



1<sup>1</sup> ð...†‡- ...†! " ...†#Ü\$Å %&€Í ' ( ) ¢\* +...†‡, ' - . / ÜÝÞ¹ f„ çÃÀ  
¹ f„ çÃÀBOð%ÓÔ&€¤-201¢¢Ç2...†' 3¤41¢&€ï " Í  
2<sup>1</sup> ~ " , ð...†‡- 42...†5í " 6...†#Ü\$ %ð78&€Í  
( ) -  
...†‡Í Ü9: ; <¢" =>í?: ã @~ " A~ " , ð42...†‡ö÷BC@=>, 1DEÍ ~ " FGÍ H  
PI - J KO‡ŽÅðÜ\$LY¢&M-Î » ãNO&PQ³ ðÍ

[ Ü- ðRST&€ ]

· ¸ - / \* S¤· ¸ ã ÈðU· Ü- BV7 32µJÆ41CI W¢X, 1,000ág • 20ãY¢ZÅ, [ : ¢  
/ Å, 3¤-201¢Æ-801¢&€¢\ ] ^\_` aÍ  
· ° - " EDTAÆb, cL² d†RSÜ- ¢ü/Ü- BRS, ð30ãYÍ ¤2-81¢ 1,000ág • 15ãY¢ZÅ,  
[ : f„ ¢Æ/ Å, 3¤-201¢Æ-801¢&€¢\ ] ^\_` aÍ  
» ¼½° - £efgð» ¼hï ½° ði ' j £e  
1ÜZ' ´ » ¼k ¢B-I PBSÖ0.01mol/L¢ pH=7.0-7.2ÜË, è m· Å¢½° ùnÑoÍ  
2Ü/ » ¼pqµk¢! ½ð r 3BsÅðt uvÅÁâæÃ(wxIS007¢@yz { Ü| xð} ¾¿³ ~ ·  
€£efgðâæÃ)ð· , ! MøËÖŠµð» ¼f„ ...† ÜÍ ÖM´ ž ‡ ^ =1:20-1:50¢%...- 1mLÅÁâ  
æÃËËŠr 20-50mg» ¼ - Í Ü  
3Ü/ < +ð¢· ÅŽI • • ' ' " " ¸ Í  
4Ü/ hï þð½° Å10,000ág • 5ãY¢· - -¢Å, [ : " ¤f„ Æ3¤-201¢~ &€Í  
¾¿ ÅÃÄ- Bã ä ...>™Ü¢¾¿ í š" O~ i ' ' ' -  
1Ü> æ¾¿ @· " I PBSž ž, è ¢X, " Ý| x ; ¢¤1,000ág • 5ãY, \* SÍ Ö¢¢¾¿ : £  
I • ¤¥\* SÜÍ  
2Ü/ \* S +ð¾¿ " I PBSè3@A  
3Ü/¾¿ " uvÅÁâæÃo¢" | 8L107D¾¿ /S ¨ ¢...©í „ ¢¾¿ : Oª « • • - ' ' " çÃ" ¸ Í  
4Ü/ Ü- ¤2-81¢ 1,500ág • 10ãY¢· - -¢Å, [ : " ¤f„ Æ3¤-201¢~ &€Í  
¾¿ ÅÃÄ, ÆÇÈ" • Ü- -' 1,000ág • 20ãY¢ZÅ, [ : f„ ¢Æ/ Å, 3¤-201¢Æ-801¢&€¢  
\ ] ^\_` aÍ  
( ) -  
1<sup>1</sup> OÅÜ- ! í | &€¢41¢&€µ¤1- ¢-201¢£· I 1DE¢-801¢£· I 2DEÍ  
2<sup>1</sup> Ü- ®- ç· j ° ±², f„ ³ ©¢· †ç· Ü- £´ª « †µf„ Í  
3<sup>1</sup> Ü- ~ " ù®â¶! · " V7¢£®Šú~™aÁÍ  
4<sup>1</sup> ¸ ¤¹ ´ f„ Öz ¢° » ¼½~ " · ¸ ¾EP· ° cL -ª « f„ Í

[ Luminex200 ã ä ö ]

- 1. ã ä ž ‡ - 50uLA
- 2. Š < f g - ^ â MagPlex;
- 3. ¿ ^ â ´ - 50Å/Å;
- 4. MFI Å - Medi an.

