

Variability in tree height and diameter across different

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Setting up our R Workspace

```
## [1] "/home/guest/Project/EDEProj_Arunkumar_Power_Rotbart_Valkenberg"
```

Rationale and Research Questions

The topic of tree heights was chosen because it is one of the main things that our group has in common; two of us are in the forestry program, while the other two are TFE concentrations. In addition, we all found a similar interest in discovering not only how tree heights vary with tree diameter and species, but also exploring these factors in a region unknown to us.

Alaska is home to a lush and vibrant ecosystem—one that is entirely foreign to North Carolina. Because of the freedom of this project, we wanted to take the opportunity to learn more about an entirely different variation of flora that was unknown to us. Our ignorance, combined with the dataset, including height, DBH, and species codes, motivated us to use this dataset to answer our questions. Additionally, the data comes from the United States Forest Service, which is a group we all have learned much about and wanted to interact with. This leads us to the main question of this research:

Q: How does tree height differ among specific tree species in Alaska, including white spruce, black spruce, lodgepole pine, and mountain hemlock? H0: The mean tree species height does not vary enough to be significant H1: The mean tree height differs significantly across species

Following questions to help us further understand the differences in these species would be: -How does this height vary with DBH? -How does this height vary with species? -How does this height vary with plot?

Data Wrangling

GGPlot Theme Setup

Linear Regressions

Correlation between Height and Diameter for all Species

```
#Linear Regression to see correlation between HT and DIA for all Species in Data
All.species.AK <- lm(HT ~ DIA, data = Ak_data.wrangled)
summary(All.species.AK)
```

```
##
## Call:
## lm(formula = HT ~ DIA, data = Ak_data.wrangled)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -111.375   -8.166   -1.053    7.420   68.400
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  11.07053    0.21767   50.86  <2e-16 ***
## DIA          3.77365    0.01703  221.54  <2e-16 ***
```

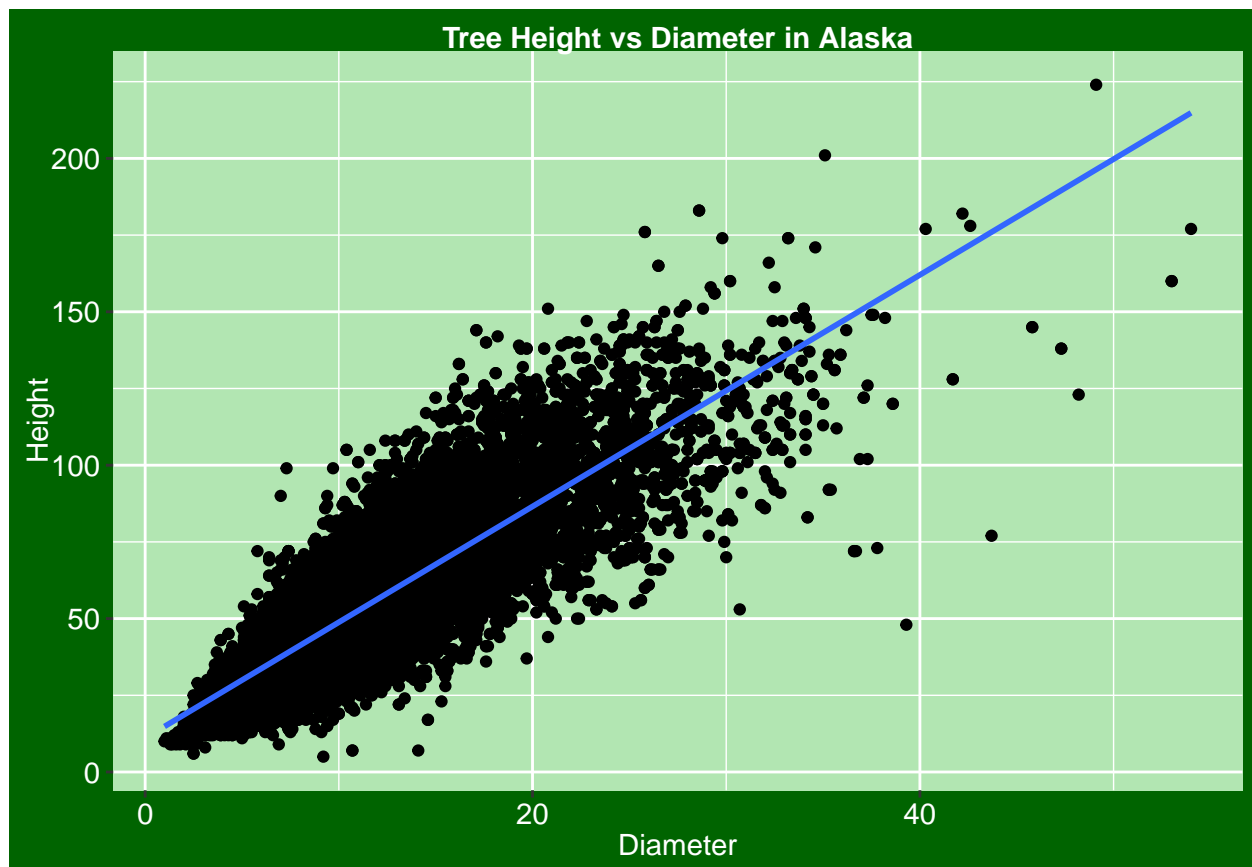
```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 13.62 on 18598 degrees of freedom
## (89 observations deleted due to missingness)
## Multiple R-squared:  0.7252, Adjusted R-squared:  0.7252
## F-statistic: 4.908e+04 on 1 and 18598 DF,  p-value: < 2.2e-16
```

```
ggplot(Ak_data.wrangled, aes(x = DIA, y = HT)) +
  geom_point() +
  geom_smooth(method = "lm", se = FALSE) +
  labs(title = "Tree Height vs Diameter in Alaska",
       x = "Diameter",
       y = "Height")
```

```
## 'geom_smooth()' using formula = 'y ~ x'
```

```
## Warning: Removed 89 rows containing non-finite outside the scale range
## ('stat_smooth()').
```

```
## Warning: Removed 89 rows containing missing values or values outside the scale range
## ('geom_point()').
```



Correlation between Height and Diameter taking Species of Interest into Account

```
#Linear Regression to see correlation between HT and DIA taking into account  
#four species.
```

```
species.model <- lm(HT ~ DIA + Species, data = Species.wanted)  
summary(species.model)
```

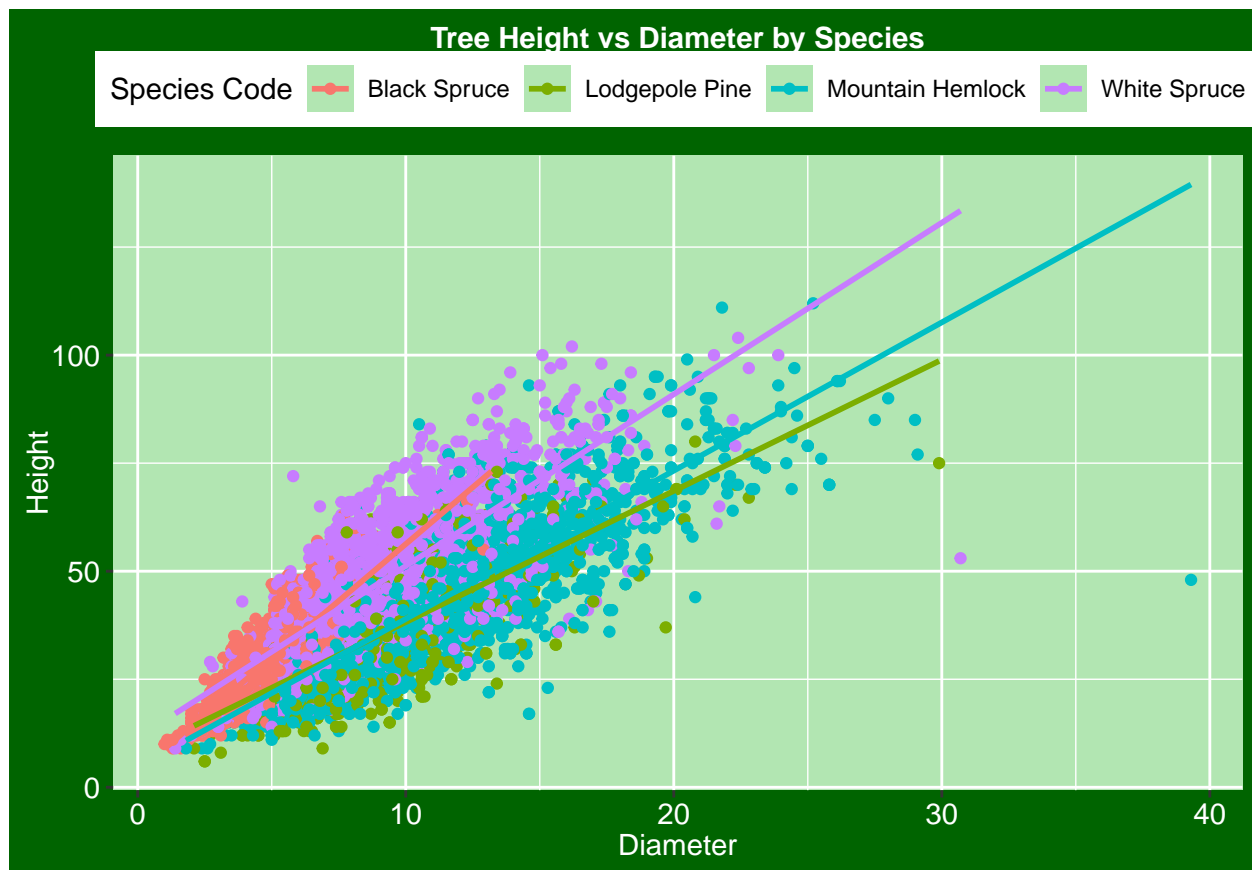
```
##  
## Call:  
## lm(formula = HT ~ DIA + Species, data = Species.wanted)  
##  
## Residuals:  
##      Min       1Q   Median       3Q      Max   
## -97.844  -5.147  -0.709   5.008  43.510   
##  
## Coefficients:  
##              Estimate Std. Error t value Pr(>|t|)      
## (Intercept)    11.22077    0.23518   47.71  <2e-16 ***  
## DIA              3.65812    0.02952  123.92  <2e-16 ***  
## SpeciesLodgepole Pine -9.17609    0.37384  -24.55  <2e-16 ***  
## SpeciesMountain Hemlock -9.14099    0.31694  -28.84  <2e-16 ***  
## SpeciesWhite Spruce    2.96974    0.27624   10.75  <2e-16 ***  
## ---  
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1  
##  
## Residual standard error: 8.691 on 8534 degrees of freedom  
## (82 observations deleted due to missingness)  
## Multiple R-squared:  0.7087, Adjusted R-squared:  0.7086   
## F-statistic: 5192 on 4 and 8534 DF,  p-value: < 2.2e-16
```

```
ggplot(Species.wanted, aes(x = DIA, y = HT, color = Species)) +  
  geom_point() +  
  geom_smooth(method = "lm", se = FALSE) +  
  labs(title = "Tree Height vs Diameter by Species",  
        x = "Diameter",  
        y = "Height",  
        color = "Species Code")
```

```
## 'geom_smooth()' using formula = 'y ~ x'
```

```
## Warning: Removed 82 rows containing non-finite outside the scale range  
## ('stat_smooth()').
```

```
## Warning: Removed 82 rows containing missing values or values outside the scale range  
## ('geom_point()').
```



Correlation between Height and Diameter taking Species of Interest and Plot ID into Account

```
#Linear regression to see correlation between HT and DIA taking into account
#four species and plot ID
PlotandSpecies.model <- lm(HT ~ DIA + Species + PLOT, data = Species.wanted)
summary(PlotandSpecies.model)
```

```
##
## Call:
## lm(formula = HT ~ DIA + Species + PLOT, data = Species.wanted)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -52.706  -2.531   0.000   2.497  28.483
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   30.74614    3.12699   9.833  < 2e-16 ***
## DIA           2.80759    0.03073  91.370  < 2e-16 ***
## SpeciesLodgepole Pine -3.27957    1.35069  -2.428  0.015206 *
## SpeciesMountain Hemlock -1.19838    1.18682  -1.010  0.312657
## SpeciesWhite Spruce    7.49339    0.48891  15.327  < 2e-16 ***
```


## PLOT18	-21.84715	4.38616	-4.981	6.49e-07	***
## PLOT26	-8.10317	3.93024	-2.062	0.039271	*
## PLOT33	-17.56976	3.98395	-4.410	1.05e-05	***
## PLOT69	-3.50780	6.29244	-0.557	0.577230	
## PLOT107	-21.74433	4.36308	-4.984	6.40e-07	***
## PLOT120	-21.18157	4.38457	-4.831	1.39e-06	***
## PLOT171	-16.88215	3.98284	-4.239	2.28e-05	***
## PLOT216	-36.55902	4.00117	-9.137	< 2e-16	***
## PLOT229	-10.11582	4.99431	-2.025	0.042859	*
## PLOT256	-21.81692	3.98274	-5.478	4.46e-08	***
## PLOT281	1.99835	3.72939	0.536	0.592089	
## PLOT341	-30.41209	4.36045	-6.975	3.37e-12	***
## PLOT362	-21.62531	4.22250	-5.121	3.12e-07	***
## PLOT407	-2.26803	3.78148	-0.600	0.548678	
## PLOT412	-26.02618	4.36033	-5.969	2.51e-09	***
## PLOT469	-18.67211	4.49476	-4.154	3.31e-05	***
## PLOT496	11.89662	6.26815	1.898	0.057747	.
## PLOT545	-15.89143	6.18084	-2.571	0.010160	*
## PLOT554	-22.06232	3.78452	-5.830	5.82e-09	***
## PLOT561	-23.34067	3.84306	-6.073	1.32e-09	***
## PLOT630	-14.73043	6.18225	-2.383	0.017214	*
## PLOT662	-16.04697	4.38467	-3.660	0.000254	***
## PLOT734	-20.84715	4.38616	-4.753	2.05e-06	***
## PLOT759	-21.49840	3.55784	-6.043	1.60e-09	***
## PLOT810	-22.00829	4.36107	-5.047	4.62e-07	***
## PLOT844	-19.39674	3.78250	-5.128	3.01e-07	***
## PLOT848	-9.34924	4.49380	-2.080	0.037520	*
## PLOT864	-25.34119	3.77381	-6.715	2.04e-11	***
## PLOT937	-26.71815	4.35769	-6.131	9.22e-10	***
## PLOT940	-4.26726	4.05019	-1.054	0.292107	
## PLOT942	-24.43433	4.49498	-5.436	5.65e-08	***
## PLOT945	-6.24679	3.80416	-1.642	0.100618	
## PLOT965	-9.66034	4.35733	-2.217	0.026655	*
## PLOT1000	-16.44808	4.36160	-3.771	0.000164	***
## PLOT1011	-19.80432	3.77626	-5.244	1.62e-07	***
## PLOT1030	0.46742	3.89667	0.120	0.904523	
## PLOT1031	-2.81609	6.25933	-0.450	0.652796	
## PLOT1032	-23.16892	6.18239	-3.748	0.000180	***
## PLOT1060	-21.14916	4.54026	-4.658	3.25e-06	***
## PLOT1079	-28.63918	4.36276	-6.564	5.62e-11	***
## PLOT1088	-1.85077	4.99413	-0.371	0.710955	
## PLOT1162	-15.99440	4.38461	-3.648	0.000266	***
## PLOT1171	-5.72774	6.25953	-0.915	0.360203	
## PLOT1173	-16.83275	3.55866	-4.730	2.29e-06	***
## PLOT1201	-27.44283	3.93038	-6.982	3.19e-12	***
## PLOT1216	-23.02908	4.38511	-5.252	1.55e-07	***
## PLOT1227	8.04516	4.35812	1.846	0.064935	.
## PLOT1295	-23.36584	6.16364	-3.791	0.000151	***
## PLOT1382	-25.01242	4.22204	-5.924	3.30e-09	***
## PLOT1397	-27.81609	6.25933	-4.444	8.98e-06	***
## PLOT1418	-22.17343	6.16303	-3.598	0.000323	***
## PLOT1472	-26.85601	4.49429	-5.976	2.41e-09	***
## PLOT1490	-18.65184	4.36049	-4.277	1.92e-05	***
## PLOT1508	-17.57219	3.93089	-4.470	7.94e-06	***

## PLOT1525	-8.27661	3.77467	-2.193	0.028366	*
## PLOT1528	-13.65968	3.59048	-3.804	0.000143	***
## PLOT1529	-26.85161	4.08054	-6.580	5.05e-11	***
## PLOT1543	-16.00442	4.05754	-3.944	8.08e-05	***
## PLOT1549	-20.01119	6.18219	-3.237	0.001214	**
## PLOT1604	-3.60579	3.93024	-0.917	0.358941	
## PLOT1699	-6.89557	4.38405	-1.573	0.115795	
## PLOT1720	-15.94182	6.18141	-2.579	0.009930	**
## PLOT1735	-18.33297	4.38542	-4.180	2.95e-05	***
## PLOT1739	-21.73676	4.38501	-4.957	7.34e-07	***
## PLOT1768	-17.58879	4.35839	-4.036	5.51e-05	***
## PLOT1833	-24.39114	4.35740	-5.598	2.26e-08	***
## PLOT1893	-21.77507	4.49374	-4.846	1.29e-06	***
## PLOT1968	-27.64660	4.87343	-5.673	1.46e-08	***
## PLOT2190	-29.36911	6.16220	-4.766	1.92e-06	***
## PLOT2261	-18.49069	3.55780	-5.197	2.08e-07	***
## PLOT2368	-14.32612	4.49393	-3.188	0.001440	**
## PLOT2374	-26.69285	4.36033	-6.122	9.79e-10	***
## PLOT2414	-21.71887	4.38551	-4.952	7.51e-07	***
## PLOT2418	-22.25094	4.38566	-5.074	4.01e-07	***
## PLOT2428	-21.25753	3.77627	-5.629	1.88e-08	***
## PLOT2476	-6.13423	6.18194	-0.992	0.321096	
## PLOT2504	-27.06631	4.49452	-6.022	1.81e-09	***
## PLOT2516	8.21380	3.93154	2.089	0.036727	*
## PLOT2583	-4.26416	4.49706	-0.948	0.343056	
## PLOT2630	-19.20360	6.18292	-3.106	0.001905	**
## PLOT2677	-28.98102	4.35793	-6.650	3.16e-11	***
## PLOT2682	-27.50259	5.00489	-5.495	4.05e-08	***
## PLOT2692	-11.89557	4.38405	-2.713	0.006677	**
## PLOT2699	-19.88635	4.35938	-4.562	5.16e-06	***
## PLOT2757	-20.03926	3.77656	-5.306	1.16e-07	***
## PLOT2760	-19.46865	4.89556	-3.977	7.06e-05	***
## PLOT2771	-11.99668	6.29315	-1.906	0.056654	.
## PLOT2775	-18.08736	4.22173	-4.284	1.86e-05	***
## PLOT2778	-12.59861	3.55897	-3.540	0.000403	***
## PLOT2846	-21.93280	3.93037	-5.580	2.50e-08	***
## PLOT2892	-18.37921	4.38633	-4.190	2.82e-05	***
## PLOT2896	0.56315	4.07692	0.138	0.890140	
## PLOT2913	-27.98735	4.35756	-6.423	1.43e-10	***
## PLOT2917	-19.92212	3.77480	-5.278	1.35e-07	***
## PLOT2921	1.96205	4.35996	0.450	0.652715	
## PLOT2942	-15.16949	4.49515	-3.375	0.000743	***
## PLOT2943	-9.72971	4.35779	-2.233	0.025601	*
## PLOT2972	-7.80367	3.55848	-2.193	0.028344	*
## PLOT3006	-23.07787	6.26000	-3.687	0.000229	***
## PLOT3007	-13.44900	3.68365	-3.651	0.000263	***
## PLOT3019	-10.88979	4.89550	-2.224	0.026152	*
## PLOT3025	-26.15724	3.84300	-6.806	1.09e-11	***
## PLOT3094	-9.18858	3.39762	-2.704	0.006860	**
## PLOT3104	-8.23152	3.80470	-2.164	0.030538	*
## PLOT3125	-9.95810	6.25967	-1.591	0.111695	
## PLOT3139	-8.70047	3.93057	-2.214	0.026895	*
## PLOT3151	-31.92839	3.98271	-8.017	1.27e-15	***
## PLOT3176	-5.18476	3.93308	-1.318	0.187468	

## PLOT3213	-16.39928	6.18080	-2.653	0.007991	**
## PLOT3310	-25.81218	4.08043	-6.326	2.68e-10	***
## PLOT3351	-10.34562	4.89573	-2.113	0.034622	*
## PLOT3415	-28.98428	4.49468	-6.449	1.21e-10	***
## PLOT3436	-9.52123	3.80447	-2.503	0.012351	*
## PLOT3452	-23.82732	3.68453	-6.467	1.07e-10	***
## PLOT3462	-24.88002	4.36026	-5.706	1.21e-08	***
## PLOT3476	-18.69166	3.68513	-5.072	4.04e-07	***
## PLOT3477	-15.52818	3.78271	-4.105	4.09e-05	***
## PLOT3567	-14.47140	4.50447	-3.213	0.001321	**
## PLOT3590	-25.54663	4.54044	-5.626	1.91e-08	***
## PLOT3601	-25.31762	4.35836	-5.809	6.58e-09	***
## PLOT3629	-17.22782	4.38525	-3.929	8.63e-05	***
## PLOT3641	-6.93363	4.53974	-1.527	0.126730	
## PLOT3653	-12.04814	3.78360	-3.184	0.001458	**
## PLOT3711	-6.63831	4.35751	-1.523	0.127702	
## PLOT3725	-9.48364	4.35825	-2.176	0.029589	*
## PLOT3765	-22.24280	6.16393	-3.609	0.000310	***
## PLOT3785	-20.15772	4.35726	-4.626	3.79e-06	***
## PLOT3788	-28.59791	4.51434	-6.335	2.53e-10	***
## PLOT3805	-21.71706	4.35890	-4.982	6.45e-07	***
## PLOT3842	-8.42168	4.35739	-1.933	0.053311	.
## PLOT3875	-27.90641	3.77349	-7.395	1.58e-13	***
## PLOT3947	-12.58355	4.35776	-2.888	0.003894	**
## PLOT4116	-7.90265	3.71394	-2.128	0.033388	*
## PLOT4160	-14.97075	3.93206	-3.807	0.000142	***
## PLOT4241	-20.20812	4.87327	-4.147	3.41e-05	***
## PLOT4247	0.62565	4.35726	0.144	0.885829	
## PLOT4251	-15.02385	4.38438	-3.427	0.000615	***
## PLOT4272	-11.74162	3.51303	-3.342	0.000835	***
## PLOT4277	-19.72411	4.38659	-4.496	7.03e-06	***
## PLOT4324	-28.06828	4.35843	-6.440	1.28e-10	***
## PLOT4332	-18.99524	4.22514	-4.496	7.05e-06	***
## PLOT4334	-20.78301	4.38582	-4.739	2.20e-06	***
## PLOT4395	-2.10733	4.87281	-0.432	0.665417	
## PLOT4452	-27.31129	4.49530	-6.076	1.30e-09	***
## PLOT4458	-11.75388	3.47844	-3.379	0.000732	***
## PLOT4494	-19.20469	3.80536	-5.047	4.61e-07	***
## PLOT4534	-15.43288	4.38474	-3.520	0.000435	***
## PLOT4561	-20.27169	3.68342	-5.503	3.86e-08	***
## PLOT4647	-20.49069	4.38569	-4.672	3.04e-06	***
## PLOT4659	-14.02992	4.22429	-3.321	0.000901	***
## PLOT4675	-2.62214	3.73956	-0.701	0.483209	
## PLOT4787	-15.53622	4.35832	-3.565	0.000367	***
## PLOT4792	-25.36495	4.49415	-5.644	1.73e-08	***
## PLOT4839	-5.65836	6.25931	-0.904	0.366032	
## PLOT4855	-11.61653	3.78189	-3.072	0.002138	**
## PLOT4865	0.23794	4.38364	0.054	0.956715	
## PLOT4945	-16.78991	4.49597	-3.734	0.000190	***
## PLOT5034	-26.84969	4.35825	-6.161	7.67e-10	***
## PLOT5113	-22.23757	4.35885	-5.102	3.46e-07	***
## PLOT5148	-11.27744	6.29310	-1.792	0.073174	.
## PLOT5193	-11.66739	4.38414	-2.661	0.007803	**
## PLOT5252	-20.65925	4.35806	-4.740	2.18e-06	***

