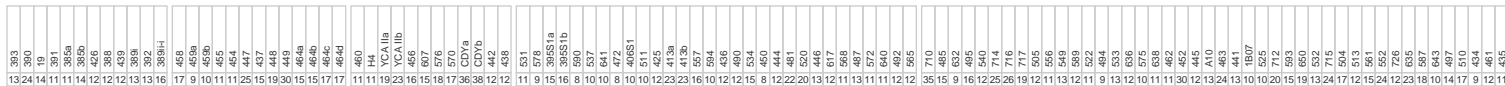
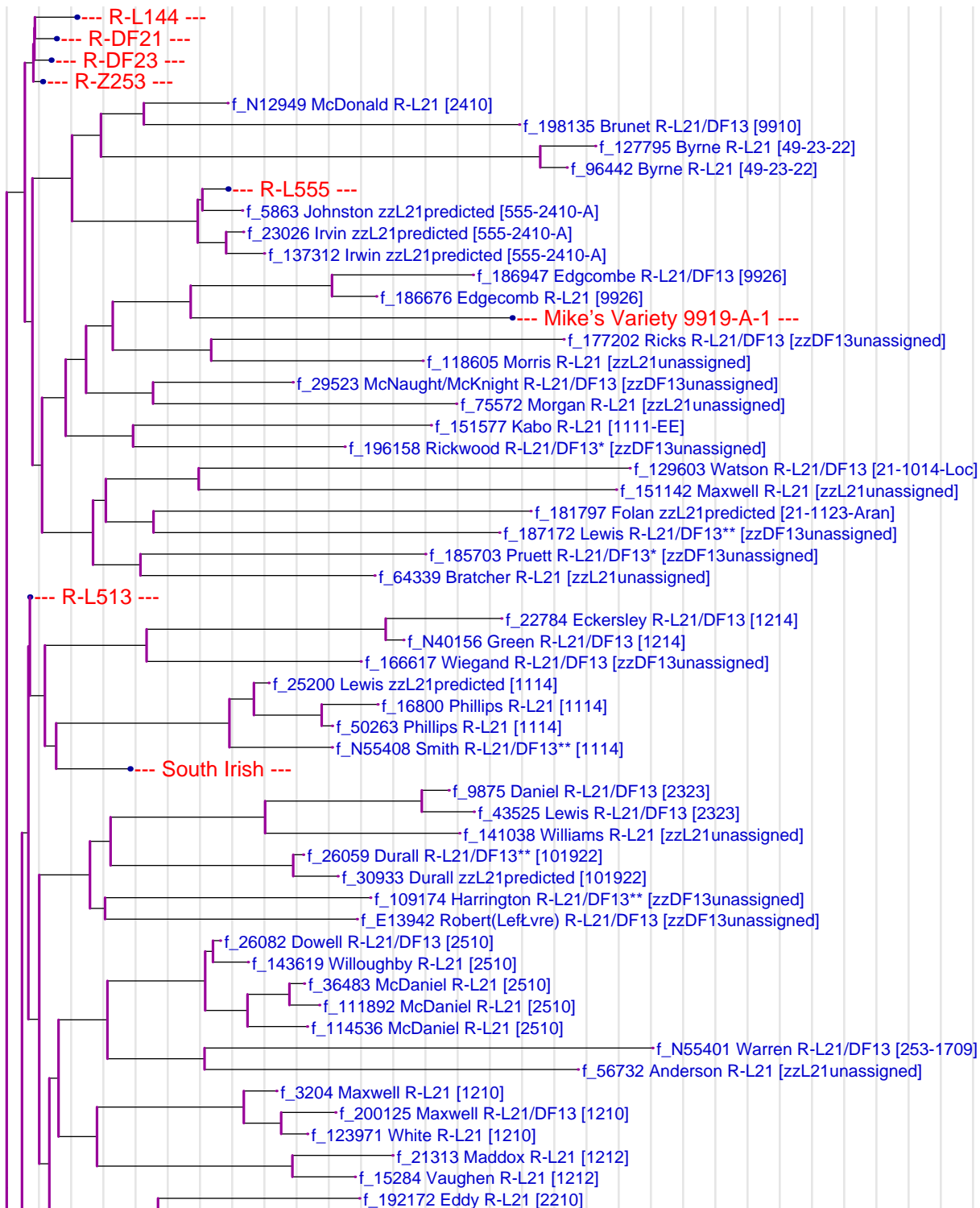
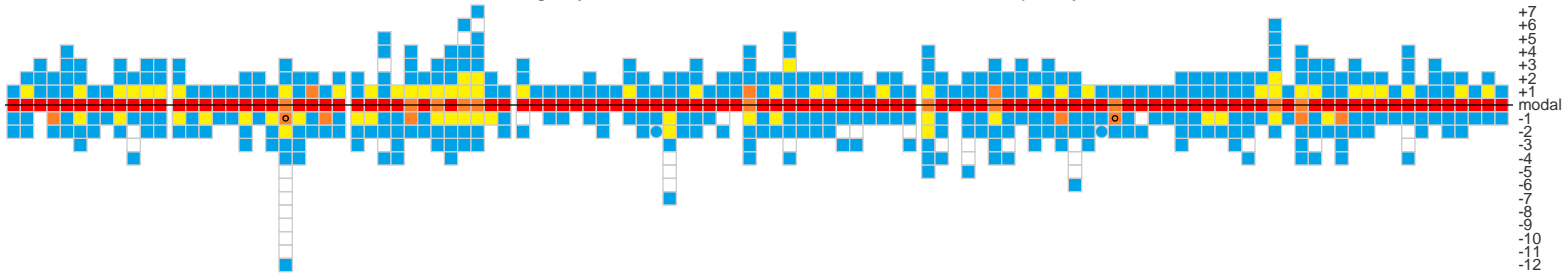


R-L21

This is the modal haplotype for the whole tree including any subtrees.



This is the marker distribution for the whole tree including any subtrees. The color indicates the relative frequency of the alleles.



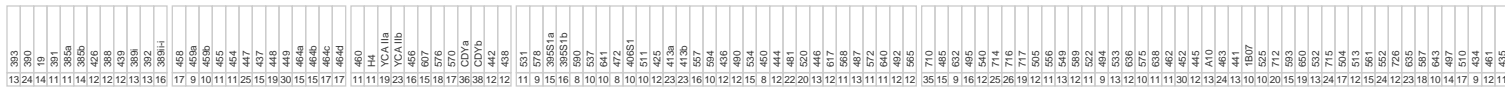
The vertical grey lines are separated 10 generations apart.



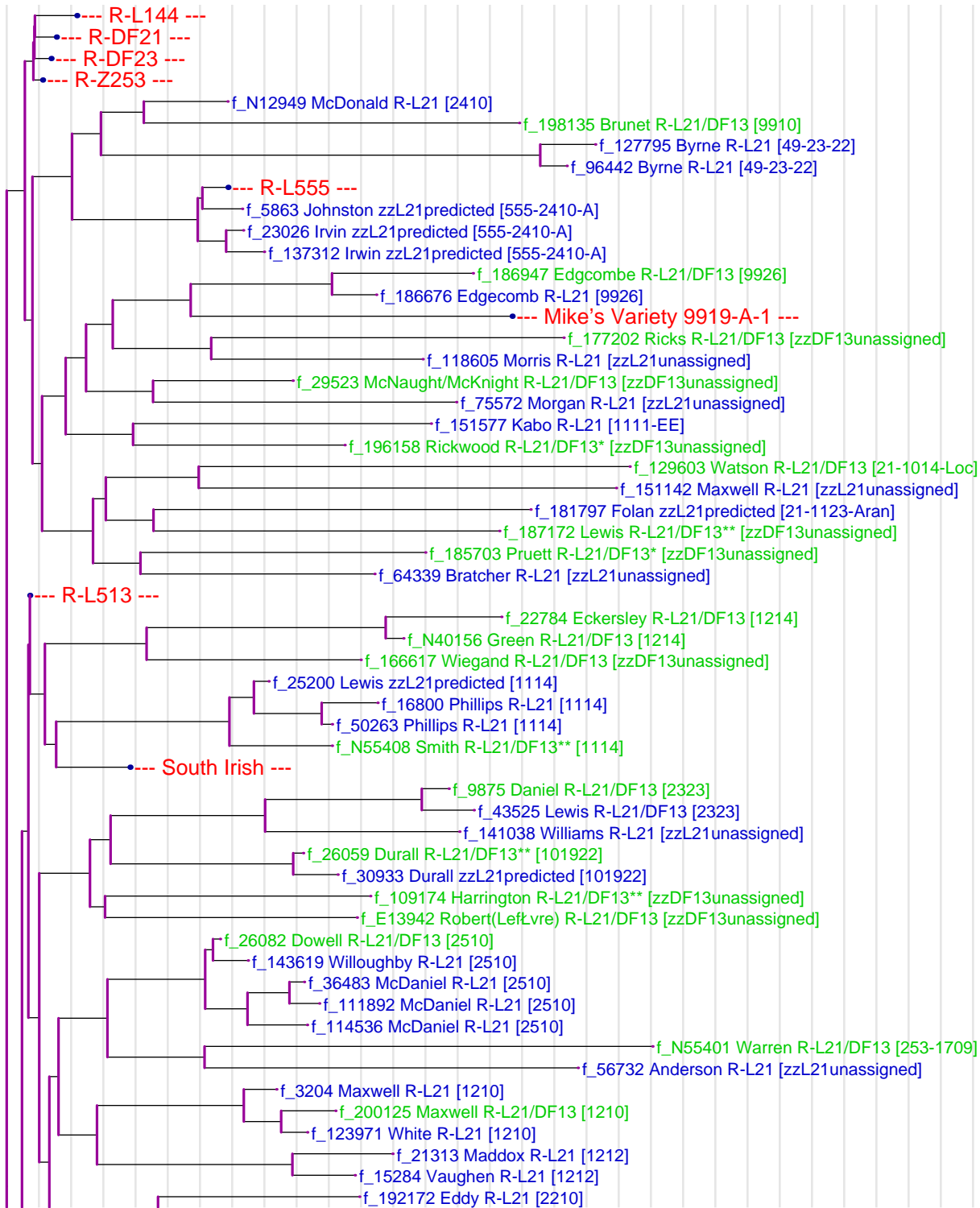
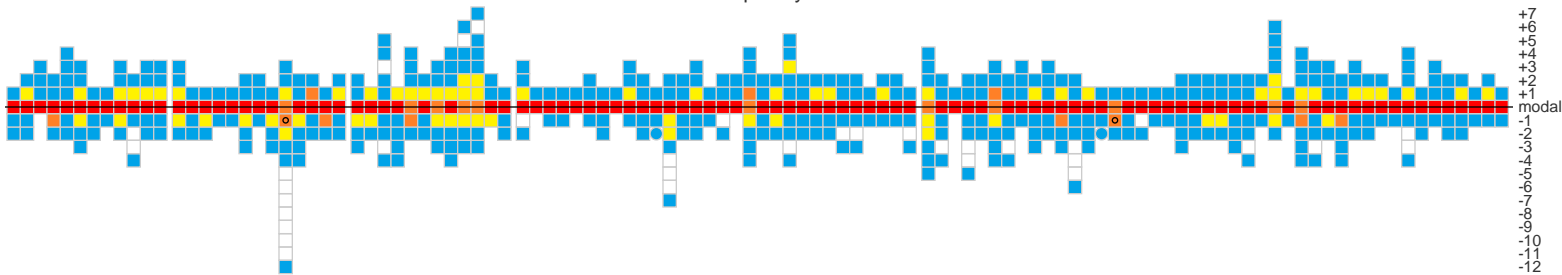
The vertical grey lines are separated 10 generations apart.

R-DF13

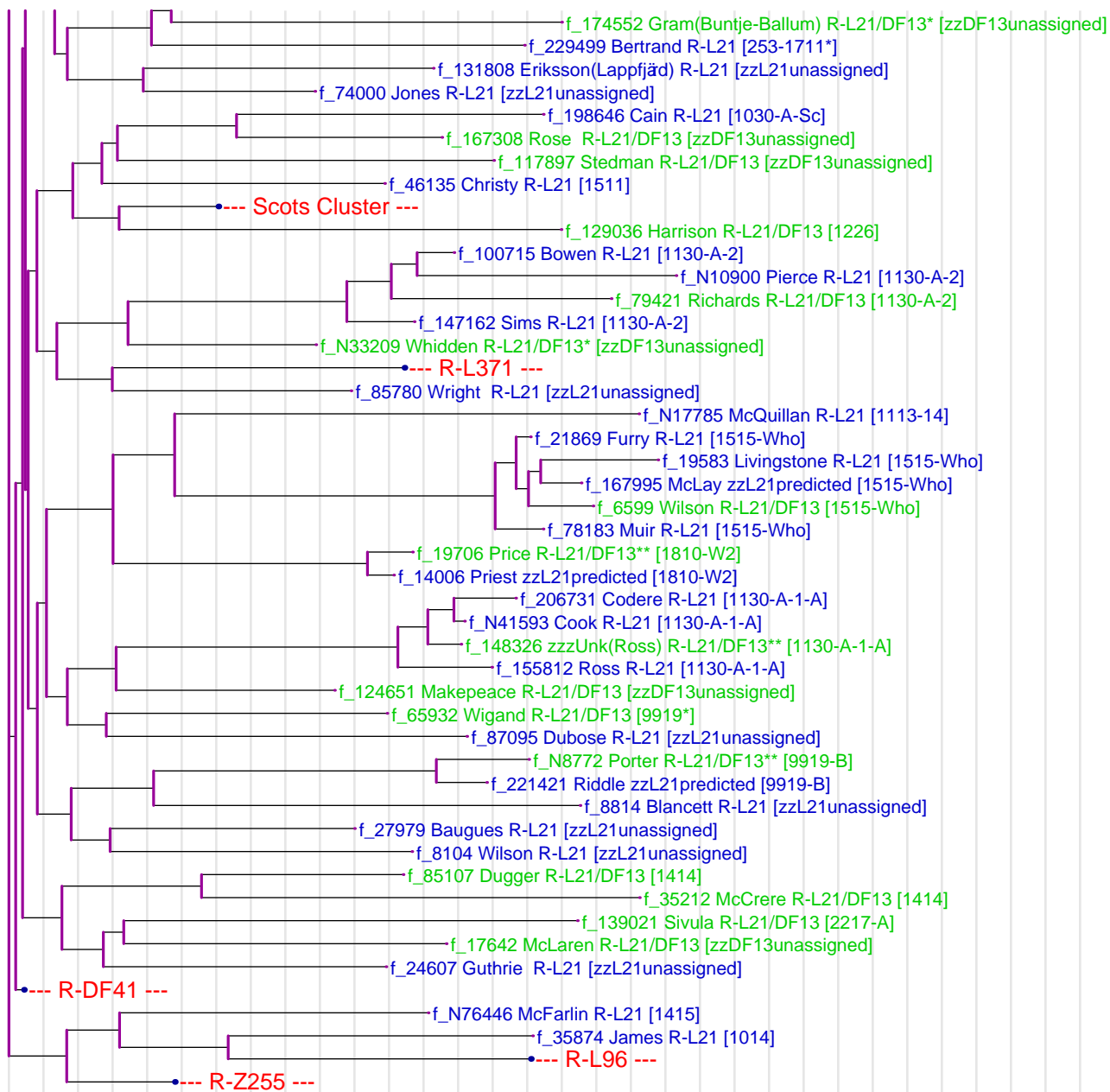
This is the modal haplotype for R-DF13. The coloration is with respect to the modal haplotype of the full tree.



This is the marker distribution for R-DF13. The color indicates the relative frequency of the alleles.



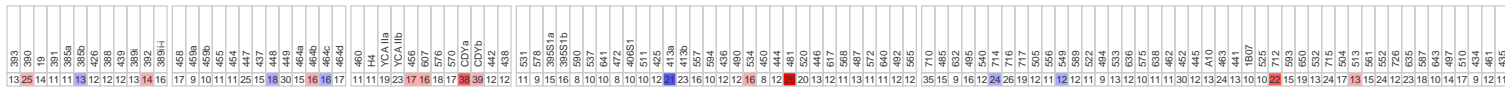
The vertical grey lines are separated 10 generations apart.



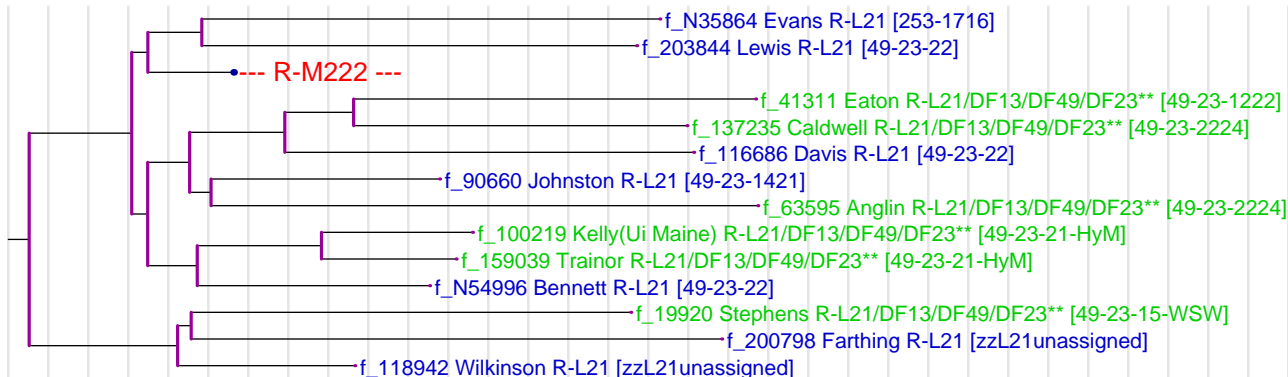
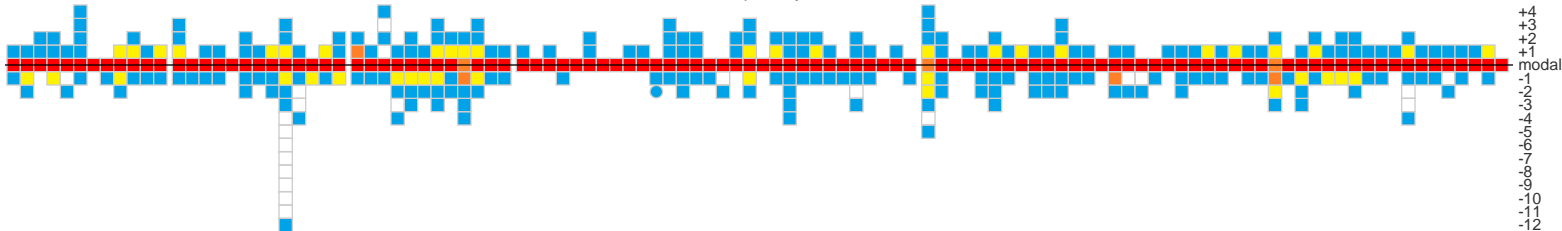
The vertical grey lines are separated 10 generations apart.