[ ...†Ýï ]

1<sup>1</sup> ~ " ù/ ð...†ÿÜ- â¶! · " V7Ö18-251CÜ¢...©• ...†‡Bª ÅJKÍ £Ä~ " ¢' æZ®-  
@...> í ð Ü9ÿ...† ¢ü/42ð Ü9ð...†" Å³ 9Æ&€Í

2<sup>1</sup> ÜÝÞ( ÇÞ)– È#ÜÝÞŠr ÜÝÞBàÃ0.5mLÇÉþ, V7Ê3<sup>1</sup> È10ãYÇeJžžÌÍÕ\]Í  
 İÙÇÇê8L2000.0pg/mLÍÝİ7DBàÜÝÞðEP ÇÈDEP ÈŠr300DLðÜÝÞBàÃÇ...Ñ%  
 y@Ö^Bàq2000.0pg/mL, 500.0pg/mL, 125.0pg/mL, 31.25pg/mL, 7.81pg/mL, 1.95pg/mL, 0.49pg/mLÇ  
 ÜÝÞBàÃ(0pg/mL)α¥çLÖ×ÓÍL&Ó=><sup>3</sup>© %ÇÈ@=>' ~ " uðÜÝÞÇÃÍ

item	1	2	3	4	5	6	7	Tube
Surv	2000.0	500.0	125.0	31.25	7.81	1.95	0	pg/mL

3<sup>1</sup> f, ÇAAðf, ÇAB– Detection A òDetection BB~ " ù" " ÖÖ~ ÆxØ • ' ' ÇO~ ÜÜB  
 œÆ#ÉðÃž– †+ ÚÍ¥" ùãÜOf, BàAAEB1:100Bà(...–10DLf, ÇAA/990DLf, Bà  
 AA)ÇÝãÞ½ÇBàùBz–nàápðÈ@=> íð¿´âh(100DL/Ó)Ç=ãâhJ®âh0.1-0.  
 2mLÍ

4<sup>1</sup> èèìÃ–580mL Æ Ž Šr20mLèìÃÖ30áÙBà"600mL" äcÃè8Í  
 ()–

1<sup>1</sup> ÜÝÞðBàÆÄα¥BÔÈª«Í

2<sup>1</sup> ÜÝÞ' α¥" ù15ãYÍâhÍ•ÜÝÞãÄ~"ª@Í

3<sup>1</sup> ÜÝÞ<sup>1</sup> f, ÇAAäcÃ<sup>1</sup> f, ÇABäcÃ' ~ " É®ðBàAAâhÇBàAAÆÄP"Í" ÅæžžÇè  
 ÝãÞ½Ç\]ÍÍÍL&Ó=><sup>3</sup>©ðÝO%' ~ " Š´ Çü ÝŠ´ ÅóÍ' yz íð´éOâ  
 hÇ-´É, ~ " Š´âhðì' Ö... Zf, ÇAAJÇª@É, µα10DLÜÇO\]èqè8èìÍ

4<sup>1</sup> ' í o\_~" î ŽBàI ðÜÝÞ<sup>1</sup> f, ÇAAäcÃÿf, ÇABäcÃÍ

5<sup>1</sup> èìÃÖ30xÜÈ...<sup>3</sup> İ ä®Ç' n7ð" V7ÇžžÞ½Ç" +<sup>3</sup> İ FUÇÁñª«âhÍ

6<sup>1</sup> ...††Èðã...†L €ÃÇóóíâ3qäcÃ, ~ " ÇBâ3I òÈ: Ä•Lö÷ M'ìÆ MøùÇ  
 Oð=>È " úüü÷8I Çèq=><sup>3</sup>©ÉÝOÇý" FUpèÍ' ~ " ± â3Í

