

€• , f „ 14(CASP14)...† ‡ ^ %

(Š&lt; Æ• Lumi nexŽ• • ' ' " )

" • \_ \_ ~™

Š• &gt; œ•

ž Ÿ | € £ š • ¤ ¥ • | § ¨ ©ª !

« ¬ -

[ ® ¯ ° • ]

 ± ‡ ^ %² • ³ ´ µ ¶ · ¸ ¹ º » ¼½º ¹ ¾¿ ÀÁÂ ¹ ¾¿ ÃÄÅ , ÆÇÈÉÊ——À  
 Ë CASP14Ĭ ĴĴ

[ ‡ ^ %î ĵ ]

‡ ^ ÐÑ	Òŋ	‡ ^ ÐÑ	Òŋ
96ÓÔÕÖf xØ	1	96ÓÔÙÚ	4
ÛÜÝ	2	ÛÜÝ ÞßÀ	1à 20mL
Š á	1	â ã ä å Æ	1à 20mL
...† æÀA	1à 120çL	...† ÞßÀA	1à 12mL
...† æÂBÕPE-SAØ	1à 120çL	...† ÞßÂB	1à 12mL
è Æ	1à 10mL	é ê ë ÆÕ30à Ø	1à 20mL
š • > œ•	1		

[ ì í î ï ð ñ ‡ ^ ]

 1<sup>1</sup> Lumi nex MAGPI Xò¤ Lumi nex 100ó¤ Lumi nex

200ó¤ ÆBi o-Radò, Bi o-Pl exòâ ã ô õ ö ø ÷ š • ø ù ø ® ú , û ü ý í ...þ ÿ Ü Ø

 2<sup>1</sup> Ž Æ Æŋ Æ ÷ ñ

 3<sup>1</sup> Þß Ýí EP .

 4<sup>1</sup> Æ •

 5<sup>1</sup> Š

 6<sup>1</sup> è Æ Ĵ ĵ ÷

 7<sup>1</sup> 0.01mol /LÕÆ1à Ø ä å (PBS)¤ pH=7.0-7.2

 8<sup>1</sup> ÷

 9<sup>1</sup> „ Û Ö ÷

[ ‡ ^ %î ñ \_ ]

1<sup>1</sup> i ± ^ % ~ ± ^ ! ± ^ " Ū# Å \$% Í &' ( α) \* ± ^ % + &, - . ŪÜÝ<sup>1</sup> ...† æÃÄ  
1<sup>1</sup> ...† æÃÄ/ ñ%ÓÔ% | -200CαÇ1 ± ^ &2 | 40C% î • Í  
2<sup>1</sup> š • + i ± ^ % ~ 31 ± ^ 4i ! 5 ± ^ " Ū# \$i 67% Í  
' ( ~  
± ^ %î „ Ū89: ; α! < = i > 9â ? š • @š • + i 31 ± ^ % ö AB? < = + 1CDÍ š • EFÍ G  
ÝH~ I J / % • Åi Ū# KÜα%L~ Î » â MN%OPμi Í

[ Ū ± i QRS% \_ ]