R-DF23

This is the modal haplotype for R-DF23. The coloration is with respect to the modal haplotype of the full tree.



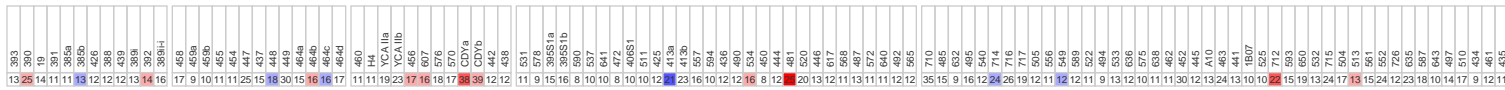
This is the marker distribution for R-DF23. The color indicates the relative frequency of the alleles.



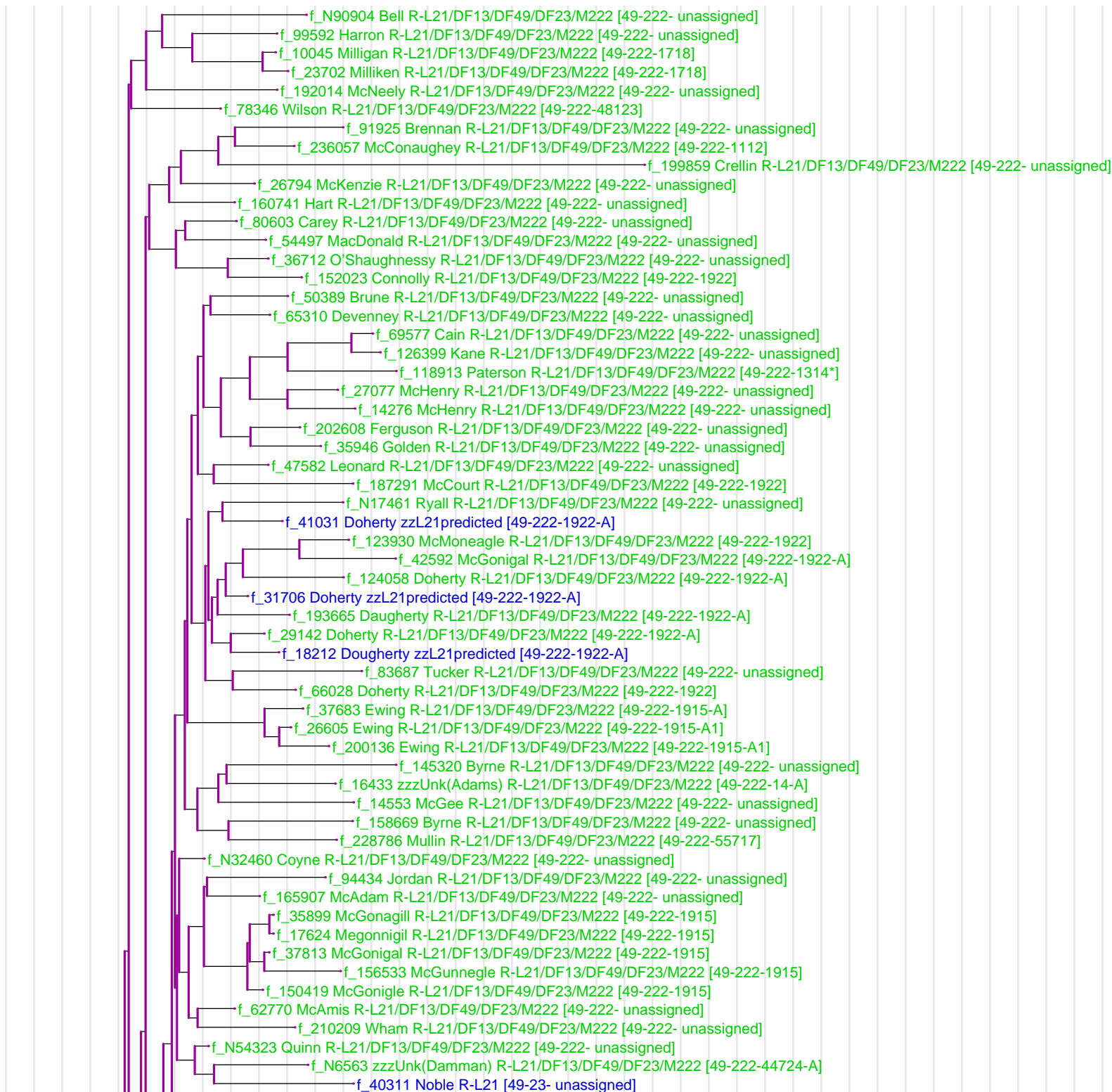
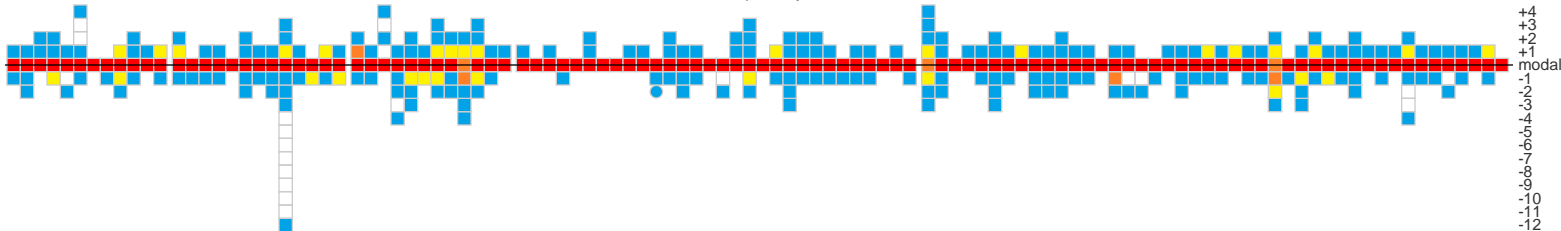
The vertical grey lines are separated 10 generations apart.

R-M222

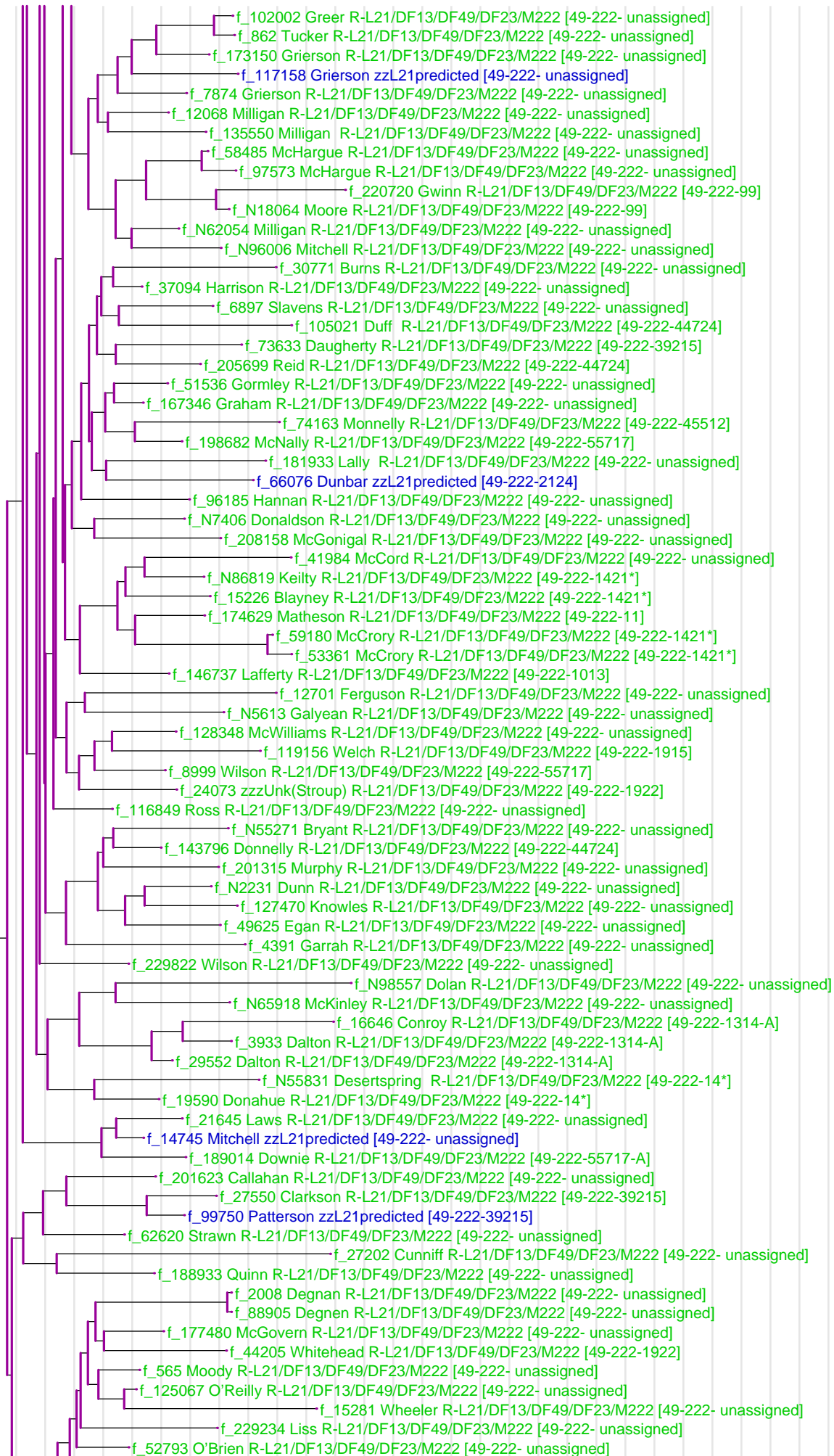
This is the modal haplotype for R-M222. The coloration is with respect to the modal haplotype of the full tree.



This is the marker distribution for R-M222. The color indicates the relative frequency of the alleles.



The vertical grey lines are separated 10 generations apart.



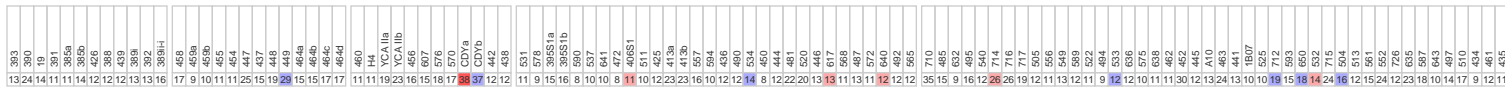
The vertical grey lines are separated 10 generations apart.



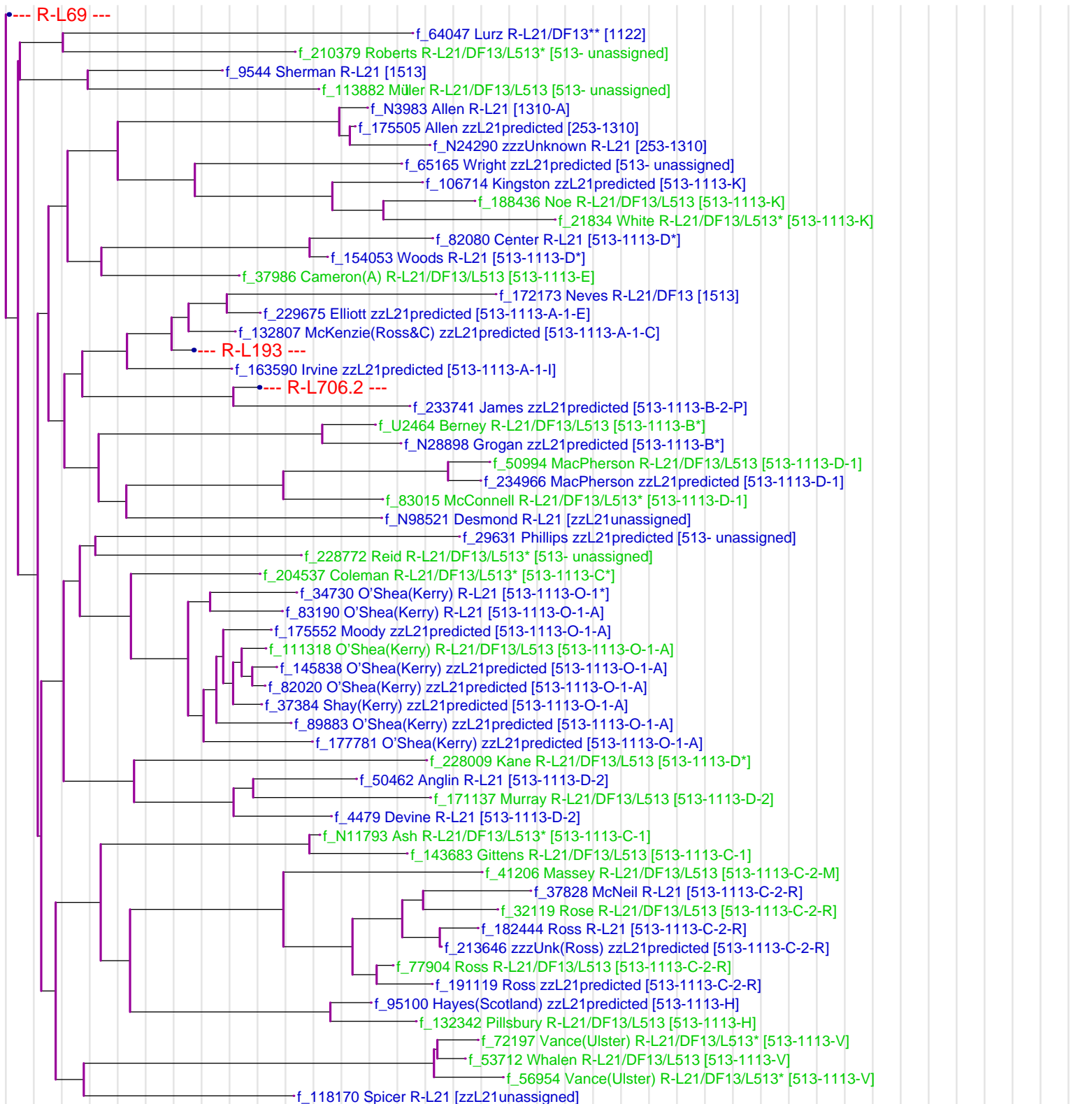
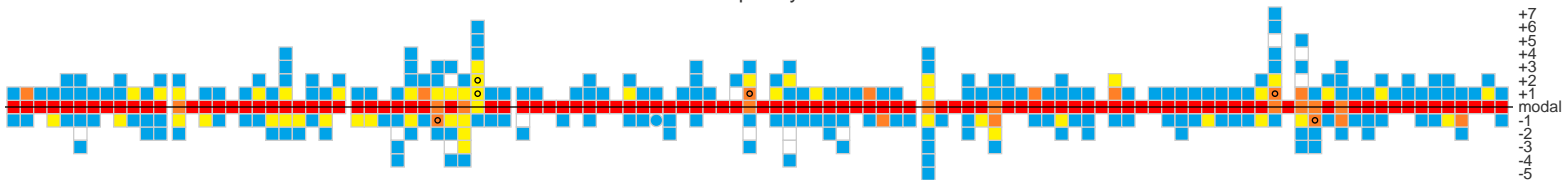
The vertical grey lines are separated 10 generations apart.

R-L513

This is the modal haplotype for R-L513. The coloration is with respect to the modal haplotype of the full tree.



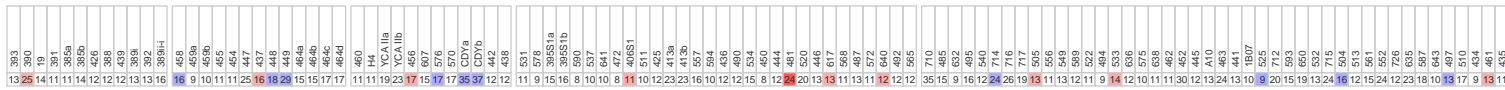
This is the marker distribution for R-L513. The color indicates the relative frequency of the alleles.



