

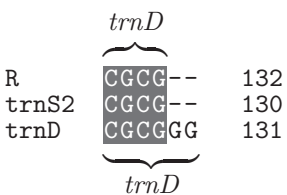
# 1 Trans

## 1.1 NC\_011007-NC\_011009

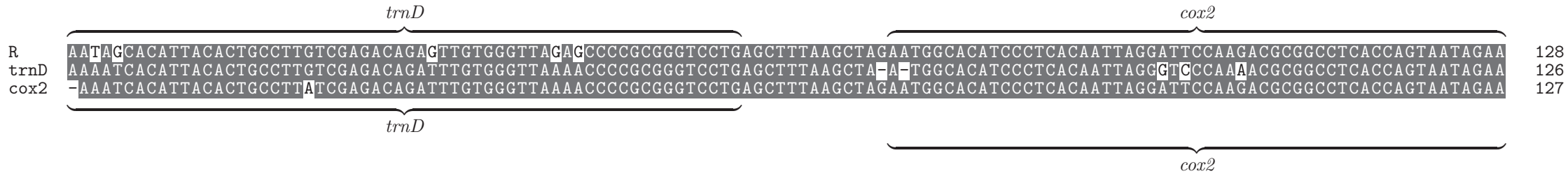
Avg ovsized: 127

LCA: Platyroctidae-family

### 1.1.1 trnS2-trnD 131



1.1.2 trnD-cox2 131



1.1.3 cox1-trnS2 121

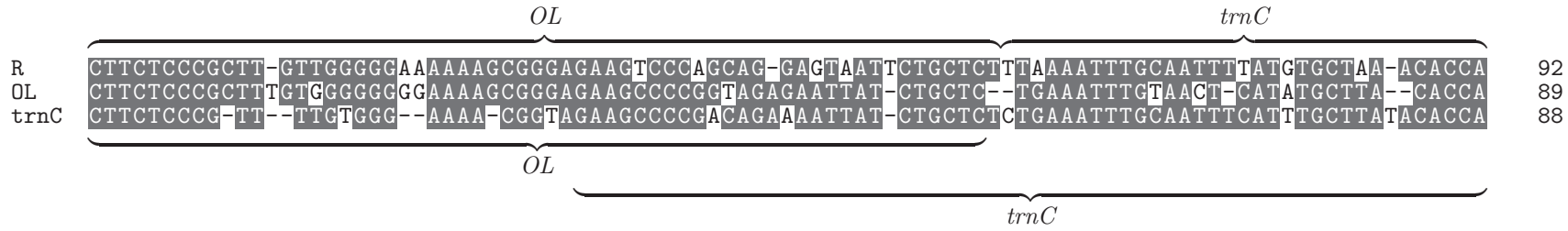


1.2 NC\_006344-NC\_006345

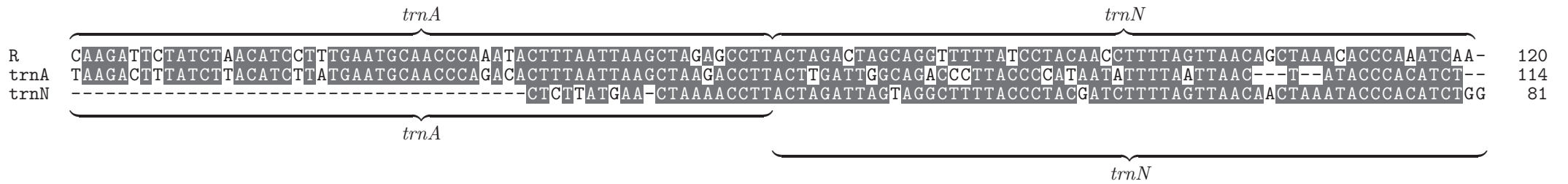
Avg ovsized: 74

LCA: Plethodontinae-subfamily

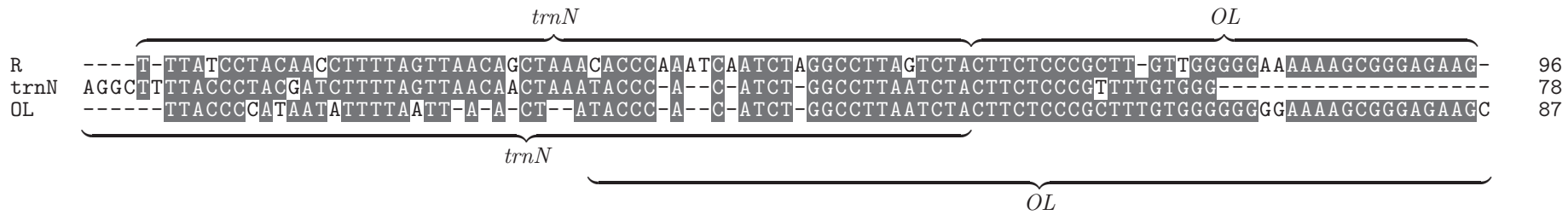
1.2.1 OL-trnC 95



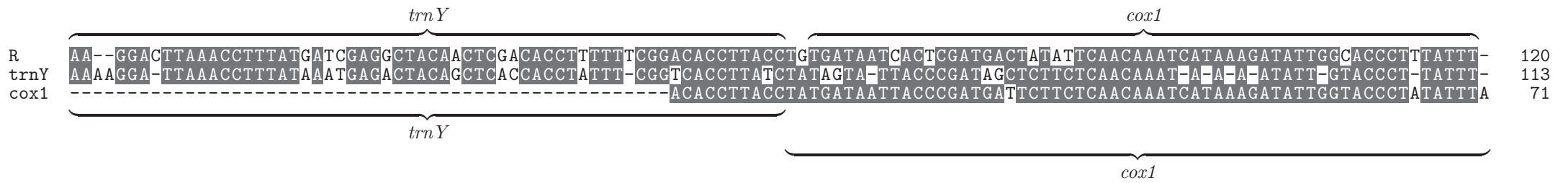
1.2.2 trnA-trnN 80



1.2.3 trnN-OL 77



1.2.4 trnY-cox1 70



1.2.5 trnW-trnA 50



### 1.3 NC\_004594-NC\_008448

Avg ovsiz: 62

LCA: Galaxiidae-family

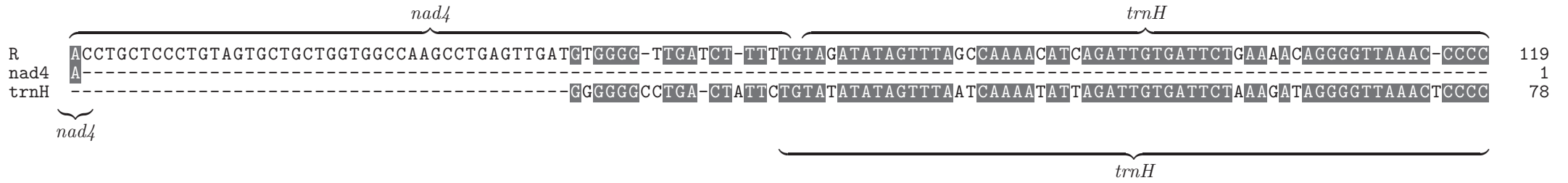
#### 1.3.1 cox3-trnG 118



#### 1.3.2 trnR-nad4l 112



1.3.3 nad4-trnH -42



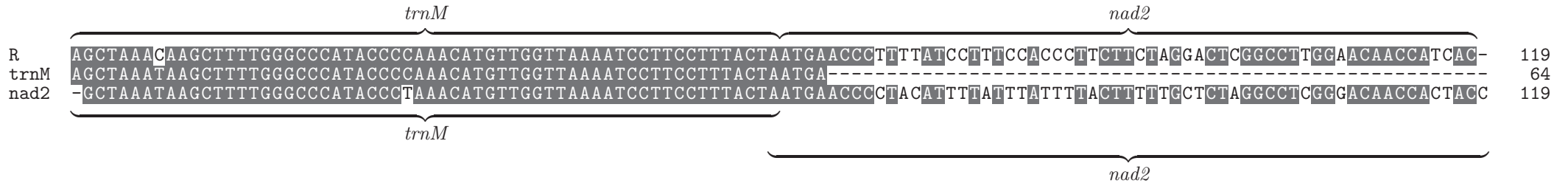
1.4 NC\_011387-NC\_011381

Avg ovsized: 59  
LCA: Cyprinodontoidei-suborder

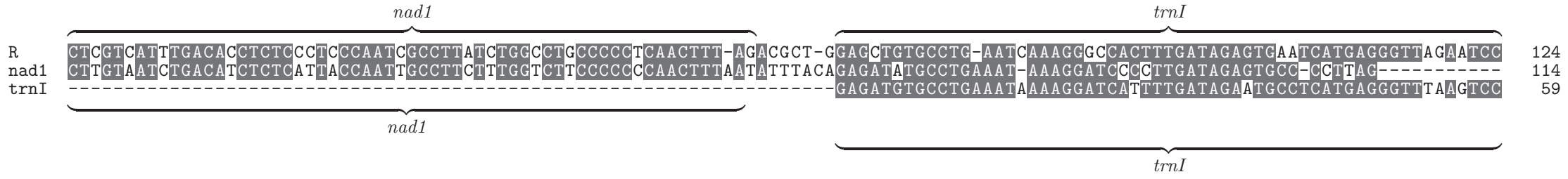
1.4.1 trnQ-trnM 66



1.4.2 *trnM-nad2* 63



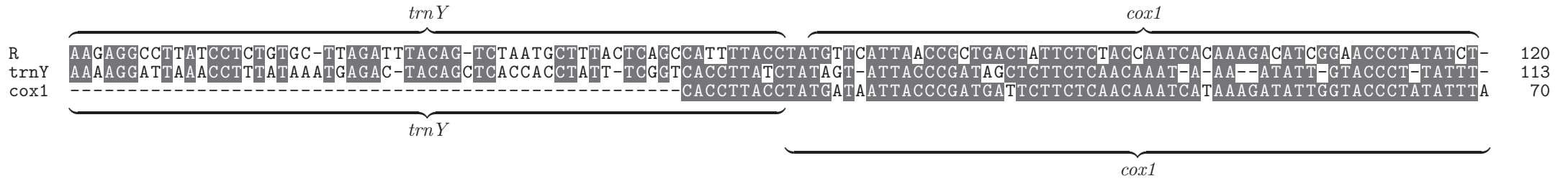
1.4.3 *nad1-trnI* 48



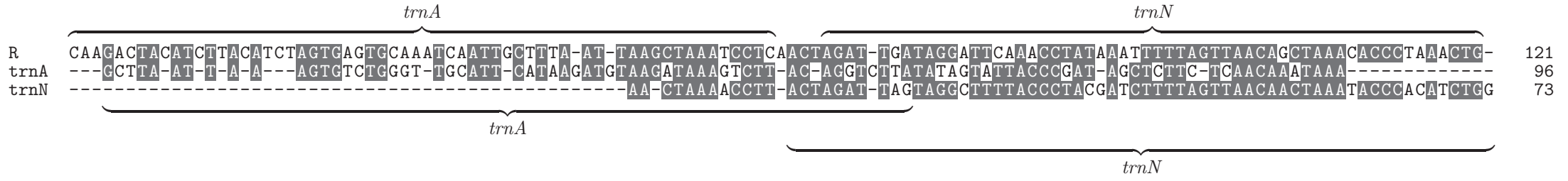
1.5 NC\_013571-NC\_006345

Avg ovsized: 35  
 LCA: Tetrapoda-superclass

1.5.1 trnY-cox1 69



1.5.2 trnA-trnN 63



1.5.3 trnW-trnA -27





1.6 NC\_009061-NC\_006355

Avg ovsz: 28

LCA: Labroidei-suborder

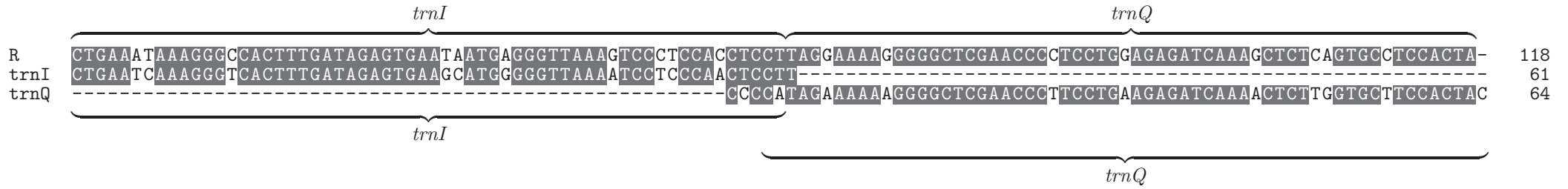
1.6.1 trnQ-trnM 55



1.6.2 trnM-nad2 23



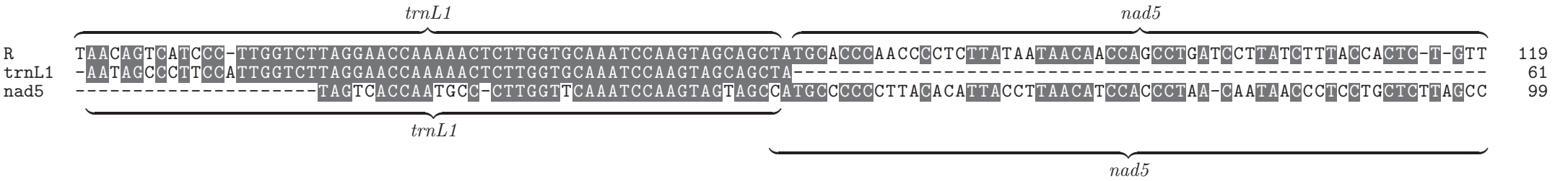
1.6.3 trnI-trnQ 6



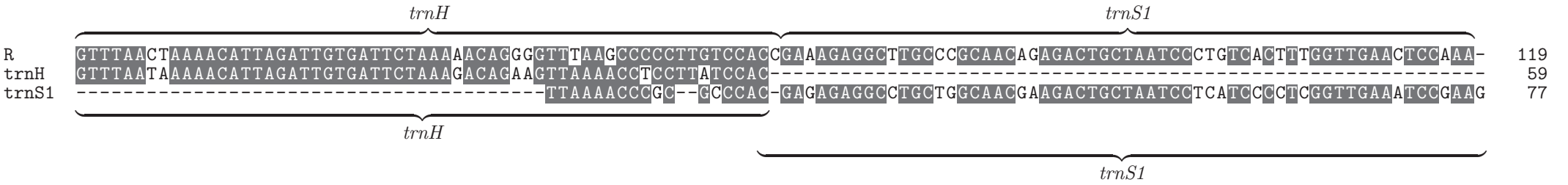
1.7 NC\_022480-NC\_010199

Avg ovsiz: 25  
LCA: Perciformes-order

1.7.1 trnL1-nad5 41



1.7.2 trnH-trnS1 19



1.7.3 nad4-trnH 16



1.8 NC\_013136-NC\_009851

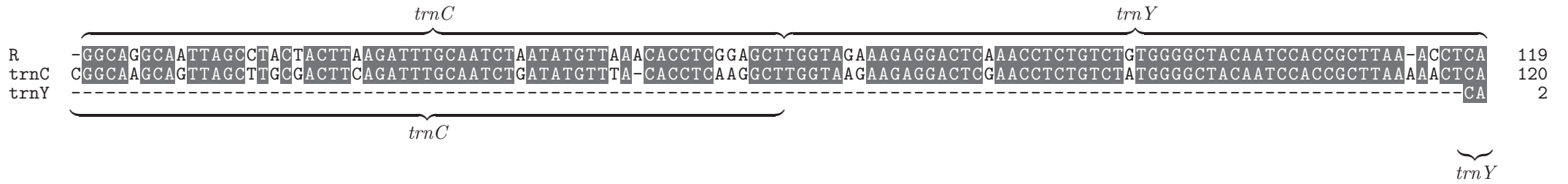
Avg ovsized: 20

LCA: Acanthuroidei-suborder

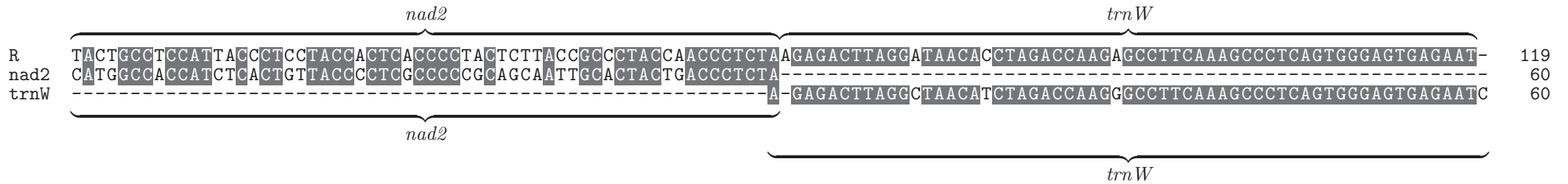
1.8.1 trnY-cox1 59



1.8.2 trnC-trnY 2



1.8.3 nad2-trnW 1



1.9 NC\_008667-NC\_008683

Avg ovsiz: 20

LCA: Cyprinoidea-superfamily

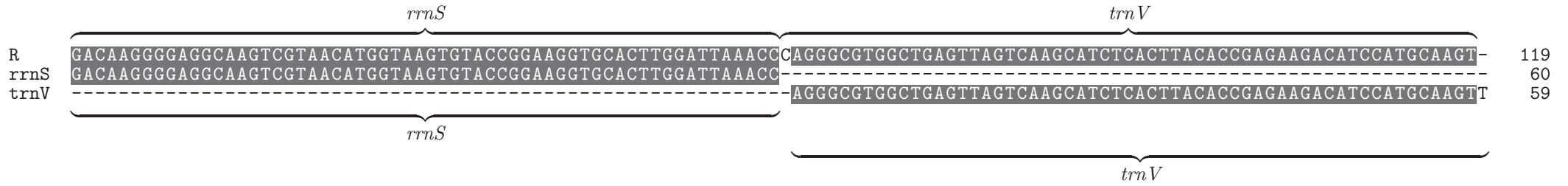
1.9.1 trnI-trnQ 59



1.9.2 nad1-trnI 2



1.9.3 rrnS-trnV -1

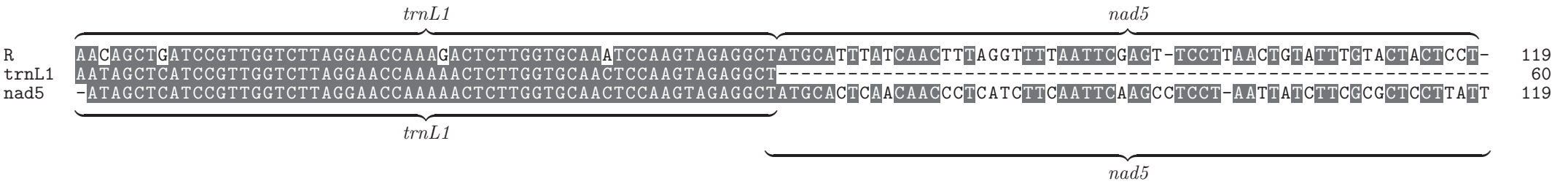


1.10 NC\_005800-NC\_005796

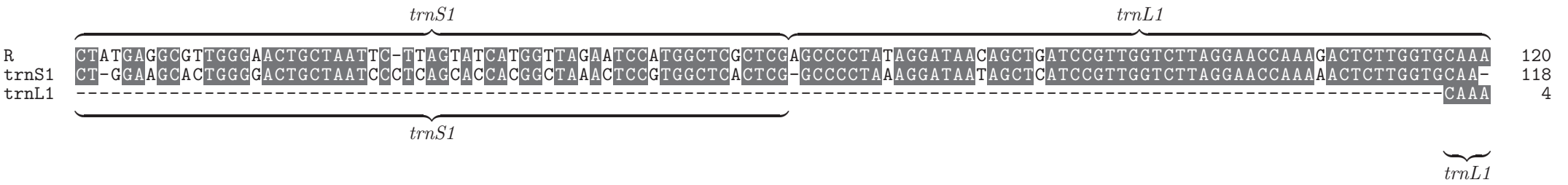
Avg ovsz: 20

LCA: Albuliformes-order

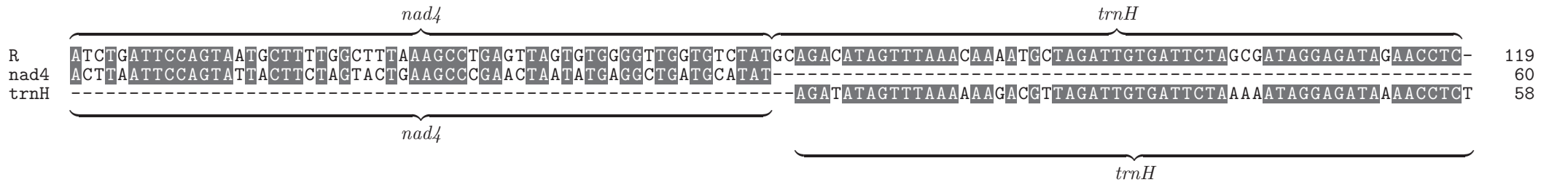
1.10.1 trnL1-nad5 59



1.10.2 trnS1-trnL1 3



1.10.3 nad4-trnH -2



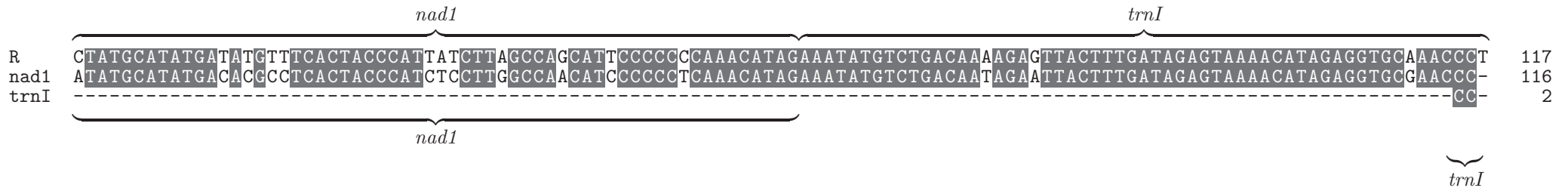
1.11 NC\_012761-NC\_012762

Avg ovsiz: 19  
LCA: Lorisiformes-infraorder

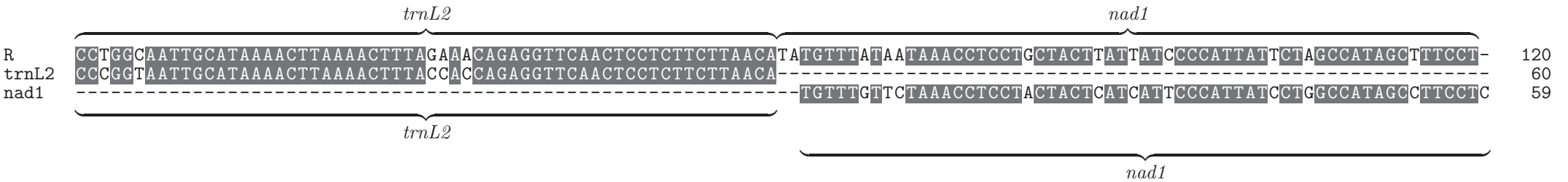
1.11.1 trnI-trnQ 59



1.11.2 nad1-trnI 2



1.11.3 trnL2-nad1 -2





1.12 NC\_006333-NC\_006340

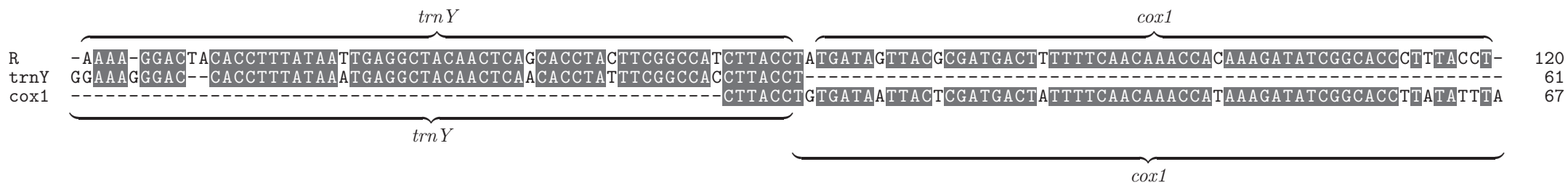
Avg ovsz: 19

LCA: Batrachoseps-genus

1.12.1 trnA-trnN 51



1.12.2 trnY-cox1 7



1.12.3 trnC-trnY 1

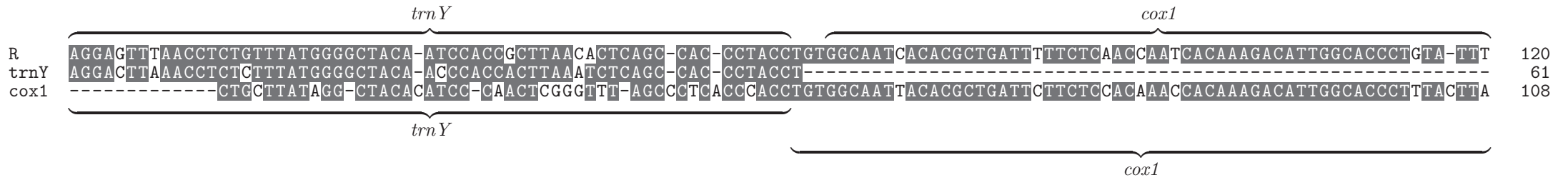


1.13 NC\_002647-NC\_003159

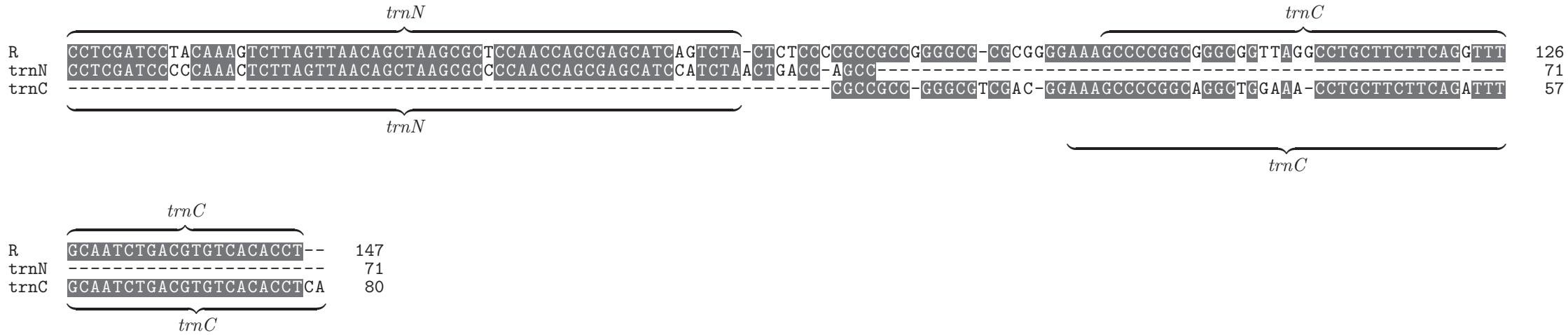
Avg ovsz: 19

LCA: Stomatiformes-order

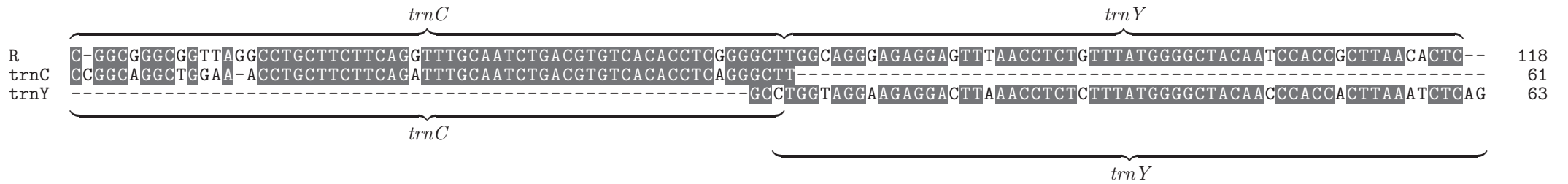
1.13.1 trnY-cox1 51



1.13.2 trnN-trnC 4



1.13.3 trnC-trnY 4



1.14 NC\_006355-NC\_011381

Avg ovsized: 18

LCA: Percomorpha-order

1.14.1 *nad1-trnI* 48

R  
*nad1*  
*trnI*

*nad1* *trnI*

TTTATAATCTGACATCTGGCACTACTAATTGCATTGCGCGGACTTCCCCCACACCTTTAA-----CA-GGAGCTGTGCCTG-AATCAAAGGGTCACTTTGATAGAGTGAAGCATGGGGTTAAAATCC 121  
CTTGTAATCTGACATCTCTCATTACCAATTGCTTCTTTGGTCTTCCCCCCTCAACTTTAATATTTACAGAGATATGCCTGAAAT-AAAGGATCCCTTGATAGAGTGCCCTT----- 112  
-----ACGGAGATGTGCCTGAAATAAAAAGGATCATTTTGATAGAAATGCCTCATGAGGGTTTAAGTCC 62

*nad1* *trnI*

1.14.2 *trnI-trnM* 14

R  
*trnI*  
*trnM*

*trnI* *trnM*

CTGA-ATCAAAGGGTCACTTTGATAGAGTGAAGCATG-GGGG-TTAAAATCCTCCCAACTCCTTCCACGGAGCAAAGTAAGCTAATAGAAGCTATTGGGCCCATACCCCAAAAATGTTGACTAA--TA 123  
-TGAAATAAAAAGGATCATTTTGATAGAAATGCCTCATGAGGGT-TTAA----- 45  
-----CCTGAGGGGATTTAAAAC-TCTTAG-TACTTCCT---AGTAAAGTCAGCTAA-ATAAGCTTTTGGGCCCATACCCCAAAACATGTTGGTTAAAATC 88

*trnI* *trnM*

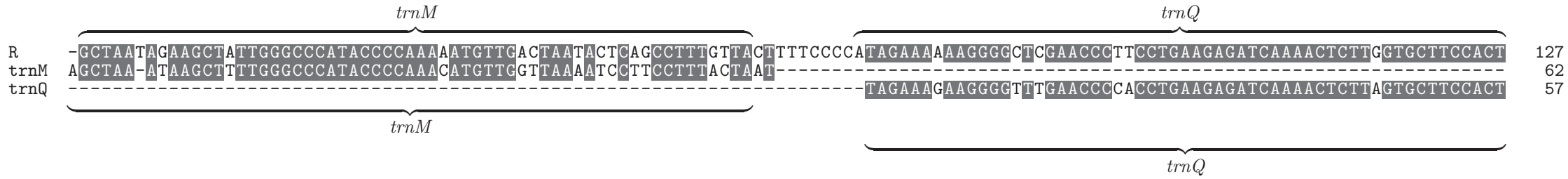
*trnM*

R  
*trnI*  
*trnM*

CTC 126  
--- 45  
CTT 91

*trnM*

1.14.3 trnM-trnQ -8

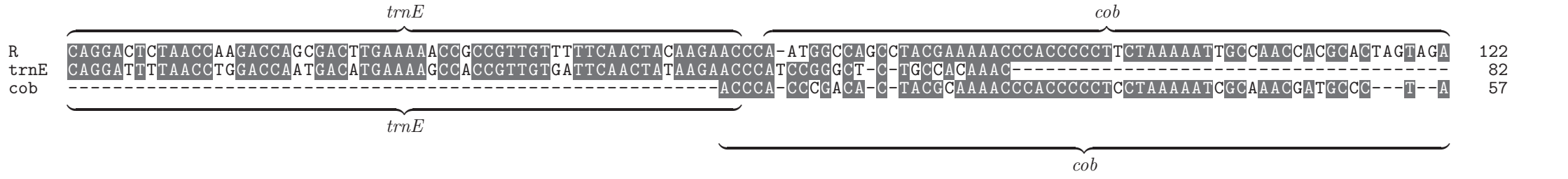


	<i>trnQ</i>	
R	A-	128
trnM	--	62
trnQ	AC	59
	<i>trnQ</i>	

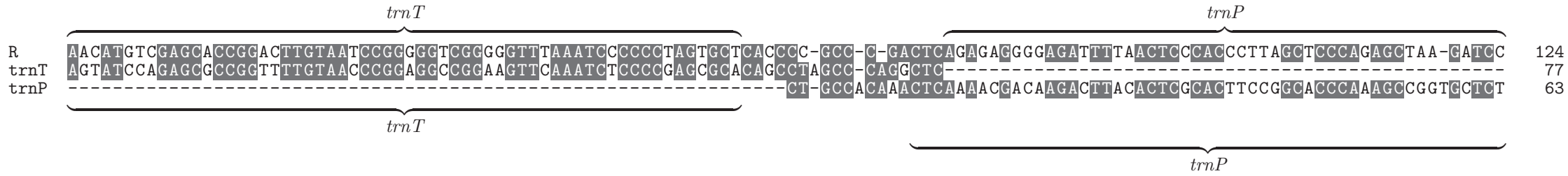
1.15 NC\_003159-NC\_003163

Avg ovsized: 10  
 LCA: Neoteleostei-subclass

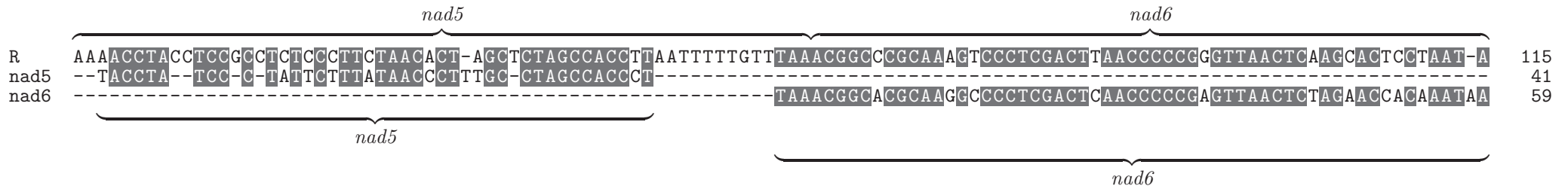
1.15.1 trnE-cob 26



1.15.2 trnT-trnP 14



1.15.3 nad5-nad6 -10

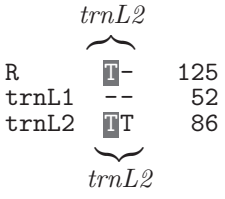
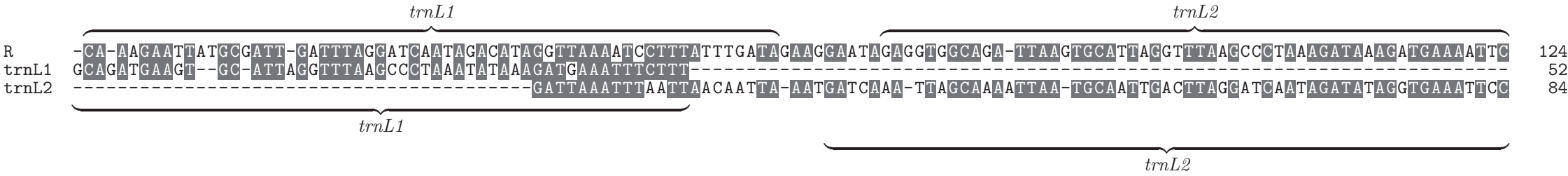


1.16 NC\_008797-NC\_007781

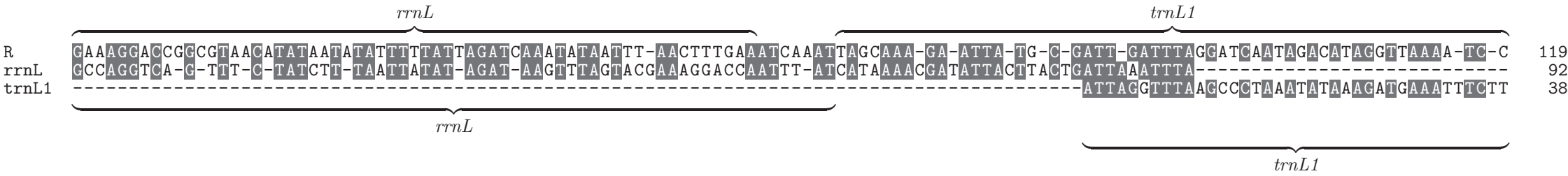
Avg ovsized: 8

LCA: Neogastropoda-infraorder

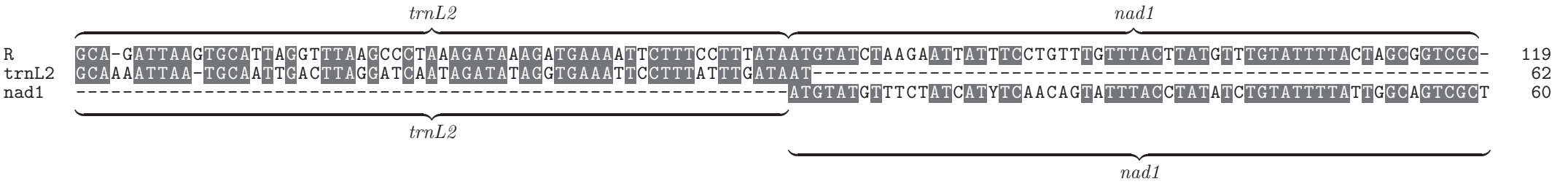
1.16.1 trnL1-trnL2 14



1.16.2 rrnL-trnL1 10



1.16.3 trnL2-nad1 2



1.17 NC\_005961-NC\_006355

Avg ovsz: 6

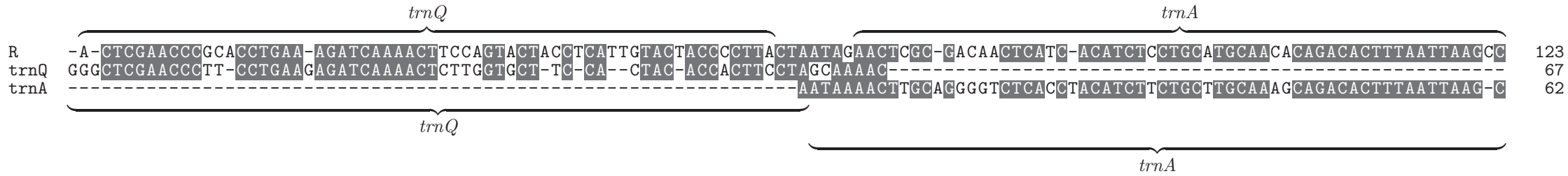
LCA: Teleostomi-superclass

1.17.1 trnM-nad2 41

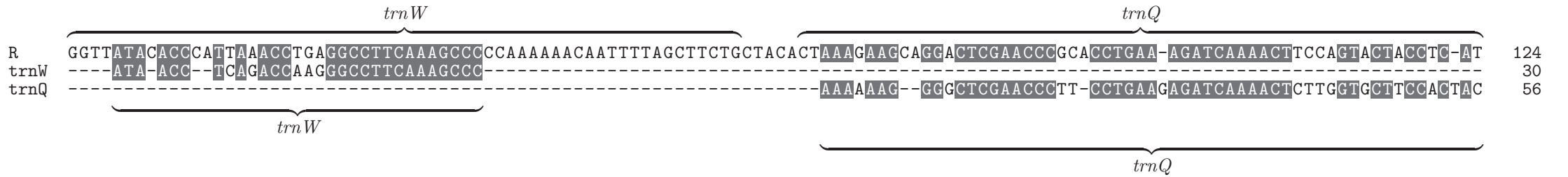




1.17.2 trnQ-trnA 8



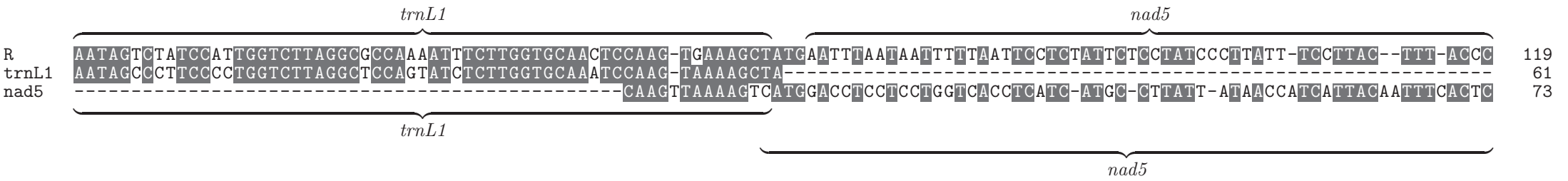
1.17.3 trnW-trnQ -30



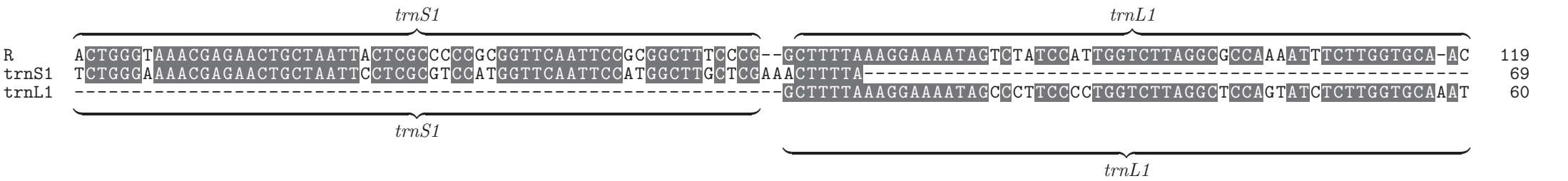
1.18 NC\_020000-NC\_006405

Avg ovsz: 5  
LCA: Anura-order

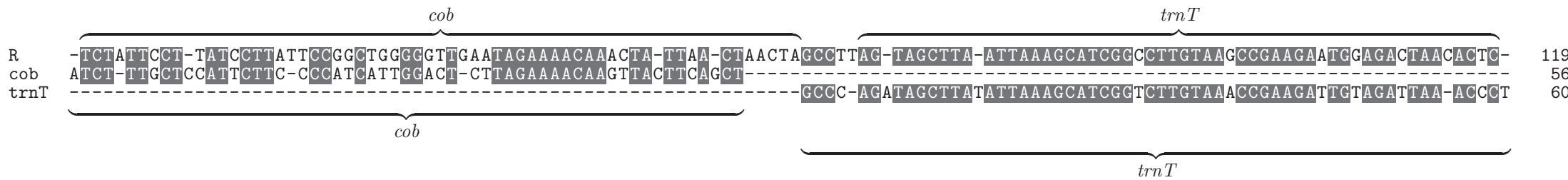
1.18.1 trnL1-nad5 14



1.18.2 trnS1-trnL1 7



1.18.3 cob-trnT -5



1.19 NC\_006355-NC\_022477

Avg ovsized: 4

LCA: Perciformes-order

1.19.1 trnQ-nad2 12

*trnQ*

```

R      GGGCTCGAACCCTTCTGAAGAGATCAAAACTCTTGGTGCTTCCACTACACCACTTCTAGCAAAAACAAG-GAAACAA--TTCCATTGGAATACACCCAACAAGTTGATTAACTTCAACGATTGCTT 125
trnQ   GGATTCGAACCCAACTAAAGAGATCAAAACTCTCAGTGCTTCTCTACACCACTTCTAGTAAAGTCAGCTAAAAAAGCTTTCAGGCCCATAC-CCTGAACATGTTGGTTAA----AACCCCTTCCCT 123
nad2   -----

```

*nad2*

```

R      CATGAGCCCCTATATTCT--CTCGATCTTTCTTTTCGGACTCGGCCTAGGAACCAACAATTAC- 185
trnQ   TACTA-CACCTCTATCCT----- 140
nad2   -----
      CCCCT-TATCCTGGCTCTA-CT-ACTATTTAGCCTCGGCCTAGGCACCATCCTCACA 54

```

*nad2*

1.19.2 trnM-trnQ 2

*trnM*

```

R      GCTAATAGAAGCTATTGGGCCCATACCCCAAAAATGTTGACTAATACTCAGCCTTTGTTACTTTTCCCC-AT-AGAAAAAAGGGGCTCGAACCCTTCTGAAGAGATCAAAACTCTTGGTGCTTCCAC 126
trnM   GCTAA-ATAAGCTTTCGGGCCCATCCCCGAACATGTCGGCCAACAATC--CCTCCTTTACT----- 59
trnQ   -----
      CTTTAAACCTATTAGAAAAGAAGGGATTTCGAACCCAACTAAAGAGATCAAAACTCTCAGTGCTTCTC 68

```

*trnM*

*trnQ*

	<i>trnQ</i>	
	⏟	
R	TA-	128
trnM	---	59
trnQ	TAC	71
	⏟	
	<i>trnQ</i>	

**1.19.3 nad1-trnI 0**

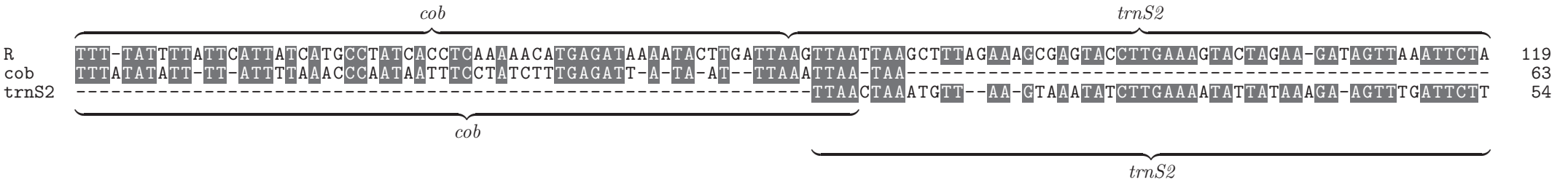
	<i>nad1</i>	<i>trnI</i>	
	⏟		
R	TTTATAATCTGACATCTGGCACTACTAATTGCATTGGCCGGACTTCCCCACACCTTTAAACAGGAGCTGTGCCTGAATCAAAGGGTCACTTTGATAGAGTGAAGCATGGGGTTAAAATC-C		121
nad1	TTAATAGTATGACACCTCGCCCTCCAATCGCATTCTCAGGCCTTCCACCCCAAATATAATA		62
trnI		GGAGCCGTGCCTGAACCAAAGGATCACTTTGATAGAGTGAATCACGAGGGTTAAAACCC	60
	⏟		
	<i>nad1</i>	<i>trnI</i>	

**1.20 NC\_022670-NC\_002735**

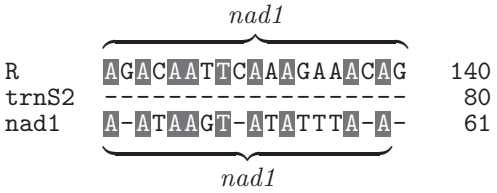
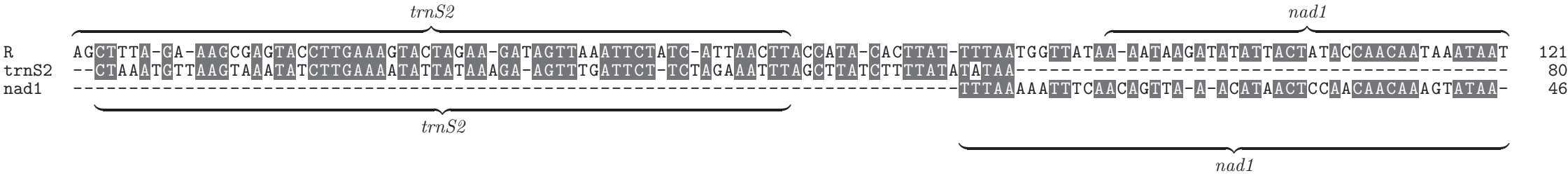
Avg ovsized: 3

LCA: Atelocerata-superclass

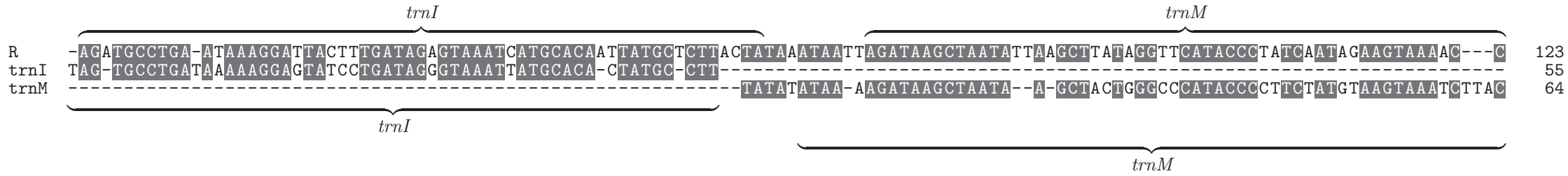
1.20.1 cob-trnS2 8



1.20.2 trnS2-nad1 5



1.20.3 trnI-trnM -2

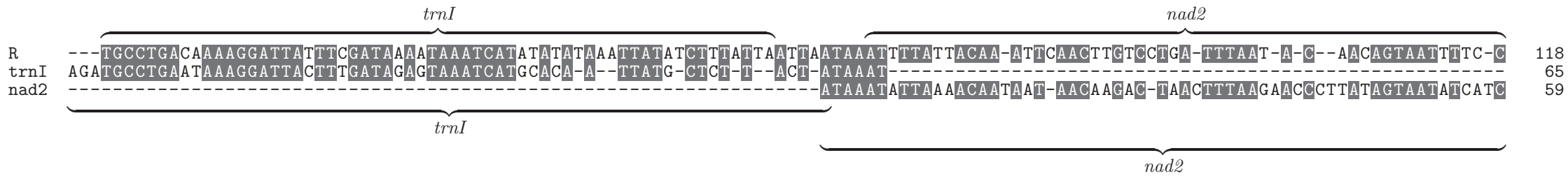


	<i>trnM</i>	
R	T-	124
trnI	--	55
trnM	TC	66
	<i>trnM</i>	

1.21 NC\_012689-NC\_022670

Avg ovsz: 2  
LCA: Neoptera-subclass

1.21.1 trnI-nad2 6



*nad2*  
 {  
 R C 119  
 trnI - 65  
 nad2 A 60  
 }  
*nad2*

1.21.2 cob-trnM 2

	<i>cob</i>	<i>trnM</i>	
R	TTTCGCATACT-TTCTAATATTAGAACTACCA-TT-AAAAATATTGAGATAAACTATTATATTAATTTAAAAAAGATAAGCTAAT--TAAGCTATTAGACTCATACTCTAACTATAGAAAATATCAATTTT		123
cob	TT-TTATTTTATTC-ATTATCATGCCTATCACCTCAAAAACATGAGATAAAAATACTTGATTA-----		60
trnM	-----TAAAT-AAT-TAGATAAGCTAATATTAAGCTTATAGGTTTCATACCTATCAATAGAAGTA-AAACCTT		65
	<i>cob</i>	<i>trnM</i>	

1.21.3 trnM-trnS2 -1

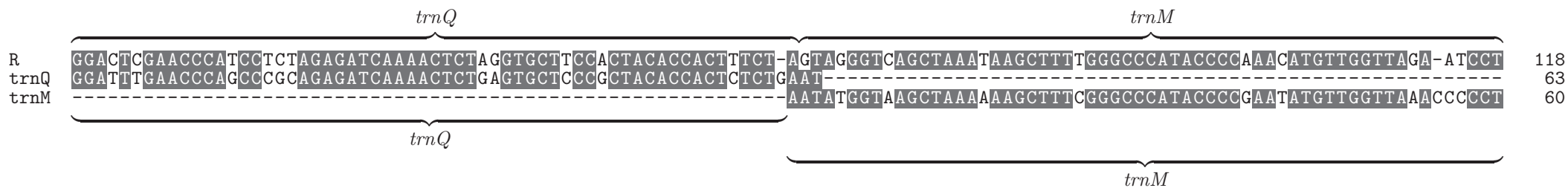
	<i>trnM</i>	<i>trnS2</i>	
R	AGCTAAT--TAAGCTATTAGACTCATACTCTAACTATAGAAAATATCAATTTTCTTCTTTTAAAGTAAATTA-GTTAAATATAAACTTATATCTTGAAAATA-TAAAAAATAATAATAATT-TATT		119
trnM	-GCTAATATTAAGCTTATAGGTTCATACCTATCAATAGAAAGTA-AAACCTTCTTCTAAATTA-----		60
trnS2	-----GTTAATTAACCTTTAGA-AAAGGAGTACCTTGAAAATACTAGAAATAGTTA-AATTCTA-T		59
	<i>trnM</i>	<i>trnS2</i>	

1.22 NC\_006917-NC\_015076

Avg ovsized: 1

LCA: Jenkinsia-genus

1.22.1 trnQ-trnM 3

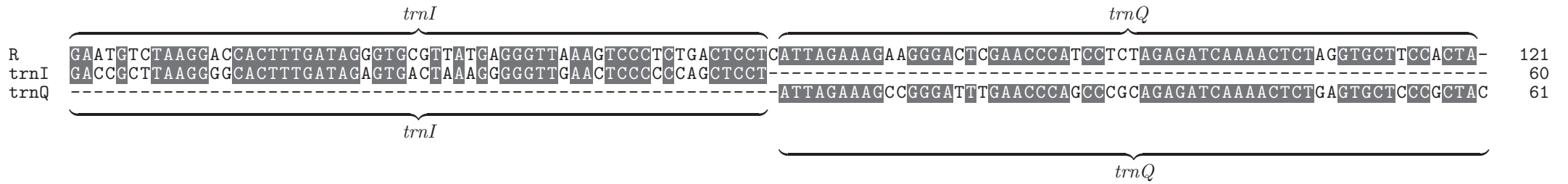


1.22.2 nad1-trnI 3





1.22.3 trnI-trnQ -1

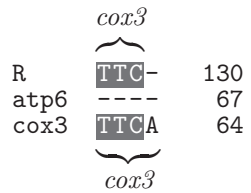
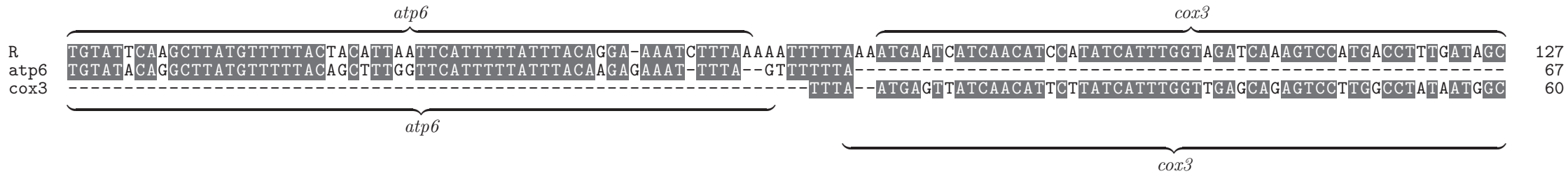