## PLOT5326	-14.64191	3.77420	-3.879	0.000106	***
## PLOT5363	-29.54249	6.29238	-4.695	2.72e-06	***
## PLOT5431	-20.47672	3.98334	-5.141	2.82e-07	***
## PLOT5439	-24.74280	3.77650	-6.552	6.11e-11	***
## PLOT5465	-19.21859	3.77851	-5.086	3.75e-07	***
## PLOT5556	-22.24831	4.27028	-5.210	1.95e-07	***
## PLOT5574	-21.56877	3.98271	-5.416	6.32e-08	***
## PLOT5578	-18.52377	3.93026	-4.713	2.49e-06	***
## PLOT5589	-10.90590	3.45553	-3.156	0.001606	**
## PLOT5612	-16.78933	4.38509	-3.829	0.000130	***
## PLOT5701	-27.67407	3.93175	-7.039	2.14e-12	***
## PLOT5737	-13.80029	3.66848	-3.762	0.000170	***
## PLOT5817	-1.07481	3.93062	-0.273	0.784519	
## PLOT5861	-25.90532	4.35766	-5.945	2.91e-09	***
## PLOT5900	-16.52465	4.35817	-3.792	0.000151	***
## PLOT5955	-2.57978	3.51328	-0.734	0.462796	
## PLOT5961	1.25763	4.35729	0.289	0.772875	
## PLOT5965	-18.55116	3.68151	-5.039	4.80e-07	***
## PLOT6000	-22.24100	3.65557	-6.084	1.24e-09	***
## PLOT6030	-26.22403	3.93140	-6.670	2.76e-11	***
## PLOT6034	-11.47381	4.99404	-2.298	0.021621	*
## PLOT6060	-19.37915	3.56112	-5.442	5.46e-08	***
## PLOT6089	-18.01752	4.38493	-4.109	4.02e-05	***
## PLOT6090	-1.00109	4.35765	-0.230	0.818307	
## PLOT6107	-21.42655	4.38539	-4.886	1.05e-06	***
## PLOT6109	-14.97651	4.38504	-3.415	0.000641	***
## PLOT6193	-13.74498	4.09328	-3.358	0.000790	***
## PLOT6222	-10.44902	3.59061	-2.910	0.003625	**
## PLOT6233	-18.75947	4.99954	-3.752	0.000177	***
## PLOT6244	-19.33297	4.38542	-4.408	1.06e-05	***
## PLOT6249	-28.14779	3.93171	-7.159	9.00e-13	***
## PLOT6300	-2.20506	4.35730	-0.506	0.612831	
## PLOT6335	-21.47913	4.38548	-4.898	9.92e-07	***
## PLOT6376	-16.23922	3.72464	-4.360	1.32e-05	***
## PLOT6380	-16.81155	3.78312	-4.444	8.98e-06	***
## PLOT6385	-26.98603	3.72502	-7.245	4.83e-13	***
## PLOT6461	-15.96603	4.38387	-3.642	0.000273	***
## PLOT6483	-21.56315	4.87246	-4.426	9.78e-06	***
## PLOT6625	-20.22186	4.35730	-4.641	3.54e-06	***
## PLOT6665	-13.21517	3.55827	-3.714	0.000206	***
## PLOT6670	-24.92736	4.87335	-5.115	3.23e-07	***
## PLOT6701	-24.34681	6.29390	-3.868	0.000111	***
## PLOT6738	-23.17524	4.38517	-5.285	1.30e-07	***
## PLOT6765	-24.09664	4.35978	-5.527	3.38e-08	***
## PLOT6793	-9.97051	4.24894	-2.347	0.018976	*
## PLOT6924	-28.06305	3.77412	-7.436	1.17e-13	***
## PLOT6968	3.49564	3.55779	0.983	0.325874	
## PLOT6976	-10.84300	4.38401	-2.473	0.013412	*
## PLOT6978	-20.80090	4.38528	-4.743	2.15e-06	***
## PLOT7028	-12.46684	4.35758	-2.861	0.004237	**
## PLOT7042	-20.76621	4.38474	-4.736	2.23e-06	***
## PLOT7086	-13.09794	4.49386	-2.915	0.003573	**
## PLOT7088	-21.79385	4.35797	-5.001	5.85e-07	***
## PLOT7148	-20.70098	4.38609	-4.720	2.41e-06	***

## PLOT7178	-16.89448	4.38525	-3.853	0.000118	***
## PLOT7196	-5.65692	4.38363	-1.290	0.196935	
## PLOT7245	-21.37810	3.44094	-6.213	5.52e-10	***
## PLOT7274	8.59626	6.29306	1.366	0.171988	
## PLOT7495	-17.11977	6.16424	-2.777	0.005497	**
## PLOT7514	-19.99782	4.35882	-4.588	4.56e-06	***
## PLOT7517	-9.35863	6.25996	-1.495	0.134963	
## PLOT7574	-25.87370	4.36128	-5.933	3.13e-09	***
## PLOT7578	-12.99002	3.98641	-3.259	0.001125	**
## PLOT7599	-8.86089	4.38381	-2.021	0.043292	*
## PLOT7612	-20.57271	6.18206	-3.328	0.000880	***
## PLOT7686	-26.38808	4.49438	-5.871	4.53e-09	***
## PLOT7720	-23.14833	4.49436	-5.151	2.67e-07	***
## PLOT7725	-15.43759	3.93080	-3.927	8.68e-05	***
## PLOT7802	-33.18139	3.77350	-8.793	< 2e-16	***
## PLOT7841	-23.94076	4.99458	-4.793	1.68e-06	***
## PLOT7849	-22.15964	3.87047	-5.725	1.08e-08	***
## PLOT7869	-20.10478	3.80619	-5.282	1.32e-07	***
## PLOT7885	-5.88438	4.35784	-1.350	0.176967	
## PLOT7968	-19.20615	4.35797	-4.407	1.06e-05	***
## PLOT8024	-15.21381	3.51453	-4.329	1.52e-05	***
## PLOT8060	-16.80038	4.49435	-3.738	0.000187	***
## PLOT8087	-14.68789	4.10454	-3.578	0.000348	***
## PLOT8105	-20.51413	4.53996	-4.519	6.33e-06	***
## PLOT8109	-14.79794	4.54060	-3.259	0.001124	**
## PLOT8173	-14.81906	3.64809	-4.062	4.92e-05	***
## PLOT8175	-14.77202	3.93222	-3.757	0.000174	***
## PLOT8219	-16.87696	4.35727	-3.873	0.000108	***
## PLOT8266	-12.01225	3.73758	-3.214	0.001316	**
## PLOT8291	-24.85793	6.29239	-3.950	7.88e-05	***
## PLOT8297	-18.79909	4.35868	-4.313	1.63e-05	***
## PLOT8299	-13.53017	4.89548	-2.764	0.005729	**
## PLOT8321	-21.36133	6.18317	-3.455	0.000554	***
## PLOT8329	-10.77596	4.35834	-2.472	0.013442	*
## PLOT8382	-14.70640	4.05093	-3.630	0.000285	***
## PLOT8394	-7.37761	4.36094	-1.692	0.090741	.
## PLOT8428	-9.78529	4.54194	-2.154	0.031243	*
## PLOT8434	-12.30803	4.35846	-2.824	0.004758	**
## PLOT8473	-13.55301	3.77595	-3.589	0.000334	***
## PLOT8623	-19.70098	4.38609	-4.492	7.19e-06	***
## PLOT8663	-19.16892	4.38592	-4.371	1.26e-05	***
## PLOT8736	-17.70916	4.10525	-4.314	1.63e-05	***
## PLOT8752	-34.46052	4.35797	-7.907	3.06e-15	***
## PLOT8809	-16.41499	6.18188	-2.655	0.007942	**
## PLOT8816	-13.32965	3.40950	-3.910	9.34e-05	***
## PLOT8825	-16.54383	4.49525	-3.680	0.000235	***
## PLOT8861	-20.88547	3.68374	-5.670	1.49e-08	***
## PLOT8919	-17.74832	4.38519	-4.047	5.24e-05	***
## PLOT8940	-25.75126	3.98330	-6.465	1.09e-10	***
## PLOT8973	-16.60724	3.61118	-4.599	4.33e-06	***
## PLOT9029	-1.80365	6.26442	-0.288	0.773418	
## PLOT9086	-24.11582	3.93068	-6.135	8.99e-10	***
## PLOT9111	-18.84663	3.93054	-4.795	1.66e-06	***
## PLOT9168	-10.95971	4.38421	-2.500	0.012450	*

## PLOT9220	-10.15460	4.22918	-2.401	0.016374	*
## PLOT9231	-13.91237	4.38479	-3.173	0.001516	**
## PLOT9287	-29.30432	4.87370	-6.013	1.92e-09	***
## PLOT9290	-19.34292	3.93024	-4.922	8.79e-07	***
## PLOT9322	-6.58442	3.56269	-1.848	0.064624	.
## PLOT9348	-10.28491	4.35814	-2.360	0.018307	*
## PLOT9375	-12.51453	3.89668	-3.212	0.001326	**
## PLOT9455	-29.15380	3.55954	-8.190	3.10e-16	***
## PLOT9465	3.98211	4.35729	0.914	0.360805	
## PLOT9476	-15.32249	4.38404	-3.495	0.000477	***
## PLOT9510	-21.90418	3.98292	-5.500	3.95e-08	***
## PLOT9522	-15.50858	4.38517	-3.537	0.000408	***
## PLOT9547	-30.16810	3.72635	-8.096	6.72e-16	***
## PLOT9633	-26.73495	4.35843	-6.134	9.06e-10	***
## PLOT9641	-14.59270	3.93093	-3.712	0.000207	***
## PLOT9665	-20.78535	6.16606	-3.371	0.000753	***
## PLOT9703	-20.13532	4.38407	-4.593	4.45e-06	***
## PLOT9757	-2.72814	4.10409	-0.665	0.506242	
## PLOT9810	-20.76923	3.61574	-5.744	9.65e-09	***
## PLOT9824	-5.73209	3.93432	-1.457	0.145179	
## PLOT9825	-35.76440	4.35819	-8.206	2.72e-16	***
## PLOT9852	-4.54363	4.35727	-1.043	0.297093	
## PLOT9855	-21.52007	3.55990	-6.045	1.57e-09	***
## PLOT9860	-20.91580	4.35905	-4.798	1.64e-06	***
## PLOT9910	-17.02856	4.49446	-3.789	0.000153	***
## PLOT9938	-13.01752	4.38493	-2.969	0.003001	**
## PLOT9956	-22.65707	4.36188	-5.194	2.12e-07	***
## PLOT9999	-11.00995	3.72361	-2.957	0.003120	**
## PLOT10006	-11.16796	3.89701	-2.866	0.004173	**
## PLOT10062	-6.61295	4.04920	-1.633	0.102485	
## PLOT10350	-16.25378	3.59097	-4.526	6.11e-06	***
## PLOT10399	-14.11743	3.80477	-3.710	0.000209	***
## PLOT10483	-22.47643	3.72380	-6.036	1.67e-09	***
## PLOT10494	-17.99440	4.38461	-4.104	4.11e-05	***
## PLOT10545	-26.18356	4.22196	-6.202	5.92e-10	***
## PLOT10547	-24.19241	4.87166	-4.966	7.01e-07	***
## PLOT10631	-23.43397	6.18090	-3.791	0.000151	***
## PLOT10655	-3.60711	3.55799	-1.014	0.310713	
## PLOT10658	-19.47426	4.35736	-4.469	7.98e-06	***
## PLOT10662	-23.81565	3.93185	-6.057	1.46e-09	***
## PLOT10726	-19.58951	4.38678	-4.466	8.12e-06	***
## PLOT10727	-20.64317	4.38504	-4.708	2.56e-06	***
## PLOT10729	-16.34562	4.38426	-3.728	0.000194	***
## PLOT10733	-13.15243	4.54076	-2.897	0.003786	**
## PLOT10781	-28.00306	4.35982	-6.423	1.43e-10	***
## PLOT10789	-22.95862	4.38554	-5.235	1.70e-07	***
## PLOT10928	-32.37696	4.87157	-6.646	3.25e-11	***
## PLOT10929	-11.31602	3.64694	-3.103	0.001925	**
## PLOT10944	-13.07381	3.69897	-3.534	0.000411	***
## PLOT10963	-14.48888	6.16338	-2.351	0.018762	*
## PLOT10979	-12.24410	3.93042	-3.115	0.001846	**
## PLOT10993	-14.10815	3.64900	-3.866	0.000112	***
## PLOT11039	-0.25567	4.36308	-0.059	0.953274	
## PLOT11052	-5.61191	6.16314	-0.911	0.362560	

## PLOT11087	-14.02385	4.38438	-3.199	0.001388	**
## PLOT11143	-18.46865	6.18108	-2.988	0.002819	**
## PLOT11166	-4.97345	4.38380	-1.135	0.256624	
## PLOT11229	-7.14110	3.80448	-1.877	0.060559	.
## PLOT11234	-21.44045	4.36251	-4.915	9.11e-07	***
## PLOT11261	-11.26416	3.93409	-2.863	0.004207	**
## PLOT11265	-4.25131	3.77350	-1.127	0.259943	
## PLOT11282	-11.77777	4.38491	-2.686	0.007250	**
## PLOT11300	-4.59169	3.55813	-1.290	0.196929	
## PLOT11303	-20.92736	4.35926	-4.801	1.62e-06	***
## PLOT11332	-26.28905	4.36094	-6.028	1.75e-09	***
## PLOT11350	-24.25457	3.93032	-6.171	7.18e-10	***
## PLOT11374	-17.90081	4.38463	-4.083	4.51e-05	***
## PLOT11400	-22.57795	4.38652	-5.147	2.72e-07	***
## PLOT11420	-13.26287	4.35728	-3.044	0.002345	**
## PLOT11439	-15.29776	3.93136	-3.891	0.000101	***
## PLOT11453	-14.06414	4.35727	-3.228	0.001254	**
## PLOT11454	-17.82963	4.35746	-4.092	4.33e-05	***
## PLOT11477	-15.55539	3.93182	-3.956	7.69e-05	***
## PLOT11520	-20.58982	4.53979	-4.535	5.85e-06	***
## PLOT11530	-19.19837	4.38557	-4.378	1.22e-05	***
## PLOT11637	-23.30351	4.38576	-5.313	1.11e-07	***
## PLOT11681	-10.94815	4.38410	-2.497	0.012541	*
## PLOT11744	-25.93978	3.72432	-6.965	3.60e-12	***
## PLOT11786	-22.94327	4.49477	-5.104	3.41e-07	***
## PLOT11849	-10.30823	6.25936	-1.647	0.099636	.
## PLOT11921	-27.23886	4.22198	-6.452	1.18e-10	***
## PLOT11946	-15.91237	4.38479	-3.629	0.000287	***
## PLOT11998	-21.32428	3.77739	-5.645	1.72e-08	***
## PLOT12000	-20.02351	5.03585	-3.976	7.08e-05	***
## PLOT12043	-2.54887	3.77376	-0.675	0.499434	
## PLOT12072	2.51069	3.55768	0.706	0.480394	
## PLOT12137	-25.31238	4.49411	-5.632	1.85e-08	***
## PLOT12141	-31.42474	4.35879	-7.210	6.24e-13	***
## PLOT12154	-34.24866	6.28774	-5.447	5.31e-08	***
## PLOT12175	-29.46181	3.93179	-7.493	7.60e-14	***
## PLOT12187	-16.93586	4.35727	-3.887	0.000103	***
## PLOT12236	-23.46793	4.35726	-5.386	7.46e-08	***
## PLOT12265	-12.72170	3.98409	-3.193	0.001414	**
## PLOT12390	-20.45746	6.16249	-3.320	0.000906	***
## PLOT12470	-9.18789	4.38411	-2.096	0.036145	*
## PLOT12552	-3.28943	4.07584	-0.807	0.419663	
## PLOT12597	-9.79340	3.72551	-2.629	0.008590	**
## PLOT12603	-16.15899	4.24895	-3.803	0.000144	***
## PLOT12685	-14.99440	4.38461	-3.420	0.000631	***
## PLOT12700	-9.20337	3.98272	-2.311	0.020873	*
## PLOT12734	-16.20179	4.36000	-3.716	0.000204	***
## PLOT12746	-14.17052	3.33701	-4.246	2.20e-05	***
## PLOT12774	-25.12609	4.35942	-5.764	8.60e-09	***
## PLOT12884	-11.94390	4.51418	-2.646	0.008168	**
## PLOT12900	-17.13945	3.73412	-4.590	4.52e-06	***
## PLOT12917	-21.68129	4.36007	-4.973	6.77e-07	***
## PLOT12921	-25.19656	4.35896	-5.780	7.79e-09	***
## PLOT12992	-16.20417	3.72469	-4.350	1.38e-05	***

## PLOT13074	-22.12422	3.93043	-5.629	1.89e-08	***
## PLOT13082	-12.06486	3.64543	-3.310	0.000939	***
## PLOT13133	-17.26569	3.93149	-4.392	1.14e-05	***
## PLOT13135	7.66885	6.16319	1.244	0.213434	
## PLOT13194	-19.30984	4.38504	-4.404	1.08e-05	***
## PLOT13317	-30.84359	3.56004	-8.664	< 2e-16	***
## PLOT13466	-24.43516	6.29325	-3.883	0.000104	***
## PLOT13497	-18.16892	6.18239	-2.939	0.003306	**
## PLOT13521	-5.40488	4.35788	-1.240	0.214925	
## PLOT13539	-8.15554	4.35908	-1.871	0.061398	.
## PLOT13627	-11.76178	4.87212	-2.414	0.015801	*
## PLOT13633	-14.17524	4.38517	-3.233	0.001233	**
## PLOT13643	-23.82848	4.53971	-5.249	1.58e-07	***
## PLOT13679	-20.13532	4.38407	-4.593	4.45e-06	***
## PLOT13720	-16.89448	4.38525	-3.853	0.000118	***
## PLOT13817	-19.51304	4.53965	-4.298	1.75e-05	***
## PLOT13835	-16.30280	3.71471	-4.389	1.16e-05	***
## PLOT13856	-26.97218	4.99532	-5.399	6.92e-08	***
## PLOT13865	-6.36350	3.47846	-1.829	0.067385	.
## PLOT13871	-24.87370	4.36128	-5.703	1.23e-08	***
## PLOT13880	-12.60055	4.49374	-2.804	0.005062	**
## PLOT13914	-11.85819	3.93046	-3.017	0.002563	**
## PLOT13933	-28.33245	3.93091	-7.208	6.33e-13	***
## PLOT13949	-13.78933	4.38509	-3.145	0.001671	**
## PLOT13964	-21.65925	4.35806	-4.970	6.87e-07	***
## PLOT13973	-16.68826	3.77398	-4.422	9.94e-06	***
## PLOT14058	-8.49235	3.93437	-2.159	0.030925	*
## PLOT14072	-16.85347	4.38536	-3.843	0.000123	***
## PLOT14100	-23.53064	3.93042	-5.987	2.25e-09	***
## PLOT14108	-22.73146	3.55857	-6.388	1.80e-10	***
## PLOT14131	-19.27515	4.38454	-4.396	1.12e-05	***
## PLOT14138	-15.68942	4.38585	-3.577	0.000350	***
## PLOT14200	-14.56748	4.38463	-3.322	0.000897	***
## PLOT14278	-23.11002	4.38671	-5.268	1.42e-07	***
## PLOT14331	-21.87660	4.38579	-4.988	6.25e-07	***
## PLOT14337	-27.89682	4.36192	-6.396	1.71e-10	***
## PLOT14352	-17.68419	4.38493	-4.033	5.57e-05	***
## PLOT14360	-20.88816	4.38602	-4.762	1.95e-06	***
## PLOT14389	-20.22891	4.38405	-4.614	4.02e-06	***
## PLOT14424	-25.37642	4.05071	-6.265	3.97e-10	***
## PLOT14474	-28.87400	3.93166	-7.344	2.32e-13	***
## PLOT14499	-23.35490	3.68079	-6.345	2.37e-10	***
## PLOT14509	-18.57904	4.38479	-4.237	2.29e-05	***
## PLOT14515	-18.22077	4.35795	-4.181	2.94e-05	***
## PLOT14517	-20.60906	3.93378	-5.239	1.66e-07	***
## PLOT14540	-25.49704	3.93202	-6.484	9.55e-11	***
## PLOT14607	-25.11888	3.93126	-6.390	1.78e-10	***
## PLOT14614	-19.37398	4.38531	-4.418	1.01e-05	***
## PLOT14700	-10.93912	6.25930	-1.748	0.080570	.
## PLOT14710	-7.41055	3.72360	-1.990	0.046615	*
## PLOT14756	-13.91580	4.35905	-3.192	0.001418	**
## PLOT14765	-23.38196	4.49903	-5.197	2.08e-07	***
## PLOT14773	-10.78114	4.53996	-2.375	0.017591	*
## PLOT14775	-14.18520	4.49371	-3.157	0.001603	**

## PLOT14790	-23.10895	3.61573	-6.391	1.76e-10	***
## PLOT14811	-12.67128	3.75712	-3.373	0.000749	***
## PLOT14832	-8.09540	4.38364	-1.847	0.064831	.
## PLOT14885	-25.80432	4.35965	-5.919	3.40e-09	***
## PLOT14889	-3.77886	4.38389	-0.862	0.388725	
## PLOT14935	-34.22088	4.87229	-7.024	2.38e-12	***
## PLOT14951	-9.60344	4.87747	-1.969	0.049002	*
## PLOT14983	-22.02727	4.35853	-5.054	4.45e-07	***
## PLOT14991	-18.21102	4.38435	-4.154	3.31e-05	***
## PLOT14992	-24.12718	4.35797	-5.536	3.21e-08	***
## PLOT15047	-6.07590	3.93188	-1.545	0.122324	
## PLOT15137	-8.73019	3.54415	-2.463	0.013793	*
## PLOT15201	-15.40343	4.38501	-3.513	0.000446	***
## PLOT15282	-4.87690	3.54560	-1.375	0.169030	
## PLOT15335	-4.33514	3.80393	-1.140	0.254474	
## PLOT15337	-13.66765	3.77492	-3.621	0.000296	***
## PLOT15343	-13.53315	3.59033	-3.769	0.000165	***
## PLOT15363	-18.49701	4.38498	-4.218	2.49e-05	***
## PLOT15381	-13.76717	3.77668	-3.645	0.000269	***
## PLOT15401	-15.85980	4.38472	-3.617	0.000300	***
## PLOT15482	-26.70134	4.49881	-5.935	3.08e-09	***
## PLOT15528	-20.88764	4.49399	-4.648	3.42e-06	***
## PLOT15536	-9.09026	4.54069	-2.002	0.045330	*
## PLOT15588	-18.98102	4.35793	-4.356	1.35e-05	***
## PLOT15613	-16.48545	4.38481	-3.760	0.000172	***
## PLOT15625	-17.32661	3.89667	-4.447	8.87e-06	***
## PLOT15633	-11.06543	3.93432	-2.813	0.004930	**
## PLOT15710	-7.76134	4.35766	-1.781	0.074945	.
## PLOT15725	-18.42132	4.38459	-4.201	2.69e-05	***
## PLOT15773	-16.36242	4.38511	-3.731	0.000192	***
## PLOT15793	-18.80177	3.92740	-4.787	1.73e-06	***
## PLOT15817	-21.93368	4.35856	-5.032	4.97e-07	***
## PLOT15824	-16.79494	3.77355	-4.451	8.70e-06	***
## PLOT15846	4.99482	3.98295	1.254	0.209869	
## PLOT15864	-24.54161	3.68453	-6.661	2.94e-11	***
## PLOT15960	-26.45113	4.35749	-6.070	1.35e-09	***
## PLOT15977	-21.03798	3.76752	-5.584	2.44e-08	***
## PLOT15993	-22.20993	4.38579	-5.064	4.22e-07	***
## PLOT16062	-9.44444	3.80539	-2.482	0.013095	*
## PLOT16103	-3.60406	4.87199	-0.740	0.459477	
## PLOT16115	-16.47389	4.38465	-3.757	0.000173	***
## PLOT16182	-10.71364	4.38467	-2.443	0.014574	*
## PLOT16258	-16.20047	3.93057	-4.122	3.81e-05	***
## PLOT16262	-0.31150	6.26262	-0.050	0.960331	
## PLOT16284	-32.38264	4.36090	-7.426	1.26e-13	***
## PLOT16306	-11.73490	4.53971	-2.585	0.009761	**
## PLOT16307	-29.93042	4.27206	-7.006	2.69e-12	***
## PLOT16332	-19.14688	4.38417	-4.367	1.28e-05	***
## PLOT16435	-35.33115	6.16319	-5.733	1.03e-08	***
## PLOT16439	-14.10297	4.35899	-3.235	0.001221	**
## PLOT16469	-27.82438	4.49824	-6.186	6.56e-10	***
## PLOT16476	-14.97470	4.35846	-3.436	0.000594	***
## PLOT16521	-6.29937	4.38387	-1.437	0.150782	
## PLOT16532	-8.39928	4.38367	-1.916	0.055404	.