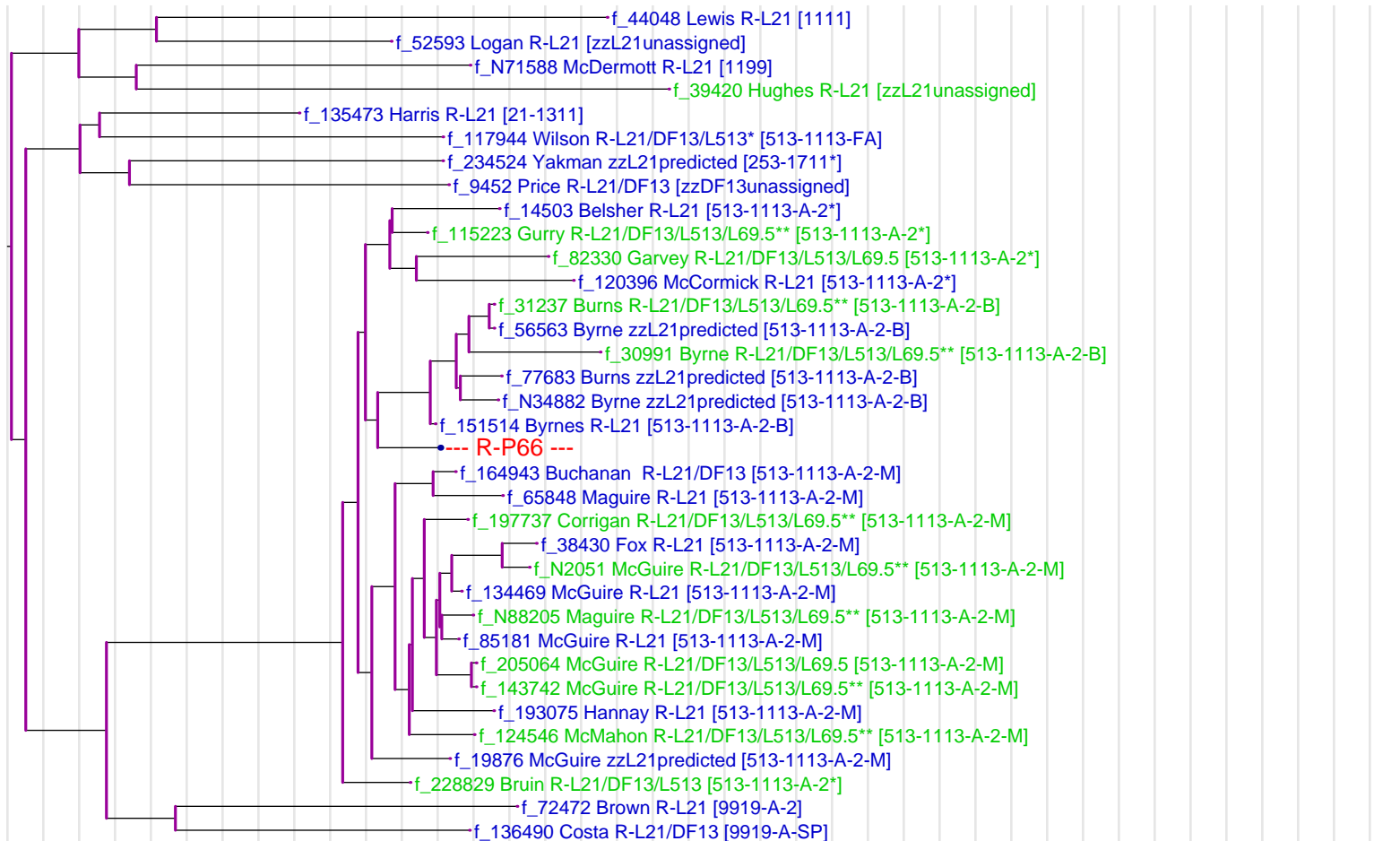
The vertical grey lines are separated 10 generations apart.

R-L69

This is the modal haplotype for R-L69. The coloration is with respect to the modal haplotype of the full tree.



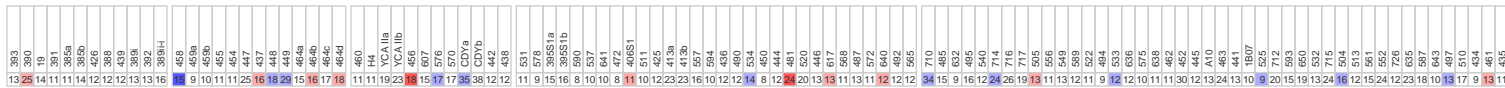
This is the marker distribution for R-L69. The color indicates the relative frequency of the alleles.



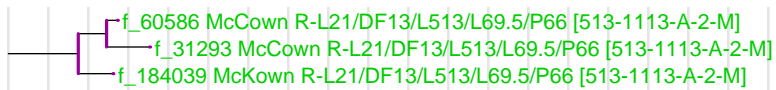
The vertical grey lines are separated 10 generations apart.

R-P66

This is the modal haplotype for R-P66. The coloration is with respect to the modal haplotype of the full tree.



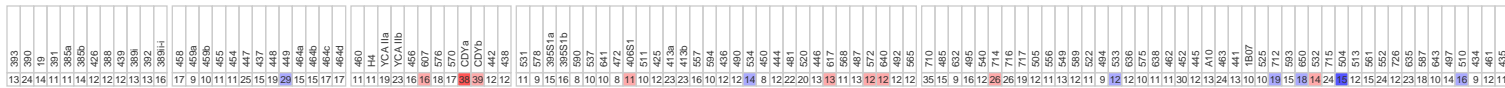
This is the marker distribution for R-P66. The color indicates the relative frequency of the alleles.



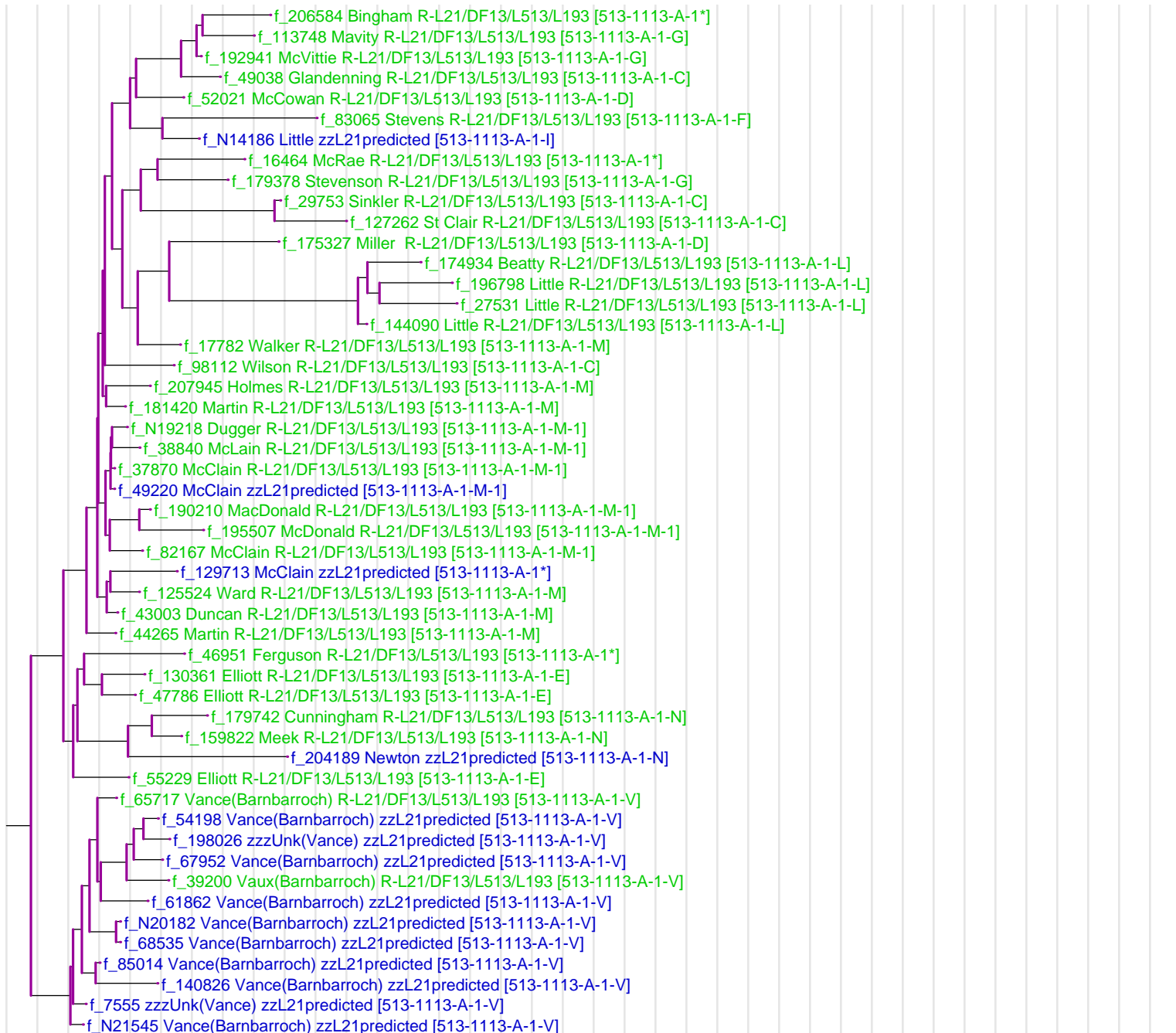
The vertical grey lines are separated 10 generations apart.

R-L193

This is the modal haplotype for R-L193. The coloration is with respect to the modal haplotype of the full tree.



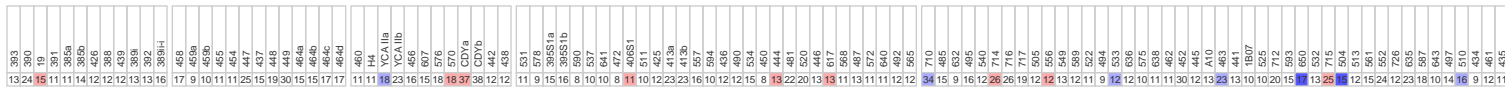
This is the marker distribution for R-L193. The color indicates the relative frequency of the alleles.



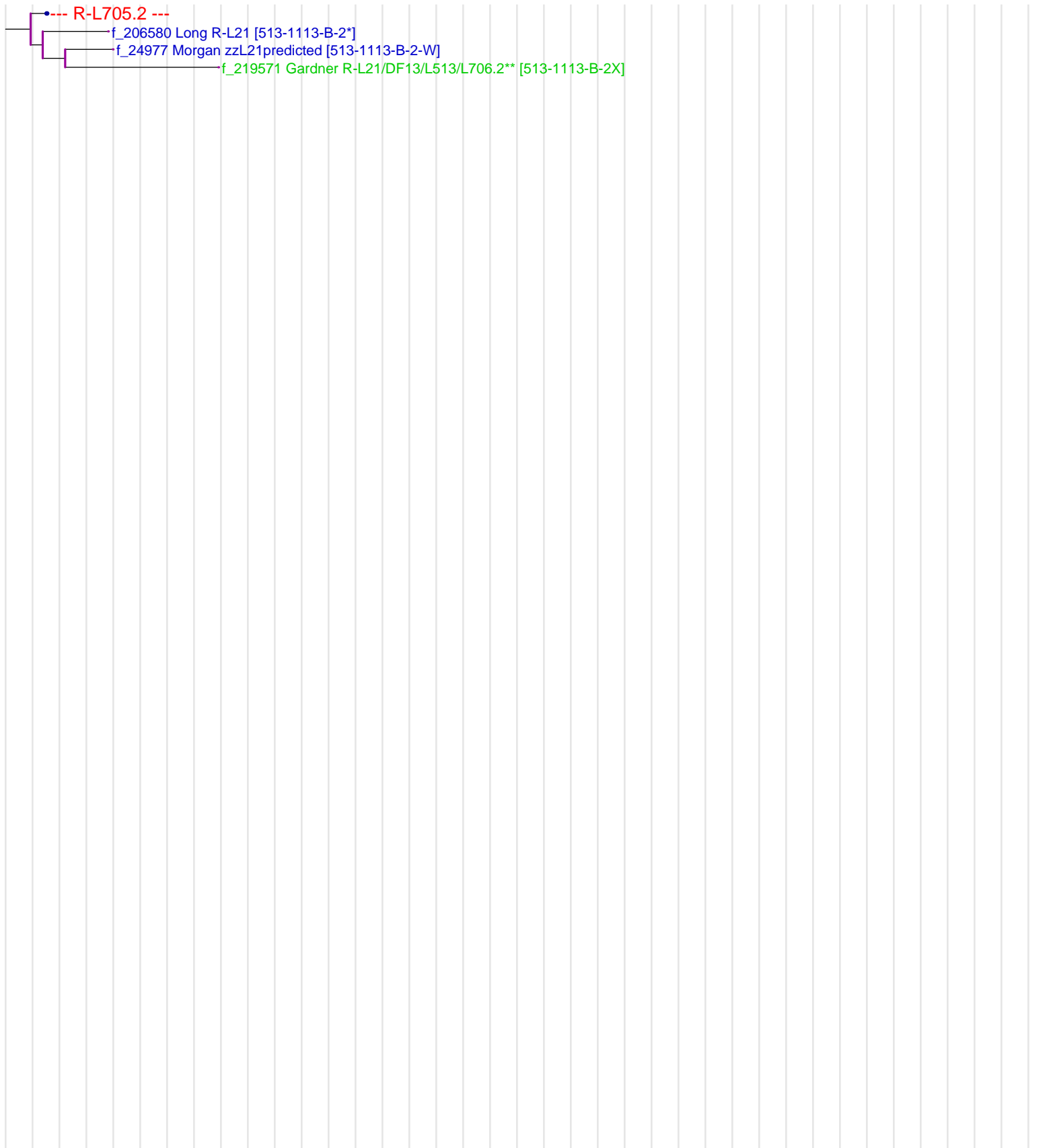
The vertical grey lines are separated 10 generations apart.

R-L706.2

This is the modal haplotype for R-L706.2. The coloration is with respect to the modal haplotype of the full tree.



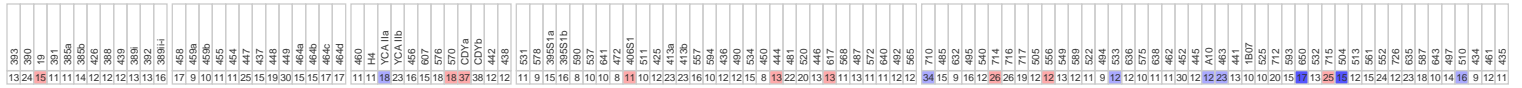
This is the marker distribution for R-L706.2. The color indicates the relative frequency of the alleles.



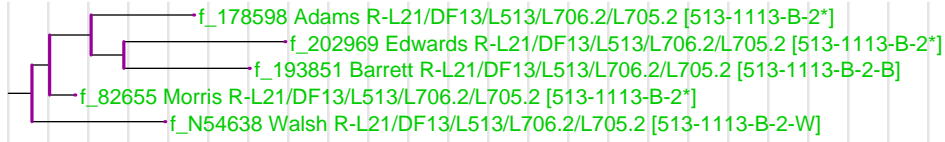
The vertical grey lines are separated 10 generations apart.

R-L705.2

This is the modal haplotype for R-L705.2. The coloration is with respect to the modal haplotype of the full tree.



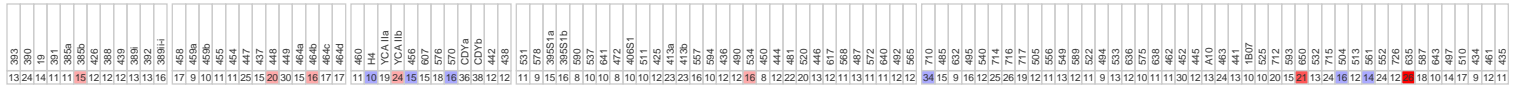
This is the marker distribution for R-L705.2. The color indicates the relative frequency of the alleles.



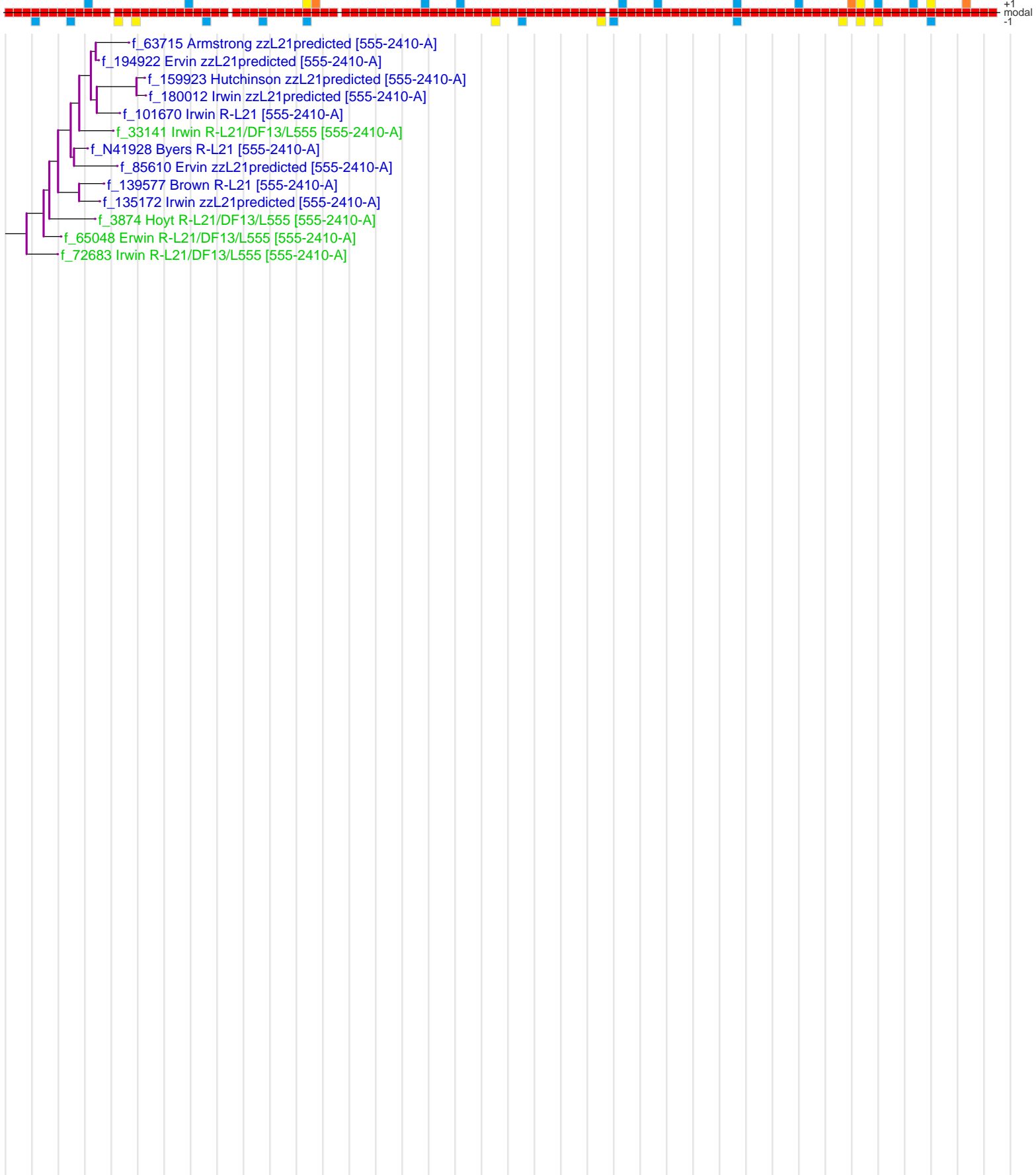
The vertical grey lines are separated 10 generations apart.