1.23 NC\_007690-NC\_007689

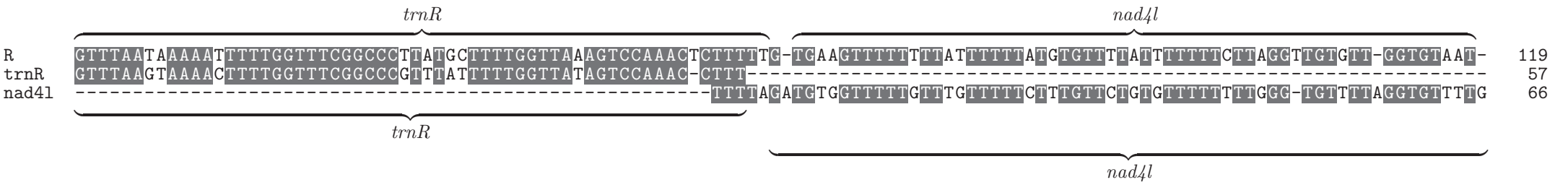
Avg ovsz: 1

LCA: Crinozoa-subphylum

1.23.1 atp6-cox3 4



1.23.2 trnR-nad4l 3



1.23.3 nad4l-cox2 -3

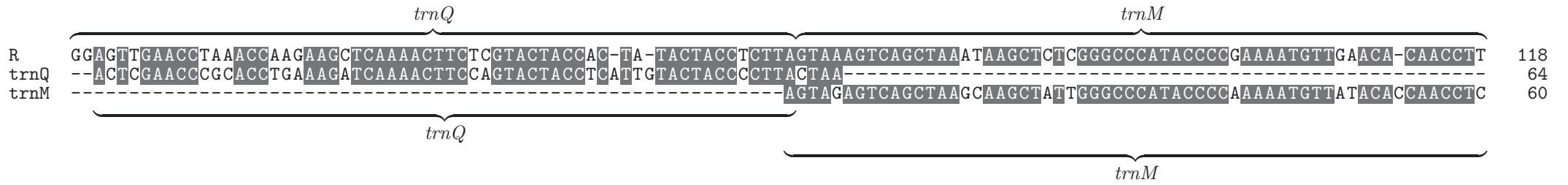


1.24 NC\_010971-NC\_005961

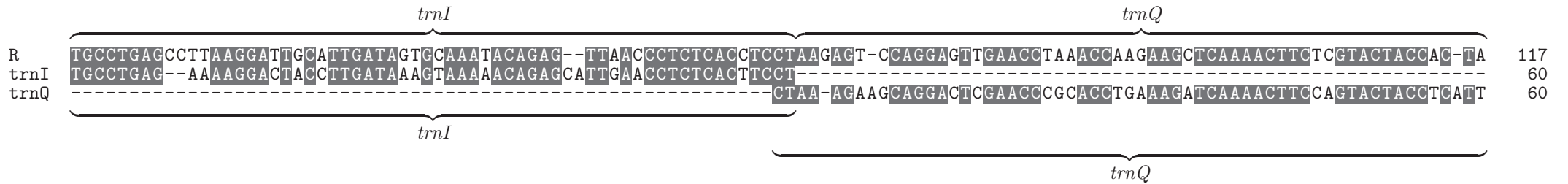
Avg ovsized: 0

LCA: Typhlopoidea-superfamily

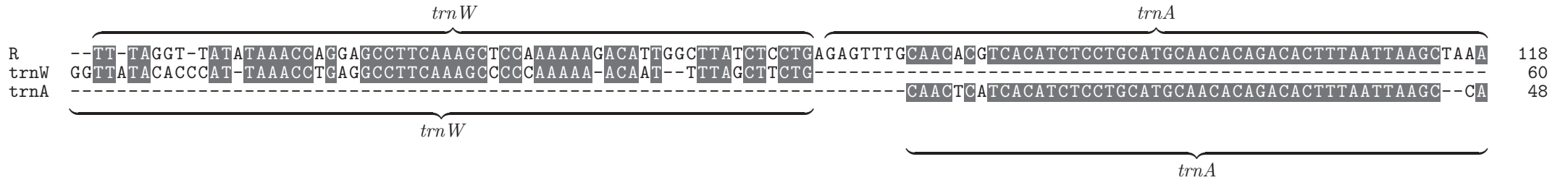
1.24.1 trnQ-trnM 5



1.24.2 trnI-trnQ 2



1.24.3 trnW-trnA -8

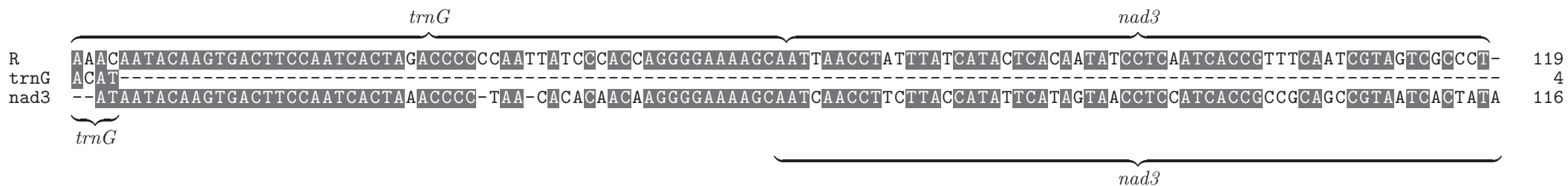


1.25 NC\_001922-NC\_004448

Avg ovsz: 0

LCA: Alligatorinae-subfamily

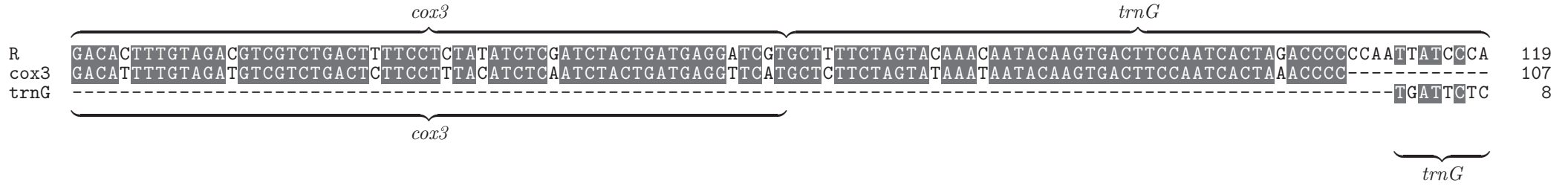
1.25.1 trnG-nad3 2



1.25.2 atp6-cox3 1



1.25.3 *cox3-trnG* -4

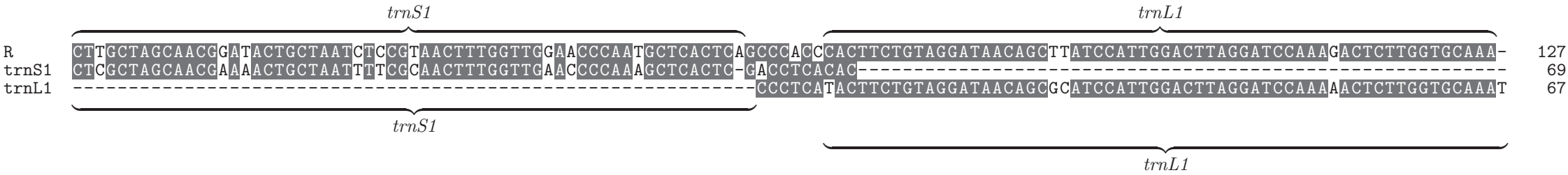


1.26 NC\_011569-NC\_010268

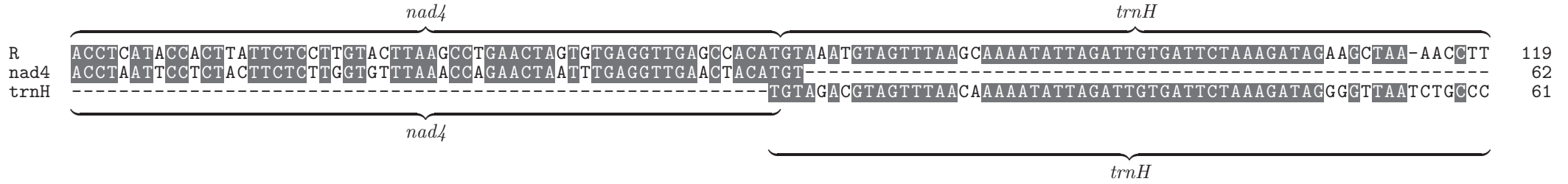
Avg ovsz: -4

LCA: Aulorhynchidae-family

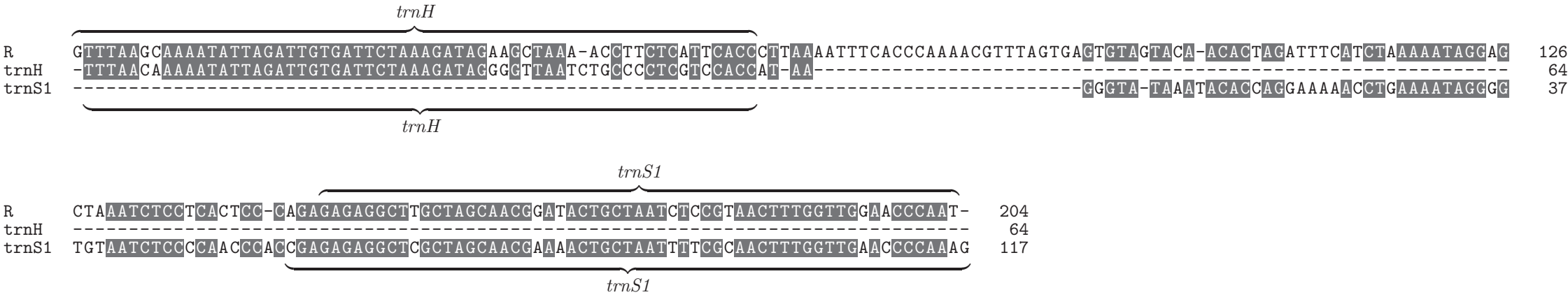
1.26.1 *trnS1-trnL1* 9



1.26.2 nad4-trnH 3



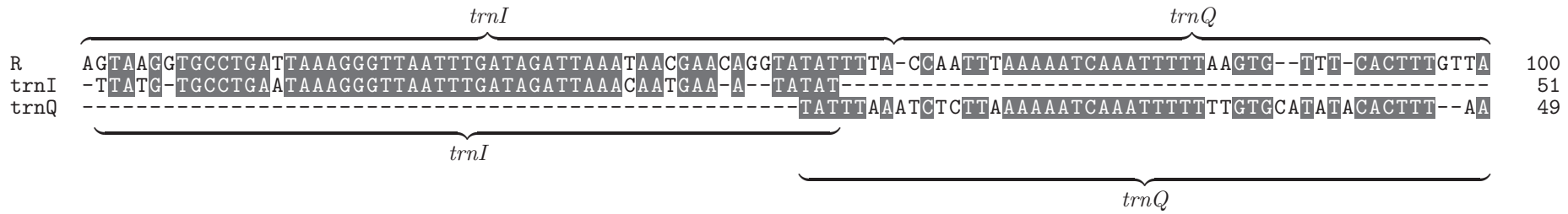
1.26.3 trnH-trnS1 -24



1.27 NC\_010777-NC\_008063

Avg ovsize: -4  
 LCA: Araneomorphae-suborder

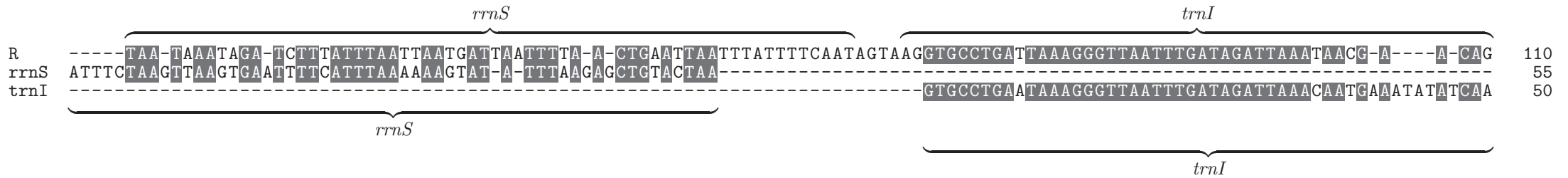
1.27.1 trnI-trnQ 3



1.27.2 nad6-cob 3



1.27.3 rrnS-trnI -18



1.28 NC\_005961-NC\_010971

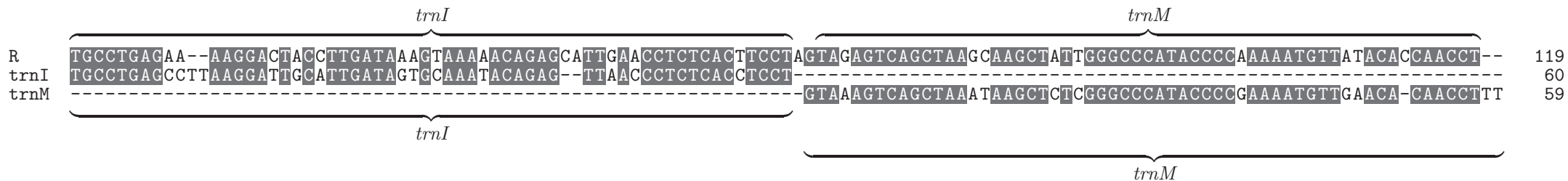
Avg ovsiz: -5

LCA: Typhlopoidea-superfamily

1.28.1 trnW-trnQ 2

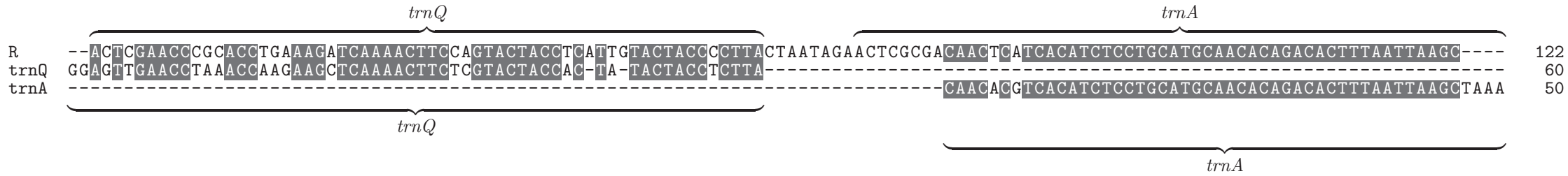


1.28.2 trnI-trnM -1





1.28.3 trnQ-trnA -16

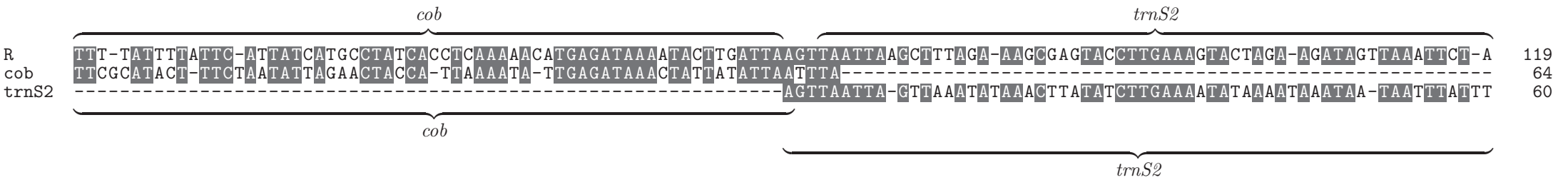


	<i>trnA</i>	
	⏟	
R	C	123
trnQ	-	60
trnA	A	51
	⏟	
	<i>trnA</i>	

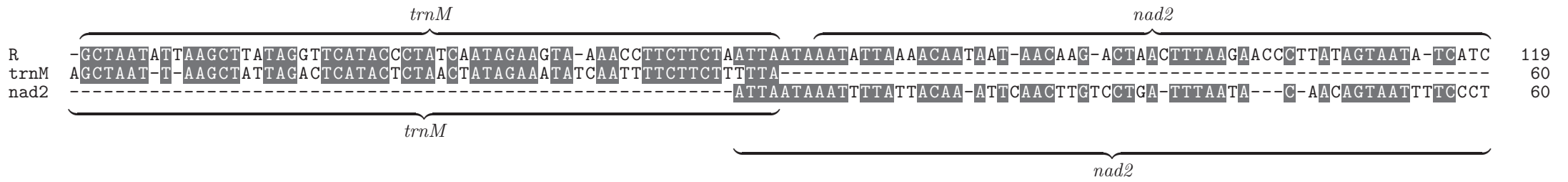
1.29 NC\_022670-NC\_012689

Avg ovsized: -6  
 LCA: Neoptera-subclass

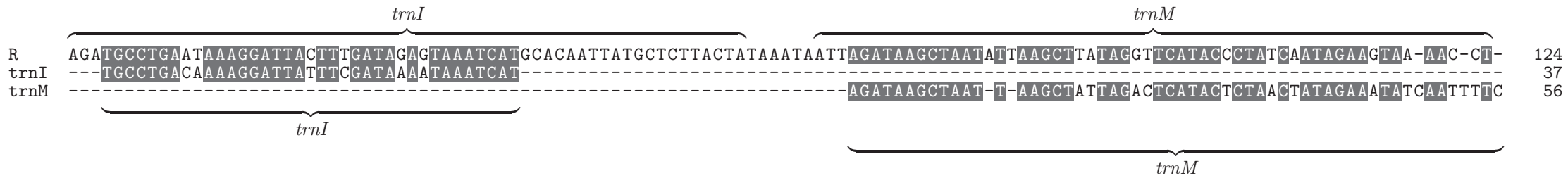
1.29.1 cob-trnS2 5



1.29.2 trnM-nad2 4



1.29.3 trnI-trnM -29

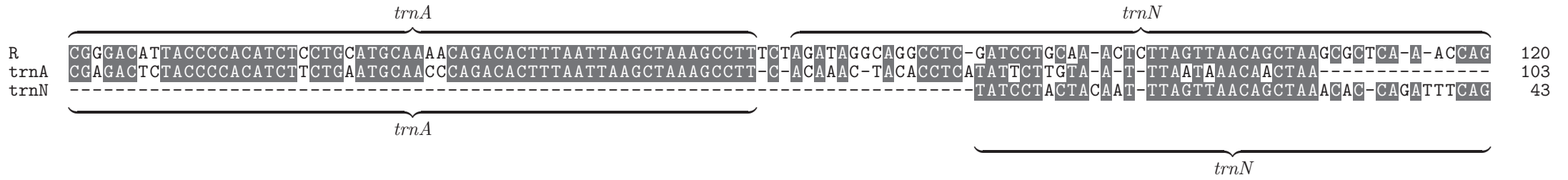


1.30 NC\_009851-NC\_006340

Avg ovsized: -10

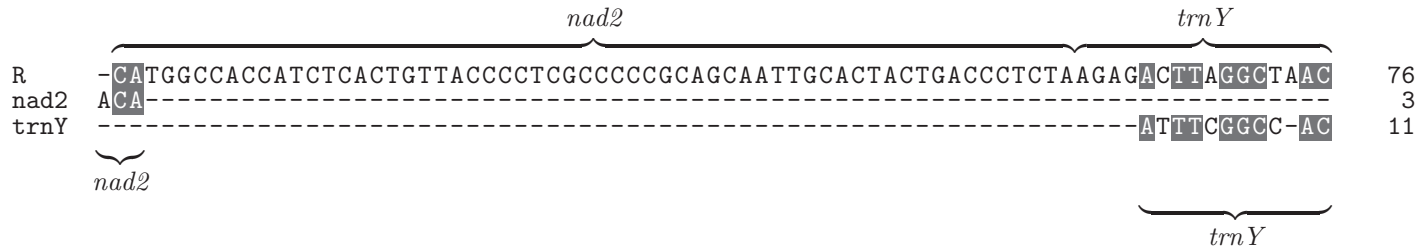
LCA: Teleostomi-superclass

1.30.1 trnA-trnN 30



1.30.2 trnY-trnW 0

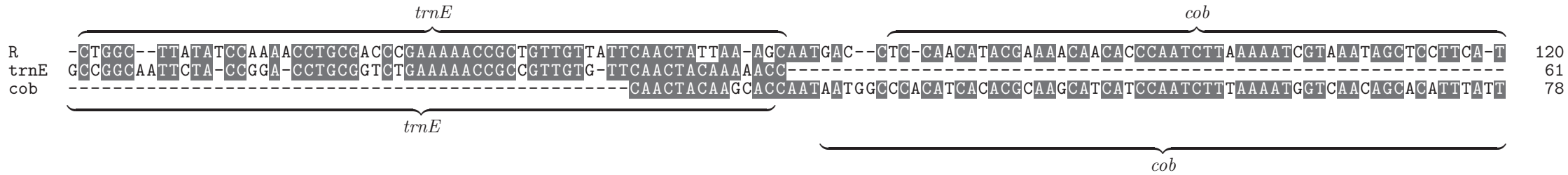
1.30.3 nad2-trnY -62



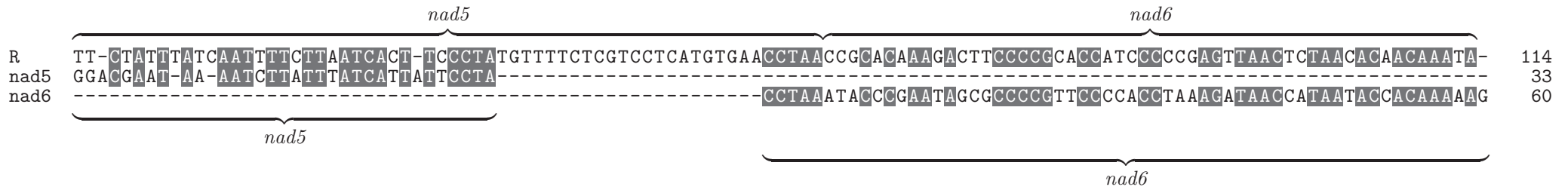
1.31 NC\_016755-NC\_006286

Avg ovsized: -11  
 LCA: Laterata-suborder

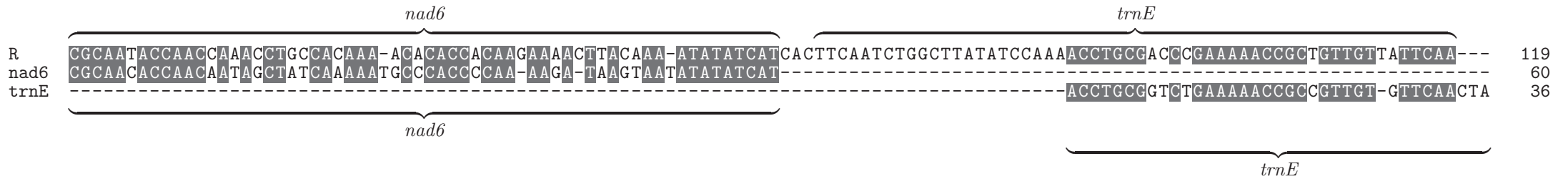
1.31.1 trnE-cob 14



1.31.2 nad5-nad6 -22



1.31.3 nad6-trnE -25



1.32 NC\_008327-NC\_023228

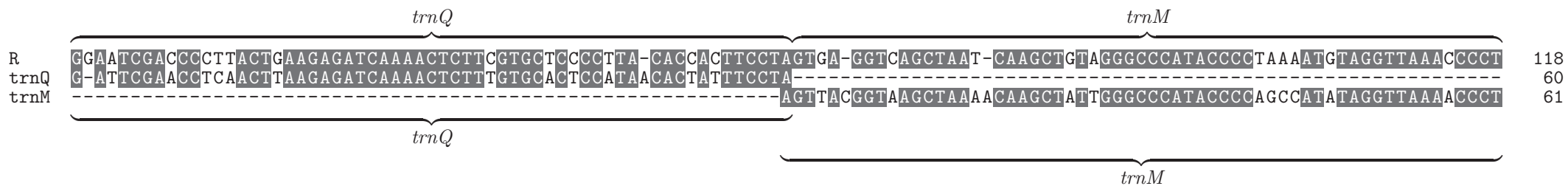
Avg ovsiz: -11

LCA: Soleoidei-suborder

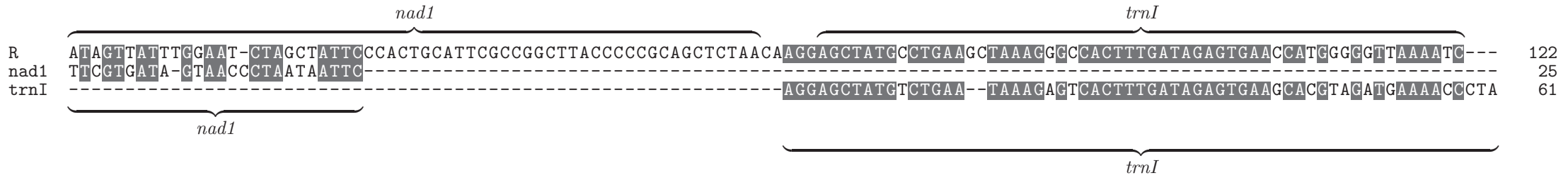
1.32.1 trnI-trnQ 3



1.32.2 trnQ-trnM 1



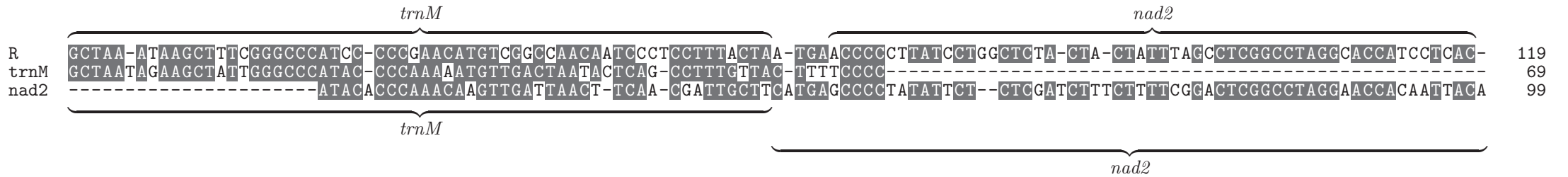
1.32.3 nad1-trnI -37



1.33 NC\_022477-NC\_006355

Avg ovsz: -11  
LCA: Perciformes-order

1.33.1 trnM-nad2 50



1.33.2 trnQ-trnI -36

*trnQ*  
 R GGATTCGAACCCAACTAAAGAGATCAAACTCTCAGTGCTTCCTCTACACCACTTCCTAGTAAAAGTCAGCTAAAAAAGCTTTT CAGGCCCATAC-CCTGAACATGTTGGTTAAAACCCTTCCCTTACT 127  
 trnQ GGGCTCGAACCCCTTCTGAAGAGATCAAACTCTTG GTGCTTCCACTACACCACTTCCTAGCAAAA-CAAGGAAACAA--TTCCATTGGAATACCCCAAACAAGTTGATTAA----- 110  
 trnI ----- 0

*trnI*  
 R ACACCTCTATCCTAAACCCCTGGAGCCGTGCCTGAACCAAAGGATCACTTTGATAGAGTGAATCACGAGGGTTAAAA-CCC 207  
 trnQ ----- 110  
 trnI ----- 60

1.33.3 nad1-trnQ -49

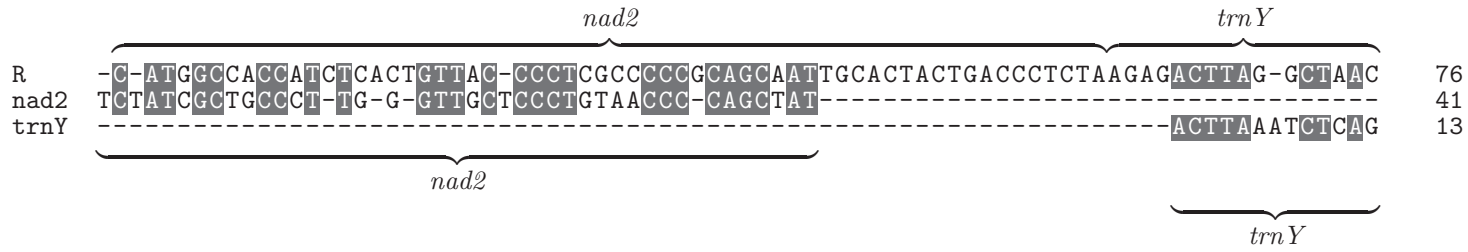
*nad1*  
 R TTAATAGTATGACACCTCGCCCTCCCAATCGCATTCTCAGGCCTTCCACCCCAAATATAATATAACAAACCACACAAACAAAAACCAACCCACCCACCCTTTAAACCTATTAGAAAAGAAGGGATTCTG 128  
 nad1 TTTATAATCTGACATCTGGCACTACTAATTGCATTGCGGGACTTCCCCACACCTTTAACA-----TAGAAAAAAGGGGCTCG 62  
 trnQ ----- 17

*trnQ*  
 R AACCCAACTAAAGAGATCAAACTCTCAGTGCTTCCTCTA- 169  
 nad1 ----- 62  
 trnQ AACCCCTTCTGAAGAGATCAAACTCTTGGTGCTTCCACTAC 59





1.34.3 nad2-trnY -22



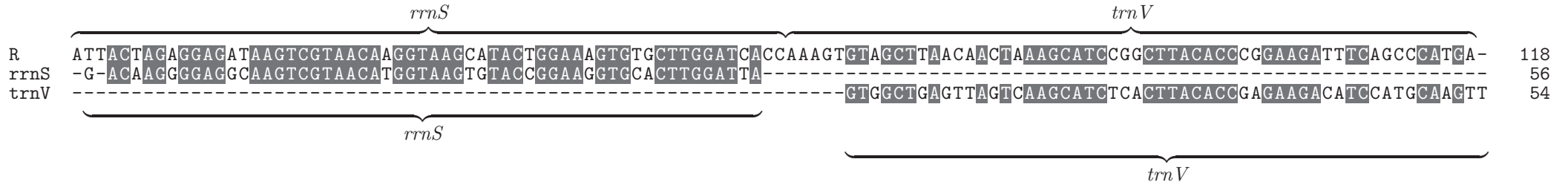
1.35 NC\_012762-NC\_008683

Avg ovsiz: -19

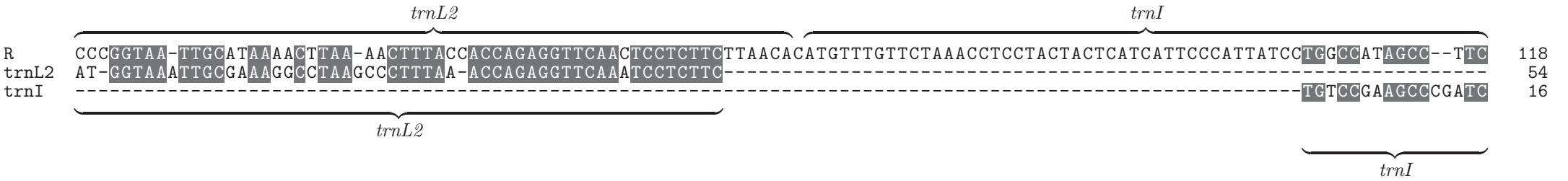
LCA: Teleostomi-superclass

1.35.1 trnI-nad1 0

1.35.2 rrnS-trnV -7



1.35.3 trnL2-trnI -50

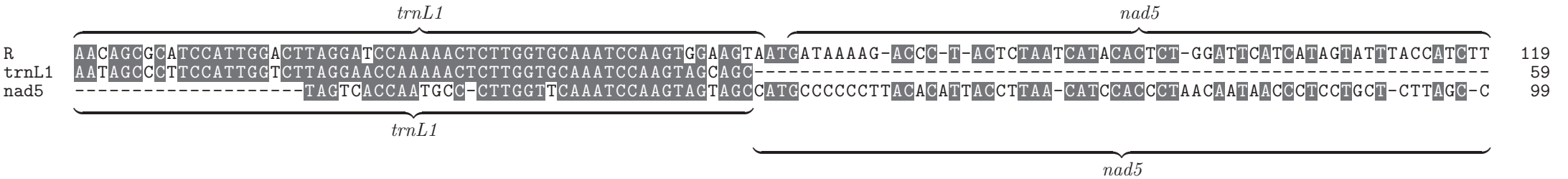


1.36 NC\_010268-NC\_010199

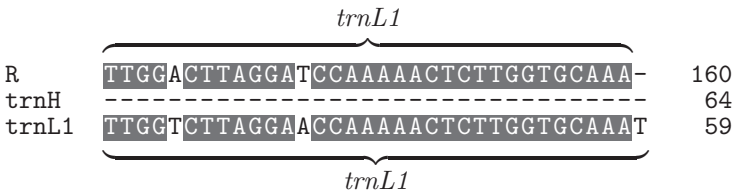
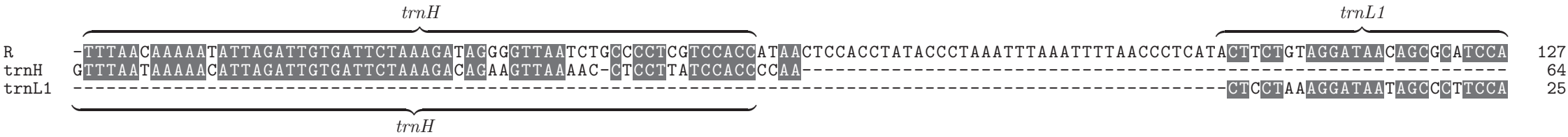
Avg ovsz: -20

LCA: Percomorpha-order

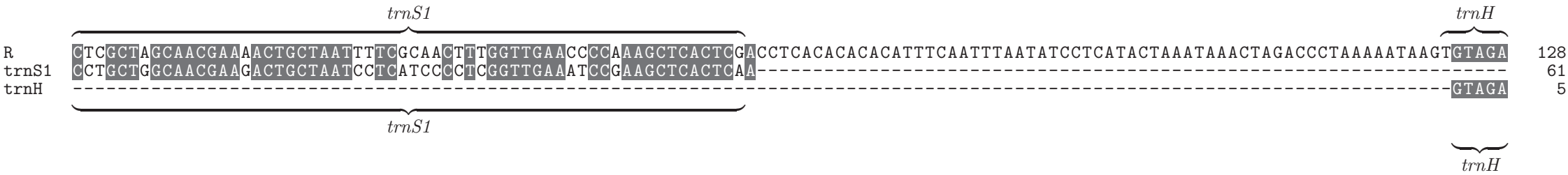
1.36.1 trnL1-nad5 39



1.36.2 trnH-trnL1 -38



1.36.3 trnS1-trnH -62



*trnH*  
 R CGTAGTTTAA CAAAAA TATTAGATTGTGATTCTAAAGA TAGGGTT -AATCTGCC 182  
 trnS1 ----- 61  
 trnH TATAGTTTAA TAAAAA CATTAGATTGTGATTCTAAAGA CAGAA GTTAAAA CTCC 60  
*trnH*

### 1.37 NC\_008063-NC\_010777

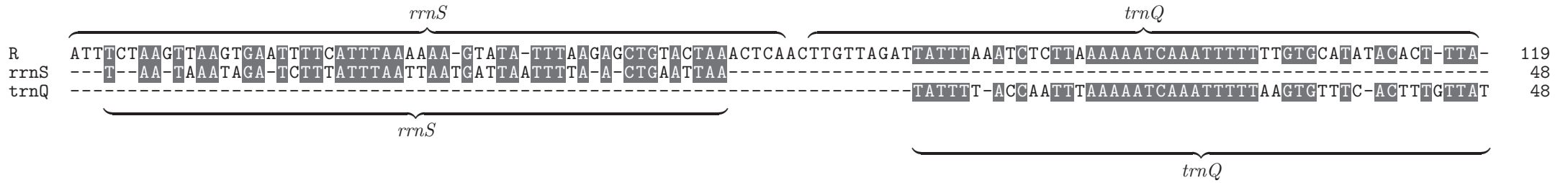
Avg ovsized: -23

LCA: Araneomorphae-suborder

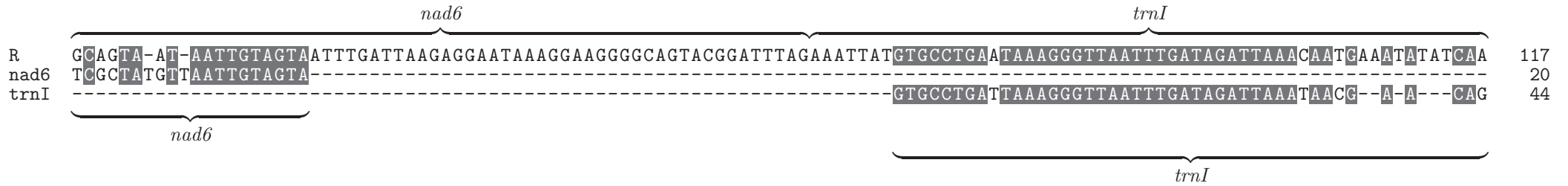
#### 1.37.1 trnI-cob -5

*trnI* *cob*  
 R -TTATG-TGCCTGAA TAAAGGGTTAATTTGATAGATTAACCAATGAAATATA TCAAATTCCTT--TACGTAAGAAAAGTGTA-TT-TA-GAGTAA TAAATAATATATTAGTAGA 106  
 trnI AGTAAAGTGCCTGAT TAAAGGGTTAATTTGATAGATTAATTAACGAA----- 47  
 cob -----TGAAAAGTATTGATACGAAAAAAAAACGTAGTTCTAAGAGTTT TAAATGGGTCATTGGTA--- 59  
*trnI* *cob*

1.37.2 *rrnS-trnQ* -16



1.37.3 *nad6-trnI* -49

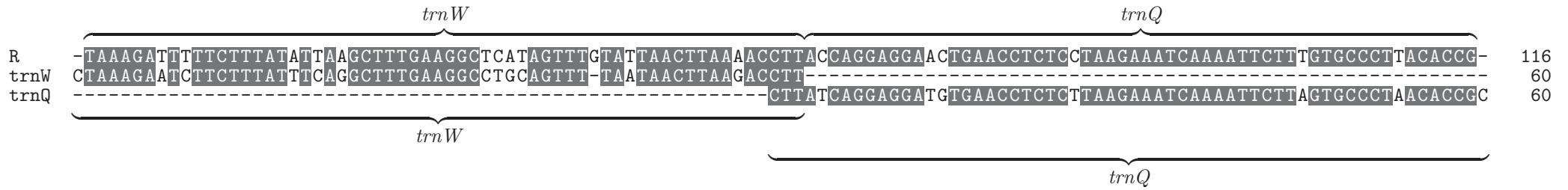


1.38 NC\_007781-NC\_008797

Avg ovsized: -23

LCA: Neogastropoda-infraorder

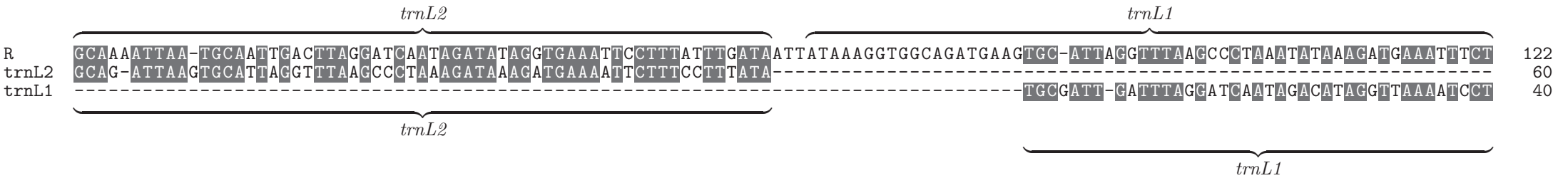
1.38.1 trnW-trnQ 3



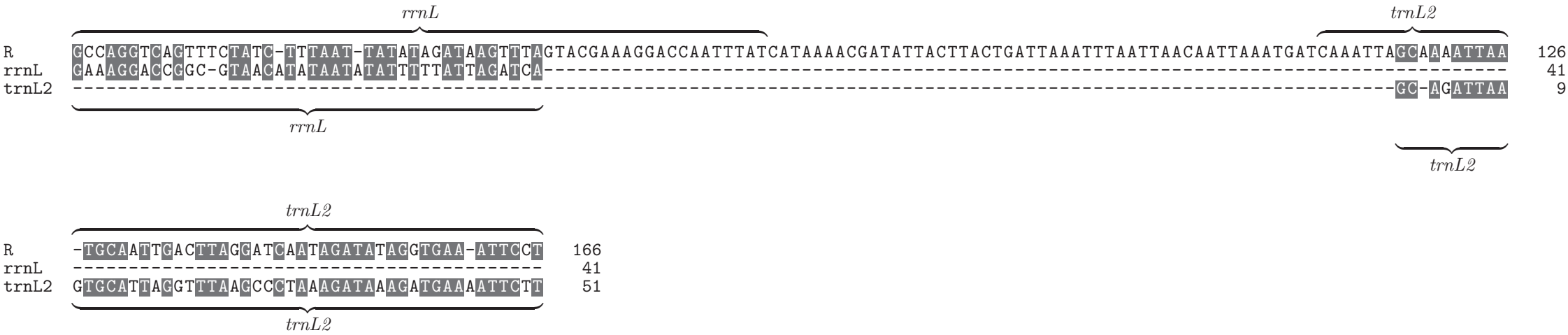
1.38.2 trnL1-nad1 1



1.38.3 trnL2-trnL1 -22



1.38.4 rrnL-trnL2 -76



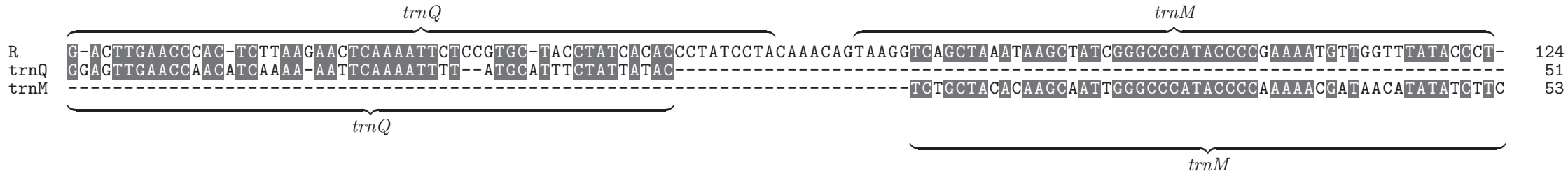
1.39 NC\_012762-NC\_014174

Avg ovsiz: -24

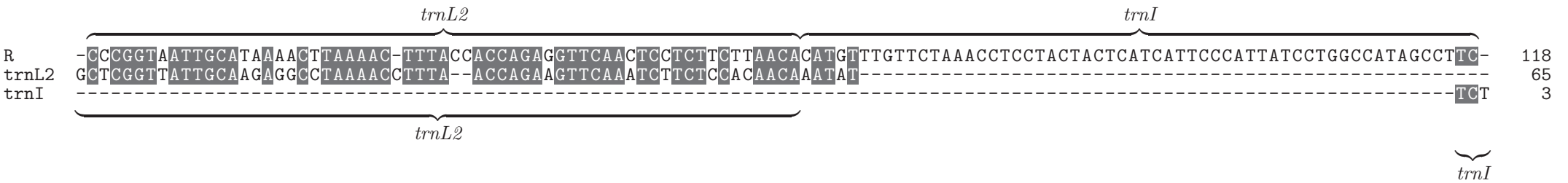
LCA: Amniota-clade

1.39.1 trnI-nad1 0

1.39.2 trnQ-trnM -21



1.39.3 trnL2-trnI -51



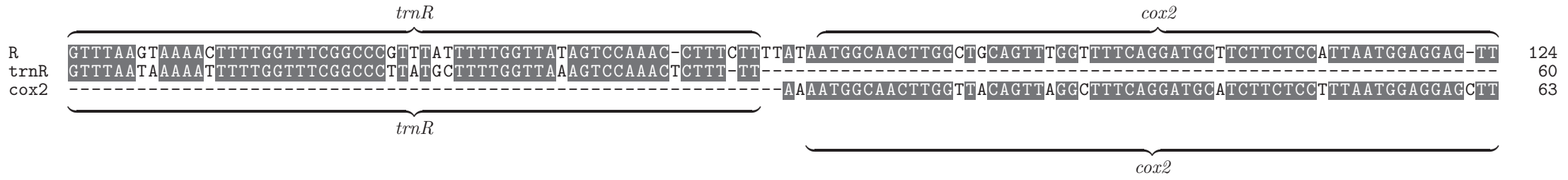
1.40 NC\_007689-NC\_007690

Avg ovsized: -24

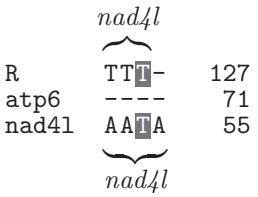
LCA: Crinozoa-subphylum



1.40.1 trnR-cox2 -2



1.40.2 atp6-nad4l -4





*trnM*  
 R CC**CATACCCCTCTATGTAAGTAAATCTTACT** 152  
 trnS2 ----- 78  
 trnM TT**CATACCCTAACAATAGAAGTAAACCT--T** 64  
*trnM*

1.41.2 trnI-trnS2 -27

*trnI* *trnS2*  
 R TAG-TGCCTGATAAAAGGAGTATCC**TGATAGGTAAATTATGCACACT-ATGC-CTT**GTCTTCTGAATTTCTTAATAAATGTT**AAGTAAATATCTTGAAAATATATATAAAGA-AGTTTGATTC--T** 122  
 trnI -AGATGCCTGA-ATAAAGGATTACTTT**TGATAGGTAAATCATGCACAATTATGCTCTT**----- 56  
 trnS2 -----**AACCGAGTACCTTGAAAGTACTAGAA-GATAGTTAAATTCAT** 42  
*trnI* *trnS2*

1.41.3 cob-nad1 -36

*cob* *nad1*  
 R TTTATATATT-TT-ATTTTAAACCCAATAATT**TCCTATCTTTGAGATTATA-ATTTAAATTAATAACACTTTAAAAATTTCAACAGTTAAACATAACTCCAACAACAAAGTATA-A-AA-T-AAGTAT** 121  
 cob TTT-TATTTTATTCATTATCATGCCTATCACCT**CAAAAACATGAGATAAAATACTTG-ATTA**----- 60  
 nad1 -----**CCAACAATAAATAATAGACAATTCAAAGAA** 30  
*cob* *nad1*

	<i>nad1</i>	
R	ATTTA	126
cob	-----	60
nad1	ACAGG	35
	<i>nad1</i>	

### 1.42 NC\_001922-NC\_007012

Avg ovsized: -25

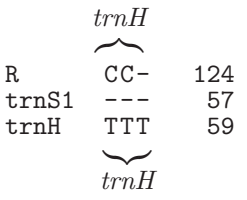
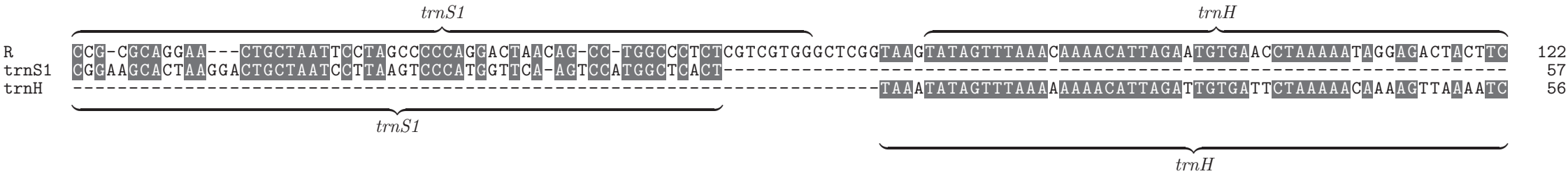
LCA: Teleostomi-superclass

#### 1.42.1 trnH-trnL1 -13

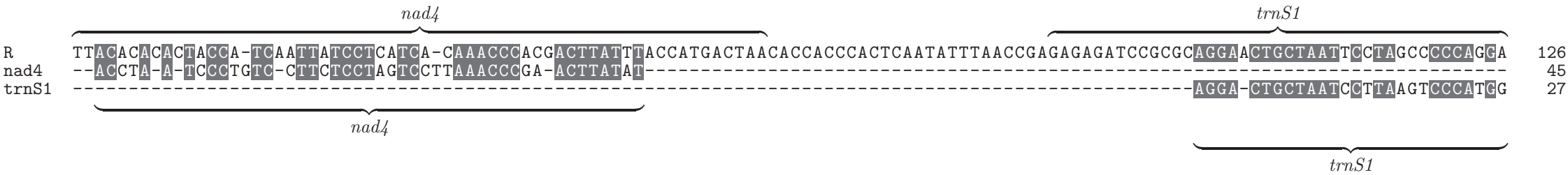
	<i>trnH</i>	<i>trnL1</i>	
R	AGTTTAAACAAAACATTAGAAATGTGAACCTAAAAATAGGAGACTACTGCCCTTACTCACCTTTTCCCACTTTCATAGGATAACTAGGACATCCCTGGCCTTAGGAGCC-AATAATCTTGGTGCAAC		127
trnH	-GTTTAAACAAAACATTAGATTTGTGATTCCTAAAAACAAGTTAAATCTTTTATTTACC-----		60
trnL1		AAAGGATAAG-ACCTCATCCATCGGTCTTAGGAAACGAAAACCCTTGGTGCAAC	53
	<i>trnH</i>	<i>trnL1</i>	

R	-	127
trnH	-	60
trnL1	T	54
	<i>trnL1</i>	

1.42.2 trnS1-trnH -14



1.42.3 nad4-trnS1 -49



	<i>trnS1</i>	
R	C T A A C A G - C C - T G G C C C T	142
nad4	-----	45
trnS1	T T C A - A G T C C A T G G - C --	41
	<i>trnS1</i>	

### 1.43 NC\_009851-NC\_013136

Avg ovsized: -25

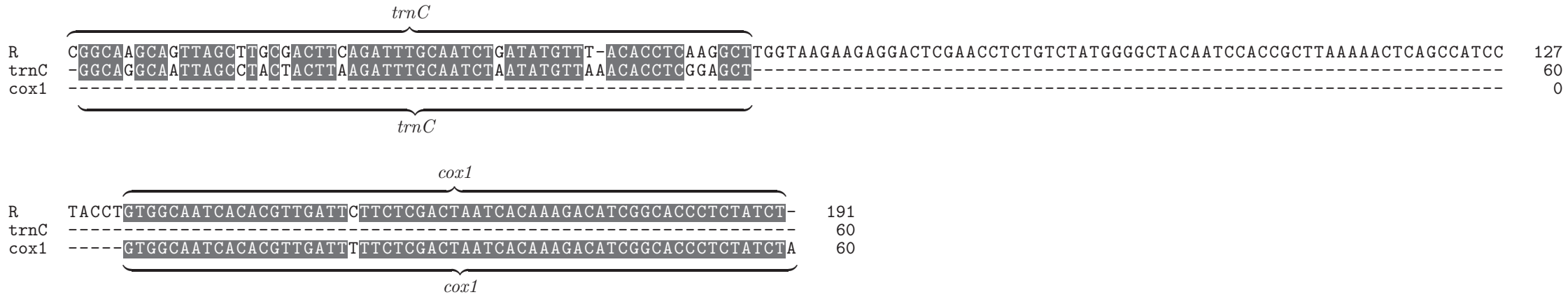
LCA: Acanthuroidei-suborder

#### 1.43.1 trnY-trnW 0

#### 1.43.2 nad2-trnY -5

	<i>nad2</i>	<i>trnY</i>	
R	C A T G G C C A C C A T C T C A C T G T T A C C C C T C G C C C C C G C A G C A A T T G C A C T A C T G A C C C T C T A A G A G A C T T A G G C - T A A C		76
nad2	T A C T G C C T C C A T T A C C C T C C T A C C A C T C A C C C C T A C T C T T A C C G C C C T A C C A A C C C T C T A		60
trnY	----- C T T A A A C C T C A G		12
	<i>nad2</i>	<i>trnY</i>	

1.43.3 trnC-cox1 -72



1.44 NC\_008975-NC\_007178

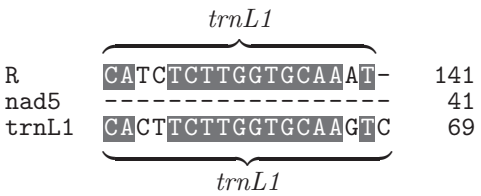
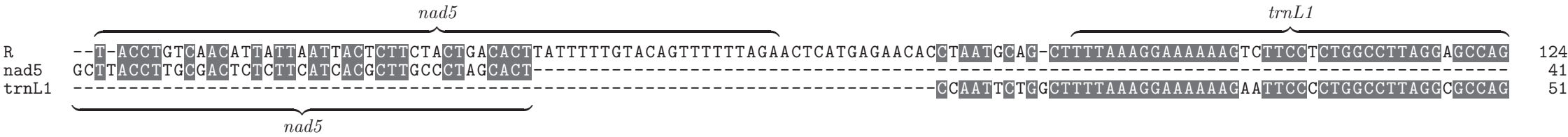
Avg ovsized: -26

LCA: Old World tree frogs-family

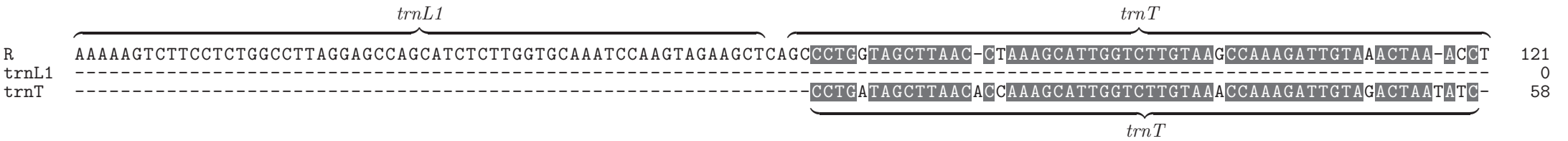
1.44.1 trnT-trnP 21



1.44.2 nad5-trnL1 -36



1.44.3 trnL1-trnT -64



1.45 NC\_010268-NC\_011569

Avg ovsized: -28

LCA: Aulorhynchidae-family



1.45.1 nad4-trnS1 1

R  
nad4  
trnS1

*nad4*

ACCTAATTCTCTACTTCTCTTGGTGTTTAAACGAGAAGTAATTTGAGGTTGAAGTACATGTGGTA-TAAATACAGCAGGAAAAACTGAAAATAGGCGTGTAAATCTCCCAACCCAGCGAGAGAGG 127  
 ACCTCATACCACTTATTCTCTCTTGTACTTAAAGCCTGAAGTACTGTGAGGTTGAGCCACAT-----TGAGTGTAGTACA-ACACTAGATTTCACTA AAAATAGGAGCTAAATCTCCTCACTCC-CAGAGAGAGG 60  
 -----TGAGTGTAGTACA-ACACTAGATTTCACTA AAAATAGGAGCTAAATCTCCTCACTCC-CAGAGAGAGG 67

*nad4*

*trnS1*

R  
nad4  
trnS1

*trnS1*

CTCGCTAGCAACGAAAACTGCTAATTTTCGCAACTTTGGTTGAA CCCAA- 178  
 -----CTCGCTAGCAACGAACTGCTAATTTTCGCAACTTTGGTTGAA CCCAA- 60  
 CTTCGCTAGCAACGAACTGCTAATTTTCGCAACTTTGGTTGAA CCCAA-TG 119

*trnS1*

1.45.2 trnH-trnL1 -30

R  
trnH  
trnL1

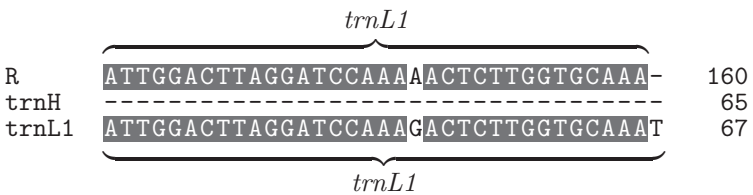
*trnH*

-TTTAA CA AAAAATATTAGATTGTGATTCTAAAAGATAGGGCTTAA TCTG C C C T G T C C A C C A T - A A C T C C A C C T A T A C C C T A A A T T T A A A T T T T A A C C C T C A T A C T T C T G T A G G A T A A C A G C G C A T C C 126  
 G T T T A A G C A A A A T A T T A G A T T G T G A T T C T A A A G A T A G A A G C T A A - A A C C T T C T G A T T C A C C C T T A A ----- C C C A C C A C T T C T G T A G G A T A A C A G C T T A T C C 65  
 ----- C C C A C C A C T T C T G T A G G A T A A C A G C T T A T C C 32

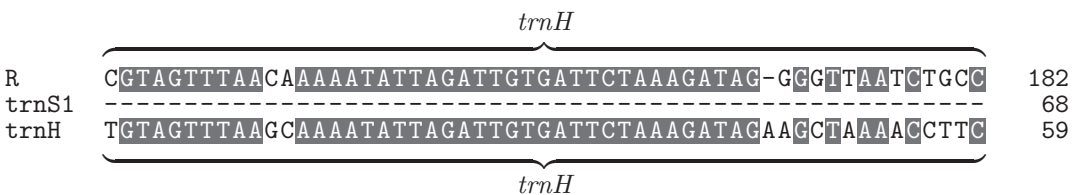
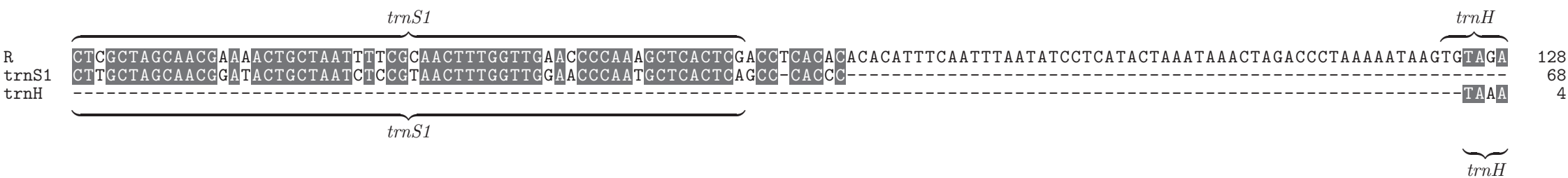
*trnH*

*trnL1*

*trnL1*



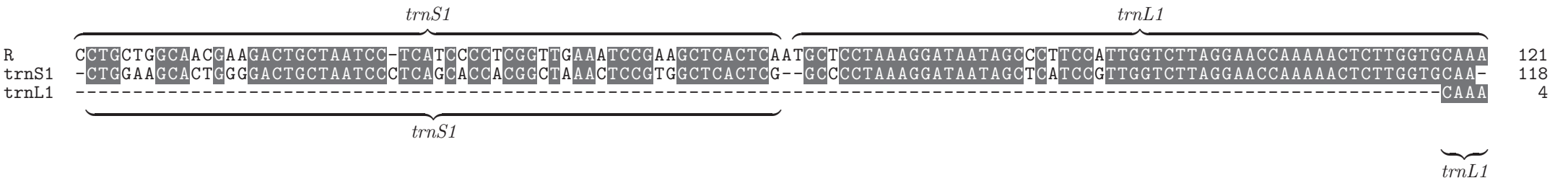
### 1.45.3 trnS1-trnH -55



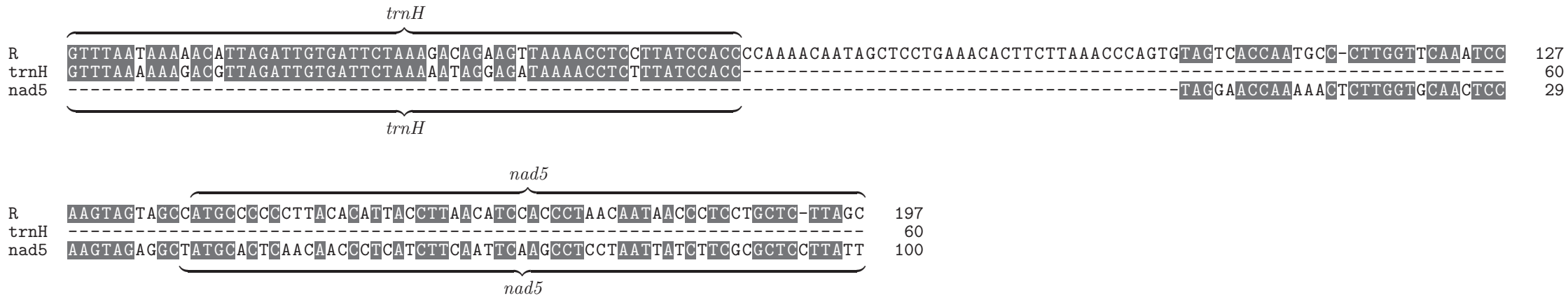
### 1.46 NC\_010199-NC\_005796

Avg ovsized: -30  
 LCA: Elopecephala-genus

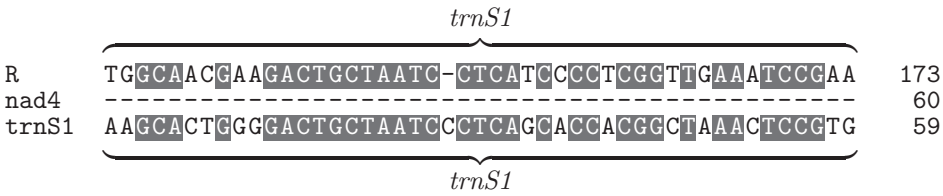
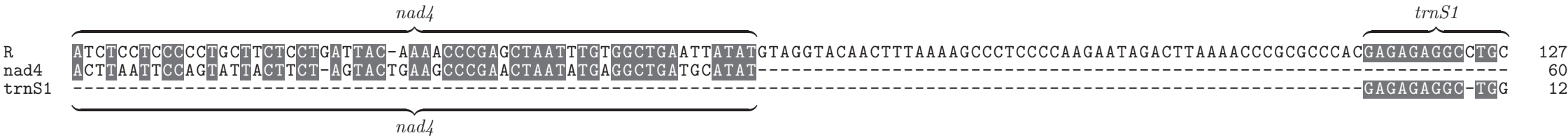
1.46.1 trnS1-trnL1 3



1.46.2 trnH-nad5 -39



1.46.3 nad4-trnS1 -54

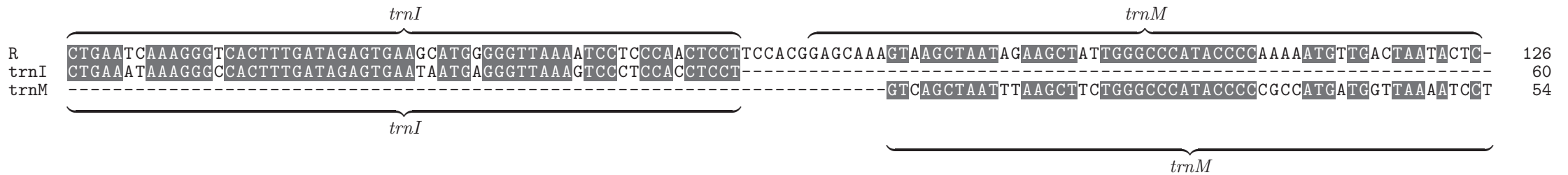


1.47 NC\_006355-NC\_009061

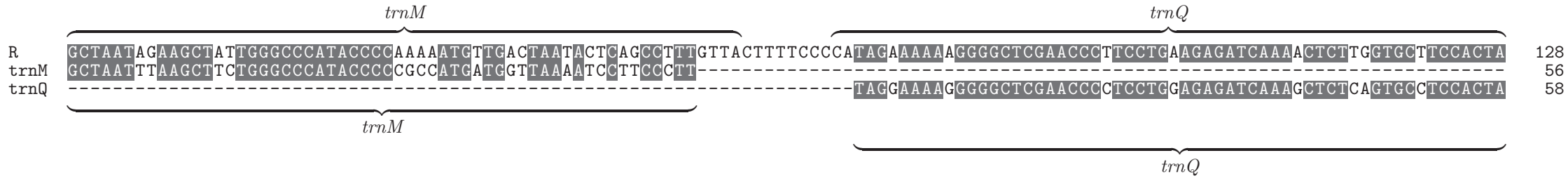
Avg ovsz: -31

LCA: Labroidei-suborder

1.47.1 trnI-trnM -13



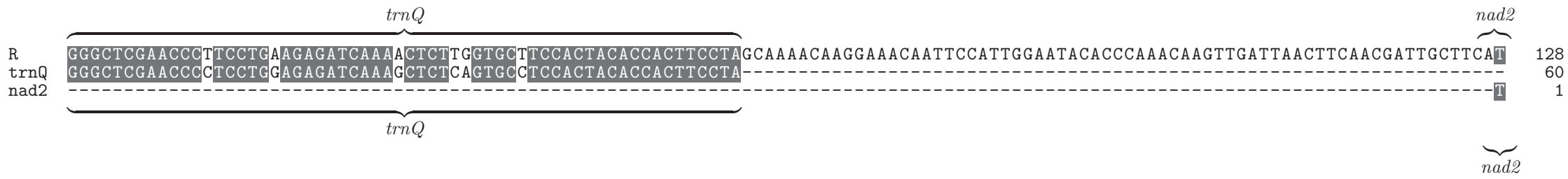
1.47.2 trnM-trnQ -14



R	-	128
trnM	-	56
trnQ	C	59

trnQ

1.47.3 trnQ-nad2 -67



*nad2*  
 R GAGCCCCTATATTCTCTCGATCTTTCTTT-TCGGACTCGGCCTAGGAACCACAATTAC- 185  
 trnQ ----- 60  
 nad2 GAACCCCTATATTCTAGGCACCCT-CTTGCTTGGGCTCGGCCTAGGTACAACCCTAACA 59  
*nad2*

1.48 NC\_001922-NC\_015305

Avg ovsiz: -33

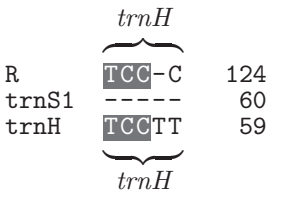
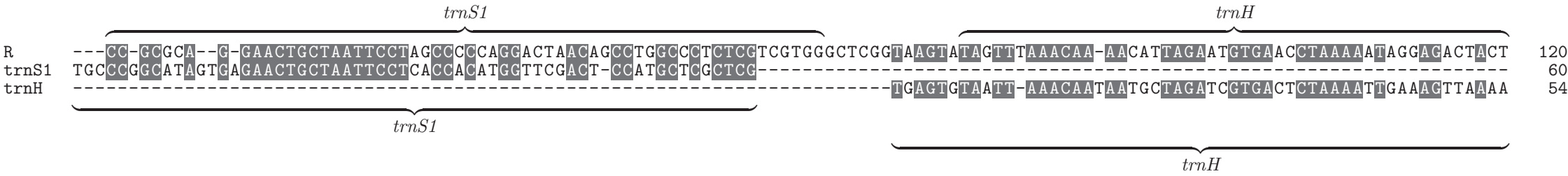
LCA: Tetrapoda-superclass

1.48.1 trnL1-nad5 3

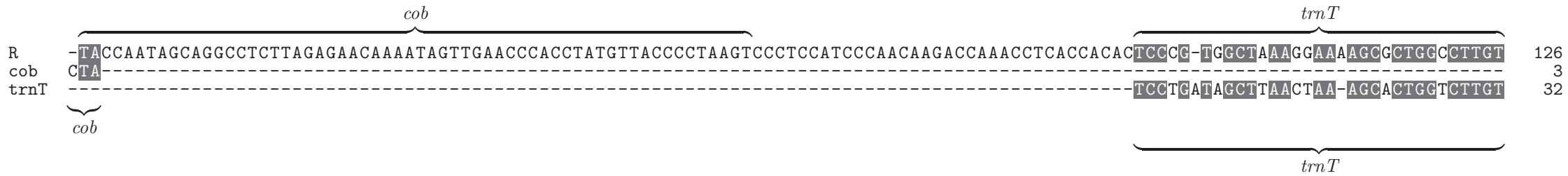
*trnL1* *nad5*  
 R AACTAGGACATCCCTGGCCTTAGGAGCCAATA-ACTTGGTGCAACCCCAAGTGAAAAACCA-TGCAA--CA-GCGGACCCTATCT-C--TTAGCTTC-TT-C-AGCCTACCTGCTTTATCCTT- 116  
 trnL1 AAACA-GCCCTCCACTGGCCTTAGGAGCCAGCACCTCTTGGTGCAAGTCCAAGT-AAAA-----AAATCCAATAGAGTCATGCCATCCCTATAAACAATTACTTTTGTGACAAACAATATCTGCAATCG-CCTTA 57  
 nad5 ----- 71  
*trnL1* *nad5*

*nad5*  
 R -TTACT 121  
 trnL1 ----- 57  
 nad5 ATTATT 77  
*nad5*

1.48.2 trnS1-trnH -12



1.48.3 cob-trnT -92



	<i>trnT</i>		
R	AAGACAGA-AGTGGG-CGGAACC-AAC	150	
cob	-----	3	
trnT	AAGCCAGAGATTGCAGCCTGACCTCTG	59	
	<i>trnT</i>		

**1.49 NC\_005961-NC\_014174**

Avg ovsized: -34  
 LCA: Toxicofera-clade

**1.49.1 trnQ-trnA -11**

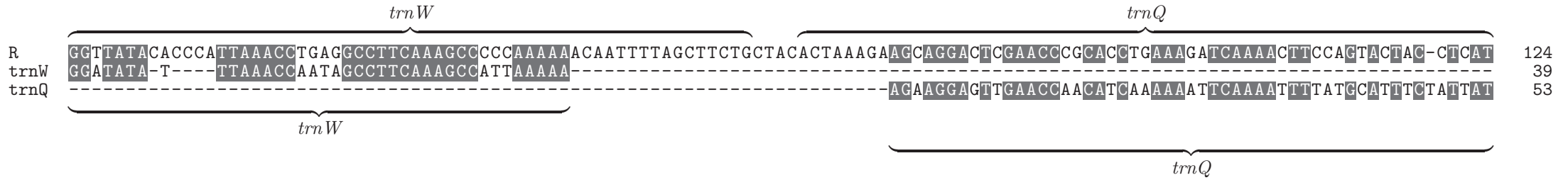
	<i>trnQ</i>			<i>trnA</i>		
R	--ACTCGAACC CGCACCTGAAAAGATCAAAACTTCCAGTACTACCTCATTGTACTACCCCTTACT-AA-TAGA		ACTCGGAC	AACTCATC-ACATCTCCTGCATGCAACACAGACACTTTAATTAAGCC	123	
trnQ	GGAGTTGAACCAACATCAAAAAATTCAAAATTTTATGCATTT-CT-ATTA		TACTACCCACTACTTAACTA	-----	68	
trnA	-----		AACT-ATCAACATCTTCTGAATGCAACTCAGATACTTTAATTAAGCT	-----	46	
	<i>trnQ</i>			<i>trnA</i>		

R	-	123
trnQ	-	68
trnA	A	47

*trnA*



1.49.2 trnW-trnQ -28



1.49.3 nad1-trnI -63

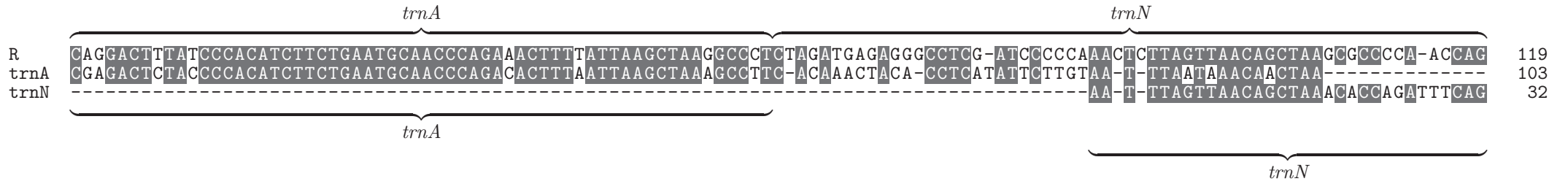


1.50 NC\_003159-NC\_006340

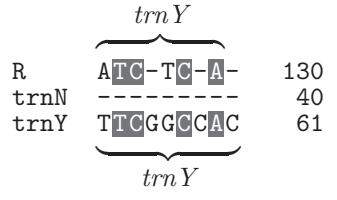
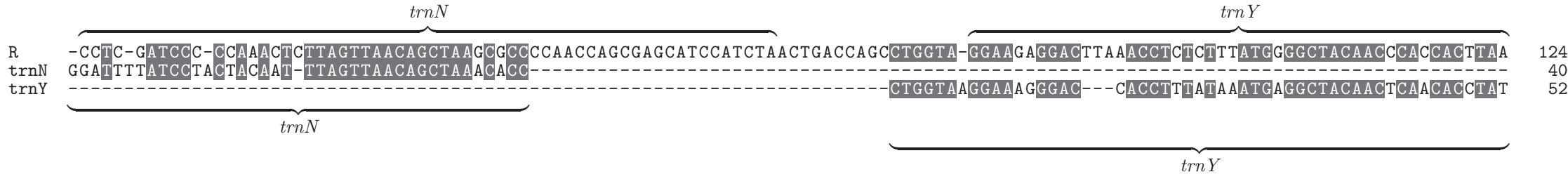
Avg ovsized: -34

LCA: Teleostomi-superclass

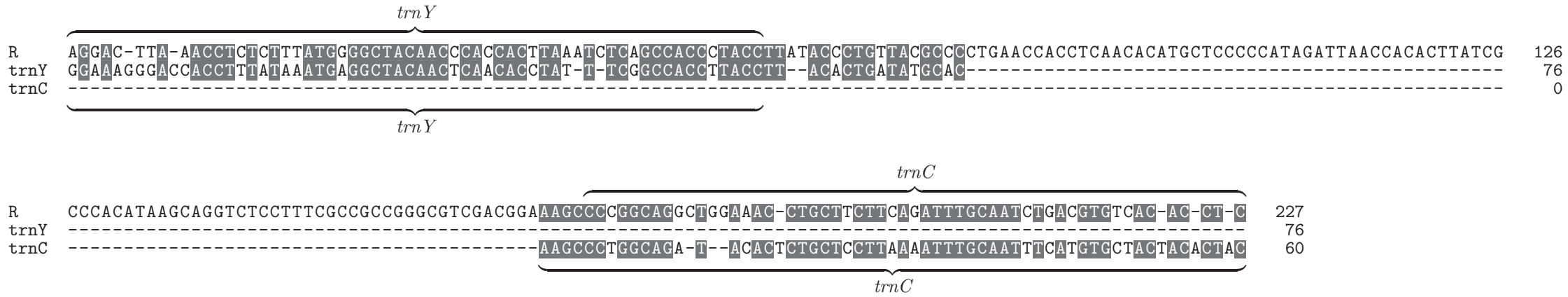
1.50.1 trnA-trnN 20



1.50.2 trnN-trnY -32



1.50.3 trnY-trnC -90

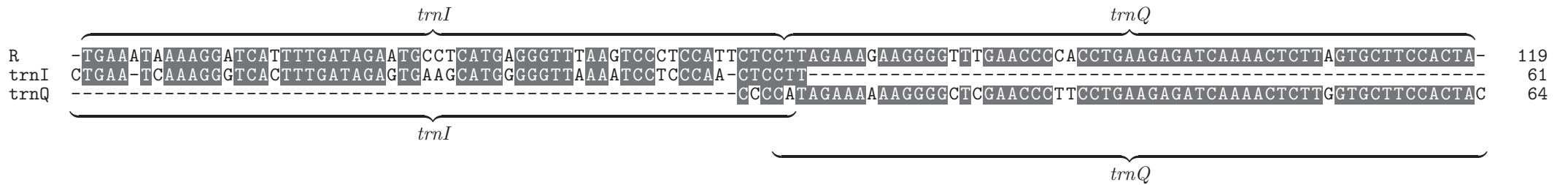


1.51 NC\_011381-NC\_006355

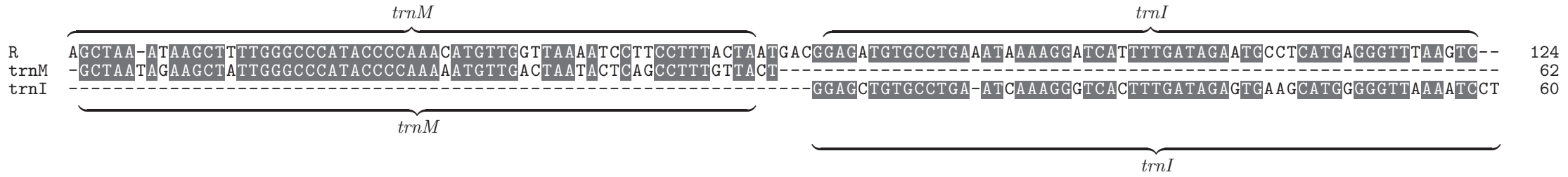
Avg ovsiz: -34

LCA: Percomorpha-order

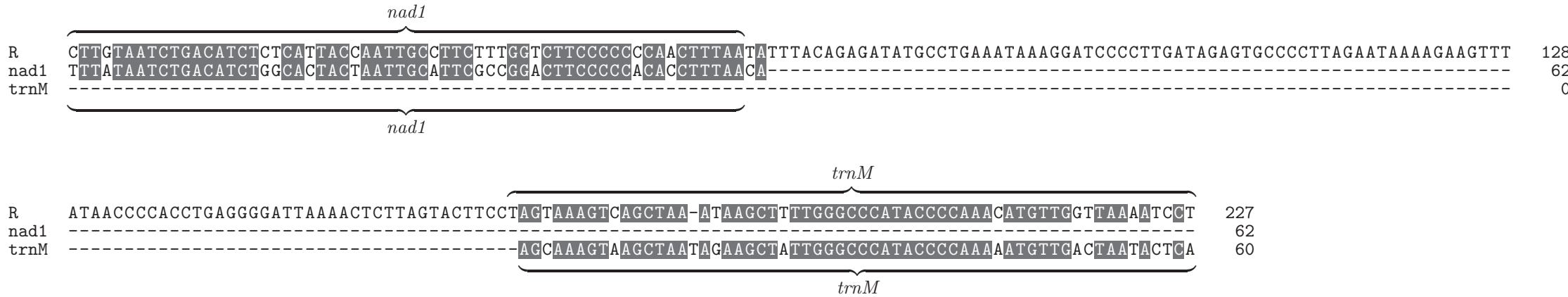
1.51.1 trnI-trnQ 6



1.51.2 trnM-trnI -3



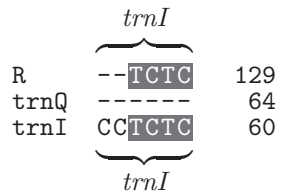
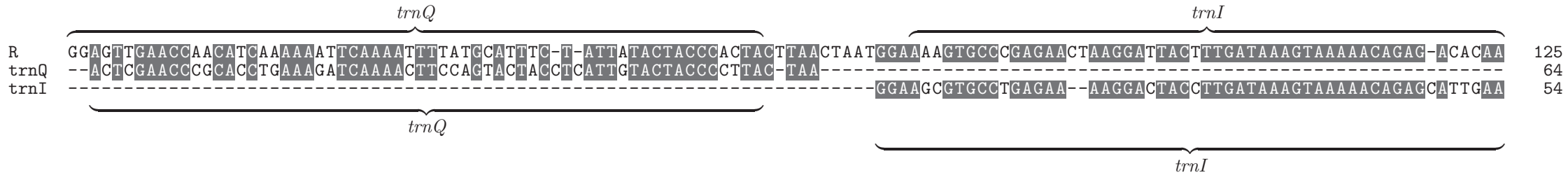
1.51.3 nad1-trnM -106



