

**S10. Text. Multi-species analysis of Tk-R 86C**  
**Supporting Figure 12**

CLUSTAL Line-ups; Genbank Reference IDs below  
 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> Predicted TM domain in **YELLOW**  
 BBS sequences in **RED**

Grimshawi	-----MPEIVDTELLVNCTILAVLRFELNSIVNTLLNSLN RTE	39
Bipectinate	-----MSETVDTELLVNCTILAVRRFELNSIVNTLLSSLNRSE	39
Anannassae	-----MSETVDTELLVNCTILAVRRFELNSIVNTLLSSLNRSE	39
Serrata	-----MSEIVDTELLVNCTILAVRRFELNSIVNTLLNSLN RTE	39
Kikkawei	-----MSEIVDTELLVNCTILAVRRFELNSIVNTLLNSLN RTE	39
Rhopaloo	-----MSEIVDTELLVNCTILAVRRFELNSIVNTLLGSLNRTE	39
Elegans	-----MSEIVDTELLVNCTILAVRRFELNSIVNTLLGSLNRTE	39
Suzuki	MWHKCGGIITQRSLIPIKGRMSEIVDTELLVNCTILAVRRFELNSIVNTLLGSLNRTE	60
Biarmipes	MWRKCGGIITQRSLIPIKGRMSEIVDTELLVNCTILAVRRFELNSIVNTLLGSLNRTE	60
Takahashi	-----MSEIVDTELLVNCTILAVRRFELNSIVNTLLSSLNRTE	39
Eugracilis	-----MSEIVDTELLVNCTILAVRRFELNSIVNTLLGSLNRTE	39
Fichsuphila	MWHECSGIIITQRPRIVIKVKMSEIVDTELLVNCTILAVRRFELNSIVNTLLGTLNRTE	60
Erecta	-----MSEIVDTELLVNCTILAVRRFELNSIVNTLLGSLNRTE	39
Mauritania	-----MSEIVDTELLVNCTILAVRRFELNSIVNTLLGSLNRTE	39
Melanogaster	-----MSEIVDTELLVNCTILAVRRFELNSIVNTLLGSLNRTE	39
Simulans	-----MSEIVDTELLVNCTILAVRRFELNSIVNTLLGSLNRTE	39
Sechellia	-----MSEIVDTELLVNCTILAVRRFELNSIVNTLLGSLNRTE	39
Mojavensis	-----MSEIVDTELLVNCTILAVRRFELNSIVNTLLNSLN RTE	39
Virilis	-----MSEIVDTELLVNCTILAVRRFELNTIVNTLLNTLN RTE	39

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Grimshawi	VVSLLSIIIDNRDNLESINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	99
Bipectinate	VVGLLSGIIENRDNLNENINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	99
Anannassae	VVGLLSGIIENRDNLNENINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	99
Serrata	VVSLLSIIIDNRDNLGSINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	99
Kikkawei	VVSLLSIIIDNPDNLGSINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	99
Rhopaloo	VVSLLSIIIDNRDNLDSINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	99
Elegans	VVSLLSIIENRDNLQSINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	99
Suzuki	VVSLLSIIIDNRDNLESINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	120
Biarmipes	VVSLLSIIIDNRDNLESINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	120
Takahashi	VVSLLSIIIDNRDNLESINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	99
Eugracilis	VVSLLSIIIDNRDNLESINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	99
Fichsuphila	VVSLLSIIENRDNLQSINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	120
Erecta	VVNLSSIIIDNRDNLESINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	99
Mauritania	VVSLLSIIIDNRDNLESINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	99
Melanogaster	VVSLLSIIIDNRDNLESINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	99
Simulans	VVSLLSIIIDNRDNLESINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	99
Sechellia	VVSLLSIIIDNRDNLESINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	99
Mojavensis	VVSLLSGIIENRDNLGSINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	99
Virilis	VVGLLSGIIENRDNLDSINEAKDFLTECLFSPTRPYELPWEQKTIWAIIFGLMMFVAIA	99