» ¼½° ~ ¥TUVi » ¼Wi ½° i X" Y ¥T  
10Z " ¶ » ¼ [ αA® \ PBSÖ0.01mol/Lα pH=7.0-7.2ØÉ , ê ] · Ãα ½° ø ^ Ñ\_Í  
2Ø. » ¼` ab [ α ½i c 2AdÃi e fgÃÃäãÃ(hi IS007α° j kl Ū, fi m¾¼μno  
p¥TUVi äãÃ)i qr L ÷ È Õ È bi » ¼stuvØÍ ÕL¶ wx=1:20-1:50αyu~ 1mLÃÃä  
ãÃÈzc 20-50mg» ¼ ± Í Ø  
3Ø. { \* i | } Ã~H• €• , f „ , Í  
4Ø. Wi ýi ½° Ã10,000àg ' 5â...α† ± ^ α Å , %9• | ...† Æ2 | -200Cš% Í  
¾¼ ÃÃÃ~ Aãã ± < ø α¾¼ i È • / š X" • , ~  
1Ø• Ž¾¼ ° • • \ PBS• • , ê α' + • ' , f „ " " α | 1,000àg ' 5â...+) RÍ Õ | • ¾¼ 9-  
H ' -~ ) RØÍ  
2Ø. ) R\* i ¾¼ • \ PBSè 3? @  
3Ø. ¾¼ • f gÃÃäãÃ\_ | f™ 7K107C¾¼ /š > α uœi t α¾¼ 9/ • ž • €ÿ • , f æÃ „ , Í  
4Ø. Ū ± | 2-80C 1,500àg ' 10â...α† ± ^ α Å , %9• | ...† Æ2 | -200Cš% Í  
¾¼ ÃÃÃ , ÆÇÈ— — Ū ± ~ &1,000àg ' 20â...αZ Å , %9...† αÆ. Å , 2 | -200CÆ-800C% α  
i ÇÈ α ¥Í  
' ( ~  
1<sup>1</sup> / Å Ū ± i ™ % α 40C% b | 1 | α -200C¥• H1CDα -800C¥• H2CDÍ  
2<sup>1</sup> Ū ± š " æ• Y ©<sup>a</sup> « + ...† -œα • v æ• Ū ± ¥ - • ž v ® ...† Í  
3<sup>1</sup> Ū ± š • ø ° ä ~ ° f ± 6 α ¥ ° z ú š < ¥ Á Í  
4<sup>1</sup> ² | ³ ¶ ...† Òk α ´ μ ¶ • š • • , , ¥ O • ° ¹ K ± • ž ...† Í

[ Lumi nex200 â ã ô ]

1. â ã w ~ 50uL@
2. Ç • UV ~ Š á MagPl ex;
3. ° Š á ¶ ~ 50 » ¼;
4. MFI ½ ~ Medi an.

[ ± ^ Ū i ]

1<sup>1</sup> š • ø. i ± ^ p Ū ± ä ~ ° f ± 6 Õ 18-250CØ α u œ • ± ^ % A ~ ¾ I J Í ¥ ç š • α & ž Z š ±  
? ± = i i „ Ū 8p ± ^ α Ū. 31 i „ Ū 8ñ ± ^ ! Å μ 8 Á % Í  
2<sup>1</sup> Ū Ū Ý (α Ã Ý) ~ Ã " Ū Ū Ý z c Ū Ū Ý Þ ß Ã 0.5mL α Ä ý + ± 6 Å 2³ Æ 10â ... α T I • • Ç È Õ ; É  
È Ø α Ç é 7K10.0ng/mL Í Ū i 7C Þ ß Ū Ū Ý i EP α Ã CEP È z c 300 È Li Ū Ū Ý Þ ß Ã α u Í \$ j  
? Í x Þ ß a 10.0ng/mL, 2.5ng/mL, 0.62ng/mL, 0.16ng/mL, 0.04ng/mL, 0.01ng/mL, 0.0ng/mL α Ū Ū Ý Þ ß  
Ã (0ng/mL) — ~ ¹ K Ö f Ó Í K % Í < = -œ < α Ã ? < = & š • f i Ū Ū Ý æ Ã Í

item	1	2	3	4	5	6	7	Tube
CASP14	10.0	2.5	0.62	0.16	0.04	0.01	0	ng/mL

3<sup>1</sup> ...† æĀĀñ...† æĀB̄ Detection A ñDetection BAš • ø&• Ĩ ĐÑŠÆÒÓ ' • , ꝛ/š ÔŌA ŽÆ" Äi Ā ‡w\* ŌÍ §• øâ x/...† ÞBĀAEB 1:100ÞB (u~ 10ĒL...† æĀA/990ĒL...† ÞB ĀA)ꝛØâ Û½ꝛÞBøÚk ®^ÛÛýi Ā? <= ì ĩ ° ¶ÝW(100ĒL/Ō)ꝛ<ÞÝWI ° ÝW0.1-0.2mLÍ

4<sup>1</sup> éêëĀ~ 580mL Æ • zc 20mLèëĀŌ30à ØÞBf 600mLf Þ¹ Āé7Í ' ( ~

1<sup>1</sup> ÛÛÝi ÞB¥¿ —~ AŌĒ • žÍ

2<sup>1</sup> ÛÛÝ&| §• ø15â...Ī ÝWÍ • ÛÛÝà¿š • -?Í

3<sup>1</sup> ÛÛÝ¹ ...† æĀAB¹ Ā¹ ...† æĀBB¹ Ā&š • Ē° ĩ ÞBĀÝWꝛÞBĀ¥¿ Û• Í • Āá• • âã Øâ Û½ꝛ ; ÉÉÍ K%Ī <= -œi ÛN< &š • Ą¶ ꝛúýÛĄ¶ Ā÷Í &j k ì ĩ ¶āNÝ Wꝛ, ¶¥tš • Ą¶ÝWi X" Ōu Z...† æĀAI ꝛ-?¥tb| 10ĒLØꝛ/ ; åaé7æçÍ