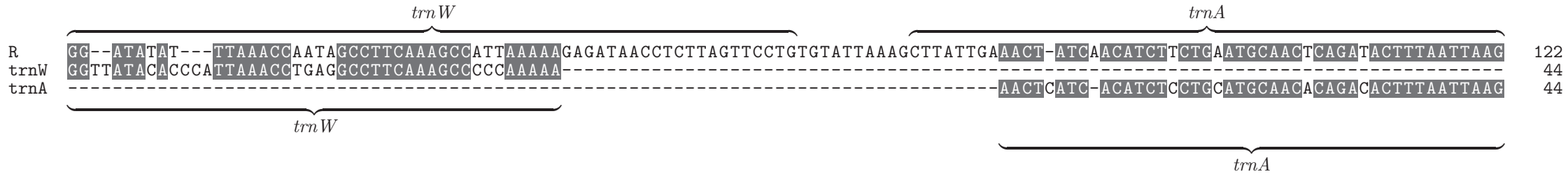
1.52 NC\_014174-NC\_005961

Avg ovsized: -35  
LCA: Toxicofera-clade

1.52.1 trnQ-trnI -5



1.52.2 trnW-trnA -39



*trnA*  
 {  
 R C-T 124  
 trnW --- 44  
 trnA CCA 47  
 }  
*trnA*

**1.52.3 nad1-trnQ -61**

*nad1* *trnQ*  
 R A C A C T A G C A A T A T G C T T A A T T T A C T C A A T A G T G C C C C T T G C A C T A G C A G C C C T T C C A T A G T G G A G A A G G A G T T G A A C C A A C A T C A A A A A A T T C A A A A T T T T A T G C A T T T C - T - A T T A 115  
 nad1 -----  
 trnQ ----- G A A G C A G G A C T C G A A C C C G C A C C T G A A A G A T C A A A A C T T C C A G T A C T A C C T C A T T - 55  
*trnQ*

**1.53 NC\_007012-NC\_001922**

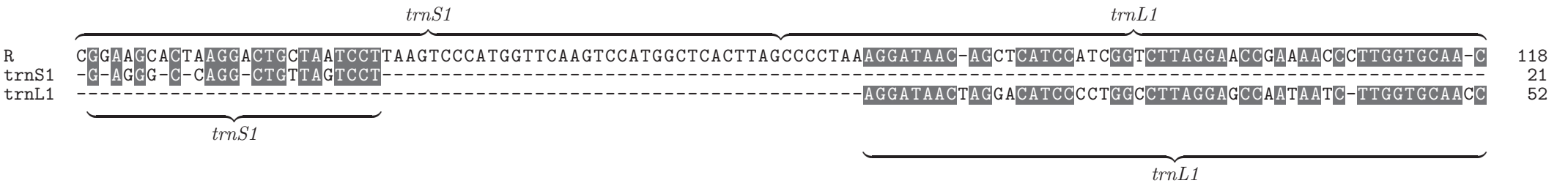
Avg ovsized: -36

LCA: Teleostomi-superclass

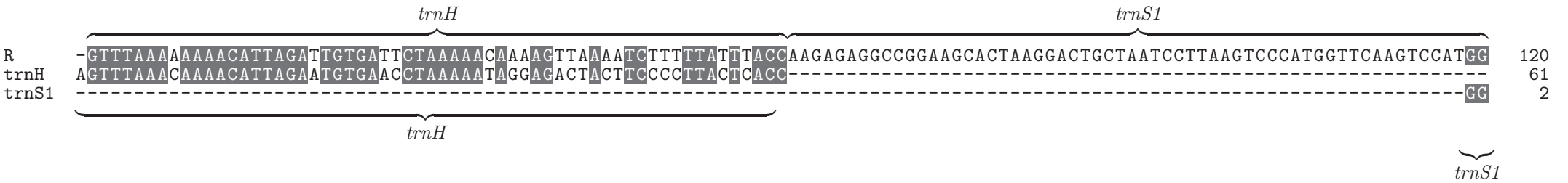
**1.53.1 nad4-trnH -11**

*nad4* *trnH*  
 R -- A C - C T A A - T C C C T G T C - C T T C T C T A G T C C T T A A A C C - C G A A C T T A T A T G A G G G G T G T G C C A C T G T A A A T A T A G T T T A A A A A A A A A C A T T A G A T T G T G A T T C T A A A A A C A A A A G T T A A A A T C T T - 119  
 nad4 T T A C A C A C A C T A C C A - T C A A T T A T C C T C A T C A C A A A C C C A C G A - C T T A T T T -----  
 trnH ----- C T C G G T A A G T A T A G T T T A A A C A A A A C A T T A G A A T G T G A A C C T A A A A A T A G G A G A C T A C T T C C C C 64  
*nad4* *trnH*

1.53.2 trnS1-trnL1 -41



1.53.3 trnH-trnS1 -58



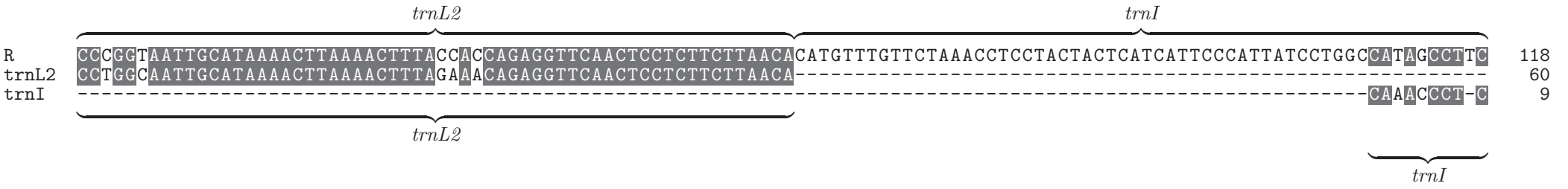
1.54 NC\_012762-NC\_012761

Avg ovsized: -37

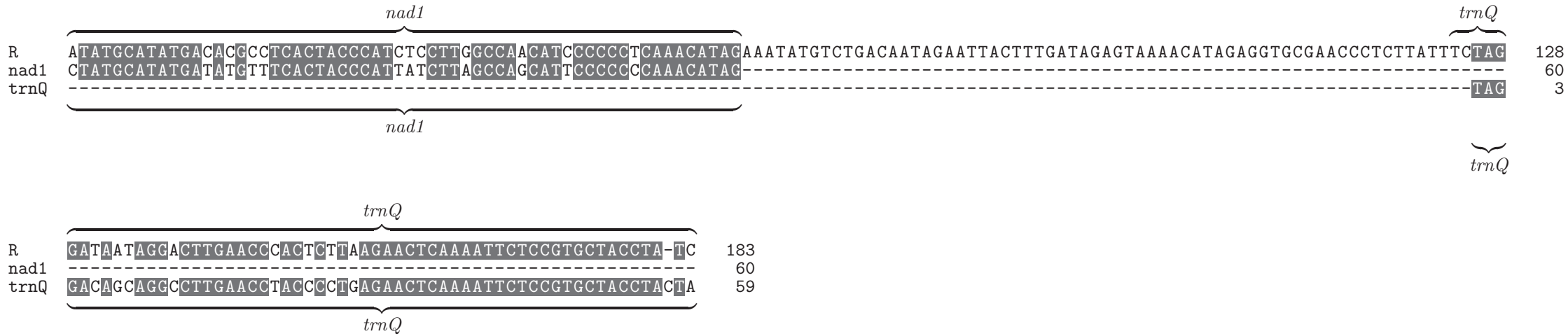
LCA: Lorisiformes-infraorder

1.54.1 trnI-nad1 0

1.54.2 trnL2-trnI -48



1.54.3 nad1-trnQ -65



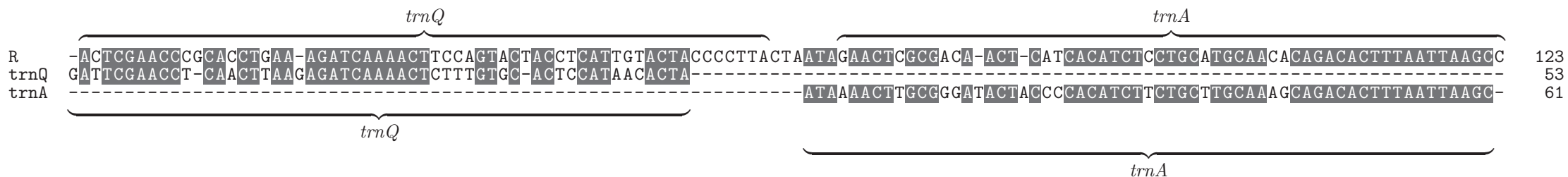


1.55 NC\_005961-NC\_023228

Avg ovsiz: -40

LCA: Teleostomi-superclass

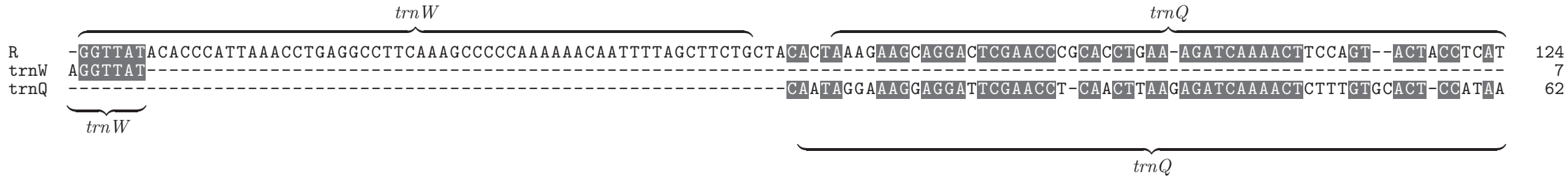
1.55.1 trnQ-trnA -10



1.55.2 nad1-trnI -55



1.55.3 trnW-trnQ -57

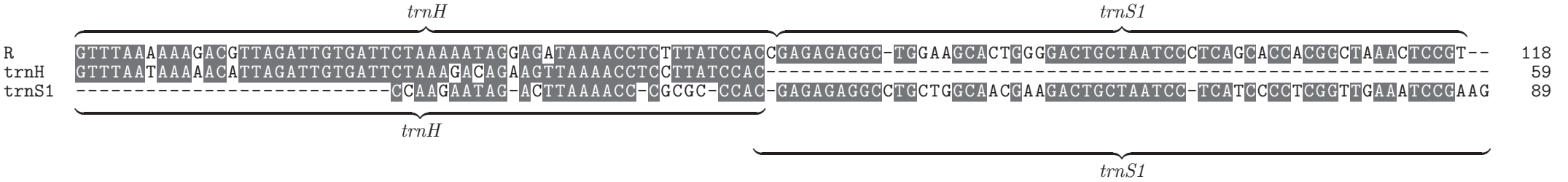


1.56 NC\_005796-NC\_010199

Avg ovsz: -40

LCA: Elopocephala-genus

1.56.1 trnH-trnS1 32



1.56.2 trnS1-nad5 -34

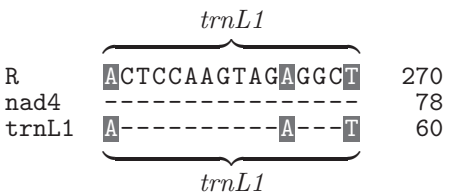
*trnS1*  
 R -CTGGAAGCACTGGGACTGCTAATCCCTCAGGACGACGGCTAAACCTCGGTGGCTCACTCGGCCCTAAAGGATAATAGCTCATCCGTTGGTCTTAGGAACCAA AAACTCTTGGTGCAACTCCAAGTA 127  
 trnS1 CCTGCTGGCAACGAAAGACTGCTAATCC-TCATCCCTCGGTTGAAAATCCGAAAGCTCACTC-----TAGTCACCAATGCC-CTTGGTTCAAATCCAAGTA 59  
 nad5 -----TAGTCACCAATGCC-CTTGGTTCAAATCCAAGTA 33

*nad5*  
 R GAGGCTATGGACTCAACAACCTCATCTTCAATGCAAGCCTCCTAATTATCTTGGCGCTGCTTA--T 192  
 trnS1 GAGGCTATGGACTCAACAACCTCATCTTCAATGCAAGCCTCCTAATTATCTTGGCGCTGCTTA--T 59  
 nad5 CTAGCCATGGCCCGCTTACAGATTACCTTAAATCACTCAACCAATAACCTCTGCTC-TTAGCC 99

1.56.3 nad4-trnL1 -120

*nad4*  
 R ACTTAAATCCAGTATTACTTCT-AGTACTGAA GCCGAACTAATA TGAAGCTGATGCATATGTAGATATA-GTTTAAAAAAGACGTTAGATTGTGATTCTAAAAATAGGAGATAAAACCTCTTTATCC 126  
 nad4 ATCTCCTCCCGCTGCTTCTCCTGATTACAAAA-CCCGAGCTAATTGTTGGCTGAATTATATGTAGGTACAAC TTTAAAAA----- 78  
 trnL1 ----- 0

*trnL1*  
 R ACCGAGAGAGGCTGGAAGCACTGGGGACTGCTAATCCCTCAGCACCCACGGCTAAACTCCGTGGCTCACTCGGCCCTAAAGGATAATAGGTCATCCGTTGGTCTTAGGAACCAAAAACTCTTGGTGCA 254  
 nad4 -----GCCCTAAAGGATAATAGGCTTCCATTGGTCTTAGGAACCAAAAACTCTTGGTGCA 78  
 trnL1 -----GCCCTAAAGGATAATAGGCTTCCATTGGTCTTAGGAACCAAAAACTCTTGGTGCA 57

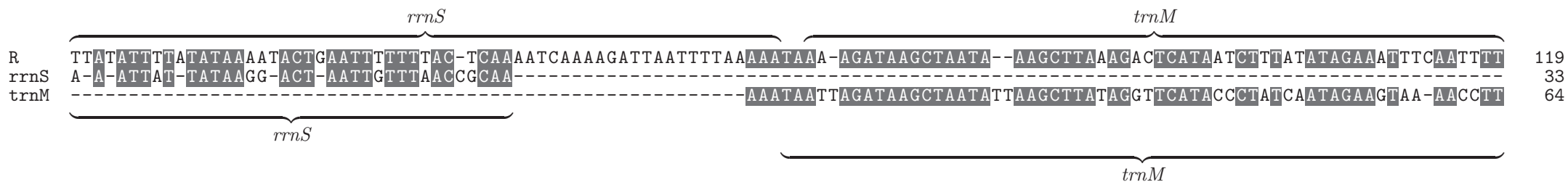


**1.57 NC\_012688-NC\_022670**

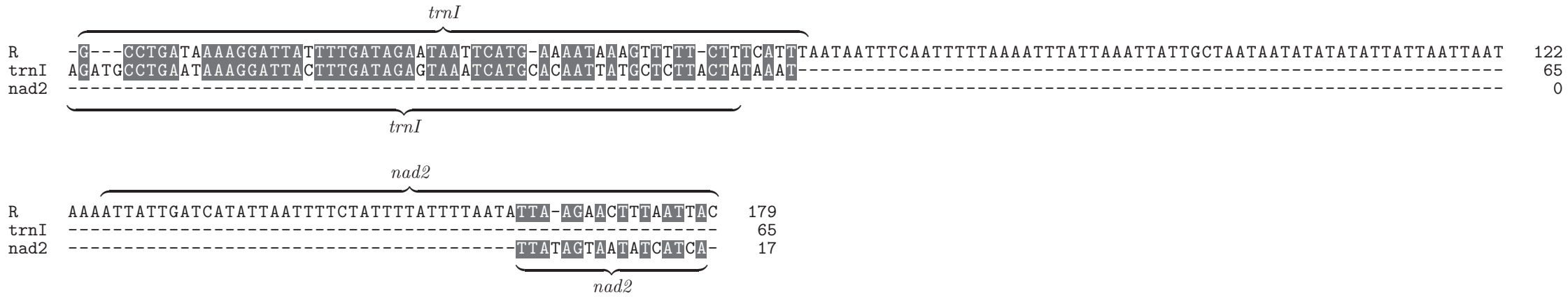
Avg ovsz: -41  
LCA: Neoptera-subclass

**1.57.1 trnM-trnQ 0**

**1.57.2 rrnS-trnM -20**



1.57.3 trnI-nad2 -103

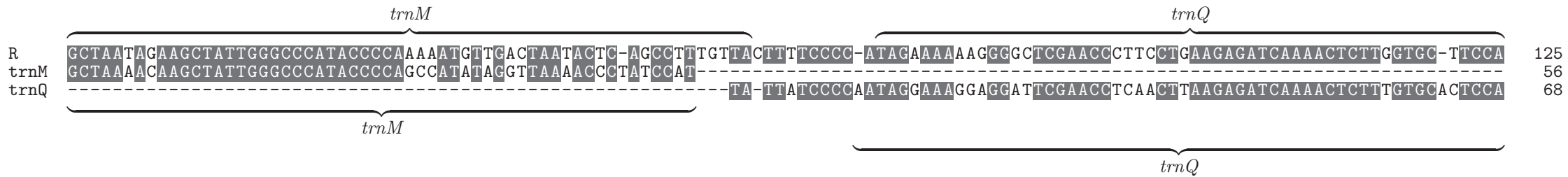


1.58 NC\_006355-NC\_023228

Avg ovsized: -44

LCA: Percomorpha-order

1.58.1 trnM-trnQ -3



*trnQ*  
 R CTA 128  
 trnM --- 56  
 trnQ TAA 71  
*trnQ*

1.58.2 nad1-trnI -9

	<i>nad1</i>	<i>trnI</i>	
R	TTTATAAT-CTGACATCTGGCACTACTAATTGCATTTCGCCGGACTTCCCCACACCTTTAA	CAGGAGCTGTGCCTGAATCAAAGGTCACCTTTGATAGAGTGAAGCATGGGGTTAAAATCC--	121
nad1	TTTCGTGATAGTAAC-CCTAATAAATTCTAGTTATAACAGCAGGTATTCCTCCA	-----	51
trnI	-----	CAGGAGCTATGTCCTGAAT-AAAGAGTCACCTTTGATAGAGTGAAGCACGTAGATGAAAACCTA	62
	<i>nad1</i>	<i>trnI</i>	

1.58.3 trnQ-nad2 -120

	<i>trnQ</i>	<i>nad2</i>	
R	GGGCTCGAACCCTTCTGAAGAGATCAAAACTCTTGGTGCT-TCCACTACACCACCTTCCTAG	CAAAACAAGGAAAACAATTCCATTGGAATACACCCAAAACAAGTTGATTAACCTTCAACGATTGCTTCA	127
trnQ	GA-TTCGAACCTCAACTTAAGAGATCAAAACTCTTGTGCACTCCATAACACTATTCCTA	-----	60
nad2	-----	-----	0
	<i>trnQ</i>		

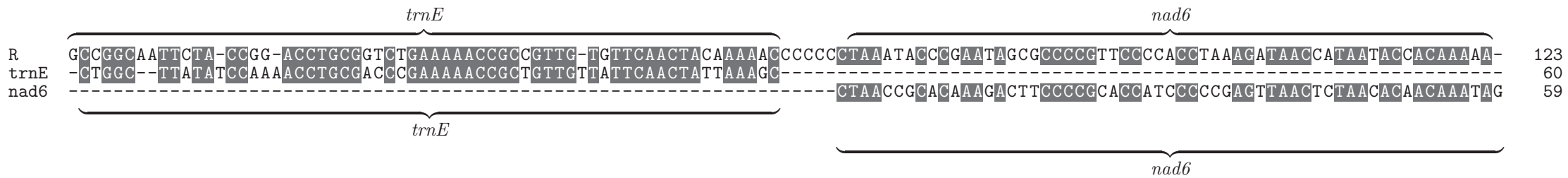


### 1.59 NC\_006286-NC\_016755

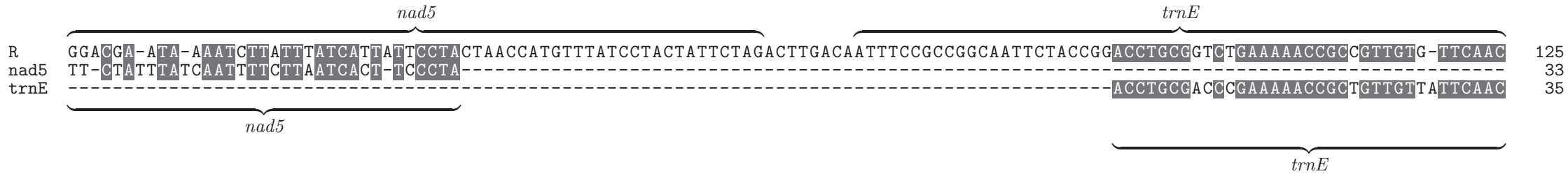
Avg ovsized: -45

LCA: Laterata-suborder

#### 1.59.1 trnE-nad6 -5

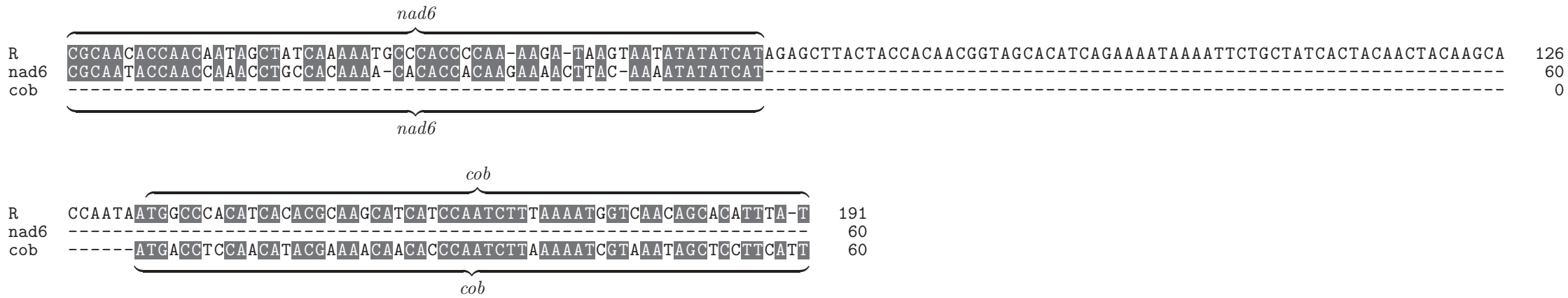


1.59.2 nad5-trnE -58



	<i>trnE</i>	
R	T	126
nad5	-	33
trnE	-	35

1.59.3 nad6-cob -72



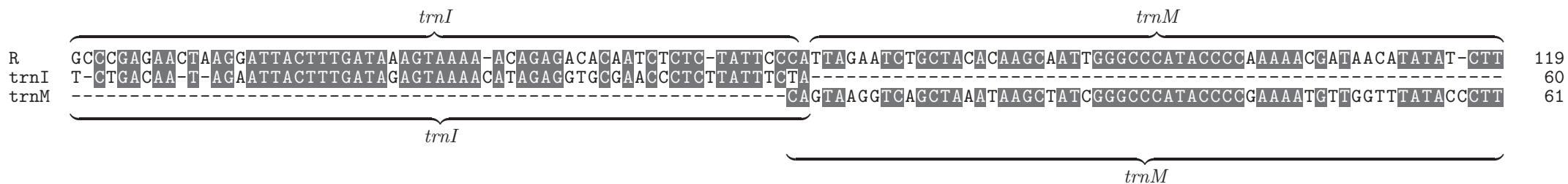


1.60 NC\_014174-NC\_012762

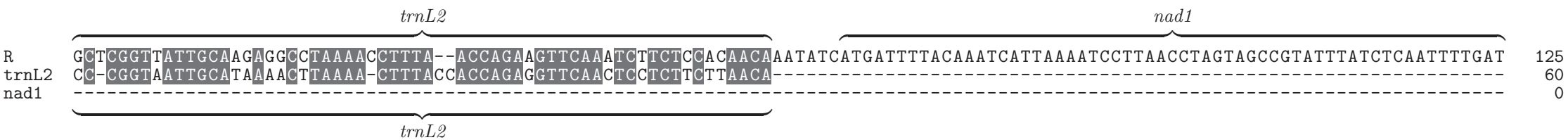
Avg ovsized: -45

LCA: Amniota-clade

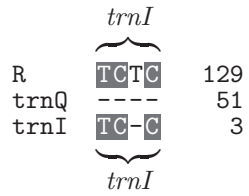
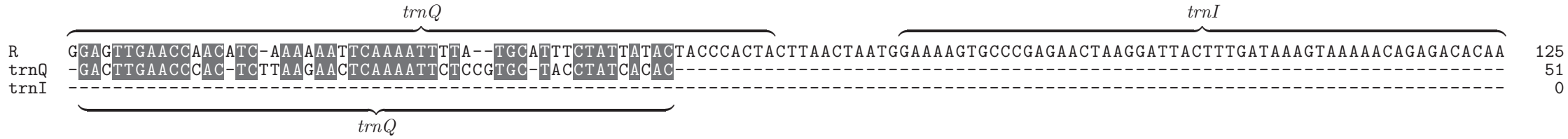
1.60.1 trnI-trnM 2



1.60.2 trnL2-nad1 -65



1.60.3 trnQ-trnI -74

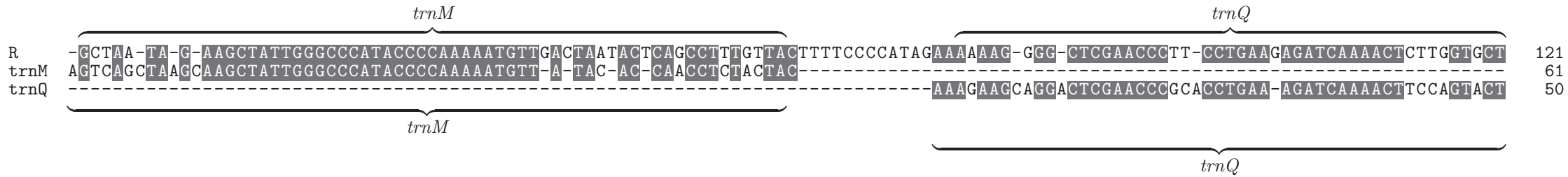


1.61 NC\_006355-NC\_005961

Avg ovsized: -50

LCA: Teleostomi-superclass

1.61.1 trnM-trnQ -12



	<i>trnQ</i>	
R	TCCAC-TA	128
trnM	-----	61
trnQ	ACCTCATT	58
	<i>trnQ</i>	

1.61.2 trnW-trnA -30

	<i>trnW</i>	<i>trnA</i>	
R	---ATA-ACC--TCAGACCAAGGGCCTTCAAAGCCC	TAAGTGGGAGTGGA	ACTCTCCCAGACCCTGAATAAAACTTGCAGGGGTCTCACCTACATCTTCTGCTTGCAAAGCAGACACTTTAATTAAG
trnW	GGTTATACACCCATTAAACCTGAGGCCTTCAAAGCCC	-----	-----
trnA	-----	AATAGAACTCGC-GACAACTCATC-ACATCTCCTGCA	TGCAACAAGCAGACACTTTAATTAAG
	<i>trnW</i>		<i>trnA</i>

R	---	121
trnW	---	37
trnA	CCA	62
	<i>trnA</i>	

1.61.3 trnQ-nad2 -108

	<i>trnQ</i>	
R	GGGCTCGAACCCCT-TCCTGAAGAGATCAAAA	CTTTGGTGCTTCC--A--CTAC-ACCACTTCCTAGCAAAAACAAGGAAACAATTCCATTGGAATACACCCAAACAAGTTGATTA
trnQ	-A-CTCGAACCCGCACCTGAA-AGATCAAAA	CTTCCAGTACTACCTCATTGTACTACCCCTTACTA
nad2	-----	-----
	<i>trnQ</i>	

		<i>nad2</i>	
R	CTTCATGAGCCCCTATATTCTCTCGATCTTTCTTTTCGGACTCGGC	CTAGGAACCA	185
trnQ	-----	CAATTA-C-	63
nad2	-----	CTAGGAACC-CTCTTAGCC	18
		<i>nad2</i>	

## 1.62 NC\_003163-NC\_003159

Avg ovsized: -51

LCA: Neoteleostei-subclass

### 1.62.1 trnE-trnP -17

		<i>trnE</i>			<i>trnP</i>	
R	CAGGATTTTAAACCTGGACCAATGACATGAAAAGCCACCGTTGTGATTCAACTATAAGAACCCATCCGGGCTCTGCCACAAA	ACTCAAAACGACAAGACTTACACTCGCACTTCCGGCACCCAAAGCCGG		128		
trnE	CAGGACTCTAACCAGACCAGCGACTTGAAAAACCGCCGTTGTTTTTCAACTACAAGAACCCA-----			63		
trnP	-----	ACTCAGAGAGGGGAGATTTTAACTCCACCCTTAGCTCCCAGAGCTAA		48		
		<i>trnE</i>			<i>trnP</i>	

		<i>trnP</i>	
R	TGCTCTTAA-TTA-A	141	
trnE	-----	63	
trnP	-GATCCTAAACTAGA	62	
		<i>trnP</i>	

1.62.2 nad5-cob -50

	<i>nad5</i>			<i>cob</i>				
R	TA--CCTA--TCC-C-TATTCTTTATAAACCCTTTGC-CTAGCCACCC	TCTCACCACAAACCTTTAAGGCC	CCCCCCCCCCTAATGACCCACCCGACA	CTACGC	AAAAACCCACCCCTC	CTAAAAATC	121	
nad5	AAAA	CCTACC	TCCG	CCTCTCCCTTCTAAACA	CTA-GCTCTAGCCACCTT		47	
cob	-----					CTACG	AAAAACCCACCCCTTCTAAAAATT	30
	<i>nad5</i>					<i>cob</i>		

	<i>cob</i>		
R	G-CAA--ACG-A-T-GC-CCT	135	
nad5	-----	47	
cob	GCCAACCACGC	ACTAGTAGAC	51
	<i>cob</i>		

1.62.3 trnT-nad6 -87

	<i>trnT</i>		
R	AGTATCCAGAGCGCCGGTTTTGTAACCCGGAGGCCGGAAGTTCAAATCTCCCGAGCGCACAGCCTAGCCC	AGGCTCTGCCACAAAAATTAACCTATTGGCCAAGGCCTGATCTGCCTGACCCCCCCC	128
trnT	AACATGTCGAGCA	CCGGACTTGTAAATCCGGGGGTTTAAATCCCCCCTAGTGCTCACCC-CGCCC	70
nad6	-----		0
	<i>trnT</i>		

	<i>nad6</i>		
R	CCGCCTTCTTTCTCACCGGCCTACCGGCCCTAAACGGCACGCAAGGCCCTCGACTCAACCCCGGAGTTAACTCTAGAACCACAAAT-A	216	
trnT	-----	70	
nad6	-----	59	
	<i>nad6</i>		

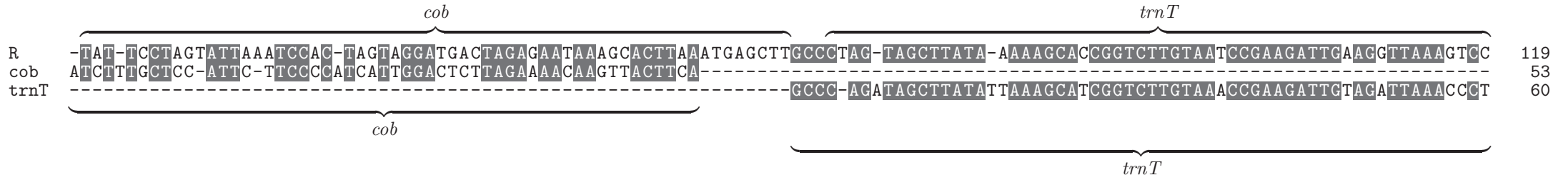
1.63 NC\_005796-NC\_006405

Avg ovsize: -60

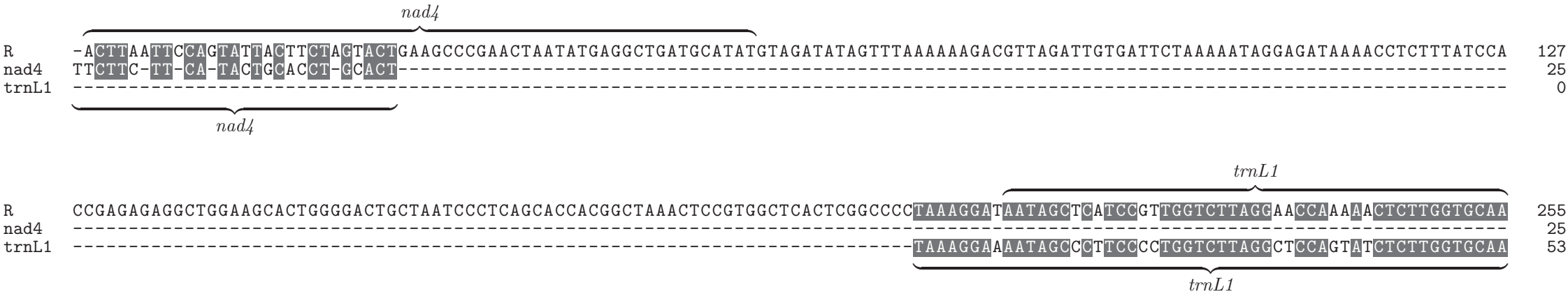
LCA: Teleostomi-superclass

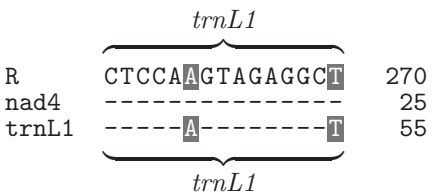
1.63.1 trnL1-trnH 0

1.63.2 cob-trnT -8



1.63.3 nad4-trnL1 -174



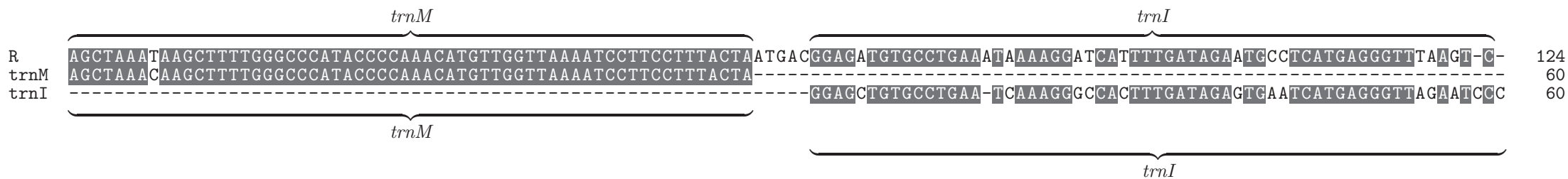


**1.64 NC\_011381-NC\_011387**

Avg ovsized: -61

LCA: Cyprinodontoidei-suborder

**1.64.1 trnM-trnI -5**



**1.64.2 trnQ-nad2 -69**



*nad2*  
 R ATGAACCCCTACATTTTATTTATTTTACTTTTCTGCTCTAGGCCTCGGGACAACCA-CTAC 187  
 trnQ ----- 60  
 nad2 -TGAACCCCTTTTATCCTTTCCACCCTTCTTCTAGGACTCGGCCTTGGAAACAACCATCAC 59  
*nad2*

**1.64.3 nad1-trnM -110**

*nad1*  
 R CTTGTAATCTGACATCTCTCATTACCAATTGCCTTCTTTGGTCTTCCCCCCTCAACTTTAATATTTACAGAGATATGCCTGAAATAAAGGATCCCCTTGATAGAGTGCCCTTAGAATAAAAGAAGTTT 128  
 nad1 CTCGTCATTGACACCTCTCCCTCCCAATCGCCTTATCTGGCCTGCCCCCTCAACTTTA----- 59  
 trnM ----- 0  
*nad1*

*trnM*  
 R ATAACCCACCTGAGGGGATTA AAACTCTTAGTACTTCCTAGTAAAGTCAGCTAAATTAAGCTTTTGGGCCCATACCCCAAACATGTTGGTTAAAATCCT- 227  
 nad1 ----- 59  
 trnM ----- GTAAAGTCAGCTAAACAAAGCTTTTGGGCCCATACCCCAAACATGTTGGTTAAAATCCTT 59  
*trnM*

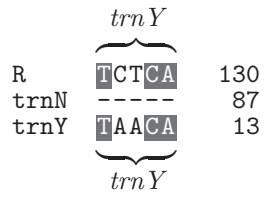
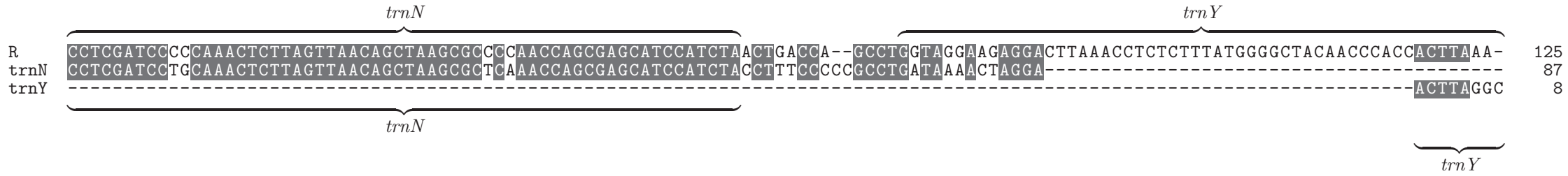
**1.65 NC\_003159-NC\_009851**

Avg ovsized: -62

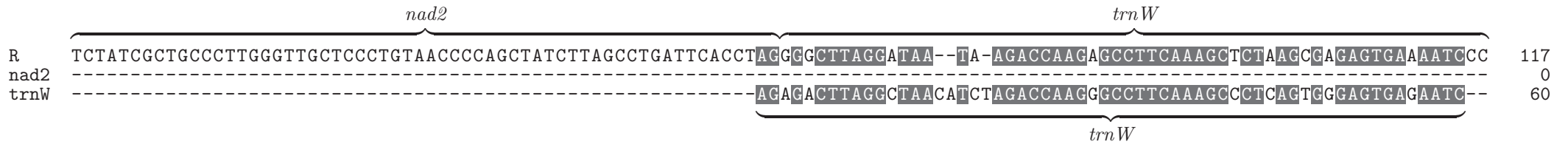
LCA: Neoteleostei-subclass



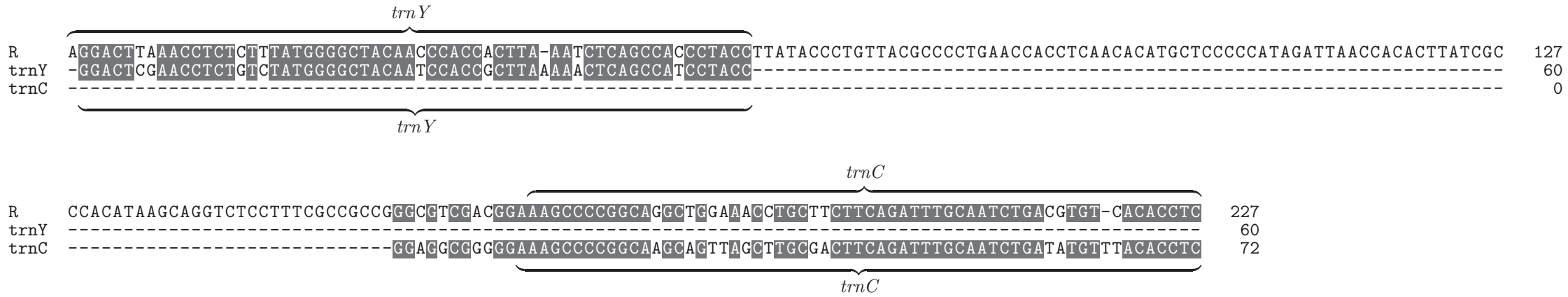
1.65.1 trnN-trnY -33



1.65.2 nad2-trnW -58



1.65.3 trnY-trnC -96

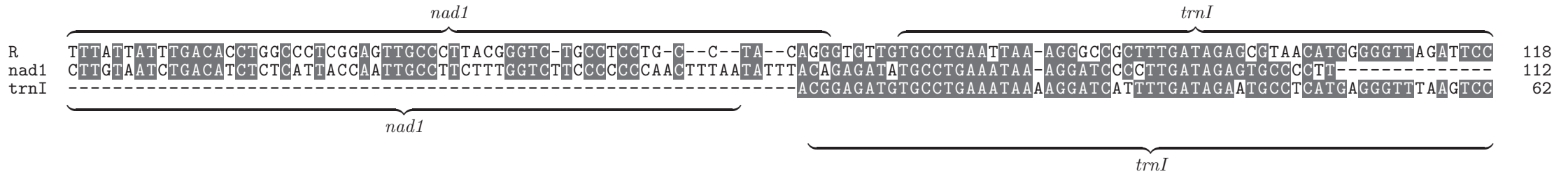


1.66 NC\_004373-NC\_011381

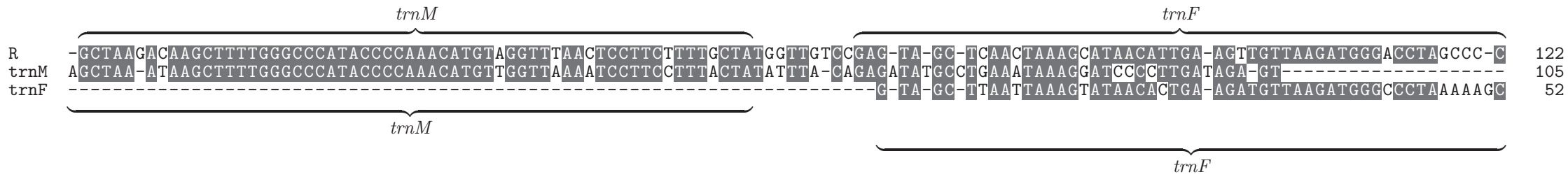
Avg ovsized: -69

LCA: Holacanthopterygii-superorder

1.66.1 nad1-trnI 48

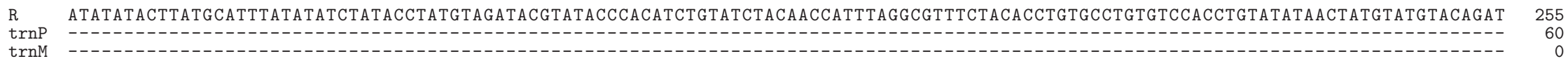


1.66.2 trnM-trnF 36



	<i>trnF</i>	
R	CC	124
trnM	--	105
trnF	CC	54
	<i>trnF</i>	

1.66.3 trnP-trnM -292





1.67.2 nad6-cob -74

*nad6*

```

R      CGCAACACCAACAATAGCTATCAAAAAATGCCACG-CC-AA-AAGATA-A-GTAATATATATCATAGAGCTTACTACCACAAGGGTAGCACATCAGAA-AATAAAATTCTGCTATCACTACAACTACA 122
nad6   ACCAAC--CAA-AAGA-CCA-CACACAACCAAACCACTAACAACATACAAAATAAAATAAGACATTCA-CTTT-TACT-CCACTG-AGCATGTAAGTTC AATAAACTCATG-TAACACTGTAA----- 113
cob    ----- 0
    
```

*nad6*

*cob*

```

R      AGCACCAATAATGGCCCACATCACACGCAAGCATCATCCAATCTTTAAAATGGTCAACAGCACATTTAT 191
nad6   ----- 113
cob    ----- 0
    
```

1.67.3 trnT-trnP -86

*trnT* *trnP*

```

R      -AGCTTACCAGATAAAGCGCCGGCCTTGTAAAGCCGGAACGAGCGCTCCGC-TCCTCAGGCTAAAACAATCCAAGCCTTACCACATCAAAGGAAAGGCTTTAAGCGCGCCTCATCTCCGCCCCAAA 126
trnT   TAGCTTA--ATACAAAGCATTGGCCTTGTAAAGCCGAAGATG-GCAATCAA C TCC----- 52
trnP   ----- 0
    
```

*trnT*

*trnP*

```

R      ACGGGCATT T T T T A A C T 142
trnT   ----- 52
trnP   ----- ACC 3
    
```

*trnP*

1.68 NC\_005796-NC\_005800

Avg ovsiz: -70

LCA: Albuliformes-order

1.68.1 trnL1-trnH 0

1.68.2 trnS1-nad5 -74

*trnS1*

R	CTG-GAAGGACTGGGGACTGCTAATCCCTCAGCACCA CGGCTAAACTCCGTGGCTCACTCG	127
trnS1	CTATGAGGCGTGGGA ACTGCTAATTC-TTAGTATCATGGTTAGAA TCCATGGCTCGCTCG	60
nad5	-----	0

*trnS1*

*nad5*

R	GAGGCTATGCACTTCAACAAGCCTCATCTTCAATTGAAGCCTCCT-AAATTAATCTTCGCGCTCTTAT-	192
trnS1	-----	60
nad5	-----TGCATTTATCAACTTTAGGTTTAAATTCGAGT-TCCTTAACTGTAATTTGTACTACTCCTG	59

*nad5*

1.68.3 nad4-trnL1 -137

*nad4*

R	ACTTAAATCCAGTATTACTTCTAGTACTGAAGCCCGAACTAATATGAGGCTGATGCATATGTAGATATAGTTTAAAAAAGACGTTAGATTGTGATTCTAAAAATAGGAGATAAAACCTCTTTATCCAC	128
nad4	ATCTGATTCAGTAAATGCTTTTGGCTTAAAGCGTGAGTATGTTGGGGTTGGTGTCTAT	60
trnL1	-----	0

*nad4*

R CGAGAGAGGCTGGAAGCACTGGGGACTGCTAATCCCTCAGCACCCACGGCTAAACTCCGTGGCTCACTCG *trnL1* 256  
 nad4 ----- GCCCCTAAGGATAATAGCTCATCCGTTGGTCTTAGGAACCAAAACTCTTGGTGCAAC 60  
 trnL1 ----- GCCCCTAAGGATAACAGCTCATCCGTTGGTCTTAGGAACCAAAACTCTTGGTGCAA- 58  
*trnL1*

*trnL1*  
 R TCCAGTAGAGGCT 270  
 nad4 ----- 60  
 trnL1 ---A---T----- 60  
*trnL1*

**1.69 NC\_005439-NC\_012434**

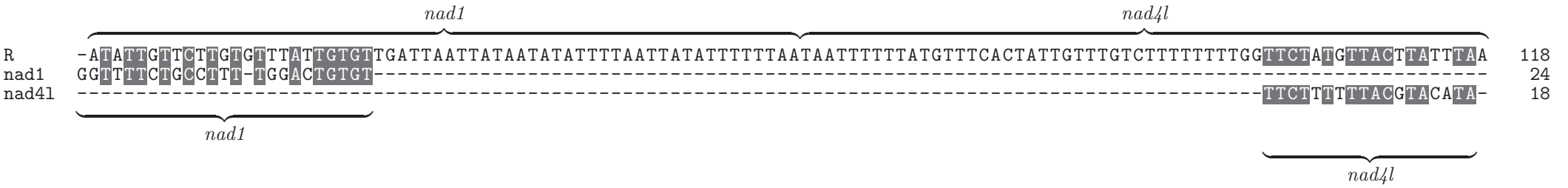
Avg ovsiz: -72

LCA: Panpulmonata-superfamily

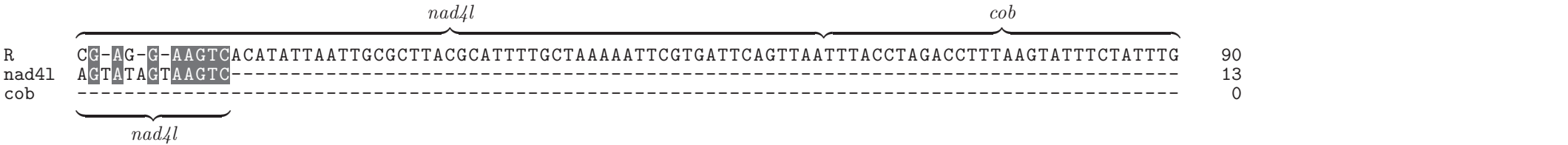
**1.69.1 cox2-trnY -61**

*cox2* *trnY*  
 R ---T-TT--ATACCTATTGTAGTAGAAGCTGTTCACGTC-GATGACTTTT TTTTTTGAAAGTGCTTAGCACAAAGGATTGTAATCTTTTCAATTTGATATTCTATCTCAAAA 103  
 cox2 CACTCTTTCATGCCAATTGTTGTAGAAACGGC-CAGGTTGGAAGA-TTT----- 47  
 trnY ----- 0  
*cox2*

1.69.2 nad1-nad4l -75



1.69.3 nad4l-cob -80



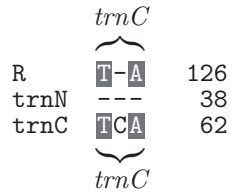
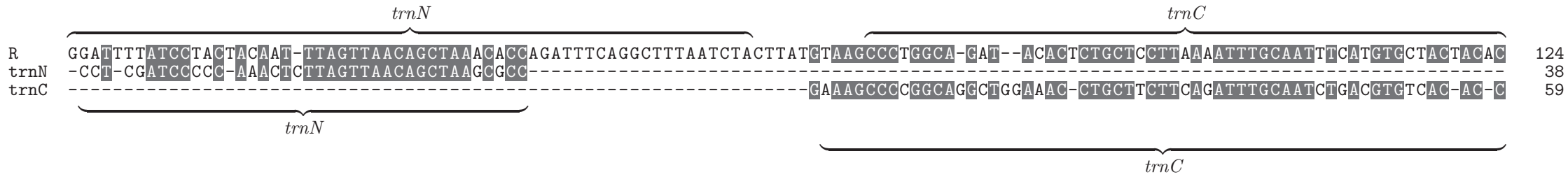
1.70 NC\_006340-NC\_003159

Avg ovsized: -79

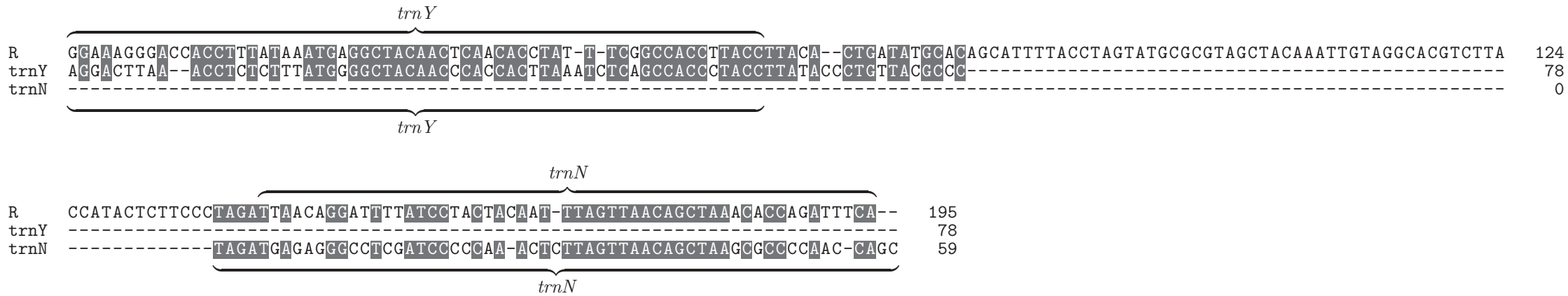
LCA: Teleostomi-superclass



1.70.1 trnN-trnC -25



1.70.2 trnY-trnN -61



1.70.3 trnA-trnY -152

	<i>trnA</i>	
R	CGAGACTCTACCCCACATCTTCTGAATGCAACCCAGACACTTTAATTAAGCTAAAGCCTT	128
trnA	CAGGACTTTATCCCACATCTTCTGAATGCAACCCAGAAACTTTTATTAAGCTAAGGCCCT	60
trnY	-----	0
	<i>trnA</i>	

		<i>trnY</i>	
R	TCCCCTGTCTGGGGGGGAAGCGGGAGAAGCCCCGGAGAAGTCATGGGGCTCCTCGGCTTACGGGAAGTGTAAAGCTTTATTACA	CTGGTAAGGAAAGGGACC-A--CCTTTATAAATGAGGCTACAAC	253
trnA	-----	-----	60
trnY	-----	CTGGTA-GGAAGAGGACTTAAACCTCTCTTTATGGGGCTACAAC	43
		<i>trnY</i>	

	<i>trnY</i>	
R	TCAACACCTATTTTCGGCCA	272
trnA	-----	60
trnY	CCACCACCTTAAATCT-CAG	61
	<i>trnY</i>	

1.71 NC\_014174-NC\_007978

Avg ovsized: -79  
 LCA: Sauropsida-subclass

1.71.1 nad5-nad6 3

	<i>nad5</i>	<i>nad6</i>	
R	TACCTATCAACATTTGTAATTACATCAATACTAGCCATAAATTATTCAACTATATTACTAACTC-CGAACCGACCCAAAACATCAACC-ACACACAAGATCTAACACTACAAACAATGT		116
nad5	-ATC-AA-AACCTACTTAGGTTCAATTCGCCCTATCCATCCTCA-TCACC-CTATTA-----		51
nad6	-----TTAA-ACCGCTCGAATAGCCCCACAAGA-CAACCCACGCACCAACTCCAACACAACAAACAA-----		60
	<i>nad5</i>	<i>nad6</i>	

1.71.2 trnE-cob -8

	<i>trnE</i>	<i>cob</i>	
R	TATCTAGACAACCTAGAACCCTCAATACGAAAAATTGATGTTGT-TATT-CAACTATAAAAAACATGACCATCCTACGAAAAATTAACCCCAATCCTAAAAACT-ATTAACCACTCCCTAATTGA		119
trnE	G-GCTTTTCTCCAAG-ACTCGCGGCCTGAAAAGCCGCTGTTGTCAATTTCAACTACGAAAAC-----		60
cob	-----CCTCCGAAAAATCTCATCCACTCCTAAA-ACTCATTAAACAACCTCTTAA-TC-----		49
	<i>trnE</i>	<i>cob</i>	

1.71.3 trnP-trnF -234

	<i>trnP</i>		
R	AAGAGGTT-AACAACCATCTCTAACTCCCAAAGCTAGAATTTTATCTTAAACTAT-CTCTTAAACATATAAATTATACACACACCAAAAAATGTCAATCCCAAACAAAAATAAAATAATTTGGTCCAG		126
trnP	A-GGGCTTAAACCTCTATCTCCAGCTCCCAAAGCTGGTATTTTACACTAAACTATCTCTGA-----		61
trnF	-----		0
	<i>trnP</i>		

R GGTTAACTCTAATTGTATTTATTTTTTTTACGATAGTATATAGAGATATATTGTGTGGCCCAGGGTTAAACTCTAATTTTATATTTATATATGTG 254  
trnP ----- 61  
trnF ----- 0

*trnF*

R TATCGGTCCAGGACTTGCCGTACAATTATTATAAAAAGTTA **TTGTAGCTTAACTTTAA-GCACAGTATTGAAAATACTGAAATGAGTGTAAACACTC-** 349  
trnP ----- 61  
trnF ----- **TTGTAGCTTACTACCAAAAGCATGGCACTGAAGATGCCAAGACGGCTGCCATT-CTCG** 56

*trnF*

### 1.72 NC\_006340-NC\_006333

Avg ovsz: -87

LCA: Batrachoseps-genus

#### 1.72.1 trnC-cox1 -34

*trnC* *cox1*

R -TGGCAGATACACTCTGCTCCTTAAAATTTGCAATTTTATGTGCTACTACACTACAGGCCTACAAATATAAGCTTGTATGCCTTACCTGTGATAAATTACTCGATGACTATTTTCAACAAACCATAAAG 127  
trnC GTAGAAG-T-CATTCTGCTCTTAAAATTTGCAATTTTATGTGCT-GTACACCAC----- 52  
cox1 -----TGATAGTTACGCGATGACTTTTTTCAACAAACCACAAAAG 39

*trnC* *cox1*

*cox1*

R **ATATCGGCACCTTATATTT-** 146  
trnC ----- 52  
cox1 **ATATCGGCACCTTTACCTA** 59

*cox1*

1.72.2 trnY-trnN -75

*trnY*

```

R      GGAAAGGGAC--CACCTTTATAAATGAGGCTACAACCTCAACACCTATTTTCGGCCACCTTACCTTACACTGATATGCACAGCATTTTACCTAGTATGCGCGTAGCTACAAATTGTAGGCACGTCTTACC 126
trnY   A-AAAGG-ACTACACCTTTATAAATGAGGCTACAACCTCAGCACCTACTTCGGCCATCTTACCT-----61
trnN   -----0
    
```

*trnY*

*trnN*

```

R      ATACTCTTCCCTAGATTAACAGGATTTTATCCTACTACAATTTAGTTAACAGCTAAACACCAGATTTCA- 195
trnY   -----61
trnN   -----CTAGATTAGTAGGCCTTTTATCCTACTACTCTTTAGTTAACAGCTAAATACCTAATATCAG 60
    
```

*trnN*

1.72.3 trnA-trnY -153

*trnA*

```

R      CGAGACTCTACCCACACATCTTCTGAATGCAACCCAGACACTTTAATTAAGCTAAAAGCCTTCACAAACTACACCTCATATTCTTGTAATTTAATAACAACCTAATATTTATTTTTAGGCTATCTACTTC 128
trnA   CAAGACTTTATTCCACACATCTTCTGAATGCAACCCAGACACTTTAATTAAGCTAAAACCCCTC-----61
trnY   -----0
    
```

*trnA*

*trnY*

```

R      TCCCCTGTCTGGGGGGGAAGCGGGAGAAGCCCCGGAGAAGTCATGGGGCTCCTCGGCTTACGGGAAGTGTAAGCTTTATTACACTGGTAAGGAAAGGGAC--CACCTTTATAAATGAGGCTACAAC 254
trnA   -----61
trnY   -----GGCAA-GAAAAGGACTACACCTTTATAAATGAGGCTACAAC 41
    
```

*trnY*

	<i>trnY</i>	
R	CAACACCTATTTTCGGCCA	272
trnA	-----	61
trnY	CAGCACCTACTTTCGGCCA	59
	<i>trnY</i>	

**1.73 NC\_004373-NC\_006355**

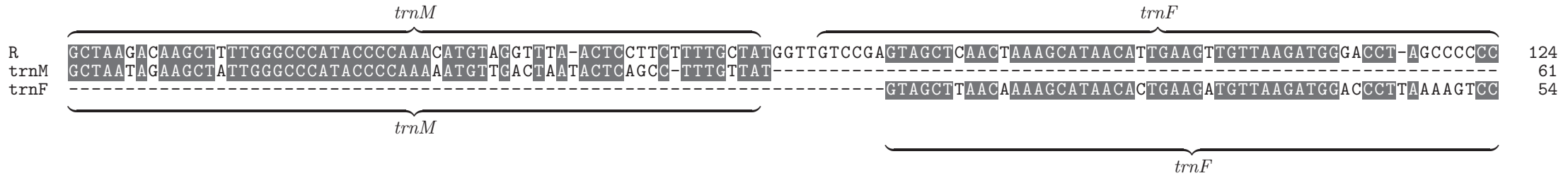
Avg ovsized: -101

LCA: Holacanthopterygii-superorder

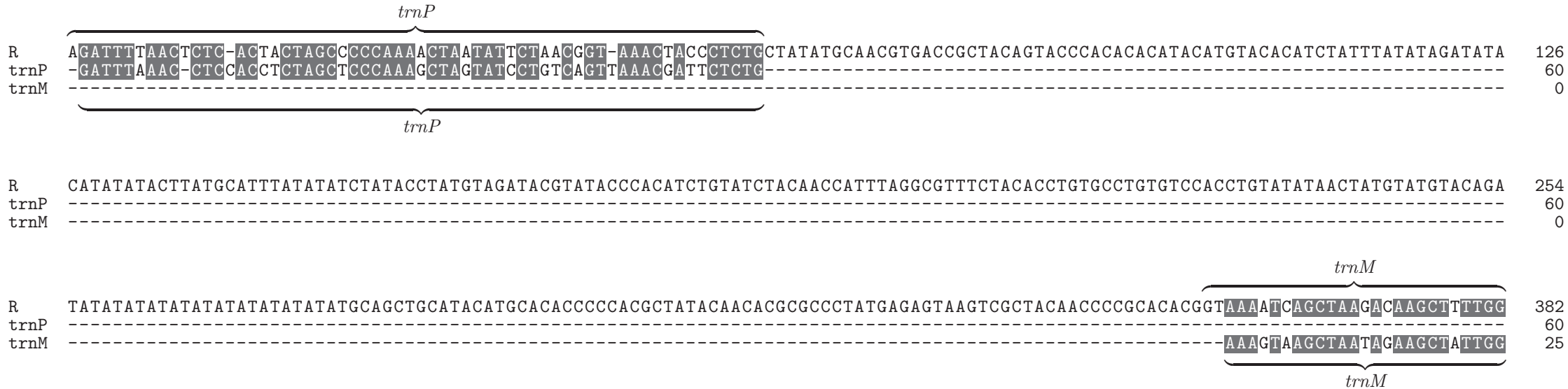
**1.73.1 trnI-trnQ 4**

	<i>trnI</i>	<i>trnQ</i>	
R	CTGAATTAAAGGGCCGCTTTGATAGAGCGTAAACATGGGGGTTAGATTCCCCCAACTCCTTAGAAAAGGAGGGCTCGAACCTCCCGGGGAGATCAAAACTCCAGTGCTCCCACTA-		118
trnI	CTGAATCAAAGGGTCACTTTGATAGAGTGAAGCATGGGGGTTAAAAATCCTCCCAACTCCTT	-----	61
trnQ	-----	CCATAGAAAAAAGGGGCTCGAACCTTCCTGAAGAGATCAAAACTCTTGGTGCTTCCACTAC	62
	<i>trnI</i>	<i>trnQ</i>	

1.73.2 trnM-trnF -10



1.73.3 trnP-trnM -297



*trnM*  
 R GCCCATACCCCAAACATGTAGGTTTA-**ACTCC** 413  
 trnP ----- 60  
 trnM GCCCATACCCCAAATAATGTTGACTAATACTCA 57  
*trnM*

**1.74 NC\_008123-NC\_004373**

Avg ovsized: -105

LCA: Ophidioidei-suborder

**1.74.1 trnQ-trnM -54**

*trnQ* *trnM*  
 R GGATTCGAACCCATCCTATAGAGATCAAAACTCTATGTGCTCCCAATACACCACCTTCTAGC-GGAATAAGCTAATTAAGCTGTCGGGCCCATACCCCGGATACGTAGGTTAAAGCCCT 118  
 trnQ GGGCTCGAACCTCCCCCGGGGAGATCAAAACTCCAGTGTCTCCCACTACACCACCTTCTAGCAGG----- 65  
 trnM ----- 0  
*trnQ*

**1.74.2 trnM-nad2 -89**

*trnM* *nad2*  
 R AGCTAAATTAAGCTGTCGGGCCCATACCCCGGATACGTAGGTTAAAGCCCTACTTCCGTTGGTGAACGTTTCAGATGATATTCATTTTACTATCTTCTTTAAT**ACTGGGCACAACCATTAC**- 119  
 trnM AG-GAGTTAAAC----- 11  
 nad2 -----  
ACTCGGCACTACCATTACC 19  
*trnM* *nad2*