## PLOT16534	-15.74480	3.78235	-4.163	3.19e-05	***
## PLOT16544	-8.77690	3.71426	-2.363	0.018155	*
## PLOT16590	-20.59926	4.36037	-4.724	2.36e-06	***
## PLOT16622	-10.55591	4.38448	-2.408	0.016087	*
## PLOT16643	-19.04064	4.38531	-4.342	1.43e-05	***
## PLOT16737	-19.00596	4.38476	-4.335	1.48e-05	***
## PLOT16769	-25.53740	3.93083	-6.497	8.81e-11	***
## PLOT16782	-26.94305	3.77640	-7.135	1.07e-12	***
## PLOT16804	-30.65007	3.93396	-7.791	7.66e-15	***
## PLOT16841	7.83295	4.54000	1.725	0.084517	.
## PLOT16901	-22.41323	5.03705	-4.450	8.74e-06	***
## PLOT16991	-16.04396	3.42705	-4.682	2.90e-06	***
## PLOT17050	-18.18455	3.61289	-5.033	4.95e-07	***
## PLOT17060	4.05672	4.35827	0.931	0.351986	
## PLOT17076	-15.92502	4.38391	-3.633	0.000283	***
## PLOT17162	-19.22710	6.16231	-3.120	0.001816	**
## PLOT17175	5.71053	4.50219	1.268	0.204703	
## PLOT17210	4.43848	4.35726	1.019	0.308411	
## PLOT17284	-11.11889	4.35848	-2.551	0.010761	*
## PLOT17288	-12.83901	6.16432	-2.083	0.037308	*
## PLOT17355	-17.42132	4.38459	-3.973	7.16e-05	***
## PLOT17365	-14.15431	4.04955	-3.495	0.000477	***
## PLOT17382	-14.84626	3.72364	-3.987	6.76e-05	***
## PLOT17383	-15.86342	3.93024	-4.036	5.49e-05	***
## PLOT17384	-18.78933	4.38509	-4.285	1.85e-05	***
## PLOT17397	-6.46865	4.38407	-1.475	0.140128	
## PLOT17400	-14.95090	3.94240	-3.792	0.000151	***
## PLOT17415	-13.99548	6.18086	-2.264	0.023586	*
## PLOT17475	-14.08986	3.72361	-3.784	0.000156	***
## PLOT17476	-19.67841	4.89625	-4.019	5.91e-05	***
## PLOT17488	-18.83558	4.38592	-4.295	1.78e-05	***
## PLOT17508	-7.32488	5.03629	-1.454	0.145877	
## PLOT17535	-26.07243	4.36151	-5.978	2.38e-09	***
## PLOT17596	-22.28491	3.77452	-5.904	3.72e-09	***
## PLOT17601	-18.06196	4.35910	-4.144	3.46e-05	***
## PLOT17743	-39.18017	4.50922	-8.689	< 2e-16	***
## PLOT17811	-23.74508	4.99437	-4.754	2.03e-06	***
## PLOT17854	-20.45943	4.35942	-4.693	2.74e-06	***
## PLOT17919	-14.59380	3.55827	-4.101	4.16e-05	***
## PLOT17931	-20.82221	4.35908	-4.777	1.82e-06	***
## PLOT17940	-23.08166	4.38519	-5.264	1.46e-07	***
## PLOT17958	-11.21791	4.49826	-2.494	0.012661	*
## PLOT18000	-13.71364	4.38467	-3.128	0.001770	**
## PLOT18005	-1.08383	6.18077	-0.175	0.860805	
## PLOT18009	-24.24084	4.35763	-5.563	2.76e-08	***
## PLOT18038	-29.34899	4.53970	-6.465	1.09e-10	***
## PLOT18063	-22.59407	3.77657	-5.983	2.31e-09	***
## PLOT18090	-21.99331	4.38623	-5.014	5.47e-07	***
## PLOT18111	-16.19765	4.35772	-3.717	0.000203	***
## PLOT18125	-33.94628	6.29242	-5.395	7.10e-08	***
## PLOT18183	-29.00197	4.36221	-6.648	3.20e-11	***
## PLOT18188	-17.90605	4.38545	-4.083	4.50e-05	***
## PLOT18200	-23.61408	4.49770	-5.250	1.57e-07	***
## PLOT18233	-20.10644	4.49742	-4.471	7.93e-06	***

## PLOT18340	-1.30596	3.77392	-0.346	0.729318	
## PLOT18342	-7.82439	4.35726	-1.796	0.072586	.
## PLOT18389	-18.41499	6.18188	-2.979	0.002904	**
## PLOT18397	-14.35085	4.38493	-3.273	0.001070	**
## PLOT18409	-5.65836	6.25931	-0.904	0.366032	
## PLOT18480	-4.94503	3.68256	-1.343	0.179376	
## PLOT18580	-17.93142	3.89678	-4.602	4.27e-06	***
## PLOT18650	-16.58021	3.50953	-4.724	2.36e-06	***
## PLOT18715	-16.71810	4.53967	-3.683	0.000233	***
## PLOT18718	-4.85089	4.27103	-1.136	0.256095	
## PLOT18720	-24.14418	4.49369	-5.373	8.01e-08	***
## PLOT18757	-3.24302	4.36073	-0.744	0.457093	
## PLOT18839	-4.71473	4.38379	-1.075	0.282194	
## PLOT18859	-18.45600	4.38509	-4.209	2.60e-05	***
## PLOT18913	-2.59169	4.38391	-0.591	0.554419	
## PLOT18918	-21.08608	3.72604	-5.659	1.59e-08	***
## PLOT18945	-13.46575	4.35868	-3.089	0.002014	**
## PLOT18955	-24.72971	4.35779	-5.675	1.45e-08	***
## PLOT18972	-10.64968	3.62240	-2.940	0.003294	**
## PLOT19021	-21.44305	3.77640	-5.678	1.42e-08	***
## PLOT19051	-14.78410	4.38437	-3.372	0.000751	***
## PLOT19090	4.81174	4.35767	1.104	0.269547	
## PLOT19108	-16.30111	3.59038	-4.540	5.72e-06	***
## PLOT19148	-16.42992	3.98335	-4.125	3.76e-05	***
## PLOT19210	-31.60991	5.00446	-6.316	2.85e-10	***
## PLOT19220	-18.40866	4.38595	-4.197	2.74e-05	***
## PLOT19223	-14.60216	3.80566	-3.837	0.000126	***
## PLOT19252	-34.15025	3.98274	-8.575	< 2e-16	***
## PLOT19279	-13.96205	6.16400	-2.265	0.023539	*
## PLOT19339	-14.05330	4.38419	-3.205	0.001355	**
## PLOT19388	-20.84717	3.61658	-5.764	8.57e-09	***
## PLOT19399	-3.33333	3.77349	-0.883	0.377077	
## PLOT19415	-13.86431	4.35772	-3.182	0.001472	**
## PLOT19494	1.25634	4.49698	0.279	0.779966	
## PLOT19511	-5.67081	3.77459	-1.502	0.133051	
## PLOT19580	-19.78078	4.36098	-4.536	5.84e-06	***
## PLOT19587	-16.83506	3.93064	-4.283	1.87e-05	***
## PLOT19609	-16.76326	4.54021	-3.692	0.000224	***
## PLOT19673	-23.49448	4.05133	-5.799	6.97e-09	***
## PLOT19713	-1.62564	4.05084	-0.401	0.688206	
## PLOT19722	-8.81718	3.93041	-2.243	0.024909	*
## PLOT19760	-21.74941	4.38403	-4.961	7.19e-07	***
## PLOT19764	-16.81526	3.68275	-4.566	5.06e-06	***
## PLOT19766	-23.38896	4.35993	-5.365	8.39e-08	***
## PLOT19800	-13.90713	4.89564	-2.841	0.004515	**
## PLOT19860	-25.71183	4.35812	-5.900	3.82e-09	***
## PLOT19923	-3.69632	6.26092	-0.590	0.554956	
## PLOT19950	-17.05318	3.84348	-4.437	9.27e-06	***
## PLOT19960	-21.76512	4.38644	-4.962	7.16e-07	***
## PLOT19972	-25.87913	3.93124	-6.583	4.97e-11	***
## PLOT20001	-25.26271	3.98399	-6.341	2.43e-10	***
## PLOT20061	-21.02638	3.93036	-5.350	9.10e-08	***
## PLOT20223	-8.90605	4.38545	-2.031	0.042314	*
## PLOT20393	-19.23414	4.38463	-4.387	1.17e-05	***

## PLOT20440	-19.63000	4.49382	-4.368	1.27e-05	***
## PLOT20459	-19.29501	4.04985	-4.764	1.93e-06	***
## PLOT20492	-15.20469	4.38488	-3.468	0.000529	***
## PLOT20524	-18.04402	3.98330	-4.530	6.00e-06	***
## PLOT20584	-19.82628	3.78295	-5.241	1.65e-07	***
## PLOT20646	-12.46974	4.38363	-2.845	0.004460	**
## PLOT20658	-23.09576	3.93096	-5.875	4.42e-09	***
## PLOT20688	-23.91294	3.93332	-6.080	1.27e-09	***
## PLOT20709	-18.93679	3.83088	-4.943	7.87e-07	***
## PLOT20711	-10.88955	4.22423	-2.578	0.009962	**
## PLOT20760	-17.29667	4.49382	-3.849	0.000120	***
## PLOT20779	-7.49593	3.55821	-2.107	0.035185	*
## PLOT20816	-24.52682	3.84344	-6.381	1.87e-10	***
## PLOT20824	-2.24156	6.18078	-0.363	0.716866	
## PLOT20836	-21.92393	4.38496	-5.000	5.89e-07	***
## PLOT20873	-22.73910	4.36151	-5.214	1.91e-07	***
## PLOT20921	-29.58246	4.35905	-6.786	1.25e-11	***
## PLOT20951	-15.75465	4.38459	-3.593	0.000329	***
## PLOT20962	-15.01571	4.87255	-3.082	0.002067	**
## PLOT21015	-7.93994	3.73694	-2.125	0.033648	*
## PLOT21138	-14.18608	4.35762	-3.255	0.001138	**
## PLOT21166	-12.80018	4.35758	-2.937	0.003321	**
## PLOT21167	-16.12151	3.91014	-4.123	3.79e-05	***
## PLOT21187	-8.70550	4.35871	-1.997	0.045837	*
## PLOT21205	-15.40452	4.38394	-3.514	0.000445	***
## PLOT21278	-19.04697	4.38467	-4.344	1.42e-05	***
## PLOT21296	-18.87136	4.38488	-4.304	1.70e-05	***
## PLOT21379	-19.73215	3.78400	-5.215	1.90e-07	***
## PLOT21501	-9.72142	3.77521	-2.575	0.010044	*
## PLOT21521	-25.11983	3.51354	-7.149	9.65e-13	***
## PLOT21540	-18.85347	4.38536	-4.299	1.74e-05	***
## PLOT21562	-29.25393	4.07591	-7.177	7.89e-13	***
## PLOT21564	-10.30912	4.35748	-2.366	0.018018	*
## PLOT21576	-20.55736	3.93140	-5.229	1.76e-07	***
## PLOT21597	-16.93658	4.38400	-3.863	0.000113	***
## PLOT21637	-9.87364	6.29335	-1.569	0.116719	
## PLOT21641	-27.34510	4.49539	-6.083	1.25e-09	***
## PLOT21645	-9.92736	6.16350	-1.611	0.107300	
## PLOT21646	-18.24570	4.38479	-4.161	3.21e-05	***
## PLOT21657	-15.71025	3.84390	-4.087	4.42e-05	***
## PLOT21683	-13.39349	3.61346	-3.707	0.000212	***
## PLOT21702	-13.17483	3.68270	-3.577	0.000349	***
## PLOT21743	-8.70804	3.78124	-2.303	0.021312	*
## PLOT21763	-21.07880	3.89858	-5.407	6.64e-08	***
## PLOT21764	-7.54645	4.99500	-1.511	0.130887	
## PLOT21788	-22.17234	4.36041	-5.085	3.78e-07	***
## PLOT21793	-19.99963	4.38542	-4.560	5.20e-06	***
## PLOT21818	-23.02908	4.38511	-5.252	1.55e-07	***
## PLOT21872	-18.57525	3.55034	-5.232	1.73e-07	***
## PLOT21884	-6.49051	4.87171	-1.332	0.182812	
## PLOT21908	-16.47913	4.38548	-3.758	0.000173	***
## PLOT22038	-23.88292	4.38506	-5.446	5.32e-08	***
## PLOT22113	-19.52014	4.38536	-4.451	8.68e-06	***
## PLOT22242	-31.10406	6.16243	-5.047	4.60e-07	***

## PLOT22290	-19.85347	4.38536	-4.527	6.08e-06	***
## PLOT22291	-4.78338	4.35727	-1.098	0.272336	
## PLOT22296	-19.63089	4.35741	-4.505	6.75e-06	***
## PLOT22303	-16.73043	6.18225	-2.706	0.006823	**
## PLOT22346	-5.61824	4.35814	-1.289	0.197396	
## PLOT22347	-26.85921	3.72352	-7.213	6.07e-13	***
## PLOT22399	-20.71706	4.35890	-4.753	2.05e-06	***
## PLOT22478	-19.76097	4.38413	-4.507	6.68e-06	***
## PLOT22493	-21.82281	3.98526	-5.476	4.51e-08	***
## PLOT22563	-1.73427	4.50343	-0.385	0.700175	
## PLOT22575	-9.63480	4.99581	-1.929	0.053826	.
## PLOT22601	-26.24275	6.29281	-4.170	3.08e-05	***
## PLOT22604	-19.14807	4.54160	-4.216	2.52e-05	***
## PLOT22659	-12.91870	4.38428	-2.947	0.003224	**
## PLOT22695	-5.47340	4.10425	-1.334	0.182383	
## PLOT22702	-19.83667	4.38442	-4.524	6.16e-06	***
## PLOT22704	-21.28293	4.49428	-4.736	2.23e-06	***
## PLOT22758	-24.59614	3.51474	-6.998	2.85e-12	***
## PLOT22828	17.83377	4.35929	4.091	4.35e-05	***
## PLOT22865	-21.22476	3.72395	-5.700	1.25e-08	***
## PLOT22904	-17.70664	4.07593	-4.344	1.42e-05	***
## PLOT22921	-33.54778	4.35848	-7.697	1.60e-14	***
## PLOT22959	-9.00949	4.07602	-2.210	0.027114	*
## PLOT23012	-24.10930	4.35834	-5.532	3.29e-08	***
## PLOT23035	-9.67076	4.53967	-2.130	0.033186	*
## PLOT23060	-17.77596	3.77475	-4.709	2.54e-06	***
## PLOT23066	-12.23203	3.59139	-3.406	0.000663	***
## PLOT23085	-26.47337	3.93160	-6.733	1.80e-11	***
## PLOT23111	-8.77254	3.80462	-2.306	0.021155	*
## PLOT23135	-15.02333	4.49520	-3.342	0.000836	***
## PLOT23140	-18.16207	3.93035	-4.621	3.89e-06	***
## PLOT23159	-18.57271	4.38545	-4.235	2.32e-05	***
## PLOT23187	-16.11977	6.16424	-2.615	0.008942	**
## PLOT23220	-34.88111	4.35848	-8.003	1.42e-15	***
## PLOT23292	-9.38139	4.38379	-2.140	0.032390	*
## PLOT23374	-13.68870	4.35786	-3.141	0.001690	**
## PLOT23384	-18.47913	3.80605	-4.855	1.23e-06	***
## PLOT23438	-17.51072	3.68087	-4.757	2.00e-06	***
## PLOT23450	-10.11168	4.49620	-2.249	0.024549	*
## PLOT23497	-3.69305	6.25938	-0.590	0.555209	
## PLOT23561	-15.26883	4.38514	-3.482	0.000501	***
## PLOT23568	-12.42132	4.38459	-2.833	0.004626	**
## PLOT23569	-9.68666	3.59081	-2.698	0.007001	**
## PLOT23623	-24.27967	3.77390	-6.434	1.33e-10	***
## PLOT23680	-15.09099	3.77751	-3.995	6.54e-05	***
## PLOT23683	-12.03498	4.23367	-2.843	0.004487	**
## PLOT23710	-16.72520	4.38484	-3.814	0.000138	***
## PLOT23723	-20.44482	3.84420	-5.318	1.08e-07	***
## PLOT23730	-4.07165	3.93046	-1.036	0.300277	
## PLOT23741	-19.18683	4.99504	-3.841	0.000124	***
## PLOT23745	-18.53170	4.38557	-4.226	2.42e-05	***
## PLOT23791	-10.19765	4.35772	-2.340	0.019306	*
## PLOT23796	-21.36242	4.38511	-4.872	1.13e-06	***
## PLOT23841	-9.89900	4.35808	-2.271	0.023154	*

## PLOT23933	-17.11588	3.90832	-4.379	1.21e-05	***
## PLOT23957	-12.78698	4.07803	-3.136	0.001723	**
## PLOT23983	-5.75540	3.84928	-1.495	0.134913	
## PLOT24009	-26.14092	4.49662	-5.813	6.41e-09	***
## PLOT24070	-19.44065	4.49444	-4.325	1.54e-05	***
## PLOT24073	-15.29994	4.49864	-3.401	0.000675	***
## PLOT24092	-19.57271	4.38545	-4.463	8.21e-06	***
## PLOT24109	-26.12521	4.49414	-5.813	6.42e-09	***
## PLOT24124	-19.43811	4.38560	-4.432	9.48e-06	***
## PLOT24168	-16.76738	3.78371	-4.431	9.51e-06	***
## PLOT24174	-22.59294	4.36142	-5.180	2.28e-07	***
## PLOT24238	-23.77591	3.98276	-5.970	2.50e-09	***
## PLOT24340	-20.11977	6.16424	-3.264	0.001104	**
## PLOT24344	-23.58050	6.16265	-3.826	0.000131	***
## PLOT24361	-16.49270	3.64520	-4.524	6.16e-06	***
## PLOT24400	-18.20993	4.38579	-4.152	3.34e-05	***
## PLOT24410	-22.95810	3.93083	-5.841	5.45e-09	***
## PLOT24514	-26.68292	4.87205	-5.477	4.49e-08	***
## PLOT24595	-19.96531	6.16213	-3.240	0.001201	**
## PLOT24603	-17.32088	3.93105	-4.406	1.07e-05	***
## PLOT24628	-14.04173	4.38408	-3.203	0.001367	**
## PLOT24635	-38.32721	6.26019	-6.122	9.75e-10	***
## PLOT24707	-22.49215	4.35753	-5.162	2.52e-07	***
## PLOT24755	-12.10930	4.35834	-2.778	0.005478	**
## PLOT24764	0.10334	4.38363	0.024	0.981193	
## PLOT24782	-18.09685	6.25932	-2.891	0.003850	**
## PLOT24787	-28.61161	3.84675	-7.438	1.15e-13	***
## PLOT24809	1.29232	4.35726	0.297	0.766788	
## PLOT24843	24.97253	6.25935	3.990	6.69e-05	***
## PLOT24855	-7.03074	6.26252	-1.123	0.261619	
## PLOT24869	-20.56748	4.38463	-4.691	2.78e-06	***
## PLOT24891	-17.82548	4.35753	-4.091	4.35e-05	***
## PLOT24905	-12.39807	3.77887	-3.281	0.001040	**
## PLOT24973	-22.04064	4.38531	-5.026	5.14e-07	***
## PLOT25021	-16.38030	4.38467	-3.736	0.000189	***
## PLOT25054	-29.52247	4.36212	-6.768	1.42e-11	***
## PLOT25067	-28.00409	4.53967	-6.169	7.29e-10	***
## PLOT25094	-20.36060	4.35853	-4.671	3.05e-06	***
## PLOT25104	-31.31959	4.35863	-7.186	7.42e-13	***
## PLOT25203	-20.00785	4.87181	-4.107	4.06e-05	***
## PLOT25223	1.55280	3.73684	0.416	0.677761	
## PLOT25315	-19.51402	5.03654	-3.874	0.000108	***
## PLOT25346	-14.82337	3.59053	-4.128	3.70e-05	***
## PLOT25361	-22.62368	6.25930	-3.614	0.000303	***
## PLOT25371	-29.26702	4.35856	-6.715	2.04e-11	***
## PLOT25542	-17.04697	4.38467	-3.888	0.000102	***
## PLOT25563	-22.23144	3.93025	-5.656	1.61e-08	***
## PLOT25590	-12.83220	3.89739	-3.293	0.000998	***
## PLOT25612	-11.76984	4.49368	-2.619	0.008834	**
## PLOT25638	-10.94182	4.38454	-2.496	0.012601	*
## PLOT25684	-12.14319	3.89741	-3.116	0.001843	**
## PLOT25696	-23.48166	4.49436	-5.225	1.80e-07	***
## PLOT25729	-14.24775	3.55894	-4.003	6.31e-05	***
## PLOT25742	-28.15745	3.68542	-7.640	2.48e-14	***

## PLOT25828	-16.21039	4.99414	-3.246	0.001177	**
## PLOT25832	-25.99041	4.36188	-5.959	2.68e-09	***
## PLOT25840	-22.68846	4.22572	-5.369	8.18e-08	***
## PLOT25878	-0.53497	4.38386	-0.122	0.902878	
## PLOT25880	-19.92393	4.38496	-4.544	5.63e-06	***
## PLOT25935	-13.70731	4.38531	-3.126	0.001781	**
## PLOT26008	-11.28511	3.93047	-2.871	0.004102	**
## PLOT26012	-26.86301	3.66235	-7.335	2.48e-13	***
## PLOT26015	-14.31210	3.78229	-3.784	0.000156	***
## PLOT26021	-23.51002	3.93224	-5.979	2.37e-09	***
## PLOT26026	-17.70731	4.38531	-4.038	5.45e-05	***
## PLOT26027	-14.97361	4.36022	-3.434	0.000598	***
## PLOT26075	-35.60793	4.27029	-8.339	< 2e-16	***
## PLOT26081	-24.90846	3.84320	-6.481	9.76e-11	***
## PLOT26117	-20.01337	4.38366	-4.565	5.07e-06	***
## PLOT26157	-24.58572	3.93284	-6.251	4.32e-10	***
## PLOT26168	-22.61816	3.83119	-5.904	3.73e-09	***
## PLOT26218	-19.70207	4.38452	-4.494	7.12e-06	***
## PLOT26233	-22.59060	4.38496	-5.152	2.65e-07	***
## PLOT26246	-19.60035	4.35856	-4.497	7.01e-06	***
## PLOT26288	-24.13423	4.38528	-5.503	3.86e-08	***
## PLOT26308	-20.80613	4.38630	-4.743	2.15e-06	***
## PLOT26321	-20.95266	4.35736	-4.809	1.55e-06	***
## PLOT26335	-6.30400	4.10017	-1.537	0.124219	
## PLOT26368	-19.97651	4.38504	-4.556	5.32e-06	***
## PLOT26370	-10.37638	4.10464	-2.528	0.011496	*
## PLOT26376	-24.28121	4.24913	-5.714	1.15e-08	***
## PLOT26393	-8.29114	3.72685	-2.225	0.026135	*
## PLOT26413	-24.30165	4.53993	-5.353	8.95e-08	***
## PLOT26440	-16.81609	6.25933	-2.687	0.007237	**
## PLOT26443	-20.33929	4.38476	-4.639	3.57e-06	***
## PLOT26470	-21.88816	4.38602	-4.990	6.18e-07	***
## PLOT26486	-17.78933	4.38509	-4.057	5.03e-05	***
## PLOT26574	-14.36648	3.72547	-3.856	0.000116	***
## PLOT26625	-16.99150	4.35958	-3.898	9.81e-05	***
## PLOT26628	-18.40216	3.77418	-4.876	1.11e-06	***
## PLOT26650	-26.44065	3.93110	-6.726	1.89e-11	***
## PLOT26679	-27.66884	3.93098	-7.039	2.14e-12	***
## PLOT26699	-11.35827	4.38369	-2.591	0.009590	**
## PLOT26741	-4.97682	3.98375	-1.249	0.211607	
## PLOT26756	-12.16949	4.99527	-2.436	0.014869	*
## PLOT26769	-13.25727	6.18171	-2.145	0.032022	*
## PLOT26777	-12.77570	3.80440	-3.358	0.000789	***
## PLOT26821	-21.05040	6.16325	-3.415	0.000641	***
## PLOT26822	-8.51599	4.38375	-1.943	0.052104	.
## PLOT26926	-20.19241	4.87166	-4.145	3.44e-05	***
## PLOT26964	-21.97018	4.38576	-5.009	5.60e-07	***
## PLOT26983	-14.70679	4.49434	-3.272	0.001072	**
## PLOT26998	-19.57271	4.38545	-4.463	8.21e-06	***
## PLOT27141	-23.97993	4.35935	-5.501	3.92e-08	***
## PLOT27174	-12.98231	3.93185	-3.302	0.000966	***
## PLOT27228	-31.72753	4.36120	-7.275	3.87e-13	***
## PLOT27229	-12.29647	6.16282	-1.995	0.046055	*
## PLOT27293	-28.94939	4.36207	-6.637	3.46e-11	***