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Grimshawi	GNGIVLWIVTGHRSMRTVTNYFLLNLSIADLLMSSLNCVFNFI F MVNSDWPFGSIYCTIN	159
Bipectinate	GNGIVLWIVTGHRSMRTVTNYFLLNLSIADLLMSSLNCVFNFI F MVNSDWPFGSIYCTIN	159
Anannassae	GNGIVLWIVTGHRSMRTVTNYFLLNLSIADLLMSSLNCVFNFI F MVNSDWPFGSIYCTIN	159
Serrata	GNGIVLWIVTGHRSMRTVTNYFLLNLSIADLLMSSLNCVFNFI F MLNSDWPFGSIYCTIN	159
Kikkawei	GNGIVLWIVTGHRSMRTVTNYFLLNLSIADLLMSSLNCVFNFI F MLNSDWPFGSIYCTIN	159
Rhopaloo	GNGIVLWIVTGHRSMRTVTNYFLLNLSIADLLMSSLNCVFNFI F MLNSDWPFGSIYCTIN	159
Elegans	GNGIVLWIVTGHRSMRTVTNYFLLNLSIADLLMSSLNCVFNFI F MLNSDWPFGSIYCTIN	159
Suzuki	GNGIVLWIVTGHRSMRTVTNYFLLNLSIADLLMSSLNCVFNFI F MLNSDWPFGSIYCTIN	180
Biarmipes	GNGIVLWIVTGHRSMRTVTNYFLLNLSIADLLMSSLNCVFNFI F MLNSDWPFGSIYCTIN	180
Takahashi	GNGIVLWIVTGHRSMRTVTNYFLLNLSIADLLMSSLNCVFNFI F MLNSDWPFGSIYCTIN	159
Eugracilis	GNGIVLWIVTGHRSMRTVTNYFLLNLSIADLLMSSLNCVFNFI F MLNSDWPFGSIYCTIN	159
Fichsuphila	GNGIVLWIVTGHRSMRTVTNYFLLNLSIADLLMSSLNCVFNFI F MLNSDWPFGSIYCTIN	180
Erecta	GNGIVLWIVTGHRSMRTVTNYFLLNLSIADLLMSSLNCVFNFI F MLNSDWPFGSIYCTIN	159
Mauritania	GNGIVLWIVTGHRSMRTVTNYFLLNLSIADLLMSSLNCVFNFI F MLNSDWPFGSIYCTIN	159
Melanogaster	GNGIVLWIVTGHRSMRTVTNYFLLNLSIADLLMSSLNCVFNFI F MLNSDWPFGSIYCTIN	159

Simulans GNGIVLWIVTGHRSMTVTNYFLLNLSIADLLMSLNCVFNFI FMLNSDWPFGSIYCTIN 159  
Sechellia GNGIVLWIVTGHRSMTVTNYFLLNLSIADLLMSLNCVFNFI FMLNSDWPFGSIYCTIN 159  
Mojavensis GNGIVLWIVTGHRSMTVTNYFLLNLSIADLLMSLNCVFNFI FMLNSDWPFGSIYCTIN 159  
Virilis GNGIVLWIVTGHRSMTVTNYFLLNLSIADLLMSTLNCVFNFI FVMNSDWPFGSIYCTIN 159  
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Grimshawi NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRFILVMIWALSCVLSAPCLLY 219  
Bipectinate NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRFILVLIWALSCVLSAPCLLY 219  
Anannassae NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRFILVLIWALSCVLSAPCLLY 219  
Serrata NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRFILVLIWVLSVLSAPCLLY 219  
Kikkawei NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRILVLIWALSCVLSAPCLLY 219  
Rhopaloo NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRILVLIWALSCVLSAPCLLY 219  
Elegans NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRILVLIWALSCVLSAPCLLY 219  
Suzuki NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRILVLIWALSCVLSAPCLLY 240  
Biarmipes NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRILVLIWALSCVLSAPCLLY 240  
Takahashi NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRILVLIWALSCVLSAPCLLY 219  
Eugracilis NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRILVLIWALSCVLSAPCLLY 219  
Fichsuphila NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRILVLIWVLSVLSAPCLLY 240  
Erecta NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRILVLIWALSCVLSAPCLLY 219  
Mauritania NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRILVLIWALSCVLSAPCLLY 219  
Melanogaster NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRILVLIWALSCVLSAPCLLY 219  
Simulans NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRILVLIWALSCVLSAPCLLY 219  
Sechellia NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRILVLIWALSCVLSAPCLLY 219  
Mojavensis NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRFILVLIWALSCVLSAPCLLY 219  
Virilis NFVANVTVSTSVFTLVLAISFDRYIAIVHPLKRRTSRRKVRFILVLIWALSCVLSAPCLLY 219  
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Grimshawi SSIMTKHYNGKSRVCFMMPDGRYPTSMADYVYNLTILVLTYGIPMIVMLICYLMGR 279  
Bipectinate SSIMTKHYNGKSRVCFMMPDGRYPTSMADYAYNLIILVLTYGIPMIVMLICYLMGR 279  
Anannassae SSIMTKHYNGKSRVCFMMPDGRYPTSMADYAYNLIILVLTYGIPMIVMLICYLMGR 279  
Serrata SSIMTKHYNGKSRVCFMMPDGRYPTSMADYAYNLIILVLTYGIPMIVMLICYLMGR 279  
Kikkawei SSIMTKHYNGKSRVCFMMPDGRYPTSMADYVYNLIILVLTYGIPMIVMLICYLMGR 279  
Rhopaloo SSIMTKHYNGKSRVCFMMPDGRYPTSMADYAYNLIILVLTYGIPMIVMLICYLMGR 279  
Elegans SSIMTKHYNGKSRVCFMMPDGRYPTSMADYAYNLIILVLTYGIPMIVMLICYLMGR 279  
Suzuki SSIMTKHYNGKSRVCFMMPDGRYPTSMADYAYNLIILVLTYGIPMIVMLICYLMGR 300  
Biarmipes SSIMTKHYNGKSRVCFMMPDGRYPTSMADYAYNLIILVLTYGIPMIVMLICYLMGR 300  
Takahashi SSIMTKHYNGKSRVCFMMPDGRYPTSMADYAYNLIILVLTYGIPMIVMLICYLMGR 279  
Eugracilis SSIMTKHYNGKSRVCFMMPDGRYPTSMADYAYNLIILVLTYGIPMIVMLICYLMGR 279  
Fichsuphila SSIMTKHYNGKSRVCFMMPDGRYPTSMADYAYNLIILVLTYGIPMIVMLICYLMGR 300  
Erecta SSIMTKHYNGKSRVCFMMPDGRYPTSMADYAYNLIILVLTYGIPMIVMLICYLMGR 279  
Mauritania SSIMTKHYNGKSRVCFMMPDGRYPTSMADYAYNLIILVLTYGIPMIVMLICYLMGR 279  
Melanogaster SSIMTKHYNGKSRVCFMMPDGRYPTSMADYAYNLIILVLTYGIPMIVMLICYLMGR 279  
Simulans SSIMTKHYNGKSRVCFMMPDGRYPTSMADYAYNLIILVLTYGIPMIVMLICYLMGR 279  
Sechellia SSIMTKHYNGKSRVCFMMPDGRYPTSMADYAYNLIILVLTYGIPMIVMLICYLMGR 279  
Mojavensis SSIMTKHYNGKSRVCFMMPDGRYPTSMADYVYNLTLLVLTYGIPMIVMLVCYLMGR 279  
Virilis SSIMTKHYNGKSRVCFMMPDGRYPTSMADYVYNLTLLVLTYGIPMIVMLICYLMGR 279  
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Grimshawi VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNQVASTK 339  
Bipectinate VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNHVASTK 339  
Anannassae VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNHVASTK 339  
Serrata VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNQVASTK 339  
Kikkawei VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNQVASTK 339  
Rhopaloo VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNQVASTK 339  
Elegans VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNQVASTK 339  
Suzuki VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNQVASTK 360  
Biarmipes VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNQVASTK 360  
Takahashi VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNQVASTK 339  
Eugracilis VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNQVASTK 339  
Fichsuphila VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNQVASTK 360  
Erecta VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNQVASTK 339  
Mauritania VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNQVASTK 339  
Melanogaster VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNQVASTK 339  
Simulans VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNQVASTK 339  
Sechellia VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNQVASTK 339  
Mojavensis VLWG**SRSIG**ENTERQIESMKSKRKVVRMFIAIVSIFAICWLPYHMFIIYAYHNNQVASTK 339  
Virilis VLWG**SRSIG**ENTDRQMESMKSKRKVVRMFIAIVSIFAICWLPYHLFFIYAYHNNQVASTK 339  
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Grimshawi YV**QHMYLGFY**WLAMSNAMVNPFIYYWMNKRFMYFQRIIVCCCLGFIRYRFD**SPKSQAT**N 399  
Bipectinate YV**QHMYLGFY**WLAMSNAMVNPFIYYWMNKRFMYFQRIICCCMGFTRHRFD**SPKSRLT**N 399