1.74.3 trnP-trnF -173

*trnP*

R	GAGAATCTAACTCCAGCCACTAACTCCCAAAGCTAGTATTCTTAAAC--TAAAATACTTTTTGACGGGTATCTAATGT-ACA--TACA-TCGATATTAACCCATATATATACATATATGTATAATAACCA	122
trnP	-AGATTTTAACTCTCACTACTAGCCCCCAAAACTAATATTC-TAACGGTAAACTACCTCTG-CTATATGCAACGTGACCGCTACAGTACCCACACACATACATGTACACATCTATTTAT-ATAGATA	124
trnF	-----	0

*trnP*

R	TACATCTATATTAAACCCATATATATA-C-ATA--TATGT--ATA-ATA-ACCATACATCTATAT-TA-ACCCATATA----TAT--ACATATATGTATAATAAACCATACATCTATATTAACCCATATA	234
trnP	TACATATATACCTTATGCAATTTATATATCTATACCTATGTAGATACGTATACCC-ACATCTGTATCTACAACCATTTAGGCGTTTCTACACCTGTGCTT-GTGTCCA-CC-TGTATAT-AA-CTATGTA	246
trnF	-----	0

R	TATACATATATGTATAATAACCATACATCTATATTAACCCATATATATACATATATGTATAATAACCATACATCTATATTAACCCATATATATACATATATGTATAATAACCATACATCTATATTAAC	362
trnP	TGTACAGATATATAT-ATATATATATATATATATGCAGCTGCATACATGCACA-----	298
trnF	-----	0

R	CCATATATATACATATATGTATAATAACCATACATCTATATTAACCCATATATATACATATATGTATAATAACCATACAGTCTATATTAACCATCAACGTAGCTTAAATAAAGCGCAACACTGAAGTT	490
trnP	-----	298
trnF	-----GTAGCTCAACTAAAGCATAAACATTTGAAGTT-----	30

*trnF*

	<i>trnF</i>	
R	GTTAAGATGGGCCCTAGAAAGC-T	513
trnP	-----	298
trnF	GTTAAGATGGGACCTAGCCCCCC	54

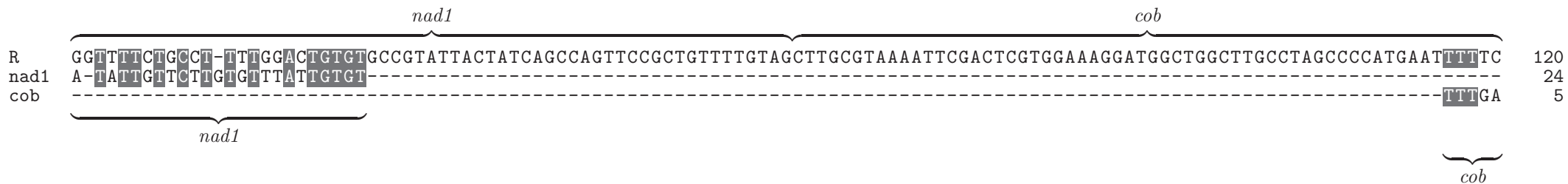
*trnF*

1.75 NC\_012434-NC\_005439

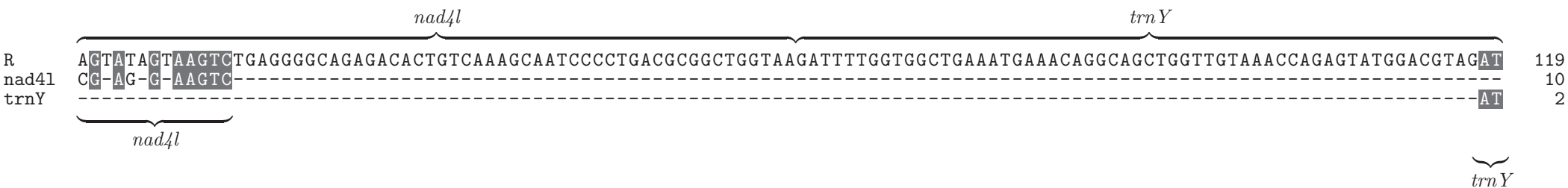
Avg ovsz: -105

LCA: Panpulmonata-superfamily

1.75.1 nad1-cob -91



1.75.2 nad4l-trnY -104



1.75.3 *cox2-nad4l* -122

R  
*cox2*  
*nad4l*

CACTC TTT CAT GCA ATT GTT GTAGAAA GGC - CAG GTT GAGA - TTT ACTCTCCCTCTAAACCAAATATATATGGATATAGACACAGTATTATTAATTCTAGAGGGAACAATGTGGTTAATCGTT 126  
 ----- TTT - ATACCTATTGTA GTAGAAA GCTCTT CACGTCC - ATGAC TTT ----- 42  
 ----- 0

*cox2*

*cox2*

R  
*cox2*  
*nad4l*

GACGTGGTAGATTTTGTACAGTACCCCTGGTCGTAGCATTAACTTTTGC TGGTACTCTCTTTTTTACGTA CAT 199  
 ----- TTT TTTGGT TCTAT - GTTACTTATTTA - AT 42  
 ----- 28

*nad4l*

*nad4l*

1.76 NC\_006340-NC\_009851

Avg ovsized: -115

LCA: Teleostomi-superclass

1.76.1 *nad2-trnW* -61

R  
*nad2*  
*trnW*

ACA AACTATTATATCAATTATATTATTACCTATTACCCCCACAGTCCTTAATTTATTTTAAGGGTTTAGGATAA - -TTTAAACCAAGGACCTTCAAAGCCCTAAACAGAAGTTAAAAACT 117  
 -CA ----- TTAGGCTAACATCTAGACCAAGGGCCTTCAAAGCCCTCAGTGGGAGTGAGAATC- 2  
 ----- 54

*nad2*

*trnW*

*trnW*

1.76.2 trnY-trnN -76

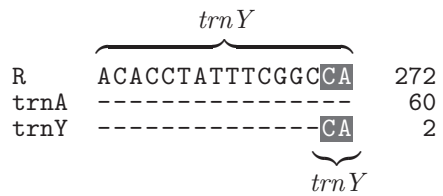
	<i>trnY</i>		
R	GGAAAGGGACCACCTTTATAAAATGAGGCTACAACCTCAACAGCCTA-TT--TCGGCCACCTTACCTTACACTGATATGCACAGCATTTTACCTAGTATGCGCGTAGCTACAAATTGTAGGCACGTCTTAC	125	
trnY	GGACTCGAACCT-CTGTCT--ATGGGGCTACAATCCACCGCTTAAAAACTCAGCCATCCTACC	60	
trnN	-----	0	
	<i>trnY</i>		

	<i>trnN</i>		
R	CATACTCTTCCCTAGATTAACAGGATTTTATCCTACTACAAT-TTAGTTAACAGCTAAACAC-CAGATTTCA	195	
trnY	-----	60	
trnN	-----CTAGATAGGCAGGCCTCGATCCTGC-AAACTCTTAGTTAACAGCTAAGCGCTCAAACCAGC	60	
	<i>trnN</i>		

1.76.3 trnA-trnY -210

	<i>trnA</i>		
R	CGAGACTCTACCCACATCTTCTGAATGCAACCAGACACTTTAATTAAGCTAAAGCCTTACAAAACCTACACCTCATATTCTTGTAATTTAATAACAACCTAATATTTATTTTTAGGCTATCTACTTC	128	
trnA	CGGGACATTACCCACATCTCTGCATGCAAAAACAGACACTTTAATTAAGCTAAAGCCTT	60	
trnY	-----	0	
	<i>trnA</i>		

	<i>trnY</i>		
R	TCCCCTGTCTGGGGGGGAAGCGGGAGAAGCCCCGGAGAAGTCATGGGGCTCCTCGGCTTACGGGAAGTGTAAGCTTTATTACACTGGTAAGGAAAGGGACCACCTTTATAAATGAGGCTACAACCTCA	256	
trnA	-----	60	
trnY	-----	0	

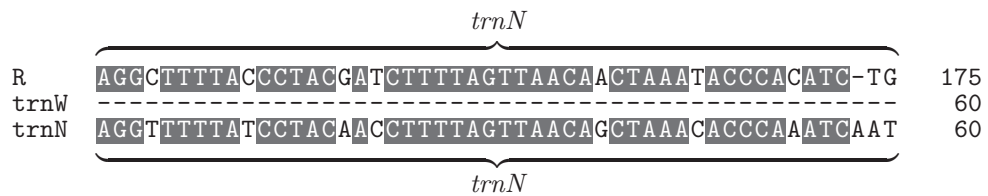
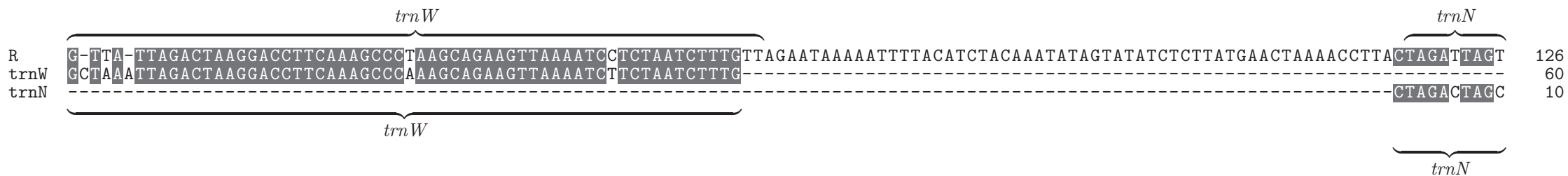


**1.77 NC\_006345-NC\_006344**

Avg ovsized: -148

LCA: Plethodontinae-subfamily

**1.77.1 trnW-trnN -58**



1.77.2 trnY-trnA -187

*trnY*

R	AAAAGGA-TTAAACCTTTATAAATGAGACTACAGCTGCACACCTATT-TCGGTCACCTTATCTATAGTATTACCCGATAGCTCTTCTCAACAAATAAAAATATTGTACCCTTATTTAGTATTGTACCTA	126
trnY	A--AGGACTTAAACCTTTATGATCGAGGCTACAACTCGACACCTTTTTTCGGACACCTTACCT	61
trnA	-----	0

*trnY*

R	ACCTGTAATCGCATTATCTATCTTAATTTAGACTATCAGAAATGATTAAGTTTATATGATACACCATTTAAAATTATTCAATTAACCTTTAAAATCCTAAATAAAGATAAATTTAATCTTTGTAAGAC	254
trnY	-----	61
trnA	-----	6

*trnA*

*trnA*

R	CTGTAAGACTTTTATCTTACATCTTATGAATGCAACCCAGACACTTTAATTAAG-	307
trnY	-----	61
trnA	TCGCAAGATTCTATCTAACATCCTTTGAATGCAACCCAAATACTTTAATTAAGC	60

*trnA*

1.77.3 trnA-cox1 -201

R	TAAGACTTTATCTTACATCTTATGAATGCAACCCAGACACTTTAATTAAGCTA-AGACCTTACTTGATTGGCAGACCCTTACCCATAATATTTTAATTAACTATACCCACATCTGGCCTTAATCTAC	127
trnA	CAAGATTCTATCTAACATCCTTTGAATGCAACCCAAATACTTTAATTAAGCTAGAG-CCTTA-----	61
cox1	-----	0

*trnA*

R TTCTCCCGCTTTGTGGGGGGGAAAAGCGGGAGAAGCCCCGGTAGAGAATTATCTGCTCTGAAATTTGTAACCTCATATGCTTACACCACAGGACTTAGTAAGAAGGATAACCTTTATAATACAACACC 255  
trnA ----- 61  
cox1 ----- 0

*cox1*

R TTACCTATGATAATTACCGATGATTCCTTCACAACAAATCATAAAGATATTGGTACCCTATATTT- 320  
trnA ----- 61  
cox1 -----TGATAATCACTCGATGACTATATTCACAACAAATCATAAAGATATTGGCACCCCTTTATTTA 59

*cox1*

**1.78 NC\_001673-NC\_006321**

Avg ovsiz: -148  
LCA: Annelida-phylum

**1.78.1 trnK-nad3 2**

*trnK* *nad3*

R -AGAGAGCTTGTAATAAGCACTTGACTTTTAAATCAAGAGATAG-TATAATTATT-TCTAGTTAATGATCCTTACAGCCTTATCCTCAGCCATTGCACTATTAGTCCCTATTA-TTATTTTGGG 119  
trnK GAGAAAGCTTGCTAA--GCATTAGTCTTTTAAACTA-AAAAAGATCTCTTTGGTCTCT----- 55  
nad3 -----CTA-TTA-TTAT--TTACA-T-TTATACTCAGAC-TAG---TAGTA-TCCTTCTTACTTATCCTT-- 54

*trnK* *nad3*

1.78.2 trnI-trnK -13

	<i>trnI</i>	<i>trnK</i>	
R	AGGGCCGG-ATGAACGGATAACTCTGATGACGTTAATTAAGGAACAAGCTTCCTGTATCTAACTAGAGAGCTTGTAATAGCACTTGACTTTTAAATC-AAGAGATAGTATAATT-AT-T-TCT		119
trnI	CGC-CGGGCATGAACGGACAGCTTTGATGTAGCTGAT-AACGAAGTA-CTTC		49
trnK	-----AGAAAGCTTGC-TA-AGCATTAGTCTTTTAAACTAAAAAAGA-TCTCTTTGGTCTCTTT		56
	<i>trnI</i>	<i>trnK</i>	

1.78.3 trnR-trnH -435

	<i>trnR</i>	
R	TAAGCA-TTAAAAAATGCGCGCCGATTTGACTCGGCGAGAGCACAAAGCATTGTTTTTTTACTTAGTTTATACTATACTCTATATATATATACGCATTTGTGTACTCTGATTGGGGGGGGGGGT	127
trnR	GTGGCAATTTA-----	11
trnH	-----	0
	<i>trnR</i>	
R	AATTTACAAAAAGCTATAATCCGAAAAGGCCCGACCGGGCGAGAAAAAAAAAAAAAAAAAAGAAAAAGTGGTGTTTTTAGGTTCTAATCCTTTAGAATGATGCCAATTTCCGAAAAACTCGACAGG	255
trnR	-----	11
trnH	-----	0
R	GACTTTTTAAATTTGCGTCCTTGCTAATATGGGCACGACGTATATTTGCGGTATTTACATAAGAAACGGCCTGTATCGAGCAAAATTTACAGTCTGTGCGGGGAAAAAATTTAACCTAAAAAATTGT	383
trnR	-----	11
trnH	-----	0



		<i>trnH</i>		
R	TCGGCGTGGGGCCTTTTTTTTTTTCAGTTTTTAAACATTA AAAATTTTCTCGGAGTTCTAATCA	TAAAGGTAGGTTACAAAAACCCCGAATTGTGGTTC	CGGAAACGTCAAAGAC-CCTTT	503
trnR	-----	-----	-----	11
trnH	-----	TAAA-ATAGTTTAAAAAAAACCTGTGTTGTGACCA	CAAAATTGTATACCTATTACTTT	58
		<i>trnH</i>		

**1.79 NC\_011128-NC\_013257**

Avg ovsized: -149

LCA: Endopterygota-infraclass

**1.79.1 trnM-trnI 1**

		<i>trnM</i>		<i>trnI</i>			
R	-CTAAATT	TAAGCTTTTGGGCTC	CATACCTCAAATATAAAG-T-AGATAAT	TCTTTTTTTTAATAAAGTGCCTGAT	TAAAGGATTATTCTGATAGGATAAATT	AAGTAAAT-ATTTACCTT	116
trnM	GCTAAA-ATAAGCTA	TTGGGTTTCATACCCCACTTATAAAGG	TCCGACCCCTTTTC	TTTTTA	-----	-----	60
trnI	-----	-----	-----	AATGAAGTGCCTGAC	TAAAGGATTATTTTGATAGAATAAATC	ATGTATTTTATATACCTT	60
		<i>trnM</i>		<i>trnI</i>			

**1.79.2 trnQ-nad2 -131**

		<i>trnQ</i>				
R	ATAGAATTA	AACTATAT-CTAAAAG	TATCAAAAAC	TATTGTGCTTATTACACTAAAAT	ATTATTAATAAAAAATATAAATTAATTATTTAGATTAAATTCTAATAAAAAATTATTAATTATAATTAT	127
trnQ	ATAGAATTA	AACTATTTCTAAA	-TATCAAAAAT	TTTTGTACATCATATACTAAAAT	GTA-----	60
nad2	-----	-----	-----	-----	-----	0
		<i>trnQ</i>				

*nad2*

R	TTTTAATTTACAACCTTAACTAACCCCCCTAAAATATTTTTTTTTTTTTATTTTAATTTTTAGAAC	191
trnQ	-----	60
nad2	-----	0

**1.79.3 rrnS-trnM -319**

*rrnS*

R	TA-AAATTTA-T-ATGTAATAAATTTTATAATAAATCCCTAAATCATAAAATTTTTCTTTAATAATAAATTAACCTAAATAGATTTTTTTTTTTTTTTTTTTTTATATTAATAATTTAATAATCAA	125
rrnS	CACAAAAATATTCATGTAATAAATAAATTA-AATAAAT---TATAGCC-AAAATCAAACTTTAA-----	60
trnM	-----	0

*rrnS*

R	TAATAAATTTTTAATAATTTCTTTTCCTTTCTTTTTATAATATTAATATTAATAACATAATTGCATATTAATTTTTATAATTCATATATTTTATATTATATTTATATACCATTATATATTTTGTTAAT	253
rrnS	-----	60
trnM	-----	0

R	AAATTAATAAATTATTAATATTAATAATAAATTAATATTTAATATATATATATATTATATAAAGATAAATAAAACACTTAAATGTTTTATTTACCATTTTTAATAATATTTACATAAAAAAAAAAATT	381
rrnS	-----	60
trnM	-----	0

*trnM*

R	AAAA-ATAAGCTAAATTTAAGCTTTTGGGCTCATACCTCAAATATAAAG-T-AGATAATT	438
rrnS	-----	60
trnM	AAAAGATAAGCTAAAT-AAGCTATTGGGTTCATACCCCACTTATAAAGGTCCGACCCCT	59

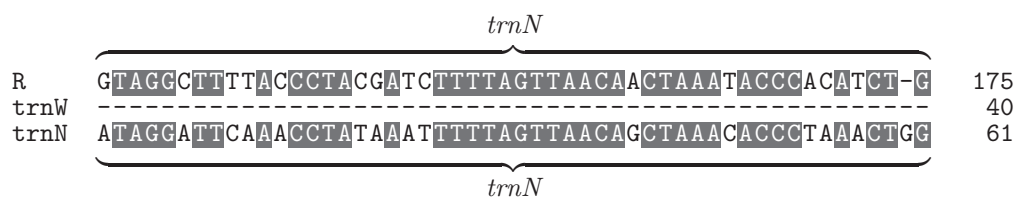
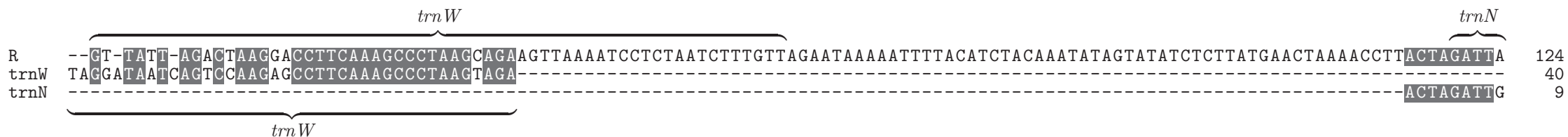
*trnM*

**1.80 NC\_006345-NC\_013571**

Avg ovsized: -163

LCA: Tetrapoda-superclass

**1.80.1 trnW-trnN -79**



**1.80.2 trnA-cox1 -200**



R TCTCCCGCTTTGTGGGGGGGAAAAGCGGGAGAAGCCCCGGTAGAGAATTATCTGCTCTGAAATTTGTAACCTCATATGCTTACACCACAGGACTTAGTAAGAAGGATAACCTTTATAATACAACACCT 256  
trnA ----- 61  
cox1 ----- 0

*cox1*

R TACCTATGATAAATTACCCGATGATTCCTTCTCAACAATCATAAAGATATTGGTACCCTATATTT- 320  
trnA ----- 61  
cox1 -----ATGTTTCATTAACCGCTGACTATTCTCTACCAATCACAAAGACATCGGAACCCTATATCTC 60

*cox1*

**1.80.3 trnY-trnA -211**

*trnY*

R AAAAGGATTAAACCTTTATAAATGAGACT-ACAG-CTCACACCTATTTTCGGTCACCTTATCTATAGTATTACCCGATAGCTCTTCTCAACAAATAAAATATTGTACCCTTATTTAGTATTGTACCTA 126  
trnY AAGAGGCCTTATCCTCTGTGCTT-AGATTTACAGTCTAA----- 38  
trnA ----- 0

*trnY*

*trnA*

R ACCTGTAATCGCATTATCTATCTTAATTTAGACTATCAGAAATGATTAAGTTTATATGATACACCATTTAAAATTATTCAATTAACCTTTAAAATCCTAAATAAAGATAAATTTAATCTTTGTAAGAC 254  
trnY ----- 38  
trnA -----TAAGGA 6

*trnA*

	<i>trnA</i>	
R	CTGTAAGACTTTATCTTACATCTTATGAATGCAACCCAGACACTTTAATTAAG-	307
trnY	-----	38
trnA	CTGCAAGACTACATCTTACATCTAGTGAGTGCAAATCAATTGCTTTAATTAAGC	60
	<i>trnA</i>	

**1.81 NC\_004373-NC\_008123**

Avg ovsized: -165

LCA: Ophidiioidei-suborder

**1.81.1 trnM-trnF -71**

	<i>trnM</i>		<i>trnF</i>	
R	GCTAAGACAAGCTTTTTGGGCCCATACCCCAAACATGTAGGTTTAACTCCTTCTTTTTGCTATGGTTGTCCGA		GTAGCTCAACTAAAGCATAACATTTGAAGTTGTTAAGATGGGACCTAGCCCCC-C	124
trnM	-----		-----	0
trnF			GTAGCTTAAATAAAGCGCAACACTGAAGTTGTTAAGATGGGCCCTAGAAAAGCTC	54
			<i>trnF</i>	

**1.81.2 trnQ-nad2 -80**

	<i>trnQ</i>		<i>nad2</i>	
R	GGGCTCGAACCTCCCGGGGAGATCAAAACTCCAGTGCTCCCACCTACACCACCTTTCTAGCAGGCC		CATATATCATAACTGCCC	128
trnQ	GGATTCGAACCCATCCTATAGAGATCAAAACTCTATGTGCTCCCAAATACACCACCTTCTA		-----	60
nad2	-----		-----	0
	<i>trnQ</i>			

	<i>nad2</i>	
R	TCCTTATGAGCCTAGGACTCGGGCACTACCATTAC-	162
trnQ	-----	60
nad2	-----TAATACTGGGCACAACCATTACA	23
	<i>nad2</i>	

**1.81.3 trnP-trnM -345**

	<i>trnP</i>	
R	-AGATTTTAACTCTCACTACTAGCCCCAAAATAATATTC-TAAGGGTAAACTAGCCTCTGCTATATGCAACGTGACCGCTACAGTACCCACACACATACATGTACACATCTATTTATATAGATATA	126
trnP	GAGAATCTAACTCCCACTACTAACTCCCAAAGCTAGTATTCTTAAC--TAAAATACTTTTGG-----	60
trnM	-----	0
	<i>trnP</i>	

R	CATATATACTTATGCATTTATATATCTATACCTATGTAGATACGTATACCCACATCTGTATCTACAACCATTTAGGCGTTTCTACACCTGTGCCTGTGTCCACCTGTATATAACTATGTATGTACAGA	254
trnP	-----	60
trnM	-----	0

	<i>trnM</i>	
R	TATATATATATATATATATATATATGCAGCTGCATACATGCACACCCCCACGCTATACAACACGCGCCCTATGAGAGTAAGTCGCTACAACCCCGCACACGGTAAAATCAGCTAAGACAAGCTTTTGG	382
trnP	-----	60
trnM	-----	0

	<i>trnM</i>	
R	GCCCATACCCCAAACATGTAGGTTTAACTCC	413
trnP	-----	60
trnM	-----TTAGCT--	6
	<i>trnM</i>	

1.82 NC\_011009-NC\_011007

Avg ovsz: -201

LCA: Platyroctidae-family

1.82.1 trnS2-cox2 -66

*trnS2*

```
R GGAGTTGAGCCCCATATGCTGGTTTCAAGCCAGCCGCATAACCGCTCTGCCACTTTCTTCTATC-AGAACCC TAGTTAAAAATCACATTACACTGCCTTATCGAGACAGATTTGTGGGTAAAAACCCC 127
trnS2 GGAGTTGAGCCCCATATGCTGGTTTCAAGCCAGCCGCATAACCGCTCTGCCACTTTCTTCTATCAAGAACC----- 73
cox2 ----- 0
```

*trnS2*

*cox2*

```
R GCGGGTCCTGAGCTTTAAGCTAGAATGGCACATCCCTCACAATTAGGATTCCAAGACGCGGCCTCACCAGTAATAGAAGAGC-T 210
trnS2 ----- 73
cox2 ----- GCTTTAAGCTAGAATGGCACATCCCTCACAATTAGGATTCCAAGACGCGGCCTCACCAGTAATAGAAGAGCTT 73
----- 73
```

*cox2*

1.82.2 cox1-trnD -72

*cox1*

```
R GATGCCCTCCCCCTACCCACACATTGAGGAGCCAGCTTTGTCCAAGTCAATCAAAGTGA CGAGAAAAGGGAGGAGTTGAGCCCCATATGCTGGTTTCAAGTCAGCCGCATAGCCGCTCTGCCACT 128
cox1 GATGCCCTCCCCCTACCCACACATTGGAAGAGCCAGCTTTGTCCAAGTCAATCAAAGTGA----- 62
trnD ----- 0
```

*cox1*

*trnD*  
 R TTCTTC TATC - AGAACCCCTAGTAAAA - ATCACATTACACTGCCTTGTCTGAGACAGATTTGTGGGTTAAAA CCCC GCGG 204  
 cox1 ----- 62  
 trnD ----- TATCAAGAACCCCTAGTAAAA TAGCACATTACACTGCCTTGTCTGAGACAGAGTTGTGGGTTAGAG CCCC GCGG 72  
*trnD*

1.82.3 trnD-trnS2 -465

*trnD*  
 R AAAATCACATTACACTGCCTTGTCTGAGACAGATTTGTGGGTTAAA CCCC GCGGGTCCTGAGCTTTAAGCTA ATGGCACATCCCTCACAATTAGGGTCCCAAAACGCGGCCTCACCAGTAATAGAAGA 128  
 trnD AATAGCACATTACACTGCCTTGTCTGAGACAGAGTTGTGGGTTAGAG CCCC GCGGGTCCTGAGCTTTAAGCTA ----- 72  
 trnS2 ----- 0  
*trnD*

R GCCTCTCCGCTTCCATGACCACGAACTTGTAAATCGTGCTTCTATTAGCACCTTCGTCTTTACATTGTGGCAACGGTCTCAACTAAACCCACCAACAAATACACTCTGGCCCCAAAGAAATTGAAAT 256  
 trnD ----- 72  
 trnS2 ----- 0

R CGTATGAACTATTCTCCCCTCAGTAATTCTTATCTGATTACTCTCCGCATACTGGACGAAATTAATGACCCACACCTCACCAGCAAAGCAACGGGTCACCAGTGGTACCAAAGCTACGAGTGTAATAA 384  
 trnD ----- 72  
 trnS2 ----- 0

R CTACGAAGACCCAGCCTTAGACTCATAATGCCCACGGCCAGTTTCGACTCCTCGAAGCGGATCCCCCGCCACAAACGTAGAATGACTCACGGATGCCCTCCCCCTCTACCACACTCGAAGAGCCAG 512  
 trnD ----- 72  
 trnS2 ----- 0



*trnS2*  
 R CTTTGTCCAAGTTCAATCAAGCTG **ACGAGAAAAGGGAGGAGTTGAGCCCCATATGCTGGTTTCAAGCCAGCCGCATAACCGCTC** - 597  
 trnD ----- 72  
 trnS2 ----- **ACGAGAAAAGGGAGGAGTTGAGCCCCATATGCTGGTTTCAAGCCAGCCGCATAACCGCTC** T 61  
*trnS2*

### 1.83 NC\_010199-NC\_010268

Avg ovsiz: -217

LCA: Percomorpha-order

#### 1.83.1 trnS1-trnL1 5

*trnS1* *trnL1*  
 R **CCTGCTGGCAACGAAGACTGCTAATCCTCATCCGCTCGGTTGAAATCGGAAGCTCACTCAATGCTCCTAAAGGATAATAGGCCTTCCATTGGTCTTAGGAAACCAAAAACTCTTGGTGCAAA** - 121  
 trnS1 **CCTGCTAGCAACGAAA** **ACTGCTAATTTTGGCAACTTTGGTTGAA** **CCCA** **AAAGCTCACTC** - 59  
 trnL1 ----- **CCCTC** **ATACTTCTGTAGGATAACAGGCATCCATTGGA** **CTTAGGAT** **CCAAAACTCTTGGTGCAAA** T 67  
*trnS1* *trnL1*

#### 1.83.2 trnH-nad5 -126

*trnH*  
 R **GTTTAAATAAAAA** **CATTAGATTGTGATTCTAAAGACAGAAAGTTAAAAC** - **CTCCTTATCCACC** **CCAAAAACAATAGCTCCTGAAACACTTCTTAAACCCAGTGTAGTCACCAATGCCCTTGGTTCAAATCC** 127  
 trnH **TTTAA** **CAAAAA** **TATTAGATTGTGATTCTAAAGATAGGGGTTAATCTG** **CCCTCGTCCACCATAA** ----- 64  
 nad5 ----- ----- 0  
*trnH*

		<i>nad5</i>	
R	AAGTAGTAGCCATGCCCCCTTACACATTACCTTAACATCCACCCTAACAAATAACCCTCCTGCTCTTAGC		197
trnH	-----		64
nad5	-----	TCTTA	5
		<i>nad5</i>	

**1.83.3 trnL1-trnH -532**

		<i>trnL1</i>	
R	AATAGCCCTTCCATTGGTCTTAGGAACCAAAAACTCTTGGTGCAAATCCAAGTAGCAGCTACAACCCAGCCCCTAACTTCCACCTTTTCCTTATACCTAAAAATACCAGGCCACACCCAAGTACCAC		128
trnL1	AAACAGCGCATCCATTGGACTTAGGATCCAAAACTCTTGGTGCAAATCCAAGTGAAGTA		60
trnH	-----		0
		<i>trnL1</i>	

R	TAGTAATTATTCCGCCAGCCAGCATATAAGCTACCCCAAAATCAAGCCGCTACCACTAACTGACCTAAATCTTATATTTTACACTCATTAAACCAACATCTTAACTGGCTTATCATAAACAAATAT	256
trnL1	-----	60
trnH	-----	0

R	GTATAACTTAATTACACCCGTCTAAACGACATCATAATCACAAGAACCAGGCTAATCTTCTCCCAACACAACCTATTGTAATAGACTAATTTTACATATGGGCTATAAAGAACAAAAATACCTATTTACA	384
trnL1	-----	60
trnH	-----	0

R	TCTTTATTAATGAAACTTAAGCCTCAGACACTTAAAAATATTACCCTTGACCACCAAGATAAAAAGCCTAGAGATTCGGATATCCGAGTATTCTAGGCTTTTATTATCGCCGGGCTACGCCACACGACT	512
trnL1	-----	60
trnH	-----	0

R TATTCAATACTAATGTCCCACTAGAACACAACCTTTTAAACATATAAAAATATACCCAACCCGTGTACCTATAATATTTTCCC  
 trnL1 -----  
 trnH -----

640  
60  
47

*trnH*

*trnH*

*trnH*

R AGTTAA AAC-CTC 652  
 trnL1 ----- 60  
 trnH GGTAA TCTGCC 60

*trnH*

### 1.84 NC\_010199-NC\_022480

Avg ovsiz: -229  
 LCA: Perciformes-order

#### 1.84.1 nad4-trnS1 -61

R ATCTCCTCCCCTGCTTCTCCTGATTACAAAACCGAGCTAATTGTGGCTGAA TTATATGTAGGTACAACCTTTAAAAGCCCTCCCAAGAATAGACTTAAAACCCGGCCACGAGAGAGGCCTGGT 128  
 nad4 -----  
 trnS1 -----

54  
13

*nad4*

*nad4*

*trnS1*

*trnS1*

*trnS1*  
 R GCAACGAAGACTGCTAATCC TCA TCCCTCGGTTGAAATCCGAA- 173  
 nad4 ----- 54  
 trnS1 CGCAACAGAGACTGCTAATCC CTG TCACTTGGTTGAACTCCAAAAG 59  
*trnS1*

1.84.2 *trnH-nad5 -94*

*trnH*  
 R GTTTAATAAAAAATTAGATTGTGATTCTAAAACACAGAAAGTTAAAACCTCCTTATCCACC----- 128  
 trnH GTTTAACTAAAAATTAGATTGTGATTCTAAAACACAGGGGTTTAAGCCCCTTGTCCACC----- 60  
 nad5 ----- 0  
*trnH*

*nad5*  
 R AGTAGTAGCCATGCCCCCTTACACA TTACCTTAACATCCACCCT-AAACAATAACCCCTCCTGCTCTTAGC 197  
 trnH ----- 60  
 nad5 ----- TTATAATAACAACCAGCCTGATCCTTATCTTTACCACTCTGTTCC 44  
*nad5*

1.84.3 *trnL1-trnH -534*

*trnL1*  
 R -AATAGCCCTTCCA TTGGTCTTAGGAACCAAAAACCTCTTGGTGCAAATCCAAGTAGCAGCTACAACCAGCCCCTAACTTCCACCTTTTCTTATACCTAAAAATACCAGGCCACACCCAAGTACCA 127  
 trnL1 TAACAGTCATCC- TTGGTCTTAGGAACCAAAAACCTCTTGGTGCAAATCCAAGTAGCAGCT----- 60  
 trnH ----- 0  
*trnL1*

R CTAGTAATTATTCCGCCAGCCAGCATATAAGCTACCCCAAATCAAGCCGCTACCACTAACTGACCTAAATCTTATATTTTACTACTCATTAAACCCAACATCTTAACTGGCTTATCATAAAACAAATA 255  
 trnL1 ----- 60  
 trnH ----- 0

R TGTATAACTTAATTACACCCGTCTAAACGACATCATAATCACAAGAACCAGGCTAATCTTCTCCCAACACAACACTATTGTAATAGACTAATTTTACATATGGGCTATAAAGAACAAAATACCTATTTAC 383  
 trnL1 ----- 60  
 trnH ----- 0

R ATCTTTATTAATGAAACTTAAGCCTCAGACACTTAAAAATATTACCCTTGCACCACCAAGATAAAAAGCCTAGAGATTCCGGATATCCGAGTATTCTAGGCTTTTATTATCGCCGGGCTACGCCACACGAC 511  
 trnL1 ----- 60  
 trnH ----- 0

R TTATTCAATACTAATGTCCCACTAGAACACAACCTTTTAAACATATAAAAATATACCCAACCCGTGTACCTATAATATTTTCCCGGTAGATATAGTTTAAATAAAAACATTAGATTGTGATTCTAAAACACAG 639  
 trnL1 ----- 60  
 trnH ----- 45

*trnH*

*trnH*

*trnH*

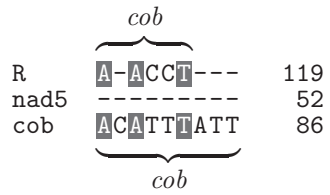
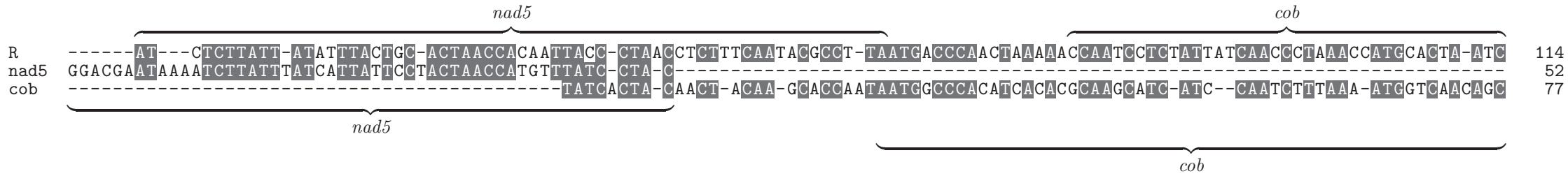
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 trnL1 ----- 60  
 trnH GG**GTT**TAA**CCC** 59

*trnH*

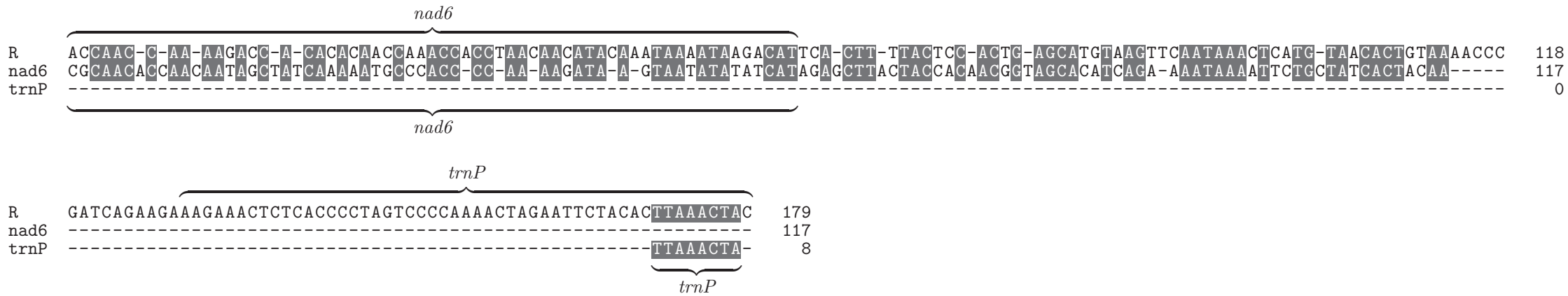
1.85 NC\_008778-NC\_006286

Avg ovsized: -247  
 LCA: Episquamata-order

1.85.1 nad5-cob 10



1.85.2 nad6-trnP -57



1.85.3 trnT-trnE -696

	<i>trnT</i>	
R	TAGCTTA--ATACAAAGCATTGGCCTTGTAAGCCGAAGATG-GCAATCAACCTCCCTACGACATTCTGCACCAACTACCTCAATTCCCCCTACATTTTCACACACTTCATATCTTCATTTTTTGAAG	125
trnT	-AGCTTACCAGATAAAAGCGCCGGCCTTGTAAGCCGGAACGAGCGCTCCGC-TCC-----	53
trnE	-----	0
	<i>trnT</i>	
R	GCCCTTTCTTGAACGTCAGCTTGCTAAAATGTCCTAAAATCCGGCTTTTCCAAATTTTATGTCTATCGAGCAGTACAAACGCGCCGCTCCTGAATTTGGCGTAAGTGATGGATTTTTTATAATTTTCG	253
trnT	-----	53
trnE	-----	0
R	TATGGTTTTTCAGCTTCGTTTTAAACCTTATATTTAAAGCACTCAACTAAGCGCTGGCTACCCCTATCGACTGCCAATCATGACCAGTCTCGTGGCTCACTCTTACAAGTTGCACCTATTTAATGACCT	381
trnT	-----	53
trnE	-----	0
R	TTCCAATACCTCTGGTTGTTAGGTCAGGCACTATCTTATAAGGTTACCAATCCCGTGGTCTTCACGACACATGGCGTTTGGGGGGATCTCATGGAGCTAACGGTCCTTAATCACGGTCACCCTGGTTT	509
trnT	-----	53
trnE	-----	0
R	AGGCGCTTTGGCCTTTCTCTCTTTTTTTAGGTGGAATTCAATAGCACGTTTCGTCCGGGGCCAGCCCATTAGTTAAAATTGTCCATGTTACAATCGAACCCCTCTACAGCCATGTTGAGTTATCTTTTAA	637
trnT	-----	53
trnE	-----	0
	<i>trnE</i>	
R	TGGTCTCGGGACATACTCTATTTTTAAAAAAAACATAAAAAATTTATTTTTTCCCCCCTCCCCCAAAATCCACTACCTATTTTTATTTGGACTATCCAAAACCAAGGACACGAAAAATCCA	765
trnT	CGTTGTT-----	53
trnE	GAAAAACCGCCGTTGTG-----	17
	<i>trnE</i>	

	<i>trnE</i>	
R	ATTCAACT-	773
trnT	-----	53
trnE	-TTCAACTA	25
	<i>trnE</i>	

**1.86 NC\_006343-NC\_006335**

Avg ovsized: -252

LCA: Plethodon-genus

**1.86.1 cob-trnT 31**

	<i>cob</i>	<i>trnT</i>	
R	TT-TTACTTTTTCCTTCTACTCTCATTAAGTGGATTAATAGAAAATAAACTTATA--AAAT-GATGCTATTGTAGTTTAATTAACATTGGTCTTGTAACCAAA-ATTGGGGGCTAATTAGCC		119
cob	TTATTTATATTC-TTC--CTCCCACTAATAGGAGTAGCCGAAAACAAACTTATA--AAAT-GATA-----		59
trnT	-----TAATTGATA-GAAATTTACACC-AAATCAATACTACCGCAGTTTAAGAAAACATCAGCCTTGTAAGCTGAAGAATGGGGATTTAAAATCTC		89
	<i>cob</i>	<i>trnT</i>	



1.86.2 nad5-nad6 3

	<i>nad5</i>	<i>nad6</i>	
R	ATATTTTAAATTTCTGCCCTCTTGGCACTTATTTTATTCTCCCTAACAGCAGCGCAAAGACCCACAAAACACCCCCCAAGTAATCCCTAACACTACAAATA-		101
nad5	-TA--G-TAA-CACTTACCTCTAC-C-CTT-TTAATGGCCTCCC-----		36
nad6	-----CCCTCACAGCACGTAAAGATCCACGAGATACCCACGAGTAATTTCTAATACCGTAAATAA		61
	<i>nad5</i>	<i>nad6</i>	

1.86.3 trnT-trnP -791

	<i>trnT</i>	
R	GTTTAATTAAACATTGGTCTTGTA AAC-CAAAATTGGGGGCTAATTAGCCCCCCCTAGCCTCCACTAATATAAAGTGTGTCTTAGCCTTATATAACTGAACTATATATTCTTCACCATCAACTATGA	127
trnT	GTTTAAGAAAACATCAGCCTTGTAAGCTGAAGAATGGGGATTTAAAATCTCCC-----	53
trnP	-----	0
	<i>trnT</i>	
R	ACGGATTGAATTACCTAACCTAGCCCAAACGGACACCGGCACACAATCTAATATGGGCTAATTTTATGCCCCAGCCTTATATAACCGAACCATATATTATCCACCACCCGCTATGAACGGATTGAA	255
trnT	-----	53
trnP	-----	0
R	TTACCTAAACCTAACCTAACGGACGCAACACAGTCTAAAATCTATAATATATACCCGCAGGTCATGCGAATATCTCTCAGCTCATTTTATATAAATACACAGTAAATTACCTCCACAAATAAAATAAA	383
trnT	-----	53
trnP	-----	0
R	CAACAAATACTACTAAACTGTTATACCTCTCGAACAAACCACTATAATATAAGAAATAAATACCTTACCCTTACTTCCCCCATAGTTTTTTATTTACCTCCAGCATCTACCTAAATATACCAAATATT	511
trnT	-----	53
trnP	-----	0

R GTCTTGCCACAGCCCCAACCTCATTCAATGTATAAACACACACATATCCCAGGTTTTCTTATATACACAAATCTACCCCGGAAATTTAACACAAGCAGGCCATTTACCATAACTCAAACCTTATAGTA 639  
trnT ----- 53  
trnP ----- 0

R CAACAGACCCCCCGCATAAACCAAACCTTGATGGGTAAAAAATGTGTAATTACCTTGCAAATTTAAAACCGTTTTACAAATAATATATAATCCTGAACAAAAAATCTACACTAAAATAAAAAATTTCT 767  
trnT ----- 53  
trnP ----- 0

R TAAAAACAGAAAAAATATTAACCAAAAAACAAACATCTCACCTCACTTCCCATAATCACTTTATAGCCCAATTTCAATTTTAAGTTAAAAATTTCAAGCAAAAAAGATTTTCACTTTTGTCTCTGACAC 895  
trnT ----- 53  
trnP ----- 51

*trnP*

*trnP*

R CCAAGGCCAAAATTCTAGAAACT-- 918  
trnT ----- 53  
trnP CCAAGGCCAAAATTCTA-AAATTTAA 75

*trnP*

*trnP*

### 1.87 NC\_022670-NC\_012688

Avg ovsized: -255

LCA: Neoptera-subclass

1.87.1 trnM-nad2 6

	<i>trnM</i>	<i>nad2</i>	
R	-GCTAATATTAAAGCTTATAGGTTTCATACCCCTATCAATAGAAGTA-AAACCTTCTTCTAATTAATAAATATTAAA-ACAATAATAACAAGACTAACTT-TAAGAACCCTTATAGTAAATATCAT--C-		119
trnM	AGCTAATA--AAGCTTAAAGACTCATAATCTTTATATAGAAAATTTCAATT		60
nad2	-----TAATTAATAAAA-ATTATTGATCATATTAATTTT-CTATTTTATTTTAAATA-TTA-AGAACCTTTAATTACT		66
	<i>trnM</i>	<i>nad2</i>	

1.87.2 trnI-trnM 6

	<i>trnI</i>	<i>trnM</i>	
R	AGATGCCTGAATAAAGGATTACTTTTGATAGAGTAAATCATGCACAATTATGCTCTTACTAT-AAATAATTAGATAAGCTAATATTAAAGCTTATAGGTTTCATACCCCTATCAATAGAAGTAA-AAACCT--		124
trnI	----GCCTGATAAAGGATTATTTTGATAGAATAATTCATG-AAAATAAAGTTTTT-CTTTCATTTAATAA-----		65
trnM	-----TAA-AAGATAAGCTAATA--AAGCTTAAAGACTCATAATCTTTATATAGAAAATTTCAATTTTC		60
	<i>trnI</i>	<i>trnM</i>	

1.87.3 rrnS-trnQ -777

	<i>rrnS</i>		
R	--AAATTAT-TATAAG-GACT-AATTGTTTAAACCGCAA-CTGCTGGCACAAAATTAGTTAGACCTTAATCAATTAAGTGGATCATAAATAATTACATTTCCAATTCTACAAATTGTGCCATACACCATT		123
rrnS	TTATATTTTATATAAAATACTGAATTTTCTTACT-CAA-----		37
trnQ	-----		0
	<i>rrnS</i>		



1.88.1 *cox3-rrnL* 2

	<i>cox3</i>	<i>rrnL</i>	
R	GATGTGGTGTGACTCTTTCTTTACTTAACTATTTATTGGTGGGGAAATTCTAGGGTCTA-A		119
<i>cox3</i>	GATGTGGTTTGGCTATTTCTGTATTTAGTTATTTATTGGTGAGG-AA-ACTCGG-TCTACTAA		60
<i>rrnL</i>	AAACTTAGGTTAAAAAAACCTGCCAAAATTTCAAATTTAGTAATGAGTTTTACTCAG-TT-T-		60
	<i>cox3</i>	<i>rrnL</i>	

1.88.2 *trnS1-trnW* -169

	<i>trnS1</i>	<i>trnW</i>	
R	AAGAGGTGTAAAGTTTAACTTCTAATTAAGCTAAAGCAGAAATGTTGCCTCTTTAGAAGAGTCCATGGGGGCAAGTTGAGCACGATAAAAATAGGCTTAAATATTGAAAAGTTTGCCTGGGGCAGAACT		128
<i>trnS1</i>	A-----		1
<i>trnW</i>	-----		0
	<i>trnS1</i>		

	<i>trnW</i>	
R	TGAGGCGGAGCTCAAGTCTGTGAGTTGGGGGGTAGCAAAGC	170
<i>trnS1</i>	-----	1
<i>trnW</i>	-----	0

1.88.3 *trnW-cox1* -641

	<i>trnW</i>	
R	GCGTGGGGCAGAACTTGAGGCGGAGCTCAAGTCTGTGAGTTGGGGGGTAGCAAAGCATTATTTGTTGCAAAGAAGAATGCTGCGCCGGCTCATAGAGTAGTGGGGGCATCGGGGGAGGAGGTTGAGT	128
<i>trnW</i>	-----	0
<i>cox1</i>	-----	0

R TGCTGGTATGCCAAGTTGAGGTGCGGCTATCCTAGCTCTAGCGCTTGACGGCTGATTAACGCCCGGAAAAAGAAAGAACAAAAGAAAAGTTAAAAATTTTCGCGATACCAAAGGACCCCCTGGGGGC 256  
 trnW ----- 0  
 cox1 ----- 0

R TGGCTAACCTCAGTACCAAAGTGCCAGCAAGAAAATGATCAAGCTTGAAAATAATAGATAATTTTCAGAGGGGGTGATAAAAAAATGTGTGTACCAAAGAAAAAATTTTTGAGTTTAGATTA AAAACC 384  
 trnW ----- 0  
 cox1 ----- 0

R AGATAGCGTCGCCAACAATTTTCATGGCGAATGGGGGGAAAATTGGAGAGTGGGGGGGGTTCATGAAGTGCTGCAAGACTTTTTTAGCTGAAGCCCAGATTAGGCTTTAAAGCCTAAACCTGTTGAAAA 512  
 trnW ----- 0  
 cox1 ----- 0

R ACAGGTCAGGCCGGCAAAAAGTCTTAAAGTGGCAAAACGAGAGAATTTAGGCTCTAAACCCCGATTTTCGGGAGGGGCGTGGTTAAAGTTGAGCACGATAAAAATAGGCTTAAATATTGAAATGTTTAG 640  
 trnW ----- 0  
 cox1 ----- 0

*cox1*

R AATAAAA TGGAGAGGGGCGACTAATCATAAAAGATATTGGTACATTATACCTTATTG-CTGG- 700  
 trnW ----- 0  
 cox1 -AATAAGTGGAGAGGGGCTACGAACCACAAAAGATATTGGTACTTTATA-CTTGTTGGCGGGG 60

*cox1*

**1.89 NC\_004448-NC\_001922**

Avg ovsiz: -286

LCA: Alligatorinae-subfamily

1.89.1 trnG-cox3 0

1.89.2 cox3-nad3 -74

*cox3*  
 R GACATTTTGTAGATGTCGTCTGACTCTTCCTTTACATCTCAATCTACTGATGAGGTTTCATGCTCTTCTAGTATAAATAATACAAGTGACTTCCAATCACTAAACCCCTAACACACAACAAGGGGAAAA 128  
 cox3 GACACTTTGTAGACGTCGTCTGACTTTTCCTCTATATCTCGATCTACTGATGAGGATCGT----- 60  
 nad3 -----  
*cox3*

*nad3*  
 R GCAATCAACCTTCTTACCATATTCATAGTAAACCTCCATCACCGCCGCAGCCGTAATCACTAT- 190  
 cox3 ----- 60  
 nad3 -----AACCTATTTATCATACTCACAAATATCCTCAATCACCGTTTCAATCGTAGTCGCCCTA 57  
*nad3*

1.89.3 atp6-trnG -784

*atp6*  
 R ATAATCCAAGCCTACGTCTTCGTCCTCTATTATCCCTATACCTTCAAGAAAAACGTAATGTCACACCAAACACACTCCTTTCACATAGTCCACCCCAGCCCCTGACCCCTCGCCGGGGCCATAGCC 128  
 atp6 ATAATCCAAGCATACGTCTTCGTCCTCTATTATCCCTATATTTACAAGAAAAATTCATAA----- 60  
 trnG -----  
*atp6*

R GCCATATTATTAACAACAGGCCTGACCTTCTGATTCCACTATGACTCTAGCCTTATTCTATTGCTCGGCCTAATCACCACTCTATTAGTAATACTCCAATGATGACGAGACATTATCCGAGAAAGCAC 256  
 atp6 ----- 60  
 trnG -----

R	CTACCTAGGACACCACACACCTGCAGTACAAAAAGGACTACGCTACGGCATAATCCTTTTTATCACATCAGAGGTCTTCTTCTTCTGGGCTTCTTCTGAGCATTTTATCACTCAAGCCTTTCCCCCA	384
atp6	-----	60
trnG	-----	0
R	CCCCTGAGCTAGGGGGACAGTGACCCCCAGTCGGAATTACCACCCTTGACCCATTTGAAGTTCCCCTCCTAAACACAGCTGTCTCCTTGCCCTCTGGGGTAAACAGTAACTGGGCCCACCACAGCTTG	512
atp6	-----	60
trnG	-----	0
R	ATGGAAGCCAACCGAACACAAGCAATTCAGGCCCTAACACTCACCGTACTCCTTGGCCTATACTTCACCGCCCTTCAAGCCATAGAGTACTACGAAGCCCCCTTTACAATCGCAGACAGCACCTACGG	640
atp6	-----	60
trnG	-----	0
R	ATCAACATTCTTCGTTGCAACCGGCTTCCACGGCCTCCATGTTATTATTGGCTCAACATTTCTCATAGTCTGCCTATATCGACAGACAAAATATCACTTCACATCCAACCACCCTTCGGGTTTCAAG	768
atp6	-----	60
trnG	-----	0
	<i>trnG</i>	
R	CCGCTGCCTGATATTGACATTTTGTAGATGTTCGTCTGACTCTTCTTTACATCTCAATCTACTGATGAGGTTTCATG	844
atp6	-----	60
trnG	-----	0

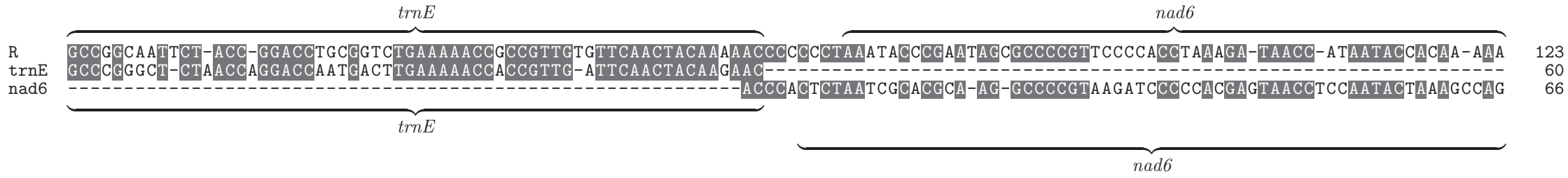
**1.90 NC\_006286-NC\_008225**

Avg ovsized: -289

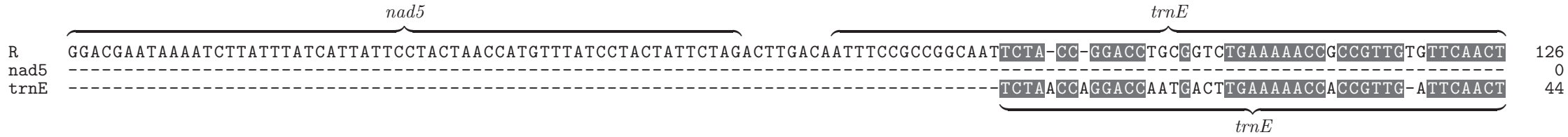
LCA: Teleostomi-superclass



1.90.1 trnE-nad6 2



1.90.2 nad5-trnE -83



R - 126  
 nad5 - 0  
 trnE A 45

trnE

1.90.3 trnP-trnF -787

	<i>trnP</i>	
R	CT---TTAAGCGCGCCTCATCTCCCGCCGCCAAAACGGGCATTTTAAACTAAACTATCCTCTGCAATGGCTGGGCTCTGCCAGGCGTTTATGTCAATTATGCGTATATAGAGGTACAGTACAAACTA	253
trnP	GAGACTTAAACTC-CCACC-C-CCAGCTCCCAAAGCTGAGATTCTTCATTAAGTATCCTCTGCAA-CCC-----	67
trnF	-----	0
	<i>trnP</i>	
R	TGTATAATAATACATTAATTTCTTGTCCCATAACAGTGATTTGCCAAAGGTAAACTCTTAATTATACTAAAGATAGACTATGTATATCGTGCATAATATCATCTAACCATGGGTGAACCATATCTAC	253
trnP	-----	67
trnF	-----	0
R	ATTCGTTCTTTACAGTACTGCCAGACAAACCATGAATCAGTTCTTGTCAATACGAATATTGTCCGGTATTGGGTTATTTCTTTATTTAGCTTCTCACGTGAGAATCATCAACCCTTGTCAGTTAAACA	381
trnP	-----	67
trnF	-----	0
R	CTCATTCCCTAGTCTCAGGCCCATTAATATAGTTGCAACCCTTACTCACTTTTTCCAAGGCCTCTGGTTGTAAGATCAGGGTCCTCTAAATCCTCAATCACCTCTCCTCACTTTTTCCAAGGCCTCT	509
trnP	-----	67
trnF	-----	0
R	GGTTGATGGGTTAATTACACTTTGCCGTAAACTCATAGCATCCCTGCACCTTTCCGGCAGCTGGTATCTTTTATTTCTCTATCTAGGCCTCTTACAATCACCCAGTGGAGTAGCCCAATCTAATTGTAGG	637
trnP	-----	67
trnF	-----	0
R	TGGAAGTCACGGTGCACCTGCATTACTGTACTATTTTCATCTCTTGAGTAATGTGTATGAATGTGCGATAGACATATTTTTATTAACAAAAACGCATACCCTGTTTTGCTGGTCTCACTCTTCGCCATTTT	765
trnP	-----	67
trnF	-----	0

R CTTCCTATGTTTTCCCTCTTGTACCAAGGATTTCAAATTCATTTTACCTAGTTACAATAATAAATACACAATAAATTGACCAACAAACTGTTTCTGTAGCTTAACCAAAGCAGGGCACTGAAGATGCC 893  
 trnP ----- 67  
 trnF ----- TTACCGTAACTTAATTAAAGTTTAATATTGAAGCTATT 38

*trnF*

*trnF*

R AAGATGGCACCCCATC-GAAC 913  
 trnP ----- 67  
 trnF AGGATGGGCCCTAATAAAGCCC 59

*trnF*

*trnF*

### 1.91 NC\_023228-NC\_006355

Avg ovsiz: -289

LCA: Percomorpha-order

#### 1.91.1 trnM-nad2 23

R GCTAAAACAAGCTATTGGGCCATAC-CCCAGCCATATAGGTTAAAACCTATCCATAACAT-ATGAACCCC-CTAGCACTATTTATACT-CATCACAGCACTCTTATCCGGCACATTTATTAC- 120  
 trnM GCTAATAGAAGCTATTGGGCCATAC-CCCAAAAATGTTGACTAA----- 44  
 nad2 -----ATACA CCCAAACAAGTTGATTAACCTTCA-A-CGATTGCTTCATGAGCCCCTATATT-CTCTCGATCTTTCTTTTC-GGACTCGGCCTAGGAACCACAATTACA 99

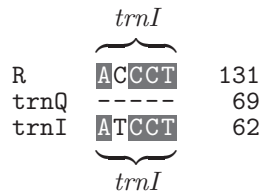
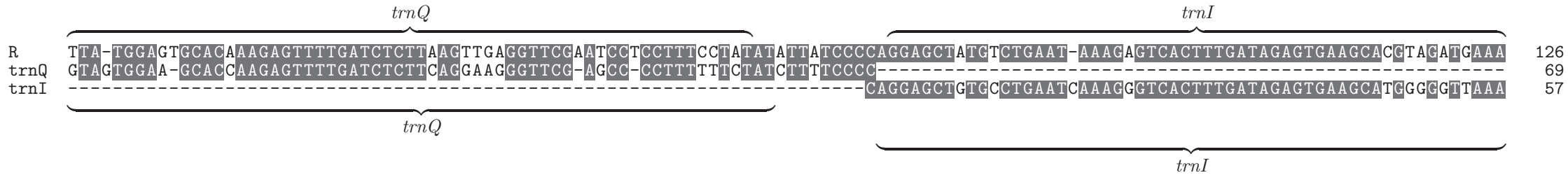
*trnM*

*nad2*

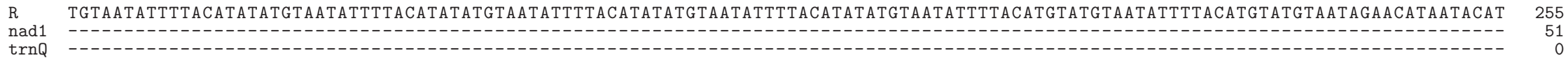
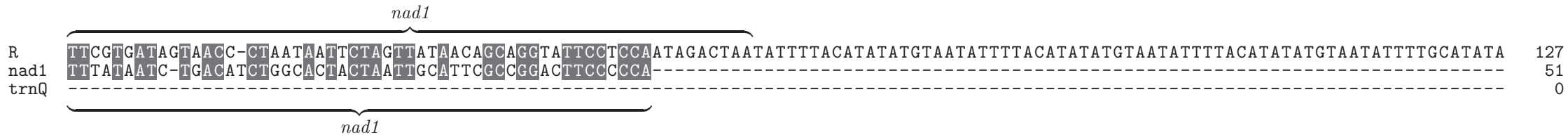
*trnM*

*nad2*

1.91.2 trnQ-trnI 1



1.91.3 nad1-trnQ -893



R	TCCA	CTCA	TAAACTT	ACTA	AATAG	ATGTAT	TAAACG	CCCAT	AGGT	TATAT	TCAT	ATATT	TATAT	ATCAG	TATAT	CACCT	ACAT	AGTAA	ATTA	AATA	ACC	ATA	CATT	GGAT	TTCA	AGA	ATCA	AGCT	CCT	TAC	AT	383											
nad1	-----																												51														
trnQ	-----																												0														
R	TCT	CAAG	ATCT	TATCT	TGAG	AGA	AATAG	TATT	CTCT	CTCT	ACTTT	ATG	CTAG	TATG	CGGG	ATCC	CAT	CATG	TAC	ACCT	CCT	ACT	TATCT	AGT	CAG	TTCT	TATTT	TATA	ACAT	ACCT	TGC	ATG	CTG	TAA	511								
nad1	-----																												51														
trnQ	-----																												0														
R	TAA	AGTT	CTAC	ACATA	CTT	GAC	ATGA	AGT	GTT	CTCC	AGGG	GATA	AAG	GGG	TTTT	CCT	CTCT	CCCT	TGTT	GACT	CG	ACT	AGT	GTCT	GC	TTA	GA	GA	AAT	ATAT	CTGG	GTA	ACT	CATA	ACCA	ATTT	CAT	CTA	639				
nad1	-----																												51														
trnQ	-----																												0														
R	TT	ACT	ACAAA	AGAC	ATAC	AGAC	ATTT	TATT	GGA	AC	ACT	ACATA	AAG	TC	TATA	AA	CATA	CAT	TTTT	ACT	GT	CTTT	TAT	AT	CCG	CC	CGC	CTT	AAT	ACA	AA	CT	TAT	AGT	CCT	ATA	CAC	AGT	AAT	AGAA	ATCC	CG	767
nad1	-----																												51														
trnQ	-----																												0														
R	G	ACT	CTTT	AATTT	ACCT	CAGT	GATTT	CGAC	ATA	AAAA	ATTTT	CCAT	CTT	ACAT	CTCT	CAA	AGA	AG	CA	CA	AA	ATAT	TAA	ACA	AA	ATTT	ACT	A	AG	CCT	AAAA	ATTTT	TG	AG	ATT	ATTT	CG	ATT	ATA	AAAA	895		
nad1	-----																												51														
trnQ	-----																												0														
R	AAT	CA	AAAA	ACA	AGCT	ACT	AAAA	TAT	CACA	AA	CCA	AGT	AACT	TTG	AAAA	TT	-TAG	GA	AA	TAG	TG	TAT	GG	AGT	GC	ACA	AA	AG	ATTT	TG	AT	CT	CTT	AA	AG	TTG	AG	GG	TT	CG	AAT--	1005	
nad1	-----																												51														
trnQ	-----																												63														