## PLOT27335	-21.36765	4.38609	-4.872	1.13e-06	***
## PLOT27358	-10.65481	3.84359	-2.772	0.005585	**
## PLOT27385	-17.15212	4.38481	-3.912	9.26e-05	***
## PLOT27396	-11.45998	4.10441	-2.792	0.005252	**
## PLOT27402	-16.78882	3.73709	-4.492	7.16e-06	***
## PLOT27403	-14.62757	6.29383	-2.324	0.020150	*
## PLOT27458	-18.41852	3.77355	-4.881	1.08e-06	***
## PLOT27489	-14.09685	3.93027	-3.587	0.000337	***
## PLOT27542	-15.19313	4.38472	-3.465	0.000534	***
## PLOT27589	-13.19855	3.78173	-3.490	0.000486	***
## PLOT27698	-28.67496	3.77789	-7.590	3.64e-14	***
## PLOT27744	-10.20868	3.68272	-2.772	0.005586	**
## PLOT27794	-23.42910	4.35885	-5.375	7.92e-08	***
## PLOT27806	-20.43811	4.38560	-4.660	3.22e-06	***
## PLOT27828	-27.00959	4.49368	-6.011	1.95e-09	***
## PLOT27856	-18.60688	4.49396	-4.140	3.51e-05	***
## PLOT27913	-20.88816	6.18246	-3.379	0.000733	***
## PLOT27916	-16.17256	4.27092	-3.787	0.000154	***
## PLOT27923	-22.03360	4.35799	-5.056	4.40e-07	***
## PLOT27963	-25.11256	6.26036	-4.011	6.10e-05	***
## PLOT28052	-21.86322	4.35896	-5.016	5.42e-07	***
## PLOT28056	-16.17524	4.38517	-3.689	0.000227	***
## PLOT28072	-17.11111	4.38491	-3.902	9.62e-05	***
## PLOT28100	-14.62457	4.35770	-3.356	0.000795	***
## PLOT28148	-5.46161	4.35730	-1.253	0.210091	
## PLOT28193	-26.50459	4.36302	-6.075	1.31e-09	***
## PLOT28194	-20.59837	4.49462	-4.583	4.67e-06	***
## PLOT28204	-25.21444	4.35848	-5.785	7.58e-09	***
## PLOT28230	-7.92357	3.78185	-2.095	0.036195	*
## PLOT28283	-8.42692	4.35725	-1.934	0.053156	.
## PLOT28373	-19.39851	4.54137	-4.272	1.97e-05	***
## PLOT28384	-12.57110	4.49370	-2.797	0.005165	**
## PLOT28402	-16.60666	4.04938	-4.101	4.16e-05	***
## PLOT28421	1.10406	4.87199	0.227	0.820731	
## PLOT28457	-12.39005	4.35827	-2.843	0.004484	**
## PLOT28466	-19.59584	4.38589	-4.468	8.03e-06	***
## PLOT28549	-3.25210	3.37635	-0.963	0.335483	
## PLOT28553	-8.54056	3.77883	-2.260	0.023847	*
## PLOT28574	-12.67804	3.78177	-3.352	0.000806	***
## PLOT28644	-15.89267	6.16308	-2.579	0.009939	**
## PLOT28666	-15.43920	4.38424	-3.522	0.000432	***
## PLOT28733	-28.45208	3.68089	-7.730	1.24e-14	***
## PLOT28766	-22.47913	4.38548	-5.126	3.05e-07	***
## PLOT28787	-16.29793	4.22170	-3.861	0.000114	***
## PLOT28800	-20.53170	4.38557	-4.682	2.90e-06	***
## PLOT28878	-23.39601	6.18381	-3.783	0.000156	***
## PLOT28900	-18.78411	3.42561	-5.483	4.33e-08	***
## PLOT28975	-6.92207	3.98277	-1.738	0.082257	.
## PLOT28979	-19.86799	3.53321	-5.623	1.95e-08	***
## PLOT28982	-22.72862	4.35910	-5.214	1.90e-07	***
## PLOT28991	-15.99062	3.59120	-4.453	8.62e-06	***
## PLOT29008	-5.63171	4.07584	-1.382	0.167102	
## PLOT29052	-22.18680	4.38536	-5.059	4.32e-07	***
## PLOT29071	-22.11002	4.38671	-5.040	4.77e-07	***

## PLOT29170	-9.10696	4.38366	-2.077	0.037796	*
## PLOT29194	-20.28039	4.38533	-4.625	3.82e-06	***
## PLOT29259	-7.07235	3.78226	-1.870	0.061546	.
## PLOT29283	-21.22022	3.40770	-6.227	5.04e-10	***
## PLOT29341	-19.39536	3.55773	-5.452	5.17e-08	***
## PLOT29359	-18.66530	4.04923	-4.610	4.11e-06	***
## PLOT29394	-6.00129	4.49768	-1.334	0.182149	
## PLOT29407	-21.50265	3.82101	-5.627	1.90e-08	***
## PLOT29430	-8.77073	4.35773	-2.013	0.044189	*
## PLOT29480	-17.83667	4.38442	-4.068	4.79e-05	***
## PLOT29501	4.84786	4.99553	0.970	0.331864	
## PLOT29506	-20.29195	4.38554	-4.627	3.78e-06	***
## PLOT29546	-17.82262	6.26799	-2.843	0.004477	**
## PLOT29559	-16.34562	6.18121	-2.644	0.008203	**
## PLOT29638	-22.72971	4.35779	-5.216	1.89e-07	***
## PLOT29644	-11.39549	3.93023	-2.899	0.003751	**
## PLOT29687	-19.19285	3.77705	-5.081	3.85e-07	***
## PLOT29722	2.75393	6.16214	0.447	0.654954	
## PLOT29815	-20.69632	6.26092	-3.306	0.000953	***
## PLOT29959	-10.40162	4.35843	-2.387	0.017035	*
## PLOT30003	-28.56369	3.93086	-7.267	4.11e-13	***
## PLOT30065	-14.10260	3.68223	-3.830	0.000129	***
## PLOT30073	-17.91971	3.93053	-4.559	5.23e-06	***
## PLOT30083	-12.36895	3.98301	-3.105	0.001908	**
## PLOT30121	-15.37533	4.87258	-3.155	0.001610	**
## PLOT30148	-24.82167	4.87403	-5.093	3.63e-07	***
## PLOT30158	-20.42655	4.38539	-4.658	3.26e-06	***
## PLOT30178	-20.12790	4.38605	-4.589	4.53e-06	***
## PLOT30223	-26.82023	3.93181	-6.821	9.82e-12	***
## PLOT30293	-22.64660	4.35935	-5.195	2.11e-07	***
## PLOT30294	-6.43977	4.49742	-1.432	0.152225	
## PLOT30297	-14.35863	6.25996	-2.294	0.021837	*
## PLOT30313	-24.31854	4.22283	-5.759	8.85e-09	***
## PLOT30348	-7.65293	4.35863	-1.756	0.079167	.
## PLOT30425	-9.02203	4.35786	-2.070	0.038464	*
## PLOT30491	-26.18381	3.72381	-7.031	2.25e-12	***
## PLOT30504	-26.31218	4.36155	-6.033	1.70e-09	***
## PLOT30564	-17.68419	4.38493	-4.033	5.57e-05	***
## PLOT30590	-12.45025	3.93200	-3.166	0.001550	**
## PLOT30594	-14.64463	4.35786	-3.361	0.000782	***
## PLOT30600	-7.24156	6.18078	-1.172	0.241390	
## PLOT30649	-13.92736	3.77581	-3.689	0.000227	***
## PLOT30692	-4.39658	6.25961	-0.702	0.482471	
## PLOT30723	-16.02136	4.50541	-3.556	0.000379	***
## PLOT30724	-21.18498	3.88261	-5.456	5.04e-08	***
## PLOT30809	-21.89433	3.53829	-6.188	6.47e-10	***
## PLOT30853	-12.78698	4.87339	-2.624	0.008715	**
## PLOT30906	-13.08611	4.04929	-3.232	0.001237	**
## PLOT30943	-13.60587	3.80462	-3.576	0.000351	***
## PLOT30957	-20.57271	4.38545	-4.691	2.77e-06	***
## PLOT30971	-22.21705	3.72388	-5.966	2.56e-09	***
## PLOT30980	-14.42764	4.38413	-3.291	0.001004	**
## PLOT31021	-35.91845	3.41825	-10.508	< 2e-16	***
## PLOT31034	-17.00845	3.48167	-4.885	1.06e-06	***

## PLOT31052	-14.37066	3.61285	-3.978	7.03e-05	***
## PLOT31056	-10.92210	3.73055	-2.928	0.003426	**
## PLOT31060	-3.01680	3.77370	-0.799	0.424072	
## PLOT31063	-8.27166	3.59058	-2.304	0.021270	*
## PLOT31065	-17.98755	4.49439	-4.002	6.34e-05	***
## PLOT31121	-4.24280	6.16393	-0.688	0.491270	
## PLOT31154	-12.77482	4.54033	-2.814	0.004913	**
## PLOT31178	-17.48545	4.38481	-3.988	6.74e-05	***
## PLOT31201	-17.01047	3.77406	-4.507	6.68e-06	***
## PLOT31221	-30.54056	4.49403	-6.796	1.17e-11	***
## PLOT31236	-15.84554	4.49368	-3.526	0.000424	***
## PLOT31255	-16.29828	4.38486	-3.717	0.000203	***
## PLOT31279	-33.99879	3.76771	-9.024	< 2e-16	***
## PLOT31280	-5.32286	4.35775	-1.221	0.221951	
## PLOT31286	-6.96966	3.93071	-1.773	0.076253	.
## PLOT31291	-20.76134	4.35766	-4.764	1.94e-06	***
## PLOT31304	-21.04588	4.38633	-4.798	1.64e-06	***
## PLOT31336	-21.88816	3.80667	-5.750	9.33e-09	***
## PLOT31346	-25.93063	4.35747	-5.951	2.80e-09	***
## PLOT31350	-30.23559	4.99502	-6.053	1.50e-09	***
## PLOT31390	-15.70731	4.38531	-3.582	0.000344	***
## PLOT31412	-22.33929	4.38476	-5.095	3.59e-07	***
## PLOT31415	-6.27624	4.38374	-1.432	0.152274	
## PLOT31458	-9.93368	4.35856	-2.279	0.022692	*
## PLOT31472	-8.50806	3.72442	-2.284	0.022380	*
## PLOT31486	-28.23233	3.77445	-7.480	8.41e-14	***
## PLOT31509	-14.50785	4.35753	-3.329	0.000875	***
## PLOT31531	-32.18629	3.72427	-8.642	< 2e-16	***
## PLOT31533	-19.99963	4.38542	-4.560	5.20e-06	***
## PLOT31633	-28.57525	4.49435	-6.358	2.18e-10	***
## PLOT31648	-30.52356	4.35975	-7.001	2.79e-12	***
## PLOT31666	-15.36874	4.38452	-3.505	0.000459	***
## PLOT31679	-12.04516	4.35812	-2.764	0.005728	**
## PLOT31713	-17.93550	4.38514	-4.090	4.36e-05	***
## PLOT31714	-14.49551	3.56131	-4.070	4.75e-05	***
## PLOT31730	-15.91761	4.38566	-3.629	0.000286	***
## PLOT31749	-1.66558	6.16236	-0.270	0.786952	
## PLOT31760	-37.30606	4.35853	-8.559	< 2e-16	***
## PLOT31762	-6.16883	4.04998	-1.523	0.127763	
## PLOT31775	-6.88111	4.35848	-1.579	0.114433	
## PLOT31814	-3.43127	6.25943	-0.548	0.583590	
## PLOT31815	-12.35301	3.62448	-3.408	0.000658	***
## PLOT31868	-30.85166	4.35876	-7.078	1.61e-12	***
## PLOT31897	-15.86975	6.25939	-2.535	0.011256	*
## PLOT31947	-19.17606	3.40214	-5.636	1.81e-08	***
## PLOT31982	-19.90894	3.68282	-5.406	6.67e-08	***
## PLOT32015	-2.04516	4.35812	-0.469	0.638889	
## PLOT32028	-7.91772	3.68140	-2.151	0.031533	*
## PLOT32042	-19.59553	6.27096	-3.125	0.001787	**
## PLOT32051	-15.34381	4.35775	-3.521	0.000433	***
## PLOT32055	-21.62368	4.99396	-4.330	1.51e-05	***
## PLOT32083	-23.70877	3.68607	-6.432	1.35e-10	***
## PLOT32106	-26.57505	4.36226	-6.092	1.18e-09	***
## PLOT32119	-17.46756	4.38528	-3.983	6.87e-05	***

## PLOT32136	-25.63415	3.72392	-6.884	6.37e-12	***
## PLOT32194	-16.51272	3.95410	-4.176	3.00e-05	***
## PLOT32210	-27.94001	4.35801	-6.411	1.54e-10	***
## PLOT32252	-20.36584	4.35945	-4.672	3.05e-06	***
## PLOT32346	-24.78011	4.36133	-5.682	1.39e-08	***
## PLOT32368	-28.00113	4.10043	-6.829	9.33e-12	***
## PLOT32377	-10.92277	4.87243	-2.242	0.025011	*
## PLOT32396	-23.55737	4.35834	-5.405	6.70e-08	***
## PLOT32424	-25.12086	4.35851	-5.764	8.60e-09	***
## PLOT32432	-20.54161	3.68453	-5.575	2.57e-08	***
## PLOT32443	-9.06828	4.35843	-2.081	0.037506	*
## PLOT32460	-16.76621	4.38474	-3.824	0.000133	***
## PLOT32538	-20.01752	4.38493	-4.565	5.08e-06	***
## PLOT32594	-22.54152	3.55774	-6.336	2.51e-10	***
## PLOT32600	-27.00676	4.10197	-6.584	4.94e-11	***
## PLOT32621	-7.29758	4.23367	-1.724	0.084808	.
## PLOT32734	-18.84823	4.38457	-4.299	1.74e-05	***
## PLOT32759	-17.09954	4.38474	-3.900	9.72e-05	***
## PLOT32779	-16.57723	4.35823	-3.804	0.000144	***
## PLOT32815	-19.00399	4.38497	-4.334	1.49e-05	***
## PLOT32851	-11.53803	6.18166	-1.866	0.062017	.
## PLOT32888	-18.59457	4.87265	-3.816	0.000137	***
## PLOT32970	-18.45835	4.10655	-4.495	7.08e-06	***
## PLOT32978	-3.10063	4.38382	-0.707	0.479411	
## PLOT33079	-23.62980	4.35830	-5.422	6.11e-08	***
## PLOT33107	-26.19988	3.73682	-7.011	2.60e-12	***
## PLOT33111	-16.66567	3.93125	-4.239	2.27e-05	***
## PLOT33300	-23.24280	4.35985	-5.331	1.01e-07	***
## PLOT33347	-4.88602	3.84432	-1.271	0.203784	
## PLOT33354	-14.78249	3.72399	-3.970	7.28e-05	***
## PLOT33359	-27.78718	3.93023	-7.070	1.71e-12	***
## PLOT33438	-16.21625	4.38506	-3.698	0.000219	***
## PLOT33478	-12.43127	4.49386	-2.766	0.005686	**
## PLOT33488	-16.42341	4.22233	-3.890	0.000101	***
## PLOT33497	-13.09521	4.99505	-2.622	0.008771	**
## PLOT33508	-7.72971	4.35779	-1.774	0.076148	.
## PLOT33516	-38.71835	4.49422	-8.615	< 2e-16	***
## PLOT33650	-16.00020	3.93242	-4.069	4.78e-05	***
## PLOT33658	5.42672	6.26065	0.867	0.386084	
## PLOT33780	-10.06486	3.80470	-2.645	0.008179	**
## PLOT33784	-8.46072	3.72388	-2.272	0.023118	*
## PLOT33868	-29.31445	4.99511	-5.869	4.61e-09	***
## PLOT33896	-19.16368	4.38498	-4.370	1.26e-05	***
## PLOT33955	-20.37921	4.38633	-4.646	3.45e-06	***
## PLOT33985	-26.66854	3.72354	-7.162	8.80e-13	***
## PLOT34039	-14.19313	4.38472	-3.237	0.001214	**
## PLOT34074	-23.63524	3.93023	-6.014	1.91e-09	***
## PLOT34161	-29.16513	4.49524	-6.488	9.33e-11	***
## PLOT34181	-31.29647	4.35830	-7.181	7.69e-13	***
## PLOT34200	-5.52289	6.26429	-0.882	0.378000	
## PLOT34238	-9.74418	3.80401	-2.562	0.010443	*
## PLOT34240	-34.80427	6.29274	-5.531	3.31e-08	***
## PLOT34256	-27.63918	4.36276	-6.335	2.53e-10	***
## PLOT34258	-16.97381	6.25937	-2.712	0.006710	**

## PLOT34279	-26.09177	3.55899	-7.331	2.55e-13	***
## PLOT34282	-9.40247	3.84456	-2.446	0.014485	*
## PLOT34330	-17.75988	4.38539	-4.050	5.19e-05	***
## PLOT34417	-18.77777	4.38491	-4.282	1.88e-05	***
## PLOT34427	-32.13044	4.49472	-7.148	9.72e-13	***
## PLOT34515	-25.88240	3.93118	-6.584	4.94e-11	***
## PLOT34572	-19.26307	3.93194	-4.899	9.86e-07	***
## PLOT34581	-21.71047	4.51433	-4.809	1.55e-06	***
## PLOT34596	-28.64655	6.29265	-4.552	5.40e-06	***
## PLOT34606	-21.03541	4.38452	-4.798	1.64e-06	***
## PLOT34723	-20.79457	4.38605	-4.741	2.17e-06	***
## PLOT34725	-19.58969	3.78254	-5.179	2.30e-07	***
## PLOT34752	-20.66449	4.35882	-4.741	2.17e-06	***
## PLOT34803	-12.25203	4.38428	-2.795	0.005212	**
## PLOT34805	0.42277	4.35823	0.097	0.922725	
## PLOT34822	-14.38030	6.18151	-2.326	0.020030	*
## PLOT34874	-21.79457	4.38605	-4.969	6.90e-07	***
## PLOT34884	-22.82402	4.38569	-5.204	2.01e-07	***
## PLOT34891	-21.52356	3.77637	-5.700	1.25e-08	***
## PLOT34928	-28.96334	3.93040	-7.369	1.93e-13	***
## PLOT34982	-14.84663	4.49395	-3.304	0.000959	***
## PLOT34995	-32.63628	3.77631	-8.642	< 2e-16	***
## PLOT35018	-15.75465	4.38459	-3.593	0.000329	***
## PLOT35034	-21.84082	4.38710	-4.978	6.57e-07	***
## PLOT35043	-20.64317	4.38504	-4.708	2.56e-06	***
## PLOT35060	-19.53642	3.93039	-4.971	6.84e-07	***
## PLOT35084	-16.41556	4.99590	-3.286	0.001022	**
## PLOT35120	-13.77010	3.68385	-3.738	0.000187	***
## PLOT35129	-8.97708	6.26099	-1.434	0.151674	
## PLOT35171	-11.28672	4.38470	-2.574	0.010071	*
## PLOT35245	-16.46033	4.05029	-4.064	4.88e-05	***
## PLOT35289	-20.04173	4.38408	-4.571	4.93e-06	***
## PLOT35296	-14.84642	3.77438	-3.933	8.46e-05	***
## PLOT35312	-24.33136	4.49370	-5.415	6.36e-08	***
## PLOT35401	-21.29195	4.38554	-4.855	1.23e-06	***
## PLOT35410	-14.84026	4.10020	-3.619	0.000297	***
## PLOT35438	-7.57489	4.38364	-1.728	0.084037	.
## PLOT35587	-20.02638	3.93036	-5.095	3.58e-07	***
## PLOT35589	-3.44408	3.55774	-0.968	0.333053	
## PLOT35649	-6.47006	4.07604	-1.587	0.112484	
## PLOT35704	-19.57271	6.18206	-3.166	0.001552	**
## PLOT35743	-24.77596	4.35834	-5.685	1.37e-08	***
## PLOT35765	-13.80038	4.99456	-2.763	0.005742	**
## PLOT35774	-2.22349	3.77411	-0.589	0.555785	
## PLOT35776	-21.65849	4.27172	-5.070	4.08e-07	***
## PLOT35780	-20.44444	4.38491	-4.662	3.19e-06	***
## PLOT35861	-1.66143	4.35738	-0.381	0.702999	
## PLOT35891	-13.55820	6.29305	-2.154	0.031239	*
## PLOT35902	-10.60668	4.35801	-2.434	0.014966	*
## PLOT35938	-27.49520	4.35841	-6.309	3.00e-10	***
## PLOT35939	-28.91893	3.84482	-7.522	6.13e-14	***
## PLOT35964	-8.03017	6.18102	-1.299	0.193932	
## PLOT35981	-13.39819	4.38431	-3.056	0.002253	**
## PLOT36073	-15.12215	3.93115	-3.847	0.000121	***

