

gene	position	ref aa	comas whole-genome 2012	de vos putative 2013	casali evolution 2014	mtu173	mtu broad
rpoA	10	S				G <sub>1</sub>	
rpoA	11	E				R <sub>1</sub>	
rpoA	12	D				T <sub>1</sub>	
rpoA	13	V				S <sub>1</sub>	
rpoA	14	L				S <sub>1</sub>	
rpoA	15	T				P <sub>1</sub>	
rpoA	16	D				N <sub>1</sub>	
rpoA	31	G			A <sub>1</sub> S <sub>1</sub>	A <sub>1</sub> S <sub>1</sub>	
rpoA	57	D		N <sub>1</sub>			
rpoA	165	S		I <sub>1</sub>			
rpoA	177	K			M <sub>1</sub>		
rpoA	181	T	I <sub>1</sub>		A <sub>1</sub>		
rpoA	182	R	L <sub>1</sub>				
rpoA	183	V	A <sub>1</sub> G <sub>1</sub>		G <sub>1</sub>		
rpoA	184	E			D <sub>1</sub>		
rpoA	186	R	C <sub>1</sub>				
rpoA	187	T	A <sub>3</sub> P <sub>1</sub>		A <sub>1</sub> P <sub>1</sub>		
rpoA	189	A	E <sub>1</sub>				
rpoA	190	D		G <sub>1</sub>	G <sub>1</sub>		
rpoA	304	L			R <sub>1</sub>		
rpoA	307	S			L <sub>1</sub>		
rpoA	319	E		K <sub>1</sub>			
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rpoB	42	L			F <sub>1</sub>		
rpoB	45	P			S <sub>1</sub>	L <sub>1</sub>	A <sub>3</sub> L <sub>9</sub> S <sub>7</sub> T <sub>2</sub>
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rpoB	92	D					G <sub>1</sub>
rpoB	163	N					K <sub>1</sub>
rpoB	167	R					C <sub>1</sub>
rpoB	168	V					G <sub>1</sub>
rpoB	172	Q					R <sub>1</sub>
rpoB	219	R					C <sub>1</sub>
rpoB	225	R					G <sub>1</sub>
rpoB	240	E					G <sub>1</sub>
rpoB	250	E				G <sub>3</sub>	
rpoB	270	D					E <sub>1</sub>
rpoB	280	P					L <sub>1</sub>
rpoB	399	T			A <sub>1</sub>		A <sub>5</sub> L <sub>4</sub>
rpoB	401	Q					R <sub>1</sub>
rpoB	409	Q					R <sub>5</sub>
rpoB	428	S					R <sub>2</sub>
rpoB	429	Q					H <sub>1</sub> P <sub>1</sub>
rpoB	430	L				P <sub>1</sub>	P <sub>3</sub> R <sub>9</sub>
rpoB	431	S					G <sub>1</sub>
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rpoB	434	M					I <sub>2</sub>
rpoB	435	D			A <sub>1</sub> F <sub>5</sub> G <sub>3</sub> V <sub>11</sub> Y <sub>2</sub>		A <sub>2</sub> G <sub>3</sub> H <sub>1</sub> N <sub>2</sub> V <sub>140</sub> Y <sub>27</sub>
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rpoB	438	N					H <sub>1</sub>
rpoB	439	P					S <sub>1</sub>
rpoB	441	S					L <sub>4</sub>
rpoB	445	H				D <sub>8</sub> R <sub>1</sub> Y <sub>2</sub>	D <sub>25</sub> L <sub>27</sub> N <sub>7</sub> P <sub>2</sub> Q <sub>2</sub> R <sub>42</sub> Y <sub>53</sub>
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rpoB	452	L				P <sub>2</sub>	P <sub>24</sub> V <sub>1</sub>
rpoB	479	P					
rpoB	480	I			T <sub>1</sub>		V <sub>1</sub>
rpoB	481	E					A <sub>1</sub>
rpoB	482	T					N <sub>1</sub>
rpoB	483	P					S <sub>1</sub>
rpoB	487	N				S <sub>1</sub>	
rpoB	488	I			V <sub>1</sub>		
rpoB	491	I			V <sub>1</sub>	L <sub>1</sub>	
rpoB	494	L					P <sub>2</sub>
rpoB	496	V			L <sub>1</sub> M <sub>1</sub>		G <sub>1</sub> M <sub>3</sub>
rpoB	503	F			S <sub>1</sub>		S <sub>3</sub>
rpoB	534	V					A <sub>1</sub> G <sub>1</sub>
rpoB	559	A					V <sub>3</sub>
rpoB	563	E					A <sub>9</sub>
rpoB	571	D			A <sub>1</sub>		
rpoB	577	P					A <sub>1</sub>
rpoB	578	R					H <sub>1</sub>
rpoB	584	A					D <sub>1</sub>
rpoB	585	T					A <sub>1</sub>
rpoB	631	D					G <sub>1</sub>
rpoB	655	M					T <sub>1</sub>
rpoB	672	S				Y <sub>1</sub>	
rpoB	676	T					A <sub>1</sub>