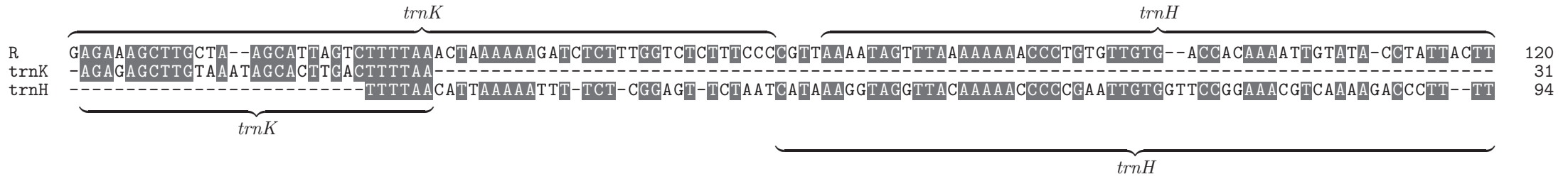
} *trnQ*  
} *trnQ*

### 1.92 NC\_006321-NC\_001673

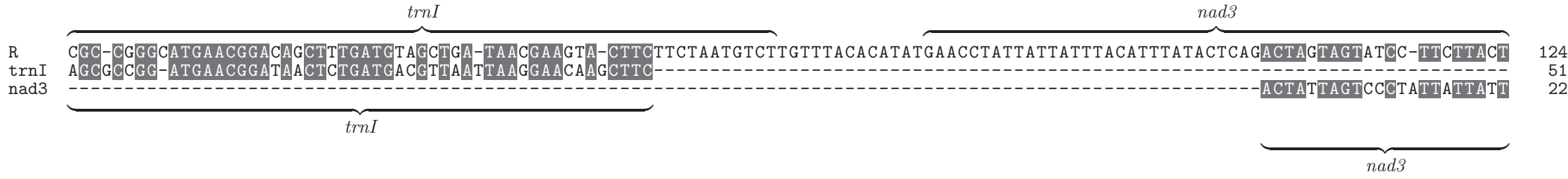
Avg ovsized: -307

LCA: Annelida-phylum

1.92.1 trnK-trnH 6



1.92.2 trnI-nad3 -54



1.92.3 trnR-trnK -875

*trnR*

R	GTGGCAATTTATGCATTTTTGGTTTTCGGCCCAAAAAAATGGGAAAATCCCCAACCTTTTATGTATATATTATATATATGTTTGTGTTATAAAATATTTATTACGGCAAAAATATATATACTTTTATATAGT	128
trnR	TAAGCA-TTAA	10
trnK	-----	0
	<i>trnR</i>	
R	ATTTTAACTTAAAACTAAAAAATACAACATAAATAAGGTAAAGAACTTTTCACAAGAACTAAAAAAGTTTTTAAATTTTTTTTTTTTTCTTTATGTATAATGTACTATATATATATATGGGATGAATTAA	256
trnR	-----	10
trnK	-----	0
R	AATTTATAAATTTTATTTAATAAATTATATTAATGAGTTAATTATATTAATAAAGAAATTTATGTTATATATTAATATATACTCTATATTTTTTTTTTCACTTAAGGAAAAAATATCTCCAAAAA	384
trnR	-----	10
trnK	-----	0
R	CACACATACGTGCAATACCCCTATTTAGGTGCTAGTACAGGTGTAAGCCATATTTTAGTAAATACATAAAATTTTTAAAAAATACCCTGTTTAGGTTCTACTATAGTCCCAGACGGCCTCTTCCGG	512
trnR	-----	10
trnK	-----	0
R	ACACACCCCTAAACAACAAAAAATACACAAATATTACACTTTAGCCTTCTAACCAAGGTTAAAGTCAACTTTTACACTTAATTTAACTTTATTAGTGTTTTCCCTCGTAAAAAATTTTTTTTCCA	640
trnR	-----	10
trnK	-----	0
R	TCTGTACATTTCTGCGGAAAACTTTTTTTTTGCCTTTTTTTTTATAAGGCCATTTCAGGTTAAAAATTCGCCATTTTACCCTGTGCACGAAACACCCTTAAAAATGACAAATTTTGACACTTTTTTTACAC	768
trnR	-----	10
trnK	-----	0

R GTTTTTTACACGTTTTTACATATTTTTTTTTCCCTAATTTTTTTTTACTTTAAAGTAAATAAAGGTTATTATATTTATTTTTATATTTACAAACAATATTATCACATATAGAGAGGAGAGAAAAGCTTG 896  
trnR ----- 10  
trnK ----- AGAGAGCTTG 10  
trnK

trnK  
R CTA--AGCATTAGTCTTTTAACTA-AAAAAGATCTCTTTGGTCTCTT 941  
trnR ----- 10  
trnK TAAATAGCACTTGACTTTTAATCAAGAGATAG-TATAATTA-TTTCTA 56  
trnK

**1.93 NC\_015076-NC\_006917**

Avg ovsiz: -311  
LCA: Jenkinsia-genus

**1.93.1 trnI-trnM 1**

trnI trnM  
R GACCGCTTAAGGGGCACTTTGATAGAGTGACTAAAGGGGGTTGAACTCCCCCAGCTCCTAA-TATGGTAAGCTAAAAAAGCTTTGGGCCCATACCCCGAATATGTTGGTTA-AACCCCC 119  
trnI ----- 62  
trnM ----- AGTAGGGTCAGCTAAATAAGCTTTTGGGCCCATACCCCAAACATGTTGGTTAGAATCCTT 60  
trnI trnM



1.93.2 nad1-trnQ -4

	<i>nad1</i>	<i>trnQ</i>	
R	T-TCGTGCTCTGACACCTTTTCTTTCATTGTCAGCACTGCCGCACTTCCCCTCAATT-TAGGAGATTAGAAAAGCCGGGATTTGAACCCAGCCCGCAGAGATCAAAACTCTGAGTGCTCCCGCTA-		122
nad1	TCTTGTCCCTCTGGCACATTGCCCTCCCCGTCGGGGCCGCTGGTCTCCACCCAGTTCTA-----		60
trnQ	-----ATTAGAAAAGAAGGGACTCGAACCCATCCTCTAGAGATCAAAACTCTAGGTGCTTCCACTAC		61
	<i>nad1</i>	<i>trnQ</i>	

1.93.3 trnQ-trnI -930

	<i>trnQ</i>	
R	GGATTTGAACCCAGCCCGCAGAGATCAAAACTCTGAGTGCTCCCGCTACACCACTCTCTGAATTGTTACCGCCAGGCTCTGCCCCGCCCGGACGTCCTCCCTTTCTGGTGATTAATATATACTATGTA	128
trnQ	GGACTCGAACCCATCCTCTAGAGATCAAAACTCTAGGTGCTTCCACTACACCACTTCTI-----	59
trnI	-----	0
	<i>trnQ</i>	
R	TTTACACCATAAATTTATTTTCAGGTACTATCAAGAAACCATTAATACTAAGAAACACCAGGTACCCTATAAGATTTATCAACTTAGTGTGGAATAAATGAATATTTGATCATTAAATCCCCATAATCTT	256
trnQ	-----	59
trnI	-----	0
R	ATATGAATGCATATTACTCTCTATCAACATCCCTAATTCTACAAATATAATGCGCAGTAAGAAATCAGCAACCCATATCTAATTGCATATCATGAATGATAGGGTCAGGGACTTACGGTGTGGGGGTT	384
trnQ	-----	59
trnI	-----	0
R	ACACAGAATGAACTATTACTGGCATCTGGTTTCTATTTTCAGGGCCATACTAGTATATTTCCCCATCAACTGAATTAATTTGCATAAGTTAATGGTGTAGGACTAACGGTTCTTTACTCCCCATGCCA	512
trnQ	-----	59
trnI	-----	0

R AGCGTTCTCTATGCGACATCTGGTTCTTTTTATTTCCGGGTCACITTTCAAATTGCATTTGGCGACTCCTTCCTAATGTTATTAGCGAAGGTGGCACTACACTTTGCCTGAGTAAACAACACTGTAACACT 640  
trnQ ----- 59  
trnI ----- 0

R CTATAGACTAAAATAGAAGACTTGCATAAGTAATATCAAGTACATAAGGTTATTCCCTTAATCATCTATCTACTCGTAGAATGCCCGGGGTGTATGGTTAAAGGAATTTGCTCGGCAAACCCCCCTA 768  
trnQ ----- 59  
trnI ----- 0

R CCCCCCTTAATCCGAAAGAACITTTGTTGTCTCCTGTCAAACCCCTAAACCAGGAAAAATTCAGACAGATCGTCACTGGGTAAAAATGTGAAATGAAGGTATGTGAGTATAATAATAAAAAAATTC 896  
trnQ ----- 59  
trnI ----- 0

R ATGCCCAAAGCCCCCTCTTTACCTGCAATTCTTCGGCCGAACCCCCCATTTTTCCCCTTGGGCCGAAGGATTCTTGTTTAAGGCGGAACTGTGCCTGACCCTTAAGGGGCACTTTGATAGAGTGA 1024  
trnQ ----- 59  
trnI ----- 35

*trnI*

*trnI*

*trnI*

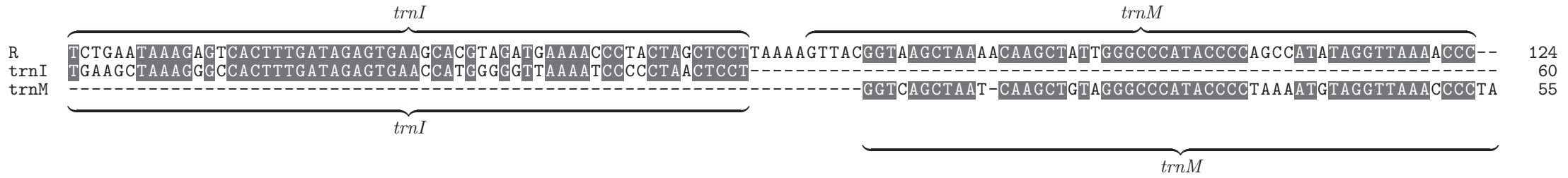
R CTAAAGGGGTTGAACT- 1041  
trnQ ----- 59  
trnI GTTATGAGGGTTAAAGTC 53

*trnI*

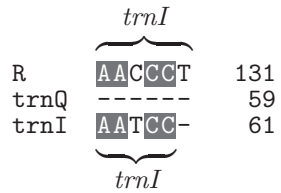
**1.94 NC\_023228-NC\_008327**

Avg ovsiz: -314  
LCA: Soleoidei-suborder

1.94.1 trnI-trnM -10



1.94.2 trnQ-trnI -12



1.94.3 nad1-trnQ -922

	<i>nad1</i>	
R	TTCGTGATA-GTAACCCCTAATAATTC	127
nad1	ATAGTTATTTGGAATC-TAGCTATTC	25
trnQ	-----	0
	<i>nad1</i>	
R	TGTAATATTTTACATATATGTAATATTTTACATATATGTAATATTTTACATATATGTAATATTTTACATATATGTAATATTTTACATATATGTAATATTTTACATATAGAACATAATACAT	255
nad1	-----	25
trnQ	-----	0
R	TCCACTCATAAACTTACTAATAGATGTATTAACGCCCATAGGTATATCATATATTATATATCAGTATATCACCTACATAGTAAATTAATAACCATACATTGGATTTCAAGAATCAAGCTCCTTACAT	383
nad1	-----	25
trnQ	-----	0
R	TCTCAAGATCTTATCTTGAGAGAATAGTATTCTCTCTACTTTATGCTAGTATGCGGGATCCCATCATGTACACCTCCTACTTATCTAGTCAGTTCTTATTTTATAACATACCTTGCATGCTGTAA	511
nad1	-----	25
trnQ	-----	0
R	TAAAGTTCTACACATACTTGACATGAAGTGTCTCCAGGGGATAAGGGGTTTTCTCTCTCCCTTGTTGACTCGACTAGTGTCTGCTTAGAAGAATATATCTGGGTAACCTACAACCAATTTTCATCTA	639
nad1	-----	25
trnQ	-----	0
R	TTACTACAAAAGACATACAGACATTTATTGGAACACTACATAAGTCCTATAAACATACATTTTTACTGTCTTTATATCCGCCCGCCTTAATACAAACTATAGTCCTATACACAGTAATAGAAATCCCG	767
nad1	-----	25
trnQ	-----	0
R	GACTCTTTAATTTACCTCAGTGATTTGACATAAAAAATTTCCATCTTACATCTCTCAAAGAAGCAACAAATATTTAAACAAAATTTACTAAGCCTAAAAATTTTTGAGATTATTCGATTATAAAAA	895
nad1	-----	25
trnQ	-----	0

*trnQ*  
 R AATCAAAAAACAAGCTACTAAAATATCACAAACCAAGTAACTTTGAAAATTTAGGAAAATAGTGTATGGAGTGCACAAAGAGTTTTGATCTCTTAAGTTGAGGTTCGAAT-- 1005  
 nad1 ----- 25  
 trnQ ----- AGGAAGTGGTGTAAAGG-GAGCACGAAGAGTTTTGATCTCTTCAGTAAGGGGTCGATTCC 59  
*trnQ*

**1.95 NC\_015076-NC\_008683**

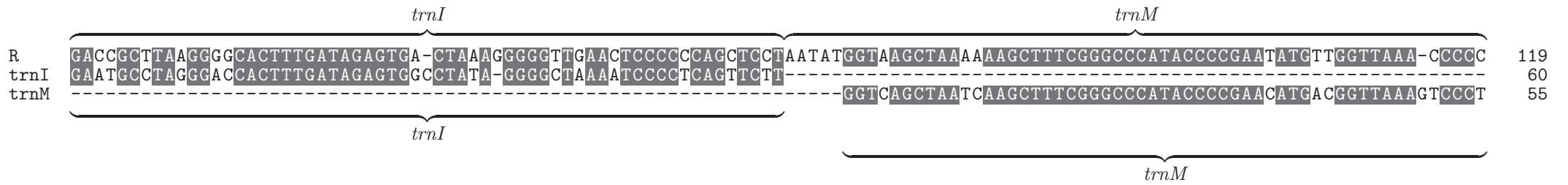
Avg ovsized: -327

LCA: Otocephala-clade

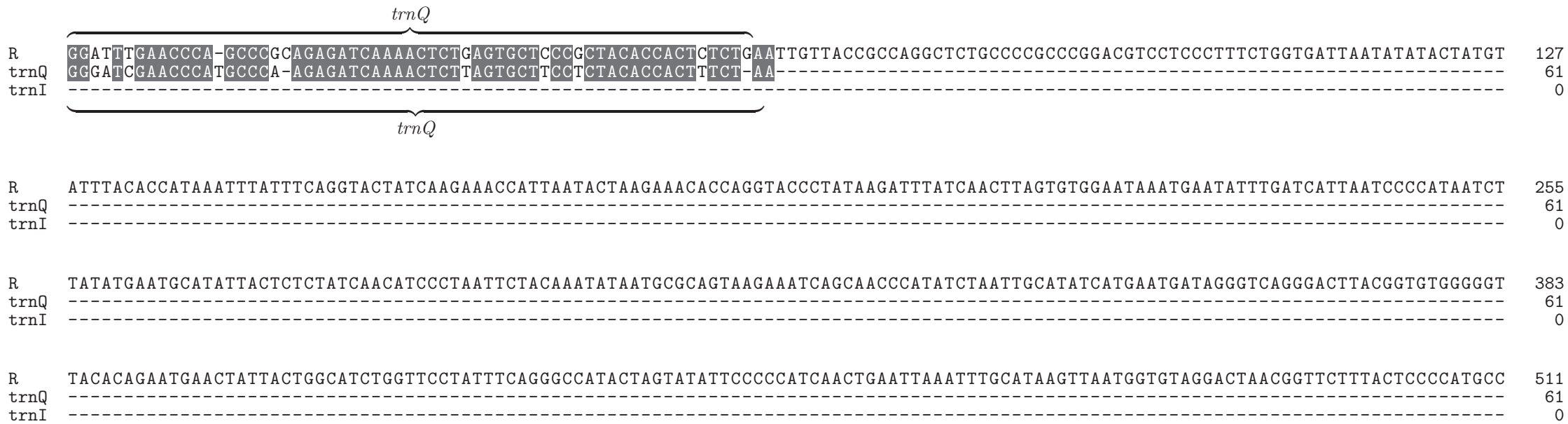
**1.95.1 rrnS-trnV 1**

*rrnS* *trnV*  
 R GCCTCAAGGGGAGGCAAGTCGTAACATGGTAAGTGTACCGGAAGGTGCACTTGGAA GAATCAGAGTGTGGCTGAGACAGATAGGCATCTCCCTTACACCGAGAATACACCCAAGCGA-TT 119  
 rrnS GAC--AAGGGGAGGCAAGTCGTAACATGGTAAGTGTACCGGAAGGTGCACTTGGATTAAAC----- 59  
 trnV ----- CAGGGCGTGGCTGAGTTAGTCAAGCATCTCACTTACACCGAGAAGACATCCATGCAAGTT 60  
*rrnS* *trnV*

1.95.2 trnI-trnM -5



1.95.3 trnQ-trnI -979



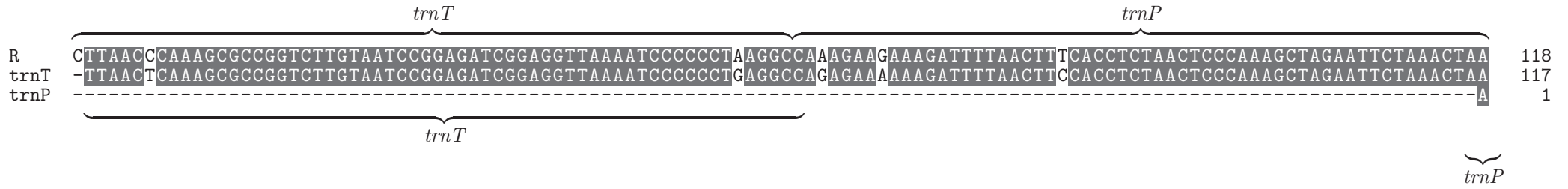
R	AAGCGTTCTCTATGCGACATCTGGTTCTTTTTATTTCCGGGTCACITTTCAAATTGCATTTGGCGACTCCTTCCTAATGTTATTAGCGAAGGTGGCACTACACTTTGCCTGAGTAAACAACCTGTAACAC	639
trnQ	-----	61
trnI	-----	0
R	TCTATAGACTAAAATAGAAGACTTGCATAAGTAATATCAAGTACATAAGGTTATTCCTTAATCATCTATCTACTCGTAGAATGCCCCGGGGTGTATGGTTAAAGGAATTTGCTCGGCAAACCCCCCT	767
trnQ	-----	61
trnI	-----	0
R	ACCCCCCTTAATCCGAAAGAACTTTGTTGTCTCCTGTCAAACCCCTAAACCAGGAAAAATTCAGACAGATCGTCACTGGGTAAAAATGTGAAATGAAGGTATGTGAGTATAATAATAAAAAAATT	895
trnQ	-----	61
trnI	-----	0
R	CATGCCCAAAGCCCCCTCTTTACCTGCAATTCTTCGGCCGAACCCCCCCCATTTTCCCCCTTGGGCCGAAGGATTCTTGTTTAAGGCGGAACTGTGCCTGACCGCTTAAGGGGCACTTTGATAGAGTG	1023
trnQ	-----	61
trnI	-----	0
	<i>trnI</i>	
	-----	
	<i>trnI</i>	
	-----	
R	ACTAAAGGGGGTTGAACT	1041
trnQ	-----	61
trnI	-----	0

**1.96 NC\_009584-NC\_009585**

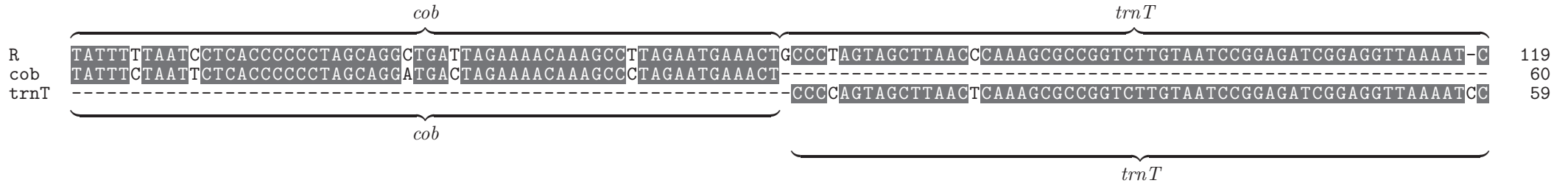
Avg ovsized: -331

LCA: Ilisha-genus

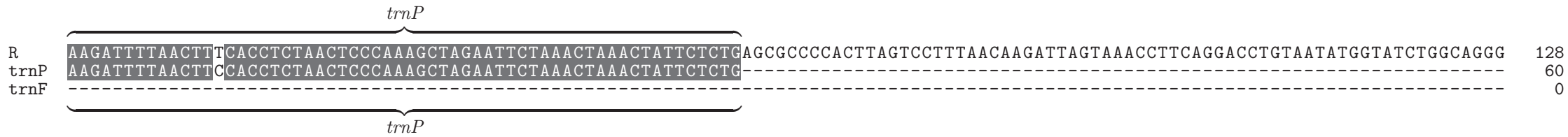
1.96.1 trnT-trnP 1



1.96.2 cob-trnT -1

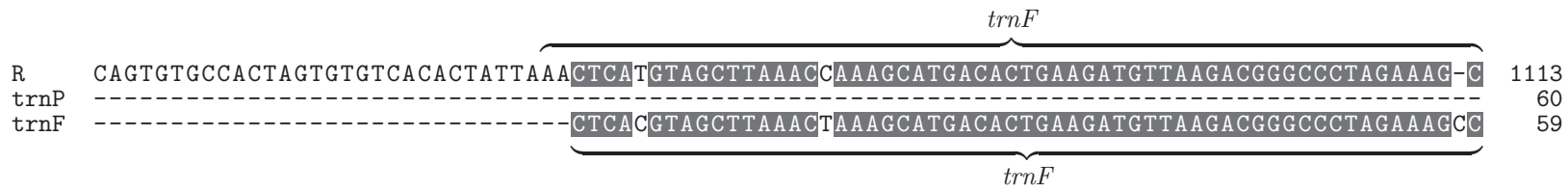


1.96.3 trnP-trnF -995





R	AGGTTTATAAATGTTTCAATGCCTAAAACCTTTATGTCCATTATAAATTAGAATATTTTCCTTCAACATCAATGGGGATAGCACAAATTACAATGTATGACTCCATATTACATGGTGTAGTACATATATG	256
trnP	-----	60
trnF	-----	0
R	GTGTTTATACATGCTATGTATAATCACCATGGATTTATTTGAACCAAAGCAAGTAATAGATATTACTAAGACATTCATAAAGCATACTATTAGAATTCAGAATTTAGTCGATCACAACTGATAAATAT	384
trnP	-----	60
trnF	-----	0
R	AATAATCCCATAAAAATTTACTACAACATTTTCTATGCCCTTTTCAATATTAATAGTTTTATCTATATTTAATGTAGTAAGAAATCACCAACCAGTTTATATAAAGGCATATCATGAATGATAGGGTC	512
trnP	-----	60
trnF	-----	0
R	AGGGACAATAATCGTGGGGGTTTCACAAAATGAACTATTTCTGGCATCTGGTTCCTATTTTCAGGGTCATACATCTCTTAATCCTCCCATAGTGAATTATATCTGACATAAGTTAATGGTGGTATTACT	640
trnP	-----	60
trnF	-----	0
R	AATGGTTCTTTACCCACATGCCGAGCGTTTCATTTATATGCATAGGGTATCTTTTTTTTTCGGGTCACTTTCACTAACATTTGACGACTCCTTCCTAATGTAACTGACAAGGTTGAACATTTCTTGC	768
trnP	-----	60
trnF	-----	0
R	TTGCAAGTATTAAGTGTTCATACTTCACCAACATTGATAGAAGAACCACATAAGTGATATCAGGTGCATAAAGTACTTATCTTTACTCCATACTTTCTGTATACTGTGCCCCCCTCCTTTTTACG	896
trnP	-----	60
trnF	-----	0
R	TGAAGGTTTTTGGCGGACAAAACCCCTTTCCCCCTTGGCGCGAGAGAACCTTGTTTTATTCCTGTCAAACCCCAAAACCAGGGAAGATTCGACTTGGCGCTCAACAAAATTCGATATGCGTTGACTATA	1024
trnP	-----	60
trnF	-----	0

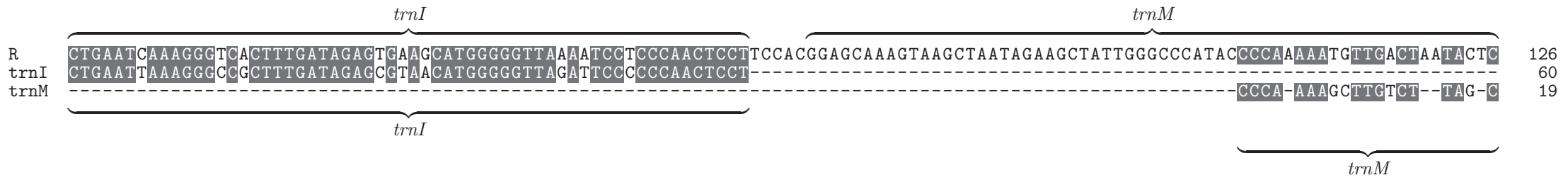


**1.97 NC\_006355-NC\_004373**

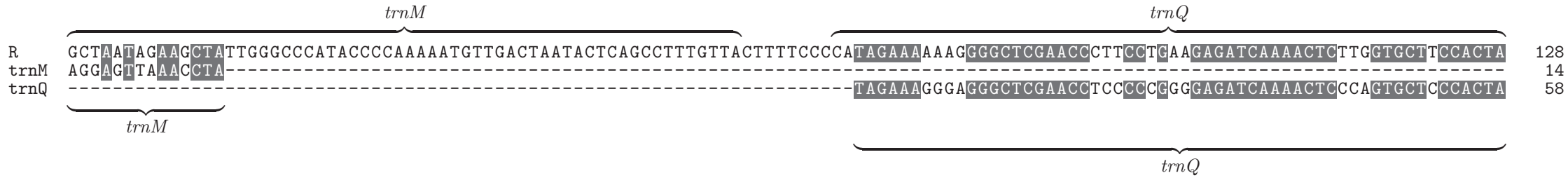
Avg ovsized: -339

LCA: Holacanthopterygii-superorder

**1.97.1 trnI-trnM -43**



1.97.2 trnM-trnQ -56



R - 128  
trnM - 14  
trnQ C 59

*trnQ*

1.97.3 trnP-trnF -918



R  
trnP  
trnF

253  
69  
0

R CCCCCTAGTCCAAATCACTACACAAACCAAGTACCCACATCCCGTTCAATTGTTGTTGACTTGCGCAGTAAGAACCGACCAACAAGCACATATCTTAACGCATTTCGTTTCTTGATGGTCAGGGATAAC 381  
trnP ----- 69  
trnF ----- 0

R CCGCCGTGGGGGTCACTAGCCTCACACTATTACTGGCATTGTTGGTTCCCTATTTTCAGGAACATTCCCTACTTTACCCCATCCGTTTATCGAACCTTGCATAAGTTAATGCGGTGAATACTTATTCCCGG 509  
trnP ----- 69  
trnF ----- 0

R TTACCCAACATGCCGAGCGCTCTCTCCACAGGTACAAGGGGTTTTCTTTTTGGTTTTCTTTTCATTTTGCATTTTACAGTGCACCCTAAAATGACCGAAAAGGTAGAACATTCTTCTTGCACGCCGGG 637  
trnP ----- 69  
trnF ----- 0

R CGGTAATTGAATGATGTAAAGATATTACACAAAGAATTGCATTAATAGCTATCAAGAGCATAATGCTTACTTCTACCTAGGAGATTTAGTGCCCCGGGGTGTTCCTACTAAAATAAATCTTTGCCCC 765  
trnP ----- 69  
trnF ----- 0

R CCTTCCCCCGCCCCAACTCACTATTAATTCATCACCCGTCTCTAAAACAACATTTTTCTAAGTTAAGCCCCGTTTGCCTCTTCCCCCTAAATCATATTACATAAATTATTATATTCATTACA 893  
trnP ----- 69  
trnF ----- 0

R AAATTGAAAATTTTCTCAAATTACAATGATGTAAATAATTTTCATCAAGACAACCTCCACCAAATTTCAATCGAATTTTCCCAACAGCTGTCGTAGCTTAACA AAAAGCATAACACTGAAGATGTTAA 1021  
trnP ----- 69  
trnF ----- 35

*trnF*

*trnF*

R *trnF*  
GATGGAC CCTTAAAAGT-C 1039  
trnP ----- 69  
trnF GATGGGACCTAGCCCCCC 54  
*trnF*



1.98.3 trnP-trnF -785

	<i>trnP</i>	
R	GGGAGTTTAAACCCACGCCCTAGCTCCCAAAGCTAGAGCTCTAA-GTTAAACTATTCTTTGGCG-A-GCTCCGCCTCCAGGCAAGTACATATGAACGTA-ATGTACATATATGTATTATCCCCAT-TA	123
trnP	AG-ATTTTAACTCTCACTACTAGCCCCCAAAAATAATATCTTAACGGTAAACTACCCTCTGCTATATGCAAAGTGAACCGCTACAGTACCCACACACATACATGTACACATCTAT-TTATATAGATATA	126
trnF	-----	0
	<i>trnP</i>	
R	-ATAGA-ATTTAACCATATATAAGTAATGTAATACTACATTAAGTGAAGACACATAAATATTTGATATCAAACATATAAATAACCAAAATACTATAAATTTTACATAAACCAATTATAAGTTCAAACAT	249
trnP	CATATATACCTTATGCATTTATA-----	148
trnF	-----	0
R	ACAAGAATTGATATACCTTTAGCGAAATTGAATTGCCCTAGCTAATAAACCCATTAGTCTAGTTATACCAAGATTCAACATCCCTAAAAGACAAAATCCGATGCAGTAAGAGACCACCATCAGTTGAT	377
trnP	-----	148
trnF	-----	0
R	TTCTAAATGCATACGGTTCTTGATGGTCAGGGACAATAATTGTGGGGGTTTCACTTAATGAACTATTCCTTGCATTTGGTTTCTATTTTCAGGAACATAAATTGAAAATACCCCATTCCTTTTATTGAAA	505
trnP	-----	148
trnF	-----	0
R	ATTGCATAAGTTAATGGTGGAGTACATTCTACTCGTTACCCACCATGCCGAGCGCTCTTTCCATAGGGCAGCTGGTTCTCTTTTTTAGGTTTCTTTTCAATTGACATTTTCAGAGTGCACCCTAAAATG	633
trnP	-----	148
trnF	-----	0
R	TTAAATTAAGGTTGAACATTTCTTTGTAATAATTAATATATGTGAATTCTTAAAAGACTTTAATTTATGAATTGCATAATTGATATCATGAGCATAATGAATGAAATATTCTCCTAACTTTTCTCTTA	761
trnP	-----	148
trnF	-----	0
R	AAACGCCCTCGGCTTTTACGCGTTAAACCCCCCTACCCCCCACTTCTCGAGACATCATTATAAATCCTGCAAACCCCCCGGAAAACAGGAAAGCCTCTACCAGTGGTTTTTAACTCTAAAGTA	889
trnP	-----	148
trnF	-----	0

		<i>trnF</i>	
R	TTTTTGATGATATGATATTGTAATATTACAAATGCTAAT	GTAGCTTAAATTAAAGTATAACACTGAAGATGTTAAGATGGGCCTAAAAAGCC-	981
trnP	-----	-----	148
trnF	-----	GTAGCTCAACTAAAGCATAACATTGAAGTTGTTAAGATGGGACCTAGCCCCCC	54
		<i>trnF</i>	

**1.99 NC\_023228-NC\_005961**

Avg ovsized: -347

LCA: Teleostomi-superclass

**1.99.1 trnQ-trnI -15**

	<i>trnQ</i>	<i>trnI</i>	
R	TTATGGAGT-GCACAAAGAGTTTTGATCTCTTAAGTTGAGG-TTCGAAATCCTCCTTTCCTATATATTATCCCA-GGA-GCTATGTCTGAATAAAGAGTC-ACCTTGATAGAGTGAAGCACGTAG-AT		122
trnQ	A-ATGAGGTAGTACTGGAAGTTTTGATCT-TTCAGGTGCGGGTTCGAGTCCTGCTT-----		54
trnI	-----	CCACGGAAGC-GTGCCTGAGAAAAG-GACTACCTTGATAAAGT-AAAAACAGAGCAT	54
	<i>trnQ</i>	<i>trnI</i>	

	<i>trnI</i>	
R	GAAAAACCT-	131
trnQ	-----	54
trnI	TGAACCTCTC	64
	<i>trnI</i>	

1.99.2 trnW-trnA -54

	<i>trnW</i>	<i>trnA</i>	
R	AGGTTATTTGACCAAGAGCCTTCAAAGCTCTAAGAAAGGGTGAAAATCCCTTAGTCTTTGG		121
trnW	-GGTTAT		6
trnA	-----ATAGAACTCGCGACA-ACT-CATCACATCTCCTGCATGCAACACAGACACTTTAATTAAGCCA		61
	<i>trnW</i>	<i>trnA</i>	

1.99.3 nad1-trnQ -973

	<i>nad1</i>	
R	TTCGTGATAGTAACCCTAATAATTCTAGTTATAACAGCAGGTATTCCTCCAATAGACTAATATTTTACATATATGTAATATTTTACATATATGTAATATTTTACATATATGTAATATTTTGCATATAT	128
nad1	CT-----	2
trnQ	-----	0
	<i>nad1</i>	
R	GTAATATTTTACATATATGTAATATTTTACATATATGTAATATTTTACATATATGTAATATTTTACATATATGTAATATTTTACATGTATGTAATATTTTACATGTATGTAATAGAACATAAATACATT	256
nad1	-----	2
trnQ	-----	0
R	CCACTCATAAACTTACTAATAGATGTATTAACGCCCATAGGTATATCATATATTATATATCAGTATATCACCTACATAGTAAATTAATAACCATAACATTGGATTTCAAGAATCAAGCTCCTTACATT	384
nad1	-----	2
trnQ	-----	0
R	CTCAAGATCTTATCTTGAGAGAATAGTATTCTCTCTCTACTTTATGCTAGTATGCGGGATCCCATCATGTACACCTCCTACTTATCTAGTCAGTTCTTATTTTATAACATACCTTGCATGCTGTTAAT	512
nad1	-----	2
trnQ	-----	0



R AAAGTTCTACACATACTTGACATGAAGTGTTCTCCAGGGGATAAGGGGTTTTCTCTCTCCCTTGTTGACTCGACTAGTGTCTGCTTAGAAGAATATATCTGGGTAACCTCATAACCAATTTTCATCTAT 640  
 nad1 ----- 2  
 trnQ ----- 0

R TACTACAAAAGACATACAGACATTTATTGGAACACTACATAAGTCCTATAAACATACATTTTTACTGTCTTTATATCCGCCCGCCTTAATACAAACTATAGTCCTATACACAGTAATAGAAATCCCGG 768  
 nad1 ----- 2  
 trnQ ----- 0

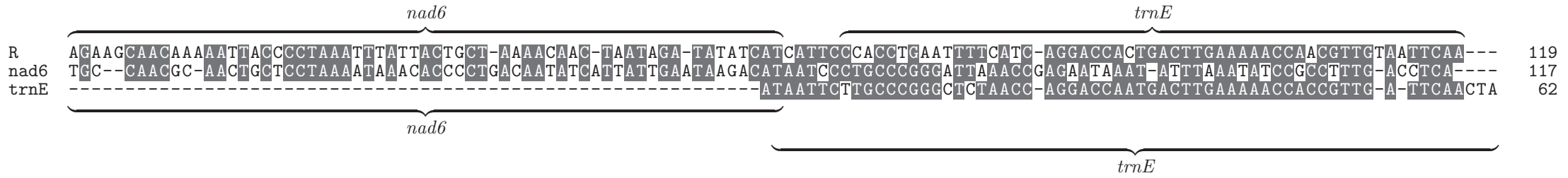
R ACTCTTTAATTTACCTCAGTGATTTTCGACATAAAAAATTTCCATCTTACATCTCTCAAAGAAGCAACAAATATTAACAAAATTTACTAAGCCTAAAAATTTTTGAGATTATTCGATTATAAAAAA 896  
 nad1 ----- 2  
 trnQ ----- 0

R ATCAAAAAACAAGCTACTAAAATATCACAAACCAAGTAACTTTGAAAATTTAGGAAATAGTGTTATGGAGTGCACAAAG *trnQ* AGTTTTGATCTCTTAAGTTGAGG-TTCGAAT 1005  
 nad1 ----- 2  
 trnQ ----- AGTTTTGATCT-TTCAGGTGCGGGTTCGAGT 30  
*trnQ*

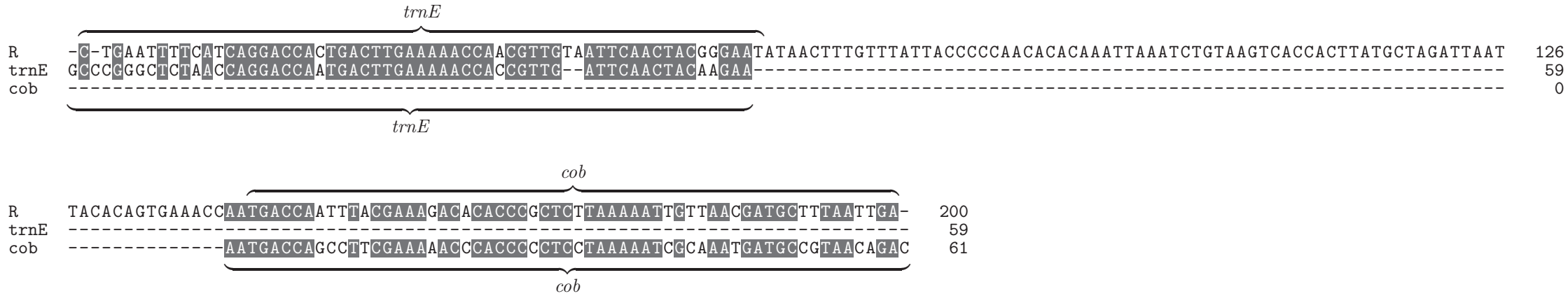
**1.100 NC\_004377-NC\_008225**

Avg ovsized: -350  
 LCA: Gadiformes-order

1.100.1 nad6-trnE 61



1.100.2 trnE-cob -81



1.100.3 trnP-trnF -1032

	<i>trnP</i>	
R	-AGATTTTAACTCCTGCCCTAGCTCCCAAAGCT-AGAATTTTAAAACTTAACTATTCTCTGGCCCAGAAAATTTGACTCGCCCCTACATTTAAAATATTCACCATAGACTATAGTAACTCTTCATG	126
trnP	GAGACTTAAACTCCCACCCCAGCTCCCAAAGCTGAGATTCTTC--ATTAAACTATCCTCTGCAACCCCAAATAT	73
trnF	-----	0
	<i>trnP</i>	
R	GTATAGTACATCTATGTATAACCACCATATACTTATTTTGACCATTCAAGAAATAAATACAATCAATTCATAAAAACTTTTCATTTAAATCTGATTAAAAACTAATTTAAACATACAAGAAATAACCA	254
trnP	-----	73
trnF	-----	0
R	CAATTAATTATTTAAGACTTAAATTTATTGAACAACCTTATTAATTTTTAAGTACACGTGATTAATCGGCCTATCGTTTTCTTTAAGGTTTACTAAATCACCAGCTAGCGTGTATTTAAATGGTACACT	382
trnP	-----	73
trnF	-----	0
R	GTCCAATGAAGGTGAGGGTACTTATTAGAAAATTCACCACTCCGTGAATTTTTCTGGCATCTCTCCCTAGCTTCAGGGTCATAACTTCATACCGCTCACAGCTTGCTTTTTGTCCATCTCTAAAT	510
trnP	-----	73
trnF	-----	0
R	GGAGTCGTTTCATATTTCCAAATTTCCACCATGCCGAGCATTCTCTCCATAGGGCTATTGGGTTCTTCTTTTTTTTTCTTTCCCTTCATCAACCCCCAGAGTGGAGTTATGAATAACTACCAGAGGT	638
trnP	-----	73
trnF	-----	0
R	AGGTCATTCTTGAAATTTAAGACATTTTATTAAGGTTTTAAAGACTTTTTTTTTAGAGAATTACATTATATTATTTCAAGGGCATAACACAACCTCCATTGTTTGGTCAAAAATTTCTTCAAAAACACA	766
trnP	-----	73
trnF	-----	0
R	AAATTTTTAAGGCCGTAAACCCCCCTACCCCCAGTTTTACGAGACTTGTAATTCCTGCAAACCCCCGAAACAGAAAAATCCCCAACTGAGCTTACTTAATCGAAAGAACCTTTCAACTCCAAA	894
trnP	-----	73
trnF	-----	0

R AATCTTTTACCCCTTGGATATTATTGACTATTAATAAAAACCCCTACGATCAAATTTTCTACCCCTTAATAGGCTCGTTAATGGAAAAATATTACACTAAAACCACTTTTTTAAAAAGCACAATGTTT 1022  
trnP ----- 73  
trnF ----- 0

R TTCCCTAAGGCCAAGTTTGACCCCAAGAATTGTGTTATTTTAATTTTAAAATTAAACTAAAGTATTAACCTTTTTTTGCTGT *trnF* 1150  
trnP ----- CGTAGCTTAAA TTTAAAGC TTAATGCTGAAGATATTAAGATGAAG 73  
trnF ----- CGTAACTTAA TTAAAGT TTAATATTGAAGCTATTAGGATGGC 43  
*trnF*

*trnF*  
R CCTAAAA--C-C 1159  
trnP ----- 73  
trnF CCTAAAAAGCCC 55  
*trnF*

**1.101 NC\_003159-NC\_002647**

Avg ovsiz: -390

LCA: Stomiatiformes-order

**1.101.1 trnN-trnY 0**

*trnN* *trnY*  
R CCTCGATCCCCAAAAC TCTTAGTTAACAGCTAAGCGC CCAACCAGCGAGCATC CATCTAACTGACC-AGCC TGGTAGGAAGAGGACTTAAACCTCTCTTTATGGGGCTACAACCCACCACCTTAAATC 127  
trnN ----- CCTCGATCCCTA AAAAGTCTTAGTTAACAGCTAAGCGC TCCAACCAGCGAGCATCAGTCT-ACTCTCCCGCC ----- 71  
trnY ----- TGGCAGGGAGAGGAGTTTAAACCTCTGTTTATGGGGCTACAATCCACCGCTTAAACAC 56  
*trnN* *trnY*

*trnY*  
 {  
 R TCA 130  
 trnN --- 71  
 trnY TCA 59  
 }  
*trnY*

1.101.2 *trnY-trnC* -79

*trnY*  
 R AGGAC TTTAAACCTCTCTTTATGGGGCTACAACCCACCACCTTAAATCTCAGCCACCCTACCTTATACCCTGTTACGCCCTGAACCACCTCAACACATGCTCCCCATAGATTAACCACACTTATCGCC 128  
 trnY AGGAGTTTAACTCTGTTTATGGGGCTACAATCCACCGCTTAAACACTCAGCCACCCTACCT----- 61  
 trnC ----- 0  
*trnY*

*trnC*  
 R CACATAAGCAGGTCTCC TTT CGCCGCCGGG -CGTCCACG -GAAAGCCCCGGCAGGCTGGA A -ACCTGCTTCTTCAGATTTGCAATCTGACGTGTCACACCTC 227  
 trnY ----- 61  
 trnC -----TCTCC--CGCCGCCGGGCG -CGCGGGGAAAGCCCCGGCGGGCGTTAGG CCTGCTTCTTCAGGTTTGCAATCTGACGTGTCACACCTC 87  
*trnC*

1.101.3 *trnC-cox1* -1093

*trnC*  
 R CCGGCAGGCTGGA A -CCTGCTTCTTCAGATTTGCAATCTGACGTGTCACACCTCAGGGCTTAAACTATGAACCCCGTAGCCCGCCACAATGCTGCCCTGAAAGCCCTGACAGCACATGCTCACCCC 127  
 trnC -CGGCAGGCGTTAGG CCTGCTTCTTCAGGTTTGCAATCTGACGTGTCACACCTCAGGGCT----- 60  
 cox1 ----- 0  
*trnC*

R	CAGGGTTGGTGGCACTTTCTGGCCGCCCCCATAAGCAGGTCTCCTTTGCGCGCCGGGCGTCGACGGAAAGTCCCCGGCAGGCTGGAAACCTGCTTCTTCAGATTTGCAATCTGACGTGTCACACCT	255
trnC	-----	60
cox1	-----	0
R	CAGGGCTTAAACTATGAACCCCGTAGCCCGCCACAATGCTGCCCTGAAAGCCCTGACAGCACATGCTCACCCCCAGGGTTGGTGGCACTTTCTGGCCGCCCCCATAAGCAGGTCTCCTTTGCGCG	383
trnC	-----	60
cox1	-----	0
R	CCGGGCGTCGACGGAAAGTCCCCGGCAGGCTGGAAACCTGCTTCTTCAGATTTGCAATCTGACGTGTCACACCTCAGGGCTTAAACTATGAACCCCGCAGCCCGCCACAATGCTGCCCTGAAAGCCC	511
trnC	-----	60
cox1	-----	0
R	TGACAGCACATGCTCACCCCCAGGGTTGGTGGCACTTTCTGGCCACCCCCATAAGCAGGTCTCCTTTGCGCGCCGGGCGTCGACGGAAAGCCCCGGCAGGCTGGAAACCTGCTTCTTCAGATTTGCA	639
trnC	-----	60
cox1	-----	0
R	ATCTGACGTGTCACACCTCAGGGCTTAAACTATGAACCCCGCAGCCCGCCACAATGCTGCCCTGAAAGCCCTGACAGCACATGCTCACCCCCAGGGTTGGTGGCACTTTCTGGCCACCCCCATAAG	767
trnC	-----	60
cox1	-----	0
R	CAGGTCTCCTTTGCGCGCCGGGCGTCGACGGAAAGCCCCGGCAGGCTGGAAACCTGCTTCTTCAGATTTGCAATCTGACGTGTCACACCTCAGGGCTTAAACTATGAACCCCGTAGCCCGCCACAAT	895
trnC	-----	60
cox1	-----	0
R	GCTGCCCTGAAAGCCCTGACAGCACATGCTCACCCCCGGGGTTGGTGGCACTTTCTGGCCGCCCCCATAAGCAGGTCTCCTTTGCGCGCCGGGCGTCGACGGAAAGCCCCGGCAGGCTGGAAACCTGC	1023
trnC	-----	60
cox1	-----	0
R	TTCTTCAGATTTGCAATCGCGCGGTTCGGAGCTGCCGCAAGCTACAGTCCCTGAATTCCAACCTCCCTCTGGGTACCTTGACCTGCTTATAGGCTACACATCCCAACTCGGGTTTAGCCCTCACCCAC	1151
trnC	-----	60
cox1	-----	0

*cox1*  
 R CTGTGGCAATTACACGCTGATTCTTCTCCACAAACACAAAAGACATTGGCACCCCTTTACTT- 1212  
 trnC ----- 60  
 cox1 --GTGGCAATCACACGCTGATTTTCTCAACCAATCACAAAAGACATTGGCACCCCTGTATTTA 60  
*cox1*

**1.102 NC\_007978-NC\_014174**

Avg ovsized: -405

LCA: Sauropsida-subclass

**1.102.1 trnP-nad6 -21**

*trnP* *nad6*  
 R A-GGGCTTAAACCTCTATCTCCAGCTCCCAAAGCTGGTATTTTACACTAAACTATTCTCTGATCTCCTTCCCCCTTAAACCGCT-CGAATAGCCCCACAAGA-CAACCCACGCACCAACTCCAACAC 125  
 trnP AAAGAGGTTAA-CAACCATCTCTAACTCCCAAAGCTAGAATTTTATCTTAAACTAT-CTCTTA----- 60  
 nad6 -----CTCCGAACCGACCCAAAACATCAACC-ACACACAAGATCTAACAC 44  
*trnP* *nad6*

*nad6*  
 R AACAAAC-A----- 133  
 trnP ----- 60  
 nad6 TACAAACAATGTT 57  
*nad6*

1.102.2 nad5-cob -24

	<i>nad5</i>		<i>cob</i>	
R	-ATC-AA-AACCTACTTAGGTTTCAATTCGCCCTATCCATCCTCAT-C-ACCCATTAGTTTCATAGAACCACAACCTCAATGGCC		CCAAACCTCCGAAAATCTCATCCACTCCTAAAA-CTCATTAAACAAC	
nad5	TACCTATCAACATTTGTAATTACATCAATACTAGCCATAAATTATTCAACTATATTACT		CCAT-CCTACGAAAATTAACCCAATCCTAAAAACT-ATTAACCAC	
cob	-----		-----	
	<i>nad5</i>		<i>cob</i>	

	<i>cob</i>	
R	TCCCTAAT----	130
nad5	-----	58
cob	TCCCTAATTGAC	56
	<i>cob</i>	

1.102.3 trnE-trnF -1170

	<i>trnE</i>	
R	G-GCTTTTCTCCAAGA-CTCGCGGCCTGAAAAGCCGCTGTTGTCAATTCAACTACGAAAAACACATTTCCCTTCTTTCCCCCCCCCCCCCTGCCCCCGCATAGAGCGGGCGGTAAATGTTTCCTATG	
trnE	TATCTAGACAACTAGAACCCCAATACGAAAAATTGATGTTGT-TAT-TCAACTATAAAAAAC-----	
trnF	-----	
	<i>trnE</i>	

R	TCCTTGTCTGCATTACCTTATATTTCCCATTAGACATACAATCCATGTTCAATAGCCATTAATATCCAAACAGGCATACCCCTCCAAAATCCCATTCTCCTTCCAGAGTACCTCCCGCCAATGGGA	254
trnE	-----	60
trnF	-----	0



R	GCAGAAATCCATTACAATATACGTACTAATACCATCTAGTCTCTAGTTTTTACATAGCTCCTTTAAAGATACGACCGTGCTTGACTGCCCTTTGAATGAGTTTGGGACAAGGCCCTCCAAATTTTCT	382
trnE	-----	60
trnF	-----	0
R	CGAATACACAAAGCTTCGTGCCAGGTTATTTATTAATCGAGCTCCTCACGTGAAATCAGCAACCCGGTGTATGGAAGATCCTACGTTACTAGCTTCAGGACCATTCTTTCCCCTACACCCCTAGCCC	510
trnE	-----	60
trnF	-----	0
R	ATCTTGCTCTTTTGGCCTCTGGTTCCTATGTCAGGGCCATAACTTGGTTAGTCCTCTCAACTTGTACTTCACCGATACATCTGGTCGGCTATATATCACCATCTCACCCGTGATCGCGACATCCGAC	638
trnE	-----	60
trnF	-----	0
R	CGTCTTGGCACTTTTGGTTCCTTTTTTTTTTTTTGGGCGTCTTCAGGCAGCCCCCTCCAGTGCACCGAGGTACACACAATCTAAGACCTGGGCCCTCCCTGGTATTCGAACGGAGTTTGGCCCTCAGGAAT	766
trnE	-----	60
trnF	-----	0
R	ACCTGAGTGTTCATAGTTAACGGGTTGGGGGAATCATCTCCGCGCTGATGCACTTTGTTTTACACCTGGTTATGGCATCTCCGCAAGTTACTAACTATGCTGCTATTTAGTGAATGCTTGTTGGGCATA	894
trnE	-----	60
trnF	-----	0
R	ATTTATCATTTTTTCATTTCTTAACCTTTCTAAACAACACTAGAAGATTTTCATTTGAAAAATGAACCGTATTTTCATCACGTATTTTATCATCACCTTCATCACTTACAAACGGCAGTGAAGTTTCAT	1022
trnE	-----	60
trnF	-----	0
R	TAAAAATAAAACCATTACGATTTGCGTTCGTATATTCGAACAACATAACACAAACTATAAACGAAACCCCCCTAAAAACAACAAAACAACAAAACAACAAAACAACAAAACAACAAAACAACAAA	1150
trnE	-----	60
trnF	-----	0



1.103.3 trnT-trnF -1216

	<i>trnT</i>	
R	-TTAACTCAAAGCGCCGGTCTTGTAATCCGGAGATCGGAGGTTAAAATCCCCCTGAGGC	127
trnT	CCTTAACC	60
trnF	-----	0
	<i>trnT</i>	
R	GATGTACTTTATATAATAATATATGGAATAATCCACGTTTACATTACAAGTTTGTGCAAAGTAACAGCATGTTTCAATTACATAAATGGAAATGGACTAAACTTGTA AAAATGTAATTATTTATCCTC	255
trnT	-----	60
trnF	-----	0
R	AATAAATGGGTATGTCGCATATATTAATGTACAAAAGCATTTACATTCACGTTAAACATTTATGTGCTCCTCCATAGTTCATGTGTTATTTTGCATTATTGGTACGGATACATATATGCATTATTATA	383
trnT	-----	60
trnF	-----	0
R	CATATATATATGGTATAGTACATATATATGCATTATTATACATATATATATGGTATAGTACATATATATGCATTATTATACATATATATATGGTATAGTACATACTATGTATTATCACCATTCATTTA	511
trnT	-----	60
trnF	-----	0
R	TTTGAACCAAACAAGTAATAGATATTACTAAAACATACATAACCCATTATTATAAGATTCAAAGTATAATGATATAAACATGATAAGTTGAATATTCCCATTTTTATTACGTA AACATTTTCCATGC	639
trnT	-----	60
trnF	-----	0
R	GTTACTCAATATTACTTGATTGTTACAATATTTAATGTAGTAAGAAAACCACCAACCAGTTTATATAAAGGCATATCATGAATGATAAGATCAGGGACAATAATCGTGGGGGTTTACAAAAATGAATTA	767
trnT	-----	60
trnF	-----	0
R	TTTCTGGCATTGGTTCCTATTTTCAGGGTCATATAACTCTTAATCCTCCTATTAATGAATTATATCTGGCATAAGTTAATGGTGGTGTACTAATGGTTCCTTTACCCACATGCCGAGCGTTTCATTTAT	895
trnT	-----	60
trnF	-----	0

R ATGCATTTGGTATTTTTTTTTCCGGGTCACCTTTCACTTGGCATTGGCGACTCCTTCCTAATGTTAACTGACAGGGTTGAACATTTCTTGCTTACAATTGCTAACTGTTTAATACTTCATTAGCATT 1023  
trnT ----- 60  
trnF ----- 0

R GATAGGAGAACCACATAAGTGATATCAGGTGCATAAAGTATACATATCTACTCCACACTTTCTGTATATAGTGTCCCCCTCTTCTTGTCTGAAAAGTTTTTCGCGCGACAAACCCCTTTCCCCTT 1151  
trnT ----- 60  
trnF ----- 0

R ACGCCGAGAGAATCCTATTTATTCCTGTCAAACCCCAAAAACAGGGAAGATCCGACCTGGCGTCTCAACAAGTTTCAGTGTGTGTTGACTATACAGTGTGCCACTAGTGTGACACACTATTAACCTCA 1279  
trnT ----- 60  
trnF ----- 4

*trnF*  
CTCA  
*trnF*

*trnF*

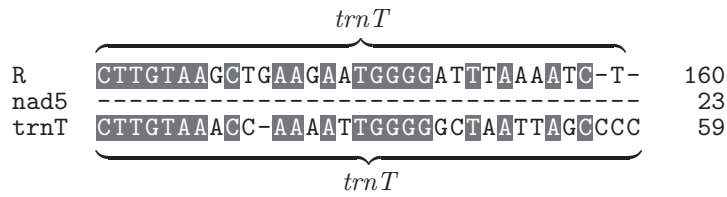
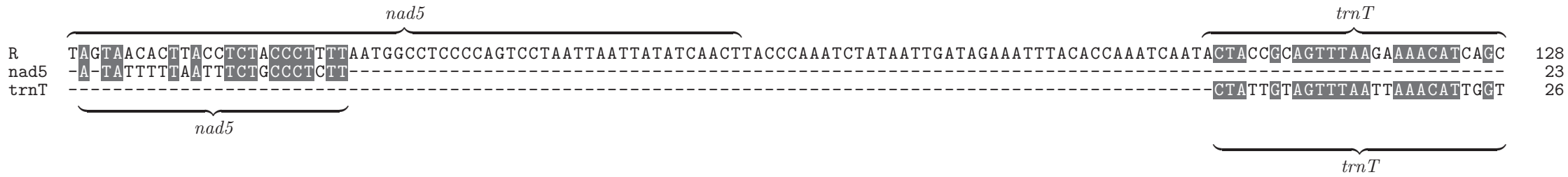
R CGTAGCTTAAACTAAAGCATGACACTGAAGATGTTAAGACGGGCCCTAGAAAGC- 1333  
trnT ----- 60  
trnF TGTAGCTTAAACCAAAGCATGACACTGAAGATGTTAAGACGGGCCCTAGAAAGCC 59

*trnF*

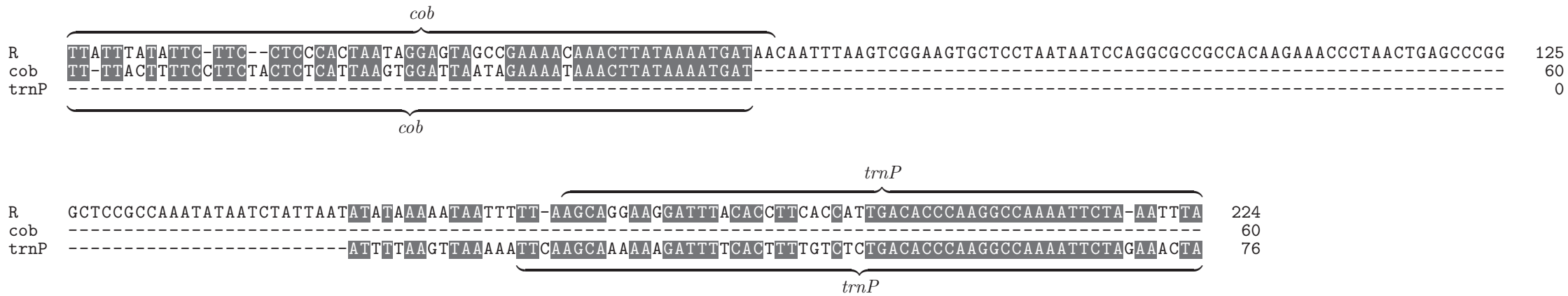
**1.104 NC\_006335-NC\_006343**

Avg ovsized: -450  
LCA: Plethodon-genus

1.104.1 nad5-trnT -77



1.104.2 cob-trnP -92



1.104.3 trnT-nad6 -1182

	<i>trnT</i>	
R	GTTTAAGAAAACATCAGCCTTGTAAGCTGAAGAATGGGGATTTAAAATCTCCCGATAGTCCGGGCTCCGCCTAAGGACGTAGACTTAAACCCAGGCAGAGCCTGGGAAAGAATCTAATTTAAATATAT	128
trnT	GTTTAATTAAACATTGGTCTTGTAAAACAAA-ATTGGGGGCTAATTAGCCCC	52
nad6	-----	0
	<i>trnT</i>	
R	ATTCCACATGCGAGTAAAAAGGGGGGGGTCCTGGCTCTATCCAGGCCCTGCCTTGAGGCATTATTACCAATCCAGGCTCTACCACCATATAACCCAACCCACATACCCATATAAACCAAAAAGTCAC	256
trnT	-----	52
nad6	-----	0
R	CTAAAAACAACACTACCGCTTATGTCCTTTCTTCACTATAGTAACGCGGTGACATATTATGTATAATAGTGCATTCATCTAATTTCCATACGAATCTGTTTTAGTACCCTCCTGGTTTTTAATTTACACAC	384
trnT	-----	52
nad6	-----	0
R	ACGGTAGAGAAATAAACAACCCGCCCTCCAGACACGATGTCCAGATCTAAGGACCTATATTGTAGGTCCGCAGCTCGCTATCTTCACGAGACCACTGGTTATGAATCTATGTGCACATAGGCAAGAG	512
trnT	-----	52
nad6	-----	0
R	TAGGCGGTAACAGTACGACCCCATATAGTTGAAGGTGATGCTCTCAAGAATCGGCGTACCCCGCACCCACATAACTGGTCTAGATGCATTCATTATTTTTTTTTCTCTTGTGAGGTCAGCCAACACC	640
trnT	-----	52
nad6	-----	0
R	CAATTTATAACTGGTAAATCTGGCTCTAAAACCTGAACATATAATGCCCGTGTAGTCTTACTATATACGCATGTTTTAATATAAGTCAATGTTGTATGGACATACACCTTCGTATTCTCTGCCTGAT	768
trnT	-----	52
nad6	-----	0
R	TCCCAGAATATTACCTCCAGTTTTCCCCCCTCTTGCATTTACAAAATAATTTTATTATACAATATATTTTTCTACTTTAAACCCCTCCCCAAAATATAGGCTAATCGGCGCCTGAAATCTTT	896
trnT	-----	52
nad6	-----	0

R AGTCAAACCCCGAAACCTAAAAACCCATCACACTCACGCACTGAAATAACAAATGATTAATAATAATTTTATTAACCTTTTAATATATTTTAATATATTTTAATATATTTTAATATATTTTAATATATT 1024  
trnT ----- 52  
nad6 ----- 0

R ATAAGATATATTAGTGTAACCTTACTAAAGCACGGCACTGAAAATGCCAATATAAATAATAATAAATTTTATAAACACTAAAAGGTCTGGTCCCAGCCTTAGTATAAAATTTTAAATATGAGAACTTATA 1152  
trnT ----- 52  
nad6 ----- 0

R TAATATATTTAAAATTTCTAACCAACAGCTGCCACCATAAACCAATACAACCTTTTAAACCAAATTTACCAAATACATAAAACCCCTCACAGCACGTAAAGATCCACGAGATACCCCAAGAGTAATTTCT 1280  
trnT ----- 52  
nad6 ----- 45

*nad6*

*nad6*

*nad6*

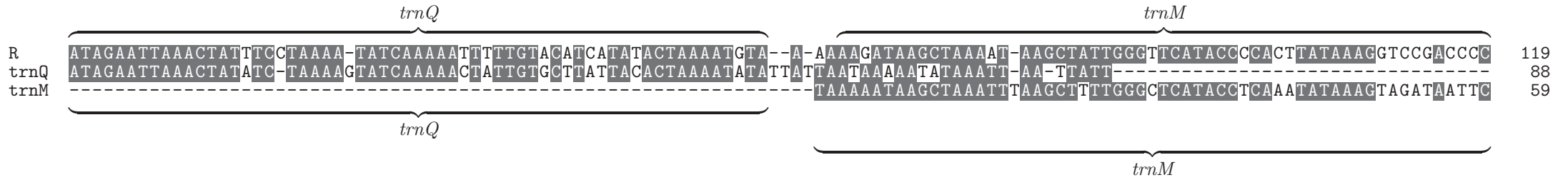
R AATACCGTAAAT-A 1293  
trnT ----- 52  
nad6 AACTACTAAATAA 59

*nad6*

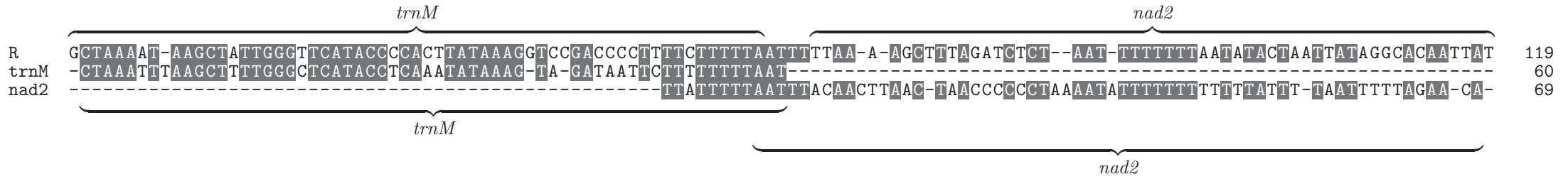
**1.105 NC\_013257-NC\_011128**

Avg ovsized: -486  
LCA: Endopterygota-infraclass

1.105.1 trnQ-trnM 26



1.105.2 trnM-nad2 11



1.105.3 rrnS-trnI -1495





R	TTTATTTTTTTTAAATTA AAAATTTATATTATTTAATTTTTTTTAAAAATAAAATTTAATTA AAAATTATTTATATAATAAATATTTTTTAAATACACA ACTACTTTTAATA AAAATAAATACATTATTTTTTC	254
rrnS	-----	59
trnI	-----	0
R	ATTAAATTTATTAATTA ACCACCTTAAATAATTTAATTTATAATAATATCTTCCAAGATTTATATTATTTTAATAATTTAAAAAATATTTTTTTTTTAATA AAAAATTAATCCTATTGAAAATAAATATTTT	382
rrnS	-----	59
trnI	-----	0
R	ATTTTAATTTAATTATTA AAAAATAAATAATTTCAATTTAATAAAATTTAATAATTTTATATTA AAATTATATTATAAATAATATTTTTATAAACATAAAAATTTAATATAAATATAAAAATTTTATTTTTAAT	510
rrnS	-----	59
trnI	-----	0
R	TAAATTAATAAATATA AAAAATAAATTTTTTAACATAAAATTAATTTTATTATTAATTTAATTATTA AAAATTA AAATTATTTTAATTTAATCAAATTAATAATTAATTA AAATGATAAAATAAAAATAAAC	638
rrnS	-----	59
trnI	-----	0
R	AATTTAATTA AAAAATATAAAAATTTATAATAATTATATAAAAATTTTATAAAATTTTATATTTTTTAATTA AAATAATTAATATA AAAAATATTTTAAATAAATATTTTTATTTGTTAAAATAAAAATTATTATAA	766
rrnS	-----	59
trnI	-----	0
R	AAAAAATTATCTTCCAAGATTTTTTTTTATAATTATTTTTAATTTTAAAAATTA AAAAATTTA AAATAATTATTTTAATTTTTTAACTAATAATATTTTTTTTTTAATAAATATTTTAAATTTTATATCTA	894
rrnS	-----	59
trnI	-----	0
R	TATATAATAAAAATAATTATTA AATTTAATTATTTTTATATTATATAATAATATAAATATTTTTATATTATATAAATAATATAAATATATAAATATTATATTTTATAATTATAAATTTAATTA AAATATATAATTAA	1022
rrnS	-----	59
trnI	-----	0
R	TTTATATATCTCTCTTTTTATCTAAATATATAAATATAATTATTA AAATCTAATATTATATATATATATATAAATTATATTTTATTTTATATACATATATGTAAATACTTATTATATATAAATATAAATTAT	1150
rrnS	-----	59
trnI	-----	0

R ATATATATATATAATTATATTTAAATAATTATATTAATATATATATATATAATATAATATAGATTTTTTATATATTAATAAATTAATTTATTTTCCATTAATTTAGTAAATATTTAATAAAACCTTTT 1278  
 rrnS ----- 59  
 trnI ----- 0

R TTAGCTTTTTTTTTATATAATTAATTTATTAATAAATAATAAATTAACCACCAATACATTTATTTTATATAAATATAATGACAATCACAACTTTATTTAATATAAAATAAATTTTATAAATAAATTT 1406  
 rrnS ----- 59  
 trnI ----- 0

R TTAATCATAAAAAATCTATTTATTTTTTATTTATTTTAACTAAATTTAACATTTAATAATTAATTATAACCATAATTTAAATATTTTTATACAAATTAATTAATTTAAAATAAATAGATTTTTTATAG 1534  
 rrnS ----- 59  
 trnI ----- 0