Anannassae	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIICCCCMGFRHRFD	SPKSRLTN	399
Serrata	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIICCCCVGLTRHRFD	SPKSRLTN	399
Kikkawei	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIICCCCVGLTRHRFD	SPKSRLTN	399
Rhopaloo	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIICCCCVSLTRHRFD	SPKSRLTN	399
Elegans	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIICCCCVGLTRHRFD	SPKSRLTN	399
Suzuki	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIICCCCVSLTRHRFD	SPKSRLTN	420
Biarmipes	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIICCCCVGLTRHRFD	SPKSRLTN	420
Takahashi	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIICCCCVGLTRHRFD	SPKSRLTN	399
Eugracilis	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIICCCCVGLTRHRFD	SPKSRLTN	399
Fichsuphila	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIICCCCVGLTRHRFD	SPKSRLTN	420
Erecta	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIICCCCVGLTRHRFD	SPKSRLTN	399
Mauritania	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIICCCCVGLTRHRFD	SPKSRLTN	399
Melanogaster	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIICCCCVGLTRHRFD	SPKSRLTN	399
Simulans	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIICCCCVGLTRHRFD	SPKSRLTN	399
Sechellia	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIICCCCVGLTRHRFD	SPKSRLTN	399
Mojavensis	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIIFCCCMGLTRYKFDSPKSRLAN		399
Virilis	YVQHMYLGFYWLAMSNAMVNPIIYYWMNKRFRMYFQRIIFCCCLGLMRYRFESPKSRMAN		399

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Grimshawi	KNSSHRNTR-----	AE	410
Bipectinate	KNSSNRHTR-----	AE	410
Anannassae	KNSSHRHTR-----	AE	410
Serrata	KNSSHRHTR-----	AE	410
Kikkawei	KNSSHRHTR-----	AE	410
Rhopaloo	KNSSHRHTR-----	AE	410
Elegans	KNSSHRHTR-----	AE	410
Suzuki	KNSSHRHTR-----	AE	431
Biarmipes	KNSSHRHTR-----	AE	431
Takahashi	KNSSHRHTR-----	AE	410
Eugracilis	KNSSHRHTR-----	AE	410
Fichsuphila	KNSSHRHTR-----	AE	431
Erecta	KNSSHRHTR-----	AE	410
Mauritania	KNSSHRHTRGGYTVAHSLPNSSPPTQTILAVLAQTQPMPTQLLLSHYSPHPTQPSAAE		459
Melanogaster	KNSSNRHTR-----	AE	410
Simulans	KNSSHRHTR-----	AE	410
Sechellia	KNSSHRHTR-----	AE	410
Mojavensis	KNSSNRNTR-----	VE	410
Virilis	KNSSNRHTR-----	AE	410