rpoB	692	A				T <sub>30</sub>	
rpoB	693	G					D <sub>1</sub>
rpoB	700	P					L <sub>1</sub>
rpoB	702	T					I <sub>1</sub>
rpoB	723	H			Y <sub>1</sub>		
rpoB	731	L			P <sub>1</sub>	P <sub>1</sub>	P <sub>8</sub>
rpoB	741	L					F <sub>1</sub>
rpoB	761	E			D <sub>1</sub>		D <sub>1</sub>
rpoB	827	R			C <sub>1</sub>		C <sub>3</sub>
rpoB	832	K					E <sub>1</sub>
rpoB	835	H			P <sub>1</sub> R <sub>1</sub>	R <sub>1</sub>	P <sub>1</sub> R <sub>3</sub>
rpoB	836	G					S <sub>1</sub>
rpoB	862	L					R <sub>2</sub>
rpoB	871	R					H <sub>1</sub>
rpoB	874	S					Y <sub>1</sub>
rpoB	891	K					E <sub>3</sub>
rpoB	896	E					K <sub>1</sub>
rpoB	920	M					V <sub>2</sub>
rpoB	936	S					R <sub>1</sub>
rpoB	944	K					E <sub>1</sub>
rpoB	970	V					A <sub>1</sub>
rpoB	971	F					L <sub>1</sub>
rpoB	980	Q					R <sub>1</sub>
rpoB	1035	I					T <sub>1</sub>
rpoB	1095	K					R <sub>1</sub>
rpoB	1106	I				T <sub>2</sub>	
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rpoC	19	D		E <sub>1</sub>			
rpoC	332	G		R <sub>2</sub>			
rpoC	416	N			C <sub>1</sub> R <sub>1</sub> S <sub>1</sub>	S <sub>7</sub>	
rpoC	428	S			S <sub>1</sub> T <sub>1</sub>		
rpoC	431	V			A <sub>1</sub>		
rpoC	432	V	A <sub>1</sub>		M <sub>1</sub>	M <sub>1</sub>	
rpoC	433	G	S <sub>1</sub>		C <sub>1</sub> S <sub>1</sub>		
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rpoC	435	Q	H <sub>1</sub>				
rpoC	445	K			R <sub>1</sub>		
rpoC	449	L	V <sub>1</sub>		V <sub>1</sub>		
rpoC	452	F		C <sub>1</sub>	C <sub>1</sub>		
rpoC	483	V	A <sub>3</sub> G <sub>3</sub>	A <sub>1</sub> G <sub>3</sub>	A <sub>1</sub> G <sub>1</sub>	A <sub>1</sub> G <sub>5</sub>	
rpoC	484	W	G <sub>2</sub>		G <sub>1</sub>	G <sub>1</sub>	
rpoC	485	D	H <sub>1</sub> N <sub>1</sub>	Y <sub>1</sub>	N <sub>1</sub> Y <sub>1</sub>		
rpoC	491	I	T <sub>1</sub> V <sub>2</sub>	T <sub>2</sub>	T <sub>1</sub> V <sub>1</sub>	T <sub>2</sub>	
rpoC	507	L				V <sub>1</sub>	
rpoC	516	L	P <sub>2</sub>		P <sub>1</sub>		
rpoC	517	L	V <sub>2</sub>				
rpoC	517	V			L <sub>1</sub>		
rpoC	519	G	D <sub>1</sub>		D <sub>1</sub>	V <sub>1</sub>	
rpoC	521	A	D <sub>1</sub>		D <sub>1</sub>		
rpoC	523	G		E <sub>1</sub>			
rpoC	523	Q	E <sub>1</sub>				
rpoC	525	H	N <sub>1</sub>	Q <sub>1</sub>	Q <sub>1</sub>		
rpoC	527	L	V <sub>1</sub>		V <sub>1</sub>	V <sub>8</sub>	
rpoC	572	R			H <sub>1</sub>		
rpoC	678	P			R <sub>1</sub>		
rpoC	698	N	H <sub>1</sub> K <sub>1</sub> S <sub>1</sub>	H <sub>1</sub> S <sub>1</sub>	H <sub>1</sub> K <sub>1</sub> S <sub>1</sub>	K <sub>1</sub>	
rpoC	702	E	K <sub>1</sub>				
rpoC	734	A			V <sub>1</sub>	V <sub>2</sub>	
rpoC	747	D			A <sub>1</sub>		
rpoC	761	Q			R <sub>1</sub>		
rpoC	770	R			H <sub>1</sub>		
rpoC	826	N			K <sub>1</sub>		
rpoC	832	I			V <sub>1</sub>		
rpoC	838	S			C <sub>1</sub>		
rpoC	847	L			R <sub>1</sub>		
rpoC	849	Y			C <sub>1</sub>		
rpoC	901	L		M <sub>1</sub>			
rpoC	943	D			G <sub>1</sub>		
rpoC	945	G			V <sub>1</sub>		
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rpoC	1040	P		R <sub>1</sub>	R <sub>1</sub> S <sub>1</sub> T <sub>1</sub>		
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rpoC	1125	Q		H <sub>2</sub>			
rpoC	1133	H				Y <sub>1</sub>	
rpoC	1152	K				Q <sub>11</sub>	
rpoC	1241	R				A <sub>1</sub>	
rpoC	1252	V			L <sub>1</sub>	M <sub>4</sub>	