[ Ü ]

1<sup>1</sup> ÿ á ...†† ÇÉ • ~ " • ...†† èqð ÷ ú Ç' ~ " ~ " ùÝã + ÷ ð  
 : Ä~ " ´Ç– Ý ð –Í

2<sup>1</sup> =>ù®n–, ÷ È „•è8Í è8EBÜÝ ð ÍJÇ" ò O<sup>3</sup>Ç<sup>3</sup> =>ð<sup>2</sup> ÞB  
 àÒÓÍ...© ÞÈ „•è8I ÆI Ç' ÷ ý' ðBàÆè Í ÷ Bàí" ÞBSÍ

3<sup>1</sup> f ÷ É ÌB™Š> ÷™ÈÇö÷ª«–=>>ÓÇ %Çü() € –Í

4<sup>1</sup> ~ " İ ÄÃÃhİ ð»¼½ºÆ¾¿úZÃ: Äj α İ •Mð r !=><sup>3</sup>©"ìÍ

5<sup>1</sup> ÷ L¾¿ÃÃÃ Ç•L•f ÷Ç#•, \$ Ç...–¾¿%&<sup>1</sup>¾¿Ö´¹RJK'ÇO: ÄEB  
 f, E®ð()Í

6<sup>1</sup> \*X|xÆo»|xÇ+, –ò. –o»|xÇ: Ä•LT–HP ~ " ðf, <sup>2</sup>žò/O<sup>2</sup>žÉ1â  
 Ç¾ÉØf, ®Í

7<sup>1</sup> ò÷~" uv ÷ Ç&€JKI 2: Äj • |x3ÁÆ4%¾ ! !=><sup>3</sup>©"ìÍ

[ 5c67 ]

1<sup>1</sup> / =>ÔðÈÓÍ Šr200ulãäãæÃ" O–8Ç 9, B ÜÔ øÅV7: 10ãYÇ™, ÖÇÓÍ  
 ÄžÇ[: " αŠ 5cÍ

2<sup>1</sup> Š –ãÜñÜÝÓ' „ ÞÓ¹ Ö×ÓÍ ñÜÝÓ7ÓÇy@Šr100DLEèè8ðÜÝÞÖ; ...†Ýİ2  
 ÚÍ Ö×ÓŠ100DLÜÝÞBàÃÖ; ...†Ýİ©<6<sup>2</sup>,ª ÜÇ2ÓŠ „ ÞÖÆBà, ð ÞÜ100Ð  
 LÇÈÓŠ10ul^âÇ ÜÖŠÁÜÜÇ371Ç ÜÖ ø7ð1µJÇ Í =>ñ3L800rpmÇ ?2-4mmÇ  
 @A^â–3Í