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Grimshawi	TKSQWKRSTMETQIQVPTSSSRDR-----	QAGAVQGLNHTAVECIIERP-	455	
Bipectinate	TKSQWKRSTMETQIQAPPI	<b>THTNSS</b> KDKEREKHLQQV-----	QTELHHRKAVECIMEGPG	465
Anannassae	TKSQWKRSTMETQIQAPPI	<b>THTNSS</b> KDRERERHLQQ-----	TELQHRKAVECIMEGPG	463
Serrata	TKSQWKRSTMETQIQVPT	<b>TNSCRD</b> QRQMTQSQS--L----	GGVATPRPAVECIMERP-	462
Kikkawei	TKSQWKRSTMETQIHQVPT	<b>TNSCRD</b> QRQLTQSQS--LGAHSGGGVGT	PRPAVECIMERP-	467
Rhopaloo	NKSQWKRSTMETQIQAPL	<b>TNSGRD</b> QRTAQF-----	LKAVDGPSSRVGVECIMERP-	460
Elegans	NKSQWKRSTMETQIQAPL	<b>TNSGRD</b> FRTPQP-----	LKVVDGASRVGVECIMERP-	460
Suzuki	TKSQWKRSTMETQIQAPV	<b>SNSGRD</b> QRMRDGYANQPAQAGVGGAGGNRAAVECIMERP-		490
Biarmipes	TKSQWKRSTMETQIQAPV	<b>SNSGRD</b> QRMRDGYPS--QAQAGVAGGNRAAVECIMERP-		487
Takahashi	TKSQWKRSTMETQIQAPV	<b>SNSCRD</b> PRMREATA-QPQTCGVGGP-NANRSAVECIMERP-		467
Eugracilis	TKSQWKRSTMETQIQAPANSTGRDQRN----	A-QQTPGTGAGIG-GPNRTAVECIMERP-		463
Fichsuphila	TKSQWKRSTMETQIQAPL	<b>TSSGRD</b> QRN----	A-QTQ--SLGGA-GSNRTAVECIMERP-	482
Erecta	TKSQWKRSTMETQIQAPV	<b>TSSGRD</b> QRS----	A-QQQHHPSGA-ATNRAAVECIMERP-	463
Mauritania	TKSQWKRSTMETQIQAPV	<b>TSSCRE</b> QRS----	A-QQQ--QPPGS-GTNRAAVECIMERP-	510
Melanogaster	TKSQWKRSTMETQIQAPV	<b>TSSCRE</b> QRS----	A-QQQ--QPPGS-GTNRAAVECIMERP-	461
Simulans	TKSQWKRSTMETQIQAPV	<b>TSSCRE</b> QRS----	A-QQQ--QPPGS-GTNRAAVECIMERP-	461
Sechellia	TKSQWKRSTMETQIQAPV	<b>TSSCRE</b> QRS----	A-QQQ--QPPGS-ETNRAAVECIMERP-	461
Mojavensis	TKSQWKRSTMETQIQVPTSSSRER-----	KAAGAAVNHMAVECVIERP-		454
Virilis	TKSQWKRSTMETQIQMPKTSRDK-----	DAGVQGLNHTAVECIIERP-		454

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Grimshawi	--VDESGSPICLSINNSAGERQRVKIKYISCEDDNPIEHESGSHGHGTHRHSRHS		513
Bipectinate	GNADGNSSPLCLSINNSMGERQRVKIKYISCEDDNPNVEHSPKQL-----		510
Anannassae	GHADGNSSPLCLSINNSVGERQRVKIKYISCEDDNPNVENS PKQL-----		508
Serrata	--MDGNSSPLCLSINNSVGERQRVKIKYISCEDDNPNVELEHSSGPKQL-----		509
Kikkawei	--LDGNSSPLCLSINNSVGERQRVKIKYISCEDDNPNVELEHSSGPKQL-----		514
Rhopaloo	--ADGNSSPLCLSINNSVGERQRVKIKYISCEDDNPNVEHTPKQ----L-----		503
Elegans	--ADGNSSPLCLSINNSVGERQRVKIKYISCEDDNPNVEHSPKH----L-----		503
Suzuki	--LDGNSSPLCLSINNSLGERQRMKIKYISCEDDNPNVELSPNQ----L-----		533
Biarmipes	--LDGNSSPLCLSINNSLGERQRLKIKYISCEDDNPNVELSPNQ----L-----		530
Takahashi	--VDGTSSPLCLSINNSLGERQRVKIKYISCEDDNPNVELSPKQ----L-----		510