## PLOT36077	-8.71203	3.93048	-2.217	0.026689	*
## PLOT36095	-20.62782	4.49440	-4.590	4.52e-06	***
## PLOT36137	-19.60030	3.98282	-4.921	8.81e-07	***
## PLOT36221	-12.07590	3.93188	-3.071	0.002140	**
## PLOT36262	-24.03598	3.93383	-6.110	1.05e-09	***
## PLOT36268	-15.97993	4.35935	-3.666	0.000249	***
## PLOT36276	-19.96495	3.80534	-5.247	1.60e-07	***
## PLOT36289	0.68850	6.26262	0.110	0.912462	
## PLOT36309	-22.27122	3.98293	-5.592	2.34e-08	***
## PLOT36351	-13.46174	3.36412	-4.002	6.36e-05	***
## PLOT36466	-27.93151	4.36297	-6.402	1.64e-10	***
## PLOT36581	-32.51635	4.99495	-6.510	8.08e-11	***
## PLOT36603	-19.08166	4.38519	-4.351	1.37e-05	***
## PLOT36611	-8.31698	3.64789	-2.280	0.022643	*
## PLOT36624	-19.43843	6.29278	-3.089	0.002017	**
## PLOT36626	-16.15352	4.54242	-3.556	0.000379	***
## PLOT36646	-27.31218	4.36155	-6.262	4.04e-10	***
## PLOT36656	-16.97361	4.36022	-3.893	0.000100	***
## PLOT36710	-21.58850	3.64607	-5.921	3.36e-09	***
## PLOT36717	-6.35117	4.54065	-1.399	0.161939	
## PLOT36744	-19.30823	6.25936	-3.085	0.002046	**
## PLOT36765	-0.87696	4.87157	-0.180	0.857145	
## PLOT36797	-20.50963	3.73728	-5.488	4.22e-08	***
## PLOT36818	-15.46666	3.78290	-4.089	4.39e-05	***
## PLOT36819	-18.38030	4.38467	-4.192	2.80e-05	***
## PLOT36829	-6.33442	6.16236	-1.028	0.304025	
## PLOT36915	-27.31218	4.36155	-6.262	4.04e-10	***
## PLOT36969	-28.96728	4.36124	-6.642	3.34e-11	***
## PLOT37004	-14.53043	3.77463	-3.849	0.000119	***
## PLOT37005	-18.76180	3.41014	-5.502	3.90e-08	***
## PLOT37009	-23.26250	4.38589	-5.304	1.17e-07	***
## PLOT37087	-26.91580	4.35905	-6.175	7.02e-10	***
## PLOT37112	-5.72686	4.49868	-1.273	0.203060	
## PLOT37113	-17.09954	6.18156	-2.766	0.005687	**
## PLOT37125	-25.15031	3.77464	-6.663	2.90e-11	***
## PLOT37190	-14.29021	3.55771	-4.017	5.97e-05	***
## PLOT37199	-9.09657	3.78144	-2.406	0.016174	*
## PLOT37267	-22.77668	4.38671	-5.192	2.14e-07	***
## PLOT37443	-13.44037	3.78285	-3.553	0.000384	***
## PLOT37488	5.10821	4.36003	1.172	0.241401	
## PLOT37678	-18.16892	4.38592	-4.143	3.48e-05	***
## PLOT37695	-13.87282	4.35797	-3.183	0.001463	**
## PLOT37832	-16.13235	3.77626	-4.272	1.96e-05	***
## PLOT37877	-26.75698	4.36073	-6.136	8.96e-10	***
## PLOT37894	-3.49529	3.49824	-0.999	0.317755	
## PLOT37927	-23.75807	4.35879	-5.451	5.20e-08	***
## PLOT37969	-12.76823	3.41854	-3.735	0.000189	***
## PLOT37980	-17.85275	4.35762	-4.097	4.24e-05	***
## PLOT38008	-25.46990	6.16542	-4.131	3.66e-05	***
## PLOT38094	-26.31762	3.93138	-6.694	2.35e-11	***
## PLOT38105	-7.65836	3.93025	-1.949	0.051389	.
## PLOT38117	-9.94743	3.68405	-2.700	0.006949	**
## PLOT38135	-19.00326	3.93027	-4.835	1.36e-06	***
## PLOT38164	-9.02312	4.35728	-2.071	0.038415	*

## PLOT38202	0.46140	6.26114	0.074	0.941257	
## PLOT38319	-24.49209	6.29364	-3.892	0.000101	***
## PLOT38357	-35.55125	4.49826	-7.903	3.16e-15	***
## PLOT38446	-22.46913	3.84340	-5.846	5.27e-09	***
## PLOT38451	-22.15901	3.79494	-5.839	5.50e-09	***
## PLOT38494	-18.19837	4.38557	-4.150	3.37e-05	***
## PLOT38542	-15.24123	3.77713	-4.035	5.52e-05	***
## PLOT38571	-5.99548	4.38377	-1.368	0.171466	
## PLOT38575	-22.41427	4.35754	-5.144	2.77e-07	***
## PLOT38583	-19.00677	3.77502	-5.035	4.91e-07	***
## PLOT38617	-15.82884	4.99769	-3.167	0.001546	**
## PLOT38664	-19.50225	4.38592	-4.447	8.87e-06	***
## PLOT38669	-21.39091	3.72366	-5.745	9.62e-09	***
## PLOT38693	-4.56696	4.49489	-1.016	0.309651	
## PLOT38751	-13.19765	4.35772	-3.029	0.002467	**
## PLOT38864	-17.51962	4.49430	-3.898	9.79e-05	***
## PLOT38878	-16.34562	4.89573	-3.339	0.000846	***
## PLOT38896	-3.58120	3.43653	-1.042	0.297406	
## PLOT38919	-25.81609	6.25933	-4.124	3.76e-05	***
## PLOT38927	-15.37398	4.38531	-3.506	0.000458	***
## PLOT38929	-19.21625	4.38506	-4.382	1.19e-05	***
## PLOT38944	5.76025	4.35725	1.322	0.186217	
## PLOT39038	-15.36350	4.38399	-3.504	0.000461	***
## PLOT39089	-27.46466	4.36057	-6.298	3.20e-10	***
## PLOT39093	-12.67190	4.35738	-2.908	0.003648	**
## PLOT39116	-16.19759	4.53967	-3.568	0.000362	***
## PLOT39145	-28.07570	4.35729	-6.443	1.25e-10	***
## PLOT39156	-8.67343	4.87275	-1.780	0.075124	.
## PLOT39170	-28.26811	3.77380	-7.491	7.75e-14	***
## PLOT39206	-16.50967	4.38401	-3.766	0.000167	***
## PLOT39216	-16.38665	3.93213	-4.167	3.12e-05	***
## PLOT39234	-17.02749	3.39031	-5.022	5.24e-07	***
## PLOT39241	-20.60216	4.38514	-4.698	2.68e-06	***
## PLOT39255	-28.15969	4.36266	-6.455	1.16e-10	***
## PLOT39318	-28.12713	3.98271	-7.062	1.81e-12	***
## PLOT39399	-24.36516	5.00068	-4.872	1.13e-06	***
## PLOT39400	-25.42032	4.07603	-6.237	4.75e-10	***
## PLOT39452	-33.80185	4.22208	-8.006	1.39e-15	***
## PLOT39459	-19.43288	4.38474	-4.432	9.49e-06	***
## PLOT39536	-6.69632	6.26092	-1.070	0.284864	
## PLOT39541	-1.47726	3.98293	-0.371	0.710725	
## PLOT39543	-27.43334	3.93023	-6.980	3.24e-12	***
## PLOT39554	-28.02421	6.26108	-4.476	7.74e-06	***
## PLOT39619	-20.82402	4.38569	-4.748	2.10e-06	***
## PLOT39643	-27.74869	3.77350	-7.354	2.16e-13	***
## PLOT39714	-14.02095	4.35923	-3.216	0.001304	**
## PLOT39762	-22.55549	4.04982	-5.569	2.66e-08	***
## PLOT39764	-21.85493	4.35767	-5.015	5.43e-07	***
## PLOT39770	-15.92393	4.38496	-3.631	0.000284	***
## PLOT39799	-9.08420	4.35905	-2.084	0.037200	*
## PLOT39900	-20.68048	3.61024	-5.728	1.06e-08	***
## PLOT39969	-23.26250	4.38589	-5.304	1.17e-07	***
## PLOT39979	-14.09664	4.35978	-3.233	0.001230	**
## PLOT40035	-14.23938	4.38545	-3.247	0.001172	**

## PLOT40062	-22.69465	4.27078	-5.314	1.11e-07	***
## PLOT40064	-21.74257	4.49512	-4.837	1.35e-06	***
## PLOT40086	-11.15269	3.93328	-2.835	0.004590	**
## PLOT40089	-21.24879	3.93030	-5.406	6.66e-08	***
## PLOT40093	-22.39658	4.49411	-4.984	6.40e-07	***
## PLOT40219	-19.83506	4.22174	-4.698	2.68e-06	***
## PLOT40227	-26.42247	3.72354	-7.096	1.42e-12	***
## PLOT40270	-9.20501	4.07629	-2.258	0.023967	*
## PLOT40312	-21.37921	4.38633	-4.874	1.12e-06	***
## PLOT40387	-23.76512	4.38644	-5.418	6.24e-08	***
## PLOT40424	-24.74362	4.07724	-6.069	1.36e-09	***
## PLOT40430	-9.34455	4.99485	-1.871	0.061412	.
## PLOT40475	-21.79953	3.84414	-5.671	1.48e-08	***
## PLOT40492	-15.60668	4.35801	-3.581	0.000345	***
## PLOT40504	-4.63416	4.35945	-1.063	0.287814	
## PLOT40515	-15.82221	4.35908	-3.630	0.000286	***
## PLOT40717	-2.39005	4.35827	-0.548	0.583439	
## PLOT40856	-28.11582	4.22178	-6.660	2.96e-11	***
## PLOT40932	-25.82765	3.93033	-6.571	5.37e-11	***
## PLOT40957	-17.61372	4.38533	-4.017	5.97e-05	***
## PLOT40967	-19.68870	4.35786	-4.518	6.35e-06	***
## PLOT40981	-13.87768	4.38435	-3.165	0.001556	**
## PLOT41022	-23.27858	4.35874	-5.341	9.57e-08	***
## PLOT41102	-5.04841	4.05452	-1.245	0.213128	
## PLOT41116	-8.78861	6.16226	-1.426	0.153858	
## PLOT41161	-11.59685	4.99398	-2.322	0.020254	*
## PLOT41183	-27.58301	3.44604	-8.004	1.41e-15	***
## PLOT41239	-20.92211	4.04925	-5.167	2.45e-07	***
## PLOT41267	-20.36408	3.72893	-5.461	4.90e-08	***
## PLOT41287	-11.88546	4.49412	-2.645	0.008196	**
## PLOT41300	-5.97544	4.99429	-1.196	0.231562	
## PLOT41355	-14.13532	4.38407	-3.224	0.001269	**
## PLOT41381	2.94852	4.35769	0.677	0.498668	
## PLOT41413	-3.47949	3.77349	-0.922	0.356516	
## PLOT41483	-21.38554	4.38551	-4.876	1.11e-06	***
## PLOT41491	-39.61845	6.16663	-6.425	1.41e-10	***
## PLOT41545	7.77596	4.35834	1.784	0.074444	.
## PLOT41565	-28.38041	4.54488	-6.244	4.52e-10	***
## PLOT41579	-12.81355	4.38417	-2.923	0.003482	**
## PLOT41609	-25.46246	3.72375	-6.838	8.76e-12	***
## PLOT41642	-5.29937	4.38387	-1.209	0.226770	
## PLOT41651	-25.27858	4.35874	-5.800	6.96e-09	***
## PLOT41682	-32.47732	4.35887	-7.451	1.05e-13	***
## PLOT41743	-21.51631	4.54283	-4.736	2.22e-06	***
## PLOT41746	-2.40074	4.36037	-0.551	0.581940	
## PLOT41758	-23.45419	4.87268	-4.813	1.52e-06	***
## PLOT41822	-20.96291	3.46517	-6.050	1.53e-09	***
## PLOT41852	-9.30195	4.04977	-2.297	0.021655	*
## PLOT41943	-8.08075	3.78281	-2.136	0.032701	*
## PLOT41952	-27.04298	4.36202	-6.200	6.00e-10	***
## PLOT42035	-7.51003	4.35778	-1.723	0.084870	.
## PLOT42066	-7.79909	4.35868	-1.789	0.073609	.
## PLOT42087	8.68455	6.16212	1.409	0.158780	
## PLOT42106	-18.74941	6.18105	-3.033	0.002428	**

## PLOT42129	-1.12533	4.07706	-0.276	0.782545	
## PLOT42167	-14.21625	4.38506	-3.242	0.001193	**
## PLOT42199	-25.88635	4.35938	-5.938	3.03e-09	***
## PLOT42207	2.08903	5.00719	0.417	0.676542	
## PLOT42259	-16.43986	3.55787	-4.621	3.90e-06	***
## PLOT42286	-8.98102	4.35793	-2.061	0.039357	*
## PLOT42303	-16.56893	4.35819	-3.802	0.000145	***
## PLOT42316	-15.15412	3.54669	-4.273	1.96e-05	***
## PLOT42361	-11.74128	4.35791	-2.694	0.007073	**
## PLOT42366	-23.09275	3.68497	-6.267	3.92e-10	***
## PLOT42429	-25.64818	3.72367	-6.888	6.19e-12	***
## PLOT42446	7.29232	4.35726	1.674	0.094256	.
## PLOT42496	-19.89972	4.38626	-4.537	5.81e-06	***
## PLOT42544	-17.47470	3.77488	-4.629	3.74e-06	***
## PLOT42605	-17.40488	4.35788	-3.994	6.57e-05	***
## PLOT42614	-21.27225	4.35948	-4.880	1.09e-06	***
## PLOT42629	-26.81282	6.26235	-4.282	1.88e-05	***
## PLOT42648	-14.96916	3.59099	-4.169	3.10e-05	***
## PLOT42670	-36.86540	4.35726	-8.461	< 2e-16	***
## PLOT42691	7.99673	6.16458	1.297	0.194605	
## PLOT42749	-26.41618	5.03862	-5.243	1.63e-07	***
## PLOT42812	-17.68708	4.10546	-4.308	1.67e-05	***
## PLOT42892	-3.40162	4.35843	-0.780	0.435144	
## PLOT42920	-5.67734	4.99438	-1.137	0.255686	
## PLOT43011	-26.85799	6.16273	-4.358	1.33e-05	***
## PLOT43017	-10.32721	6.26019	-1.650	0.099059	.
## PLOT43026	-12.04121	4.49572	-2.678	0.007416	**
## PLOT43085	-7.20687	6.18078	-1.166	0.243651	
## PLOT43120	-36.81609	4.22141	-8.721	< 2e-16	***
## PLOT43166	-10.33405	4.38414	-2.357	0.018445	*
## PLOT43195	-23.27246	3.93024	-5.921	3.35e-09	***
## PLOT43202	-9.57380	4.38416	-2.184	0.029017	*
## PLOT43210	-9.72479	5.00060	-1.945	0.051851	.
## PLOT43284	-4.59512	4.35788	-1.054	0.291721	
## PLOT43290	-25.30279	4.35781	-5.806	6.68e-09	***
## PLOT43311	-14.90637	3.58680	-4.156	3.28e-05	***
## PLOT43317	-15.36408	4.49817	-3.416	0.000640	***
## PLOT43332	-13.08273	4.27053	-3.063	0.002197	**
## PLOT43484	-11.35251	4.49849	-2.524	0.011638	*
## PLOT43597	-25.17011	4.54431	-5.539	3.16e-08	***
## PLOT43663	-16.40789	4.53965	-3.614	0.000303	***
## PLOT43711	-6.32905	3.53967	-1.788	0.073816	.
## PLOT43744	-26.41318	4.35861	-6.060	1.44e-09	***
## PLOT43757	0.28797	6.25945	0.046	0.963307	
## PLOT43772	-8.07679	4.35745	-1.854	0.063847	.
## PLOT43842	-3.13008	4.38373	-0.714	0.475238	
## PLOT43859	-30.68238	4.35836	-7.040	2.12e-12	***
## PLOT43887	-9.78303	3.93123	-2.489	0.012851	*
## PLOT43903	-10.50064	6.25930	-1.678	0.093471	.
## PLOT43917	-15.59060	4.38496	-3.555	0.000380	***
## PLOT43925	2.29953	4.36413	0.527	0.598270	
## PLOT43996	-22.89267	4.35866	-5.252	1.55e-07	***
## PLOT44027	-23.60715	4.22186	-5.592	2.34e-08	***
## PLOT44072	-17.96988	3.77626	-4.759	1.99e-06	***

## PLOT44257	-13.98943	3.47831	-4.022	5.84e-05	***
## PLOT44300	-12.83667	4.38442	-2.928	0.003425	**
## PLOT44314	-4.61844	4.49388	-1.028	0.304121	
## PLOT44400	-16.46865	6.18108	-2.664	0.007732	**
## PLOT44424	-22.16892	6.18239	-3.586	0.000338	***
## PLOT44430	-19.04407	4.35968	-4.368	1.27e-05	***
## PLOT44458	-22.31327	4.35935	-5.118	3.17e-07	***
## PLOT44460	-24.36579	6.29268	-3.872	0.000109	***
## PLOT44461	-21.11271	4.22330	-4.999	5.91e-07	***
## PLOT44472	-8.49555	4.23368	-2.007	0.044827	*
## PLOT44480	-24.47317	4.35734	-5.617	2.03e-08	***
## PLOT44483	-9.59288	6.29341	-1.524	0.127488	
## PLOT44496	-12.64987	6.16222	-2.053	0.040130	*
## PLOT44515	-12.49793	3.77377	-3.312	0.000932	***
## PLOT44536	-22.99062	4.35902	-5.274	1.38e-07	***
## PLOT44542	-18.61822	3.52468	-5.282	1.32e-07	***
## PLOT44567	-3.32592	3.77443	-0.881	0.378257	
## PLOT44571	-13.81936	6.26121	-2.207	0.027339	*
## PLOT44653	-22.04588	6.18268	-3.566	0.000365	***
## PLOT44655	-8.91051	3.56137	-2.502	0.012374	*
## PLOT44745	-6.15079	3.89725	-1.578	0.114559	
## PLOT44771	-28.57110	3.93025	-7.270	4.02e-13	***
## PLOT44820	-23.63161	4.38486	-5.389	7.32e-08	***
## PLOT44856	-16.28926	4.49393	-3.625	0.000291	***
## PLOT44888	-20.62348	4.35893	-4.731	2.28e-06	***
## PLOT44932	-3.05366	4.35761	-0.701	0.483473	
## PLOT44949	-14.60600	4.50482	-3.242	0.001192	**
## PLOT44957	-18.00775	3.77942	-4.765	1.93e-06	***
## PLOT45043	-11.76569	4.49478	-2.618	0.008874	**
## PLOT45089	-15.28770	4.51449	-3.386	0.000712	***
## PLOT45095	-13.41311	4.22137	-3.177	0.001493	**
## PLOT45107	-19.17234	3.56155	-5.383	7.57e-08	***
## PLOT45129	-15.06486	6.18125	-2.437	0.014828	*
## PLOT45165	-14.15844	4.38429	-3.229	0.001247	**
## PLOT45187	-12.52232	3.58995	-3.488	0.000490	***
## PLOT45222	-15.23414	4.38463	-3.474	0.000515	***
## PLOT45231	-29.83812	4.49464	-6.639	3.42e-11	***
## PLOT45282	-10.52486	3.72375	-2.826	0.004721	**
## PLOT45289	-10.64136	4.35846	-2.442	0.014651	*
## PLOT45315	-25.96199	3.98345	-6.517	7.68e-11	***
## PLOT45323	-16.62005	4.38470	-3.790	0.000152	***
## PLOT45337	-18.73152	4.38431	-4.272	1.96e-05	***
## PLOT45342	-25.06631	4.49452	-5.577	2.54e-08	***
## PLOT45400	-23.82434	3.98328	-5.981	2.33e-09	***
## PLOT45431	-22.24835	4.99517	-4.454	8.57e-06	***
## PLOT45540	-16.62980	4.35830	-3.816	0.000137	***
## PLOT45553	-6.47208	4.35810	-1.485	0.137574	
## PLOT45586	-11.62348	4.35893	-2.667	0.007681	**
## PLOT45599	-19.15735	4.38569	-4.368	1.27e-05	***
## PLOT45629	-13.03469	4.35731	-2.991	0.002787	**
## PLOT45667	-12.66739	4.38414	-2.889	0.003873	**
## PLOT45694	-6.18909	6.29370	-0.983	0.325458	
## PLOT45706	-20.01119	6.18219	-3.237	0.001214	**
## PLOT45760	-14.62233	3.98402	-3.670	0.000244	***

## PLOT45827	-24.40814	4.49402	-5.431	5.80e-08	***
## PLOT45892	-17.56133	3.78154	-4.644	3.48e-06	***
## PLOT45933	-13.22258	4.38448	-3.016	0.002573	**
## PLOT45935	-26.79711	6.26005	-4.281	1.89e-05	***
## PLOT45952	-25.65204	3.93040	-6.527	7.23e-11	***
## PLOT46092	-25.89176	3.77707	-6.855	7.78e-12	***
## PLOT46097	-14.32068	4.35756	-3.286	0.001020	**
## PLOT46121	7.50394	4.99890	1.501	0.133373	
## PLOT46134	-17.02782	3.77426	-4.512	6.55e-06	***
## PLOT46135	-26.32721	4.49492	-5.857	4.94e-09	***
## PLOT46187	-23.89267	4.35866	-5.482	4.37e-08	***
## PLOT46219	-8.98283	4.38446	-2.049	0.040522	*
## PLOT46267	-16.89891	3.72596	-4.535	5.85e-06	***
## PLOT46314	-17.84315	3.42015	-5.217	1.87e-07	***
## PLOT46329	-4.59484	4.10016	-1.121	0.262478	
## PLOT46368	-21.02908	4.38511	-4.796	1.66e-06	***
## PLOT46405	-24.51635	6.26010	-3.916	9.08e-05	***
## PLOT46408	-33.69077	4.87299	-6.914	5.16e-12	***
## PLOT46422	-22.60216	4.38514	-5.154	2.62e-07	***
## PLOT46431	-13.97651	3.80554	-3.673	0.000242	***
## PLOT46462	-15.88744	4.35795	-3.646	0.000269	***
## PLOT46465	-17.67122	4.49930	-3.928	8.67e-05	***
## PLOT46525	-5.96762	3.72701	-1.601	0.109384	
## PLOT46540	-17.83206	3.78306	-4.714	2.48e-06	***
## PLOT46596	-14.81806	4.35739	-3.401	0.000676	***
## PLOT46601	-9.60035	4.35856	-2.203	0.027654	*
## PLOT46698	-5.20247	3.70013	-1.406	0.159765	
## PLOT46707	-11.89702	3.93086	-3.027	0.002483	**
## PLOT46713	-6.17887	4.49368	-1.375	0.169174	
## PLOT46790	-12.99891	4.35765	-2.983	0.002865	**
## PLOT46813	-30.43461	3.77972	-8.052	9.58e-16	***
## PLOT46831	-11.73204	3.81815	-3.073	0.002130	**
## PLOT46848	-22.66721	3.61296	-6.274	3.75e-10	***
## PLOT46968	-12.71203	3.93048	-3.234	0.001226	**
## PLOT46972	-14.85347	4.38536	-3.387	0.000711	***
## PLOT47020	-20.55301	4.35938	-4.715	2.47e-06	***
## PLOT47049	-16.02836	3.77379	-4.247	2.19e-05	***
## PLOT47096	-26.54414	3.63029	-7.312	2.95e-13	***
## PLOT47099	-13.77254	4.38424	-3.141	0.001689	**
## PLOT47110	-20.58396	4.49900	-4.575	4.84e-06	***
## PLOT47133	-18.08021	3.78379	-4.778	1.81e-06	***
## PLOT47149	-22.58013	4.38384	-5.151	2.67e-07	***
## PLOT47150	-19.29195	4.89687	-3.940	8.24e-05	***
## PLOT47215	-27.11256	6.26036	-4.331	1.51e-05	***
## PLOT47255	-29.90423	4.35885	-6.861	7.48e-12	***
## PLOT47267	-20.64841	4.38599	-4.708	2.55e-06	***
## PLOT47302	-11.15031	4.35825	-2.558	0.010537	*
## PLOT47304	-29.51882	3.72421	-7.926	2.63e-15	***
## PLOT47309	-5.55410	4.35795	-1.274	0.202540	
## PLOT47318	-32.05283	4.10132	-7.815	6.34e-15	***
## PLOT47391	-32.47099	4.35965	-7.448	1.07e-13	***
## PLOT47403	-12.17976	3.77438	-3.227	0.001257	**
## PLOT47420	3.89828	4.38367	0.889	0.373889	
## PLOT47487	-11.02442	3.93414	-2.802	0.005090	**