4<sup>1</sup> &è\_Éš • é~ÞBHİ ÛÛÝ¹ ...† æĀAB¹ Āp...† æĀBB¹ ĀÍ

5<sup>1</sup> èëĀŌ30xØĒu -èã§ ꝛ&^6ëf±6ꝛ • • Û½ꝛf\* -èEì æÁÍ • žÝWÍ

6<sup>1</sup> ‡^%ĒĪ â‡^K Āꝛi ði Ý2aÞ¹ Ā+š • ꝛAY2HñĒ9¿ • Kðó L¶çÆ Lððꝛ /ñ<=Ē • ð÷øó7ç ꝛåa<= -œ¥ÛNꝛùfEì úæí &š • ³ Ý2Í

[ Ū±•, \_ ]

1<sup>1</sup> ±ûüàý‡^%±þý ꝛ¥ý • š • • ‡^% åaī ±" öý ꝛ&š • š • øØâ \* ±i 9¿š • ¶ꝛ® Ø ĩ ±Í

2<sup>1</sup> <=ø° ^®† ±Ē †-é7Í é7¥AÛÛ ĩ ĪI ꝛ• ð Nµç µ<=i « ÝÞ BÍ ŌÍ uœ ÝĒ †-é7H ÆH ꝛ&y ±ü" ĩ ÞBÆé Í ±ÞBì • ÞBSÍ

3<sup>1</sup> ... ±¥ Ī A> œ• ±< Ēꝛðö • ž®<=Ī ç < ꝛú' ( ±Í

4<sup>1</sup> š • " ĀĀĀWī ĩ » ¼½° Ą¾¿ ùZĀ9¿Y | " -Lī c <= -œ çÍ

5<sup>1</sup> ±K¾¿ ĀĀĀꝛ • K • U ±Ā • ! ꝛu~¾¿" #¹¾¿ Ò¶¹ Q I J \$ꝛ /9¿ A ...† ¥§i %&Í

6<sup>1</sup> • ' , fÆ\_» , fꝛ ' ( ) ñ\* ) \_» , fꝛ9¿ • KS±GÝ š • ĩ ...† ' ñ+ , ' ¥- Ý ꝛꝛ ¥x...† §Í

7<sup>1</sup> ðöš • fg ±ꝛ% I J H. 9¿Y • , f/ÁÆO< , <= -œ çÍ

[ 1¹ 23 ]

1<sup>1</sup> . <=Ōi ĀŌÍ zc 200ulâãäåĀ • /®4ꝛ 5+A, ŪŌ ÷Ā±66 10â...ꝛ< +ĐĀŌÍ Ā ꝛ%9 • | z 1¹Í

2<sup>1</sup> z ~ â xðÛÛŌ¹ † ÝŌ¹ ŌfŌÍ ðÛÛŌŌŌꝛj ? zc 100ĒL¥Té7i ÛÛÝŌ7‡^Ûi 2 ŌÍ ŌfŌz 100ĒLÛÛÝÞBĀŌ7‡^Ûi « 82« +- Øꝛ1Ōz † ÝŌÆÞB+i ÝŌ100Ē LꝛĀŌz 10ul Šá ꝛ, ŪŌz ĀÛÛꝛ37Ōꝛ, ŪŌ ÷6ë1.5bI ꝛ Ē9: ð2K800rpmꝛ ; 2-4mm ꝛ<=Šá‡/Í

3<sup>1</sup> ĀŠ ꝛ2â...† Ā ꝛŠ %>i " #ŠĐĀꝛ¥ • èëÍ

4<sup>1</sup> ĀŌz ...† æĀAB¹ Ā100ĒLŌ§ • øÝWØꝛ, ŪŌÛÛꝛ37Ōꝛ, ŪŌ ÷6ë1bI ꝛ Ē9: ð2 K800rpmꝛ ; 2-4mmꝛ<=Šá‡/Í