R TTAAAAATTAATATTTTTAATATAATGAAGTGCCTGACTAAAGGATTATTTTGATAGATAAATCATGTATTTTATATACC-T- 1616  
 rrnS ----- 59  
 trnI -----ATAAAGTGCCTGATTAAAGGATTATTTCTGATAGATAAATTAAGTAAA-TATTTACCTTT 59

*trnI*  
  
*trnI*

**1.106 NC\_006405-NC\_005796**

Avg ovsized: -491  
 LCA: Teleostomi-superclass

1.106.1 nad4-trnH 4

	<i>nad4</i>	<i>trnH</i>	
R	TTCTTCTTCATACTGCACCTGCACCTTCTATTTATTCTTAATCCTGAGCTTATTTTTTCTG-		TGAATATAGTTTAACTAAAATCCTAGGTTGTGGTCCTAGAAATGAGG-GTTAATATC-CT
nad4	A-CTTAAT--TCCAGTA--TT-ACCTCTAGT-A--CTGAAGCCCGAACTAATATGAGGCTGA		TGCATAT-----
trnH	-----		ATATAGTTTAAAAAAGACGTTAGATTGTGATTCTAAAAAT-AGGAGATAAAACCTCT
	<i>nad4</i>	<i>trnH</i>	

1.106.2 trnL1-trnT -2

	<i>trnL1</i>	<i>trnT</i>	
R	AATAGCCCTTCCCTGGTCTTAGGCTCCAGTATCTCTTGGTGCAAATCCAAGTAAAAGCTAG		CCGAGATAGCTTATATTAAAGCATCGGTCTTGTAACCGAAGATTGTAGATTAAA--CC
trnL1	AATAGCTCATCCGTGGTCTTAGGAAACCAAAAACCTCTTGGTGCAACCTCCAAGTAGAGGCT		-----
trnT	-----		CCTAG-TAGCTTATAA-AAAGCACGGTCTTGTAATCCGAAGATTCAACGTTAAA GTCC
	<i>trnL1</i>	<i>trnT</i>	

1.106.3 cob-trnL1 -1475

	<i>cob</i>		
R	ATCTTGTCTCC-ATTCT-TCCCATCATTGGACTCTTAGAAAAAAGTTACTTCA		GCTTTAACATAAGCAGTTCCCGGATTTTTTCCGCTTCTACCGCCTCCCCGATAACCCCCATTCCAGGATTTTC
cob	-TATT-CCTAGTATTAAATCCAC-TAGTAGGATGACTAGAGAAATAAGCACTTAA		-----
trnL1	-----		-----
	<i>cob</i>		

R	CCTAGCAAATTAGCTTTTTTTGTTGGCAGTTACCGACCCCTATGTACCTAAAAACATACATCTATATACCACATATTAAATAGACCATTATATGTATAATCCCCAATAATAGATATACCCCATATATCA	254
cob	-----	52
trnL1	-----	0
R	GTAGCATATTATGTTTAAATCAACATTAATCTATTAACCCCATGCTTACCTTTTCCCTAATACTGGTTAATTTTACACCCTATTTATTGGACATTCCCCCATAATTACAAAAGAATCATGAATGGCACCG	382
cob	-----	52
trnL1	-----	0
R	CCCATCACGTGAAATGGCAGCCGCCATACTTTCAATACCAGTTCGGATCCTTAAATTCTTTAGTAACGTCATATCCTCACCATTAATTATCCAATCGCTTCATCCACCCACCATCACACCCATAATT	510
cob	-----	52
trnL1	-----	0
R	AATGTAACTAAATTCCTTATAATGAAAAACGTACAACCTATACATCCACATTACTIONTCCATTCCCCCAACAATGATTGTATAATCCCATAAAAAATTTGAATTGTACCTTCACTTGAAGTAAGAACACGAC	638
cob	-----	52
trnL1	-----	0
R	TATTATTTATAATAAACTTTCATAATACCCAATAATGGTACATTAAGCATGAACATAAAAAATGTATAATCCACATAACAGTAACAACAACATAAAATATTGTACTIONTCCCTTCCTGCATACACACTIONTAGC	766
cob	-----	52
trnL1	-----	0
R	AGCAATTGCTGCTGCTACATGGATACCTTAATGAGACCTAACTGAAATTCAGCCCGGGGATCTTATTTTCCCCGGTCATATATTGTAGAGTAACCTCAATTGACCTTCAAAAAACATCCGGTAGCC	894
cob	-----	52
trnL1	-----	0
R	CCGAATCTATGGACCTGTTGACAAGAGACGTCCTTTCTCGTAATTTAAAAAACATCCCTCCTTATGCGTGAAGTACCTGCAGAGTCCTTAACCTTACCTGGTCTGAATTGGATAGGCATAAAATAATAT	1022
cob	-----	52
trnL1	-----	0
R	AGGGACTIONTTCACCTGGCATCTCTCAGTGGGGTAATAACATTAACCTTGGGTTGGACATAACATGCTCGCGTGGGATTTACCATCCCCTCTATTGTTCCCCCTTAAGTCAATGCTAGATGGACATAG	1150
cob	-----	52
trnL1	-----	0

R CATTATATAATTTCCCCCCTCCTACCAAAATTCGGCTAAAATTTTAACGTAWWTTCTCGACACCCCCCTACCCCCCACACAAGGAATTTTAGTAGCTTTAACTAACCACCCCCCGGAGTTAGT 1278  
 cob ----- 52  
 trnL1 ----- 0

R GTCTAAAAAAATTTTACCGTTATGTGTTTTTCATAATAAAAATCAAATTTTGTAGACCCATCACATGTCAAATTTGGGTCCTAGATGTATATATATCATATTTTAACTCTTCAACGATGTCTATAGCTTTAGT 1406  
 cob ----- 52  
 trnL1 ----- 0

R CAACTTTTTTTAACTAAGGCCCTAGACTCCCCCACAATTTTTTAACTCTACCTACAAGCCATACCGCTTTTAAAGGAAAAATAGCCCTTCCCCTGGTCTTAGGCTCCAGTATCTCTTGGTGCAAAA 1532  
 cob ----- 52  
 trnL1 ----- 4

*trnL1*

**1.107 NC\_006405-NC\_020000**

Avg ovsiz: -500  
 LCA: Anura-order

**1.107.1 trnL1-trnT -5**

R AATAGCCTTCCCTGGTCTTAGGCTCCAGTATCTCTTGGTGCAAAATCCAAGTAAAAGCTAGCCCAGATAGCTTATATTAAAGCATCGGCTTTGTAAACCGAAGATGTAGATFAA-AGCC- 120  
 trnL1 AATAGTCTATCCATTTGGTCTTAGGCGCCAAAATTTCTTGGTGCAACCTCCAAGTGAAAAGCT-----AG-TAGCTTA-ATTAAAGCATCGGCCTTGTAAACCGAAGATGAGACTAACACTCT 60  
 trnT ----- 55

*trnL1* *trnT*

1.107.2 trnS1-nad5 -77

	<i>trnS1</i>		<i>nad5</i>	
R	TCTGGGAAAACGAGAAGTCTAATTCTCTGGGTCCATGGTTCAATTCCATGGCTTGCTCGAAACTTTTATCATGACACCATCAAGTTAAAAGTCATGGACCTCCTCCTGGTCACCTCATCATGCCTTA			128
trnS1	ACTGGGTAAACGAGAAGTCTAATTACTCGGCCCGCGGTTCAATTCCGCGGCTTTC			60
nad5	-----			0
	<i>trnS1</i>			

	<i>nad5</i>	
R	TTATAACCA	153
trnS1	TCATTAGAAATTCACT	60
nad5	-----	
	TCCTTACT-TTACCGA	15
	<i>nad5</i>	

1.107.3 cob-trnL1 -1418

	<i>cob</i>		
R	ATCTTTGCTCCATTCTTCC-CCATCATTGGACTCT-TAGAAAACAAGTACTTCAGCTTTAACATAAGCAGTTCCCGGATTTTTTCCGCTTCTACCGCTCCCGATAACCCCATTCAGGATTTT		125
cob	-TCTATTCTT-ATCCTTATTCCGGCTGGGGTTGAAATAGAAAACAACTA-TTAA-CT		55
trnL1	-----		0
	<i>cob</i>		

R	CCCTAGCAAATTAGCTTTTTTGTGGCAGTTACCGACCCCTATGTACCTAAAACATACATCTATATACCACATATTAATAGACCATTATATGTATAATCCCAATAATAGATATACCCCATATATC	253
cob	-----	55
trnL1	-----	0

R	AGTAGCATATTATGTTTAATCAACATTAATCTATTAACCCCATGCTTACCTTTTCCCTAATACTGGTTAATTTTACACCCTATTTATTGGACATTCCCCATAATTACAAAGAATCATGAATGGCACC	381
cob	-----	55
trnL1	-----	0

R	GCCCATCACGTGAAATGGCAGCCGCCATACTTTCAATACCAGTTCGGATCCTTAAATTCTTTAGTAACGTCATATCCTCACCATTAATTATCCAATCGCTTCATCCACCCACCATCACACCCATAAT	509
cob	-----	55
trnL1	-----	0
R	TAATGTAACTAAATTCCTTATAATGAAAAACGTACAACCTATAACATCCACATTACTCCATTCCCCCAACAATGATTGTATAATCCCATAAAAAATTTGAATTGTACCTTCACTTGAAGTAAGAACACGA	637
cob	-----	55
trnL1	-----	0
R	CTATTATTTATAATAAACTTTCATAATACCCAATAATGGTACATTAAGCATGAACATAAAAATGTATAATCCACATAACAGTAACAACAACATAAAATATTGTACTACCCTTCCCTGCATACACAACACTAG	765
cob	-----	55
trnL1	-----	0
R	CAGCAATTGCTGCTGCTACATGGATACCTTAATGAGACCTAACTGAAATTCAGCCCGGGGATCTTATTTTCCCCCGGTCATATATTGTAGAGTAACCTCAATTGACCTTCAAAAAACATCCGGTAGC	893
cob	-----	55
trnL1	-----	0
R	CCCGAATCTATGGACCTGTTGACAAGAGACGTCCTTTCTCGTAATTTAAAAAACATCCCTCCTTATGCGTGAAGTACCTGCAGAGTCCTTAACCTTACCTGGTCTGAATTGGATAGGCATAAAATAATA	1021
cob	-----	55
trnL1	-----	0
R	TAGGGAACCTTTCACCTGGCATCTCTCAGTGGGGTAATAACATTAACCTTGGGTTGGACATAACATGCTCGCGTGGGATTTACCATCCCCTCTATTGTTCCCCCTTAAGTCAATGCTAGATGGACATA	1149
cob	-----	55
trnL1	-----	0
R	GCATTTATATAATTTCCCCCCTCCTACCAAAATTCGGCTAAAAATTTTAAACGTAWWTTCTCGACACCCCCCTACCCCCCACACAAGGAATTTTAGTAGCTTTAACTAACCACCCCCCGGAGTTAG	1277
cob	-----	55
trnL1	-----	0
R	TGTCTAAAAAAATTTTACCGTTATGTGTTTTTATAATAAAAATCAAATTTTGTAGACCCATCACATGTCAAATGGGTCTAGATGTATATATATCATATTTTAACTTCAACGATGTCTATAGCTTTAG	1405
cob	-----	55
trnL1	-----	0

R TCAACTTTTTTAACTAAGGCCCTAGACTCCCCCACAATTTTTTAACTCTACCTACAAGCCATACCGCTTTTAAAGGAAAAATAGCCTTCCCTGGTCTTAGGCTCCAGTATCTCTTGGTGCAA-A 1532  
 cob ----- 55  
 trnL1 ----- CTTTAAAGGAAAAATAGTCTATCCATGGTCTTAGGGCCAAAATCTCTTGGTGCAACT 59

*trnL1*

*trnL1*

**1.108 NC\_006405-NC\_007440**

Avg ovsiz: -501

LCA: Neobatrachia-suborder

**1.108.1 nad6-trnE 31**

*nad6*

R GGGAGAAGGATTTGAAGCAACAGCCACAATCCAACCAATAGTCATAATTCAAATACCATATATTCCTGCCAGG-ACTCT-AACCTGGACCAACAGTATGAAAAACTGCCGCTGTAATTCAA- 120  
 nad6 CG-A--CGGATTTGAGGCCACAGCCAATATTCCCAATAATAAACACAACCTCCTTTATCA-CTATTTCTGCTAGGTACT-T-AACCTAGTCT----- 85  
 trnE ----- ATATTTCTGCCAGG-ACT-TCAACCTAAACTTGTAACTGAAAAACTACTGTTGTTGTTCAAC 61

*nad6*

*trnE*

**1.108.2 trnE-cob -61**

*trnE*

R CAGGACTCTAACCTGGACCAACAGTATGAAAAACTGCCGCTGTAATTCAACTACAAGAAC TCATGGCCCCGCAATTCGAAAACCCATCCACTATTAATAAATTATTAACAGTGCCTTTAT 121  
 trnE CAGGACTTCAACCTAAACTTGTAACTGAAAAACTACTGTTGTTGTTCAACTACAGAAAC ----- 60  
 cob ----- 0

*trnE*



1.108.3 cob-trnL1 -1473

*cob*

R	ATCTTTGCTCCATTCTTCCCATCATTGGACTCTTAGAAAAACAAGTTACTTCAGCTTTAACATAAGCAGTTCCCGGATTTTTTCCGCTTCTACCGCCTCCCGGATAACCCCCATTCCAGGATTTTCCC	128
cob	-----	0
trnL1	-----	0
R	TAGCAAATTAGCTTTTTTTTGGTTGGCAGTTACCGACCCCTATGTACCTAAAAACATACATCTATATACCACATATTTAAATAGACCATTATATGTATAATCCCCAATAATAGATATACCCCATATATCAGT	256
cob	-----	0
trnL1	-----	0
R	AGCATATTATGTTTAATCAACATTAATCTATTAACCCCATGCTTACCTTTTCCCTAATACTGGTTAATTTTACACCCTATTTATTGGACATTCCCCCATAATTACAAAAGAATCATGAATGGCACCGCC	384
cob	-----	0
trnL1	-----	0
R	CATCACGTGAAATGGCAGCCGCCATACTTTCAATACCAGTTCGGATCCTTAAATTCTTTAGTAACGTCATATCCTCACCATTAATTATCCAATCGCTTCATCCACCCACCATCACACCCATAATTAA	512
cob	-----	0
trnL1	-----	0
R	TGTAACTAAATTCCTTATAATGAAAAACGTACAACCTATACATCCACATTACTCCATTCCCCCAACAATGATTGTATAATCCCATAAAAATTTGAATTGTACCTTCACTTGAAGTAAGAACACGACTA	640
cob	-----	0
trnL1	-----	0
R	TTATTTATAATAAACTTTCATAATACCCAATAATGGTACATTAAGCATGAACATAAAAATGTATAATCCACATAACAGTAACAACAACATAAAATATTGTACTACCCTTCCCTGCATACACAACACTAGCAG	768
cob	-----	0
trnL1	-----	0
R	CAATTGCTGCTGCTACATGGATACCTTAATGAGACCTAACTGAAATTCAGCCCCGGGGATCTTATTTTCCCCCGGTCATATATTGTAGAGTAACCTCAATTGACCTTCAAAAAACATCCGGGTAGCCCC	896
cob	-----	0
trnL1	-----	0

R GAATCTATGGACCTGTTGACAAGAGACGTCCTTTCTCGTAATTTAAAAAACATCCCTCCTTATGCGTGAAGTACCTGCAGAGTCCTAACCTTACCTGGTCTGAATTGGATAGGCATAAATAATATAG 1024  
 cob ----- 0  
 trnL1 ----- 0

R GGAACTTTCACCTGGCATCTCTCAGTGGGGTAATAACATTAAACTTGGGTTGGACATAACATGCTCGCGTGGGATTTACCATCCCCTCTATTGTTCCCCCTTAAGTCAATGCTAGATGGACATAGCA 1152  
 cob ----- 0  
 trnL1 ----- 0

R TTTATATAATTTCCCCCCTCCTACCAAAATTCGGCTAAAATTTAACGTAWWTTCTCGACACCCCCCTACCCCCCACACAAGGAATTTAGTAGCTTTAACTAACCACCCCCGGAGTTAGTGT 1280  
 cob ----- 0  
 trnL1 ----- 0

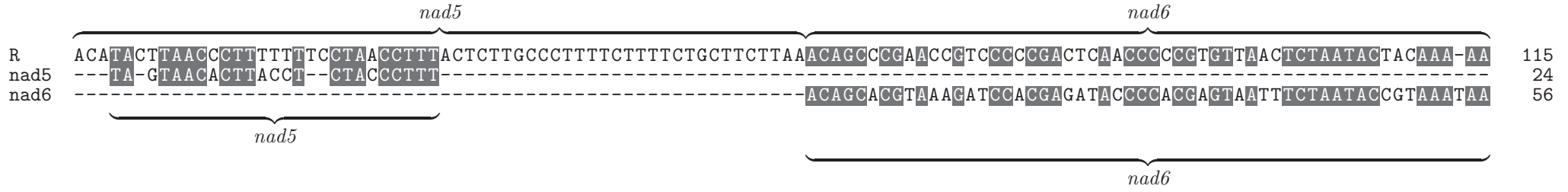
R CTAAAAAAATTTTACCGTTATGTGTTTTTCATAATAAAATCAAATTTTGTAGACCCATCACATGTCAAATTTGGGTCCTAGATGTATATATATCATATTTTAACTTTCAACGATGTCTATAGCTTTAGTCA 1408  
 cob ----- 0  
 trnL1 ----- 0

R ACTTTTTTTAACTAAGGCCCTAGACTCCCCCACAATTTTTTAACTCTACCTACAAGCCATACC *trnL1* GCTTTTAAAGGAAAATAGCCCTTCCCTGGTCTTAGGCTCCAG-TATCTCTTGGTGCAA--A 1532  
 cob ----- 0  
 trnL1 ----- GCTTTTAAAGGAAAAGAGCT-TTCCCTGGTCTTAGGGGCCAGCTA-ACTTGGTGCAAGTC 60  
*trnL1*

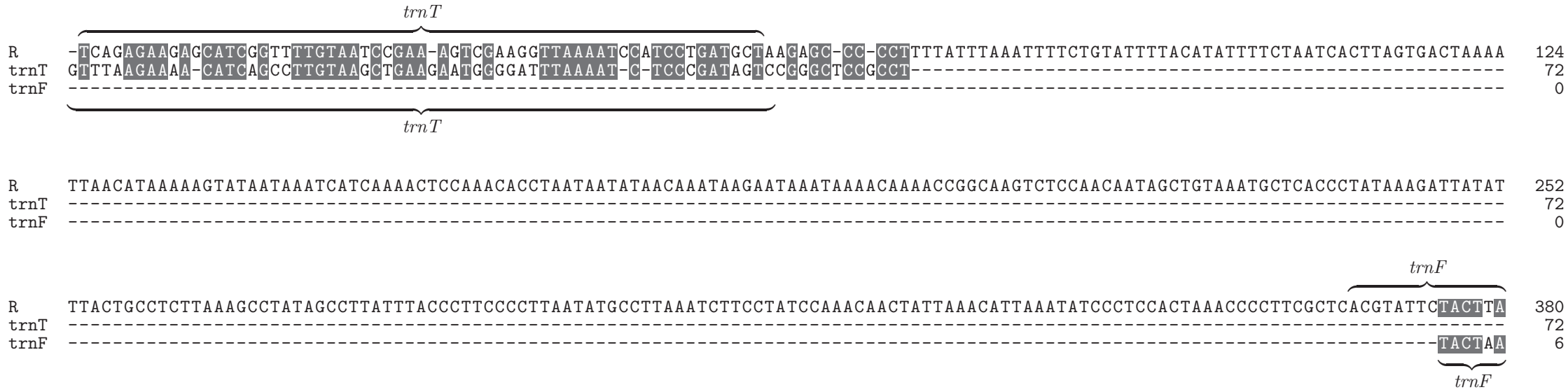
**1.109 NC\_004592-NC\_006335**

Avg ovsized: -503  
 LCA: Teleostomi-superclass

1.109.1 *nad5-nad6* -30



1.109.2 *trnT-trnF* -303



	<i>trnF</i>	
R	AGATATAACACTGAAGATGTTAAGACGGCCCTAA-AAAAG-GC	421
trnT	-----	72
trnF	AGC-ACGGCACTGAAAATGCCAAGACAGATAATAAATAAATCTC	48
	<i>trnF</i>	

**1.109.3 trnP-trnT -1178**

	<i>trnP</i>	
R	GAGATTTTAACTCCT-ATCTTTAGCTCCCAAAGCTAAAATTTTAAATTAACCTACC-CCTCTGGAGATGTACCATTTAGTATTATGGTCTTTAAGATTTGTATAGTATAACTATGCATTATCAACATAA	126
trnP	AGGATTTACAC-CTTCACCAATTGACACCCAAGGCCAAAATTTCTAAATTTAACTACCGCT-----	58
trnT	-----	0
	<i>trnP</i>	

R	ATTTATTTAGACCTATCATACATCAGTATTCCTCAAAGAACCACATAAAGCCAAACACGTGATAATAACCAATTAGGAAGCTCTACCACCGGGAAATTGAATCTTCAATAGATAATCCATCACCTAC	254
trnP	-----	58
trnT	-----	0

R	TGCTCTCTCACAAACCCACCATCTATACAGTTTAGTGCCGCTTAATGTAGTAAGAACCGACCAACATTGCCACTCGCGCATACTCTTCATGATGATCACGTGCAATTATTGTGGGGGTCGCTATTAGT	382
trnP	-----	58
trnT	-----	0

R	GAACTATTACTTGCATCTGGTTCCATTTTCAGGGTCAATCCTTAAGAAAACCACCAACTGAAAGCCGAATGCAATGCATCTGGTTAATGGTGTGCGACCTTACGACTCGTTACCCACCAAGCCGGGCGTT	510
trnP	-----	58
trnT	-----	0

R	CTTTTAAATGCATGGGGTTCTCTTTTTTTCTTTCTTTCACTTTGCATCCCCAGTGCACACTAAAAAGACTAACAAGGGAGACCTAGATCTTGTTGTCCAGAGGACCAATGTTCCATGTAAAAAGAC	638
trnP	-----	58
trnT	-----	0

R TTTGACAGAAGAAACCCATAATTTGTTTTCTAGTGCATAAGCCTACTCCTGTGCAGCCCCCGGTGGTAACCTTCAAATTTTTCTAAAGCCCCCCTACCCCCAAAAATCTACGTAAGGGGCACCACT 766  
trnP ----- 58  
trnT ----- 0

R TTTAGAACTAATTTACCTTAAAAAATATAAAACCCCAACATAAACTTGTGGCCCTCCAAATAAAGGTGCGAATTTGTGCCCTCTTTATAGTAGGCCATGTCTTTTCATTTATTTATGTAAAATTGAAT 894  
trnP ----- 58  
trnT ----- 0

R AGATAAGAAAGGACAAAAAACTAGAGCCCTATAAACTCTTTCAACAAATACTCCTCTCCTTTCTAATTATTAGCTAAACCAGAAAATATCTCTATCTTAATTCATCTTGGCCCTTCACAACAAAC 1022  
trnP ----- 58  
trnT ----- 0

R GGCCTTAATTTAACAATTAATAGCCTAAGTCCTTAAATAAATAATATAACTTTATCATGCGTTCTGTAAAGAGCAAATTTTGTCCCTCTTTATACGCGTCCTAGCGTTTCTAGTTATTTTTATGA 1150  
trnP ----- 58  
trnT ----- 0

R AAGCCCCGTAAAGAACTCATTATTTACTTTATAGGTCCCTTACAGAAACCTGCATAGAATGTGCCTAAAATATAAGTCTTCCCCCACCAAATTTATGCACGCACCAGAAGCTCAGAGAAGAGCATCG 1278  
trnP ----- 58  
trnT ----- 37

*trnT*

*trnT*

*trnT*

R GTTTGTAAATCCGAA-AGTCGAAGGTTAAAAAT--C 1310  
trnP ----- 58  
trnT GCCTTGTAAGCTGAAGAATGGGATTTAAAAATCTC 72

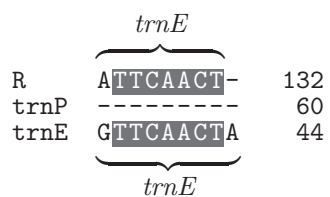
*trnT*

1.110 NC\_008225-NC\_006286

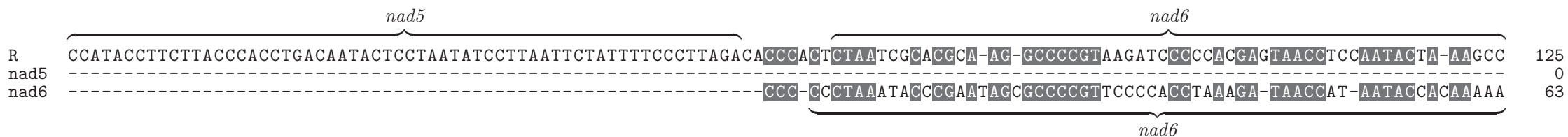
Avg ovsz: -520

LCA: Teleostomi-superclass

1.110.1 trnP-trnE -28



1.110.2 nad5-nad6 -62



	<i>nad6</i>	
	⏟	
R	A	126
nad5	-	0
nad6	G	64
	⏟	
	<i>nad6</i>	

**1.110.3 trnE-trnF -1470**

	<i>trnE</i>	
	⏟	
R	GCCCGGG-CTCTAACCAGGACCAATGACTTGAAAAACCAACCGTTGA-TTCAACTACAAGAAC	126
trnE	GCCGGCAATTCTA-CC-GGACCTGCGGTCTGAAAAACCGCCGTTGTGTTCAACTACAAAAC	60
trnF	-----	0
	⏟	
	<i>trnE</i>	
R	CACCATAAAAAATATTTTAACCATACAGGAATTACTATCGTTTTTCATTTTTCAAACGAAGTAGGTATAATCACATTAACATAATTAACCACCCTTTTTATCTACCACTCCCTATCCTCTTAAATACT	254
trnE	-----	60
trnF	-----	0
R	CATTAAATCACCCGCTAGTCTCGCTTCTGTGGCCACGTTCTCTTGTAAGGTCAAGGGCAAGACATTTGACTTCCCCTTTCAGTGAATTATTCCTGGCATTACAGCCTAGCTTCACGGCCATTA AAAAGT	382
trnE	-----	60
trnF	-----	0
R	TTATTGTACATAACTTGCATTTTTGCGCATTTATGAATGGTGGAACACATCAATTGATAATCGCTTCGCTAGCCGAGCGCTCTTTCTAAAGGGTATTTGGTATTTTTCTTCTTTCCTTTTCATTTTAC	510
trnE	-----	60
trnF	-----	0
R	ATTCAGAGTGTAACAAATGATTCTCTTAAGGTTGAACAAATTTCTTGAACCTCAGGAAATAATGTATTATGTTTAATAATTATTCTTGCTAAATTGCATACCTGTAGCAAGAGCATAATACTATATT	638
trnE	-----	60
trnF	-----	0

R	ACTTATTCAGACTAACCTATCTTATGCCCCCTCCCGTTCGTCTAAACCCCCCTACCCCCAGTTCCTAAAGTCTTATTCTGCAAACCCCCGGAACAGAAACTCCATGAACTGGACAACAAACAATT	766
trnE	-----	60
trnF	-----	0
R	TAACCCATAACACCCCGCACCCCAACCTTCCACACATACACACATACATATATACATATATACATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTACATATATACATATATAC	894
trnE	-----	60
trnF	-----	0
R	ATATATACATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTACATATATAC	1022
trnE	-----	60
trnF	-----	0
R	ATATATACATATATACATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTAC	1150
trnE	-----	60
trnF	-----	0
R	ATATATACATATATACATGTATACGTGTGTACATATATACATATATACATATATACATATATACATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTACATATATACATATATAC	1278
trnE	-----	60
trnF	-----	0
R	ATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTACATATATACATATATACATATATACATATATACATGTATACATGTATACGTGTGTACATATATACATATATACATATATAC	1406
trnE	-----	60
trnF	-----	0
R	ATATTTACATATATTTACATACATTTACATATTTACATATATTTATGCTTATGTGTTTACTTATATCCTCAACCCGGTACTTCTCCACCAACAAACCAACCCCTGTAAGATGACAATAATATGTTTAC	1534
trnE	-----	60
trnF	-----	4

*trnF*  
TTAC  
TTTC  
*trnF*



*trnF*  
 R CGTAACTTAATTAAAGTTTAATATTGAAGCTATTAGGATGGG-CCCTAAAAAGCC 1588  
 trnE ----- 60  
 trnF TGTAGCTTAACCAAAGCAGGGCACTGAAGATGCCAAGATGGCACCCCATCGAACG 59  
*trnF*

1.111 NC\_008225-NC\_004377

Avg ovsized: -524  
 LCA: Gadiformes-order

1.111.1 trnP-trnE -34

*trnP*  
 R GAGACTTAAACTCCCAACCCAGCTCCCAAAGCTGAGATTCTTCAT--TAAACTATCCTCTGCAACCCCAAATATAATTCTTGCCCGGGCTCTAAC CAGGACCAATGACTTGAAAAACCACCGTTG-- 124  
 trnP -AGATTTTAAACTCCTGCCCTAGCTCCCAAAGCT-AGAAATTTAAAAACTTAACTATTCTCTG----- 60  
 trnE ----- CAGGACCACTGACTTGAAAAACCAACGTTGTA 32  
*trnP* *trnE*

*trnE*  
 R ATTCAACT 132  
 trnP ----- 60  
 trnE ATTCAAC- 39  
*trnE*

1.111.2 nad6-cob -70

*nad6*

R TGC--CAAGGCAACT-GCTCCTAAAATAAACACCCCTGACAATATCATTATTGA-ATAAGACATAATCCCTGCCCGGATTAAACCGAGAATAAATATTTAAATATCCGCCTTTGACCTCAGGGACTT 124  
 nad6 AGAAGCAACAAAAATTACCCTAAATTTATTACTGCT-AAAACAAC-TAATAGATATA----- 56  
 cob ----- 0

*nad6*

*cob*

R AATGACCAGCCTTCGAAAACCCACCCCTCCTAAAAATCGCAAATGATGCCGTAACAGA- 184  
 nad6 ----- 56  
 cob AATGACCAATTTACGAAAGACACACCCGCTCCTAAAAATTGTTAACGATGCTTTAATTGAC 61  
 ----- 0

*cob*

1.111.3 trnE-trnF -1470

*trnE*

R GCCCGGGCTCTAAC CAGGACCAATGACTTGAAAAACCAACCGTTG-A-TTCAACTACAAGAACA-AACAACGCATCTGCCAACTATAGTCCTTGAAATATAAAATGTCTAGTCATTATTCTATGTATTA 125  
 trnE -C-TGAATTTTCATCAGGACCAC TGACTTGAAAAACCAACCGTTGTAATTCAACTACGGGAATATAAC----- 65  
 trnF ----- 0

*trnE*

R ACACCATAAAAAATTTTTAACCATACAGGAATTACTATCGTTTTTCATTTTTCAAAACGAAGTAGGTATAATCACATTAACATAATTAACCACCCTTTTTATCTACCACTCCCTATCCTCTTAAATAC 253  
 trnE ----- 65  
 trnF ----- 0

R TCATTAATCACCCGCTAGTCTCGCTTCTGTGGCCACGTTCTCTTGTAAGGTCAAGGGCAAGACATTTGACTTCCCCTTTTCAGTGAATTATTCCTGGCATTTCAGCCTAGCTTCACGGCCATTA AAAAG 381  
 trnE ----- 65  
 trnF ----- 0

R	TTTATTGTACATAACTTGCATTTTTGCGCATTTTATGAATGGTGGAACACATCAATTGATAATCGCTTCGCTAGCCGAGCGCTCTTTCTAAAGGGTATTTGGTATTTTTCTTCTTTCTTTTCATTTTA	509
trnE	-----	65
trnF	-----	0
R	CATTTTCAGAGTGTAACAAAATGATTCTCTTAAGGTTGAACAAAATTTCTTGAACCTCAGGAAATAATGTATTATGTTTTAATAATTATTCTTGCTAAATTGCATACCTGTAGCAAGAGCATAAATACTATAT	637
trnE	-----	65
trnF	-----	0
R	TACTTATTCAGACTAACCTATCTTATGCCCCCTCCCGTTTCGTCTAAACCCCCCTACCCCCCAGTTCCTAAAGTCTTATTCTGCAAACCCCCCGGAAACAGAAACTCCATGAACTGGACAACAAACAAT	765
trnE	-----	65
trnF	-----	0
R	TTAACCCATAACACCCCGCACCCCCAACCTTCCACACATACACACATACATATATACATATATACATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTACATATATACATATATA	893
trnE	-----	65
trnF	-----	0
R	CATATATACATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTACATATATA	1021
trnE	-----	65
trnF	-----	0
R	CATATATACATATATACATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTA	1149
trnE	-----	65
trnF	-----	0
R	CATATATACATATATACATGTATACGTGTGTACATATATACATATATACATATATACATATATACATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTACATATATACATATATA	1277
trnE	-----	65
trnF	-----	0
R	CATGTATACGTGTGTACATATATACATATATACATGTATACGTGTGTACATATATACATATATACATATATACATATATACATGTATACGTGTGTACATATATACATATATACATATATA	1405
trnE	-----	65
trnF	-----	0

R CATATTTACATATATTTACATACATTTACATATTTACATATATTTATGCTTATGTGTTTACTTATATCCTCAACCCGGTACTTCCTCCACCAACAAACCAACCCCTGTAAGATGACAATAATATGTTA 1533  
 trnE ----- 65  
 trnF ----- 0

*trnF*

R CCGTAACTTAA-T-TAAAGTTTAATATTGAAGCTATTAGGATGGGCCCTAAAAAGCC 1588  
 trnE ----- 65  
 trnF -CGTAGCTTAAATTAAAGCTTAAATGCTGAAGATATTAAGATGAAGCCTAAAAAC-CT 55

*trnF*

### 1.112 NC\_008831-NC\_003979

Avg ovsiz: -617

LCA: Harpacticoida-order

#### 1.112.1 cox3-trnW -62

*cox3* *trnW*

R GATGTGGTTTGGCTATTTCTGTATTTAGTTATTTATTGGTGAGG-AAA-CT-CGGTCTACTAAAAAACTTAGGTTAAATAAAACCAATTAATTTCAAATTTAATAATGAGAGAATCAGTTT 118  
 cox3 GATGTGGTGTGACTCTTTCTTTACTTAACTATTTATTGGTGGGGAATTCTAGGGTCTA----- 59  
 trnW ----- 0

*cox3*

1.112.2 trnS1-cox1 -771

*trnS1*

R	AGTATTAAAAATAACAAAATCTTTAAAAATTTTAAATTTCTAATTAAAAAACAAGCATATTAATGTTGGATTTTTGGCTTGGCTCTAAATTGGGGAATATTGGAAAAAGAGGCTCAAAACAGAGGGGAGCC	128
trnS1	A-----	1
cox1	-----	0

*trnS1*

R	GGCGAAAGCCCTAAATTAGAAAATTAGGGGTAGGGAGGCTGTAAACCGGCCATTTGGACGTTTGCGTGTAATTAATTTTTGAAGATTAAATGGGCGCCGATCCGCGGTCTGGGGGAGGTCATCGCTGGT	256
trnS1	-----	1
cox1	-----	0

R	ATGCCTGGGTGTAGGGCGGATGTCCTAGCTCTGCGCTTGACGGCTGATTATCGCTGAAAAAAAAAGAAAGAAAAAAAAAGAAAAGTTGAAAAATTTTTGTAGATACACAGTAACCCCCGGGGGGTTGGTAAG	384
trnS1	-----	1
cox1	-----	0

R	AGTGGGTACCAAAGGGGAGAGGAAGAATTATATCAGCTAGAAAATTTCTTATTAGGGGTTGAAGGGCAATTAAAAAAAAAAGTTGTGTGTACCAAGTTACAAAAATTTCCAAGTTTAGATTAAAAAGACAGA	512
trnS1	-----	1
cox1	-----	0

R	AAACAAAATTTTTTAAACTGAGGGAGTGGGCAGTAATTACCTGGCGAGCCTAGGAGCCTGGGGGGTCAAGTAGATTCTTGGCTTGGCTCTAAATTGGGGAATATTGGAAAAAGAGGCTCAAAACAGA	640
trnS1	-----	1
cox1	-----	0

R	GGGGAGCCGGCGAAAGCCCTAAATTAGAAAATTAGGGGTAGGGAGGCTGTAAACCGGCCATTTGGACGTTTGCGTGTAATTAATTTTTGAAGATTAAATGGGCGCCGATCCGCGGTCTGGGGGATGTTT	768
trnS1	-----	1
cox1	-----	0

		<i>cox1</i>	
R	AGAA	TAAAGTGGAGAGGGGCTACGAA	830
trnS1	----	CAACAAGATATTGGTACTTTATAC-TTGTTGCGGG	1
cox1	----	TAAAGTGGAGAGGGGCGACTAATCA	59
		<i>cox1</i>	

**1.112.3 trnW-rrnL -1020**

		<i>trnW</i>	
R	AAACTTAGGTTAAATAAACCAATTA	128	
trnW	-----	0	
rrnL	-----	0	
R	CTCTAAGATTTTCATTTTTTAGTT	256	
trnW	-----	0	
rrnL	-----	0	
R	TTTTCTAAGTATCAAGGAGGGATT	384	
trnW	-----	0	
rrnL	-----	0	
R	AATTAATCTTTAGTAAAAATTCAG	512	
trnW	-----	0	
rrnL	-----	0	
R	TAAAGCTCTGCCCGGTGATAAAAA	640	
trnW	-----	0	
rrnL	-----	0	

R     ATTCTGAGTGCAAATACTTAGACTAAATTCAGGGACGAGAAGACCCTAAAATCTTATTTACTTATTTAGATTATTATAAAAAATTAATTGGTTGGGGCAACCTAATAAATGTAAATACTTTTTATAGT     768  
trnW     -----  
rrnL     -----  
0  
0

R     CTAAACTTGAACCTCTGCAACTTATTACCAAGATACTTTAGGGATAACAGCATTAAAGGGCCTTGGAGTTCATATCTACTGTGCCTGAATGACCTCGATGTTGAATTAAGAAACCTTCTAAGAGAAAAAG     896  
trnW     -----  
rrnL     -----  
0  
0

R     CCTAGAAGTTCAGTCTGTTTCGACTGGTATTTTTCTTACATGATTTGAGTTAAGATCGACGTAAGTCAGATTGGTTTCTATCTTGAATTTTCTTTGATTTTATTAGTACGAAAGGAATTTAAAAA     1020  
trnW     -----  
rrnL     -----  
0  
0

*rrnL*

**1.113 NC\_007440-NC\_006405**

Avg ovsized: -667

LCA: Neobatrachia-suborder

**1.113.1 nad6-cob -86**

*nad6* *cob*

R     CG-A--CGGATTTGAGGCCACAGCCAATATTCCCAATAATAAACACAACCTCCTTTATCACTATTTCTGCTAGGTACTTAACTAGTCTGTATAATCTACCTTCTAGTTACAGAAATTATGGCACCTCT     125  
nad6     GGGAGAAGGATTTGAAGCAACAGCCACAATCCAACCAATAGTCATAATTCAAATACCA-TA-----  
cob     -----  
0  
0

*nad6*

	<i>cob</i>	
R	ACGTAAATCTCACCCAATTC	146
nad6	-----	61
cob	-----T	1
	<i>cob</i>	

**1.113.2 cob-trnE -340**

	<i>cob</i>	
R	GTAAGCATCATTCCCCACAACAAGCATCGCGCAGTTATGAGCCACCATCTGCCGTTTTAAAGCGTCAAATAAGCCATCCTACGAAGACTCCACCTAAATTGATGGCACATGACTATCTTCCTCAATGGG	128
cob	-----	0
trnE	-----	0

R	CCTTGATTAACGACCTATACTGGTTCACTCATTCAAACACATTTAAAAATCCCATAATTATTTTCCCATGAATTTGATCCTCTACTACCCTACGAAATGGTCTACCCTTACGCTAGGGGTTGGGCC	256
cob	-----	0
trnE	-----	0

		<i>trnE</i>	
R	GTCCACCCTCTACCAACAAGCCGCCAAACACATCCTAGATCAACCCTGAATCACACCAACACACAACAATTTGAACATGCCTCC	ATATTTCTGCCAGGACTTCAACCTAAACTTGTAACTGAAAAAC	384
cob	-----	-----	0
trnE	-----	ATATTCCTGCCAGGACTCTAACCTGGACCAACAGTATGAAAAAC	44
		<i>trnE</i>	

	<i>trnE</i>	
R	TACTGTTGTTGTTCAA-	400
cob	-----	0
trnE	TGCCGCTGTAATTCAAC	61
	<i>trnE</i>	



1.113.3 trnE-trnL1 -1577

	<i>trnE</i>	
R	CAGGACTTCAACCTAAACTTGTAACTGAAAAACTACTGTTGTTGTTCAACTACAGAAGCTTCCCATAAAATGATTCTTCCCCTATTATGCCCGTTTTTAGTTAGTAGGGTAAAACATCTTATGAT	128
trnE	CAGGACTCTAACCTGGACCAACAGTATGAAAAACTGCCCTGTAAATCAACTACAAGAAGCT	61
trnL1	-----	0
	<i>trnE</i>	
R	TTGCCCCCCCCATCTCTAGTCACTATTTATCTCTCAGTATCCCATAAGATGATTCTTCCCATATGTCTATTTACACTTTATTGGGTAAAACATTTTATGATCAACCTCATTCAATTTCTAACCATC	256
trnE	-----	61
trnL1	-----	0
R	ATTTATCTCTCAGTATCCCATAAGATGATTCTTCCTTTATATGTCCGTCTATACTTTATTGGGTATAACATTTTATGATCACCACATTCATTTCTAACCATCATTATCTCTCAGTATCCCATAAAA	384
trnE	-----	61
trnL1	-----	0
R	ATGATTTACCCATATATATGTTTAAGACATATATGTTTAATCCCATTTCATGTCTAGTCACCACTCATTACCCATATTTATGGTCATTGAACACATGAAGACCCAAACAAAATAAAAAATATCCCTTTT	512
trnE	-----	61
trnL1	-----	0
R	TAATGTTTGCCTGCGCCCATATTATGACTACTTGATTGGACCTTCCCTTGCCCGGGTAAATTCGTATCTTAATCTAAGTGAGTCCAACCTGGTTGATCCCTCCGTCTTAATCTTCATAAAATTTATGTT	640
trnE	-----	61
trnL1	-----	0
R	ACGAATAAACTCTAAAATGGTTTTCTTTACACCTTAAGTCTCCCATAACCTTCTTTACCTATAGTTAATAATGCATCATTTCATCCTACGAAGACTCCACCCAAATTTGATAGCACCATGAATATTTTTTTT	768
trnE	-----	61
trnL1	-----	0
R	CAATGGACCTTCATTAACGACCTATACTGGTTCCTCATTCAAACACACTTAAAAATCTCCCATAATTATTTTCCCCTCATGAATTGATCTTTTACTACCCTTCGTTACTACCAGGAATCCTATTCTT	896
trnE	-----	61
trnL1	-----	0

R TCACCCAACCTTACGAGACGGTCCACGGTTGGTTTAAGGACTGGATCGTCCTCAGTTTCCAATGGTCCAAATTTGTAGAGTTACAGCCGTCGATCTTACGTTTACCTGACGGATGTGAATCTGTGGGA 1024  
trnE ----- 61  
trnL1 ----- 0

R CCCATATTGAAGAGACGCTGCGATCGATCTTCAATAAAATATCCCTCCTATGAGCGAGGGACCTACCTACAAGATAAGACCACCCTTGAAGTACTGAGGCATTGGTAGGGGTTTTTATAGGGGAGGTTT 1152  
trnE ----- 61  
trnL1 ----- 0

R CATCCACATCTCAGAGTGTCCGCTATGGCATGGTGAGAGGTCCGGACTATACCTTAGTCCCCATTGCAGGTTATTGTTCCCATATCTATGAATGCTCGACGGACATAGAGACTACCCTGATATTTCCCT 1280  
trnE ----- 61  
trnL1 ----- 0

R CCCACCTTTAGGATTTACGCTCAAATTTGATTTTTTCGCTTTTTTTCATCTTTTTTTCATCTTTTTTGAATAATCAAAAAATCCATTTTTTACCCATTTTTTACCCATTTTTTACCCATTTTTTCTCTTTT 1408  
trnE ----- 61  
trnL1 ----- 0

R TTTGCTCCTACCCCCCCTTCCCCCCCCCAACTCTTTTTTCTATTAAATCCCCTAATCCCCCGAGTTAGGTTTAAAAAAAAAAGCCAATTGGGCCCCCCGAAAAAAAAATTTCTTATACTTAG 1536  
trnE ----- 61  
trnL1 ----- 0

R ATTTACACTTTTTTTTTTCTGCAGAACTTGATAAGTTTTTAACAATAACAAAAACCTTTATACCCTACGCAGAAAAATACTACATCAAAAAGCTAAGACTG **CTTTTAA**T**GGAAAA****GAGCT**-**TTCC****TC** 1663  
trnE ----- 61  
trnL1 ----- 26

*trnL1*

*trnL1*

*trnL1*

R **TGGT****TTAGG****GG****CCAG****CTAA**-**TCTTGGTGCAA****GT** 1696  
trnE ----- 61  
trnL1 **TGGT****CTTAGG****CT****CCAG**-**TATC****TCTTGGTGCAA****AT** 59

*trnL1*

1.114 NC\_008448-NC\_004594

Avg ovsized: -793

LCA: Galaxiidae-family

1.114.1 nad4-trnG -464

	<i>nad4</i>	
R	AAAATATTAGATTATGATCTAAAGATGGGGGTTAAATTCCTCTTATTTAGCCAGGAGAGGCTCGAAGCACTGGTGACTGCTGCAGTATTATTAGCTTCTGGCGTCACCGTCACGTGAGCCCACCATAG	128
nad4	A-----	1
trnG	-----	0
	<i>nad4</i>	
R	CATTATAGAAGGCGAACGAAAACAGGCCATTCAGTCTTTAGTCCTAACTATTTTTGCTAGGCTTCTATTTTACCTTCCTTCAAGCTATGGAATATTATGAAGCCCCCTTTACCATTGCTGATGGAGTAT	256
nad4	-----	1
trnG	-----	0
R	ACGGTTCAACCTTTTTTTGTAGCTACAGGTTTCCACGGCCTCCATGTAGTTATCGGCTCAACTTTTTTTAGCTGTCTGCCTACTCCGACAAATAATGTATCATTTTACATCTAAACATCACTTCGGCTTC	384
nad4	-----	1
trnG	-----	0
	<i>trnG</i>	
R	GAAGCAGCCGCTGATATTGACATTTGTTGATGTCGTGTGACTTTTCCTTTATGCCTCTATTTATTGATGAGGCTCATAGTCTTTCTAGTATTAATAATTAGTATAAGTGACTTCCAATCACGCAGTTC	512
nad4	-----	1
trnG	-----	46
	<i>trnG</i>	

	<i>trnG</i>	
R	<u>TTGGTTA-AA-CC</u>	523
nad4	-----	1
trnG	<u>TTGGTTAGAGTCC</u>	59
	<i>trnG</i>	

1.114.2 cox3-nad4l -487

	<i>cox3</i>	
R	<u>-CATTTTCGTTGATGTCGTGTGACCTTTTCCTTATGCCTCTATTTATTGATGAGGCTCATA</u>	127
cox3	GCAC TTCGTTGACGTTGTCTGATTATTCTTGTATGTCCTCAATTTATTGATGAGGCTCATA-----	60
nad4l	-----	0
	<i>cox3</i>	

R	ACAATAATTTAATTATGCTATCTTTACTATCGCAGGCCTCCGCTCAAGAACTTTAACCCCTTACGTCTTTTTGGGTATCTTAAATGTTTCATATGCCGAAAACTCTTGCCTGTGAGTATGTGTATAAC	255
cox3	-----	60
nad4l	-----	0

R	CCATTAGGATCCGCCTACCTCCCCCTTCTATCCAATTTTTCTAGTAATAATCTTATTACTCTTCCGCTTAGAAAATTGCTCTCTACATCCCCTTCCTTAAGGAGACCCACTAATGCTACCTCTA	383
cox3	-----	60
nad4l	-----	0

R	ACCACTTTTATTTGAACTGTAGTTGCTCTTATCTTGCTAACCTCGGCTTAACTTATAATTATTGCAGTGGAAGGACCTAAAAATAAGATGAAAAGGTGGTTAATCCAAAAACAAGACCTCTGATTTTCGAC	511
cox3	-----	60
nad4l	-----	0

		<i>nad4l</i>	
R	TCAGAAAATTATGGTTTAAATCCATAACCCCTTA	<u>TGACCGCACCCCTTTTACCTTCTTTCAGCTTTTATTCTAGGATTAATAGGTC</u>	604
cox3	-----		60
nad4l	-----	<u>TGACTCCAGTACACTTTACCTTCACTTCAGCTTTTGTCTCTAGGCTAATAGGATTAACCC</u>	59
		<i>nad4l</i>	

1.114.3 trnR-trnH -1428

		<i>trnR</i>	
R	<u>TCCAAAACAAAGACCTCTGATTTCGACTCAGAAAATTATGGTTTAAATCCATAACCCCTT</u>		128
trnR	-----		60
trnH	-----		0
		<i>trnR</i>	

R	TAAGCATCTTCTACCCACGCTATGTGTCTAGAAGGTATTATACTTTCTTTATTTATTGCACCCTCTCAATGAAACCTTCAATTAGATTATACCGGACTTTCTCCGCCCTATGCTACTACTTGCTTTT	256
trnR	-----	60
trnH	-----	0

R	TCTGCTTGCAGAGCAACTACAGGCTTAACATCATTAGTTACCACTGCTCGCACTGACAGCCCCAACGCTTAAAAGTATAAACCTTTTATAGTACTAAATATTTTAATCCCTGCCTTAATAATACTCC	384
trnR	-----	60
trnH	-----	0

R	CAACTATTTGATTGTCCTCTACTAAATAACTCTGATCTTCTTTTGTAAATCAAAGCCTTGTAATTGCTTAATTAAGCCTCTTTTGAATTTAAAAATACCAATGAAGTCGGTTGGTCGCCACAAATCTT	512
trnR	-----	60
trnH	-----	0

R	TTTTGCAGTTGACCCCTATTTTCCCCTTCTTACCCTCAACTGCTAACTCCTCCCTCTTAATATTTAGGCAAGCCAGAACCATACTTCTTTAGGACCAATCACTCGACAACATACTCTAATGCTATTA	640
trnR	-----	60
trnH	-----	0

R	GTCTCTTTACAAGTATTTTTAATTTTAGCATTTAATGCAACCGGATAATTATATCTTATATAATGTTTGAAACCACACTTCTCTCAACTTTAGTTATTATTGCCCGCTGGGGCAAGCAAACAGAACAT	768
trnR	-----	60
trnH	-----	0
R	TTAAACGCCAATACCTATTTTTTATTTAATACACTTGCAGGGTCTTTGCCCTTACTGATTGCTTTACTAGCCCTTCAAAGCATAACAAGTACCTTATCAATACTTGTGACACAATTCATTAGCCATT	896
trnR	-----	60
trnH	-----	0
R	AAATTCAATCTCCTCAACTTATAAATCATGTTAAGCACATGCCTTCTAGCTTTTTAGTTAGAATACCTCTTTATGGCACACACCTTTGACTTCCCAAAGCCCACTTAGAAAACCCCAATTGATGGCTCT	1024
trnR	-----	60
trnH	-----	0
R	ATAGTCCCTGTTGTAATGCTCCTAAAATTAGGAGCCTGCCGTATAATACAAACTATACCATACTAGAGCCCCTAGACAAAGAACTTGCACCCCCGTTTATTATTTTAGCTCCGTAAGAGATTGCCACA	1152
trnR	-----	60
trnH	-----	0
R	ACTGTTCTATCTGCCTACATCAGACAGGCCTAAAAGCTCTTATTGCATATTCTTCTGTTAGGATATGGGCCTTGTGACAGGAGGTATTTTAATTCAGACCCCTTAAGGATTCACAGAAGATGTTATTC	1280
trnR	-----	60
trnH	-----	0
R	TTATAATTGCACGTCATCTCACCTCCCAGCTCTTTTCTGCTTAGCTAACACCAGCTATGGATGAACCTGGAGTCAAACCTTACTTTTTAACCCGCGGGATACAAATTACTTTAGCCTTAATAATAATA	1408
trnR	-----	60
trnH	-----	0
R	TGGCAACTCATTGCTAATATGGTTAACCTGGCTTTAACCCCCCGCTGGGGGGGGGGGGGGGGGGCCTGACTATTCTG	1536
trnR	-----	60
trnH	-----	48

*trnH*



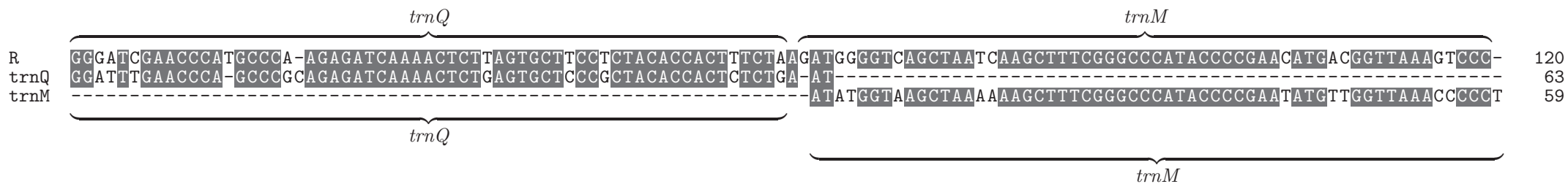


**1.115 NC\_008683-NC\_015076**

Avg ovsized: -940

LCA: Otocephala-clade

**1.115.1 trnQ-trnM 2**



1.115.2 trnI-trnV 0

1.115.3 rrnS-trnI -2822

	<i>rrnS</i>	
R	GA--CAAGGGGAGGCAAGTCGTAACATGGTAAGTGTACCGGAAGGTGCACTTGGATTAAACCCAGGGCGTGGCTGAGTTAGTCAAGCATCTCACTTACACCGAGAAGACATCCATGCAAGTTGGATCG	126
rrnS	GCCTCAAGGGGAGGCAAGTCGTAACATGGTAAGTGTACCGGAAGGTGCACTTGGAAAGAA-----	59
trnI	-----	0
	<i>rrnS</i>	
R	CCCTGAGCCAAACAGCTAGCTTAACCACCAATATAACCTAACAATGTTAATAACAAAACATGACTTAACACCACAAACTAAACCATTTTTTTTACCTGAGTATGGGAGACAGAAAAGGTTCAACCCAAA	254
rrnS	-----	59
trnI	-----	0
R	GCAATAGAAAAAGTACCGCAAGGGAAAGCTGAAAGAGAAATGAAACAACCCATATAAGCACTAAAAAACAAAGACTAAACCTTGTACCTTTTGCATCATGATTTAGCCAGCACCCCTCAAGCAAAGAGA	382
rrnS	-----	59
trnI	-----	0
R	CCTTTAGTTTGGAAACCCCGAAACCAGGTGAGCTACCCCGAGACAGCCTATTTAAATTTAGGGCTAACCCGTCTCTGTGGCAAAAGAGTGGGAAGAGCTCCGGGTAGAAGTGATAGACCTACCGAACCT	510
rrnS	-----	59
trnI	-----	0
R	GGTGATAGCTGGTTGCCTGAGAAGTGGATAGAAGTTCAGCCTCGTACGCCCAAATCAAAAAATATAACATTAAGACATAAGGGATACATACGAGAGTTAGTTAAAGGGGGTACAGCCCCTCTAACAA	638
rrnS	-----	59
trnI	-----	0
R	AGGATACAACCTTCACAGGAGGATAAAGATCATAATATATAAAACATGCTGTTTTAGTGGGCCTAAAAGCAGCCATCTAAATAGAAAAGCGTTAAAGCTCAGACAGAAAAGAAGTTTATTATACTGATAA	766
rrnS	-----	59
trnI	-----	0



R	AAAATCTTATTCCCCTAACAAATATCAGGCTAACCCATGCCACATGGAAGAAATTATGCTAAAATGAGTAACAAGAAGACCTGCTCTTCTCCAAGCACAAGTGTAAAGCCAGATCGGACAGACCACTGG	894
rrnS	-----	59
trnI	-----	0
R	AAATTAACGAACCCAACCCAAGAGAGTAATGTGAATAATAGAAAAACCAAGAAAAACCCACAACCAAAACAATCGTTAACCCACACTGGAGTGCTATTTTTAAAGGAAAGACTAAAAGAAAGGGAAGG	1022
rrnS	-----	59
trnI	-----	0
R	AACTCGGCAAACACAAGCCTCGCCTGTTTACCAAAAACATCGCCTCCTGCAACTAAACTGAGTATAGGAGGTCCAGCCTGCCAGTGACTACGGGTTCAACGGCCGCGGTATTTTGACCGTGCAAAGG	1150
rrnS	-----	59
trnI	-----	0
R	TAGCGCAATCACTTGTCTTTTAAATAGAGACCTGTATGAATGGCTAAACGAGGGCTTAACTGTCTCCCCCTTCAAGTCAGTGAAATTGATCTATCCGTGCAGAAGCGGGTATAACCATACAAGACGAG	1278
rrnS	-----	59
trnI	-----	0
R	AAGACCCTTTGGAGCTTAAGGTACAAAATTCAACCACGTTAAGCAACTTAATAAAAAGCAAAAACCTTAGTGAAAAATGAAATTTTACCTTCGGTTGGGGCGACCACGGAGGAAAAACAAGCCTCCGAG	1406
rrnS	-----	59
trnI	-----	0
R	TGGAATGGGCCAAACCCCTAAAACCAAGAGAAACATCTCTAAGCCACAGAACATCTGACCAAAAATGATCCGGCTAATAAAGCCGATCAACGAACCAAGTTACCCTAGGGATAACAGCGCAATCCTCT	1534
rrnS	-----	59
trnI	-----	0
R	CCCAGAGTCCATATCGACGAGGGGGTTTACGACCTCGATGTTGGATCAGGACATCCTAATGGTGCAGCCGCTATTAAGGGTTCGTTTGTTC AACGATTAAGTCCTACGTGATCTGAGTTCAGACCGG	1662
rrnS	-----	59
trnI	-----	0
R	AGCAATCCAGGTCAGTTTCTATCTGTAACGCTACTTTTCTAGTACGAAAGGATCGGAAAAGAGGGGCCATACTTAAAGCACGCCCCACCCCTAATTAATGAAAACAAATAAATTAACAAAGGGAG	1790
rrnS	-----	59
trnI	-----	0

R	GGCCAAAACCCCAACCGCCC	GAAATAAGGACATACTGGGGTGGCAGAGCATGGTAAATTGCGAAAGGCCTAAGCCCTTTAAACCAGAGGTTCAAATCCTCTTCCCAGTTTATGCTAAACACTCTAATA	1918
rrnS	-----	-----	59
trnI	-----	-----	0
R	AACCACCTGATCAACCCCCTAGCCTACATCGTGCCTGTCCTGCTAGCAGTAGCCTTCCTAACTCTAATCGAACGCAAAGTATTAGGATACATACAACACTACGAAAAGGGCCAAATGTGGTCGGACCATA	2046	
rrnS	-----	-----	59
trnI	-----	-----	0
R	CGGTCTCCTACAACCTATCGCCGACGGAGTAAAATTATTTATTAAGAGCCAGTCCGCCCTTCTACATCCTCCCCATTCTATTCTTAGCCACCCCCATTCTTGCATTAACTCTAGCCCTAACTCTAT	2174	
rrnS	-----	-----	59
trnI	-----	-----	0
R	GAGCACCCATACCCATACCCATACCCAGTAATTGATCTCAACCTAGGAGTTCTCTTTATCCTAGCCCTATCAAGCCTCGCAGTATATTCTATTCTAGGATCAGGATGAGCATCAAATTCAAAATACGCA	2302	
rrnS	-----	-----	59
trnI	-----	-----	0
R	CTAATCGGAGCCCTACGGGCCGTAGCCCAAACAATTTCTATGAAGTAAGCCTCGGACTAATCCTTCTATCAGTAATTATCTTCTCAGGAGGCTACACCCTACAAACATTTAGTACGGCCCAAGAAAG	2430	
rrnS	-----	-----	59
trnI	-----	-----	0
R	TATCTGACTATTAGCCCCTGCATGACCATTAGCCGCAATATGATACATCTCAACCCTGGCAGAACTAACCGAGCACCATTGACCTAACAGAAGGAGAATCAGAGCTAGTCTCAGGCTTCAACGTAG	2558	
rrnS	-----	-----	59
trnI	-----	-----	0
R	AATATGCAGGAGGGCCCTTCGCCCTCTTCTTCTAGCCGAGTATGCAAACATCCTATTAATAAAATACCTTATCAGCTGTACTATTTCTGGGAACATCACACATCCACCACATCCCAGAATTAACAACA	2686	
rrnS	-----	-----	59
trnI	-----	-----	0
R	ATTAGCCTTATGACTAAGGCCGCGCTACTCTCTATTGTATTCTCTGAGTACGAGCCTCGTATCCACGATTCCGATACGACCAACTAATACACCTTGTATGAAAAAACTTCTCCCCCTAACATTGGC	2814	
rrnS	-----	-----	59
trnI	-----	-----	0

R TCTAGTACTATGACACATTGCCCTGCCAATCGCACTAGCGGGCCTTCCCCCACAACCTATAGTTTCA *trnI* 2942  
 rrnS ----- 59  
 trnI ----- GGAACTGTGCCCGAATGCTTAGGGACCACTTTGATAGAGTGGCCTATAGGGGCTAAAATCCC 58

*trnI*  
 R TCAGTTCTT 2951  
 rrnS ----- 59  
 trnI TC----- 60  
*trnI*

**1.116 NC\_008683-NC\_008667**

Avg ovsiz: -962

LCA: Cyprinoidea-superfamily

**1.116.1 trnI-trnV 0**

**1.116.2 nad1-trnQ -71**

*nad1*  
 R CTAGTACTATGACACATTGCCCTGCCAATCGCACTAGCGGGCCTTCCCCCACAACCTATAGTTTTCAGGAACTGTGCCCGAATGCCTAGGGACCACTTTGATAGAGTGGCCTATAGGGGCTAAAATCCCCT 128  
 nad1 ----- 64  
 trnQ ----- ATTCA----- 0  
*nad1*

		<i>trnQ</i>	
R	CAGTTCT	TAGAAAGAAGGGGATCGAACCCATGCCCAAGAGATCAAAACTCTTAGTGCTTCCTCTA-	193
nad1	-----	-----	64
trnQ	-----	TAGAAAGAAGGGGATCGAACCCATGCCCAAGAGATCAAAACTCTTAGTGCTTCCTCTAC	59
		<i>trnQ</i>	

**1.116.3 rrnS-trnI -2816**

		<i>rrnS</i>	
R	GACAAGGGGAGGCAAGTCGTAACATGGTAAGTGTACCGGAAGGTGCACTTGGATTA AAC	CAGGGCGTGGCTGAGTTAGTCAAGCATCTCACTTACACCGAGAAGACATCCATGCAAGTTGGATCGCC	128
rrnS	-----	-----	60
trnI	-----	-----	0
		<i>rrnS</i>	

R	CTGAGCCAAACAGCTAGCTTAACCACCAATATAACCTAACAAATGTTAATAACAAAACATGACTTAACACCACAAACTAAACCATTTTTTTTACCTGAGTATGGGAGACAGAAAAGGTTCAACCCAAAGC	256
rrnS	-----	60
trnI	-----	0

R	AATAGAAAAAGTACCGCAAGGGAAAGCTGAAAGAGAAATGAAACAACCCATATAAGCACTAAAAAACAAAGACTAAACCTTGTACCTTTTGCATCATGATTTAGCCAGCACCCCTCAAGCAAAGAGACC	384
rrnS	-----	60
trnI	-----	0

R	TTTAGTTTGA AACCCCGAAACCAGGTGAGCTACCCCGAGACAGCCTATTTAAATTTAGGGCTAACCCGTCTCTGTGGCAAAAGAGTGGGAAGAGCTCCGGGTAGAAGTGATAGACCTACCGAACCTGG	512
rrnS	-----	60
trnI	-----	0

R	TGATAGCTGGTTGCCTGAGAAGTGGATAGAAGTTCAGCCTCGTACGCCCAAATCAAAAAATATAACATTAAGACATAAGGGATACATACGAGAGTTAGTTAAAGGGGGTACAGCCCCTCTAACAAAG	640
rrnS	-----	60
trnI	-----	0