## PLOT47504	-11.22077	4.35795	-2.575	0.010052	*
## PLOT47553	-19.14194	3.59211	-5.329	1.02e-07	***
## PLOT47564	-27.09685	6.25932	-4.329	1.52e-05	***
## PLOT47575	-18.99082	4.50092	-4.219	2.48e-05	***
## PLOT47582	-36.18717	4.35725	-8.305	< 2e-16	***
## PLOT47629	-8.42873	4.38364	-1.923	0.054552	.
## PLOT47642	-13.49541	3.93035	-3.434	0.000599	***
## PLOT47830	-37.97470	4.35846	-8.713	< 2e-16	***
## PLOT47945	-23.27334	4.35801	-5.340	9.59e-08	***
## PLOT48011	-8.96603	4.38387	-2.045	0.040871	*
## PLOT48020	-17.04312	3.59115	-4.746	2.12e-06	***
## PLOT48050	-18.21625	4.38506	-4.154	3.31e-05	***
## PLOT48097	-22.48888	4.35908	-5.159	2.55e-07	***
## PLOT48103	-24.17452	3.77381	-6.406	1.60e-10	***
## PLOT48127	-24.93280	4.49380	-5.548	3.00e-08	***
## PLOT48150	-12.17447	3.77897	-3.222	0.001281	**
## PLOT48176	-23.76406	4.99396	-4.759	1.99e-06	***
## PLOT48225	-7.74737	4.04961	-1.913	0.055777	.
## PLOT48233	-32.35734	4.36628	-7.411	1.41e-13	***
## PLOT48275	-20.28039	4.38533	-4.625	3.82e-06	***
## PLOT48334	-8.35013	4.35744	-1.916	0.055371	.
## PLOT48368	-16.46759	4.22273	-3.900	9.72e-05	***
## PLOT48434	-24.89392	3.51564	-7.081	1.58e-12	***
## PLOT48461	-11.75320	3.49438	-3.363	0.000774	***
## PLOT48482	-21.35033	4.49460	-4.750	2.07e-06	***
## PLOT48521	-14.03463	3.98310	-3.524	0.000429	***
## PLOT48528	-16.32207	3.44903	-4.732	2.27e-06	***
## PLOT48530	-5.84555	4.36115	-1.340	0.180172	
## PLOT48550	-13.44372	4.35743	-3.085	0.002042	**
## PLOT48561	-22.04588	6.18268	-3.566	0.000365	***
## PLOT48562	-13.74288	3.61296	-3.804	0.000144	***
## PLOT48800	-27.71074	4.35968	-6.356	2.21e-10	***
## PLOT48816	-13.17524	4.38517	-3.005	0.002670	**
## PLOT48850	-20.04064	4.38531	-4.570	4.97e-06	***
## PLOT48883	-27.05971	4.22328	-6.407	1.58e-10	***
## PLOT48904	-24.99515	3.98278	-6.276	3.70e-10	***
## PLOT48916	-32.21743	4.22356	-7.628	2.72e-14	***
## PLOT48917	-21.59117	4.49614	-4.802	1.60e-06	***
## PLOT48942	-25.99362	4.53994	-5.726	1.08e-08	***
## PLOT48948	-24.60035	4.35856	-5.644	1.73e-08	***
## PLOT48950	-20.84946	3.72477	-5.598	2.26e-08	***
## PLOT48956	-11.70985	4.49426	-2.606	0.009194	**
## PLOT49006	-17.32773	4.38461	-3.952	7.83e-05	***
## PLOT49069	-15.88401	4.38396	-3.623	0.000293	***
## PLOT49177	-27.10208	4.49395	-6.031	1.72e-09	***
## PLOT49207	-12.26722	4.49374	-2.730	0.006353	**
## PLOT49208	-6.18105	4.49497	-1.375	0.169146	
## PLOT49217	2.34884	3.73059	0.630	0.528968	
## PLOT49251	-15.39187	4.38484	-3.510	0.000451	***
## PLOT49262	-11.99258	4.35806	-2.752	0.005943	**
## PLOT49302	-18.60526	3.84424	-4.840	1.33e-06	***
## PLOT49305	-28.79909	4.35868	-6.607	4.22e-11	***
## PLOT49317	-14.47389	4.38465	-3.301	0.000968	***
## PLOT49349	-24.03158	3.61315	-6.651	3.14e-11	***

## PLOT49375	-19.45439	4.49376	-4.329	1.52e-05	***
## PLOT49381	-26.79385	4.35797	-6.148	8.29e-10	***
## PLOT49402	5.58028	4.36395	1.279	0.201040	
## PLOT49403	-26.91936	3.62322	-7.430	1.23e-13	***
## PLOT49475	-15.64157	4.49377	-3.481	0.000503	***
## PLOT49485	-18.95157	3.55877	-5.325	1.04e-07	***
## PLOT49510	-16.64317	3.80554	-4.373	1.24e-05	***
## PLOT49550	-17.25836	4.38391	-3.937	8.34e-05	***
## PLOT49565	-22.07955	3.55774	-6.206	5.76e-10	***
## PLOT49568	-17.20081	3.77383	-4.558	5.26e-06	***
## PLOT49584	-24.57416	4.49573	-5.466	4.77e-08	***
## PLOT49585	-29.01478	4.05020	-7.164	8.70e-13	***
## PLOT49698	-28.88546	3.93074	-7.349	2.24e-13	***
## PLOT49711	-22.88899	3.85300	-5.941	2.98e-09	***
## PLOT49715	-20.87533	4.87258	-4.284	1.86e-05	***
## PLOT49742	-6.67823	4.35726	-1.533	0.125406	
## PLOT49793	-21.83712	3.61298	-6.044	1.58e-09	***
## PLOT49810	-6.36911	3.77367	-1.688	0.091502	.
## PLOT49860	-25.08654	4.22253	-5.941	2.98e-09	***
## PLOT49874	-24.09488	3.93485	-6.123	9.68e-10	***
## PLOT49882	-19.13044	3.93143	-4.866	1.17e-06	***
## PLOT49892	-11.31565	3.93185	-2.878	0.004016	**
## PLOT50141	-4.19037	3.59013	-1.167	0.243176	
## PLOT50157	-16.23414	4.38463	-3.703	0.000215	***
## PLOT50206	-14.13423	4.38528	-3.223	0.001274	**
## PLOT50223	-36.49309	3.55935	-10.253	< 2e-16	***
## PLOT50247	-15.67053	4.05785	-3.862	0.000114	***
## PLOT50271	-17.47208	4.35810	-4.009	6.16e-05	***
## PLOT50282	-15.32919	3.77459	-4.061	4.94e-05	***
## PLOT50318	-13.07481	3.62644	-3.605	0.000314	***
## PLOT50348	-21.71887	4.38551	-4.952	7.51e-07	***
## PLOT50359	-23.31327	4.35935	-5.348	9.20e-08	***
## PLOT50361	0.82201	4.50104	0.183	0.855097	
## PLOT50381	-21.39710	4.38573	-4.879	1.09e-06	***
## PLOT50431	-11.94634	4.35761	-2.741	0.006133	**
## PLOT50434	-27.54778	4.35848	-6.320	2.78e-10	***
## PLOT50437	-14.78613	3.38079	-4.374	1.24e-05	***
## PLOT50498	11.64432	4.99883	2.329	0.019867	*
## PLOT50645	-8.68232	3.77893	-2.298	0.021618	*
## PLOT50687	-19.65836	6.25931	-3.141	0.001693	**
## PLOT50691	-20.55301	3.77595	-5.443	5.42e-08	***
## PLOT50772	-10.93389	4.49374	-2.433	0.014995	*
## PLOT50821	-29.34523	3.66385	-8.009	1.35e-15	***
## PLOT50845	-16.95375	4.35735	-3.891	0.000101	***
## PLOT50900	-33.42145	3.72370	-8.975	< 2e-16	***
## PLOT50966	-6.20284	3.70568	-1.674	0.094203	.
## PLOT50968	-20.88744	4.35795	-4.793	1.68e-06	***
## PLOT50996	-5.80038	6.25978	-0.927	0.354163	
## PLOT51009	-12.27348	3.63233	-3.379	0.000732	***
## PLOT51041	-1.64878	4.35729	-0.378	0.705149	
## PLOT51161	-13.51082	3.72358	-3.628	0.000287	***
## PLOT51164	-9.56564	3.93676	-2.430	0.015133	*
## PLOT51241	-30.79167	4.36164	-7.060	1.84e-12	***
## PLOT51249	16.10406	4.35773	3.696	0.000221	***

## PLOT51278	-19.84240	3.54950	-5.590	2.36e-08	***
## PLOT51435	-16.67895	4.38426	-3.804	0.000144	***
## PLOT51483	-8.25655	4.35745	-1.895	0.058161	.
## PLOT51487	-21.89114	3.77366	-5.801	6.90e-09	***
## PLOT51496	-22.59620	4.35728	-5.186	2.21e-07	***
## PLOT51548	-12.64660	6.16357	-2.052	0.040226	*
## PLOT51656	-10.71400	3.77361	-2.839	0.004537	**
## PLOT51669	-18.96865	3.64514	-5.204	2.01e-07	***
## PLOT51683	-11.85799	6.16273	-1.924	0.054379	.
## PLOT51711	-30.71530	6.26314	-4.904	9.61e-07	***
## PLOT51768	-26.12400	3.68089	-7.097	1.41e-12	***
## PLOT51845	-24.85710	3.93026	-6.325	2.71e-10	***
## PLOT51890	-8.07679	4.35745	-1.854	0.063847	.
## PLOT51937	-19.45600	4.38509	-4.437	9.28e-06	***
## PLOT51972	-13.15844	4.38429	-3.001	0.002699	**
## PLOT51974	-7.47037	3.78184	-1.975	0.048273	*
## PLOT52012	-19.85980	4.38472	-4.529	6.02e-06	***
## PLOT52042	-11.95277	3.40975	-3.505	0.000459	***
## PLOT52093	-19.12215	3.93115	-4.864	1.18e-06	***
## PLOT52117	-12.88518	3.78231	-3.407	0.000661	***
## PLOT52131	-9.27858	4.35874	-2.129	0.033313	*
## PLOT52136	-16.50858	4.38517	-3.765	0.000168	***
## PLOT52144	-26.41263	3.77601	-6.995	2.92e-12	***
## PLOT52186	-16.58416	3.89844	-4.254	2.13e-05	***
## PLOT52192	-19.00596	4.38476	-4.335	1.48e-05	***
## PLOT52204	-24.53992	3.77388	-6.503	8.47e-11	***
## PLOT52227	-20.00829	3.77789	-5.296	1.22e-07	***
## PLOT52261	-10.70768	3.55769	-3.010	0.002625	**
## PLOT52267	-22.56115	4.38525	-5.145	2.76e-07	***
## PLOT52273	-24.99782	3.77530	-6.621	3.84e-11	***
## PLOT52308	-12.35570	3.92794	-3.146	0.001665	**
## PLOT52309	-23.91761	4.38566	-5.454	5.12e-08	***
## PLOT52314	-17.83558	4.38592	-4.067	4.83e-05	***
## PLOT52317	-32.79167	4.36164	-7.518	6.29e-14	***
## PLOT52365	-14.35901	3.61675	-3.970	7.26e-05	***
## PLOT52399	-11.99115	4.99411	-2.401	0.016375	*
## PLOT52437	-20.20179	4.36000	-4.633	3.67e-06	***
## PLOT52493	-21.50225	3.80656	-5.649	1.68e-08	***
## PLOT52570	-12.63725	4.22985	-2.988	0.002822	**
## PLOT52586	-9.92756	3.93023	-2.526	0.011562	*
## PLOT52636	-2.97861	3.93087	-0.758	0.448629	
## PLOT52645	-5.64655	5.03569	-1.121	0.262199	
## PLOT52658	-26.25862	3.44580	-7.620	2.88e-14	***
## PLOT52707	-9.81093	4.10436	-2.390	0.016859	*
## PLOT52710	-28.12086	4.35851	-6.452	1.18e-10	***
## PLOT52725	-16.03790	6.29660	-2.547	0.010886	*
## PLOT52776	-23.39710	4.38573	-5.335	9.88e-08	***
## PLOT52823	-17.97651	6.18176	-2.908	0.003650	**
## PLOT52827	-21.46756	4.38528	-4.895	1.00e-06	***
## PLOT52844	-14.79566	3.80492	-3.889	0.000102	***
## PLOT52872	-26.04318	6.25972	-4.160	3.22e-05	***
## PLOT52919	11.44569	6.25952	1.829	0.067516	.
## PLOT52958	-16.01571	4.35836	-3.675	0.000240	***
## PLOT52964	2.75212	4.38366	0.628	0.530149	

## PLOT52967	-13.73043	6.18225	-2.221	0.026389	*
## PLOT52977	-27.94160	3.72357	-7.504	7.01e-14	***
## PLOT53035	-19.71426	3.78477	-5.209	1.96e-07	***
## PLOT53072	-4.47135	3.55988	-1.256	0.209145	
## PLOT53106	-32.94407	3.72383	-8.847	< 2e-16	***
## PLOT53113	0.93405	4.38367	0.213	0.831275	
## PLOT53126	-31.47148	4.27044	-7.370	1.92e-13	***
## PLOT53172	-28.84228	4.35726	-6.619	3.89e-11	***
## PLOT53198	-27.79603	4.35742	-6.379	1.90e-10	***
## PLOT53294	-33.94001	4.35801	-7.788	7.86e-15	***
## PLOT53359	-5.27168	3.61287	-1.459	0.144574	
## PLOT53377	-13.93368	3.77500	-3.691	0.000225	***
## PLOT53386	-12.50044	4.35929	-2.868	0.004150	**
## PLOT53393	-28.84603	3.77675	-7.638	2.52e-14	***
## PLOT53399	-10.69684	4.38399	-2.440	0.014714	*
## PLOT53410	-11.08529	3.77794	-2.934	0.003355	**
## PLOT53462	-26.45175	3.68080	-7.186	7.38e-13	***
## PLOT53506	-19.61372	4.38533	-4.473	7.86e-06	***
## PLOT53615	-12.57064	3.80478	-3.304	0.000959	***
## PLOT53629	-6.76730	4.38382	-1.544	0.122709	
## PLOT53655	-27.58879	4.35839	-6.330	2.61e-10	***
## PLOT53661	-12.05040	4.35890	-2.765	0.005716	**
## PLOT53663	-31.28274	3.72664	-8.394	< 2e-16	***
## PLOT53738	-20.25457	6.25935	-3.236	0.001219	**
## PLOT53762	-0.98916	4.38404	-0.226	0.821498	
## PLOT53799	-17.04318	6.25972	-2.723	0.006493	**
## PLOT53840	-15.54959	4.38506	-3.546	0.000394	***
## PLOT53854	-27.51635	3.72486	-7.387	1.68e-13	***
## PLOT53862	-21.30912	3.55796	-5.989	2.22e-09	***
## PLOT53863	-20.84715	4.38616	-4.753	2.05e-06	***
## PLOT53881	-20.08964	3.93658	-5.103	3.43e-07	***
## PLOT53885	-13.68877	3.59063	-3.812	0.000139	***
## PLOT53898	-13.47208	4.35810	-3.091	0.002001	**
## PLOT53902	-22.50282	3.93191	-5.723	1.09e-08	***
## PLOT53945	-26.16622	6.25959	-4.180	2.95e-05	***
## PLOT54028	-27.11977	4.36030	-6.220	5.29e-10	***
## PLOT54069	-21.83027	3.93047	-5.554	2.90e-08	***
## PLOT54072	-17.20112	4.50024	-3.822	0.000133	***
## PLOT54080	-27.31365	3.64551	-7.492	7.65e-14	***
## PLOT54133	-10.60587	3.80462	-2.788	0.005325	**
## PLOT54184	-29.14398	4.35887	-6.686	2.48e-11	***
## PLOT54190	-16.10587	4.38424	-3.674	0.000241	***
## PLOT54256	-15.65583	4.38404	-3.571	0.000358	***
## PLOT54295	-19.76459	3.68338	-5.366	8.33e-08	***
## PLOT54395	-4.08726	4.35732	-0.938	0.348268	
## PLOT54480	-22.81246	4.38548	-5.202	2.03e-07	***
## PLOT54491	-22.30429	3.37685	-6.605	4.28e-11	***
## PLOT54560	-23.08479	3.55807	-6.488	9.33e-11	***
## PLOT54604	-17.25457	3.93032	-4.390	1.15e-05	***
## PLOT54611	-11.28039	4.38533	-2.572	0.010124	*
## PLOT54612	-18.53803	6.18166	-2.999	0.002720	**
## PLOT54681	-13.66967	3.98337	-3.432	0.000604	***
## PLOT54682	-13.87768	4.38435	-3.165	0.001556	**
## PLOT54712	-17.45600	4.38509	-3.981	6.94e-05	***

## PLOT54742	-23.00487	4.38648	-5.244	1.62e-07	***
## PLOT54777	-21.31979	4.49373	-4.744	2.14e-06	***
## PLOT54879	-13.87136	4.38488	-3.163	0.001566	**
## PLOT54895	-17.02272	3.39565	-5.013	5.50e-07	***
## PLOT54899	-18.38422	3.98273	-4.616	3.99e-06	***
## PLOT54920	-18.03360	4.35799	-4.138	3.55e-05	***
## PLOT55003	-27.10297	4.35899	-6.218	5.35e-10	***
## PLOT55017	-11.03017	4.38399	-2.516	0.011893	*
## PLOT55022	-16.29195	6.18212	-2.635	0.008425	**
## PLOT55049	-9.32830	4.49667	-2.074	0.038072	*
## PLOT55056	-17.49215	6.16228	-2.839	0.004545	**
## PLOT55151	-14.94379	3.57746	-4.177	2.99e-05	***
## PLOT55193	-26.40597	4.49409	-5.876	4.42e-09	***
## PLOT55195	-5.17670	6.16246	-0.840	0.400917	
## PLOT55204	-18.73515	4.49378	-4.169	3.10e-05	***
## PLOT55355	-26.09773	4.35819	-5.988	2.23e-09	***
## PLOT55369	5.27967	4.35761	1.212	0.225709	
## PLOT55371	-18.46124	3.80671	-4.850	1.27e-06	***
## PLOT55373	-1.08726	4.35732	-0.250	0.802963	
## PLOT55389	-14.16236	3.98271	-3.556	0.000379	***
## PLOT55390	-29.36495	4.49415	-6.534	6.88e-11	***
## PLOT55408	-16.61689	4.10548	-4.047	5.24e-05	***
## PLOT55409	-34.49629	4.35746	-7.917	2.84e-15	***
## PLOT55499	-18.09322	4.38539	-4.126	3.74e-05	***
## PLOT55500	-10.80427	3.98328	-2.712	0.006697	**
## PLOT55544	-28.30714	4.49377	-6.299	3.18e-10	***
## PLOT55563	-17.54026	3.85395	-4.551	5.43e-06	***
## PLOT55618	-29.35799	3.77454	-7.778	8.50e-15	***
## PLOT55628	-14.84395	3.45322	-4.299	1.74e-05	***
## PLOT55654	-29.53424	4.49442	-6.571	5.37e-11	***
## PLOT55742	3.13025	6.25939	0.500	0.617030	
## PLOT55773	-13.27704	3.72362	-3.566	0.000366	***
## PLOT55801	-7.63933	3.54577	-2.154	0.031238	*
## PLOT55808	-29.43376	4.04922	-7.269	4.04e-13	***
## PLOT55828	-15.60216	4.38514	-3.558	0.000376	***
## PLOT55834	-23.89070	4.49470	-5.315	1.10e-07	***
## PLOT55847	-27.53231	3.77891	-7.286	3.57e-13	***
## PLOT55907	-20.83776	6.18082	-3.371	0.000752	***
## PLOT55918	-23.67786	4.38563	-5.399	6.94e-08	***
## PLOT55947	-20.84425	4.36178	-4.779	1.80e-06	***
## PLOT55958	-26.51635	6.26010	-4.236	2.31e-05	***
## PLOT56009	-27.76222	4.36216	-6.364	2.09e-10	***
## PLOT56028	-18.81251	4.10015	-4.588	4.55e-06	***
## PLOT56036	-26.37049	3.55769	-7.412	1.40e-13	***
## PLOT56038	-18.04326	3.80641	-4.740	2.18e-06	***
## PLOT56084	-20.53747	3.76734	-5.451	5.18e-08	***
## PLOT56109	-17.50334	6.18133	-2.832	0.004645	**
## PLOT56116	-6.31048	3.73216	-1.691	0.090915	.
## PLOT56145	-20.68942	4.38585	-4.717	2.44e-06	***
## PLOT56198	-23.44968	4.38582	-5.347	9.26e-08	***
## PLOT56201	-21.89412	3.78209	-5.789	7.41e-09	***
## PLOT56279	-22.53170	4.38557	-5.138	2.86e-07	***
## PLOT56281	-21.43288	4.38474	-4.888	1.04e-06	***
## PLOT56283	-26.06719	4.36018	-5.978	2.37e-09	***

## PLOT56329	-27.83486	3.77423	-7.375	1.85e-13	***
## PLOT56398	-16.71887	4.38551	-3.812	0.000139	***
## PLOT56405	-26.98952	6.26060	-4.311	1.65e-05	***
## PLOT56406	-18.90081	4.38463	-4.311	1.65e-05	***
## PLOT56434	-5.77700	4.53981	-1.273	0.203233	
## PLOT56483	-8.61953	3.93154	-2.192	0.028385	*
## PLOT56505	-24.36133	4.38702	-5.553	2.92e-08	***
## PLOT56539	-7.17670	3.55833	-2.017	0.043749	*
## PLOT56567	-12.07041	3.77999	-3.193	0.001413	**
## PLOT56581	-7.40539	3.59208	-2.062	0.039286	*
## PLOT56612	-20.18731	3.89898	-5.178	2.31e-07	***
## PLOT56665	-28.52356	6.16385	-4.628	3.77e-06	***
## PLOT56679	-29.46704	4.49435	-6.556	5.93e-11	***
## PLOT56761	-9.79994	3.72385	-2.632	0.008516	**
## PLOT56775	-14.32277	3.57839	-4.003	6.33e-05	***
## PLOT56784	-12.05366	4.35761	-2.766	0.005689	**
## PLOT56826	-9.12673	3.72551	-2.450	0.014320	*
## PLOT56834	-12.83486	4.35790	-2.945	0.003239	**
## PLOT56896	-14.05040	6.16325	-2.280	0.022657	*
## PLOT56918	-15.38502	3.93085	-3.914	9.17e-05	***
## PLOT56932	-16.79810	4.87156	-3.448	0.000568	***
## PLOT56979	-18.74832	4.38519	-4.275	1.94e-05	***
## PLOT57057	-12.60777	4.35731	-2.893	0.003823	**
## PLOT57058	-17.99258	4.35806	-4.129	3.70e-05	***
## PLOT57099	-9.79042	4.38397	-2.233	0.025567	*
## PLOT57106	-15.18157	4.38457	-3.463	0.000539	***
## PLOT57123	-6.38809	4.87288	-1.311	0.189922	
## PLOT57170	-17.68258	4.49380	-3.935	8.41e-05	***
## PLOT57211	-20.73360	4.51423	-4.593	4.45e-06	***
## PLOT57237	-22.46756	4.38528	-5.123	3.09e-07	***
## PLOT57263	-18.42655	4.38539	-4.202	2.68e-05	***
## PLOT57273	-21.93550	4.38514	-5.002	5.81e-07	***
## PLOT57296	-16.03328	4.10590	-3.905	9.52e-05	***
## PLOT57322	-19.64293	3.57316	-5.497	4.00e-08	***
## PLOT57402	-11.64652	3.78129	-3.080	0.002078	**
## PLOT57412	-9.34381	4.35775	-2.144	0.032055	*
## PLOT57416	-23.85871	4.38641	-5.439	5.54e-08	***
## PLOT57448	-25.02095	3.77577	-6.627	3.70e-11	***
## PLOT57466	-31.93390	6.16595	-5.179	2.30e-07	***
## PLOT57517	-24.70550	4.35871	-5.668	1.51e-08	***
## PLOT57534	-19.12267	3.80560	-5.025	5.17e-07	***
## PLOT57546	2.78841	4.49718	0.620	0.535255	
## PLOT57547	-20.79857	3.59155	-5.791	7.32e-09	***
## PLOT57561	-8.81412	4.49759	-1.960	0.050068	.
## PLOT57605	-24.11977	3.77701	-6.386	1.82e-10	***
## PLOT57630	-9.84064	4.87219	-2.020	0.043449	*
## PLOT57760	-21.27744	5.03626	-4.225	2.42e-05	***
## PLOT57897	-20.09895	3.72353	-5.398	6.98e-08	***
## PLOT57923	-18.79603	4.35742	-4.314	1.63e-05	***
## PLOT57934	-10.81987	4.38385	-2.468	0.013608	*
## PLOT57968	-15.49072	3.71477	-4.170	3.08e-05	***
## PLOT58091	-11.97470	4.35846	-2.747	0.006022	**
## PLOT58093	-23.98122	4.49401	-5.336	9.80e-08	***
## PLOT58145	1.18150	3.55889	0.332	0.739910	