Eugracilis	--TDGTSSPLCLSIINNSVGERQVRVVIKIKYISCEDEDNNPVELSPKQ----	L-----	506
Fichsuphila	--ADGTSSPLCLSIINNSVGERQVRVVIKIKYISCEDEDNNPVEHSPKQ----	L-----	525
Erecta	--ADGSSSPCLSIINNSIGERQVRVVIKIKYISCEDEDNNPVELSPKQ----	L-----	506
Mauritania	--ADGSSSPCLSIINNSIGERQVRVVIKIKYISCEDEDNNPVELSPKQ----	L-----	553
Melanogaster	--ADGSSSPCLSIINNSIGERQVRVVIKIKYISCEDEDNNPVELSPKQ----	M-----	504
Simulans	--ADGSSSPCLSIINNSIGERQVRVVIKIKYISCEDEDNNPVELSPKQ----	L-----	504
Sechellia	--ADGSSSPCLSIINNSIGERQVRVVIKIKYISCEDEDNNPVELSPKQ----	L-----	504
Mojavensis	--MDDNSSPICLSINNSAGERQRLRIKIKYISCEDEDNNPIEEASESSSNHSHGHSHNHSRSH		512
Virilis	--IDDNSSPICLSIKNSAGERQVRVVIKIKYISCEDEDNNPIEEGSENNSSHDSNHS	HGHGHSC	512
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**Melanogaster [NP 524304.2](#)**

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1 mseivdtell vncatilavrr felnsivntt llgslnrtev vllssiidn rdnlesinea
  61 kdflteclfp sptropyelp eqktiwaiif glmmfvaia ngivlwivtg hrsmrtvtny
 121 flnlnsiadl lmsslncvfn fifmlnsdwp fgsiyctinn fvanvtvsts vftlvaisfd
 181 ryiaivhplk rrtstrrkvri ilvliwalsc vlsapcllys simtkhyng ksrtvcfmmw
 241 pdgryptsma dyaynliilv ltygipmivm licyslmgrv lwgsrsigen tdrqmesmks
 301 krkvvrmfia ivsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp
 361 liyywmnkrf rmyfqriicc ccvgltrhrf dspksrltnk nssnrhtrae tksqwkrstm
 421 etqiqqapvt sscreqrsaq qqppgsqgn raavecimer padgsssplc lsinnsiger
 481 qrvkikyisc dednnpvels pkqm

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**Simulans [XP 002103960.1](#)**

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1 mseivdtell vncatilavrr felnsivntt llgslnrtev vllssiidn rdnlesinea
  61 kdflteclfp sptropyelp eqktiwaiif glmmfvaia ngivlwivtg hrsmrtvtny
 121 flnlnsiadl lmsslncvfn fifmlnsdwp fgsiyctinn fvanvtvsts vftlvaisfd
 181 ryiaivhplk rrtstrrkvri ilvliwalsc vlsapcllys simtkhyng ksrtvcfmmw
 241 pdgryptsma dyaynliilv ltygipmivm licyslmgrv lwgsrsigen tdrqmesmks
 301 krkvvrmfia ivsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp
 361 liyywmnkrf rmyfqriicc ccvgltrhrf dspksrltnk nssnrhtrae tksqwkrstm
 421 etqiqqapvt sscreqrsaq qqppgsqgn raavecimer padgsssplc lsinnsiger
 481 qrvkikyisc dednnpvels pkql

```

**Suzuki [XP 036674593.1](#)**

```

1 mwhkcggiit qrslipikgs rmseivdtel lvnctilavr rfelnsivnt tllgslnrte
  61 vsvllssiid nrdnlesine akdflteclfp psptropyelp weqktiwaii fglmmfvaia
 121 ngivlwivtg hrsmrtvttn yfllnlsiad llmsslncvf nfifmlnsdw pfgsiyctin
 181 nfanvtvst svftlvaisf dryiaivhpl krtsrrkvr iilvliwals cvlsapclly
 241 ssimtkhyng gksrtvcfmm wpdgryptsm adyaynliil vlygvpmiv mlicyslmgr
 301 vlwgsrsige ntdrqmesmk skrkvrmfi aivsifaicw lpyhlffiya yhnnqvastk
 361 yvqhmylgfy wlamsnamvn pliyywmnkr frmyfqriic ccvsltrhr fdspsrltn
 421 knsshrhtra etksqwrst netqiqqapv snsgrdqrmr dgyanqpaqa gvggagppnr
 481 aavecimerp ldgnssplcl sinnslgerq rmkikyisc ednnpvelsp nql

```

**Mauritania [XP 033163933.1](#)**

```

1 mseivdtell vncatilavrr felnsivntt llgslnrtev vllssiidn rdnlesinea
  61 kdflteclfp sptropyelp eqktiwaiif glmmfvaia ngivlwivtg hrsmrtvtny
 121 flnlnsiadl lmsslncvfn fifmlnsdwp fgsiyctinn fvanvtvsts vftlvaisfd
 181 ryiaivhplk rrtstrrkvri ilvliwalsc vlsapcllys simtkhyng ksrtvcfmmw
 241 pdgryptsma dyaynliilv ltygipmivm licyslmgrv lwgsrsigen tdrqmesmks
 301 krkvvrmfia ivsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp
 361 liyywmnkrf rmyfqriicc ccvgltrhrf dspksrltnk nsshrhtrgg ytvahslpns
 421 sppttqtila vlaqtqmpq tqllshysp hptqpsaaet ksqwkrstme tqiqqapvts
 481 screqrsaq qqppgsqgn raavecimerp adgsssplcl sinnsigerq rvkikyiscd
 541 ednnpvelsp kql

```

**Sechellia [XP 032578092.1](#)**