R-L555

This is the modal haplotype for R-L555. The coloration is with respect to the modal haplotype of the full tree.



This is the marker distribution for R-L555. The color indicates the relative frequency of the alleles.



The vertical grey lines are separated 10 generations apart.

R-L96

This is the modal haplotype for R-L96. The coloration is with respect to the modal haplotype of the full tree.

303	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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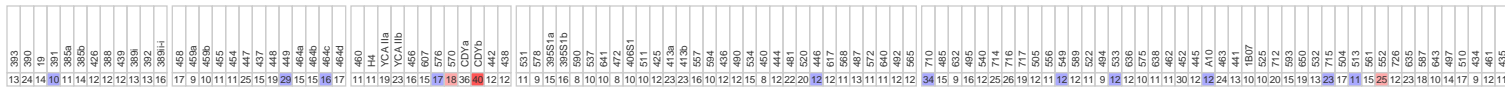
This is the marker distribution for R-L96. The color indicates the relative frequency of the alleles.



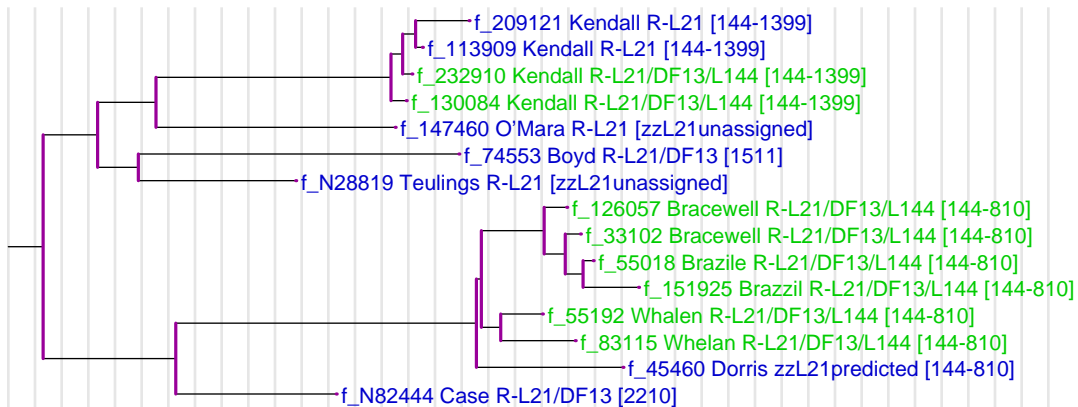
The vertical grey lines are separated 10 generations apart.

R-L144

This is the modal haplotype for R-L144. The coloration is with respect to the modal haplotype of the full tree.



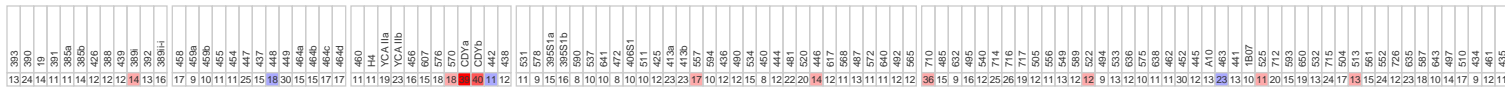
This is the marker distribution for R-L144. The color indicates the relative frequency of the alleles.



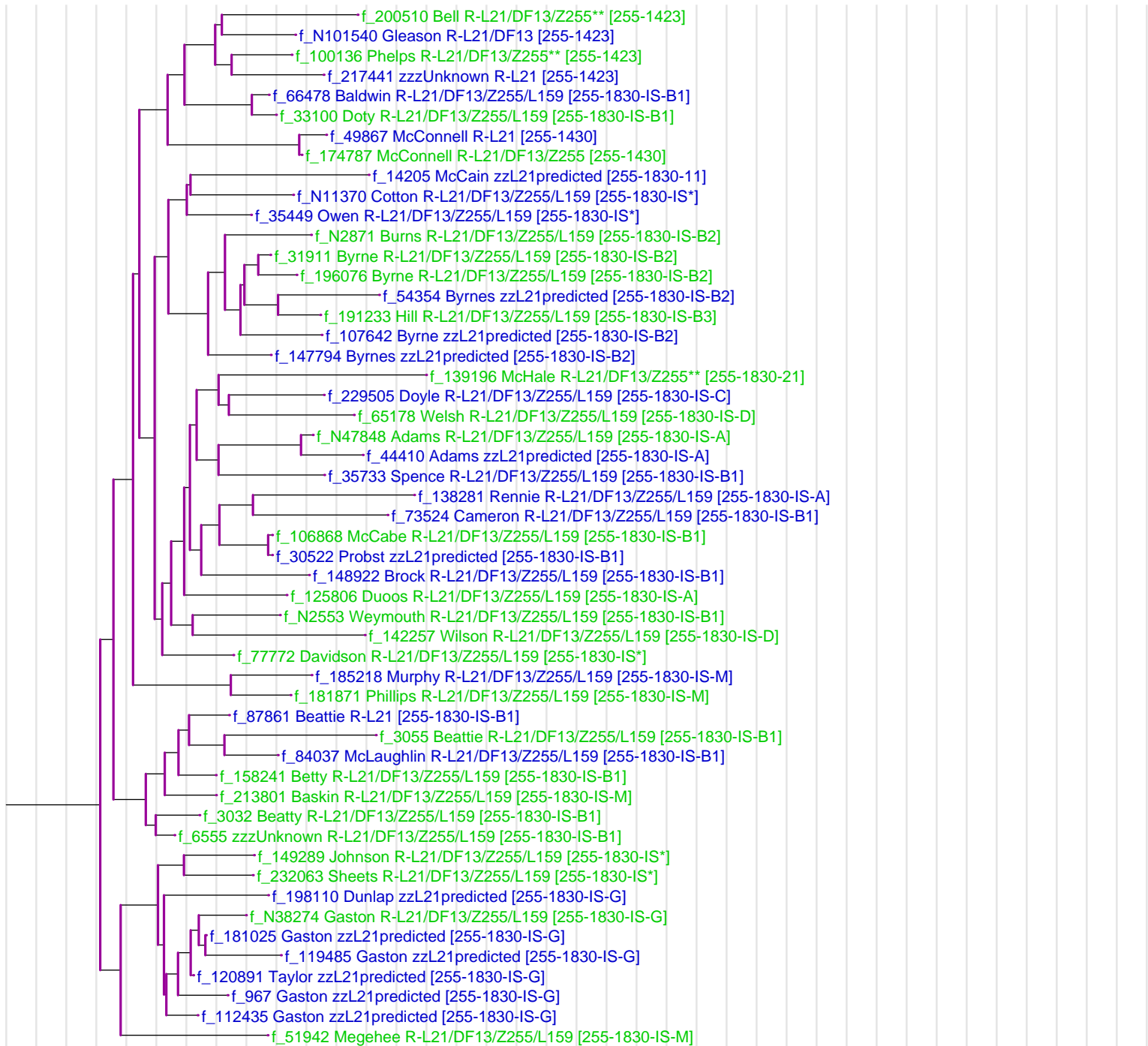
The vertical grey lines are separated 10 generations apart.

R-Z255

This is the modal haplotype for R-Z255. The coloration is with respect to the modal haplotype of the full tree.



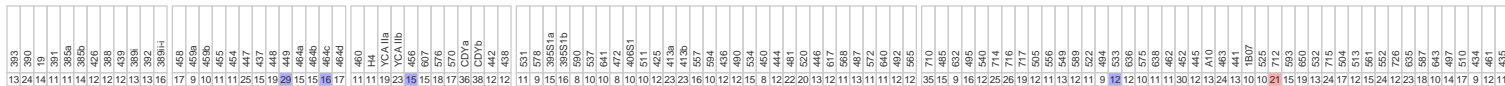
This is the marker distribution for R-Z255. The color indicates the relative frequency of the alleles.



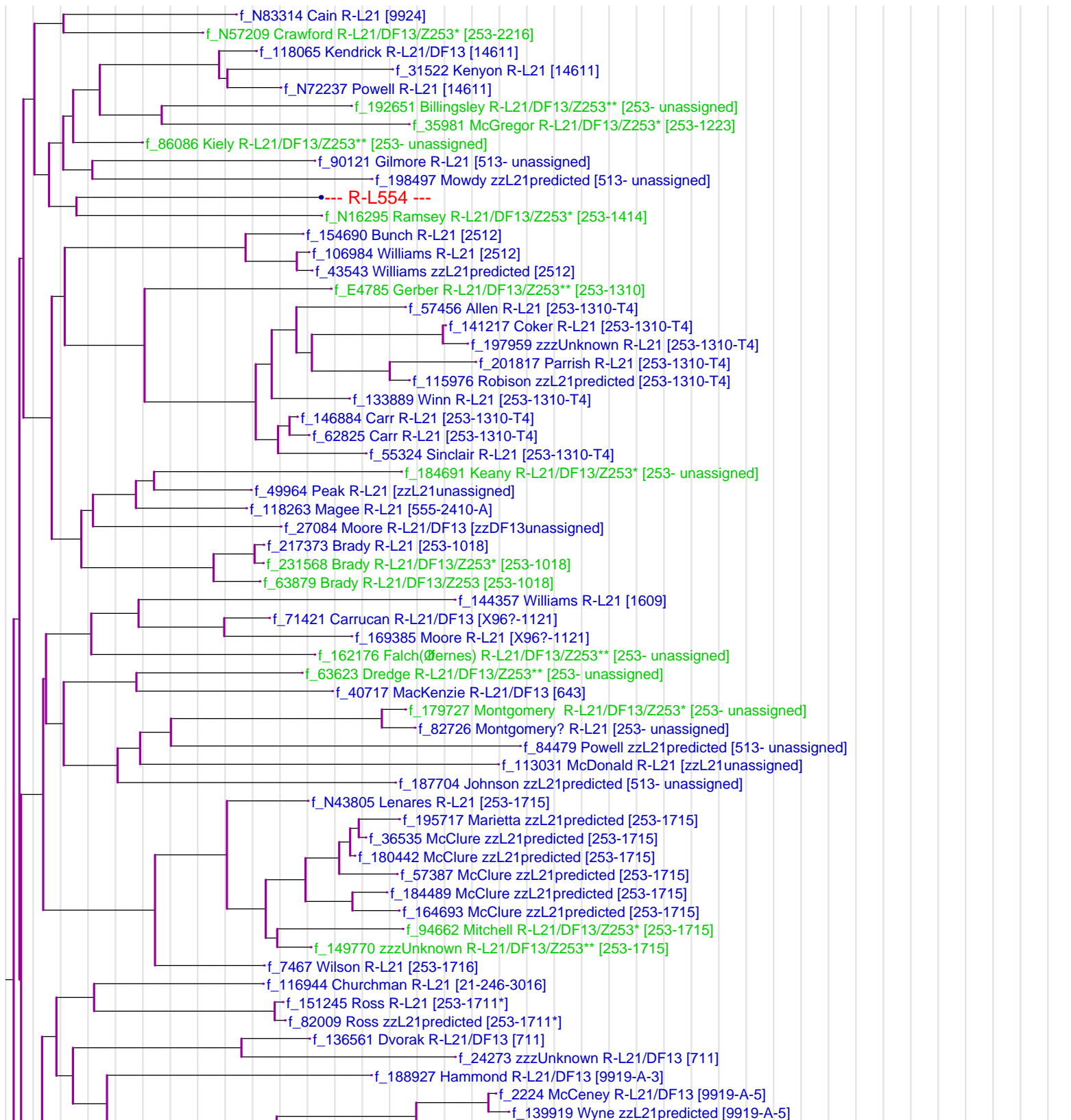
The vertical grey lines are separated 10 generations apart.

R-Z253

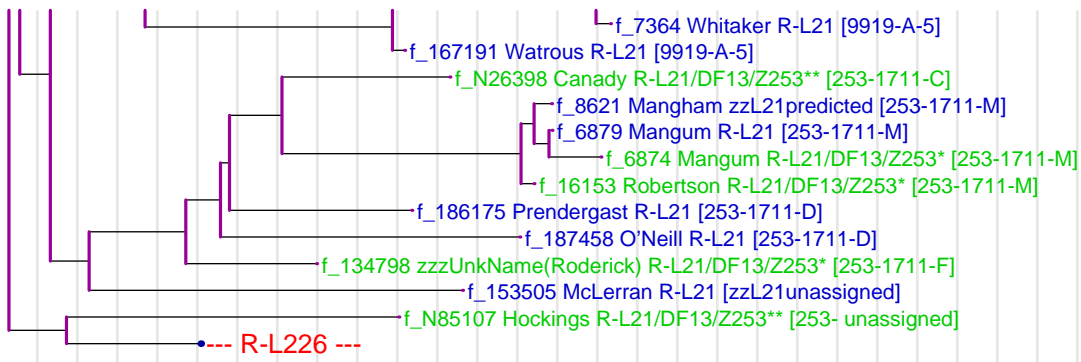
This is the modal haplotype for R-Z253. The coloration is with respect to the modal haplotype of the full tree.



This is the marker distribution for R-Z253. The color indicates the relative frequency of the alleles.



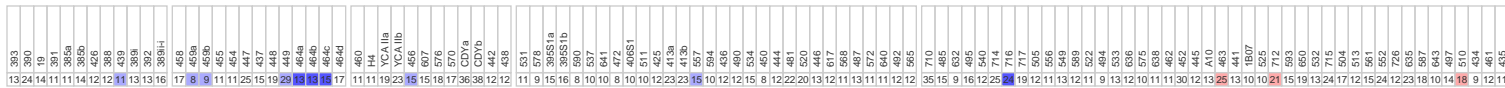
The vertical grey lines are separated 10 generations apart.



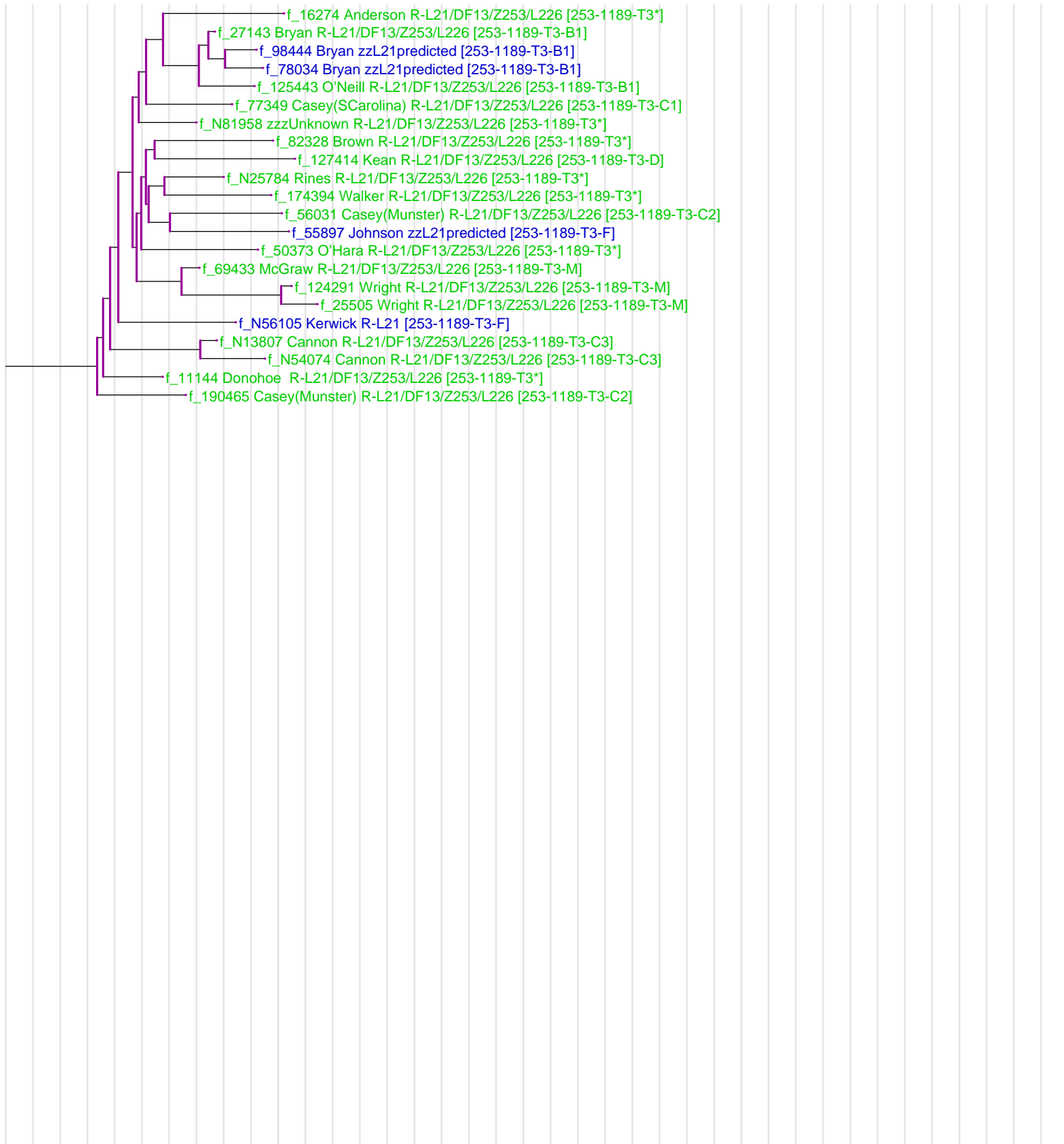
The vertical grey lines are separated 10 generations apart.

R-L226

This is the modal haplotype for R-L226. The coloration is with respect to the modal haplotype of the full tree.