5<sup>1</sup> ÅŠ 2â...+† Â 200ËLi èèÂèè?Ê1-2â...† ÓÍ Â Í\_ÉèÔ3?  
Í «+~?èè+æ ZÆ@§31i èèäâÂæ. „ ÛÔ@AA BÂæ. C AÓÍ i Â i i Â  
Í vHñs9í ÈŠ èÔDEEaÍ

6<sup>1</sup> ]Š 200ËLi èèÂèè?Ê1-2â...† ÓÍ Â Í\_ÉèÔ3? æX  
9: ð2K800rpm ; 2-4mmæ<=Šá†/Í

7<sup>1</sup> ÅŠ 2â...+† Â 200ËLi èèÂèè?Ê1-2â...† ÓÍ Â Í\_ÉèÔ3? æX  
" T235Í

8<sup>1</sup> ]Š 200ËLi èèÂèè?Ê1-2â...† ÓÍ Â Í\_ÉèÔ3? æX  
' (~

1<sup>1</sup> †^ Üî ~ Üî ~?<= i t i „ Û8æÇÈi 9HÆÓÔÅ: Šæ™ æ! 5> æ• t >% æ/i Š?  
š•Í

2<sup>1</sup> z ~ <=1<sup>1</sup> È&š• ~?<i I J æ j ôóÍ z I' (¥t KÊG-æ. Ýz | „ ÛÔÖi  
æ, ¶¥LñÓŽæ•• MÈÛ½Í S¢° †^ z c ~ æz HñÈ« ~CÓŠ«+~CÓZ I J J N,  
¶bÕ~OPWA10â.../Í ØæuæQ³ æ. Y ¥T i R@6ëS I J æH, æTU@ª \* †¶½i Ü  
N< ñ\_É< Í KV†½i ÜN< æ¶. ð2ÉÓ• ž<=Í

3<sup>1</sup> 6è~K<= Ý Wæ<=I &. z ÅÄÆÛÚi „ ÛÔ2| 4%Í æ/ j Â WæèÔ+°, -•ž  
Š21<sup>1</sup> æXYI ZM° j „ ÛÔ• | Â[ " #æTI ° \] ^\_` µi 6èI J p67Í

4<sup>1</sup> èè~ Øâèèab\_t æAÃ?èèHñÈæMt. èèÂÈi ÐÁÍ uæš• í ÈèÔDæ&Acdš•  
+í • | ef <=HñÈÍ

5<sup>1</sup> uæ<=±Í 47 | 60%æ¶. š•z 4÷ù 47 gÍ

[ <=(, \_ ]

. CASP14´ x| Š<Æ• hi æWaj Ék æI Æ• Èâxz c ÛÛÝÆÛ±æÇÈ CASP14Sm~ | j É  
k Åi´ ~næ' +z c — " i CASP14´ æA. ~ni — " ´ éó+æz c PEÛoï pp  
æPExqW+ æÚk MFI½ÖMedian Fluorescence IntensityØi³ bp ÝÈi CASP14é7FeÉÉÍ • Lumin  
exããô†µæÛÛ Ýé7Í

[ ÛÛ ]

r ÛÛÝñ ±MFI½A] ÖfÓMFI½+1 Ì ÖstÌ Øæuð2ÉÓæu° ZÇg ½ÛÛÍ / ÛÛÝi é7  
KvwÛÛÆý ÒwÛÛØæMFI½KxwÛÛÆý ÒwÛÛØæy§ÛÛ Ö« Xñf° j z { XñÛÛi R2½  
Eµæ/R2½| } ~| 1KyØÍ ¶. š•• €W¹ • Á• žããæucurve expert 1.30æÚk ÝMFI½æ  
ÛÛ , §É° i é7æf/pBÍ Ò@Æ• ÛÛ—i é7SMFI½ÛÛ§ÛÛ i z { Xñfæ. Ýi  
MFI½, cXñfæÛÛ§ Ýé7æí f/pBÍ Òæ%K Ýi <pé7Í

[ ...VÒk ]

