCTTCCAGCAAGGCCAAT TGACCAAAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secM-81_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGTTGCTGAGCGCAGGCAAA CCTAAACTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secM-209_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AATCAACGGAATAGTTTCAAT TCGGGCGGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_secM-311_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGCCTGAAGAGGCAAGATT CTTCAGCAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speD-215_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAGAATAGTGACGTGGCAC CCTGTGGTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speD-407_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGGAGAAATCACGCCGAGG TAGAGACTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speD-689_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCTGTCGGTTAAGTCTTCCG GTTTGGTGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speD-724_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTCTTTCCACAGCGCAGCGGT AATTTCCTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speD-759_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCTGGCATATTGCGCCGTAA TAAATCTCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speD-593_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGACGTTACATCCACCATGT CACACAGCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speD-139_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACAGGTTTCTGACAGGATTTG GGTGACG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speD-371_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGCGCGGAAGGTACATAAAC CGCCTTCAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speD-301_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCAAGATGGGCAACGACCGT TTCTGGCAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speD-250_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTCGATGAGTTTCGGGTCAAC CGGTTCTTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speD-85_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATAAGCAATATAACCGTCGCG CTCTTCGCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speD-442_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTCAAGCTGGTGATCAGGTA ATTCAGCGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speD-477_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGCGCACGCGATAATCAATG GTTACGATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speE-622_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCAACGTCGCTGAAGTAATG GCTGAGTTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speE-367_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGATCGTCGTAGCTACCGGC GTTATGGTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speE-159_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TAGATAAACTCGTCGCGCTCG GTGGTTTGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speE-194_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGGCCAGTAGCGGAACATGGG TCATCATCT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speE-229_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCGCCGATAATCAGCACATG TTTGCGGTG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speE-462_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGATAGGATCGGTGCAGTCG GAGATAATG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speE-729_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCGCCTGAATAATTTCCGTT GAGAGATGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speE-783_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCCGTATGGATTGCCGATTG TAATAACGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speE-332_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GATACTGACGGCAGAACGATA CGACACCCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speE-122_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CATCCAGCGCCATTACGCGAC CAAATGCAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speE-406_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AACGAAATTGACGCCATCGTC GATCACCAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speE-37_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCTACCGCAAAGTACTGCC AAATGGTC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speE-666_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTCATGATACCGCCGTAATG GTCGGGATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speE-542_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTGCGACGAAGATACCGCCAG GATTCAGGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_speE-824_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AAGCCAGTGCGTCTTGCAAT ACTGAGGTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacC-248_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAATGCCGCTGAGATCGCGGT AGCTGTCTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacC-80_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGCCGTTAAATCGGCCATAT CTTCGGCTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacC-21_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CAGACGGCCATCAGGCTGCCG AATAACACT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacC-315_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTGACGTAGGCAAGCAGGCTT AAGGAATCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacC-203_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGTCGAAGGTGTCGAATTAC TGAGGTCCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacC-149_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCAGTGCGCGACGAATTTGCC CGTTAGGTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacF-506_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGACTGGCGAATTAATCCA GCACCATGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacF-117_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCACTGACATTACGGAAGAAA TGCAGCGCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacF-715_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTAGCAACAGGCCAGTTCGAA ATCCAGACG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacF-613_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTGCGGATAAAGCTGTGAATC GAGCGACAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacF-210_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACGCCAATCCAGGTCTGGAGT TTACGTTGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacF-245_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTAATGCTTCAATACGGCTCT GGTCCACGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacF-385_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGTAGGTAAATCAAAGCTGCA ACAGCCGCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacF-175_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GTCAAGTTCTTCAACAGCTC AGTGCGGAC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacF-305_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GAAATTGCCGATACGCGGCG CGGAAATTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacF-461_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGGGTTCAGGCTGGCAATCC AGGTTTCTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacF-349_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCTCAGTCGCTGACGCCACAG AGCAATCAA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacG-10_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCCGCAGGTTGGGCAATTCAC CGTAATAGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacG-169_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCACTGCTTTGTTCTTCGCT CCAGTCATC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacG-101_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTTCAAGCAGCCATTCTCCGA GGTGATCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacL-284_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCTCAACGCCGATAGCGACA GGCTTTCTT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacL-191_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCATCACCTCTTCACCGTCCA TCCACAGGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacL-110_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGCTGCTTGTTCCACTTCAT CAAGCAAGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacL-145_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGTTGCCAGGACCGTTCGCT ACCTTTCAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacL-226_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTCATCGCCAGCGAATTCCAG TTGATTGGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacL-333_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TACTTCTGCTGCACGAAATTG CGGTAAGCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacL-69_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTCACCTCTTCATTAACCGAG TGCCCCGACC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yacL-27_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATGGACATACGCACCTTTACC ACTCCGGTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadG-726_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AGTCGATACTGATAGCCATCG AGCTTCGGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadG-761_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCAGCACTTCACTTCCAGCG TCGCGGTAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadG-575_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCATTTCTGCTTCTCCAGGT AGTGTGTGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadG-870_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACCAGTGAAACAAACAGCTCT TCCAGACGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadG-281_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGCCTGATTACCAACAATTT GCTGCACGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadG-393_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ATCCCGCCAGATAACATACGC GCACGTTCCG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadG-227_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCTGCGGCACCACTCCCAACT GACGTTTAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadG-428_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCATTAAACGCACGGGCAATCA TTAACCGGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadG-497_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC ACATTGAGCGGCGAAGTTCAA TATCCACGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadG-182_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCTCGAGATCGTAACCAATA CGGTGACCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadG-316_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GATGTACGCTTCTTTGCGCTC CACGCCGTA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadG-685_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGGTGCGAGATCGAGAATAAA GGTTTCCGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadG-617_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCACCAGCTCACCCTGTTGAA TAATGCCGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadG-66_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TCACCCGCTTCGACCTGCAA TCTATCCCA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadH-217_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGATGACGCAACGTTGGCGTA GGCATTGGT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadH-742_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TTAGCTACGCAAACACGTCC ACGTTGGAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadH-53_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GCGTCTGCAACCCAGATTACGCA TAAAGCGAT
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadH-88_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC AAAGTAAAGGGTCATGGTGAT GACTGGCGG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadH-463_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC GGCAAACACACCGTTTACGCAA ACCCGCAAG
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadH-519_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TACGTGAGTGGCGTTAACACA AAGGTTGGC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadH-151_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CTGCATATAGCTGAAGCCATG CATATCGCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadH-599_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TATAACGATTGGGTTTCAGGT GCGACAGCC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadH-297_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TATCCGGCAATAATGACGTGA GTCGGAACC
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadH-419_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CCGTGAGCACCCAGCGTTAAGG CAACGAATA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadH-653_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC TGACCAGCGGAACATCATTGA TACCGAGGA
CATTGC GCTTCTCCGGAACATTAGC

Exp-1_yadH-688_I1-bc25mer_83004-20_I2-bc25mer_83517-20
ACAACCGCGTGTACAAGGC CAGGCATCCGAGAGGTCTGG
GAATGC CGCCACAATAAGACCACCAG TACGCCAAA
CATTGC GCTTCTCCGGAACATTAGC