R	GATACAACCTTCACAGGAGGATAAAGATCATAATATATAAAACATGCTGTTTTAGTGGGCCTAAAAGCAGCCATCTAAATAGAAAGCGTTAAAGCTCAGACAGAAAGAAGTTTATTATACTGATAAAA	768
rrnS	-----	60
trnI	-----	0
R	AATCTTATTCCCCTAACAAATATCAGGCTAACCCATGCCACATGGAAGAAATTATGCTAAAATGAGTAACAAGAAGACCTGCTCTTCTCCAAGCACAAGTGTAAGCCAGATCGGACAGACCACTGGAA	896
rrnS	-----	60
trnI	-----	0
R	ATTAACGAACCCAACCCAAGAGAGTAATGTGAATAATAGAAAAACCAAGAAAAACCCACAACCAACAATCGTTAACCCACACTGGAGTGCTATTTTTAAAGGAAAGACTAAAAGAAAGGGAAGGAA	1024
rrnS	-----	60
trnI	-----	0
R	CTCGCAAACACAAGCCTCGCCTGTTTACCAAAAACATCGCCTCCTGCAACTAACTGAGTATAGGAGGTCCAGCCTGCCAGTGACTACGGGTTCAACGGCCGCGGTATTTTGACCGTGCAAAGGTA	1152
rrnS	-----	60
trnI	-----	0
R	GCGCAATCACTTGTCTTTTTAAATAGAGACCTGTATGAATGGCTAAACGAGGGCTTAACTGTCTCCCCCTTCAAGTCAGTGAAATTGATCTATCCGTGCAGAAGCGGGTATAACCATAACAAGACGAGAA	1280
rrnS	-----	60
trnI	-----	0
R	GACCCTTTGGAGCTTAAGGTACAAAATTCAACCACGTTAAGCAACTTAATAAAAAGCAAAAACCTTAGTGGAATAATGAAATTTTACCTTCGGTTGGGGCGACCACGGAGGAAAAACAAGCCTCCGAGTG	1408
rrnS	-----	60
trnI	-----	0
R	GAATGGGCCAAACCCCTAAAACCAAGAGAAAACATCTCTAAGCCACAGAACATCTGACCAAAAATGATCCGGCTAATAAAGCCGATCAACGAACCAAGTTACCCTAGGGATAACAGCGCAATCCTCTCC	1536
rrnS	-----	60
trnI	-----	0
R	CAGAGTCCATATCGACGAGGGGGTTTACGACCTCGATGTTGGATCAGGACATCCTAATGGTGCAGCCGCTATTAAGGGTTCGTTTGTTC AACGATTAAGTCCTACGTGATCTGAGTTCAGACCGGAG	1664
rrnS	-----	60
trnI	-----	0

R	CAATCCAGGTCAGTTTCTATCTGTAACGCTACTTTTCCTAGTACGAAAGGATCGGAAAAGAGGGGCCATACTTAAAGCACGCCCCACCCCTAATTAATGAAAACAAATAAATTAACAAAGGGAGGG	1792
rrnS	-----	60
trnI	-----	0
R	CCAAAACCCCAACCGCCCCGAAATAAGGACATACTGGGGTGGCAGAGCATGGTAAATTGCGAAAGGCCTAAGCCCTTTAAACCAGAGGTTCAAATCCTCTTCCCAGTTTATGCTAAACACTCTAATAAA	1920
rrnS	-----	60
trnI	-----	0
R	CCACCTGATCAACCCCCTAGCCTACATCGTGCCTGTCCTGCTAGCAGTAGCCTTCCTAACTCTAATCGAACGCAAAGTATTAGGATACATACAACTACGAAAAGGGCCAAATGTGGTCGGACCATAACG	2048
rrnS	-----	60
trnI	-----	0
R	GTCTCCTACAACCTATCGCCGACGGAGTAAAATTATTTATTAAGAGCCAGTCCGCCCTTCTACATCCTCCCCATTCTATTCTTAGCCACCCCCATTCTTGCATTAACTCTAGCCCTAACTCTATGA	2176
rrnS	-----	60
trnI	-----	0
R	GCACCCATACCCATACCATACCCAGTAATTGATCTCAACCTAGGAGTTCTCTTTATCCTAGCCCTATCAAGCCTCGCAGTATATTCTATTCTAGGATCAGGATGAGCATCAAATTCAAAATACGCCT	2304
rrnS	-----	60
trnI	-----	0
R	AATCGGAGCCCTACGGGCCGTAGCCCAAACAATTTCTATGAAGTAAGCCTCGGACTAATCCTTCTATCAGTAATTATCTTCTCAGGAGGCTACACCCTACAAACATTTAGTACGGCCCAAGAAAGTA	2432
rrnS	-----	60
trnI	-----	0
R	TCTGACTATTAGCCCCTGCATGACCATTAGCCGCAATATGATACATCTCAACCCTGGCAGAACTAACCGAGCACCATTGACCTAACAGAAGGAGAATCAGAGCTAGTCTCAGGCTTCAACGTAGAA	2560
rrnS	-----	60
trnI	-----	0
R	TATGCAGGAGGGCCCTTCGCCCTCTTCTTCTAGCCGAGTATGCAAACATCCTATTAATAAATAACCTTATCAGCTGTACTATTTCTGGGAACATCACACATCCACCACATCCAGAATTAACAACAAT	2688
rrnS	-----	60
trnI	-----	0

R TAGCCTTATGACTAAGGCCGCGCTACTCTCTATTGTATTCTCTGAGTACGAGCCTCGTATCCACGATTCCGATACGACCAACTAATACACCTTGTATGAAAAAACTTCCTCCCCCTAACATTGGCTC 2816  
 rrnS ----- 60  
 trnI ----- 0

R TAGTACTATGACACATTGCCCTGCCAATCGCACTAGCGGGCCTTCCCCACAACCTATAGTTCAGGAACTGTGCCCGAATGCCTAGGGACCACTTTGATAGAGTGGCCTATAGGGGCTAAAAATCCCCTC 2944  
 rrnS ----- 60  
 trnI ----- TCAGGAACTGTGCCCGAATGCCTAGGGACCACTTTGATAGAGTGGCCTATAGGGGCTAAAAAT-----C 63

*trnI*

*trnI*

*trnI*  
 R AGTTCTT 2951  
 rrnS ----- 60  
 trnI ----- 63

**1.117 NC\_016059-NC\_015305**

Avg ovsized: -987  
 LCA: Ranidae-family

**1.117.1 nad4-trnH 11**

R TTCTCCTCCTCCATATCTTACCAGGCCTCCTCCTTGTACTCAAACCAGAAATTAATTTTCTGTGAATATAGTTTAAACAAAACCCTAGATTGTGATTCTAGAAACAAAGGTTGAACCCCT- 119  
 nad4 --CT--TCAT--AT--TC--TACCCGGACTTCTATTTATCCTCAAGCCAGAGCTACTTTTCTGTGTATA----- 59  
 trnH -----TTATGAGTGTA--A--TTAAACAATAATGCTAGATCGTGACTCTAAAATTGAAAAGTTAAAATCCTT 62

*nad4* *trnH*

*nad4* *trnH*

1.117.2 trnH-trnS1 2

	<i>trnH</i>	<i>trnS1</i>	
R	GTTTAAACAAAACCTAGATTGTGATCTAGAAACAAGTTGAAACCCTTTTATTCACCGAGCCGACTGGAGTAAAGAGAACTGCTAATTCCTCACCCTCATGGTTCAATTCATG---		118
trnH	ATTAAACAATAATGCTAGATCGTGACTCTAAAAATTGAAAGTTAAAAATCCTTCTGCTC-----		57
trnS1	-----TCCCGAGCCTGCCGGCATAGTGAGAACTGCTAATTCCTCACCAC-ATGGTTGACTCCATGCTC		65
	<i>trnH</i>	<i>trnS1</i>	

1.117.3 cob-trnL1 -2974

	<i>cob</i>		
R	--A-TCTTTGTCCTTCTTATCCCATCACTAGGACTCCTGAAAAA CAAGCTCTTAAAAATTTAAAAACAACCTGCCTCCGCTTATGTATATAGAGCATAAAATTTATTACCCCATATTAAGGCTAACATAC		125
cob	CTAGTATTTATCCTCGTA-CCCATG-CTAGGCCTCCTAGAAAAA TAAGCTCTTAAAAATCTA-----		59
trnL1	-----		0
	<i>cob</i>		
R	CTATTTTCATCCACATTAATGTATGATTTATAACATTCATGTATAATAACCATACATTAAACTTATATACATATTAAGATGTACATATATGCACCACAAAATATTATATTAATGTATTAAGACATTTTCAT		253
cob	-----		59
trnL1	-----		0
R	GTATGTTCTAAAAACATTATATGTATATAGTACATTAATCTATTTACCCCAAGCATATCATAAAACAATGTAAAAGAATGGTCTGATACCTTAATAACCTGACCAAAAAATGTTTAACCCCATCTTATGCT		381
cob	-----		59
trnL1	-----		0
R	TCGTAACCGTCCATATCATGACTACTTGATCGCACCTTCCCTTGTTAACGTCTACGCAGATCATAAAACCAAAGTGAGTCCAACCGGTTGATCCCCAAAAACAGAAAACCAATGTTTCCCTGTATACCTTG		509
cob	-----		59
trnL1	-----		0



R	AACTTAACAAATGAATACTTTTACAACCTTTAGAGTTACATCCCACATATACCACCCAATTGAATGCTTCATTTCATTTAATCAAGGTAAGACCTTAACTTGCACAAAATCACGCAGATTATTATAACAA	637
cob	-----	59
trnL1	-----	0
R	TCTTTCAATAATACCCTACCATGGACCTGCATACAGTATACTAAACGATAAAATTGCAAATAAAGTCCTTACAACATTAACCTGCCAGACCTCTACCTTGAACAATCAACACGACGCGTACGCTTTCAC	765
cob	-----	59
trnL1	-----	0
R	CCTATCGTACCCCCGTCAACCAGCCATGGATCGGGCCTAGGGTGATCTTAATTTTCCAATGGACCTTAATTGTAGAGTTACAGCGATTGACCTTTAGGAGGTATCTGACGGAACCGAATCTATGGACC	893
cob	-----	59
trnL1	-----	0
R	CAAAATAGAAGAGACGCTCAAAAATGCTTTTTTAAAAAGGTATCCCTCCTATGAACGAAAAGACCTCTCTACAAGCTCAGACCACTTAATGACAGCTAAGTCTACTGGTATTTTTTTTTTGGGGGTCCTTTCAC	1021
cob	-----	59
trnL1	-----	0
R	CAGCAACTCCAGTGGGGTCACGGCTTACGGATAAGGTTGGGACATATAGTCCAGGTACCATAATTTTACATTGTCTCTTGTATGATGCATTTTAATGAATGCTATAATGACATAATGTCAGCCCATAA	1149
cob	-----	59
trnL1	-----	0
R	TTACTGATTCTTCCCCCTTTCGGCAATAAAAAATTTTACGGCTTTTGTGCGAGAACCCCCCTTCCCCCCCCACAGCTTATTTTCCTGTAGATTGCCTTAAAAACCCCCCGAGATTAAGGTTTA	1277
cob	-----	59
trnL1	-----	0
R	TAGGAGTTCTGCCATGGGATTGTGACCGTCAACTTTTTTTTTTTCCTATAGATTGCCTTAAAAACCCCCCGAGATTAAGGTTTATAGGAGTTCTGCCATGGGATTGTGACCGTCAACTTTTTTTTTTCC	1405
cob	-----	59
trnL1	-----	0
R	TATAGATTGCCTTAAAAACCCCCCGAGATTAAGGTTTATAGGAGTTCTGCCATGGGATTGTGACCGTCAACTTTTTTTTTTTCCTATAGATTGCCTTAAAAACCCCCCGAGATTAAGGTTTATAGGA	1533
cob	-----	59
trnL1	-----	0

R	GTTCTGCCATGGGATTGTGACCGTCAACTTTTTTTTTTCTATAGATTGCCTTAAAAACCCCCCGAGATTAAGGTTTATAGGAGTTCTGCTGTGGGCCACACCACTGTCCTGCCCTGCCCCACCTAGG	1661
cob	-----	59
trnL1	-----	0
R	GCTTACTTAACTATATAAAAACTATCGAGTCCTTATAGGTACTTATCCTTATAGGTACTTATCCTTATAGGTACTTATCCTTATAGGTACTTATCCTTATAGGTACTTATCCTTATAGGTACTTATCC	1789
cob	-----	59
trnL1	-----	0
R	TTATAGGTACTTATCCTTGTAGGTACTTATCCTTGTAGGTACTTATCCTTATAGGTACTTATCCTTATAGGTACTTATCCTTGTAGGTACTTATCCTTGTAGGTACTTATCCTTGTAGGTACTTATCC	1917
cob	-----	59
trnL1	-----	0
R	TTGTAGGTACTTATCCTTGTAGGTACTTATCCTTGTAGGTTACTTATCCTTGTAGGTTACTTATCCTTGTAGGTTACTTATCCTTGTAGGTTACTTATCCTTGTAGGTTACTTATCCTTGTAGGTTAC	2045
cob	-----	59
trnL1	-----	0
R	TTATCCTTGTAGGTTACTTATCCTTGTAGGTTACTTATCCTTGTAGGTTACTTATCCTTGTAGGTTACTTATCCTTGTAGGTTACTTATCCTTGTAGGTTACTTATCCTTGTAGGTTACTTATCCTTG	2173
cob	-----	59
trnL1	-----	0
R	TAGGTTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACT	2301
cob	-----	59
trnL1	-----	0
R	TATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGT	2429
cob	-----	59
trnL1	-----	0
R	GGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTT	2557
cob	-----	59
trnL1	-----	0

R ATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGATTACTTATCCTTGTGGGTTACTTATCCTTGTGGGTTACTTATCCTTGTGGGTTACTTATCCTTGTGGGTTACTTATCCTTGTG 2685  
 cob ----- 59  
 trnL1 ----- 0

R GGTTACTTATCCTTGTGGGTTACTTATCCTTGTGGGTTACTTATCCTTGTGGATTACTTATCCTTGTGGGTTACCACGTATTTATTAAACCTATAACATCCCTGTATTCCCACATGAACTGCCACGAG 2813  
 cob ----- 59  
 trnL1 ----- 0

R TTTGCGAACCATTCTCTGATACTGTCACTGCCTTTGTTATTTATCTACTAATATCCTTCCTATTCCCCAAACTACCCGCCCAACCTCCAAACAACCTTAACTCACCTAAATTTCTGTTTGTATG 2941  
 cob ----- 59  
 trnL1 ----- 0

R AGATTGCCTGAATAATATAAAATTTAGCCACCCCTTACAACCTTATACCTACCATAAGATTAGACCACTTAATTTAATAACCCTCCCACCCATCGCCTTTTAAAGGAAAAAGAGCCCTCCACTGGCCT 3069  
 cob ----- 59  
 trnL1 ----- AC CCGCTTTTAAAGGAAAA CAGCCCTCCACTGGCCT 36

*trnL1*

*trnL1*

R TAGGAGCCAGCATCTCTTGGTGCAAGT- 3096  
 cob ----- 59  
 trnL1 TAGGAGCCAGCACCTCTTGGTGCAAGTC 64

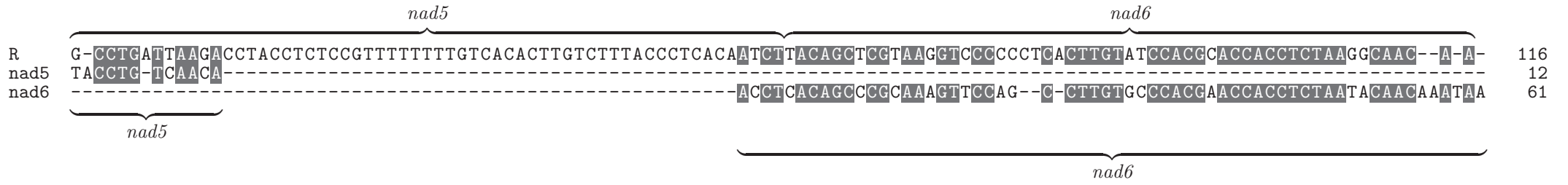
*trnL1*

### 1.118 NC\_016059-NC\_008975

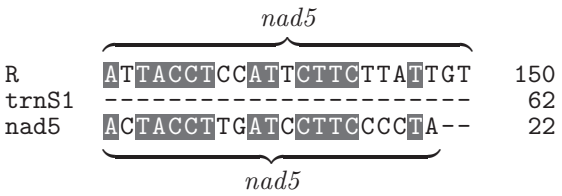
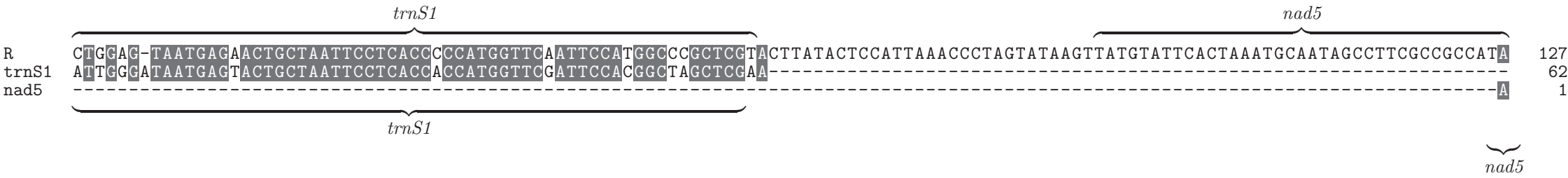
Avg ovsized: -1045

LCA: Ranoidea-superfamily

1.118.1 nad5-nad6 -44



1.118.2 trnS1-nad5 -65



1.118.3 cob-trnL1 -3028

*cob*

R	ATCTTTGTCCTTCTTATCCCATCACTAGGACTCCTGGAAAAACAAGCTCCTAAAAATTTAAAAACAACCTGCCTCCGCCTTATGTATATAGAGCATAAAATTTATTACCCCATATTAAGGCTAACATACCTA	128
cob	-----	0
trnL1	-----	0
R	TTTCATCCACATTAATGTATGATTTATAACATTCATGTATAATAACCATACATTAAACTTATATACATATTAAGATGTACATATATGCACCACAAAATATTATATTAATGTATTAAGACATTTTCATGTA	256
cob	-----	0
trnL1	-----	0
R	TGTTCTAAAAACATTATATGTATATAGTACATTAATCTATTTACCCCAAGCATATCATAAAACAATGTAAAAGAATGGTCTGATACCTTAATAACCTGACCAAAAATGTTTAACCCCATCTTATGCTTCG	384
cob	-----	0
trnL1	-----	0
R	TAACCGTCCATATCATGACTACTTGATCGCACCTTCCCTTGTTAACGTCTACGCAGATCATAAACCAAAGTGAGTCCAACCGGTTGATCCCCAAAAACAGAAACCCAATGTTCCCTGTATACCTTGAAC	512
cob	-----	0
trnL1	-----	0
R	TTAACAAATGAATACTTTTACAACCTTTAGAGTTACATCCCACATATACCACCCAATTGAATGCTTCATTCATTTAATCAAGGTAAGACCTTAACTTGCACAAAATCACGCAGATTATTATAACAATCT	640
cob	-----	0
trnL1	-----	0
R	TTCAATAATACCCTACCATGGACCTGCATACAGTATACTAAACGATAAAATTGCAAATAAAGTCCTTACAACATTAACCTGCCAGACCTCTACCTTGAACAATCAACACGACGGGTACGCTTTCACCCT	768
cob	-----	0
trnL1	-----	0
R	ATCGTACCCCCGTCAACCAGCCATGGATCGGGCCTAGGGTGATCTTAATTTTCCAATGGACCTTAATTGTAGAGTTACAGCGATTGACCTTTAGGAGGTATCTGACGGAACCGAATCTATGGACCCAA	896
cob	-----	0
trnL1	-----	0

R	ATAGAAGAGACGCTCAAAATGCTTTTTAAAAGGTATCCCTCCTATGAACGAAAGACCTCTCTACAAGCTCAGACCACTTAATGACAGCTAAGTCTACTGGTATTTTTTTTTGGGGGTCCTTTCACCAG	1024
cob	-----	0
trnL1	-----	0
R	CAACTCCAGTGGGGTCACGGCTTACGGATAAGGTTGGGACATATAGTCCAGGTACCATAATTTTACATTGTCTCTTGTATGATGCATTTTAATGAATGCTATAATGACATAATGTCAGCCCATAATTA	1152
cob	-----	0
trnL1	-----	0
R	CTGATTCTTCCCCTTTCCGCAATAAAAAATTTTACGGCTTTTTGTGCGAGAACCCCCCTTTCCCCCCCACAGCTTATTTTCCTGTAGATTGCCTTAAAAACCCCCCGAGATTAAGGTTTATAG	1280
cob	-----	0
trnL1	-----	0
R	GAGTTCTGCCATGGGATTGTGACCGTCAACTTTTTTTTTTCCCTATAGATTGCCTTAAAAACCCCCCGAGATTAAGGTTTATAGGAGTTCTGCCATGGGATTGTGACCGTCAACTTTTTTTTTTCCCTAT	1408
cob	-----	0
trnL1	-----	0
R	AGATTGCCTTAAAAACCCCCCGAGATTAAGGTTTATAGGAGTTCTGCCATGGGATTGTGACCGTCAACTTTTTTTTTTCCCTATAGATTGCCTTAAAAACCCCCCGAGATTAAGGTTTATAGGAGTT	1536
cob	-----	0
trnL1	-----	0
R	CTGCCATGGGATTGTGACCGTCAACTTTTTTTTTTCCCTATAGATTGCCTTAAAAACCCCCCGAGATTAAGGTTTATAGGAGTTCTGCTGTGGGCCACACCACTGTCCTGCCCTGCCCCACCTAGGGCT	1664
cob	-----	0
trnL1	-----	0
R	TACTTAACTATATAAAAACTATCGAGTCCTTATAGGTACTTATCCTTATAGGTACTTATCCTTATAGGTACTTATCCTTATAGGTACTTATCCTTATAGGTACTTATCCTTATAGGTACTTATCCTTA	1792
cob	-----	0
trnL1	-----	0
R	TAGGTACTTATCCTTGTAGGTACTTATCCTTGTAGGTACTTATCCTTATAGGTACTTATCCTTATAGGTACTTATCCTTGTAGGTACTTATCCTTGTAGGTACTTATCCTTGTAGGTACTTATCCTTG	1920
cob	-----	0
trnL1	-----	0



R  
cob  
trnL1

TTGCTGAATAATATAAATTTAGCCCACCTTACAACCTTTATACCTACCATAAGATTAGACCACTTAATTTTAATAACCTCC

3070  
0  
44

*trnL1*

CACC C-AT-CCGCTTTTAAAGGAAAA GAGCCCTCCA CTGGCCTT

CACCTAATGCAGCTTTTAAAGGAAAA AACTCTTCC TCTGGCCTT

*trnL1*

R  
cob  
trnL1

3096  
0  
71

*trnL1*

AGGAGCCAGCATCTCTTGGTGCAAGT-

AGGAGCCAGCATCTCTTGGTGCAAAATC

*trnL1*

### 1.119 NC\_006335-NC\_004592

Avg ovsiz: -1121

LCA: Teleostomi-superclass

#### 1.119.1 nad5-trnT -80

R  
nad5  
trnT

120  
30  
18

*nad5*

---TAG-TAACACTTACCT--CTACCCTTTTAATGGCCTCCCCAGTCCTAATTAATTATATCAACTTACCCAAATCTATAATTGATAGAAATTTACACCAAATCAATACTACC-GCAGTTTA-AGAAA

ACATACTTAACCCTTTTTTTCCTAACCTTT

*nad5*

ACCAGAAGCTCAGAGAAG

*trnT*

*trnT*



	<i>trnT</i>	
R	A-CATCAGCCTTGTAAGCTGAAGAATGGGGATTTAAAATCT	160
nad5	-----	30
trnT	AGCATCGGTTTGTAAATCCGAA-AGTCGAAGGTTAAAATCC	58
	<i>trnT</i>	

1.119.2 trnT-nad6 -1166

	<i>trnT</i>	
R	GTTTAAGAAAA-CATCAGCCTTGTAAGCTGAAGAATGGGGATTTAAAATC--TCCCGATAGTCCGGGCTCCGCCTAAGGACGTAGACTTAAACCCAGGCAGAGCCTGGGAAAGAATCTAATTTAAATA	125
trnT	-----	71
nad6	-TCAGAGAAGAGCATCGGTTTGTAAATCCGAA-AGTCGAAGGTTAAAATCCA TCCTGATGCTAAGAGC-CC-CCT-----	0
	<i>trnT</i>	

R	TATATTCCACATGCGAGTAAAAAGGGGGGGTCTGGCTCTATCCAGGCCCTGCCTTGAGGCATTATTACCAATCCAGGCTCTACCACCATATAACCCAACCCACATACCCATATAAACCAAAAGT	253
trnT	-----	71
nad6	-----	0

R	CACCTAAAAACAACCTACCGCTTATGTCCTTTCTTCACTATAGTAACGCGGTGACATATTATGTATAATAGTGCATTTCATCTAATTTCCATACGAATCTGTTTTAGTACCCTCCTGGTTTTTAATTTCA	381
trnT	-----	71
nad6	-----	0

R	CACACGGTAGAGAAATAAACAACCCGCCCTCCAGACACGATGTCCAGATCTAAGGACCTATATTGTAGGTCCGCAGCTCGCTATCTTCACGAGACCACTGGTTATGAATCTATGTGCACATAGGCAA	509
trnT	-----	71
nad6	-----	0

R	GAGTAGGCGGTAACAGTACGACCCCATATAGTTGAAGGTGATGCTCTCAAGAATCGGCGTACCCCGCACCCACATAACTGGTCTAGATGCATTATTATTTTTTTTCTCTTGTGAGGTCAGCCAAC	637
trnT	-----	71
nad6	-----	0

R ACCCAATTTATAACTGGTAAATCTGGCTCTAAAACCTGAACATATAATGCCCGTGTAGTCTTACTATATACGCATGTTTTAATATAAGTCAATGTTGTATGGACATACACCTTCGTATTCCTCTGCCT 765  
 trnT ----- 71  
 nad6 ----- 0

R GATTCCCAGAATATTACCTCCCAGTTTCCCCCCCCTCTTGCATTTTCACAAAATAATTTTATTATACAATATATTTTTCTACTTTAAACCCCCCTCCCCAAAATATAGGCTAATCGGCGCCTGAAATC 893  
 trnT ----- 71  
 nad6 ----- 0

R TTTAGTCAAACCCCGAAACCTAAAAACCCATCACACTCACGCACTGAAATAACAAATGATTAATAATAATTTTATTAACCTTTTAATATATTTTAATATATTTTAATATATTTTAATATATTTTAATAT 1021  
 trnT ----- 71  
 nad6 ----- 0

R ATTATAAGATATATTAGTGTAACCTTACTAAAGCACGGCACTGAAAATGCCAATATAAATAATAATAAATTTTATAAACACTAAAAGGTCTGGTCCCAGCCTTAGTATAAAATTTTAAATATGAGAACTT 1149  
 trnT ----- 71  
 nad6 ----- 0

R ATATAATATATTTAAAATTTCTAACCAACAGCTGCCACCATAAACCAATACAACCTTTTTAACCAAATTTACCAAATACATAAACCCCTCACAGCACGTAAGATCCACGAGATACCCACGAGTAATT 1277  
 trnT ----- 71  
 nad6 ----- 39

*nad6*

*nad6*

*nad6*

R TCTAATACCGTAAATA- 1293  
 trnT ----- 71  
 nad6 TCTAATACTACAAAAAG 56

*nad6*

1.119.3 trnP-trnF -2117

	<i>trnP</i>	
R	AGGATTTACACCTTC-ACGATTGACACCCAAGGCCAAAATTTCTAAATTTAACTACGGCTTATGTCCTTTCTTCACTATAGTAACGCGGTGACATATTATGTATAATAGTGCATTCATCTAATTTCCAT	127
trnP	GAGATTTTAA-CTCCTATCTTTAGCTCCCAAAAGCTAAAATTTTAAATTAAACTACC-CT	57
trnF	-----	0
	<i>trnP</i>	
R	ACGAATCTGTTTTAGTACCCTCCTGATTTTTAATTTTACACACCGGTAGAGAAAATAAACAACCCGCCCTCCAGACACGATGTCCAGATCTAAGGACCTATATTGTAGGTCCGCAGCTCGCTATCTTCA	255
trnP	-----	57
trnF	-----	0
R	CGAGACCACTGGTTATGAATCTATGTGCACATAGGCAAGAGTAGGCGGTAACAGTACGACCCCATATAGTTGAAGGTGATGCTCTCAAGAATCGGCGTACCCCGCACCCACATAACTGGTCTAGATG	383
trnP	-----	57
trnF	-----	0
R	CATTCATTATTTTTTTTTCTCTTGTGAGGTGAGCCAACACCCAATTTATAACTGGTAAATCTGGCTCTAAAACCTGAACATATAATGCCCGTGTAGTCTTACTATATACGCATGTTTTAATATAAGTC	511
trnP	-----	57
trnF	-----	0
R	AATGTTGTATGGACATACACCTTCGTATTCCTCTGCCTGATTCCCAGAATATTACCTCCCAGTTTCCCCCCTCTTGCATTTACAAAATAATTTTATTATACAATATATTTTTTCTACTTTAAACCC	639
trnP	-----	57
trnF	-----	0
R	CCCTCCCCAAAATATAGGCTAATCGGCGCCTGAAATCTTTAGTCAAACCCCGAAAACCTAAAAACCCATCACACTCACGCACTGAAATAACAAAATGATTAATAATAATTTTATTAACCTTTTAATATAT	767
trnP	-----	57
trnF	-----	0
R	TTTAATATATTTTAATATATTTTAATATATATTTTAATATATTGTAAGATATGCTAGTGTAGCTTACTAAAGCACGGCACTGAAAATGCCAATATAAATAATAATAAATTTTATAAACACTAAAAGGT	895
trnP	-----	57
trnF	-----	0

R	CTGGTCCCAGCCTTAGTATAAAATTTTTAATATGAGAACTTATATAATATATTTTAAAATTTCTAACCAACAGCTGCCACCAATTAATCTAATATAGAAGCTTCAAACAGGATTAATTTAAACCTATATA	1023
trnP	-----	57
trnF	-----	0
R	CTAGTAACACTTACCTCTACCCTTTTAAATGGCCTCCCCAGTCCTAATTAATTATATCAACTTACCCAAATCTATAATTGATAGAAAATTTACACCAAATCAATACTACCGCAGTTTAAGAAAACATCAG	1151
trnP	-----	57
trnF	-----	0
R	CCTTGTAAGCTGAAGAATGGGGATTTAAAATCTCCCGATAGTCCGGGCTCCGCCTAAGGACGTAGACTTAAACCCAGGCAGAGCCTGGGAAAAGAATCTAATTTAAATATATATTCCACATGCGAGTAA	1279
trnP	-----	57
trnF	-----	0
R	AGAGGGGGGGGGTCTGGCTCTATCCAGGCCCTGCCTTGAGGCATTATTACCAATCCAGGCTCTACCACCATATAACCCAACCCACATACCCATATAAACCGAAAGTCACCTAAAAACAACCTACCGC	1407
trnP	-----	57
trnF	-----	0
R	TTATGTCCTTTCTTCACTATAGTAACGCGGTGACATATTATGTATAATAGTGCATTCATCTAATTTCCATACGAATCTGTTTTAGTACCCTCCTGATTTTTAATTTACACACGGTAGAGAAATAAAC	1535
trnP	-----	57
trnF	-----	0
R	AACCCGCCCCTCCAGACACGATGTCCAGATCTAAGGACCTATATTGTAGGTCCGCAGCTCGCTATCTTCACGAGACCACTGGTTATGAATCTATGTGCACATAGGCAAGAGTAGGCGGTAACAGTACG	1663
trnP	-----	57
trnF	-----	0
R	ACCCCATATAGTTGAAGGTGATGCTCTCAAGAATCGGCGTACCCCGCACCCACATAACTGGTCTAGATGCATTCATTATTTTTTTTTCTCTTGTGAGGTCAGCCAACACCCAATTTATAACTGGTAA	1791
trnP	-----	57
trnF	-----	0
R	ATCTGGCTCTAAAACCTGAACATATAATGCCCGTGTAGTCTTACTATATACGCATGTTTTAATATAAGTCAATGTTGTATGGACATACACCTTCGTATTCCTCTGCCTGATTCCAGAATATTACCTC	1919
trnP	-----	57
trnF	-----	0

R CCAGTTTCCCCCCCCTCTTGCATTTACACAAAATAATTTTATTATACAATATATTTTTCTACTTTAAACCCCCCTCCCCAAAATATAGGCTAATCGGCGCCTGAAATCTTTAGTCAAACCCCGAAACC 2047  
trnP ----- 57  
trnF ----- 0

R TAAAAACCCATCACACTCACGCACTGAAATAACAAATGATTAATAATAATTTTATTAACCTTTAATATATTTTAAATATATTTTAAATATATTTTAAATATATTTTAAATATATTGTAAGATATGCTAGT 2175  
trnP ----- 57  
trnF ----- 0

*trnF*

R GTAGCTTACTAAAGC-ACGGCACTGAAAATGCCAAGACAGATAATAATAAATCT 2228  
trnP ----- 57  
trnF GTATTC TACTT AAGATATAACACTGAAGATGTTAAGACGGCCCC TAAAAAGGCC 54

*trnF*

## 1.120 NC\_007178-NC\_008975

Avg ovsized: -1122

LCA: Old World tree frogs-family

### 1.120.1 trnT-trnL1 -15

*trnT*

R -TTAACAACCAAAGCATTGGTCTTGTAACCAAAGATTGTAGACTAATATC-TACTCAGGACTAAAATTTATTTAAATCCAATCTCGCTTTTAAAGGAAAAAAGAAATTCCCTGGCCTTAGGC GCCAG 126  
trnT CTTAAC-CTAAAGCATTGGTCTTGTAACCAAAGATTGTAACTAA-ACCTFACCAGAGCT-----CTAATGCAG-CTTTTAAAGGAAAAAAGTC TTCCCTGGCCTTAGGA GCCAG 60  
trnL1 ----- 50

*trnL1*

*trnT*

*trnL1*

	<i>trnL1</i>	
R	<u>CACTCTTGGTGCAAGT</u> -	143
trnT	-----	60
trnL1	<u>CAATCTCTTGGTGCAAAATC</u>	68
	<i>trnL1</i>	

**1.120.2 trnL1-trnP -62**

	<i>trnL1</i>		<i>trnP</i>	
R	<u>CTTAGGCGCCAGCACTTCTTGGTGCAAGTCCAAGTAAAAGCTTAGTTAATACACAAACATA</u>		<u>TCAAGACAAAGGAGTTTAAG-TTCATATCTTCGACCCCCAAAGCCGACATTCTAATTAAA-</u>	
trnL1	-----		-----	
trnP	-----		<u>TCAAGACAAAGGAGTTTAAGCTTC-ATCTCGACCCCCAAAGCCGACATTCTAATTAAA</u> C	
			<i>trnP</i>	
				121 0 60

**1.120.3 nad5-trnT -3290**

	<i>nad5</i>		
R	<u>GCTTACCTTGGCGACTCTCTTTCATCAGCTTGCCCTAGCACTCCTCCTAACACCCGAGTAGCAATCCTACACATACTATACATACTATGTATAATCAACATT</u> CATACTATGTTTTTTTATACATACTATG		
nad5	-----		
trnT	<u>TACCTGTCAACATTATTAAATTACTCTTCTACTGACACT</u>		
	-----		
	<i>nad5</i>		
R	<u>TATAATCAACATT</u> CATACTATGTTTTTTTATACATATTATGTATAATCAACATTCATATATGTTTATACATACTATGTATAATCAACATTCATACTATGTTTTTTTATACATACTATGTATAATCAACAT		
nad5	-----		
trnT	-----		
			128 38 0  256 38 0

R	TATAATAAATGAGGACTAAGGTAAACATCACACTTTTTGGACAATTCAATGAATGTACCGAGGAAATTAATGAATGTAAAACAACACACAAATAATGTATATGATACCAAAAATGTAATTAATAA	384
nad5	-----	38
trnT	-----	0
R	CACTAATTGAAGAATACATTATTTTCATAAACACTAGCGTATACATTCCATTAAGGCGGATGATCTCTGCAGCATATGATTAATACCACATATTATGAAAATTAGCACGGAATGATTGGCCGCGCCCA	512
nad5	-----	38
trnT	-----	0
R	TATCATGACTACTTGATAGGACCTTCCCTTGTCTTAGGATATTCATATCTTGCCCAATGTTAGTCCAATTGCTAACCACATACCATCATAAACAATGTTTATGTAATTAATATAACTTAACAGACCA	640
nad5	-----	38
trnT	-----	0
R	AACCTAACAACTTAAGACTCATATAAATGATTTAACACTAAACTGAATGCATCATTTCATATAGACAAGGTAAAGCCTTCACTTGCTTAAGATCATGAATATGTATTACAACCTTGTAAATCAAC	768
nad5	-----	38
trnT	-----	0
R	TATAATGGATCATTATATAGGACTTTTCACAAAATGCAGGAAAAAATTCTTTTTTCCCAGTATGAAAATTCTCTTCAAGTCATCTTCCACATGAATATTTTCTTCAAATGACCTGATATACTCAACTT	896
nad5	-----	38
trnT	-----	0
R	GACGCCTATTCATTAAAGCTAACGTCCAACAACCCAACGAATGCGCGGAAGCATCTCGCTGGTTAAGCTTCCAAGGGACCAAGGTCGTAGCCGACCAACTAGAACTTTTCAGGAGGTATCTGACGGAA	1024
nad5	-----	38
trnT	-----	0
R	CCGAATCTATGGACATACAAAACCTTAATAAACATCTAGTGCTTTTTAAGAGGCATCCCTCTCTATGGAGTCGGGACCTTTATATAAGCTCAGACTACTTGTGAAGTCTGGGTCTTTCTGGACTGGGGG	1152
nad5	-----	38
trnT	-----	0
R	GGGGTAAACAAGAACTCATCAACATTGGACAGGGGGGTTTTCACTGTAAGATTCATATCCGAAACCGTGGAACAAGTCACACGCTTAGCAGTGCGCACCGCCCCTGTCTCAGTAAACGTCTCCGCCGT	1280
nad5	-----	38
trnT	-----	0

R	TTCAATGGTTATTTCGGGTGGGACTAACAGCTATACTGGATGTCCTCCACTAGCCTGAACTCCAACGAGCATAACTTAATGCTAGACGGACATATTTTTCAACAGGTCCTTAATTCCACACACTATATT	1408
nad5	-----	38
trnT	-----	0
R	TCTCCCCCTTTTGCAATTTTTACAAATTTTTAAAAATAGAAAATTTTTCTGCCTACCCCCCCTTTCCCCCCCCAAAAACAGACCAGCTAGCAACCCCTAGCGCCCCCGGGGCTAAGGACTAAAAA	1536
nad5	-----	38
trnT	-----	0
R	GATCTATTTGTGGGGTTAACAAAGCACAAACCACAACCCTGCTGCTTTGAGATATGTTCAATATATTCGTGTCTTAATCATTTTTATATGTGATATAACACGTAATATGTCTTATAAATGATGTATAC	1664
nad5	-----	38
trnT	-----	0
R	ACTATAAATGATGTATACACTATAAATGATGTATACACTATAAATGATGTATACACTATAAATGATGTATACACTATAAATGATGTATACACTATAAATGATGTATACACTATAAATGACGTATACAC	1792
nad5	-----	38
trnT	-----	0
R	TATAAATGATGTATACACTATAAATGATGTATACACTATAAATGATGTATACACTATAAATGATGTGTACACTATAAATGATGTATACACTATAAATGATGTATACACTATAAATGATGTATACACTA	1920
nad5	-----	38
trnT	-----	0
R	TAAATGATGTATACACTATAAATGATGTATACACTATAAATGATGTATACACTATAAATGATGTATACACTATAAATGATGTATACACTATAAATGATGTATACACTATAAATGATGTATACACTATA	2048
nad5	-----	38
trnT	-----	0
R	AATGATGTATACACTATAAATGATGTATACACTATAAATGATGTATACACTATAAATGATGTATACACTATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTA	2176
nad5	-----	38
trnT	-----	0
R	TATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTACACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATG	2304
nad5	-----	38
trnT	-----	0



R	ATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATAC	2432
nad5	-----	38
trnT	-----	0
R	ACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATA	2560
nad5	-----	38
trnT	-----	0
R	AATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGT	2688
nad5	-----	38
trnT	-----	0
R	ATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTATATAAATGATGTATACACTA	2816
nad5	-----	38
trnT	-----	0
R	TATAAATGATGTATACACTATACGCTACACAAACACGTGTCTGCAGTAATTAACATACAGGTGCCTGAACGCACACTGACGTGGTTTTGTTCCCACGCATACACGGTGATCCTCACTAACCTCTACTT	2944
nad5	-----	38
trnT	-----	0
R	ATTTTTAACCCACCCTAAATTATTCTTCCTATTAAGCTTACTGCTAGAATATAAGGGTTATTTATACTTCCCCCTTTGTGCATATGTAATGTTCCGCACTTTTACATGAATAAATTCTTCATCATTTA	3072
nad5	-----	38
trnT	-----	0
R	ACCCCGACTATGATACCCTTTACCAATTTATTTTTATTGCATTAATACACATTTCTGACTAGTTAGCATTAACTCTTTTCCTTCCTTGATAAACTATATTGTAGCATGCCTTGCATACGTAGTCGGA	3200
nad5	-----	38
trnT	-----	0
R	TCAAACCTACGCTCTAACAGATTATTATAACCTACACAATATTTTAGTTATACTAGTAATGTATAACCAATGTTTATTGGCGTTTCGCTCTATTTCTTAATGCAACTAACACACCCTTCTACCCGTATTT	3328
nad5	-----	38
trnT	-----	0

*trnT*  
 R CTAAGTCTCGATAGCTTAAACACCAAAGCATTGGTCTTGTAACCAAAGATTGTAGACTA-AT-AT 3391  
 nad5 ----- 38  
 trnT ---AGCCCTGGTAGCTTAAAC-CTAAAGCATTGGTCTTGTAAGCCAAAGATTGTAAACTAAACCTT 61  
*trnT*

**1.121 NC\_008683-NC\_012762**

Avg ovsiz: -1446

LCA: Teleostomi-superclass

**1.121.1 trnL2-nad1 -3**

*trnL2* *nad1*  
 R AT-GGTAAATTGGGAAAGGCCTAAGCCCTTTA-AACCAGAGGTTCAAATCCTCTTCCAGTTTATGCTAAAGACTCTAATAAAGCACCTGATCAACCCGCT-AGCCTACATGGT-GCCTGTCCT- 120  
 trnL2 CCCGGTA-ATTGCATAAAACCTTAAAC-TTTACCACCAGAGGTTCAAATCCTCTTCCAGTTTATGCTAAAGACTCTAATAAAGCACCTGATCAACCCGCT-AGCCTACATGGT-GCCTGTCCT- 54  
 nad1 -----GTTTGTCTAAAG-CTG--CTA--CTA-CTCATCAATTCCCAATTATCCTGG-CATAAGCCT-TCCTC 58  
*trnL2* *nad1*

**1.121.2 rrnS-trnI -2890**

*rrnS*  
 R --GACAAGGGGAGGCAAGTCGTAACATGGTAAGTGTACCGGAAGGTGCACTTGGATTAAACCCAGGGCGTGGCTGAGTTAGTCAAGCATCTCACTTACACCGAGAAGACATCCATGCAAGTTGGATCG 126  
 rrnS ATTACTAGAGGAGATAAGTCGTAACAAGGTAAGCATACTGGAAAAGTGTGCTTGGATCA----- 58  
 trnI ----- 0  
*rrnS*

R	CCCTGAGCCAAACAGCTAGCTTAACCACCAATATAACCTAACAATGTTAATAACAAAACATGACTTAACACCACAACTAAACCATTTTTTTTACCTGAGTATGGGAGACAGAAAAGGTTCAACCCAAA	254
rrnS	-----	58
trnI	-----	0
R	GCAATAGAAAAAGTACCGCAAGGGAAAAGCTGAAAGAGAAAATGAAACAACCCATATAAGCACTAAAAAACAAAGACTAAACCTTGTACCTTTTGCATCATGATTTAGCCAGCACCCCTCAAGCAAAGAGA	382
rrnS	-----	58
trnI	-----	0
R	CCTTTAGTTTGAACCCCGAAACCAGGTGAGCTACCCCGAGACAGCCTATTTAAATTTAGGGCTAACCCGTCTCTGTGGCAAAAGAGTGGGAAGAGCTCCGGGTAGAAGTGATAGACCTACCGAACCT	510
rrnS	-----	58
trnI	-----	0
R	GGTGATAGCTGGTTGCCTGAGAAGTGGATAGAAGTTCAGCCTCGTACGCCCAAATCAAAAAATATAACATTAAGACATAAGGGATACATACGAGAGTTAGTTAAAGGGGGTACAGCCCCTCTAACAA	638
rrnS	-----	58
trnI	-----	0
R	AGGATACAACCTTCACAGGAGGATAAAGATCATAATATATAAAACATGCTGTTTTAGTGGGCCTAAAAGCAGCCATCTAAATAGAAAGCGTTAAAGCTCAGACAGAAAGAAGTTTATTATACTGATAA	766
rrnS	-----	58
trnI	-----	0
R	AAAATCTTATTCCCCTAACAAATATCAGGCTAACCCATGCCACATGGAAGAAATTATGCTAAAATGAGTAACAAGAAGACCTGCTCTTCTCCAAGCACAAGTGTAAAGCCAGATCGGACAGACCACTGG	894
rrnS	-----	58
trnI	-----	0
R	AAATTAACGAACCCAACCCAAGAGAGTAATGTGAATAATAGAAAAACCAAGAAAAACCCACAACCAAAACAATCGTTAACCCACACTGGAGTGCTATTTTTAAAGGAAAGACTAAAAGAAAGGGAAGG	1022
rrnS	-----	58
trnI	-----	0
R	AACTCGGCAAACACAAGCCTCGCCTGTTTACCAAAAACATCGCCTCCTGCAACTAACTGAGTATAGGAGGTCCAGCCTGCCAGTGACTACGGGTTCAACGGCCGCGGTATTTTGACCGTGCAAAGG	1150
rrnS	-----	58
trnI	-----	0

R	TAGCGCAATCACTTGTCTTTTAAATAGAGACCTGTATGAATGGCTAAACGAGGGCTTAACTGTCTCCCCCTTCAAGTCAGTGAAATTGATCTATCCGTGCAGAAGCGGGTATAACCATACAAGACGAG	1278
rrnS	-----	58
trnI	-----	0
R	AAGACCCTTTGGAGCTTAAGGTACAAAATTCAACCACGTTAAGCAACTTAATAAAAAGCAAAAACCTTAGTGAAAAATGAAATTTTACCTTCGGTTGGGGCGACCACGGAGGAAAAACAAGCCTCCGAG	1406
rrnS	-----	58
trnI	-----	0
R	TGGAATGGGCCAAACCCCTAAAACCAAGAGAAAACATCTCTAAGCCACAGAACATCTGACCAAAAATGATCCGGCTAATAAAGCCGATCAACGAACCAAGTTACCCTAGGGATAACAGCGCAATCCTCT	1534
rrnS	-----	58
trnI	-----	0
R	CCCAGAGTCCATATCGACGAGGGGGTTTACGACCTCGATGTTGGATCAGGACATCCTAATGGTGCAGCCGCTATTAAGGGTTCGTTTGTTC AACGATTA AAGTCCTACGTGATCTGAGTTCAGACCGG	1662
rrnS	-----	58
trnI	-----	0
R	AGCAATCCAGGTCAGTTTCTATCTGTAAACGCTACTTTTTCCTAGTACGAAAGGATCGGAAAAGAGGGGCCATACTTAAAGCACGCCCCACCCCTAATTAATGAAAACAAATAAATTAACAAAGGGAG	1790
rrnS	-----	58
trnI	-----	0
R	GGCCAAAACCCCAACCGCCCGAAATAAGGACATACTGGGGTGGCAGAGCATGGTAAATTGCGAAAGGCCTAAGCCCTTTAAACCAGAGGTTCAAATCCTCTTCCCAGTTTATGCTAAACACTCTAATA	1918
rrnS	-----	58
trnI	-----	0
R	AACCACCTGATCAACCCCCTAGCCTACATCGTGCCTGTCCTGCTAGCAGTAGCCTTCCTAACTCTAATCGAACGCAAAGTATTAGGATACATACAACACTACGAAAAGGGCCAAATGTGGTCGGACCATA	2046
rrnS	-----	58
trnI	-----	0
R	CGGTCTCCTACAACCTATCGCCGACGGAGTAAAATTATTTATTAAGAGCCAGTCCGCCCTTCTACATCCTCCCCATTCTATTCTTAGCCACCCCCATTCTTGCATTA ACTCTAGCCCTAACTCTAT	2174
rrnS	-----	58
trnI	-----	0

R GAGCACCCATACCCATACCCATACCCAGTAATTGATCTCAACCTAGGAGTTCTCTTTATCCTAGCCCTATCAAGCCTCGCAGTATATTCTATTCTAGGATCAGGATGAGCATCAAATTCAAAATACGCA 2302  
 rrnS ----- 58  
 trnI ----- 0

R CTAATCGGAGCCCTACGGGCCGTAGCCCAAACAATTTCTATGAAGTAAGCCTCGGACTAATCCTTCTATCAGTAATTATCTTCTCAGGAGGCTACACCCTACAAACATTTAGTACGGCCCAAGAAAG 2430  
 rrnS ----- 58  
 trnI ----- 0

R TATCTGACTATTAGCCCCTGCATGACCATTAGCCGCAATATGATACATCTCAACCCTGGCAGAAACTAACCGAGCACCATTTCGACCTAACAGAAGGAGAATCAGAGCTAGTCTCAGGCTTCAACGTAG 2558  
 rrnS ----- 58  
 trnI ----- 0

R AATATGCAGGAGGGCCCTTCGCCCTCTTCTTCTAGCCGAGTATGCAAACATCCTATTAATAAAATACCTTATCAGCTGTACTATTTCTGGGAACATCACACATCCACCACATCCCAGAATTAACAACA 2686  
 rrnS ----- 58  
 trnI ----- 0

R ATTAGCCTTATGACTAAGGCCGCGCTACTCTCTATTGTATTCTCTGAGTACGAGCCTCGTATCCACGATTCCGATACGACCAACTAATACACCTTGTATGAAAAAACTTCCTCCCCCTAACATTGGC 2814  
 rrnS ----- 58  
 trnI ----- 0

R TCTAGTACTATGACACATTGCCCTGCCAATCGCACTAGCGGGCCTTCCCCCACA ACTATAGTT CAGGAACTGTGCCCGAATGCCTAGGGACCACTTTGATAGAGTGGCCTATAGGGGCTAAAATCCCC 2942  
 rrnS ----- 58  
 trnI ----- 0

*trnI*

R TCAGTTCTT 2951  
 rrnS ----- 58  
 trnI ---TTCC--- 4

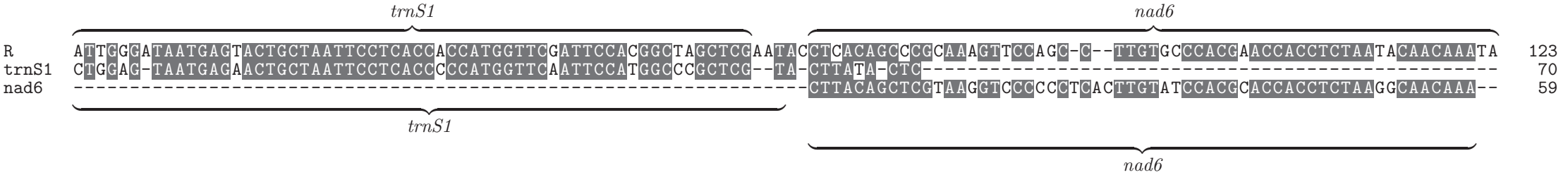
*trnI*

1.122 NC\_008975-NC\_016059

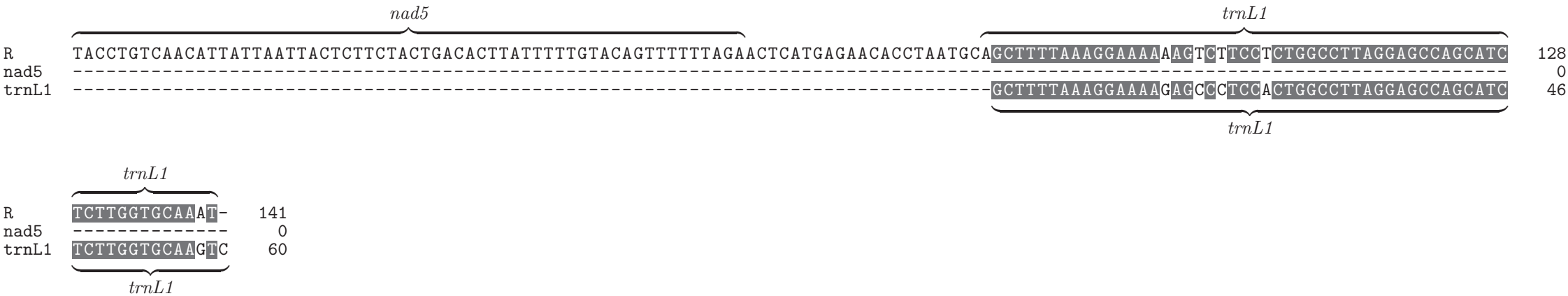
Avg ovsized: -1588

LCA: Ranoidea-superfamily

1.122.1 trnS1-nad6 10



1.122.2 nad5-trnL1 -82



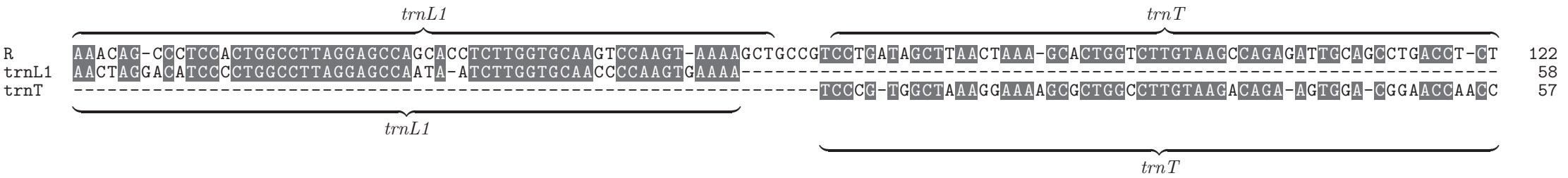
1.122.3 cob-nad5 -4694

1.123 NC\_015305-NC\_001922

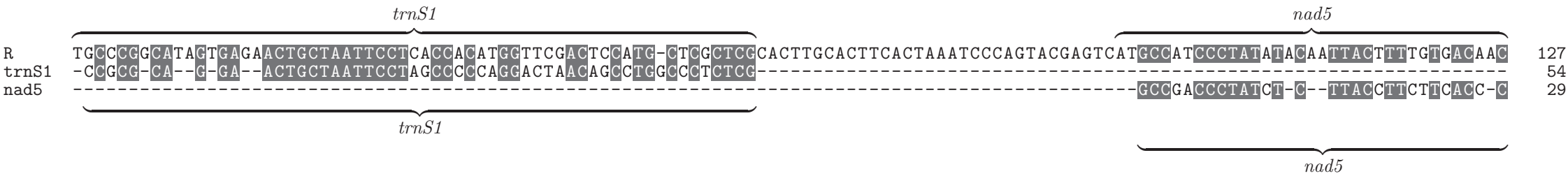
Avg ovszie: -1671

LCA: Tetrapoda-superclass

1.123.1 trnL1-trnT -7



1.123.2 trnS1-nad5 -34



*nad5*  
 R AATAT-CTGCAATCGCCTTAAATTAT 151  
 trnS1 ----- 54  
 nad5 TACCTGCTTTTATC-CTTTACTA- 52  
*nad5*

1.123.3 cob-trnH -4972

1.124 NC\_015305-NC\_016059

Avg ovsized: -1685

LCA: Ranidae-family

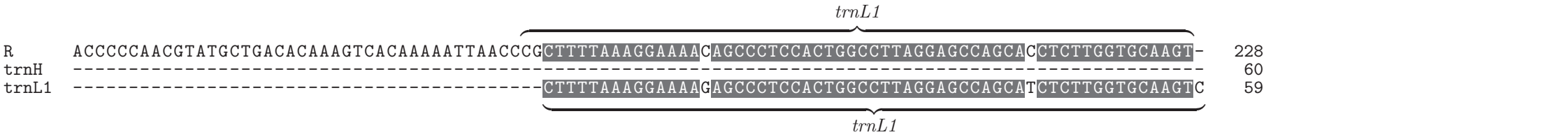
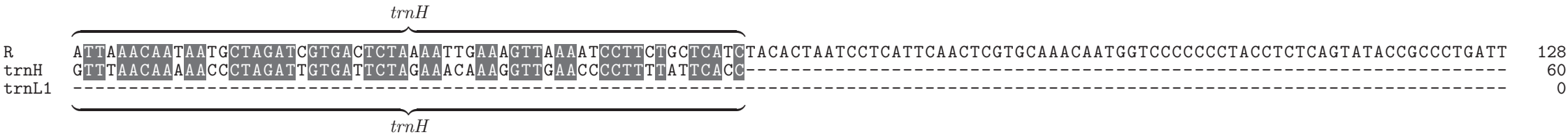
1.124.1 nad4-trnS1 -32

*nad4* *trnS1*  
 R CTTCAT--ATTCT-ACCGGACTTCTATTTATCCTCAAGCCAGAGCTACTTTTCTGTGTATAGCCCACAACAGCATAGTGACTCCCCGAGCCTGCCTCGGCATAGTGAGAACTGCTAATTCCTC 120  
 nad4 TTCTCCTCCTCCATATCTTACCAGGCCTCCTCCTTGTACTCAAACCAGAATTAAATTTTCT----- 60  
 trnS1 -----GAGCCCGACTGGAGTAAATGAGAACTGCTAATTCCTC 36  
*nad4* *trnS1*

*trnS1*  
 R ACCAC-ATGGTTGACTCCATGCT 143  
 nad4 ----- 60  
 trnS1 ACCCCATGGTTCAATTCATGG- 59  
*trnS1*



1.124.2 trnH-trnL1 -110



1.124.3 cob-trnH -4914

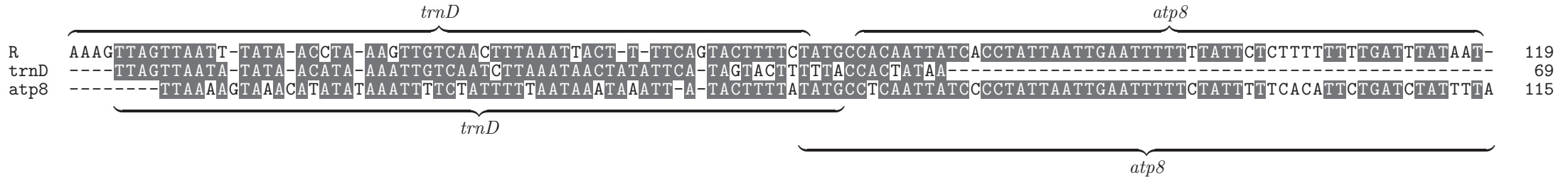
2 TDRL

2.1 NC\_009689-NC\_007895

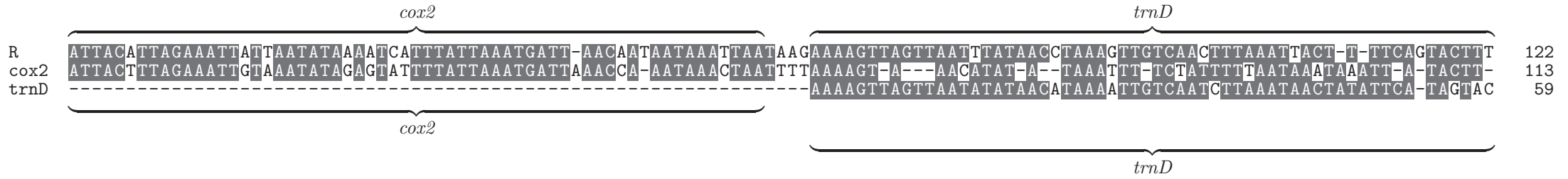
Avg ovsized: 15

LCA: Coleoidea-subclass

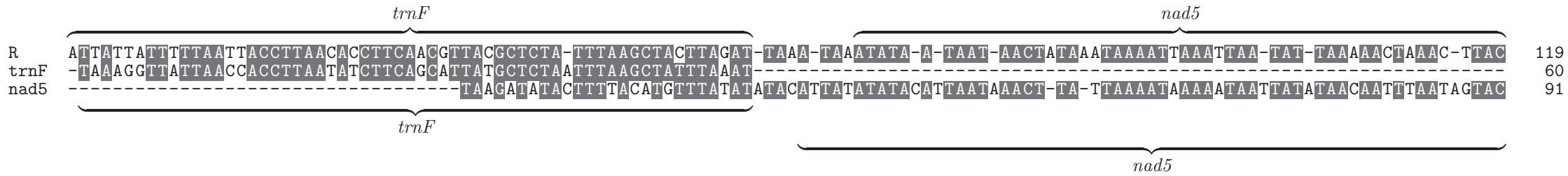
2.1.1 trnD-atp8 69



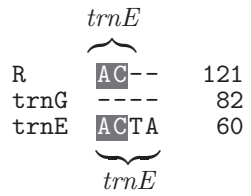
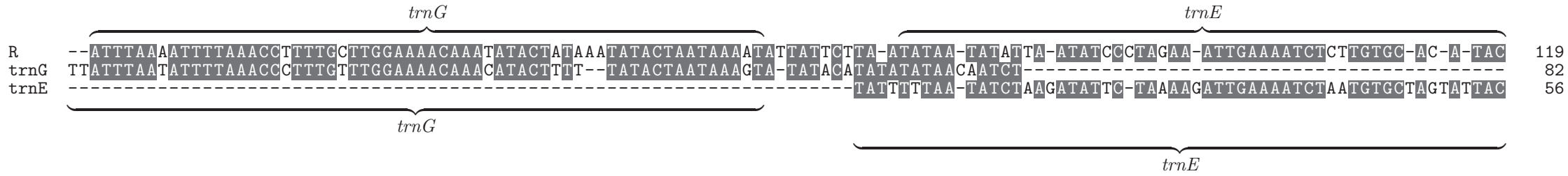
2.1.2 cox2-trnD 59



2.1.3 trnF-nad5 26



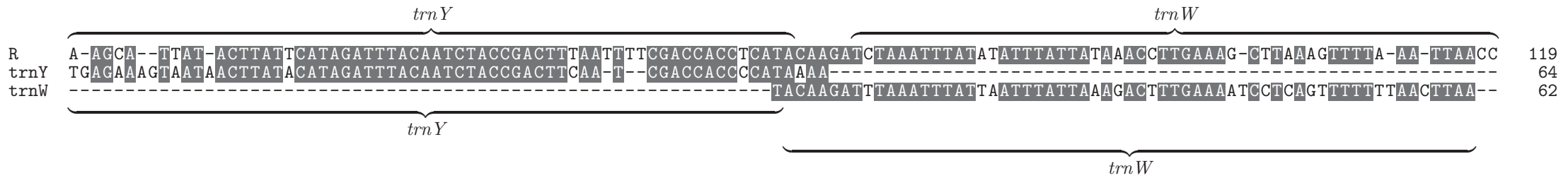
2.1.4 trnG-trnE 15



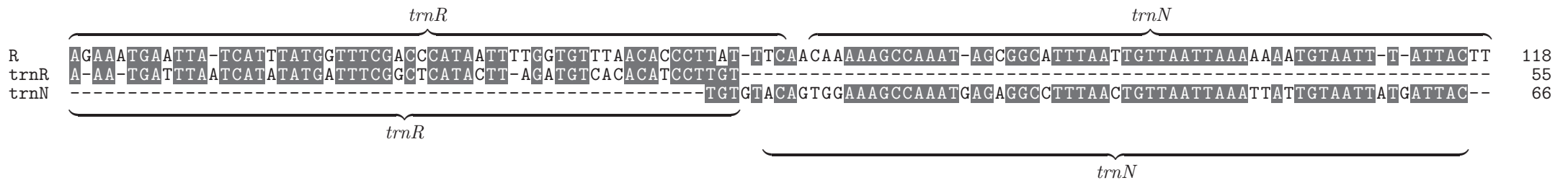
2.1.5 trnW-trnQ 10



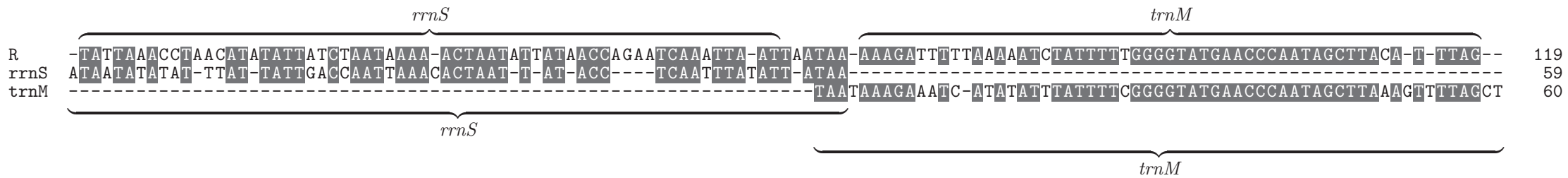
2.1.6 trnY-trnW 5



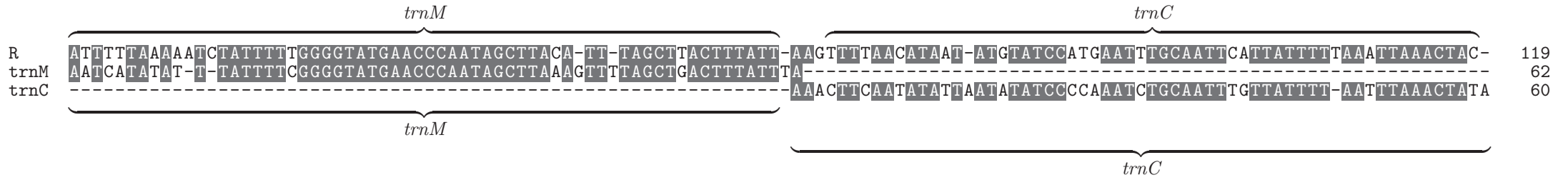
2.1.7 trnR-trnN 3



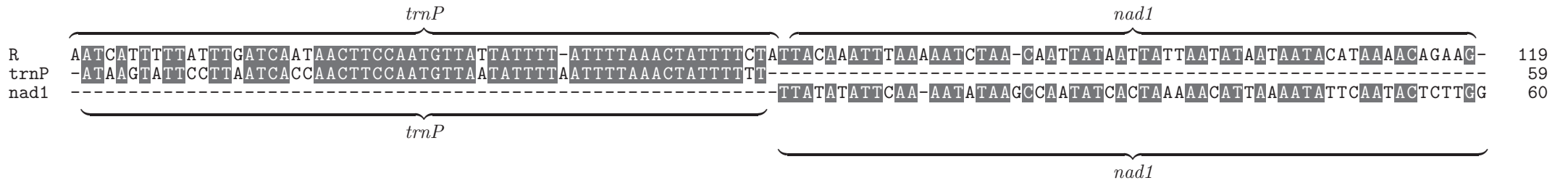
2.1.8 rrnS-trnM 3



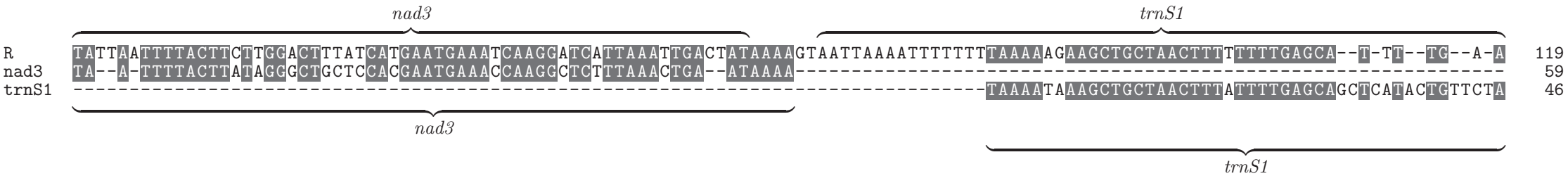
2.1.9 trnM-trnC 1



2.1.10 trnP-nad1 -1



2.1.11 nad3-trnS1 -17



## 2.2 NC\_015310-NC\_023250

Avg ovsized: -23

LCA: Unioninae-subfamily

### 2.2.1 trnH-trnA 55

		<i>trnH</i>		
R	-GAGAGT	GCTACAACCTATT	TATAGAACCACAACCTATCGTTTTTTTAAACTACTCATTAC	-C-C-CCATTATA-AATA
trnH	CGA-AAAGAT	CCTTTCCCATCT	TATAGAACCACAATCTATTGTTTTCC	TAAACTACTCGTTACTCTCTCTAATATAG
trnA				AACTTCCATTTACTTATA
				TTTTAATAATA-CTA-CTA-CTCAA-AAATC
		<i>trnH</i>		
				119
				122
				48