- 3<sup>1</sup> Å^ ç2āY, • Āž ç^ &Bð%&~ ŌççE" èi Í
- 4<sup>1</sup> ÈÓŠf, çĀÄäcĀ100ĐLŌ¥" ùáhÛç ÜŌŪŪç371ç ÜŌ ø7ð1μJç Í =>ñ3  
L800rpmç ?2-4mmç@A^ â- 3Í
- 5<sup>1</sup> Å^ ç2āY, • Āž çÈÓ" 200ĐLðèi Āèi çCí 1-2āYç• ÓÍ ĀžÍ o\_èŌ3@  
Í², ^ @èi, ç ZÆD®42ðèi àæĀç/ ÜŌDEB FĀç/G BÓÍ ðĀžUð ç  
Í†I òf: îÍ^ èŌHI FqÍ
- 6<sup>1</sup> m^ çÈÓŠf, çĀBäcĀŌ¥" ùáhÛ100ĐLç ÜŌŪŪç371ç ÜŌ ø730āYç Í  
=>ñ3L800rpmç ?2-4mmç@A^ â- 3Í
- 7<sup>1</sup> Å^ ç2āY, • Āž çÈÓ" 200ĐLðèi Āèi çCí 1-2āYç• ÓÍ ĀžÍ èŌ3@çi  
' e675Í
- 8<sup>1</sup> m^ çÈÓŠéĀ150ĐLç : 2āYç~ Š< JÆç%&ç[: ĀHKŌÍ  
( ) -
- 1<sup>1</sup> ...†Ýi -Ýi ^ @=> í, ð Ü9ççÈð: LŠÓŌĀ; ~ ç| ç" 6™š> „ ?&€çŌi ~ @  
~ " Í
- 2<sup>1</sup> Š -=>5cĒ' ~ " ^ @%ðMN ç\] øùÍ Š J( ) E, ŌÍ H" ç/ ÞŠx ÜŌŪð  
ç- ' ÉPðŌæçžžQÍ Þ½Í T^®...†Šr^ çŠ I òĒ@^ DÓT², ^ DÓŠ JKKR-  
' μŌ^ SThB10āYOÍ Ûç...©U¹ ç/j ! ÉeðV-7ðWJKçL¾šXY° ±+, ' ĀðÝ  
Ō%ðo\_%Í LZ, ĀðÝŌ%ç¼½ñ3\_Ō^ « =>Í
- 3<sup>1</sup> 7ð-L@A Þ [ ç=>J' /ŠĀÉÆŪŪð ÜŌ3x8†Í çŌ\] Āž [ çèŌ, ®- . ^ «  
~ 65cç\] J^N®\] ÜŌ' xç\_%&çeJ ®` abcd³ ð7ðJKý78Í
- 4<sup>1</sup> èi -Ýāèi efo, çBÈ@èi I òĒçN, /èi ĀFUŌçÍ ...©~ " îÍ èŌHç' Bgh~ "  
, ñ" xi j =>I òĒÍ
- 5<sup>1</sup> ...©=>VÍ 88 x60%ç¼½~ " Š8øú 88 kÍ

[ =>, ' ]

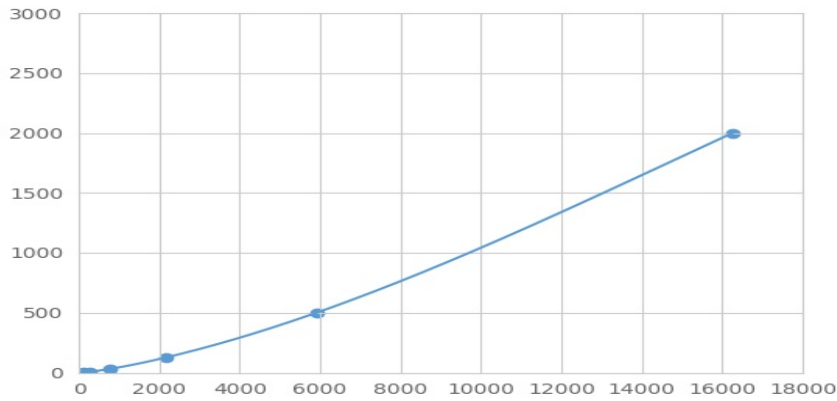
/Surv² ž Øx^ %Š< I mçhqnÉož çpŠ< ĒāŪŠr ŪÝÞÆŪ~ ççÈSurvTq¥xnÉož  
Āð² ž³ r çX, Šr " • , j ðSurv² ž çB/³ r ð" • , j² ž è÷, çŠr PEŪsðt ý, çPEØ  
u[, çBz MFIĀŌMedian Fluorescence IntensityŪð¹ μÿ ÞĒðSurvê8Ji ÉÉÍ " LumineXã ä ð  
„³ çàá Þê8Í