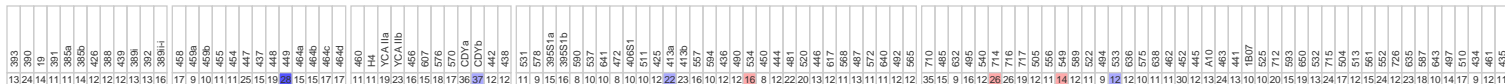
This is the marker distribution for R-L226. The color indicates the relative frequency of the alleles.



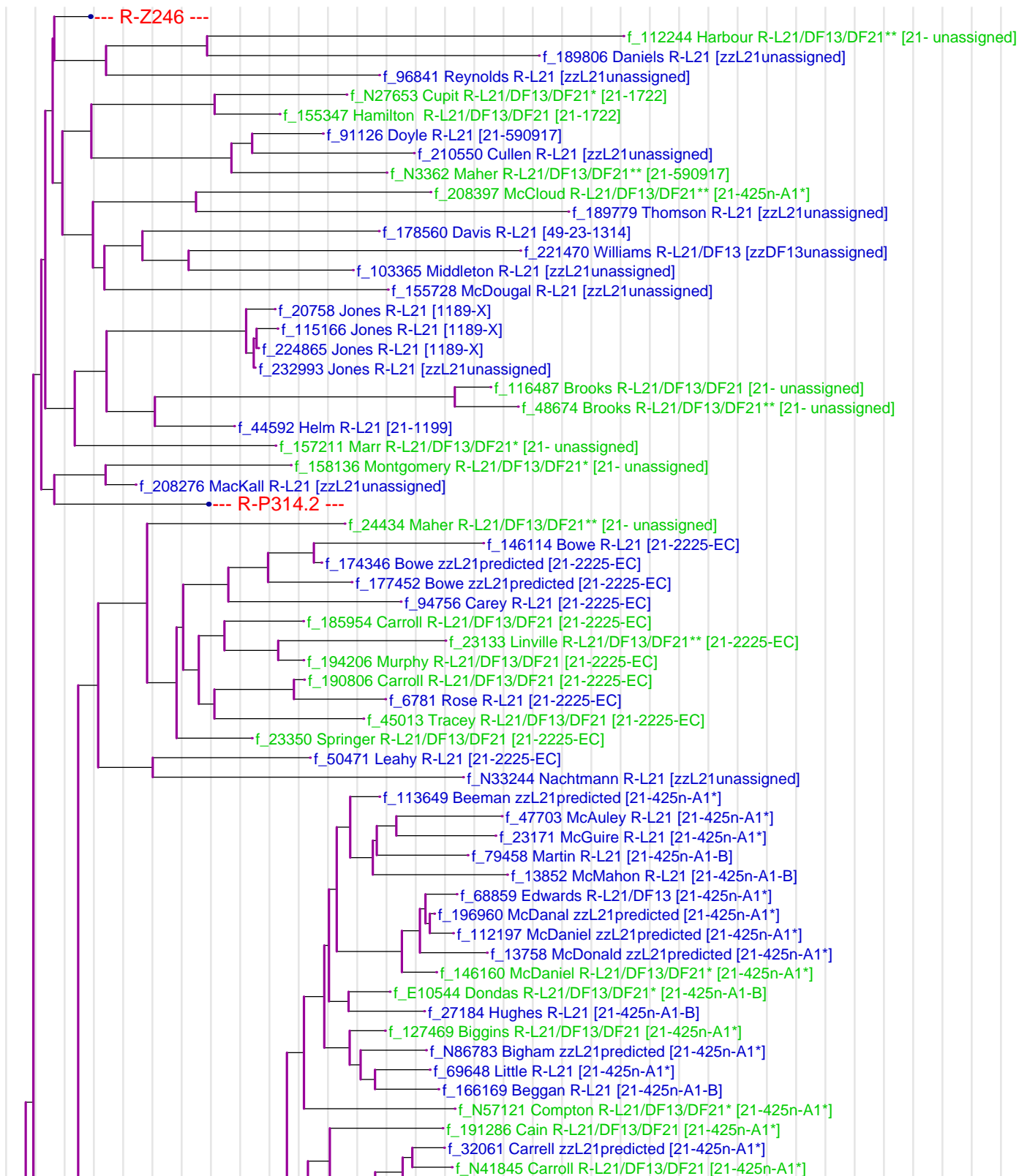
The vertical grey lines are separated 10 generations apart.

R-DF21

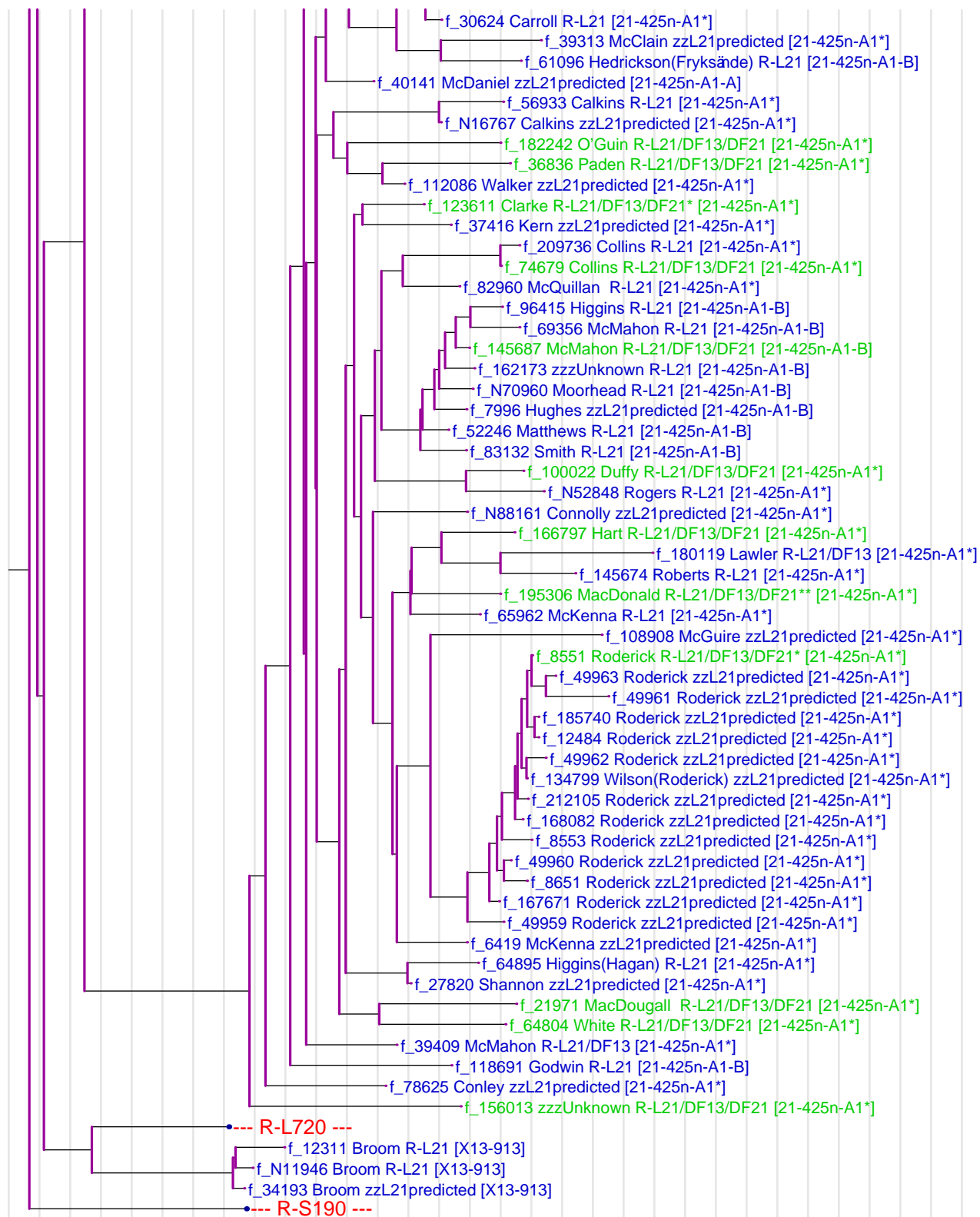
This is the modal haplotype for R-DF21. The coloration is with respect to the modal haplotype of the full tree.



This is the marker distribution for R-DF21. The color indicates the relative frequency of the alleles.



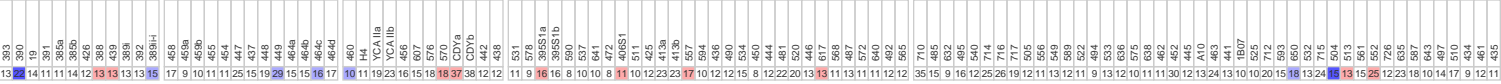
The vertical grey lines are separated 10 generations apart.



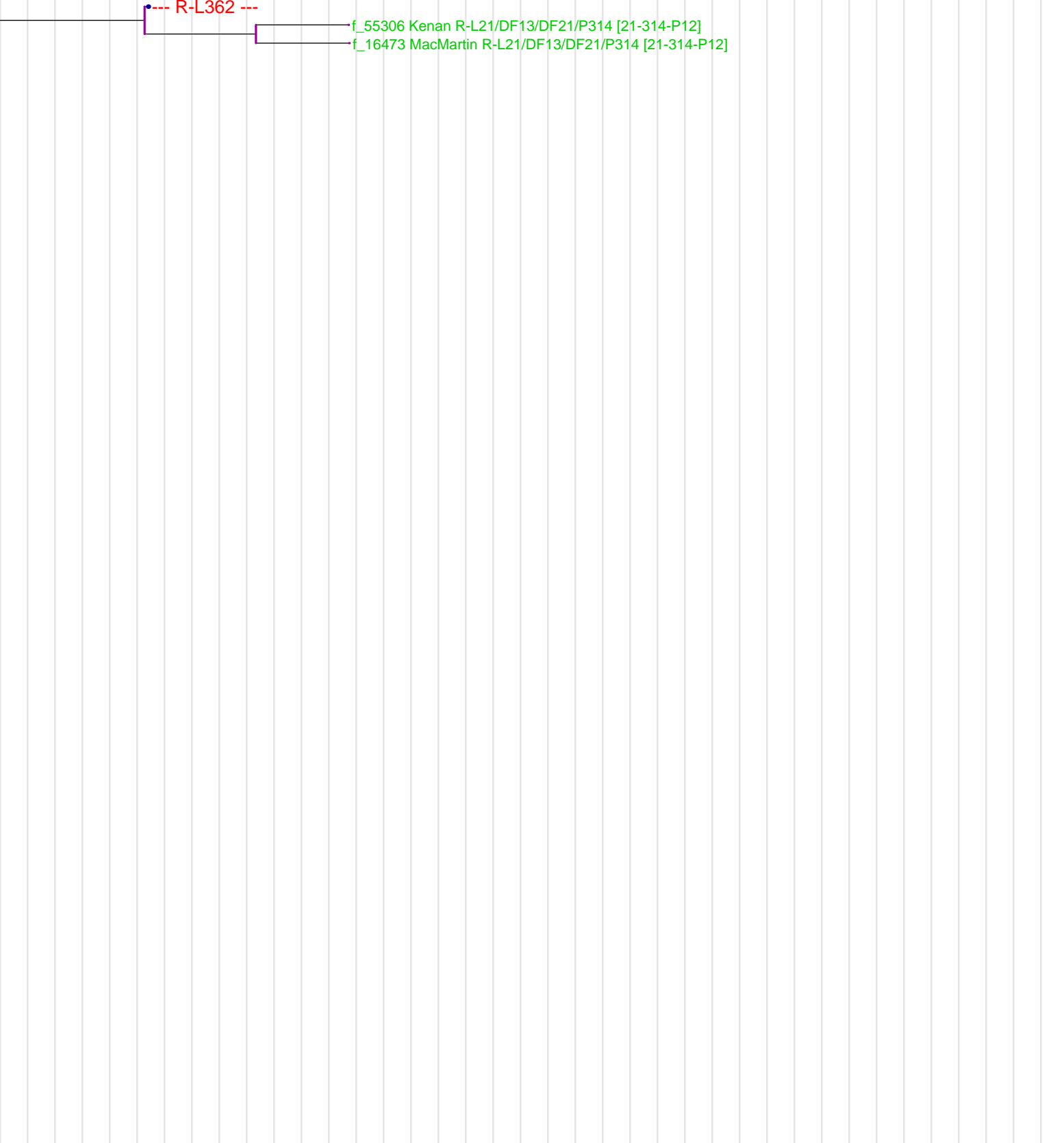
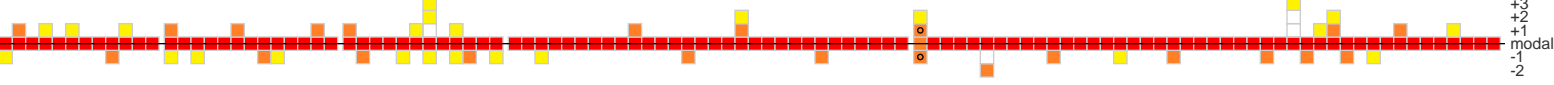
The vertical grey lines are separated 10 generations apart.

R-P314.2

This is the modal haplotype for R-P314.2. The coloration is with respect to the modal haplotype of the full tree.



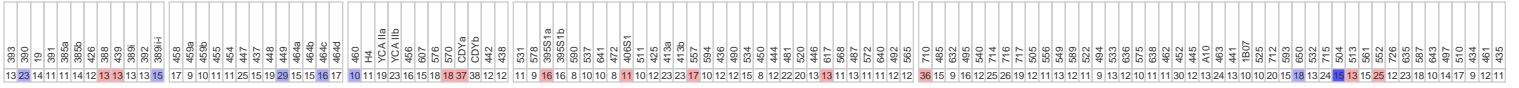
This is the marker distribution for R-P314.2. The color indicates the relative frequency of the alleles.



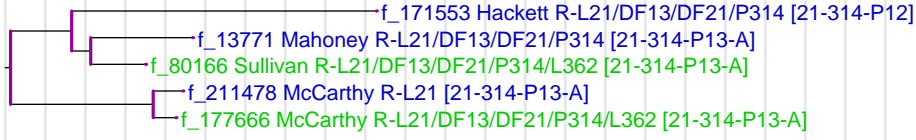
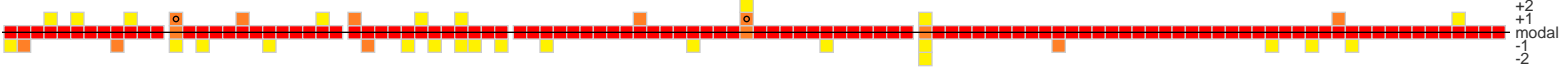
The vertical grey lines are separated 10 generations apart.

R-L362

This is the modal haplotype for R-L362. The coloration is with respect to the modal haplotype of the full tree.



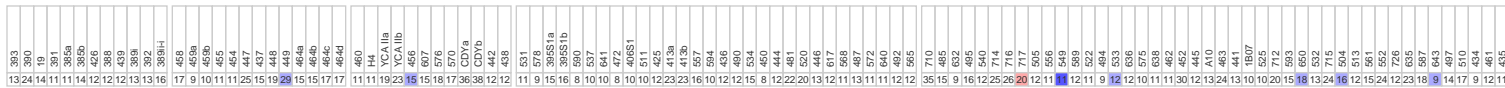
This is the marker distribution for R-L362. The color indicates the relative frequency of the alleles.



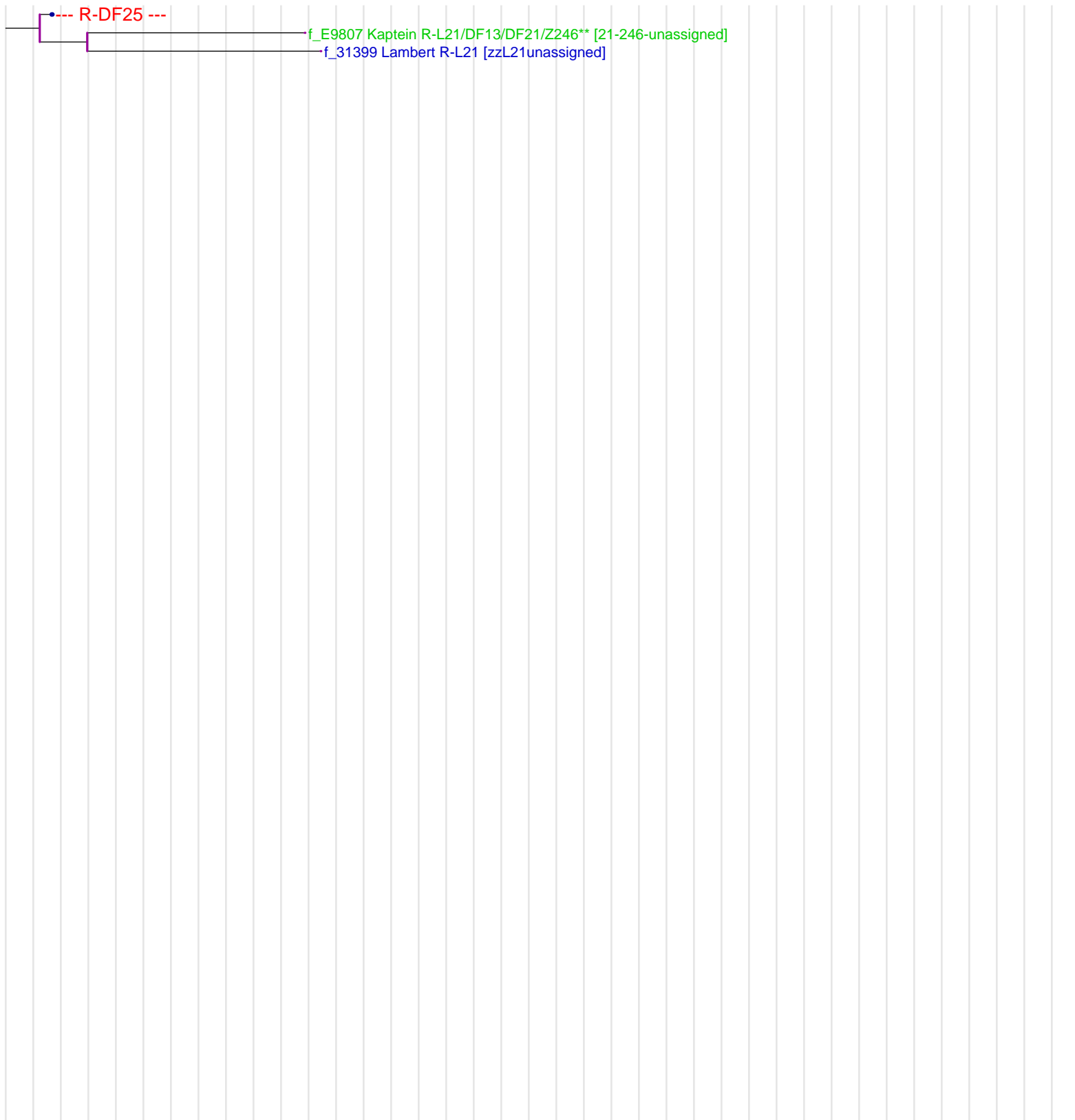
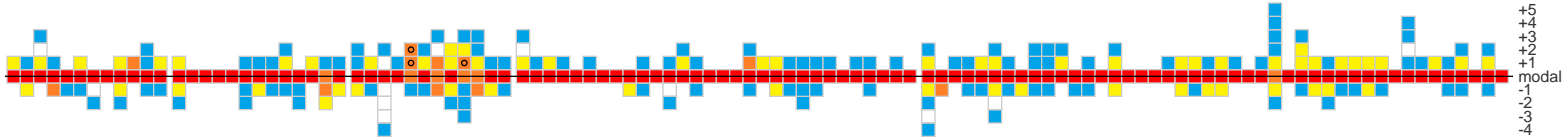
The vertical grey lines are separated 10 generations apart.