KV†| ÛÛæ, é7Kí O¶, MFI½K• O¶æ´ µyÌ I 4Q• ÛÛÝi MFI½¹ KxwÛÛØX†ØæÛÛ  
Ýi é7KvwÛÛØY†ØÍ TI KV†=-æi — ^ < æÌ ÈùÝi O( %Òk , aýÒ½Í ¶. š• ýÒ½ð  
ŠÛÛ Ì Í | <=1<sup>1</sup> 8Ái ¥TÖu1<sup>1</sup> 1 Á<Æ¹ èÔ<Æp678Á\$ØæÛÛ i MFI½Y  
ç•Í ùÝi ÛÛ žÝŽ æ<= i t Úkí éi <=ðŠÛÛ Í



(€•, f„ 14)...† ‡ ^ %ÜÜ

[ ...† \_\_\_\_\_ ]

0.01-10ng/mL.

[ « \_\_\_\_\_• ]

v ½K20CÖf ÝÕ%ÜÜÝÞBÃØ†µi g ½z 8Í ÜÜç ý° i é 7Í

[ \_\_\_\_\_< ]

± ‡ ^ %• | ...† CASP14¤ ~ ...† SÇÈÉ• —L' œT' " ¢° Í

| " \* < Æñ ±E•ï • W¤¥9¿ Ea ÉÊÆÉ• —L' " ¢° ...† ¤• v ± ‡ ^ % 9¿ S ~...  
† i ÇÈ—L ' " ¢° Í

[ ä™7 ]

ä™7• Ý†µ½i O• —ÖCVh\$Í CVÕ%Ø = SD/meanà 100

—Í ç~ ZT—? ‡ ^ %ý ¹ È¹ ½µ½ ±• žµ¶...† ¤Ã~ ±m™†µ20

? ¤â x ÜÜ¥Té7 ±i g ½ñSD½Í

—J ç~ oZ3C¥T—? i ‡ ^ %â x ý ¹ È¹ ½µ½ ±• žµ¶†µ¤ÃC ±š• T† ‡ ^ %\_É†  
µ8? ¤â x ÜÜ¥Té7 ±i g ½ñSD½Í

—Í ç~ CV<10%

—J ç~ CV<12%

[ Pµ< ]

~†µ¤‡ ^ %A ~ Í š ! ¶• 67% ¤ > < / : . b | 5%Í

Kœb | î • ý ‡ ^ %• ž ø + ...† ½i ©ª ¤ < = ± i Ý 8Áì , ¶ % > ñ ¤ | ÇO < = ± Í 67¹ 4  
7ñ6é8ÁÍ Ç? T† < = ¢E• ž 1¹ 9œÉ™Kæç Í

[ < = ¤ ñ ]

1¹ < = ø ÜÜÝ¹ ‡ ^ ñ ± Üî @

2¹ z ÕÜÜÝÆ ±Ø100ÈL¤z Šá ¤37OC„ ÜÔ ÷ ¥ë1.5b | @

3¹ Š ÐÃ¤z ...† æÃA100ÈL¤37OC„ ÜÔ ÷ ¥ë1b | @

4<sup>1</sup> Š ēŌ3?@  
 5<sup>1</sup> z ...† æÃB100ĒLα37OC Ē ¥ë 30â ...@  
 6<sup>1</sup> Š ēŌ3?@  
 7<sup>1</sup> z èÃ150ĒLα 6 2â ...+GŌÍ

[ > œ ]