```

1 mseivdtell vncatilavrr felnsivntt llgslnrtev vllssiidn rdnlesinea
  61 kdflteclfp sptropyelp eqktiwaiif glmmfvaia ngivlwivtg hrsmrtvtny
 121 flnlnsiadl lmsslncvfn fifmlnsdwp fgsiyctinn fvanvtvsts vftlvaisfd
 181 ryiaivhplk rrtstrrkvri ilvliwalsc vlsapcllys simtkhyng ksrtvcfmmw
 241 pdgryptsma dyaynliilv ltygipmivm licyslmgrv lwgsrsigen tdrqmesmks
 301 krkvvrmfia ivsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp
 361 liyywmnkrf rmyfqriicc ccvgltrhrf dspksrltnk nsshrhtrae tksqwkrstm
 421 etqiqqapvt sscreqrsaq qqppgsqgn raavecimer padgsssplc lsinnsiger

```

481 qrvkikyisc dednnpvels pkql

Serrata [XP\\_020798481.1](#)

```
1 mseivdtell vnctilavrr felnsivntt llslnrtev vsllssiidn rdnlginea
  61 kdflteclfp sptropyelpw eqktiweiif glmmfvaiaig ngivlwivtg hrsmrtvtny
 121 flnlslsiadl lmsslncvfn fifmlnsdwp fgisyctinn fvanvtvsts vftlvaisfd
 181 ryiaivhplk rrtstrrkvrf ilvliwvlscl vlsapcllys simtkhyyng ksrtvcfmmw
 241 pdgryptsma dyaynliilv ltygipmivm licyslmgrv lwgrsrsigen tdrqmesmks
 301 krkvvrmfia ivsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp
 361 liyywmnkrf rmyfqriicc ccvgltrhrf dspksrltnk nsshrhtrae tksqwkrstm
 421 etqiqqpvtt nscrdqrqmt qsqslggvat prpavecime rmpdgnsspl clsinnsvge
 481 qrvkikyis cdednnpvel ehssgpkql
```

Erecta [XP\\_001980652.1](#)

```
1 mseivdtell vnctilavrr felnsivntt llslnrtev vnlssiidn rdnlesinea
  61 kdflteclfp sptropyelpw eqktiweiif glmmfvaiaig ngivlwivtg hrsmrtvtny
 121 flnlslsiadl lmsslncvfn fifmlnsdwp fgisyctinn fvanvtvsts vftlvaisfd
 181 ryiaivhplk rrtstrrkvri ilvliwalsc vlsapcllys simtkhyyng ksrtvcfmmw
 241 pdgryptsma dyaynliilv ltygipmivm licyslmgrv lwgrsrsigen tdrqmesmks
 301 krkvvrmfia ivsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp
 361 liyywmnkrf rmyfqriicc ccvgltrhrf dspksrltnk nsshrhtrae tksqwkrstm
 421 etqiqqapvt ssgrdqrsaq qqqhpsgaa tnraavecim erpadgsssp lclsinnsig
 481 erqrvkikyis cdednnpvel lspkql
```

Takahashi [XP\\_017004985.2](#)

```
1 mseivdtell vnctilavrr felnsivntt llslnrtev vsllssiidn rdnlesinea
  61 kdflteclfp sptropyelpw eqktiweiif glmmfvaiaig ngivlwivtg hrsmrtvtny
 121 flnlslsiadl lmsslncvfn fifmlnsdwp fgisyctinn fvanvtvsts vftlvaisfd
 181 ryiaivhplk rrtstrrkvri ilvliwalsc vlsapcllys simtkhyyng ksrtvcfmmw
 241 pdgryptsma dyaynliilv ltygipmivm licyslmgrv lwgrsrsigen tdrqmesmks
 301 krkvvrmfia ivsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp
 361 liyywmnkrf rmyfqriicc ccvgltrhrf dspksrltnk nsshrhtrae tksqwkrstm
 421 etqiqqapvs nscrdprme ataqpqtqgv ggpnanrsav ecimerpvdg tssplclsln
 481 nslgerqrvk ikyiscdedn npvelspkql
```

Biarmipes [XP\\_016959801.1](#)

```
1 mwrkcggiit qrslipikgc rmseivdtel lvnctilavrr felnsivnt tllgslnrte
  61 vvsllssiid nrdnlesine akdflteclfp psptropyelp weqktiweiif fglmmfvaia
 121 gngivlwivt ghrsmrtvtn yflnlslsiad llmsslncvfn nfifmlnsdwp pfgisyctin
 181 nfanvtvst svftlvaisf dryiaivhpl krtrstrrkvr iilvliwals cvlsapclly
 241 ssimtkhyyng gksrtvcfmm wpdgryptsma adyaynliil vltgipmiv mlicyslmgr
 301 vlgwrsrsige ntdrqmesmk skrkvvrmfi aivsifaicw lpyhlffiya yhnnqvastk
 361 yvqhmylgfy wlamsnamvn pliyywmnkrf rmyfqriicc ccvgltrhrf fdspksrltn
 421 knsshrhtra etksqwkrst metqiqqapv snsgrdqrmr dgypsqaqag vaggpnraav
 481 ecimerpldg nssplclsln nslgerqrvk ikyiscdedn npvelspnql
```

Eugracilis [XP\\_017083539.1](#)