			<i>trnA</i>	
R	TTA--TAA-AT-A-A-T--	AGTTCTATACTTTAAACA	AAAAGATTTGATTTGCAT	TCAA
trnH	TTA			CCATTGAGATATTA
trnA	TTACCTAAGATGAGACT	TACAAGTTCTATACTTTAATC	AAAAGACTTGATTTGCAATC	AGCCATTGAGTGATACCCCAACA
			<i>trnA</i>	
				189
				125
				128

### 2.2.2 trnM-trnW 41

		<i>trnM</i>		<i>trnW</i>	
R	GTAAGCTAATAA	CTA-AGCTGTTGGGCTCATA	ACCCAAAAATAGAACTC	TCTTCC	ACTATC-TCA-CTT-TAC-CTTAAGGA
trnM	-TAAGCTAACCT	CTAAAGCTGTTGGGCTCATA	ACCCAAAAATAGACACAT	TCTTCC	ACTAAGAACCCCTTCTACACCTCAAACAAAAA
trnW					-TCAAAAAGTAAAATCAATAGCCT
					-----
					ACACTACAGAGATTTAAGTTAAACA
					-A-ACT-AATAGCCTTCAAAGCTTTAATT
		<i>trnM</i>		<i>trnW</i>	
					120
					112
					51

	<i>trnW</i>	
R	GATCTAAAATCAA--T	134
trnM	-----	112
trnW	GACACCAAGTCAATCT	67
	<i>trnW</i>	

**2.2.3 trnS2-trnS1 23**

	<i>trnS2</i>		<i>trnS1</i>															
R	GACCTCGGAGAA	GATTTGCCTTGAAATCAAAA	AAGAAAGTGTTCGACTC	ACTTATCCTTTT	TCTG	GAAA	G	GTAGCCGAGCTAATATG	T	GGCTTCTAAG	T	ACATAAAGAGAGGTTTAACTCCTT	C	123				
trnS2	GACCTCGGAGAA	TATTTGCCTTGAAATCAAAA	CAGAAAGTGTTCGACTC	ACTTATCCTTTT	A	TAG	-----	-----	-----	-----	-----	-----	-----	64				
trnS1	-----	-----	CAAGCCT	AGCT	AAA	CTT	A	TAA	A	GAGAA	-	GTAGCCGAGCTAATATG	A	GGCTTCTAAG	C	ACATAAAGAGAGGTTTAACTCCTT	-	80
	<i>trnS2</i>												<i>trnS1</i>					

**2.2.4 cox2-nad3 4**

	<i>cox2</i>		<i>nad3</i>																					
R	AAGCTCAGAACTCAAAC	CACTATAA	CTATCTT	TGAAACCCTAATTG	ACCCCAAAAGCTCATT	TTT-T	TATTTT	TATTTT	TAT	CCGCCATT	TATAT	CTCCC	ACTCTAAT	GAACCCT	CACGCC	ACTCGTGAAC	126							
cox2	CAACTCAA	AACTT	AAA	ACTCT	AAA	ACTATCT	TGAAACCCTA	ACTG	ACCCCAAAAGCTCATT	CACTCC	ATACT	TACCA	TTAAC	CCGCC	CC	-----	87							
nad3	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	CCCCT	ACCCT	CTCCC	ACTCT	AAA	GAACCCT	T	CGCC	ACTCA	TGAAC	45
	<i>cox2</i>												<i>nad3</i>											

	<i>nad3</i>	
R	TACTCCACCAAACAAT-A	143
cox2	-----	87
nad3	AACCCCCCAAATAACAA	63
	<i>nad3</i>	

### 2.2.5 trnS1-trnE 3

	<i>trnS1</i>		<i>trnE</i>	
R	GCCGAGCTAATATGTTGGCTTCTAACTACATAAAGAGAGGTTTAACTCCTTCCACCCTTCTCTTTAG		CTAATTAAGTGTTAGGTTTATGCACATTGATTTTTCACGTCAAAAAGAGCATTTTA-G-T	123
trnS1	GCCGAGCTAATATGAGGCTTCTAACCACATAAAGAGAGGTTTAACTCCTTCAATTTCTCTCTAAA		CTA-----	68
trnE	-----		CTAATTAAGTGTTCA-C-T-TACGCACATTGACTTTTCACGTCAAAAAGAGCATACTAATGCA	59
	<i>trnS1</i>		<i>trnE</i>	

### 2.2.6 nad3-trnH -17

	<i>nad3</i>			
R	ACAT-AATAATACAA-ACCCAAGCAAGACAGCTACCAAAACCCTTAACACCACCTTTTTCCATATCACCTTACAA--AGGTAAATTTAATGTTTAATACACCAAA-ACCTAAAACCCTTAAATGCCT-C			122
nad3	-CACC AACACAAGACCCAA-TACTAAAGATAACAAAATTCTTACTATAACTTTTTCCATTT-ACCTAATAACTAGATAACA-----			81
trnH	-----		CAAATACC-AAAACCTCACATTTTCATTC	26
	<i>nad3</i>			



		<i>trnH</i>	
R	TAACTAATGAGAGTGCTACAACCTATTATAGAACCACAACCTATCGTTTTTTTAAACTA--C		186
nad3	-----		81
trnH	CAAC-CTAACGAAA-GATCTTTCCCATCTATAGAACCACAATCTATTGTTTTCCTTAAACTACTC		90
		<i>trnH</i>	

**2.2.7 trnE-nad2 -275**

		<i>trnE</i>	
R	--GTGTTAGGTTTATGCACATTGATTTTTACGTCAAAAGAGCATTTTAGTGCCTTAGCTATTTAAAAGTTGACCAAAACTTT-AAG--TAATCTTTAACCAAAAACCTTCAAAGCTACTATCCA		123
trnE	AAAGTGTTC--CTTACGCACATTGACTTTTTACGTCAAAAGAGCATACTAATGCCTTAGCTACCCAAAAACAACCCCAACTCACCAGCAAATCTTTA-----		99
nad2	-----		0
		<i>trnE</i>	

R	TACTTATACTCTCTTTCTTAATTGTCCTATGCCTAACCTTAAGTATTCCCATATTTATCCTTTCTAACGAACCAAATCTTACTAACCAAACTATGTTCAATAGACCTTAACAATCAACCTCCACAA	251
trnE	-----	99
nad2	-----	0

		<i>nad2</i>	
R	CCCCAACAGATAATTACCATATTACTGCCAGATCAGGGAACACAGACTTGACCAAACCAAACCAAGCATCCAGCGTCAGAAAAAGTAATGACCATAACTACTACTTTCACTTTTTTATAAATGAA		379
trnE	-----		99
nad2	-----TAAATGAA		8
		<i>nad2</i>	

	<i>nad2</i>	
R	ATCTCCAAACAAAACCTCCTATTTATATTTCTTATAGTTAGAAGCACTTGCATAGT-	433
trnE	-----	99
nad2	ATCGCCACACAAAATCCTTATTCCCTATCCCTAATAATCAGAAGCACTTGCATAGTA	63
	<i>nad2</i>	

### 2.3 NC\_005144-NC\_005298

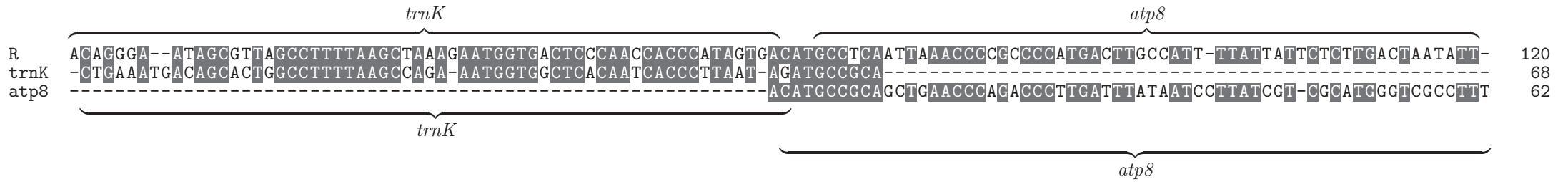
Avg ovsized: -27

LCA: Elopomorpha-superorder

#### 2.3.1 nad6-trnE 44

	<i>nad6</i>	<i>trnE</i>	
R	AGCTACAGCAACAAGA-CCAAGAACCACCCAATTAAAAATAAAAAAATGAAATAAG-TCACAAATTTCTACCCGGATTTTAACCGAGACCAATGACTTGAAAAACCACCGCTGTTATTCAA-		119
nad6	AGATACACCCAAAACACCCAACAA-CAGCACCGCTAAAA-GAGAATAATTAAGTAAGTTCATAAATCTTATAAGGATTCAACCTAATACCACAAATGTGATAA-----		101
trnE	-----	CATAGTTTTTACCCAGATTTAACTGAGACCGATGATATGAAAAACCACTGATGTAATTCAAC	63
	<i>nad6</i>	<i>trnE</i>	

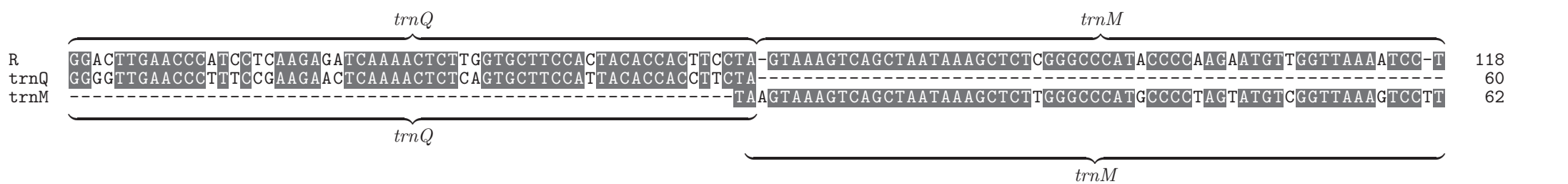
2.3.2 trnK-atp8 10



2.3.3 trnW-trnA 3



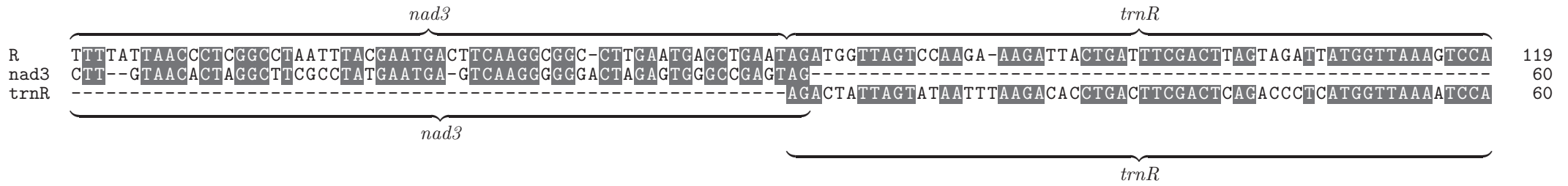
2.3.4 trnQ-trnM 2



2.3.5 trnI-trnQ 2



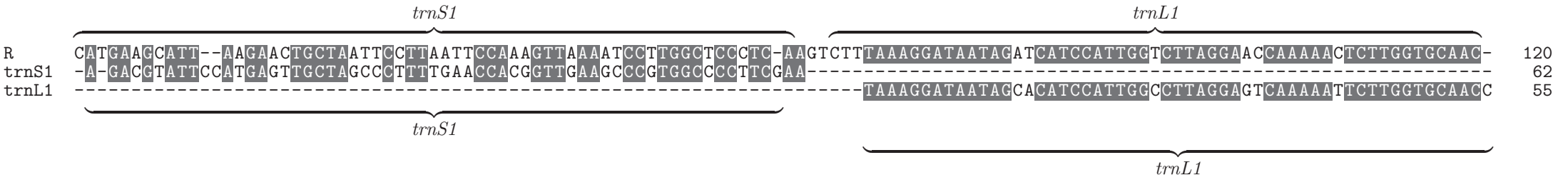
2.3.6 nad3-trnR 2



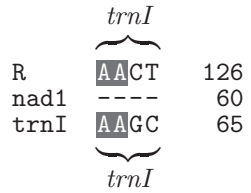
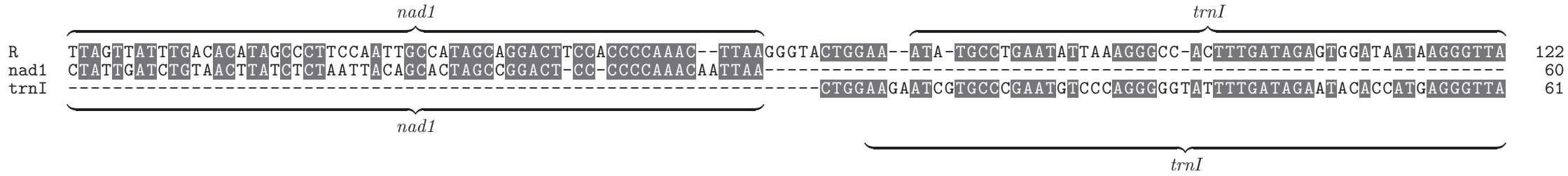
2.3.7 cob-trnT 2



2.3.8 trnS1-trnL1 -5



2.3.9 nad1-trnI -5



2.3.10 nad2-trnW -55

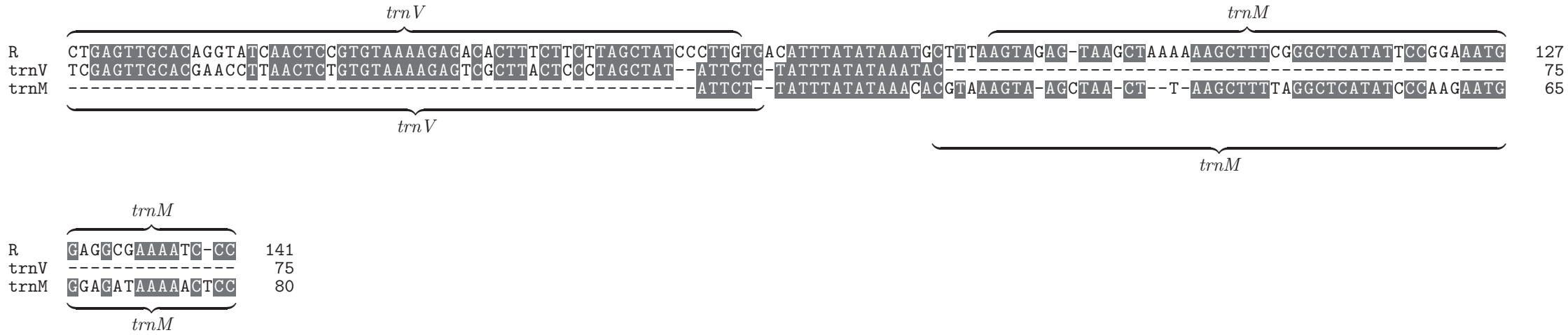
	<i>nad2</i>	<i>trnW</i>	
R	-----		
nad2	-TTACCACCACTGGCACACTCATACTATTACCTTTGACCCCAACAATGACAACAATGCTCTAAGAACTTAGGATAGCATTAAAGACCAAAAAGCCTTCAAAGCTTTAAGCAGGAGTGAAAAAT--		119
trnW	GTTGCAACAAC-----CTTAGGATAAGAGC-AGACCTAAAACCTTCAAAGTTTTAAGCAGGGGTGAAAATCC		55
	<i>nad2</i>	<i>trnW</i>	

2.3.11 trnP-trnF -297

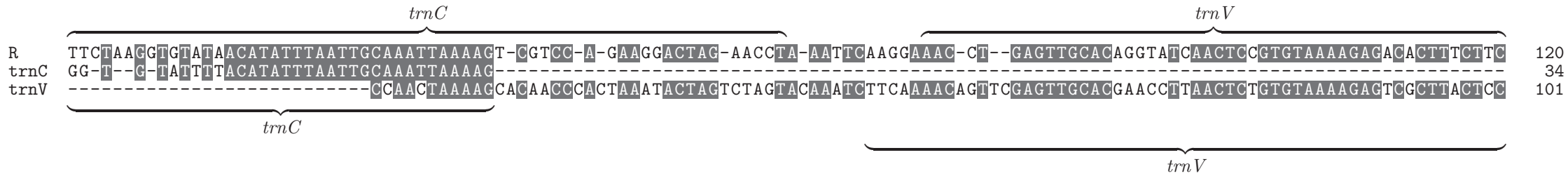
	<i>trnP</i>		
R	-----		
trnP	GGAGAGTTTAACTCCTATCCTTGGCTCCCAAAGCTAAGATTTTA-ATTA-AACTACCCCGTG-C--TA-ACGCAC-A-C-CAAAAA--AATTC-T-AAAACC-TGCGGGTATGTACTATAATACATAC		114
trnF	AGA-A-TTAAACTCCCACCCCGGCCCCCAAAGCCGGGATCCTCTATTAGAAC-ACCCTCTGACAATATATGTACTAATGCATACATGCATATATTTTGCATGTATGTACTA-G-TACATAT		123
	-----		0
	<i>trnP</i>		
R	-----		
trnP	TATGTATTATCTTACATAAGTTATGTATACCGGGACACATTGTGTAAAACAGTACATTTTCCTTGTGTTGAAC-AG-ACAAA-ACTCAATAATTCAACATAAATCCTGCAAAAGTAGTTAATGTGCAGTA		239
trnF	TATGCATAAATTTGCAT--GT-ATG--TACTAGTACATATTATGCATAA---T---TTTGCATGTATGTACTAGTACATATTATGCATAATTTTACATGTAT-GT--ACTAGTACATATTATGCATAA		237
	-----		0
R	-----		
trnP	CCTTACATAATTAACCCGATCAAGAAATTTAATTACAATCTATAAAGAAATAAACCATATTGTTTGGTAATAATAACGGATGTGGACATATAATACACAAATCGTTATCAACATGAACTCCTATTAACG		367
trnF	TTTACATGT-----		247
	-----		0
R	-----		
trnP	TAAAGAAATAGCTTGTCTCGACATAAECTTATCATACCCATATTCATCGAAGTCCCCACATCCTTGCCAATATTAATTAATTTGTAATAAGAAACCAGCAACGGTGATATCAGGTGAAATCGTTTATT		495
trnF	-----		247
	-----		0



2.4.2 trnV-trnM 22



2.4.3 trnC-trnV 11





*trnV*  
 {  
 R TTA- 123  
 trnC ---- 34  
 trnV CTAG 105  
 }  
*trnV*

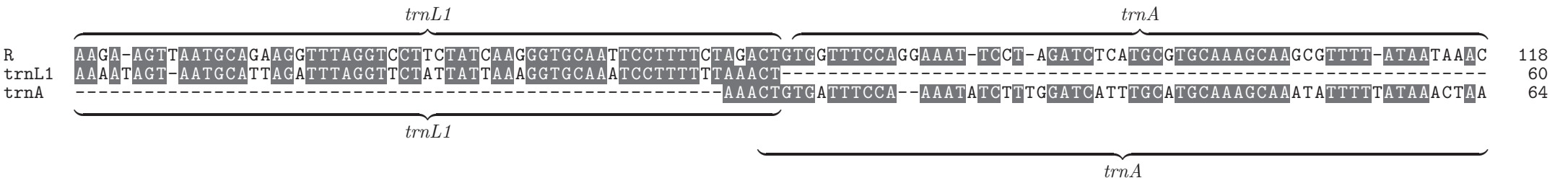
#### 2.4.4 trnP-trnQ 10

	<i>trnP</i>	<i>trnQ</i>	
R	-AGTTTAAACAAAAATAGTTGTTTTGGGGACAACCAGATATAAGGATCTT-CT-TGTGCTTCTGAGGTAAAA-AGTTATGACCTTCTATCAAGGGAATCAAAAGACCCTCATTTCGTTAA-		115
trnP	TAGTTTATTAA-AATAGTTATTTTGGGGATAACAGATACA-G-ACCTAGCCC		66
trnQ	-----CTGAAA-AGATGAGAAACGACCTCATATCAAGGATATCAAAAATCCCTCATTTCATTAAA		60
	<i>trnP</i>	<i>trnQ</i>	

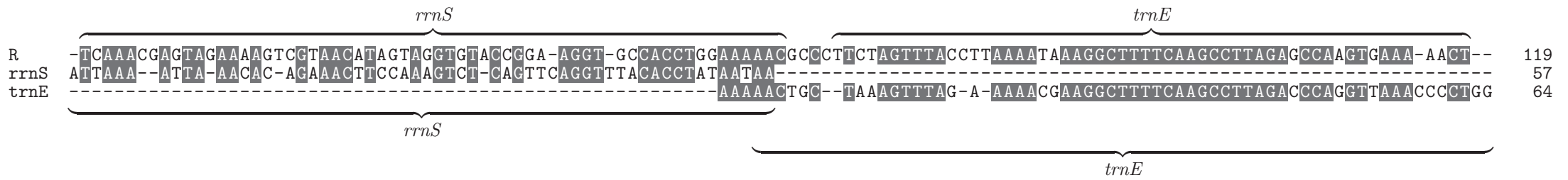
#### 2.4.5 trnQ-trnN 7

	<i>trnQ</i>	<i>trnN</i>	
R	AAGTTATGACCTTCTATCAAGGGAATCAAAAGACCCTCATTTCGTTAAACTATACCTC-A--TGAGTTGAAGCTGA-CTGTAGCATTGGCCGTTAACCAAAGGATGGAGGTTATTAACC		119
trnQ	GAGAAACGACCTCATATCAAGGATATCAAAAATCCCTCATTTCATTAAAATA		53
trnN	-----TAAAACAATCTTTAAATGGGTTGAAGCTGAAACAATAGCATTGGCCGTTAACCAAAGGATGAAGGTTAGTCCCT		77
	<i>trnQ</i>	<i>trnN</i>	

2.4.6 trnL1-trnA 5



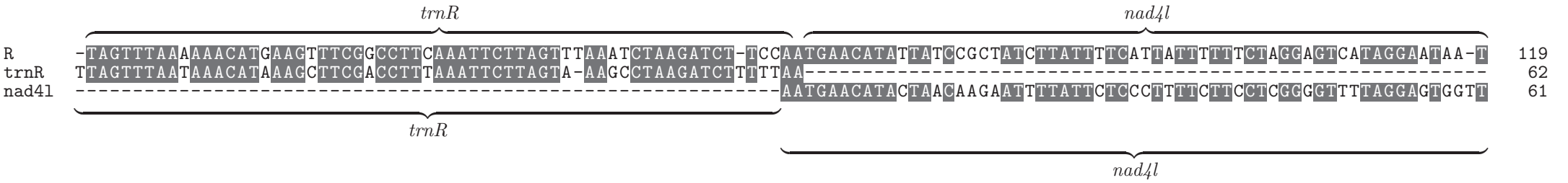
2.4.7 rrnS-trnE 5



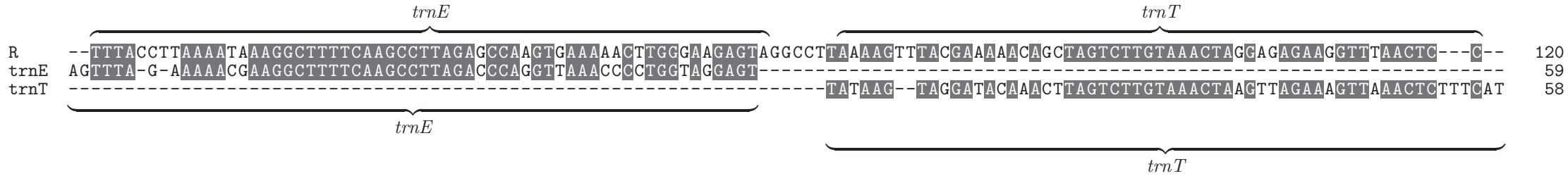
2.4.8 trnW-trnC 2



2.4.9 trnR-nad4l 2



2.4.10 trnE-trnT -6



2.4.11 trnT-trnP -422



R ATAGTATTATTTCCACATTAACATATATTTCTTTTTTACTCCTTATATTACTCTTAGCTTCCAAGTAATGGCATATCATAGTCTCTTCTAATCTTTCTTAATGTAGTAACAGCCTTCTCCCTTTAGG 256  
trnT ----- 60  
trnP ----- 0

R GGTTGTCTTTTCAAGTTTCGACTTTGGTAATTGTTATACTTCTTTATTTTGGCTCTCATGTAAATTTCTCAAGTTCTAAATATATTCACTACACTCTGTTTTAGCTGGGTTTGTCTCGGTAAGTTCCGC 384  
trnT ----- 60  
trnP ----- 0

R TGGGCCAACATCATGTTTTAAATTATAGACGTTAAGTCTTTTCATTTATATAAATAGTTATATTTAAATATTAATAATTATCTAAGCTTTCCCTATTTCTAGAAAGCTAGTTTAAACAAAAATAGTTGTTTT 512  
trnT ----- 60  
trnP ----- 29

*trnP*

*trnP*

R GGGGACAAACGATATA-AGG-ATCTTCT-TG 540  
trnT ----- 60  
trnP GGGGATAACAGATACAGACCTAGC-CCTGTG 59

*trnP*

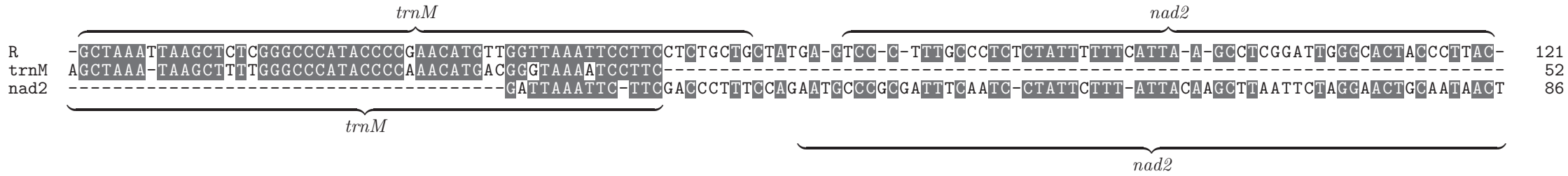
*trnP*

## 2.5 NC\_015120-NC\_008124

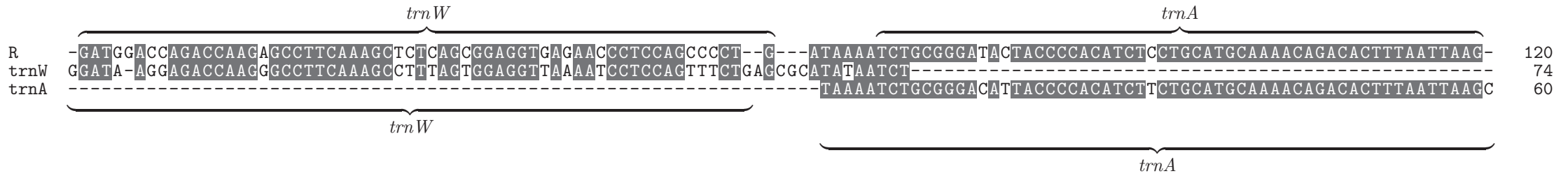
Avg ovsized: -47

LCA: Gadiformes-order

2.5.1 trnM-nad2 14



2.5.2 trnW-trnA 8



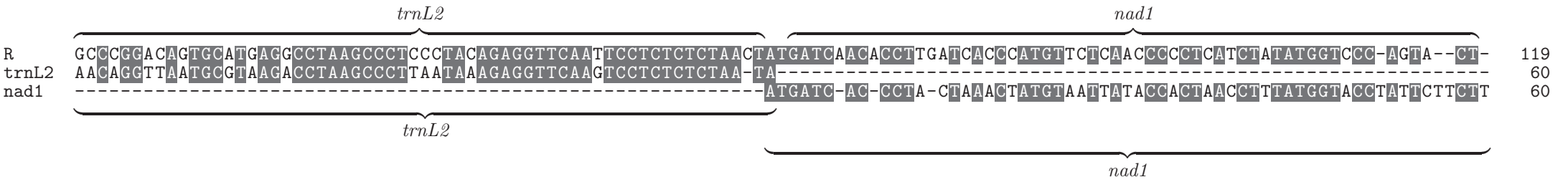
2.5.3 nad6-trnE 7



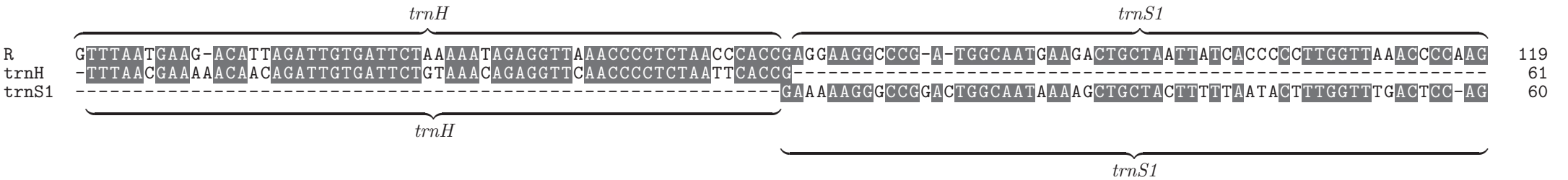
2.5.4 trnI-trnQ 5



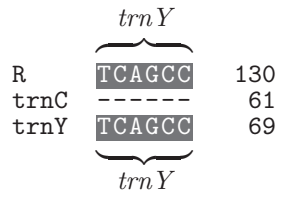
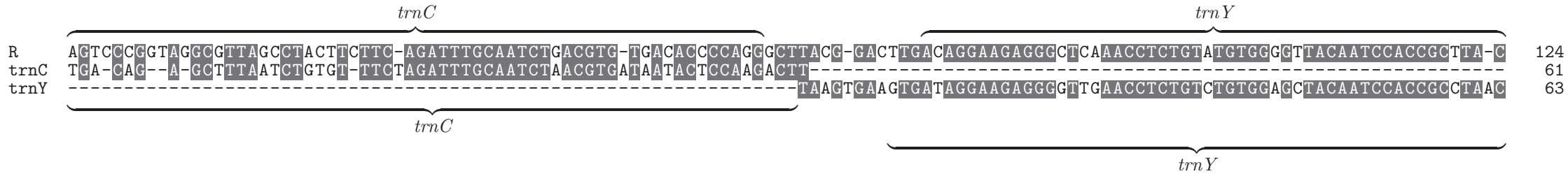
2.5.5 trnL2-nad1 1



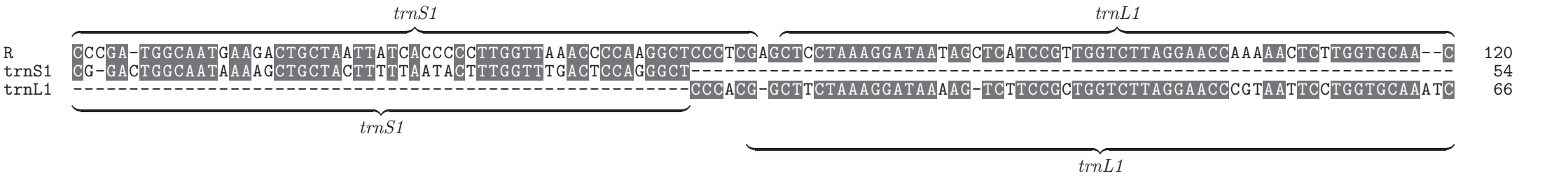
2.5.6 trnH-trnS1 1



2.5.7 trnC-trnY 1



2.5.8 trnS1-trnL1 0



2.5.9 nad1-trnI -5

	<i>nad1</i>	<i>trnI</i>	
R	CTAGTGGATTGGCACCTCTCACTCACCCTT-GCATTGGCCGGGCTCCCACCCCAAGCCTAGGCAACGGAGTTGTGCCTG-AATTAAAGGACCCTTTGATAGAGTGAATCATAAGGGTTAAACTCC		123
nad1	TTTATAATCTGACATCTGTCAATTTCTATTAGCCTAAGT-GGCCTCCCACCTCAGATCTA		59
trnI		GGTGCTGTGCCTGAAACTAAAGGGCCACTTTGATGTAGTGGATCATGAGGGCTAAAATCC	60
	<i>nad1</i>	<i>trnI</i>	

2.5.10 rrnL-trnL2 -27

	<i>rrnL</i>	<i>trnL2</i>	
R	CCA CTGAC ACCTAATAAAAGTGCAA-AAGGGGGCTTAAAAAGGCCCCAGAAAAATATGGGCA TGTTCAGTGGCAGAGCCGGACAGTGCA TGAGGCCTAAGCCCTCC TACAGAGGTTCAA --		119
rrnL	TTAAATTTACCTAG-AAGGTAGCAGAAGTTGGC		32
trnL2		TATTA GAGTGGCAGAA CA-GGTTAA TGGGTAAGA CCTAAGCCCTTAA TAAAGAGGTTCAA GT	61
	<i>rrnL</i>	<i>trnL2</i>	

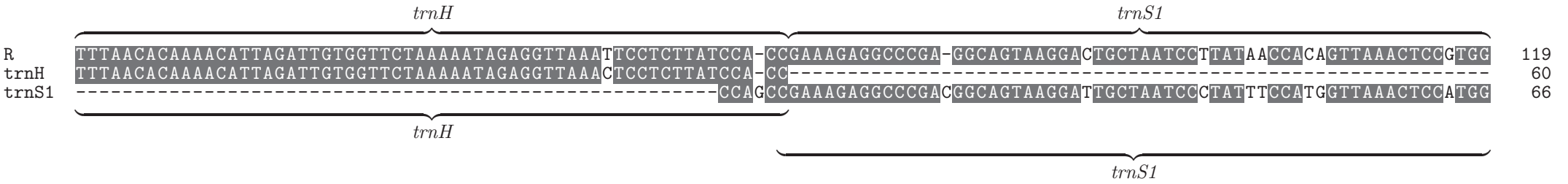
2.5.11 trnT-trnP -529

	<i>trnT</i>		
R	GCACAA CAGAGCGCCGGCCTTGTAAGTCGGAGGTCGGAGGC TAAATTCCTCCCTAGCGCTAAACACGAGCAGCACAATTGCCTCCGAGCTCTGCCCAACCCACTTTCTACAAAACCTTAAGAGTCTT		128
trnT	GTAAATTCAGAGCACCAGTCTTGTAAGTGGGGTCAAAGGTTAAACTCCTTTCTAGTGCTAA		62
trnP			0
	<i>trnT</i>		





**3.1.1 trnH-trnS1 6**



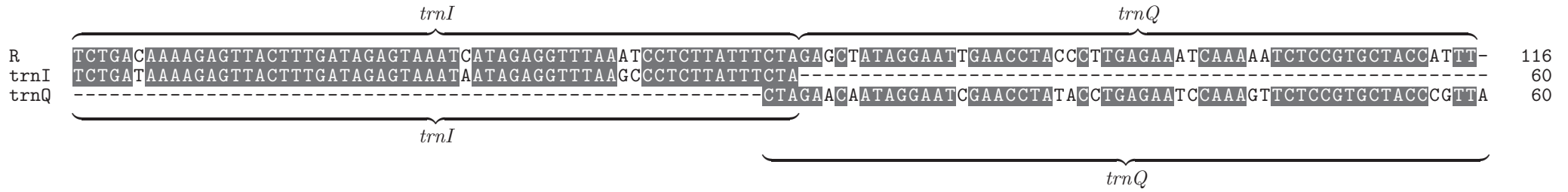
**3.1.2 trnS1-trnL1 2**



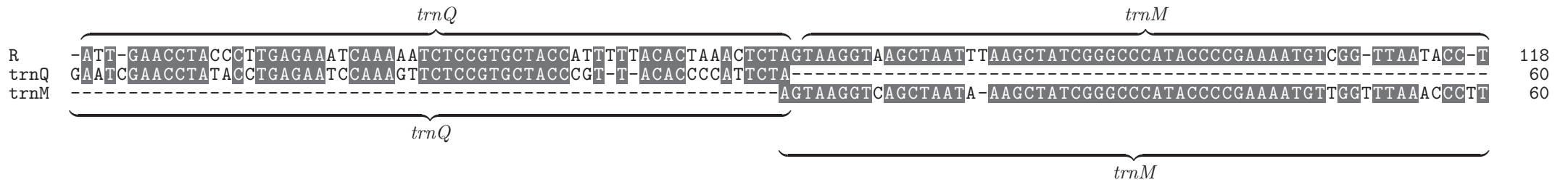
**3.2 NC\_006893-NC\_013571**

Avg ovsized: 2  
LCA: notFound-notFound

### 3.2.1 trnI-trnQ 3



### 3.2.2 trnQ-trnM 1

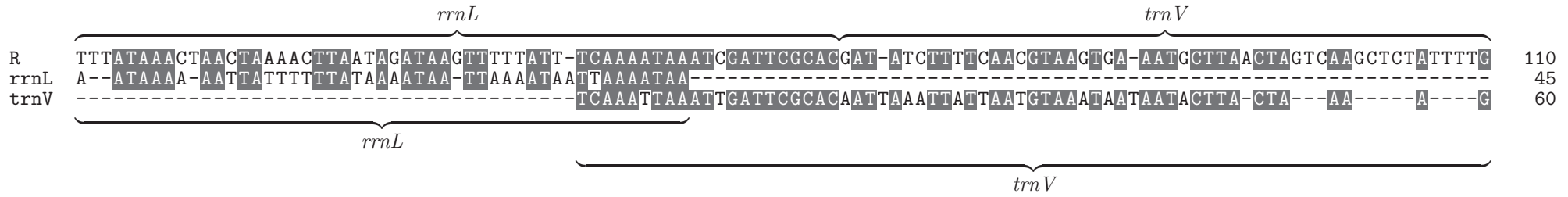


## 3.3 NC\_006081-NC\_012463

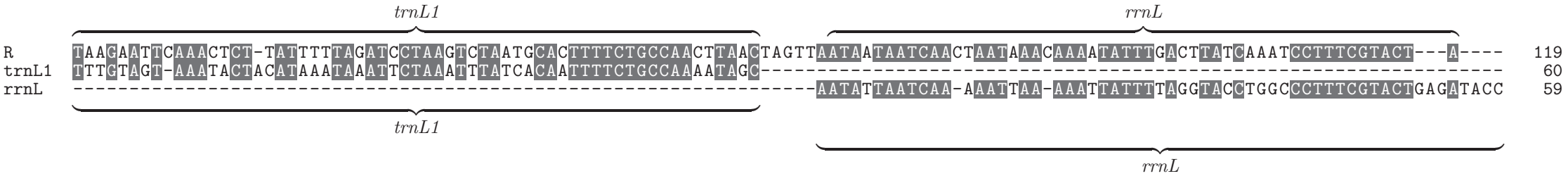
Avg ovsized: 2

LCA: Pancrustacea-subphylum

### 3.3.1 rrnL-trnV 9



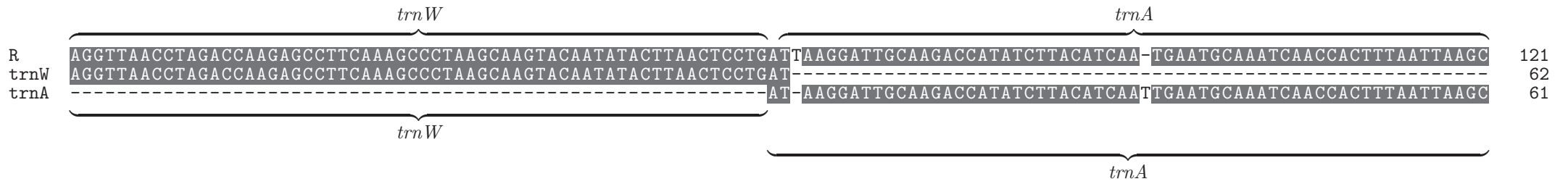
### 3.3.2 trnL1-rrnL -5



### 3.4 NC\_013836-NC\_014703

Avg ovsized: 1  
LCA: Cervus-genus

**3.4.1 trnW-trnA 2**



**3.4.2 trnA-trnN 1**



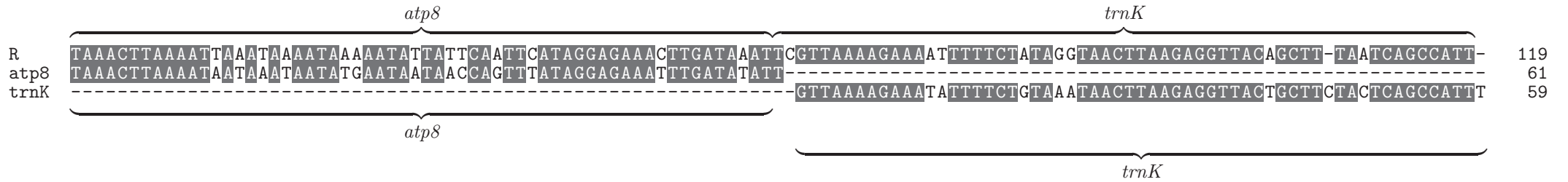
**3.5 NC\_014347-NC\_012571**

Avg ovsized: 0  
 LCA: Panonychus-genus

3.5.1 *trnK-cox2* 1



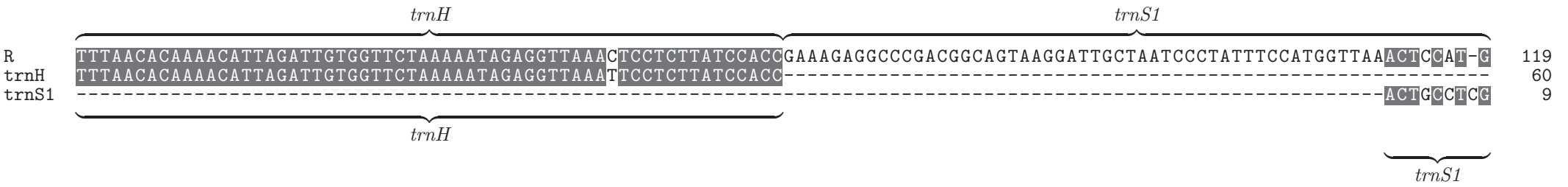
3.5.2 *atp8-trnK* -1



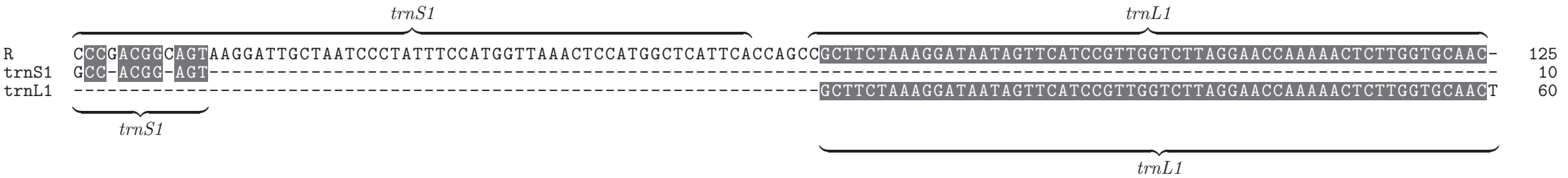
3.6 NC\_023222-NC\_023223

Avg ovsized: -52  
LCA: Bagridae-family

**3.6.1 trnH-trnS1 -51**



**3.6.2 trnS1-trnL1 -54**

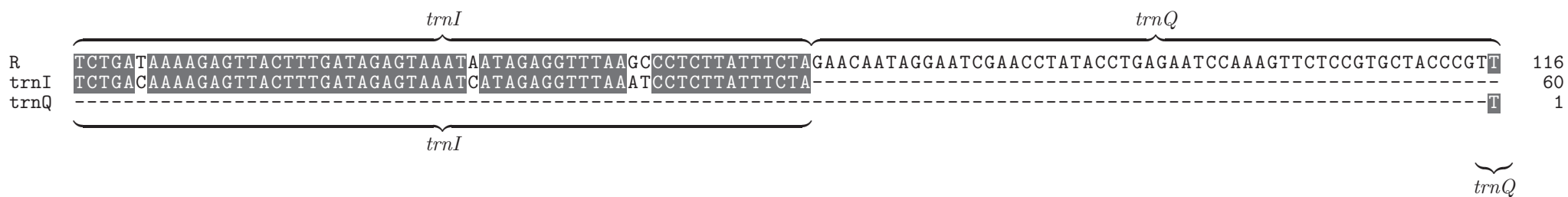


**3.7 NC\_013571-NC\_006893**

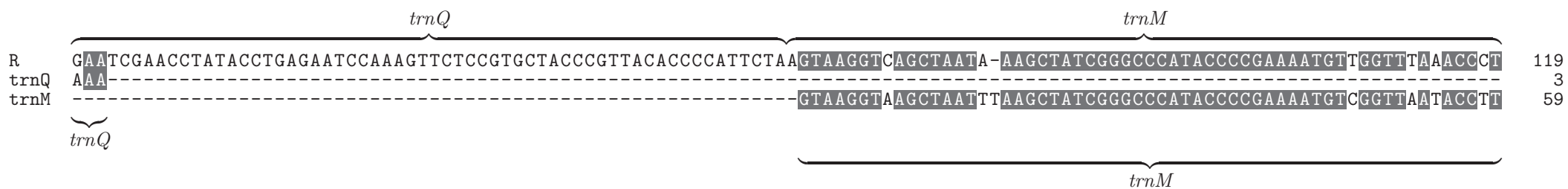
Avg ovsized: -56

LCA: notFound-notFound

### 3.7.1 trnI-trnQ -55



### 3.7.2 trnQ-trnM -58



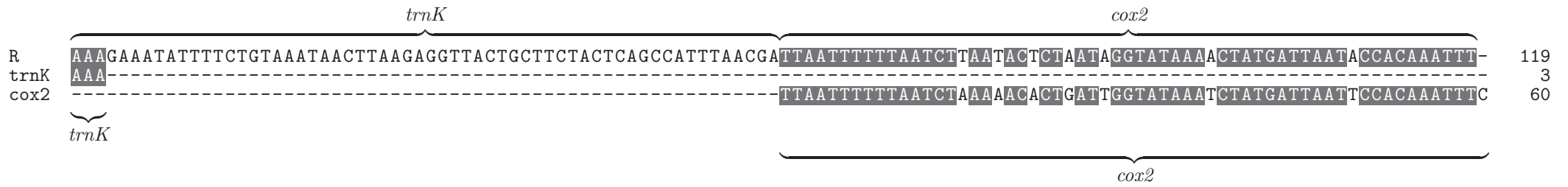
## 3.8 NC\_012571-NC\_014347

Avg ovsized: -58

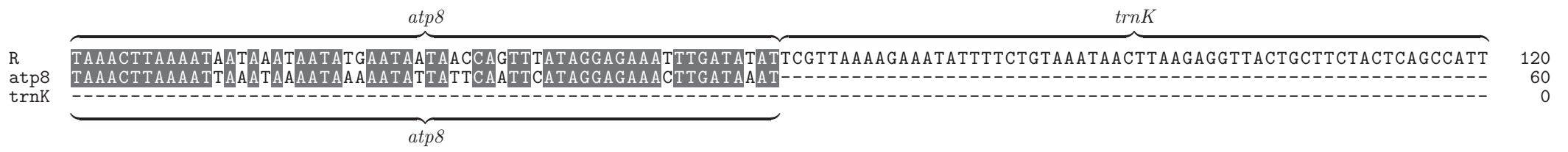
LCA: Panonychus-genus



**3.8.1 trnK-cox2 -57**



**3.8.2 atp8-trnK -60**



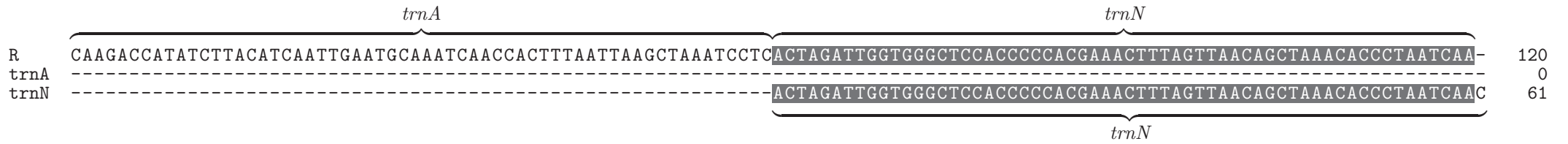
**3.9 NC\_014703-NC\_013836**

Avg ovsized: -59  
 LCA: Cervus-genus

**3.9.1 trnW-trnA -59**



**3.9.2 trnA-trnN -60**



**3.10 NC\_012463-NC\_006081**

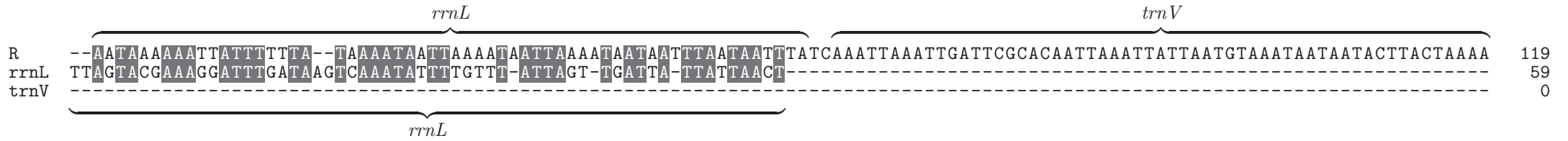
Avg ovsized: -60

LCA: Pancrustacea-subphylum

**3.10.1 trnL1-rrnL -59**



3.10.2 rrnL-trnV -61

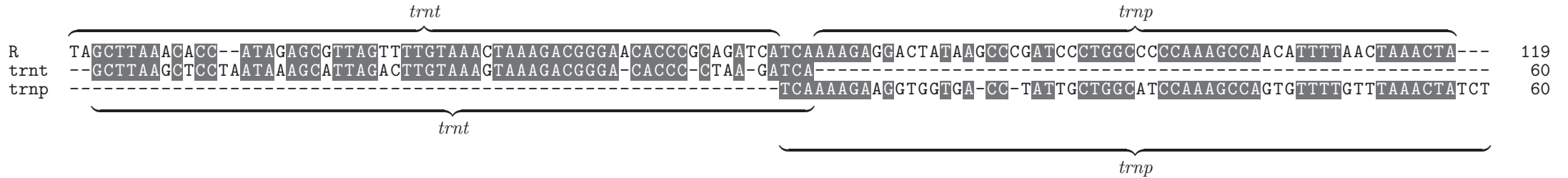


3.11 NC\_006922-NC\_009683

Avg ovsized: -399

LCA: Agamidae-family

3.11.1 trnt-trnp 3



3.11.2 trnP-trnF -802

	<i>trnP</i>	
R	-GAGGACTATAAGCCCGATCCCTGGCCCCCAAGCCAACATTTTAACTAAACTATCTTTTGT	127
trnP	AGA-TAGTTTAAACA-AAAACA CTGGCTTTGGATGCCAGCAATAGGTCACCACCTTCTTTTG	59
trnF	-----	0
	<i>trnP</i>	
R	TTTACTATCGTCCGGTACCCCCCTACCCCCCATTGCTGAAAGAGTAAAAAATCACACATACGTATATGTATAATCCCCATTATTTAGTACTAAATAATGTAACCTTATGCCCTATGTATATCGTGC	255
trnP	-----	59
trnF	-----	0
R	ATTAATTTTTTTGGCCCATGCATATCATCATAGACATTCCCCTCTTAATCATACTAACTACATGTCATTATATAAGGTACAGTATACCCTTCACCCCATGGATATCAAGCATGCACATATCTGCTTAA	383
trnP	-----	59
trnF	-----	0
R	TCTGACATAACCCTTGCCCAACCAATCAACATTCTATATGTACCCCTCCGCGAGAGATCAGCAATCCTTGCATGAAAGGTTTATCATGTCTAGCTTCAGGCTCCTATATCGAGGTTGCATCACAACCTG	511
trnP	-----	59
trnF	-----	0
R	TACTTTCCAAGGCCTCTGGTTGTTACTTCAGGCACATCACATCCAACCTCCGCCACGGTTATCTTTCCAAGACCTATGGTTGATGGTGTATTACATCTCACCCATGACCCCCATTCTTGCCCTTCC	639
trnP	-----	59
trnF	-----	0
R	GGCATTTGGTACTTTTTATCTATTTTTCAACTCTCTGTACATTTCAAGTGCCAGCAATTACAGTTGCACCTAGTCCATATATTAAGTGTGTACCCCGCTATATATCCCATGTATTACAATCTTTTTAA	767
trnP	-----	59
trnF	-----	0

R TGCTCGTAGGACATAAACTTATAAAAAACAACCAATTTGACCAGAAATACCGAGAACAACAAACATTTCATCAAACATATGTTGTAACCCCGTCA *trnF* TTGTAGCTTACCACCAAAGCATAGTGCTGAAGA 895  
trnP ----- 59  
trnF ----- TTGTAGCTTAATTT-AAAGCCTAGTGTTGAAAA 32  
*trnF*

*trnF*  
R CACTAAGACGAGCCTTA--CTCCA 917  
trnP ----- 59  
trnF CACTAAAACGAGCCAAACGCTCCA 56  
*trnF*

### 3.12 NC\_023228-NC\_015076

Avg ovsiz: -456

LCA: Clupeocephala-order

#### 3.12.1 trnQ-trnI -9

*trnQ*  
R TTATGGAGTGCACAAAGAGTTTTGATCTCTTA-AGTTGAGGTTTGAATCCTC-CTTTCCTATATATTATCCCCAGGAGCTATGTCTGA---ATAAAGAGTCACTTTGATAGAGTGAAGCACGTAGATG 123  
trnQ GTAGCGGGAGCACTCAGAGTTTTGATCTCTGCGGCTG-GGTTCAAATCCCGGCTTT-CTAAAGA----- 63  
trnI ----- GGAACTGTGCCTGACCGCTTAAGGGGCACTTTGATAGAGTGACTAAAGGGGT- 53  
*trnQ* *trnI*



R ATTACTACAAAAGACATACAGACATTTATTGGAACACTACATAAGTCCTATAAACATACATTTTTTACTGTCTTTATATCCGCCCGCCTTAATACAACTATAGTCCTATACACAGTAATAGAAATCCC 766  
 nad1 ----- 50  
 trnQ ----- 0

R GGACTCTTTAATTTACCTCAGTGATTTTCGACATAAAAAATTTCCATCTTACATCTCTCAAAGAAGCAACAAATATTAACAAAATTTACTAAGCCTAAAAATTTTTGAGATTATTCGATTATAAAA 894  
 nad1 ----- 50  
 trnQ ----- 0

AAATCAAAAAACAAGCTACTAAAATATCACAAACCAAGTAACTTTGAAAATTTAGGAAATAGTGTAT-G-GAGTGCACAAAGAGTTTTGATCTCTTAAGT-TGAGGTTTGAAT-- 1005  
 nad1 ----- 50  
 trnQ ----- 55

*trnQ*

*trnQ*

### 3.13 NC\_015076-NC\_023228-revcomp

Avg ovsized: -467

LCA: Clupeocephala-order

#### 3.13.1 nad1-trnq -12

TTCGTCGTC-TGACACCTT-TCCTTCATTGTCAGCACTGCCGCACTTCCCCTCAATTTAGGAGATTA-GAAAGCCGGGATTTGAACC-CAGCCCGCAGAGATCAAAACTCTGAGTGCTCCCGCTA- 122  
 nad1 ----- 50  
 trnq ----- 61

*nad1*

*trnq*

*nad1*

*trnq*

3.13.2 trnq-trni -923

	<i>trnq</i>	
R	GGATTTGAACC-CAGCCCGCAGAGATCAAAACTCTGAGTGTCTCCCGCTA-CACCACTCTCTGAATTGTTACCGCCAGGCTCTGCCCCGCCCGGACGTCCTCCCTTTCTGGTGATTAATATATACTATG	126
trnq	-GATTCGAACCTCAACTTA-AGAGATCAAAACTCTTTGTGCACTCCATAACACTATTTCT	59
trni	-----	0
	<i>trnq</i>	
R	TATTTACACCATAAATTTATTTTCAGGTACTATCAAGAAACCATTAATACTAAGAAACACCAGGTACCCTATAAGATTTATCAACTTAGTGTGGAATAAATGAATATTTGATCATTAAATCCCATAATC	254
trnq	-----	59
trni	-----	0
R	TTATATGAATGCATATTACTCTCTATCAACATCCCTAATTCTACAAATATAATGCGCAGTAAGAAATCAGCAACCCATATCTAATTGCATATCATGAATGATAGGGTCAGGGACTTACGGTGTGGGGG	382
trnq	-----	59
trni	-----	0
R	TTACACAGAATGAACTATTACTGGCATCTGGTTCCTATTTTCAGGGCCATACTAGTATATTTCCCCATCAACTGAATTAATTTGCATAAGTTAATGGTGTAGGACTAACGGTTCCTTACTCCCCATGC	510
trnq	-----	59
trni	-----	0
R	CAAGCGTTCTCTATGCGACATCTGGTTCCTTTTATTTCCGGGTCACCTTCAAATTGCATTTGGCGACTCCTTCCTAATGTTATTAGCGAAGGTGGCACTACACTTTGCCTGAGTAAACAACCTGTAACA	638
trnq	-----	59
trni	-----	0
R	CTCTATAGACTAAAATAGAAGACTTGCATAAGTAATATCAAGTACATAAGGTTATTCCTTAATCATCTATCTACTCGTAGAATGCCCCGGGGTGTATGGTTAAAGGAATTTGCTCGGCAAACCCCCC	766
trnq	-----	59
trni	-----	0
R	TACCCCCCTTAATCCGAAAGAACCTTTGTTGTCTCCTGTCAAACCCTAAACCAGGAAAAATTCAGACAGATCGTCACTGGGTTAAATGTGAAATGAAGGTATGTGAGTATAATAATATAAAAAAAT	894
trnq	-----	59
trni	-----	0



R TCATGCCCAAAGCCCCCTCTTTACCTGCAATTCTTCGGCCGAACCCCCCATTTTTCCCCTTGGGCCGAAGGATTCTTGTTAAGGC **GGAACTGTGCCTGACCGCTTAAGGGGCACTTTGATAGAGT** 1022  
 trnq ----- 59  
 trni ----- **GGAGCTATGTCTGAA---TAAAGAGTCACTTTGATAGAGT** 37

*trni*

*trni*

R **GACTAAAGGGGTTGA-A--CT-** 1041  
 trnq ----- 59  
 trni **GAAGCACGTAGATGAAAACCTA** 60

*trni*

### 3.14 NC\_009683-NC\_006922

Avg ovsiz: -753

LCA: Agamidae-family

#### 3.14.1 trnT-trnP 2

R **---GCTTAAGCTCCTAATAAAGCATTAGACTTTGTTAAAGTAAAGACGGGA-CACCCCTAAAGATCAAAAGATAGTTTAAACAAAACACTGGCTTTGGATGCCAGCAATAGGTCACCACCTTCT-** 117  
 trnT **TAGCTTAAACACC--ATAGAGCGTTAGTTTGTAAACTAAAGACGGGAA-CACCCGCA-GATCA** 60  
 trnP ----- **CAAAAGATAGTTTGTAAATGTTGGCTTTGGGGGCCAGGATCGGGCTTATAGTCCTC** 60

*trnT*

*trnP*

*trnP*

3.14.2 trnP-trnF -1508

	<i>trnP</i>	
R	AGATAGTTTAAACAAAACACTGGCTTTGGATGCCAGCAATAGGTCACC-AC-CTTCTTTTGA	126
trnP	A--TAGTTTAGTTAAAATGTTGGCTTTGGGGGCCAGGGATCGGGCTTATAGTCCCTCTTTTGA	60
trnF	-----	0
	<i>trnP</i>	
R	ATAAAATTATTTACCACATGAATATTTATGTAATACATCAATATATATCTAATACATTAATACATATATATATATAATAACATTAGTACATATATGTCTATAGTACATTATTTTTTTTTGCCCCATAA	254
trnP	-----	60
trnF	-----	0
R	TATATTCTTTAGTACCACCACTCTGACTATTACAGTCAATCTTGCTTAACCAACCGGTTATTTATTGATTTACACCTCACGAGAACCGACCAATCCTTGCTTGCCTGCTATTCCCTCACTAGTCTCGT	382
trnP	-----	60
trnF	-----	0
R	GGGTCATCAATCGAGGTTGCAACACAACCTTGCTCTTTCCAAGACCTACGGGCGTTTAGTCAGGCACTTCTAACCCCTTAATCATAACCACGTCCTCCTTTCCAAGGCCTGTAGTTGCAGCTTATCCTTG	510
trnP	-----	60
trnF	-----	0
R	CTACCTACATACCATGATTGCACAACCCCTTGGCCGCCCCGCATTTCAGCTTTTTTTTTAGCGTCTCAGCCTCACCAACACCAGTGGTTCGCTACCGATCCATTGTAGGTGGGTACCATATATCTCAATCTT	638
trnP	-----	60
trnF	-----	0
R	TTATTCCCTCCGACTTCATTTTGGGGCATTTCATTTATGCTTGTTAGTCATAAAAAATCGCAAAAAATTGCCAAATTTGTCCGAAATTCAACTAGAACAAAGGACAAAATAAAAAACAAACAAACAACC	766
trnP	-----	60
trnF	-----	0
R	AAACGTTTGTTTTTAACCTAAAATCATCTAAAACAACGGATTTTTTAAAAAACCAACAAATTCGGTGTGTTGTCAAAGATTCAACTAGAACAAACGAACAAACAAACAAATGAACAAACAAATGAACACA	894
trnP	-----	60
trnF	-----	0

R AATGATTAACAAACAAACAAACAAACATTTGTTGTTAGCTCAAATTTTTCTAGAAAAATTAATAAACAAACTAAACAAACAAACGAACAAACATTTGTTGTTAGCTCAAATTTTTCTAGAAAAATTA 1022  
trnP ----- 60  
trnF ----- 0

R ATAAACAAACTAAACAAACAAACGAACAAACATTTGTTGTTAGCTCAAATTTTTCTAGAAAAATTAATAAACAAACTAAACAAACAAACGAACAAACATTTGTTGTTAGCTCAAATTTTTCTAGAAAAAT 1150  
trnP ----- 60  
trnF ----- 0

R TAATAACAAACTAAACAAACAAACGAACGAACAAACATTTGTTGTTAGCTCAAATTTTTCTAGAAAAATTAATAAACAAACTAAACAAAGTTTGTATAGCTAGTTTATCTAGACGAACACACTCCG 1278  
trnP ----- 60  
trnF ----- 0

R CCGCATATACTTTTTAGAATTAATTTTTTATTTTTTATAAAAAATTTTTAATATATATATATATTTTTTATAAAAACTTTTTAGATATATATATATATATATTTTTTTTTATAAAAAATATTTAAT 1406  
trnP ----- 60  
trnF ----- 0

R ATATATATATATATATTTTTTATTTTTTATAAAAAATTTTTAATATATATATATATTTTTTATTTTTTATAAAAAATTTTTAATATATATATATATTTTTTATAAATATTTATTTTTTTATTACAC 1534  
trnP ----- 60  
trnF ----- 0

*trnF*

R ATTCAACCGCCAAACCTCTAAAACACAAACGTACTTGTAGCTTAATTT-AAAGCCTAGTGTGAAAAACACTAAAACGAGCCAAACGCTCC 1623  
trnP ----- 60  
trnF ----- TGTAGCTTACCACC AAAGCATAGTGTCTGAAGACACTAAGACGAGCCTTACTCAA 56

*trnF*