1<sup>1</sup> | " 8Áñ| < Ē g\$¥¿ýŸh" ùŸi ( ©• žì i i<sup>a</sup> μSâã α±GÝ9¿ A-  
 μī L¶ < Ē« -Í  
 2<sup>1</sup> « - i <= -œS† ^ i < 1 <= i ÉÊ11 / ñ <= Ÿ ™` ÉÊ α&š Ūi Ø i Ū±i ~ Í  
 3<sup>1</sup> ¥T-? i T-GÝ9¿ Y £®ç x αu~ ...† • 1 ° 7 α&j k † ^ %Ō > œ• • ž <= 1<sup>1</sup> α±² ³  
 • - > œ• ž<sup>1</sup> Ž Í  
 4<sup>1</sup> ±† ^ %Ÿ´ † ^ Ÿ´ š• α¥¿ Ū• ÇμWã" i GÝÍ à \] ^ \_ ±† ^ %Ōi <=> œ¶ Y{ \* «  
 i ...† -œÍ  
 5<sup>1</sup> A ñ6ëHñĒ | . † ^ • , A<sup>1</sup> ° ĒÍ † ^ " Ä Ä» / <= WpĒ-—ôõ α• K, f Á  
 „ i Ä . † ½¥ŪNÍ  
 6<sup>1</sup> ¼ ½i „ ¾ŌŌŌĒ9¿ Y £® -L αvKeb" ¿ α¥Yý <= -œã aXY©<sup>a</sup> Í „ ŪŌAš•  
 I H eÄÁZ\$ α&èùøZ\$Í  
 7<sup>1</sup> | 1<sup>1</sup> ¥cd<sup>1</sup> 1<sup>1</sup> ÁæĒúæo• GŌôñÃ\$M 9¿ úæ-œi G-Í <=ø&Ä¾ÁG> œ  
 • ŪÆ† ô ÷ Í  
 8<sup>1</sup> A ±Wī / ñ1<sup>1</sup> i ĀCHñĒi O" M9¿ ¥Tī <= -œα / KVù <= -œi 9\_£ < α <  
 =i Ā-21<sup>1</sup> Mī t \] PwÍ  
 9<sup>1</sup> † ^ %A\$Çø ~H\] L...αĒ | ² É8Áñr <= ±8Áç• α9¿ Yã a <= -œS\$Ç-œ¥-  
 Ē¥T-? † ^ %-J ç Ē³ i %&Í  
 10<sup>1</sup> ±† ^ % SÇμÇĒTU† ^ %Æ¥TX" ...† T-i i -i GÝüýx α / ¥Í ] ...† -œ¥- i  
 %&Í  
 11<sup>1</sup> • | Wī † ^ %Ē´ i | Í (-bK\_», f αĒ | î \_», f oZi Í ¾<sup>1</sup> hī -Đ<sup>1</sup> ò" Xf \$  
 r ¥T α / ´ μ´ " %Ō • † ^ %9• | Çμûü\_», f i ...† α-b´ μs¥ööš• † ^ %...† \_  
 », f Í  
 12<sup>1</sup> &@Ñ ÝĒ † -i é7 αÆ ðŪ® <= Nμ Ý...† é7Í Ō i • , 9/ <= ±Ē ...-i ¶•  
 \$ † ^ %...† Í  
 13<sup>1</sup> • † ^ %9¿ ¥" • | - <= ±p < ¥Nμi Ó <= Ýi ...† αy u α² • Ō] <= \$Í  
 14<sup>1</sup> ±1<sup>1</sup> > œT " • | 48T† ^ %ŌÍ  
 15<sup>1</sup> • † ^ %ž ŸçĒš• αu. Ç• | \$" ©<sup>a</sup> ĒXYÇμ• Ōα´ üü. ¥ý• vG-i Ōxý αØ¥Ū  
 ŪXY" Ū XÍ

[ ÖxÁÜ ]

Öx	9¿ (•	ÁÝXp
ŪŪ ç	ŪŪÝŪi ¥eN	• ž eNi ŪŪÝß7pß
	Zñëë¥Øâ	Øâi Zñëë
	Ā¥äN	..., pýe Ā÷

ä™7	Šáêë¥Øâ	! > œ• t > Øâ 6 êëp?Ě
	Û½¥Øâp Z ‡ ^ ¥	Øâ Û½p Z ‡ ^
	_£œ• 1 ĩ ÷ pÛÚ	š• z ÷ t à á f ĩ 1 š• f ĩ ĩ ÷ pÛÚ
	z ¥äN	..., pÿe Ā ÷
MF1½	ÃÓz ĩ ‡ ^ ¶ ¥äN	ÿe Ā ÷ æ ä Nz c ‡ ^
	6ëI J ¥eN	%Ī Ø ĩ 6ëI J
	6ë67¥eN	‡ ^ t g° f ± 6Û%Ī ÛN ĩ 6 ë67
	PEÛo—Ā	à á ‡ ^
	PEÛo—pβÍ Ò¥ý	! 5 > œ• < = 1 1
	• § GÒI J GÒ	A > œ• ¶• ĩ GÒI J Ī GÒ
± ½	¥eN ĩ ± Xf	eN ± æ š• fg ± • ž < =
	¥eN ĩ ±) Rp• , X"	QZeN ĩ ±) Rp• , X"
	† —LA ± ĚĪ ¶	š• fg ± æ _£ < =