## PLOT58218	-9.27618	3.55784	-2.607	0.009148	**
## PLOT58240	-14.09359	4.35725	-3.235	0.001225	**
## PLOT58257	-13.30942	3.61744	-3.679	0.000236	***
## PLOT58261	-23.38067	4.35736	-5.366	8.33e-08	***
## PLOT58265	-18.33061	3.77631	-4.854	1.24e-06	***
## PLOT58297	-19.76460	4.49386	-4.398	1.11e-05	***
## PLOT58311	-13.47317	6.16215	-2.186	0.028818	*
## PLOT58341	-17.90942	4.54024	-3.945	8.08e-05	***
## PLOT58409	-18.12267	3.80560	-4.762	1.96e-06	***
## PLOT58436	-20.40343	4.38501	-4.653	3.34e-06	***
## PLOT58457	-25.41862	3.93024	-6.467	1.07e-10	***
## PLOT58478	-18.40830	3.78270	-4.866	1.16e-06	***
## PLOT58565	-27.55213	3.72405	-7.398	1.55e-13	***
## PLOT58575	-12.83522	3.78267	-3.393	0.000695	***
## PLOT58598	-20.35013	3.44494	-5.907	3.65e-09	***
## PLOT58607	-29.77378	4.36251	-6.825	9.58e-12	***
## PLOT58608	-19.18499	4.35876	-4.401	1.09e-05	***
## PLOT58613	-10.41950	3.51391	-2.965	0.003036	**
## PLOT58635	-11.98916	4.38404	-2.735	0.006260	**
## PLOT58708	-28.51718	3.98387	-7.158	9.06e-13	***
## PLOT58715	-10.70264	3.93383	-2.721	0.006532	**
## PLOT58729	-19.74832	4.38519	-4.503	6.80e-06	***
## PLOT58749	-28.76958	5.03557	-5.713	1.16e-08	***
## PLOT58770	-20.49758	3.93300	-5.212	1.93e-07	***
## PLOT58792	-18.43288	4.38474	-4.204	2.66e-05	***
## PLOT58833	-1.88171	3.61285	-0.521	0.602497	
## PLOT58837	-5.34292	6.25930	-0.854	0.393359	
## PLOT58842	-7.81878	4.38481	-1.783	0.074608	.
## PLOT58855	-1.43018	4.49371	-0.318	0.750296	
## PLOT58856	-18.62005	4.38470	-4.247	2.20e-05	***
## PLOT58861	-19.69435	4.50732	-4.369	1.26e-05	***
## PLOT58871	-13.87717	3.93203	-3.529	0.000420	***
## PLOT58887	-12.55591	4.38448	-2.864	0.004200	**
## PLOT58890	-17.71473	3.64480	-4.860	1.20e-06	***
## PLOT58983	-20.91689	4.35776	-4.800	1.62e-06	***
## PLOT59026	-3.01571	6.16287	-0.489	0.624621	
## PLOT59038	-14.42764	3.80449	-3.792	0.000151	***
## PLOT59089	-4.77577	4.04990	-1.179	0.238349	
## PLOT59102	-15.29828	4.38486	-3.489	0.000488	***
## PLOT59115	-13.22891	4.38405	-3.018	0.002558	**
## PLOT59293	-10.90713	6.18114	-1.765	0.077680	.
## PLOT59305	-10.39823	3.61316	-2.878	0.004016	**
## PLOT59376	-14.81878	6.18160	-2.397	0.016547	*
## PLOT59403	-21.14922	4.35989	-4.851	1.26e-06	***
## PLOT59452	-14.25675	4.49458	-3.172	0.001521	**
## PLOT59490	-21.11730	4.22246	-5.001	5.85e-07	***
## PLOT59584	-23.02529	3.93128	-5.857	4.94e-09	***
## PLOT59594	-22.01571	4.35836	-5.051	4.50e-07	***
## PLOT59602	-20.79623	3.93387	-5.286	1.29e-07	***
## PLOT59603	-13.82221	3.64801	-3.789	0.000153	***
## PLOT59674	-25.52247	4.36212	-5.851	5.12e-09	***
## PLOT59675	-16.59109	3.80898	-4.356	1.35e-05	***
## PLOT59707	-28.24824	3.93057	-7.187	7.36e-13	***
## PLOT59862	-16.26831	4.49445	-3.620	0.000297	***

## PLOT59869	-21.74664	3.72450	-5.839	5.51e-09	***
## PLOT59891	-22.86648	6.26086	-3.652	0.000262	***
## PLOT59908	-12.37924	4.99449	-2.479	0.013215	*
## PLOT59914	-20.43288	4.38474	-4.660	3.22e-06	***
## PLOT59947	-29.77392	3.55768	-8.369	< 2e-16	***
## PLOT59967	-19.60740	6.18253	-3.171	0.001524	**
## PLOT60009	-22.63851	3.93428	-5.754	9.10e-09	***
## PLOT60052	-0.62748	3.87165	-0.162	0.871255	
## PLOT60053	-20.66449	4.35882	-4.741	2.17e-06	***
## PLOT60078	-13.36553	4.07891	-3.277	0.001056	**
## PLOT60111	-6.05498	3.55866	-1.701	0.088901	.
## PLOT60115	-12.85347	6.18200	-2.079	0.037639	*
## PLOT60159	-4.22213	3.44472	-1.226	0.220361	
## PLOT60168	-22.16892	4.38592	-5.055	4.43e-07	***
## PLOT60287	-21.07009	4.38501	-4.805	1.58e-06	***
## PLOT60361	-16.12918	3.64876	-4.420	1.00e-05	***
## PLOT60403	-13.51942	4.35762	-3.102	0.001927	**
## PLOT60406	-17.78249	4.49407	-3.957	7.67e-05	***
## PLOT60433	-15.59169	6.18097	-2.523	0.011675	*
## PLOT60476	-17.08749	3.84605	-4.443	9.02e-06	***
## PLOT60488	-20.71074	4.35968	-4.751	2.07e-06	***
## PLOT60523	-12.96495	4.38486	-2.957	0.003120	**
## PLOT60545	-17.60649	4.22485	-4.167	3.12e-05	***
## PLOT60573	-8.28076	6.16209	-1.344	0.179052	
## PLOT60630	-17.41499	4.38519	-3.971	7.22e-05	***
## PLOT60664	-0.01591	4.49380	-0.004	0.997175	
## PLOT60670	-16.16368	4.38498	-3.686	0.000230	***
## PLOT60701	-25.87364	6.29335	-4.111	3.98e-05	***
## PLOT60784	-11.96443	3.93136	-3.043	0.002349	**
## PLOT60880	-14.90118	4.35737	-3.420	0.000631	***
## PLOT60887	-40.25457	6.25935	-6.431	1.36e-10	***
## PLOT60947	-23.49701	4.38498	-5.359	8.67e-08	***
## PLOT60954	-20.53974	3.78293	-5.430	5.85e-08	***
## PLOT60996	-4.06216	6.25930	-0.649	0.516374	
## PLOT61035	-17.09718	3.53989	-4.830	1.40e-06	***
## PLOT61061	-10.59169	6.18097	-1.714	0.086650	.
## PLOT61062	-8.41318	4.35861	-1.930	0.053619	.
## PLOT61063	-19.54778	4.35848	-4.485	7.41e-06	***
## PLOT61085	-19.40343	4.38501	-4.425	9.80e-06	***
## PLOT61092	-10.44553	3.59026	-2.909	0.003633	**
## PLOT61098	-20.89448	4.38525	-4.765	1.93e-06	***
## PLOT61117	-16.38554	4.38551	-3.736	0.000188	***
## PLOT61122	-3.08383	6.18077	-0.499	0.617838	
## PLOT61126	-24.39303	3.78387	-6.447	1.22e-10	***
## PLOT61144	-18.33115	4.87296	-3.762	0.000170	***
## PLOT61145	-11.68166	3.46399	-3.372	0.000750	***
## PLOT61150	-16.80090	4.38528	-3.831	0.000129	***
## PLOT61205	-18.94525	4.35874	-4.346	1.40e-05	***
## PLOT61252	-19.87136	4.38488	-4.532	5.95e-06	***
## PLOT61299	-4.80308	3.80392	-1.263	0.206755	
## PLOT61302	-23.68129	4.36007	-5.431	5.79e-08	***
## PLOT61311	-14.04697	4.38467	-3.204	0.001363	**
## PLOT61326	-12.36911	4.35741	-2.839	0.004544	**
## PLOT61358	-19.14922	4.35989	-4.392	1.14e-05	***

## PLOT61377	-5.62531	4.99491	-1.126	0.260118	
## PLOT61387	-25.41950	6.16265	-4.125	3.76e-05	***
## PLOT61418	-30.22315	6.26161	-4.827	1.42e-06	***
## PLOT61420	-5.82330	3.77410	-1.543	0.122887	
## PLOT61540	-22.54959	4.38506	-5.142	2.79e-07	***
## PLOT61565	-27.60144	4.35752	-6.334	2.54e-10	***
## PLOT61580	-17.92552	3.51319	-5.102	3.45e-07	***
## PLOT61659	-11.33115	3.55960	-3.183	0.001463	**
## PLOT61750	1.01454	4.07767	0.249	0.803519	
## PLOT61756	-23.11339	3.98427	-5.801	6.89e-09	***
## PLOT61799	-17.27749	4.87460	-3.544	0.000396	***
## PLOT61846	-20.35609	4.38585	-4.641	3.53e-06	***
## PLOT61894	-5.55846	4.36003	-1.275	0.202401	
## PLOT61915	-27.73097	4.27027	-6.494	8.97e-11	***
## PLOT61932	-12.35194	4.38390	-2.818	0.004853	**
## PLOT61952	-20.83901	4.36041	-4.779	1.80e-06	***
## PLOT61967	-19.85612	3.93121	-5.051	4.52e-07	***
## PLOT61981	-26.58770	4.36011	-6.098	1.14e-09	***
## PLOT62051	-19.58790	4.49375	-4.359	1.33e-05	***
## PLOT62069	-26.92736	4.35926	-6.177	6.92e-10	***
## PLOT62101	-21.43990	4.27112	-5.020	5.31e-07	***
## PLOT62115	-6.96603	4.38387	-1.589	0.112105	
## PLOT62117	-18.39248	3.68294	-4.994	6.07e-07	***
## PLOT62188	-2.67299	4.35733	-0.613	0.539602	
## PLOT62211	-7.35829	3.93555	-1.870	0.061570	.
## PLOT62272	-12.77625	3.77647	-3.383	0.000721	***
## PLOT62488	-9.32503	4.49369	-2.075	0.038012	*
## PLOT62530	9.36673	4.49864	2.082	0.037369	*
## PLOT62537	-10.50596	3.80523	-2.761	0.005780	**
## PLOT62617	-14.67371	3.80415	-3.857	0.000116	***
## PLOT62621	-12.06595	4.38367	-2.752	0.005931	**
## PLOT62659	-15.21553	3.77376	-4.032	5.59e-05	***
## PLOT62677	-18.48516	3.55889	-5.194	2.12e-07	***
## PLOT62707	-20.93627	3.51522	-5.956	2.72e-09	***
## PLOT62749	-13.46530	3.54952	-3.794	0.000150	***
## PLOT62763	-15.10297	4.35899	-3.465	0.000534	***
## PLOT62820	-13.54959	4.38506	-3.090	0.002010	**
## PLOT62825	-8.14398	4.35887	-1.868	0.061755	.
## PLOT62830	-23.13423	6.18194	-3.742	0.000184	***
## PLOT62847	-19.16678	3.84441	-4.986	6.33e-07	***
## PLOT62873	-21.98102	6.16257	-3.567	0.000364	***
## PLOT62890	-16.36350	4.38399	-3.733	0.000191	***
## PLOT62894	-13.15212	4.38481	-2.999	0.002715	**
## PLOT62897	-23.17415	4.38710	-5.282	1.32e-07	***
## PLOT62973	-24.72448	4.35740	-5.674	1.45e-08	***
## PLOT63032	-12.47399	4.07587	-3.060	0.002219	**
## PLOT63074	-23.08814	4.27233	-5.404	6.74e-08	***
## PLOT63109	-9.43236	4.49478	-2.099	0.035898	*
## PLOT63136	-14.64950	4.38446	-3.341	0.000839	***
## PLOT63162	-24.12790	4.38605	-5.501	3.92e-08	***
## PLOT63166	-16.72141	4.49438	-3.721	0.000200	***
## PLOT63177	-25.21247	4.49456	-5.610	2.11e-08	***
## PLOT63238	-14.39658	4.49411	-3.203	0.001364	**
## PLOT63273	-21.16556	3.72353	-5.684	1.37e-08	***

```

## PLOT63277      -20.30984      4.38504      -4.632 3.70e-06 ***
## PLOT63314      -10.94755      3.44811      -3.175 0.001506 **
## PLOT63373      -21.67136      3.77400      -5.742 9.76e-09 ***
## PLOT63375       -1.46161      4.35730      -0.335 0.737305
## PLOT63378      -18.57904      4.38479      -4.237 2.29e-05 ***
## PLOT63405       12.91559      6.26454       2.062 0.039275 *
## PLOT63429       -3.33857      3.77364      -0.885 0.376346
## PLOT63473       -0.93767      4.38363      -0.214 0.830629
## PLOT63583      -27.35319      4.36137      -6.272 3.80e-10 ***
## PLOT63589      -11.78861      6.16226      -1.913 0.055787 .
## PLOT63640      -17.41499      6.18188      -2.817 0.004860 **
## PLOT63642      -11.06343      3.62628      -3.051 0.002291 **
## PLOT63698      -11.73474      4.24931      -2.762 0.005768 **
## PLOT63719       -4.18168      3.77678      -1.107 0.268245
## PLOT63757      -25.40807      3.72389      -6.823 9.71e-12 ***
## PLOT63773      -21.96199      6.29285      -3.490 0.000486 ***
## PLOT63775      -17.98174      4.38599      -4.100 4.18e-05 ***
## PLOT63786      -14.15687      3.84458      -3.682 0.000233 ***
## PLOT63818      -15.77464      3.60442      -4.376 1.22e-05 ***
## PLOT63955      -17.91689      4.35776      -4.111 3.98e-05 ***
## PLOT63959      -25.02276      4.38585      -5.705 1.21e-08 ***
## PLOT63988      -21.92284      6.18300      -3.546 0.000394 ***
## PLOT64010      -17.59864      4.10016      -4.292 1.79e-05 ***
## PLOT64063       1.06088      6.25930       0.169 0.865418
## PLOT64065      -16.08555      3.78114      -4.254 2.13e-05 ***
## PLOT64076      -16.28926      6.25948      -2.602 0.009280 **
## PLOT64145       -8.30722      3.80510      -2.183 0.029057 *
## PLOT64153      -25.16622      6.25959      -4.020 5.87e-05 ***
## PLOT64204      -18.81878      4.10529      -4.584 4.64e-06 ***
## PLOT64212      -21.46309      4.10592      -5.227 1.77e-07 ***
## PLOT64249      -26.79385      4.35797      -6.148 8.29e-10 ***
## PLOT64269       -8.31041      3.93293      -2.113 0.034635 *
## PLOT64295      -17.86503      3.80615      -4.694 2.74e-06 ***
## PLOT64323      -18.63161      4.38486      -4.249 2.18e-05 ***
## PLOT64345      -20.26587      3.98368      -5.087 3.73e-07 ***
## PLOT64384      -18.08855      3.93370      -4.598 4.34e-06 ***
## PLOT64407      -22.72250      3.93029      -5.781 7.75e-09 ***
## PLOT64414      -13.20679      3.68818      -3.581 0.000345 ***
## PLOT64443       -8.32177      4.35726      -1.910 0.056194 .
## PLOT64463      -21.64789      3.93061      -5.508 3.78e-08 ***
## PLOT64465       -8.92450      3.93304      -2.269 0.023294 *
## PLOT67852      -25.98140      4.04920      -6.416 1.49e-10 ***
## PLOT67854      -24.16731      3.93023      -6.149 8.25e-10 ***
## PLOT67857      -26.51744      4.49387      -5.901 3.80e-09 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 5.337 on 6600 degrees of freedom
## (82 observations deleted due to missingness)
## Multiple R-squared:  0.9151, Adjusted R-squared:  0.8901
## F-statistic: 36.69 on 1938 and 6600 DF, p-value: < 2.2e-16

```

ANOVA Tests

```
#ANOVA with species interaction
species.model.anova <- aov(HT ~ DIA + Species,
                           data = Species.wanted)
summary(species.model.anova)

##              Df  Sum Sq Mean Sq F value Pr(>F)
## DIA              1 1351652 1351652 17894.8 <2e-16 ***
## Species          3  216899   72300   957.2 <2e-16 ***
## Residuals      8534  644599        76
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 82 observations deleted due to missingness
```

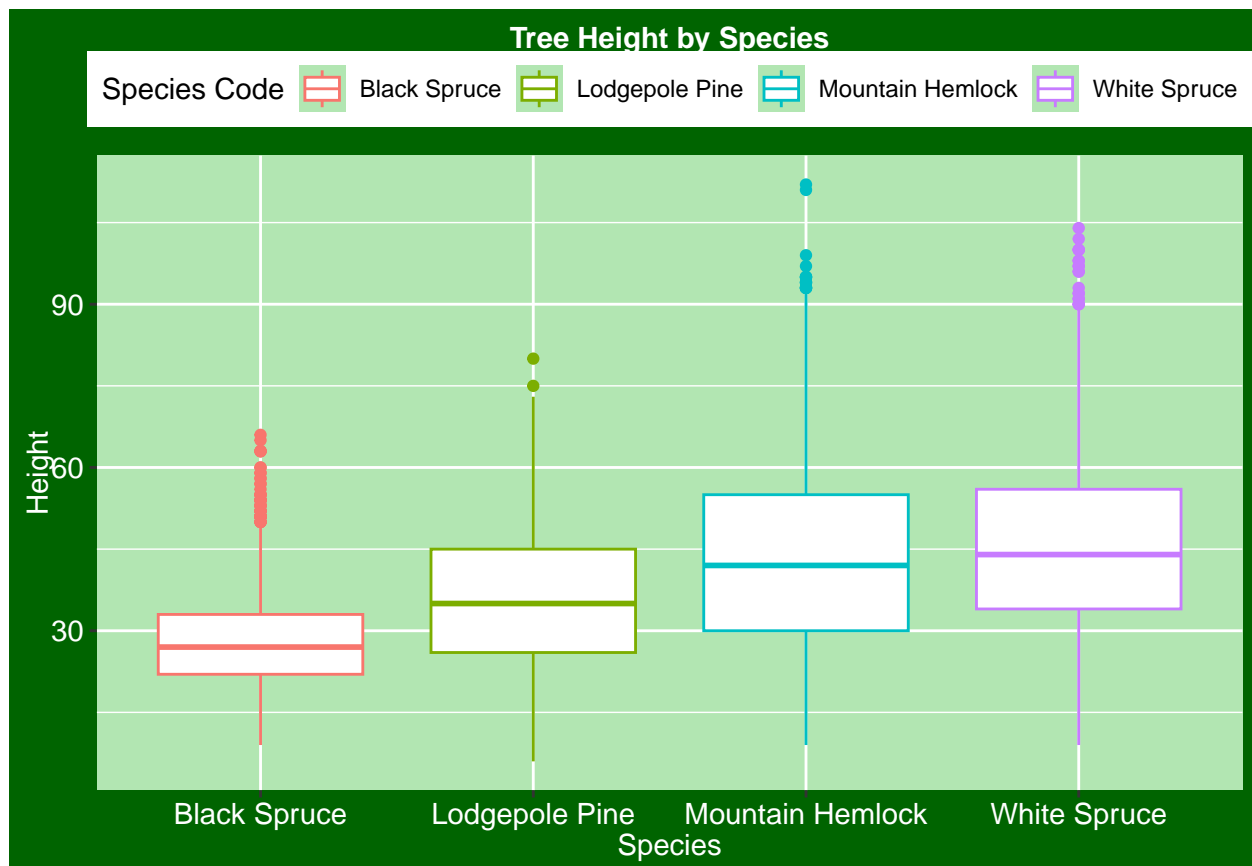
```
#ANOVA with species and plot interaction
PlotandSpecies.model.anova <- aov(HT ~ DIA + Species + PLOT,
                                  data = Species.wanted)
summary(PlotandSpecies.model.anova)
```

```
##              Df  Sum Sq Mean Sq  F value Pr(>F)
## DIA              1 1351652 1351652 47462.200 <2e-16 ***
## Species          3  216899   72300  2538.752 <2e-16 ***
## PLOT           1934  456641     236    8.291 <2e-16 ***
## Residuals      6600 187958        28
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 82 observations deleted due to missingness
```

The ANOVA results suggest that diameter has the highest influence on tree height, as expected. Additionally, it suggests that both species and plot number have a significant influence on tree height. The influence of plot is smaller than that of diameter and tree species. These results will be explored further in the following sections.

Mean Height Comparisons

```
#Boxplot of Tree Height by Species
ggplot(Species.wanted, aes(x = Species, y = HT, color = Species)) +
  geom_boxplot() +
  labs(title = "Tree Height by Species",
       x = "Species",
       y = "Height",
       color = "Species Code")
```



#Mean Height of Black Spruce compared to Mean Height of White Spruce

```
b.w.spruces <- Species.wanted %>%
  filter(SPCD %in% c(94, 95))
BlackvWhiteSpruce <- aov(HT~Species, data = b.w.spruces)

summary.aov(BlackvWhiteSpruce)
```

```
##              Df Sum Sq Mean Sq F value Pr(>F)
## Species      1 363941  363941    2077 <2e-16 ***
## Residuals    4951 867673      175
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

#Mean Height of White Spruce compared to Mean Height of Lodgepole Pine

```
w.spruce.l.pine <- Species.wanted %>%
  filter(SPCD %in% c(94, 108))
WhiteSprucevLodgePine <- aov(HT~Species, data = w.spruce.l.pine)

summary.aov(WhiteSprucevLodgePine)
```

```
##              Df Sum Sq Mean Sq F value Pr(>F)
## Species      1  59934   59934    257.6 <2e-16 ***
## Residuals    3669 853755      233
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
#Mean Height of Lodgepole Pine compared to Mean Height of Mountain Hemlock
l.pine.m.hemlock <- Species.wanted %>%
  filter(SPCD %in% c(108, 264))
LodgePinevMountHemlock <- aov(HT~Species, data = l.pine.m.hemlock)

summary.aov(LodgePinevMountHemlock)
```

```
##              Df Sum Sq Mean Sq F value Pr(>F)
## Species      1  33524   33524    129.7 <2e-16 ***
## Residuals    3666 947667     259
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
#Mean Height of Black Spruce compared to Mean Height of Mountain Hemlock
b.spruce.m.hemlock <- Species.wanted %>%
  filter(SPCD %in% c(95, 264))
BlackSprucevMountHemlock <- aov(HT~Species, data = b.spruce.m.hemlock)

summary.aov(BlackSprucevMountHemlock)
```

```
##              Df Sum Sq Mean Sq F value Pr(>F)
## Species      1 270470   270470    1392 <2e-16 ***
## Residuals    4948 961585     194
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
#Mean Height of Black Spruce compared to Mean Height of Lodgepole Pine
b.spruce.l.pine <- Species.wanted %>%
  filter(SPCD %in% c(95, 108))
BlackSprucevLodgePine <- aov(HT~Species, data = b.spruce.l.pine)

summary.aov(BlackSprucevLodgePine)
```

```
##              Df Sum Sq Mean Sq F value Pr(>F)
## Species      1  38618   38618    361.7 <2e-16 ***
## Residuals    3052 325847     107
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
#Mean Height of White Spruce compared to Mean Height of Mountain Hemlock
w.spruce.m.hemlock <- Species.wanted %>%
  filter(SPCD %in% c(95, 108))
WhiteSprucevMountHemlock <- aov(HT~Species, data = w.spruce.m.hemlock)

summary.aov(WhiteSprucevMountHemlock)
```

```
##              Df Sum Sq Mean Sq F value Pr(>F)
## Species      1  38618   38618    361.7 <2e-16 ***
## Residuals    3052 325847     107
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

*#Because the anova test shows that all results are significant,
#a pairwise comparison between species can be conducted to show the confidence
#interval, p-value and difference in each species*

```
TukeyResults1 <- TukeyHSD(WhiteSprucevLodgePine)
TukeyResults2 <- TukeyHSD(LodgePinevMountHemlock)
TukeyResults3 <- TukeyHSD(BlackSprucevMountHemlock)
TukeyResults4 <- TukeyHSD(BlackSprucevLodgePine)
TukeyResults5 <- TukeyHSD(BlackSprucevLodgePine)
TukeyResults6 <- TukeyHSD(BlackSprucevLodgePine)
```