R-Z246

This is the modal haplotype for R-Z246. The coloration is with respect to the modal haplotype of the full tree.



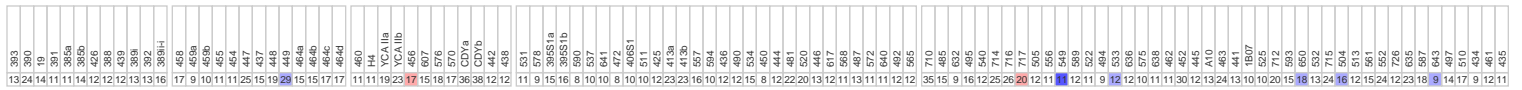
This is the marker distribution for R-Z246. The color indicates the relative frequency of the alleles.



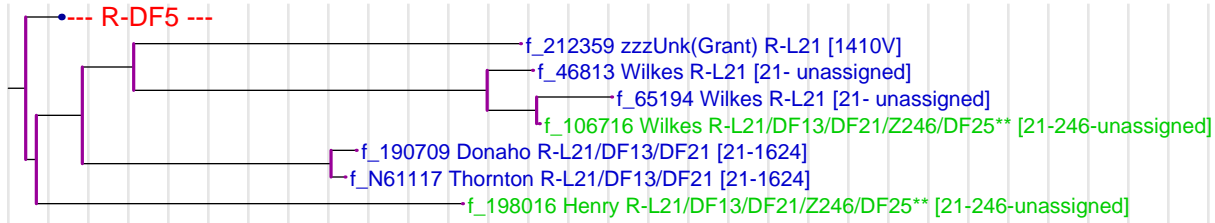
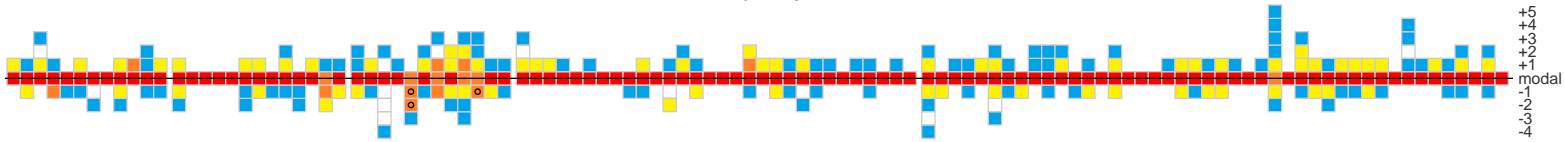
The vertical grey lines are separated 10 generations apart.

R-DF25

This is the modal haplotype for R-DF25. The coloration is with respect to the modal haplotype of the full tree.



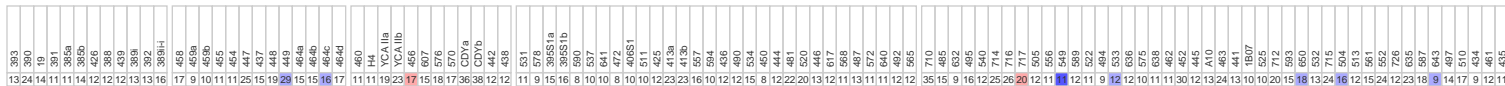
This is the marker distribution for R-DF25. The color indicates the relative frequency of the alleles.



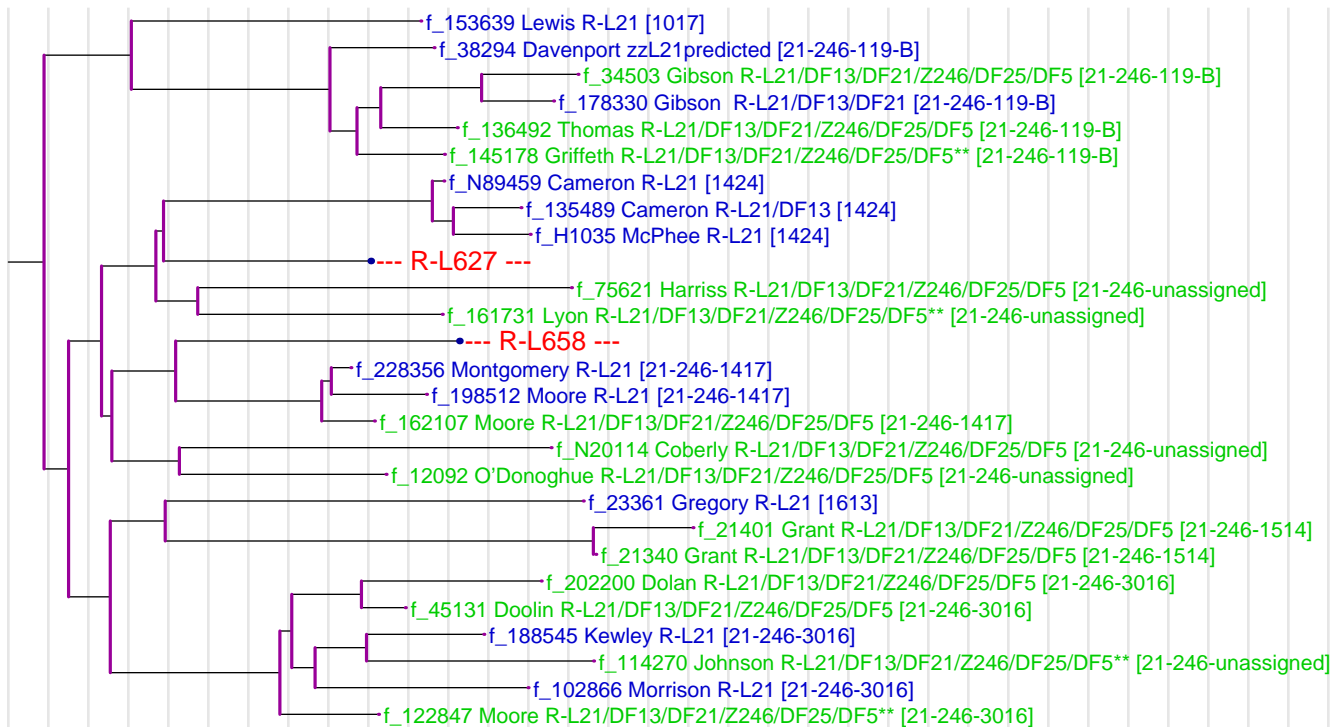
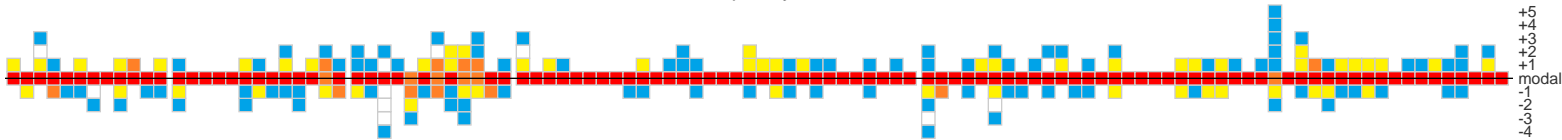
The vertical grey lines are separated 10 generations apart.

R-DF5

This is the modal haplotype for R-DF5. The coloration is with respect to the modal haplotype of the full tree.



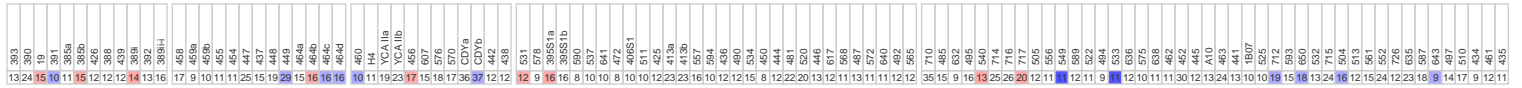
This is the marker distribution for R-DF5. The color indicates the relative frequency of the alleles.



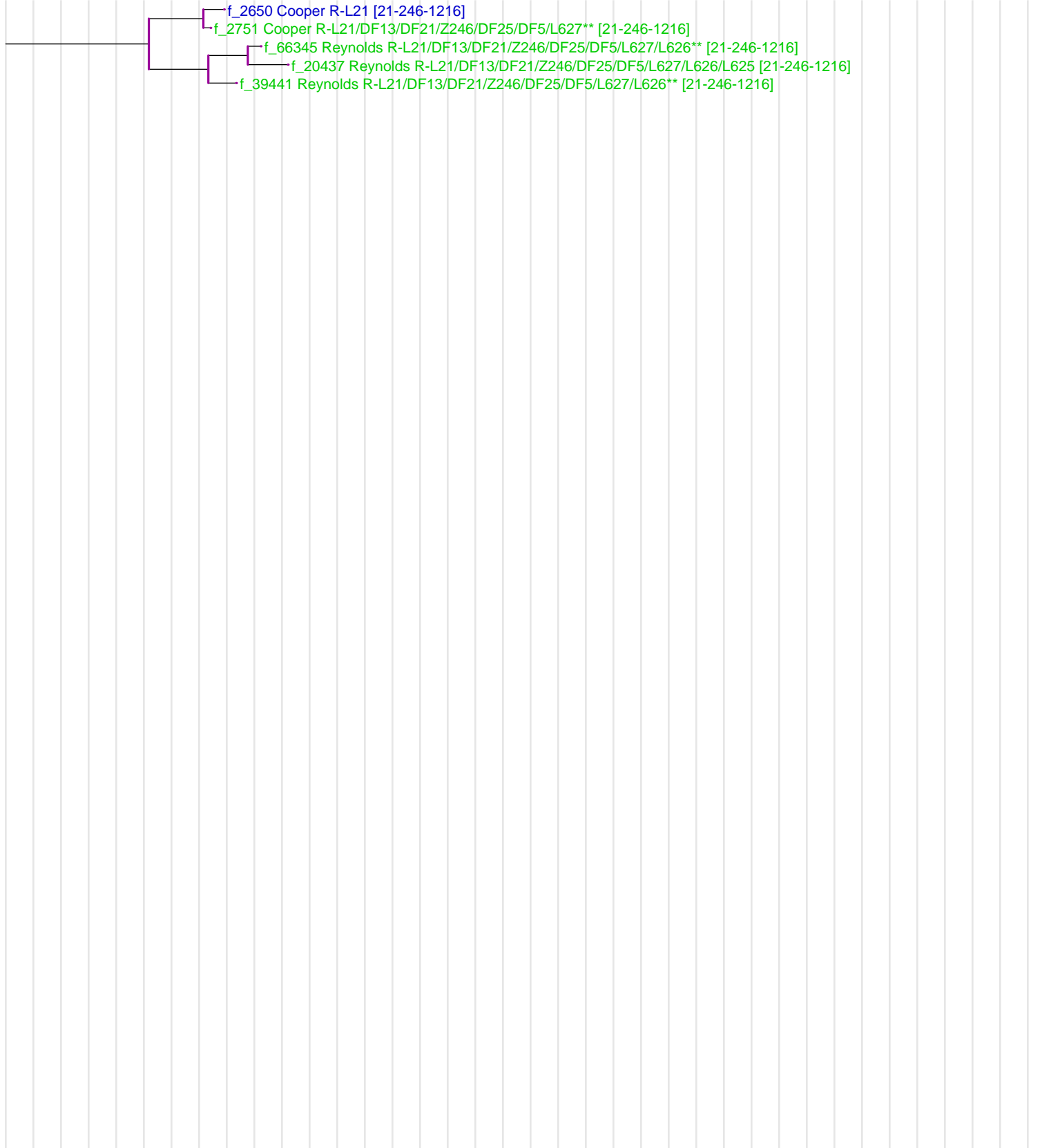
The vertical grey lines are separated 10 generations apart.

R-L627

This is the modal haplotype for R-L627. The coloration is with respect to the modal haplotype of the full tree.



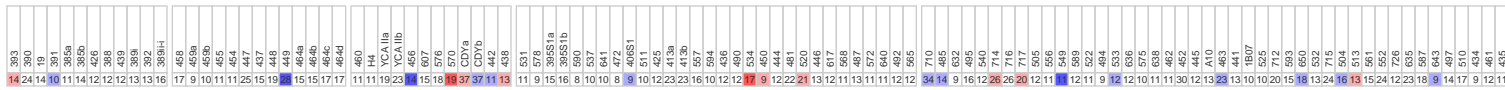
This is the marker distribution for R-L627. The color indicates the relative frequency of the alleles.



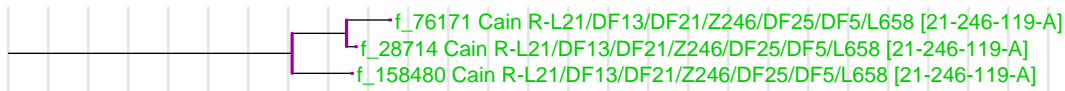
The vertical grey lines are separated 10 generations apart.

R-L658

This is the modal haplotype for R-L658. The coloration is with respect to the modal haplotype of the full tree.



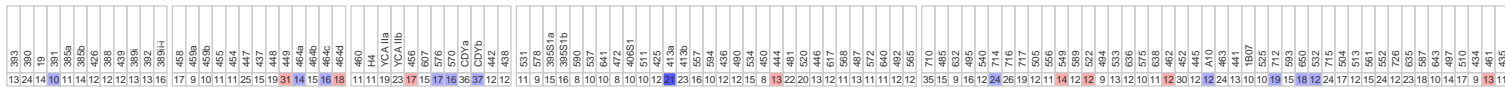
This is the marker distribution for R-L658. The color indicates the relative frequency of the alleles.



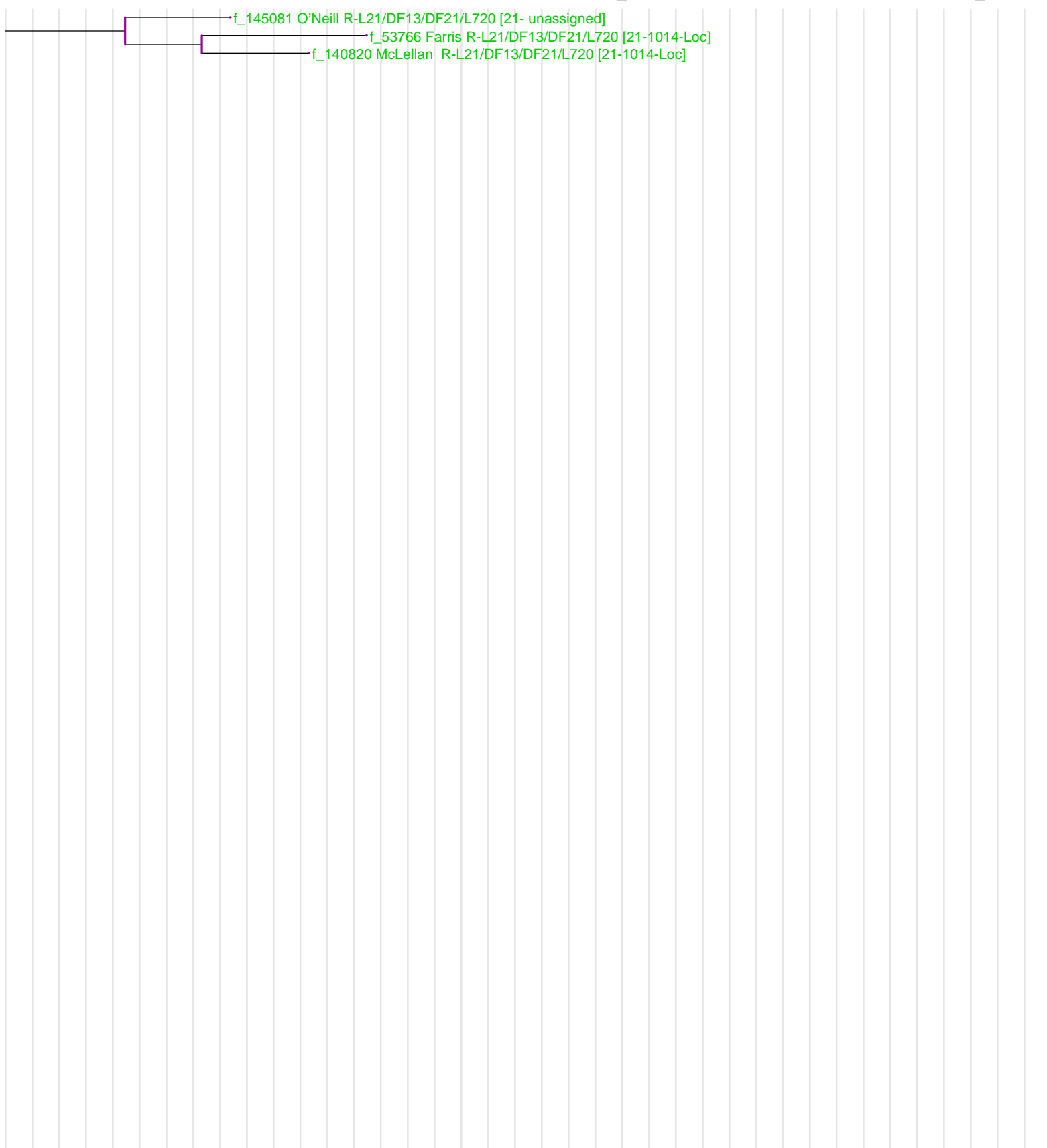
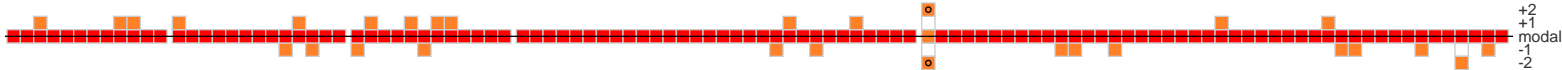
The vertical grey lines are separated 10 generations apart.