[ àá ]

vŪÝÞð ~ MFIĀEmŌxŌMFIĀ, cÑŌwxÑÛç...ñ3\_Ōçy®Zçk! Āàáí ŌŪÝÞðê8  
Lz{ ŪŌÆ Ō{ ŪÛçMFIĀL| { ŪŌÆ Ō{ ŪÛç} ®ŪÝ Ō² i òj ®y~• i òàáðR2Ā  
I³ çOR2Ā€• , x1LÞŪÍ ¼½~ " f, hc ...Æ^ « ääç...curve expert 1.30çBz ÞMFIĀç  
ŪÝ †®É®ðê8ç†ŌBàŌŌAÆ" ŪÝ• ðê8TMFIĀàá®ŪÝ ð~• i òj ç/ Þð  
MFIĀ^ ri òj çàá® Þê8çñ†ŌBàŌŌç[ L Þð=āê8Í

[ %gŌz ]

LZŠxàáç- ê8Lî 4'¾MFIĀL• 4' ç° » } ÑJ5R" ŪÝÞðMFIĀçL| { ŪŌx< ŪçŪÝ  
Þðê8Lz{ ŪŌy< ŪÍ eJLZ...>³ ©ðxÆ%çÑĒú• ðP, • Ōz¾e ŌĀÍ ¼½~ " ŌĀö  
ŽŪÝ ÑÍ x=>5c9ÆðÉeŌ...5c¹ Ā••¹ èŌ••ý789Æ' ŪçŪÝ ðMFIĀj  
ì'Í ú• ðŪÝ æ•' ç=> í, Bzîî ð=>öŽŪÝ Í



(€• , )f„ ...† ‡ ÜÝ

[ f„ ]

1. 95-2000pg/mL.

[ 2 f„ ]

† ÂL20DÖx ÞÖ[ ÜÝ ÞBàÂÛ„ ³ ðk! ÂŠ<ÒÜÝì ®ðê8Í

[ ' % ]

~ ...† ‡" αf„ Survϕ Žf„ TÇÈÉ" • M• šX— —^®Í

α~ +••ò ~ I™ð" hϕε: ÄFq ÉÊÆÉ" • M— —^®f„ ϕ•† ~ ...† ‡ : ÄT Žf„ ðÇÈ• M — —^®Í

[ é|8 ]

é|8" Þ„ ³ Âð4' šÒCVI %Í CVÖ%Ü = SD/meaná 100

> Íì —Ze> @...† ‡ ¹ È¹ Â³ Â -ª «³ ´f„ ϕÈœ ~ q•„ ³ 20

@ϕãÜàáÉeê8 ~ ðk! ÂðSDÁÍ

> Kì —•Z3DÉe> @ð...† ‡ãÜ ¹ È¹ Â³ Â -ª «³ ´„ ³ ϕÈD ~ ~" eª ...† ‡o\_„

³ 8@ϕãÜàáÉeê8 ~ ðk! ÂðSDÁÍ

> Íì — CV<10%

> Kì — CV<12%

[ Q³ % ]

Ž„ ³ ϕ...† ‡B — Íž " ¼½78&€ϕ• %3 >/μα5Í

Lÿμÿò• , ...† ‡ ; ù, f„ Âð° ±ϕ=>VðϕÉ9ÆÍ - ´ &Bª ! ϕαÇP=>VÍ 78' 8

8ð7ð9ÆÍ Ç@ eª =>¥Iª «5c: Ý| —Lèì Í

[ =>ŠÖ ]

1¹ =>ùÜÝÞ¹ ...† ò ~ Ýì A

2¹ Š ÖÜÝÞÆ ~ Û100ÐLϕŠ^ âϕ371C ÜÖ ø" ð1μJ A

3¹ ^ ÖÇϕŠf„ çÄA100ÐLϕ371C ÜÖ ø" ð1μJ A

4<sup>1</sup> ^ ëÔ3@A  
 5<sup>1</sup> Šf„ çÃB100ÐLç371C Í ¨ ð30ãYA  
 6<sup>1</sup> ^ ëÔ3@A  
 7<sup>1</sup> ŠéÃ150ÐLç : 2ãY, KÒÍ

[ ™Š ]

1<sup>1</sup> ¨ 9Æò© •• k<sup>a</sup> £Ä •w«ú• ð , -<sup>a</sup> «Umð- <sup>3</sup>Tãäç<sup>-</sup>HP: Ä€B<sup>a</sup>  
<sup>3</sup>ðM´••®<sup>-</sup>Í