```
1 mseivdtell vnctilavrr felnsivntt llslnrtev vsllssiidn rdnlesinea
  61 kdflteclfp sptropyelpw eqktiweiif glmmfvaiaig ngivlwivtg hrsmrtvtny
 121 flnlslsiadl lmsslncvfn fifmlnsdwp fgisyctinn fvanvtvsts vftlvaisfd
 181 ryiaivhplk rrtstrrkvri ilvliwalsc vlsapcllys simtkhyyng ksrtvcfmmw
 241 pdgryptsma dyaynliilv ltygipmivm licyslmgrv lwgrsrsigen tdrqmesmks
 301 krkvvrmfia ivsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp
 361 liyywmnkrf rmyfqriicc ccvgltrhrf dspksrltnk nsshrhtrae tksqwkrstm
 421 etqiqqapan stgrdqrnaq qtptgagigg pnrtavecim erptdgtssp lclsinnsvg
 481 erqrvkikyis cdednnpvel lspkql
```

Rhopaloo [XP\\_016989968.2](#)

```
1 mseivdtell vnctilavrr felnsivntt llslnrtev vsllssiidn rdnldsinea
  61 kdflteclfp sptropyelpw eqktiweiif glmmfvaiaig ngivlwivtg hrsmrtvtny
 121 flnlslsiadl lmsslncvfn fifmlnsdwp fgisyctinn fvanvtvsts vftlvaisfd
 181 ryiaivhplk rrtstrrkvri ilvliwalsc vlsapcllys simtkhyyng ksrtvcfmmw
```

241 pdgryptsma dyaynliili ltygipmivm licyslmgrv lwgsrsigen tdrqmesmks  
301 krkvvrmfia ivsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp  
361 liyywmnkrf rmyfqriicc ccvsltrhrf dspksrltnk nsshrhtrae nksqwkrcstm  
421 etqiqqaplt nsgrdqprtaq plkavdgpsr vgvecimerp adgnssplcl sinnsvgerq  
481 rvkikyiscd ednnpvehp kql

Fichsuphila [XP\\_017057393.1](#)

1 mwhecsgiit qrprivikvw kmseivdtel lvnctilavr rfelnsivnt tllgtlnrte  
61 vvsllssiie nrdnlqsine akdflteclfp psptrpyelp weqktiwaii fgllmmfvaia  
121 ngivlwivt ghrsmrtvtn yfllnlsiad llmsslncvfn nfifmlnsdw pfgsiyctin  
181 nfvantvst svftlvaisf dryiaivhpl krtrsrrkvr iilvliwvls cvlsapclly  
241 ssimtkhyyn gkrtvcfmm wpdgryptsma adyaynliil vltgipmiv mlicyslmgr  
301 vlwgsrsige ntdrqmesmk skrkvrmfi aivsifaicw lpyhlffiyay yhnnqvastk  
361 vqghmylgfy wlamsnamvn pliyywmnkr frmyfqriic ccvgltrhr fdspskrltn  
421 knsshrhtra etksqwkrcstm metqiqqapl tssgrdqrna qtqslggags nrtavecime  
481 rpadgtsspl clsinnsvge rqrvkikyis cdednnpveh spkql

Elegans [XP\\_017112407.1](#)

1 mseivdtell vnctilavr felnsivnt llgslnrtev vsllssiien rdnlqsinea  
61 kdflteclfp sptprpyelp eqktiwaiif glmmfvaia ngivlwivtg hrsmrtvtny  
121 flnlnsiadl lmsslncvfn fifmlnsdwp fgsiyctinn fvanvtvsts vftlvaisfd  
181 ryiaivhplk rrtsrrkvri ilvliwalsc vlsapcllys simtkhyyn gkrtvcfmmw  
241 pdgryptsma dyaynliilv ltygipmivm licyslmgrv lwgsrsigen tdrqmesmks  
301 krkvvrmfia ivsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp  
361 liyywmnkrf rmyfqriicc ccvgltrhrf dspksrltnk nsshrhtrae nksqwkrcstm  
421 etqiqqaplt nsgrdprtpq plkvvdqasr vgvecimerp adgnssplcl sinnsvgerq  
481 rvkikyiscd ednnpvehp khl

Kikkawei [XP\\_017020386.1](#)

1 mseivdtell vnctilavr felnsivnt llslnrtev vsllssiien rdnlqsinea  
61 kdflteclfp sptprpyelp eqktiwaiif glmmfvaia ngivlwivtg hrsmrtvtny  
121 flnlnsiadl lmsslncvfn fifmlnsdwp fgsiyctinn fvanvtvsts vftlvaisfd  
181 ryiaivhplk rrtsrrkvri ilvliwalsc vlsapcllys simtkhyyn gkrtvcfmmw  
241 pdgryptsma dyaynliilv ltygipmivm licyslmgrv lwgsrsigen tdrqmesmks  
301 krkvvrmfia ivsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp  
361 liyywmnkrf rmyfqriicc ccvgltrhrf dspksrltnk nsshrhtrae tksqwkrcstm  
421 etqiqqvptt nsgrdqprqlt qsqslgahsg ggvgtrpav ecimerpldg nssplclsln  
481 nsvgerqrvk ikyiscdedn npvelehssg pkql

Bipectinate [XP\\_017104778.2](#)