R-L720

This is the modal haplotype for R-L720. The coloration is with respect to the modal haplotype of the full tree.



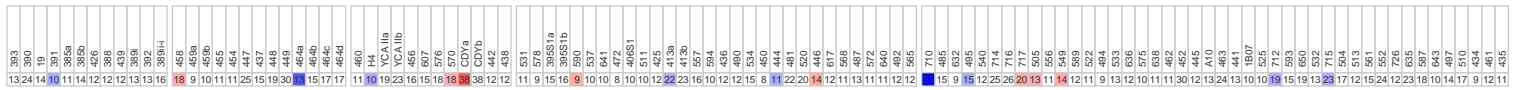
This is the marker distribution for R-L720. The color indicates the relative frequency of the alleles.



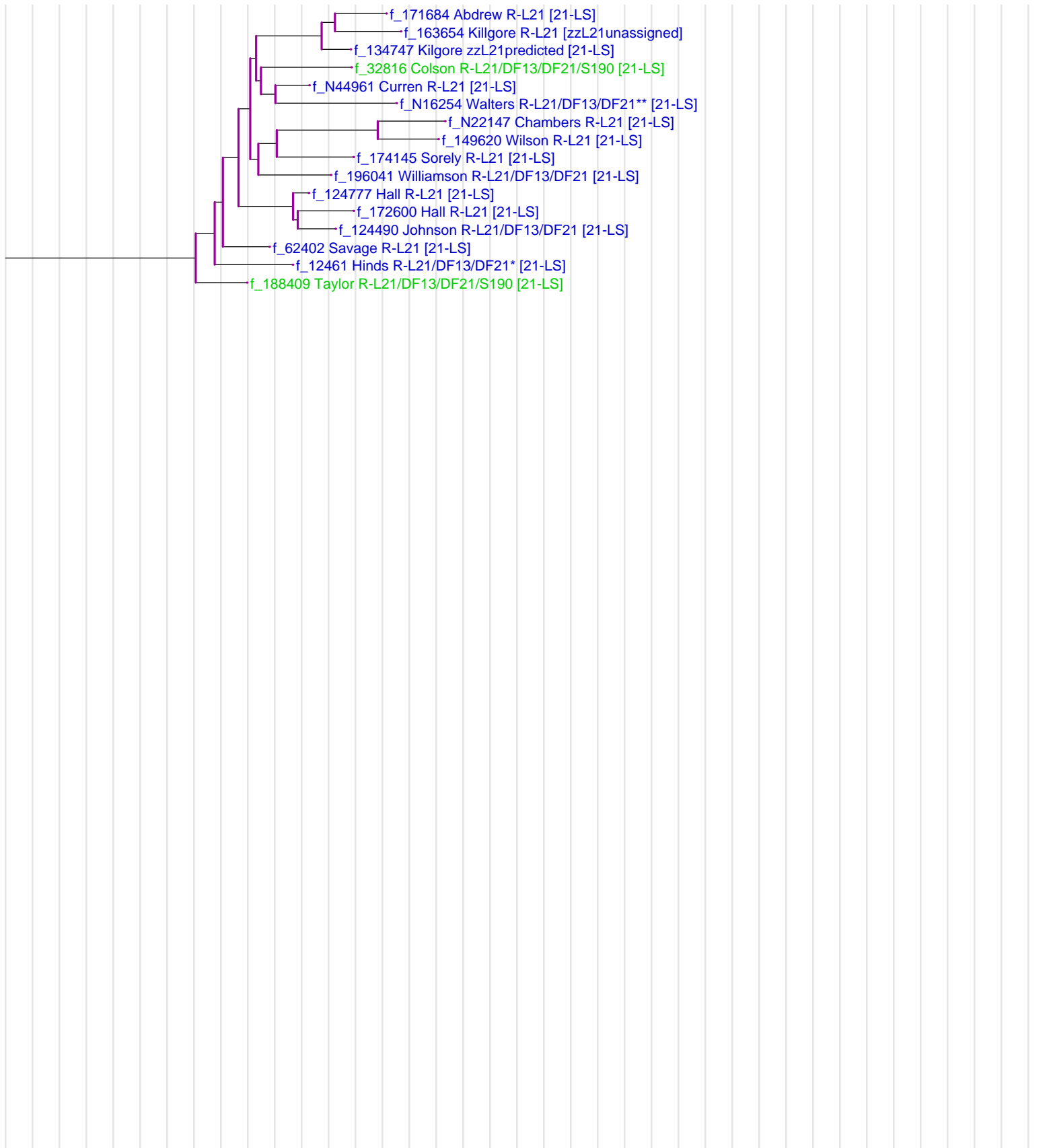
The vertical grey lines are separated 10 generations apart.

R-S190

This is the modal haplotype for R-S190. The coloration is with respect to the modal haplotype of the full tree.



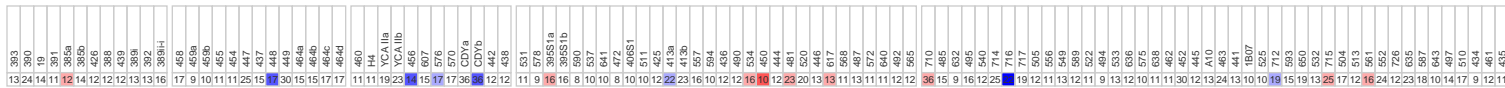
This is the marker distribution for R-S190. The color indicates the relative frequency of the alleles.



The vertical grey lines are separated 10 generations apart.

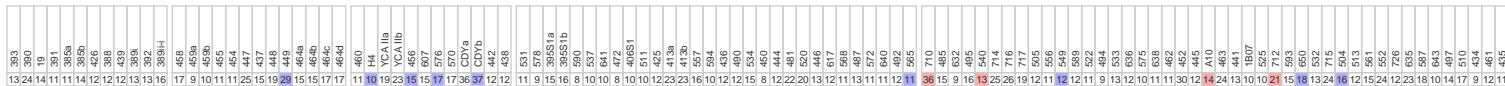
R-L371

This is the modal haplotype for R-L371. The coloration is with respect to the modal haplotype of the full tree.

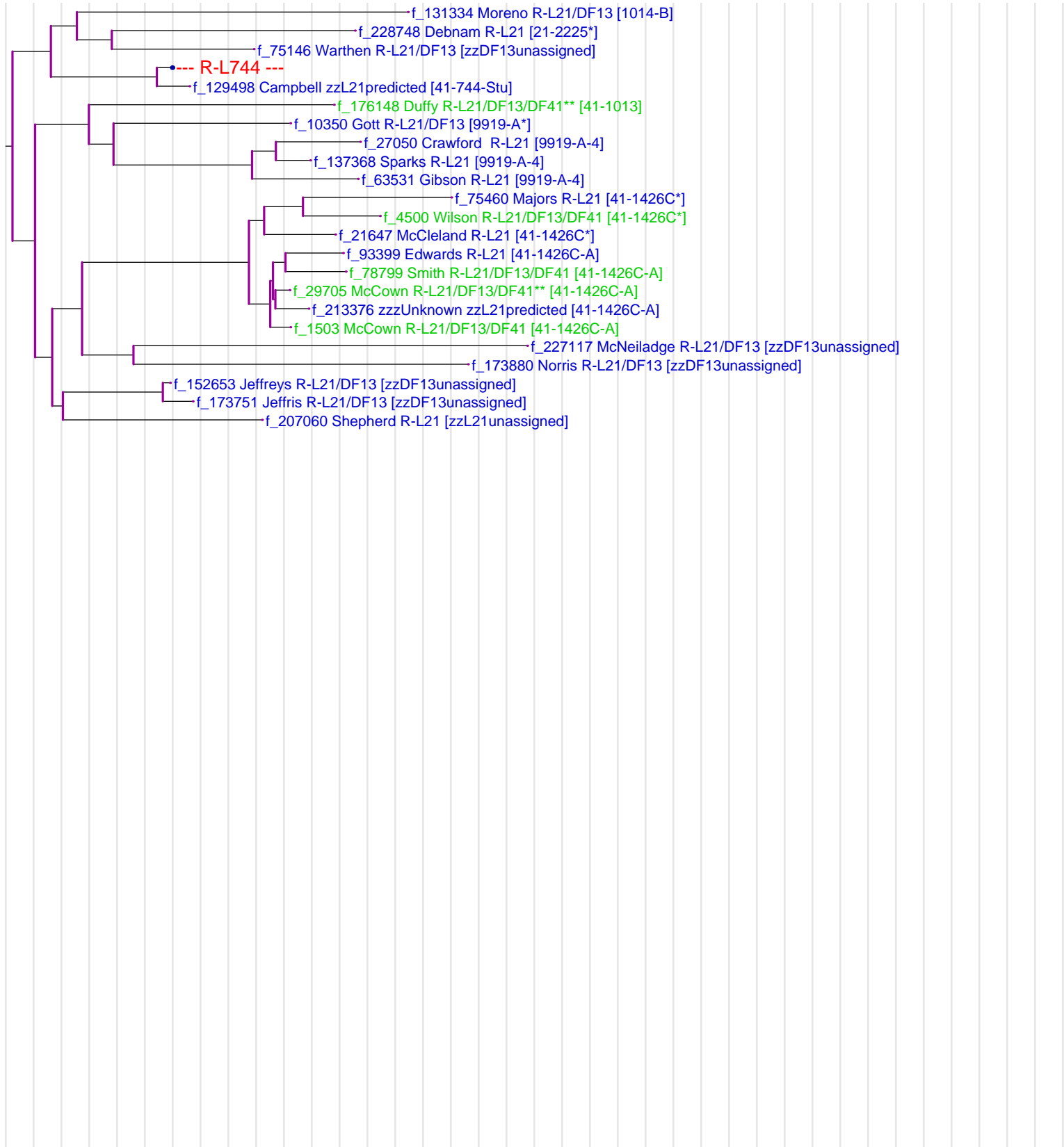


R-DF41

This is the modal haplotype for R-DF41. The coloration is with respect to the modal haplotype of the full tree.



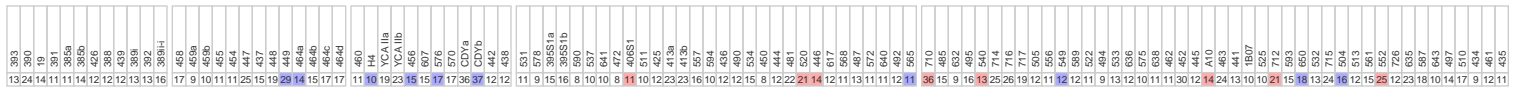
This is the marker distribution for R-DF41. The color indicates the relative frequency of the alleles.



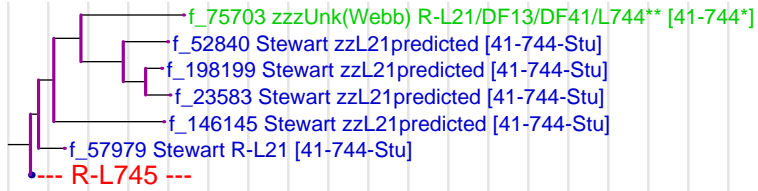
The vertical grey lines are separated 10 generations apart.

R-L744

This is the modal haplotype for R-L744. The coloration is with respect to the modal haplotype of the full tree.



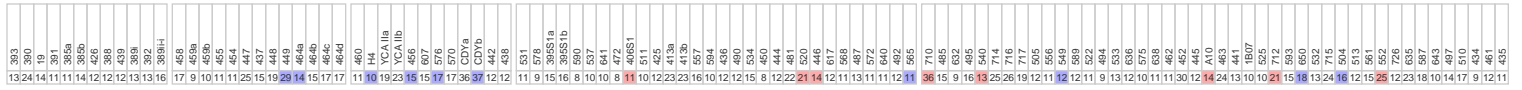
This is the marker distribution for R-L744. The color indicates the relative frequency of the alleles.



The vertical grey lines are separated 10 generations apart.

R-L745

This is the modal haplotype for R-L745. The coloration is with respect to the modal haplotype of the full tree.



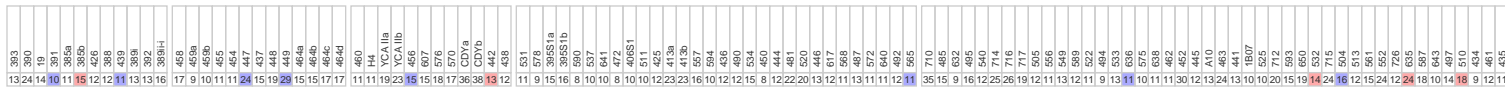
This is the marker distribution for R-L745. The color indicates the relative frequency of the alleles.



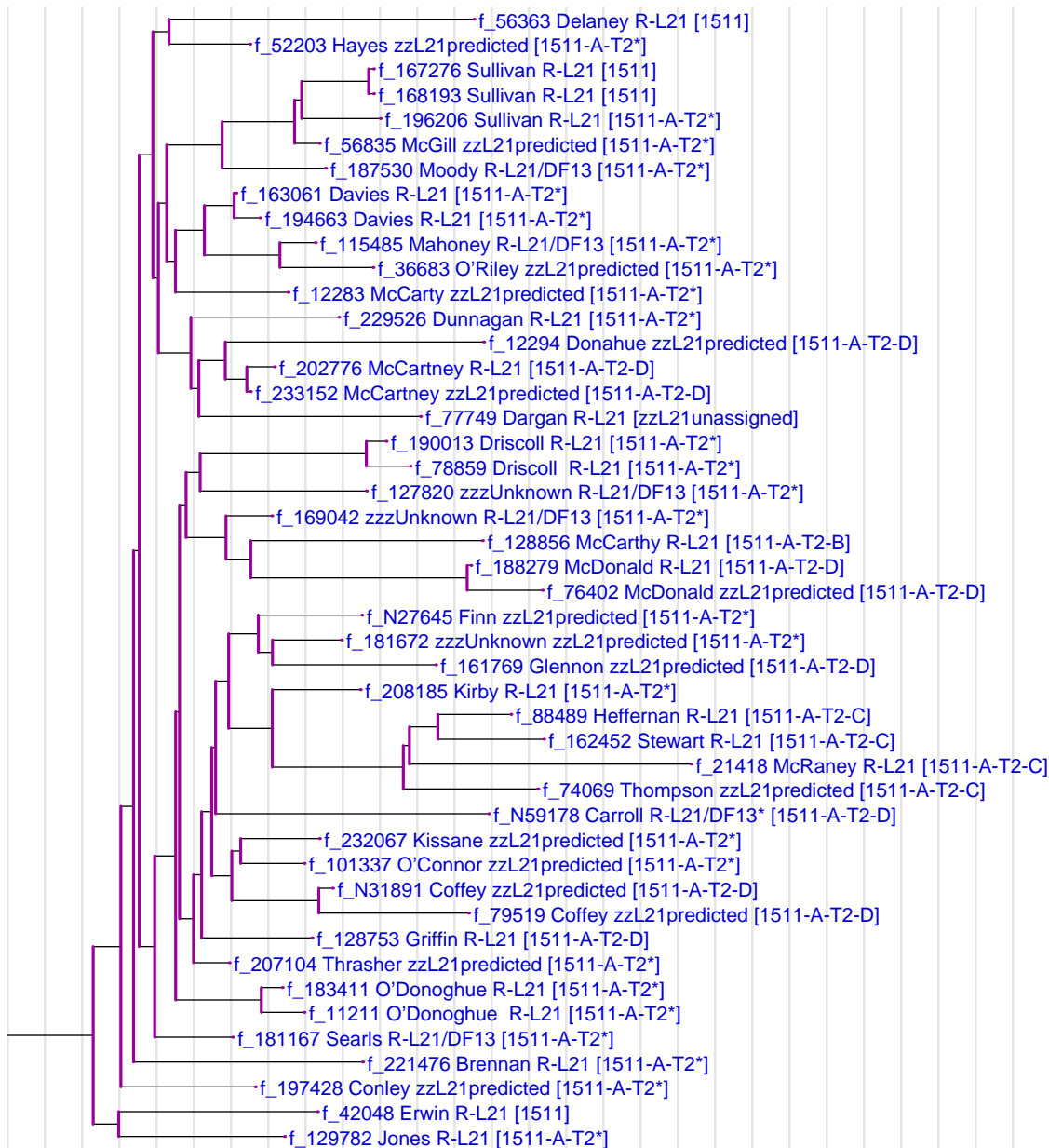
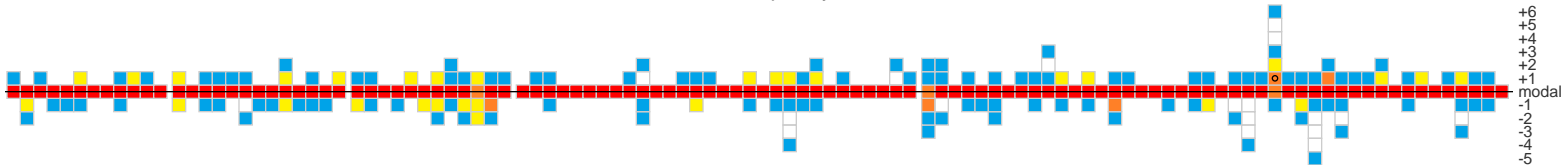
The vertical grey lines are separated 10 generations apart.