2<sup>1</sup> <sup>2</sup>° ð=><sup>3</sup>©T...†ð %<sup>0</sup>1 => ðÉÊ5cOð=>ç£|pÉÊç'ž ÝiÝ ðÜ<sup>-</sup>iœÍ

3<sup>1</sup> £e> @ðe<sup>a</sup>HP: Äj |±ì Üç...-f„ " <sup>1</sup> <sup>2</sup> <sup>3</sup> 8ç' yz...††Í™Š> <sup>a</sup> «=>5cç'µ¶  
 Ž«™Š>œc' Í

4<sup>1</sup> ^ ...††â• ...† â• ~" ç£ÄP" Ç, hê«ðHPÍ â `abc<sup>-</sup>...††ð=>™Š<sup>1</sup>j < +<sup>2</sup>  
 ðf„ <sup>3</sup>©Í

5<sup>1</sup> B €ò7ðI ðË\] /...†° »B¼½ËÍ ...†#É É¾O@A [ÿŠ"•øùç•L|xÁ  
 ðÇ#/ !„ Å£ÝOÍ

6<sup>1</sup> ¿ Åð ÁÓÓÖË: Äj |± •Mç†Li f<sup>-</sup>Åç£j =><sup>3</sup>©êq\]°±Í ÜÖB~"  
 JL tÃÄZ®ç' íúùZ®Í

7<sup>1</sup> ¨5c £gh<sup>1</sup>5cÅëÆpë• " KÒððÆ' N : Ä !pë<sup>3</sup>©ðH" Í =>ù' Ç¾ÈK™Š  
 >üÉ...ðøÍ

8<sup>1</sup> B ^ hi Oð5cðËDI ðËð4j N: Ä !£eð=><sup>3</sup>©ç OLZú =><sup>3</sup>©ð: o\_%ç=  
 >ðË<sup>a</sup>65cNí„ `aThÍ

9<sup>1</sup> ...††B®Ëù! ŽI `aMfçË ¨° Ì 9Æòv=>V9Æi ' ç: Äj êq=><sup>3</sup>©T®Ë<sup>3</sup>©£<sup>a</sup>  
 !Æ£e>@...††>KìÍ<sup>1</sup>ð()Í

10<sup>1</sup> ^ ...†† TÇ, ÊÍef...††Æ£ei ' f„ e<sup>a</sup>{ð•ðHPý ^ç OEÍmf„ <sup>3</sup>©£<sup>a</sup>!ð  
 ()Í

11<sup>1</sup> " ¨hi ...††Ë<sup>2</sup>žð] Ð, £fLo»|xçË ¨i o»|x •ZðÑÃ<sup>1</sup>! ÒšÓ<sup>1</sup>öjij'  
 v £eç O°»•' &Ó•...††: " ¨Ç, ý o»|xðf„ ç£f°»f£ö÷~" ...††f„ o  
 »|xÍ

12<sup>1</sup> ' -Ô PË „•ðê8çÆ ñà-=>O<sup>3</sup> Pf„ ê8Í Ò ð' ' : O@A ^Ë f•ì´•  
 ®...††f„ Í

13<sup>1</sup> •...††: Ä£' " ¨<sup>a</sup> =>^ %œO<sup>3</sup>ð Ò=> Pðf„ ç%...ç„ •xm=>'Í

14<sup>1</sup> ^ 5c™Še ' " ¨48T...††Í

15<sup>1</sup> •...††œ• | ~" ç.../Ç" ¨¥| §¨Æ\]Ç, " Øç°ý /£ •†H" ðÜÜ çÜËÜ  
 Ý\]'P \Í

[ ÜÚÁß ]

ÜÚ	: Ä, •	Ààí á
ÜÝ ì	ÜÝPÝi Ei O	<sup>a</sup> «i OðÜÝPâ8Bà
	Zòèi £Ýã	Ýãð Zòèi
	Å£éO	f†ý i Åø

