**Project 10\_05\_01**

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| **Oligo** | **Conc. (µM)** |
| 10\_05\_G | 99.46 |
| 10\_05\_I | 106.76 |
| 10\_05\_I(C,2) | 103.56 |
| 10\_05\_I(C,3) | 102.40 |
| 10\_05\_I(C,4) | 104.27 |
| 10\_05\_I(C,5) | 100.95 |
| 10\_05\_I(C,6) | 98.47 |
| 10\_05\_S | 91.72 |
| 10\_05\_S(C,2) | 100.25 |
| 10\_05\_S(C,3) | 92.75 |
| 10\_05\_S(C,4) | 88.76 |
| 10\_05\_S(C,5) | 91.61 |
| 10\_05\_S(C,6) | 91.61 |

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| **Gate No.** | **Gate** | **Vol (µL)** | **Incumbent** | **Vol (µL)** | **Buffer** |
| 1 | 10\_05\_G | 10.1 | 10\_05\_I | 14.1 | 975.8 |
| 2 | 10\_05\_G | 10.1 | 10\_05\_I(C,2) | 14.5 | 975.4 |
| 3 | 10\_05\_G | 10.1 | 10\_05\_I(C,3) | 14.7 | 975.2 |
| 4 | 10\_05\_G | 10.1 | 10\_05\_I(C,4) | 14.4 | 975.5 |
| 5 | 10\_05\_G | 10.1 | 10\_05\_I(C,5) | 14.9 | 975.0 |
| 6 | 10\_05\_G | 10.1 | 10\_05\_I(C,6) | 15.2 | 974.7 |

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| **Invader** | **Substrate** | **Vol (µL)** | **Buffer** |
| 1 | 10\_05\_S | 10.9 | 989.1 |
| 2 | 10\_05\_S(C,2) | 9.8 | 990.2 |
| 3 | 10\_05\_S(C,3) | 10.8 | 989.2 |
| 4 | 10\_05\_S(C,4) | 11.3 | 988.7 |
| 5 | 10\_05\_S(C,5) | 10.9 | 989.1 |
| 6 | 10\_05\_S(C,6) | 10.9 | 989.1 |

**Signal (1 µM):**

* 10\_05\_G (99.46 µM) – 10.1 µL
* 10\_05\_S (91.72 µM) – 16.4 µL
* Buffer – 973.5 µL

**Signal Dilution (5 nM):**

* Signal (1 µM) – 50 µL
* Buffer – 9950 µL

**Universal Gate Dilution (10 nM):**

* Gate (1 µM) – 100 µL
* Buffer – 9900 µL

**Universal Invader Dilution (20 nM):**

* Invader (1 µM) – 200 µL
* Buffer – 9800 µL

**Experiment 10Each Well:**

Gate 40 µL = Diluted to 5 nM

Invader 40 µL = Diluted to 10 nM

Total Volume = 80 µL

Z-Height = 9.0 mm

Gain = 2500

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **X1** | **X2** | **X3** | **X4** | **X5** | **X6** | **X7** | **X8** |
| **Gate 1 = G + I** | | | | | | | |
| Buffer | S | S(C,2) | S(C,3) | S(C,4) | S(C,5) | S(C,6) | Buffer |
|  |  |  |  |  |  |  |  |
| **X9** | **X10** | **X11** | **X12** | **X13** | **X14** | **X15** | **X16** |
| **Gate 2 = G + I(C,2)** | | | | | | | |
| Buffer | S | S(C,2) | S(C,3) | S(C,4) | S(C,5) | S(C,6) | Buffer |
| **X17** | **X18** | **X19** | **X20** | **X21** | **X22** | **X23** | **X24** |
| **Gate 3 = G + I(C,3)** | | | | | | | |
| Buffer | S | S(C,2) | S(C,3) | S(C,4) | S(C,5) | S(C,6) | Buffer |
| **X25** | **X26** | **X27** | **X28** | **X29** | **X30** | **X31** | **X32** |
| **Gate 4 = G + I(C,4)** | | | | | | | |
| Buffer | S | S(C,2) | S(C,3) | S(C,4) | S(C,5) | S(C,6) | Buffer |
| **X33** | **X34** | **X35** | **X36** | **X37** | **X38** | **X39** | **X40** |
| **Gate 5 = G + I(C,5)** | | | | | | | |
| Buffer | S | S(C,2) | S(C,3) | S(C,4) | S(C,5) | S(C,6) | Buffer |
| **X41** | **X42** | **X43** | **X44** | **X45** | **X46** | **X47** | **X48** |
| **Gate 6 = G + I(C,6)** | | | | | | | |
| Buffer | S | S(C,2) | S(C,3) | S(C,4) | S(C,5) | S(C,6) | Buffer |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **S** | **S(C,2)** | **S(C,3)** | **S(C,4)** | **S(C,5)** | **S(C,6)** |
| **Gate 1 = G + I** | X2 Complement | X3 Formation | X4 Formation | X5 Formation | X6 Formation | X7 Formation |
| **Gate 2 = G + I(C,2)** | X10 Correction | X11 Exchange | X12 Correct → Form | X13 Correct → Form | X14 Correct → Form | X15 Correct → Form |
| **Gate 3 = G + I(C,3)** | X18 Correction | X19 Form → Correct | X20 Exchange | X21 Correct → Form | X22 Correct → Form | X23 Correct → Form |
| **Gate 4 = G + I(C,4)** | X26 Correction | X27 Form → Correct | X28 Form → Correct | X29 Exchange | X30 Correct → Form | X31 Correct → Form |
| **Gate 5 = G + I(C,5)** | X34 Correction | X35 Form → Correct | X36 Form → Correct | X37 Form → Correct | X38 Exchange | X39 Correct → Form |
| **Gate 6 = G + I(C,6)** | X42 Correction | X43 Form → Correct | X44 Form → Correct | X45 Form → Correct | X46 Form → Correct | X47 Exchange |