South Irish

This is the modal haplotype for South Irish. The coloration is with respect to the modal haplotype of the full tree.



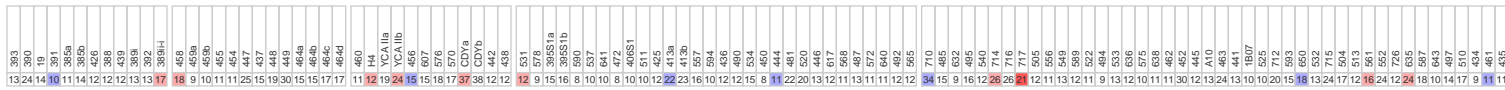
This is the marker distribution for South Irish. The color indicates the relative frequency of the alleles.



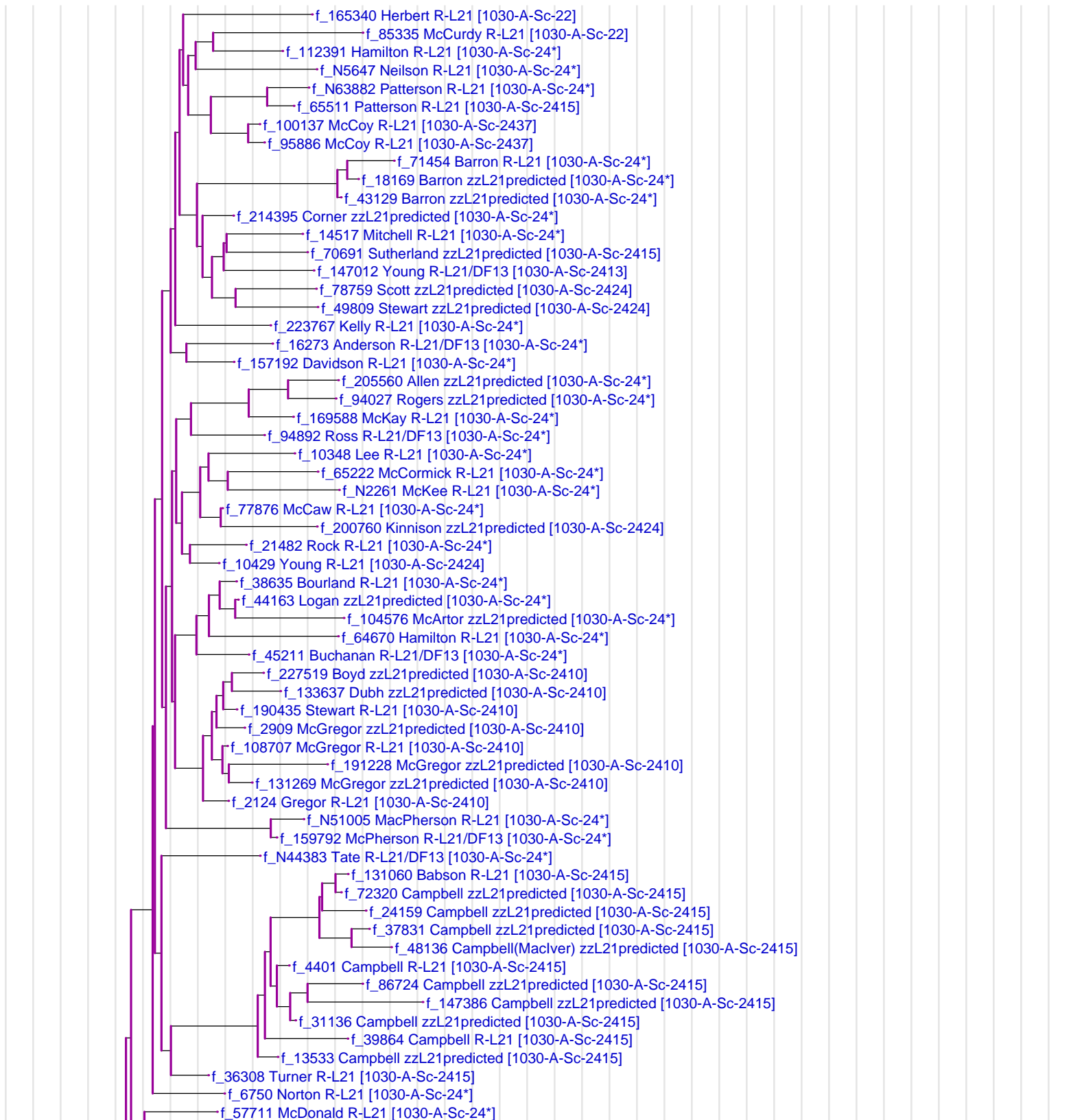
The vertical grey lines are separated 10 generations apart.

Scots Cluster

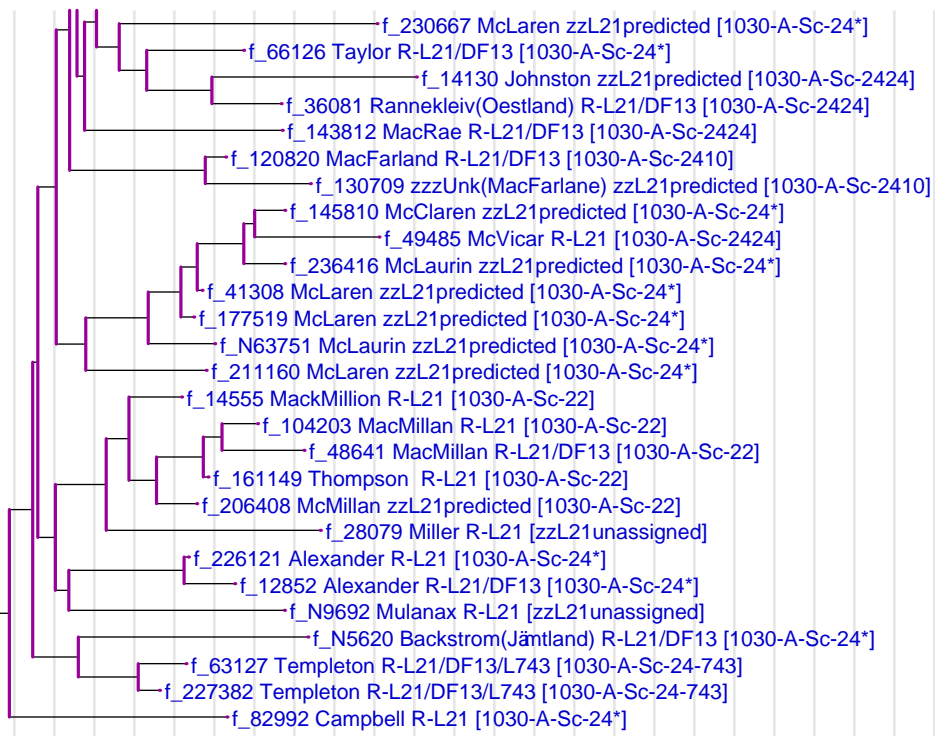
This is the modal haplotype for Scots Cluster. The coloration is with respect to the modal haplotype of the full tree.



This is the marker distribution for Scots Cluster. The color indicates the relative frequency of the alleles.



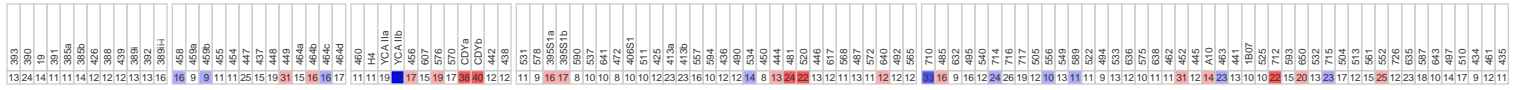
The vertical grey lines are separated 10 generations apart.



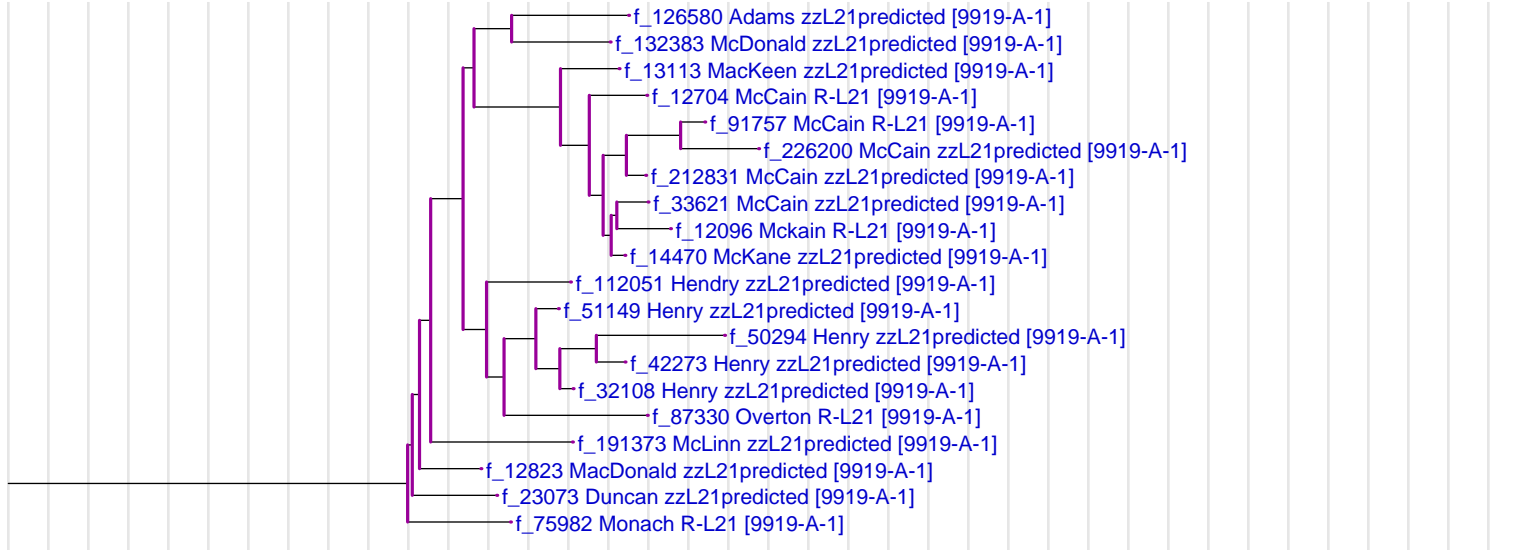
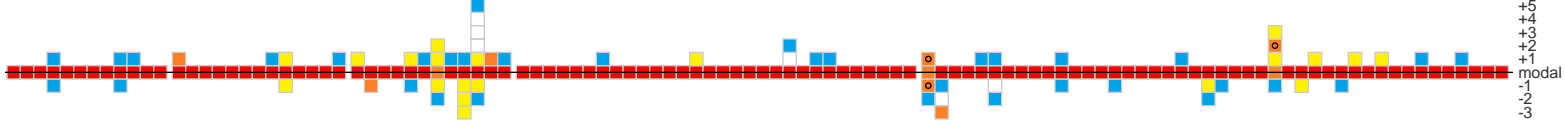
The vertical grey lines are separated 10 generations apart.

Mike's Variety 9919-A-1

This is the modal haplotype for Mike's Variety 9919-A-1. The coloration is with respect to the modal haplotype of the full tree.



This is the marker distribution for Mike's Variety 9919-A-1. The color indicates the relative frequency of the alleles.



The vertical grey lines are separated 10 generations apart.

Cluster Modals

Full Tree (R-L21)

393	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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R-DF13	13	24	14	11	11	14	12	12	13	13	16	17	9	10	11	11	25	15	19	30	15	15	17	17	11	11	19	23	16	15	18	17	36	38	12	12	11	9	15	16	8	10	10	8	10	10	12	23	23	16	10	12	12	15	8	12	22	20	13	12	11	11	11	12	12	35	15	9	16	12	25	26	19	12	11	13	12	11	9	13	12	10	11	11	30	12	13	24	13	10	10	20	15	19	13	24	17	12	15	24	12	23	18	10	14	17	9	12	11
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R-DF23	13	25	14	11	11	13	12	12	13	14	16	17	9	10	11	11	25	15	19	30	15	16	16	17	11	11	19	23	17	16	18	17	38	39	32	12	11	9	15	16	8	10	10	8	10	10	12	23	21	23	16	10	12	12	16	8	12	20	13	12	11	13	11	11	12	12	35	15	9	16	12	24	26	19	12	11	12	12	11	9	13	12	10	11	11	30	12	13	24	13	10	10	20	15	19	13	24	17	13	15	24	12	23	18	10	14	17	9	12	11
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R-M222	13	25	14	11	11	13	12	12	13	14	16	17	9	10	11	11	25	15	19	30	15	16	16	17	11	11	19	23	17	16	18	17	38	39	32	12	11	9	15	16	8	10	10	8	10	10	12	23	21	23	16	10	12	12	16	8	12	20	13	12	11	13	11	11	12	12	35	15	9	16	12	24	26	19	12	11	12	12	11	9	13	12	10	11	11	30	12	13	24	13	10	10	20	15	19	13	24	17	13	15	24	12	23	18	10	14	17	9	12	11
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R-L513	13	24	14	11	11	14	12	12	13	13	16	17	9	10	11	11	25	15	19	30	15	15	17	17	11	11	19	23	16	15	18	17	38	37	32	12	11	9	15	16	8	10	10	8	10	10	12	23	23	16	10	12	12	14	8	12	22	20	13	13	11	13	11	12	12	35	15	9	16	12	26	26	19	12	11	13	12	11	9	12	12	10	11	11	30	12	13	24	13	10	10	19	15	18	14	24	16	12	15	24	12	23	18	10	14	17	9	12	11
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R-P66	13	25	14	11	11	14	12	12	13	13	16	16	9	10	11	11	25	15	19	30	15	16	16	17	11	11	19	23	15	15	17	37	35	38	12	11	9	15	16	8	10	10	8	10	10	12	23	23	16	10	12	12	14	8	12	20	13	13	11	13	11	12	12	35	15	9	16	12	24	26	19	13	11	13	12	11	9	12	12	10	11	11	30	12	13	24	13	10	10	19	15	18	14	24	16	12	15	24	12	23	18	10	14	17	9	12	11
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R-L193	13	24	14	11	11	14	12	12	13	13	16	17	9	10	11	11	25	15	19	30	15	15	17	17	11	11	19	23	16	15	18	17	38	39	32	12	11	9	15	16	8	10	10	8	10	10	12	23	23	16	10	12	12	14	8	12	22	20	13	13	11	13	11	12	12	35	15	9	16	12	26	26	19	12	11	13	12	11	9	12	12	10	11	11	30	12	13	24	13	10	10	19	15	18	14	24	16	12	15	24	12	23	18	10	14	17	9	12	11
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R-L706.2	13	24	14	11	11	14	12	12	13	13	16	16	9	10	11	11	25	15	19	30	15	15	17	17	11	11	19	23	17	15	17	37	35	37	12	11	9	15	16	8	10	10	8	10	10	12	23	23	16	10	12	12	15	8	12	22	20	13	13	11	13	11	12	12	35	15	9	16	12	26	26	19	12	12	13	12	11	9	12	12	10	11	11	30	12	13	23	13	10	10	20	15	18	13	25	16	12	15	24	12	23	18	10	14	16	9	12	11
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R-L705.2	13	24	14	11	11	14	12	12	13	13	16	17	9	10	11	11	25	15	19	30	15	15	17	17	11	11	19	23	16	15	18	17	38	37	32	12	11	9	15	16	8	10	10	8	10	10	12	23	23	16	10	12	12	15	8	12	22	20	13	13	11	13	11	12	12	35	15	9	16	12	26	26	19	12	12	13	12	11	9	12	12	10	11	11	30	12	12	23	13	10	10	20	15	18	13	25	16	12	15	24	12	23	18	10	14	16	9	12	11
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R-L555	13	24	14	11	11	15	12	12	13	13	16	17	9	10	11	11	25	15	1
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Notes

The Tree

The tree was generated using a custom neighbor-joining algorithm which takes into account constraints imposed by SNP results. The STR data came from the 2012-08-03 version of Mike Walsh's Excel spreadsheet, while the SNP data came primarily from the L21+, Scottish, and Irish FTDNA projects. Only members with 111 FTDNA markers, and who were supposedly L21+ were used.

Only those SNPs which appear on the ISOGG tree have been included in the analysis. Those men whose entries are colored green have tested positive for the SNP corresponding to the branch on which they're located. Those men whose names are blue are positioned only by virtue of their STR results.

Modal Values

For the calculation of the modal haplotypes, in the event of a tie for a particular marker, with two or more different allele values having the same count of haplotypes, the allele closest to the R-L21 modal haplotype was chosen. This was done so that the modal haplotype would more closely resemble what might be the ancestral haplotype for the cluster.

Allele Distribution Diagram

The allele distribution plot attempts to display relative frequency information of the various allele values for each marker. For each possible allele value of each marker, a different coloured box is used to represent the fraction of haplotypes, with that particular allele value. A red box indicates that more than 50% of the haplotypes have that particular value, an orange box indicates more than 33% have that particular value, yellow for more than 25%, and blue indicates that the fraction is simply greater than 0.

If the fraction for an allele is within 5% of what it is for the modal value, I have indicated that allele with a small circle. The idea here, is that if the other allele value is so close, then if you were to use different sample data, you could potentially end up with a different modal value.

- - greater than 0% of haplotypes
- - greater than 25% of haplotypes
- - greater than 33% of haplotypes
- - greater than 50% of haplotypes

Consider the following example of DYS 464c for the whole of R-L21. We look at what fraction of the people in this cluster have a particular allele value. The modal value is clearly 17, but 16 is not far behind. As 16 is within 5% of the modal value, I have indicated that close relationship with a small circle.

Allele	Count	Fraction	Colour
19	0	0.00%	
18	14	0.94%	■
17	694	46.80%	■
16	626	42.21%	■
15	145	9.78%	■
14	2	0.13%	■
13	2	0.13%	■
12	0	0.00%	