1 msetvdtell vnctilavr felnsivnt llsslnrtev vglsgiiien rdnleneia  
61 kdflteclfp sptprpyelp eqktiwaiif glmmfvaia ngivlwivtg hrsmrtvtny  
121 flnlnsiadl lmsslncvfn fifmlnsdwp fgsiyctinn fvanvtvsts vftlvaisfd  
181 ryiaivhplk rrtsrrkvrf ilvliwalsc vlsapcllys simtkhyyn gkrtvcfmmw  
241 pdgryptsma dyaynliilv ltygipmivm licytlmgrv lwgsrsigen tdrqmesmks  
301 krkvvrmfia ivsifaicwl pyhlffiyay hnnhvastky vqhmylgfyw lamsnamvnp  
361 liyywmnkrf rmyfqriicc ccmgtrhrf dspksrltnk nsshrhtrae tksqwkrcstm  
421 etqiqappit htsskdker ekhlqqvqte lhhrkaveci megpggnadg nssplclsln  
481 nsmgerqrvk ikyiscdedn npvehspkql

Anannasae [XP\\_001952989.1](#)

1 msetvdtell vnctilavr felnsivnt llsslnrsev vglsgiiien rdnleneia  
61 kdflteclfp sptprpyelp eqktiwaiif glmmfvaia ngivlwivtg hrsmrtvtny  
121 flnlnsiadl lmsslncvfn fifmlnsdwp fgsiyctinn fvanvtvsts vftlvaisfd  
181 ryiaivhplk rrtsrrkvrf ilvliwalsc vlsapcllys simtkhyyn gkrtvcfmmw  
241 pdgryptsma dyaynliilv ltygipmivm licytlmgrv lwgsrsigen tdrqmesmks  
301 krkvvrmfia ivsifaicwl pyhlffiyay hnnhvastky vqhmylgfyw lamsnamvnp  
361 liyywmnkrf rmyfqriicc ccmgtrhrf dspksrltnk nsshrhtrae tksqwkrcstm  
421 etqiqappit htsskdker erhlqqtelq hrkavecime gpgghadgns splclslns  
481 vgerqrvkik yiscdednnp venspkql

Mojavensis [XP\\_001998315.1](#)

1 mseivdtell vnctilavrr felnsivntt llslnrtev vsllsgiiien rdnlgsinea  
61 kdflteclfp sptpryelpw eqktiwaivf glmmfvaiaag ngivlwivtg hrsmrtvtny  
121 flnlslsiadl lmsslncvfn fifmlnsdwp fgsiyctinn fvanvtvsts vftlvaisfd  
181 ryiaivhplk rrtstrrkvrf ilvliwalsc vlsapcllys simtkhyng ksrtvcfmmw  
241 pdgryptsma dyvynltllv ltygipmivm lvcyslmgrv lwgsrsigen terqiesmks  
301 krkvvrmfia ivsifaicwl pyhmffiyay hnnqvastky vqhmylgfyw lamsnamvnp  
361 iyywmnkrf rmyfqriifc ccmgltrykf dspksrlank nssnrtrve tksqwkrstm  
421 etqiqvptt ssrerkaaga avnhmavecv ierpmdnss piclsinnsa gerqrlriky  
481 iscdednnp eeasessnh shghshnshr shthahrcsh rqkttgtqel

Virilis [XP\\_002053610.1](#)

1 mseivdtell vnctilavrr felntivntt llntlnrtev vgllsgiiien rdnlidsinea  
61 kdflteclfp sptpryelpw eqktiwaivf glmmfvaiaag ngivlwivtg hrsmrtvtny  
121 flnlslsiadl lmsslncvfn fifmvnsdwp fgsiyctinn fvanvtvsts vftlvaisfd  
181 ryiaivhplk rrtstrrkvrf ilvliwalsc vlsapcllys simtkhyng ksrtvcfmmw  
241 pdgryptsmt dyvynvtilv ltygipmivm licyslmgrv lwgsrsigen tdrqmesmks  
301 krkvvrmfia ivsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp  
361 iyywmnkrf rmyfqriifc cclglmryrf espksrmank nssnrhtrae tksqwkrstm  
421 etqiqqmpkt ssrdkdagvq glnhtaveci ierpiddnss piclsiknsa gerqrvkiky  
481 iscdednnp eegsennssh dsnhshghgh scgrshgqna kaiqq

Grimshawi [XP\\_001994653.1](#)

1 mpeivdtell vnctilavlr felnsivnit llslnrtev vslltsiidn rdnllesinea  
61 kdflteclfp sptpryelpw eqktiwaivf glmmfvaiaag ngivlwivtg hrsmrtvtny  
121 flnlslsiadl lmsslncvfn fifmvnsdwp fgsiyctinn fvanvtvsts vftlvaisfd  
181 ryiaivhplk rrtstrrkvrf ilvliwalsc vlsapcllys simtkhyng ksrtvcfmmw  
241 pdgryptsma dyvynltlv ltygipmivm licytlmgrv lwgsrsigen tdrqmesmks  
301 krkvvrmfia vvsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp  
361 iyywmnkrf rmyfqrivcc cclgfiryrf dspksqatnk nsshrntrae tksqwkrstm  
421 etqiqqvpts ssrdraqagav qglnhtavec iierpvdesg spiclsinnsa agerqrvkik  
481 yiscdednnp iehesesghs hghthrhshr hslsnygrs raqnaalvqq l