Gate 1 Negative = X1 & X8

Gate 2 Negative = X9 & X16

Gate 3 Negative = X17 & X24

Gate 4 Negative = X25 & X32

Gate 5 Negative = X33 & X40

Gate 6 Negative = X41 & X48

**Project 10\_05\_02**

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| --- | --- |
| **Oligo** | **Conc. (µM)** |
| 10\_05\_G | 99.46 |
| 10\_05\_I | 106.76 |
| 10\_05\_I(C,2) | 103.56 |
| 10\_05\_I(C,3) | 102.40 |
| 10\_05\_I(C,4) | 104.27 |
| 10\_05\_I(C,5) | 100.95 |
| 10\_05\_I(C,6) | 98.47 |
| 10\_05\_S | 91.72 |
| 10\_05\_S(C,2) | 100.25 |
| 10\_05\_S(C,3) | 92.75 |
| 10\_05\_S(C,4) | 88.76 |
| 10\_05\_S(C,5) | 91.61 |
| 10\_05\_S(C,6) | 91.61 |

**Universal Gate Dilution (10 nM):**

* Gate (1 µM) – 100 µL
* Carrier Strand (100 µM) - 100 µL
* Buffer – 9800 µL

**Invader 1 Dilution (20 nM):**

* Invader (1 µM) – 200 µL
* Carrier Strand (100 µM) - 100 µL
* Buffer – 9700 µL

**Invaders 2-6 (100 nM) directly made in 10 mL:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Invader** | **Substrate** | **Vol (µL)** | **Carrier Strand** | **Buffer** |
| 2 | 10\_05\_S(C,2) | 9.8 | 100 | 9890.2 |
| 3 | 10\_05\_S(C,3) | 10.8 | 100 | 9889.2 |
| 4 | 10\_05\_S(C,4) | 11.3 | 100 | 9888.7 |
| 5 | 10\_05\_S(C,5) | 10.9 | 100 | 9889.1 |
| 6 | 10\_05\_S(C,6) | 10.9 | 100 | 9889.1 |

**Each Well:**

Gate 40 µL = Diluted to 5 nM

Invader 1 40 µL = Diluted to 10 nM

Or Invader 2-6 40 µL = Diluted to 50 nM

Total Volume = 80 µL

Z-Height = 9.0 mm

Gain = 2500

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **X1** | **X2** | **X3** | **X4** | **X5** | **X6** | **X7** | **X8** |
| **Gate 1 = G + I** | | | | | | | |
| Buffer | S | S(C,2) | S(C,3) | S(C,4) | S(C,5) | S(C,6) | Buffer |
|  |  |  |  |  |  |  |  |
| **X9** | **X10** | **X11** | **X12** | **X13** | **X14** | **X15** | **X16** |
| **Gate 2 = G + I(C,2)** | | | | | | | |
| Buffer | S | S(C,2) | S(C,3) | S(C,4) | S(C,5) | S(C,6) | Buffer |
| **X17** | **X18** | **X19** | **X20** | **X21** | **X22** | **X23** | **X24** |
| **Gate 3 = G + I(C,3)** | | | | | | | |
| Buffer | S | S(C,2) | S(C,3) | S(C,4) | S(C,5) | S(C,6) | Buffer |
| **X25** | **X26** | **X27** | **X28** | **X29** | **X30** | **X31** | **X32** |
| **Gate 4 = G + I(C,4)** | | | | | | | |
| Buffer | S | S(C,2) | S(C,3) | S(C,4) | S(C,5) | S(C,6) | Buffer |
| **X33** | **X34** | **X35** | **X36** | **X37** | **X38** | **X39** | **X40** |
| **Gate 5 = G + I(C,5)** | | | | | | | |
| Buffer | S | S(C,2) | S(C,3) | S(C,4) | S(C,5) | S(C,6) | Buffer |
| **X41** | **X42** | **X43** | **X44** | **X45** | **X46** | **X47** | **X48** |
| **Gate 6 = G + I(C,6)** | | | | | | | |
| Buffer | S | S(C,2) | S(C,3) | S(C,4) | S(C,5) | S(C,6) | Buffer |