TukeyResults1

```
## Tukey multiple comparisons of means
## 95% family-wise confidence level
##
## Fit: aov(formula = HT ~ Species, data = w.spruce.l.pine)
##
## $Species
##
```

	diff	lwr	upr	p	adj
White Spruce-Lodgepole Pine	9.442757	8.289179	10.59634		0

TukeyResults2

```
## Tukey multiple comparisons of means
## 95% family-wise confidence level
##
## Fit: aov(formula = HT ~ Species, data = l.pine.m.hemlock)
##
## $Species
##
```

	diff	lwr	upr	p	adj
Mountain Hemlock-Lodgepole Pine	7.063093	5.847069	8.279118		0

TukeyResults3

```
## Tukey multiple comparisons of means
## 95% family-wise confidence level
##
## Fit: aov(formula = HT ~ Species, data = b.spruce.m.hemlock)
##
## $Species
##
```

	diff	lwr	upr	p	adj
Mountain Hemlock-Black Spruce	14.89889	14.11595	15.68182		0

TukeyResults4

```
## Tukey multiple comparisons of means
## 95% family-wise confidence level
##
## Fit: aov(formula = HT ~ Species, data = b.spruce.l.pine)
##
```



```
## $Species
##               diff      lwr      upr p adj
## Lodgepole Pine-Black Spruce 7.835792 7.027957 8.643627 0
```

TukeyResults5

```
## Tukey multiple comparisons of means
## 95% family-wise confidence level
##
## Fit: aov(formula = HT ~ Species, data = b.spruce.l.pine)
##
## $Species
##               diff      lwr      upr p adj
## Lodgepole Pine-Black Spruce 7.835792 7.027957 8.643627 0
```

TukeyResults6

```
## Tukey multiple comparisons of means
## 95% family-wise confidence level
##
## Fit: aov(formula = HT ~ Species, data = b.spruce.l.pine)
##
## $Species
##               diff      lwr      upr p adj
## Lodgepole Pine-Black Spruce 7.835792 7.027957 8.643627 0
```

```
TukeyResults1_df <- as.data.frame(TukeyResults1$Species) %>%
  mutate(Comparison = "White Spruce vs Lodgepole Pine")

TukeyResults2_df <- as.data.frame(TukeyResults2$Species) %>%
  mutate(Comparison = "Lodgepole Pine vs Mountain Hemlock")

TukeyResults3_df <- as.data.frame(TukeyResults3$Species) %>%
  mutate(Comparison = "Black Spruce vs Mountain Hemlock")

TukeyResults4_df <- as.data.frame(TukeyResults4$Species) %>%
  mutate(Comparison = "Black Spruce vs Lodgepole Pine")

TukeyResults5_df <- as.data.frame(TukeyResults1$Species) %>%
  mutate(Comparison = "White Spruce vs Black Spruce")

TukeyResults6_df <- as.data.frame(TukeyResults1$Species) %>%
  mutate(Comparison = "White Spruce vs Mountain Hemlock")

all_TukeyResults <- bind_rows(TukeyResults1_df, TukeyResults2_df, TukeyResults3_df, TukeyResults4_df, TukeyResults5_df, TukeyResults6_df)

print(all_TukeyResults)
```

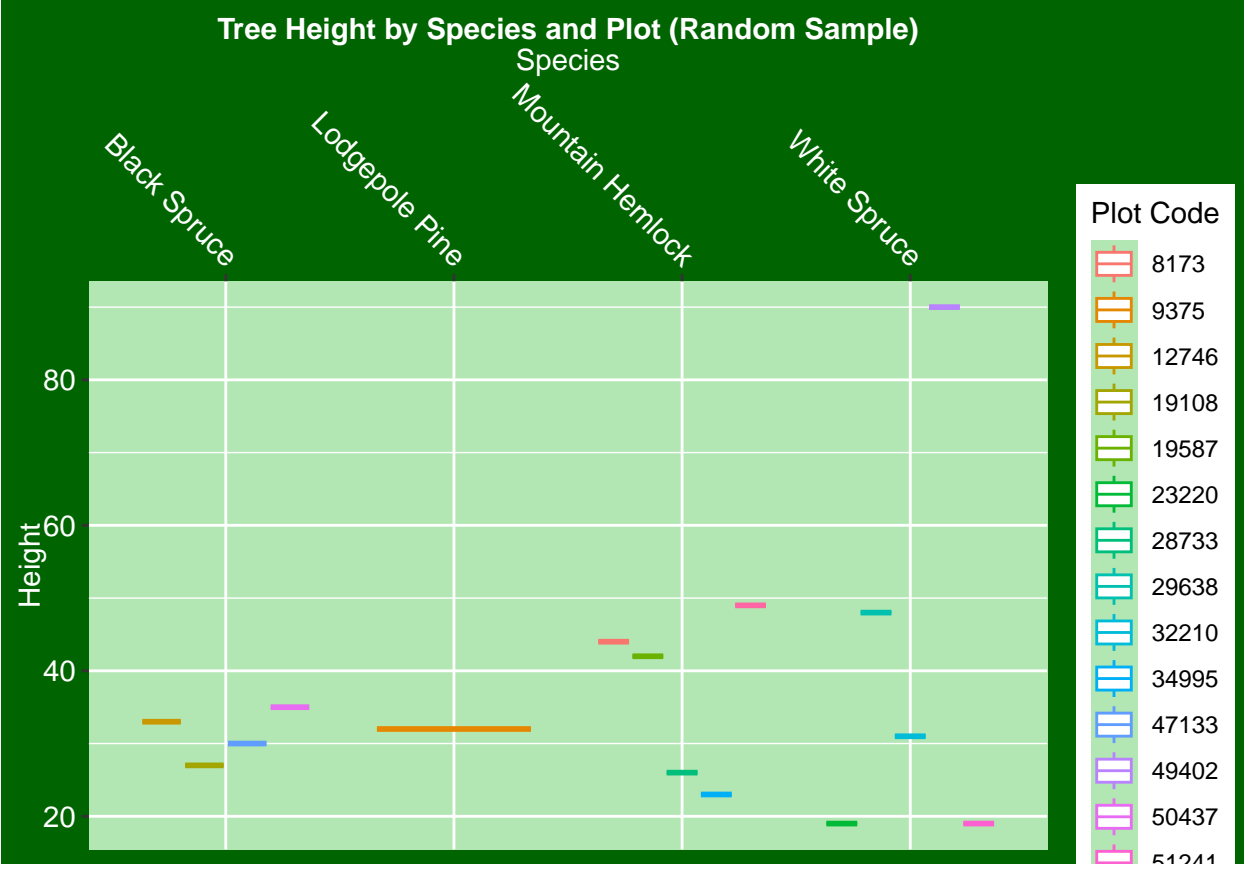
```
##               diff      lwr      upr      p adj
## White Spruce-Lodgepole Pine...1 9.442757 8.289179 10.596335 8.369286e-09
## Mountain Hemlock-Lodgepole Pine 7.063093 5.847069 8.279118 8.252223e-09
## Mountain Hemlock-Black Spruce 14.898886 14.115947 15.681825 3.501914e-09
```

```
## Lodgepole Pine-Black Spruce      7.835792  7.027957  8.643627 0.000000e+00
## White Spruce-Lodgepole Pine...5  9.442757  8.289179 10.596335 8.369286e-09
## White Spruce-Lodgepole Pine...6  9.442757  8.289179 10.596335 8.369286e-09
##                                     Comparison
## White Spruce-Lodgepole Pine...1    White Spruce vs Lodgepole Pine
## Mountain Hemlock-Lodgepole Pine    Lodgepole Pine vs Mountain Hemlock
## Mountain Hemlock-Black Spruce      Black Spruce vs Mountain Hemlock
## Lodgepole Pine-Black Spruce        Black Spruce vs Lodgepole Pine
## White Spruce-Lodgepole Pine...5    White Spruce vs Black Spruce
## White Spruce-Lodgepole Pine...6    White Spruce vs Black Spruce
```

Visualizing Interactions with Plot Differences

```
random_plot_subset <- Species.wanted[sample(nrow(Species.wanted), size = 15,
                                             replace = FALSE), ]

#Plot showing relationship between HT, PLOT, and Species (random sample)
ggplot(random_plot_subset, aes(x = Species, y = HT, color = PLOT)) +
  geom_boxplot() +
  labs(title = "Tree Height by Species and Plot (Random Sample)",
       x = "Species",
       y = "Height",
       color = "Plot Code") +
  theme(axis.text.x = element_text(angle = -45, hjust = 1)) +
  theme(legend.position = "right")+
  scale_x_discrete(position = "top")
```



Dataset Information

Data was collected using both remote sensing and ground sampling. Remote sensing was used to group the trees into classes based on similar strata, and used stratum weight as well as known total area to estimate population totals. Ground sampling was done via plots to cover a one-acre sample area, with those plots either being new or re-measurements of old plots. Among the variables measured were tree diameter, height, and species, all three being very important to our research questions and subsequent analysis.

Once we downloaded the dataset, our process of data wrangling involved differentiating the trees by species. We placed a special emphasis on this due to how the dataset only provides species codes, not the the names of the species themselves. Therefore, we filtered for the four most common species, changing their codes into their species names in a new separate column. We also turned everything in this species column to a factor in order to for it to fit in the analysis.

Item Name	Value
INVYR	Year of inventory
SPCD	Species code
DIA	Diameter at breast height (in)
HT	Total height (ft)
AGEDIA	Tree age at diameter (years)
METHOD	Method for determining site index (1:collected this inventory 2:collected last inventory 3:estimated 4:height-intercept method this inventory)
SITREE_FVS	Site index of tree (height that tree is expected to attain at reference age)
SIBASE_FVS	Site index base age (Set in years to the closest rotation/culmination year of mean annual increment)

Exploratory Analysis

graphs for variables of interest, maps, basic stuff people might want to know about the data

Correlation between Height and Diameter taking Species of Interest and Plot ID into Account

```
#Linear regression to see correlation between HT and DIA taking into account  
#four species and plot ID  
PlotandSpecies.model <- lm(HT ~ DIA + Species + PLOT, data = Species.wanted)  
summary(PlotandSpecies.model)
```

```
##  
## Call:  
## lm(formula = HT ~ DIA + Species + PLOT, data = Species.wanted)  
##  
## Residuals:  
##      Min       1Q   Median       3Q      Max   
## -52.706  -2.531   0.000    2.497  28.483   
##  
## Coefficients:  
##              Estimate Std. Error t value Pr(>|t|)      
## (Intercept)    30.74614     3.12699   9.833 < 2e-16 ***  
## DIA             2.80759     0.03073  91.370 < 2e-16 ***  
## SpeciesLodgepole Pine -3.27957     1.35069  -2.428 0.015206 *  
## SpeciesMountain Hemlock -1.19838     1.18682  -1.010 0.312657  
## SpeciesWhite Spruce    7.49339     0.48891  15.327 < 2e-16 ***  
## PLOT18          -21.84715     4.38616  -4.981 6.49e-07 ***  
## PLOT26           -8.10317     3.93024  -2.062 0.039271 *  
## PLOT33          -17.56976     3.98395  -4.410 1.05e-05 ***  
## PLOT69           -3.50780     6.29244  -0.557 0.577230  
## PLOT107          -21.74433     4.36308  -4.984 6.40e-07 ***  
## PLOT120          -21.18157     4.38457  -4.831 1.39e-06 ***  
## PLOT171          -16.88215     3.98284  -4.239 2.28e-05 ***  
## PLOT216          -36.55902     4.00117  -9.137 < 2e-16 ***  
## PLOT229          -10.11582     4.99431  -2.025 0.042859 *  
## PLOT256          -21.81692     3.98274  -5.478 4.46e-08 ***  
## PLOT281           1.99835     3.72939   0.536 0.592089  
## PLOT341          -30.41209     4.36045  -6.975 3.37e-12 ***  
## PLOT362          -21.62531     4.22250  -5.121 3.12e-07 ***  
## PLOT407           -2.26803     3.78148  -0.600 0.548678  
## PLOT412          -26.02618     4.36033  -5.969 2.51e-09 ***  
## PLOT469          -18.67211     4.49476  -4.154 3.31e-05 ***  
## PLOT496           11.89662     6.26815   1.898 0.057747 .  
## PLOT545          -15.89143     6.18084  -2.571 0.010160 *  
## PLOT554          -22.06232     3.78452  -5.830 5.82e-09 ***  
## PLOT561          -23.34067     3.84306  -6.073 1.32e-09 ***  
## PLOT630          -14.73043     6.18225  -2.383 0.017214 *  
## PLOT662          -16.04697     4.38467  -3.660 0.000254 ***  
## PLOT734          -20.84715     4.38616  -4.753 2.05e-06 ***  
## PLOT759          -21.49840     3.55784  -6.043 1.60e-09 ***
```

## PLOT810	-22.00829	4.36107	-5.047	4.62e-07	***
## PLOT844	-19.39674	3.78250	-5.128	3.01e-07	***
## PLOT848	-9.34924	4.49380	-2.080	0.037520	*
## PLOT864	-25.34119	3.77381	-6.715	2.04e-11	***
## PLOT937	-26.71815	4.35769	-6.131	9.22e-10	***
## PLOT940	-4.26726	4.05019	-1.054	0.292107	
## PLOT942	-24.43433	4.49498	-5.436	5.65e-08	***
## PLOT945	-6.24679	3.80416	-1.642	0.100618	
## PLOT965	-9.66034	4.35733	-2.217	0.026655	*
## PLOT1000	-16.44808	4.36160	-3.771	0.000164	***
## PLOT1011	-19.80432	3.77626	-5.244	1.62e-07	***
## PLOT1030	0.46742	3.89667	0.120	0.904523	
## PLOT1031	-2.81609	6.25933	-0.450	0.652796	
## PLOT1032	-23.16892	6.18239	-3.748	0.000180	***
## PLOT1060	-21.14916	4.54026	-4.658	3.25e-06	***
## PLOT1079	-28.63918	4.36276	-6.564	5.62e-11	***
## PLOT1088	-1.85077	4.99413	-0.371	0.710955	
## PLOT1162	-15.99440	4.38461	-3.648	0.000266	***
## PLOT1171	-5.72774	6.25953	-0.915	0.360203	
## PLOT1173	-16.83275	3.55866	-4.730	2.29e-06	***
## PLOT1201	-27.44283	3.93038	-6.982	3.19e-12	***
## PLOT1216	-23.02908	4.38511	-5.252	1.55e-07	***
## PLOT1227	8.04516	4.35812	1.846	0.064935	.
## PLOT1295	-23.36584	6.16364	-3.791	0.000151	***
## PLOT1382	-25.01242	4.22204	-5.924	3.30e-09	***
## PLOT1397	-27.81609	6.25933	-4.444	8.98e-06	***
## PLOT1418	-22.17343	6.16303	-3.598	0.000323	***
## PLOT1472	-26.85601	4.49429	-5.976	2.41e-09	***
## PLOT1490	-18.65184	4.36049	-4.277	1.92e-05	***
## PLOT1508	-17.57219	3.93089	-4.470	7.94e-06	***
## PLOT1525	-8.27661	3.77467	-2.193	0.028366	*
## PLOT1528	-13.65968	3.59048	-3.804	0.000143	***
## PLOT1529	-26.85161	4.08054	-6.580	5.05e-11	***
## PLOT1543	-16.00442	4.05754	-3.944	8.08e-05	***
## PLOT1549	-20.01119	6.18219	-3.237	0.001214	**
## PLOT1604	-3.60579	3.93024	-0.917	0.358941	
## PLOT1699	-6.89557	4.38405	-1.573	0.115795	
## PLOT1720	-15.94182	6.18141	-2.579	0.009930	**
## PLOT1735	-18.33297	4.38542	-4.180	2.95e-05	***
## PLOT1739	-21.73676	4.38501	-4.957	7.34e-07	***
## PLOT1768	-17.58879	4.35839	-4.036	5.51e-05	***
## PLOT1833	-24.39114	4.35740	-5.598	2.26e-08	***
## PLOT1893	-21.77507	4.49374	-4.846	1.29e-06	***
## PLOT1968	-27.64660	4.87343	-5.673	1.46e-08	***
## PLOT2190	-29.36911	6.16220	-4.766	1.92e-06	***
## PLOT2261	-18.49069	3.55780	-5.197	2.08e-07	***
## PLOT2368	-14.32612	4.49393	-3.188	0.001440	**
## PLOT2374	-26.69285	4.36033	-6.122	9.79e-10	***
## PLOT2414	-21.71887	4.38551	-4.952	7.51e-07	***
## PLOT2418	-22.25094	4.38566	-5.074	4.01e-07	***
## PLOT2428	-21.25753	3.77627	-5.629	1.88e-08	***
## PLOT2476	-6.13423	6.18194	-0.992	0.321096	
## PLOT2504	-27.06631	4.49452	-6.022	1.81e-09	***
## PLOT2516	8.21380	3.93154	2.089	0.036727	*

## PLOT2583	-4.26416	4.49706	-0.948	0.343056	
## PLOT2630	-19.20360	6.18292	-3.106	0.001905	**
## PLOT2677	-28.98102	4.35793	-6.650	3.16e-11	***
## PLOT2682	-27.50259	5.00489	-5.495	4.05e-08	***
## PLOT2692	-11.89557	4.38405	-2.713	0.006677	**
## PLOT2699	-19.88635	4.35938	-4.562	5.16e-06	***
## PLOT2757	-20.03926	3.77656	-5.306	1.16e-07	***
## PLOT2760	-19.46865	4.89556	-3.977	7.06e-05	***
## PLOT2771	-11.99668	6.29315	-1.906	0.056654	.
## PLOT2775	-18.08736	4.22173	-4.284	1.86e-05	***
## PLOT2778	-12.59861	3.55897	-3.540	0.000403	***
## PLOT2846	-21.93280	3.93037	-5.580	2.50e-08	***
## PLOT2892	-18.37921	4.38633	-4.190	2.82e-05	***
## PLOT2896	0.56315	4.07692	0.138	0.890140	
## PLOT2913	-27.98735	4.35756	-6.423	1.43e-10	***
## PLOT2917	-19.92212	3.77480	-5.278	1.35e-07	***
## PLOT2921	1.96205	4.35996	0.450	0.652715	
## PLOT2942	-15.16949	4.49515	-3.375	0.000743	***
## PLOT2943	-9.72971	4.35779	-2.233	0.025601	*
## PLOT2972	-7.80367	3.55848	-2.193	0.028344	*
## PLOT3006	-23.07787	6.26000	-3.687	0.000229	***
## PLOT3007	-13.44900	3.68365	-3.651	0.000263	***
## PLOT3019	-10.88979	4.89550	-2.224	0.026152	*
## PLOT3025	-26.15724	3.84300	-6.806	1.09e-11	***
## PLOT3094	-9.18858	3.39762	-2.704	0.006860	**
## PLOT3104	-8.23152	3.80470	-2.164	0.030538	*
## PLOT3125	-9.95810	6.25967	-1.591	0.111695	
## PLOT3139	-8.70047	3.93057	-2.214	0.026895	*
## PLOT3151	-31.92839	3.98271	-8.017	1.27e-15	***
## PLOT3176	-5.18476	3.93308	-1.318	0.187468	
## PLOT3213	-16.39928	6.18080	-2.653	0.007991	**
## PLOT3310	-25.81218	4.08043	-6.326	2.68e-10	***
## PLOT3351	-10.34562	4.89573	-2.113	0.034622	*
## PLOT3415	-28.98428	4.49468	-6.449	1.21e-10	***
## PLOT3436	-9.52123	3.80447	-2.503	0.012351	*
## PLOT3452	-23.82732	3.68453	-6.467	1.07e-10	***
## PLOT3462	-24.88002	4.36026	-5.706	1.21e-08	***
## PLOT3476	-18.69166	3.68513	-5.072	4.04e-07	***
## PLOT3477	-15.52818	3.78271	-4.105	4.09e-05	***
## PLOT3567	-14.47140	4.50447	-3.213	0.001321	**
## PLOT3590	-25.54663	4.54044	-5.626	1.91e-08	***
## PLOT3601	-25.31762	4.35836	-5.809	6.58e-09	***
## PLOT3629	-17.22782	4.38525	-3.929	8.63e-05	***
## PLOT3641	-6.93363	4.53974	-1.527	0.126730	
## PLOT3653	-12.04814	3.78360	-3.184	0.001458	**
## PLOT3711	-6.63831	4.35751	-1.523	0.127702	
## PLOT3725	-9.48364	4.35825	-2.176	0.029589	*
## PLOT3765	-22.24280	6.16393	-3.609	0.000310	***
## PLOT3785	-20.15772	4.35726	-4.626	3.79e-06	***
## PLOT3788	-28.59791	4.51434	-6.335	2.53e-10	***
## PLOT3805	-21.71706	4.35890	-4.982	6.45e-07	***
## PLOT3842	-8.42168	4.35739	-1.933	0.053311	.
## PLOT3875	-27.90641	3.77349	-7.395	1.58e-13	***
## PLOT3947	-12.58355	4.35776	-2.888	0.003894	**

## PLOT4116	-7.90265	3.71394	-2.128	0.033388	*
## PLOT4160	-14.97075	3.93206	-3.807	0.000142	***
## PLOT4241	-20.20812	4.87327	-4.147	3.41e-05	***
## PLOT4247	0.62565	4.35726	0.144	0.885829	
## PLOT4251	-15.02385	4.38438	-3.427	0.000615	***
## PLOT4272	-11.74162	3.51303	-3.342	0.000835	***
## PLOT4277	-19.72411	4.38659	-4.496	7.03e-06	***
## PLOT4324	-28.06828	4.35843	-6.440	1.28e-10	***
## PLOT4332	-18.99524	4.22514	-4.496	7.05e-06	***
## PLOT4334	-20.78301	4.38582	-4.739	2.20e-06	***
## PLOT4395	-2.10733	4.87281	-0.432	0.665417	
## PLOT4452	-27.31129	4.49530	-6.076	1.30e-09	***
## PLOT4458	-11.75388	3.47844	-3.379	0.000732	***
## PLOT4494	-19.20469	3.80536	-5.047	4.61e-07	***
## PLOT4534	-15.43288	4.38474	-3.520	0.000435	***
## PLOT4561	-20.27169	3.68342	-5.503	3.86e-08	***
## PLOT4647	-20.49069	4.38569	-4.672	3.04e-06	***
## PLOT4659	-14.02992	4.22429	-3.321	0.000901	***
## PLOT4675	-2.62214	3.73956	-0.701	0.483209	
## PLOT4787	-15.53622	4.35832	-3.565	0.000367	***
## PLOT4792	-25.36495	4.49415	-5.644	1.73e-08	***
## PLOT4839	-5.65836	6.25931	-0.904	0.366032	
## PLOT4855	-11.61653	3.78189	-3.072	0.002138	**
## PLOT4865	0.23794	4.38364	0.054	0.956715	
## PLOT4945	-16.78991	4.49597	-3.734	0.000190	***
## PLOT5034	-26.84969	4.35825	-6.161	7.67e-10	***
## PLOT5113	-22.23757	4.35885	-5.102	3.46e-07	***
## PLOT5148	-11.27744	6.29310	-1.792	0.073174	.
## PLOT5193	-11.66739	4.38414	-2.661	0.007803	**
## PLOT5252	-20.65925	4.35806	-4.740	2.18e-06	***
## PLOT5326	-14.64191	3.77420	-3.879	0.000106	***
## PLOT5363	-29.54249	6.29238	-4.695	2.72e-06	***
## PLOT5431	-20.47672	3.98334	-5.141	2.82e-07	***
## PLOT5439	-24.74280	3.77650	-6.552	6.11e-11	***
## PLOT5465	-19.21859	3.77851	-5.086	3.75e-07	***
## PLOT5556	-22.24831	4.27028	-5.210	1.95e-07	***
## PLOT5574	-21.56877	3.98271	-5.416	6.32e-08	***
## PLOT5578	-18.52377	3.93026	-4.713	2.49e-06	***
## PLOT5589	-10.90590	3.45553	-3.156	0.001606	**
## PLOT5612	-16.78933	4.38509	-3.829	0.000130	***
## PLOT5701	-27.67407	3.93175	-7.039	2.14e-12	***
## PLOT5737	-13.80029	3.66848	-3.762	0.000170	***
## PLOT5817	-1.07481	3.93062	-0.273	0.784519	
## PLOT5861	-25.90532	4.35766	-5.945	2.91e-09	***
## PLOT5900	-16.52465	4.35817	-3.792	0.000151	***
## PLOT5955	-2.57978	3.51328	-0.734	0.462796	
## PLOT5961	1.25763	4.35729	0.289	0.772875	
## PLOT5965	-18.55116	3.68151	-5.039	4.80e-07	***
## PLOT6000	-22.24100	3.65557	-6.084	1.24e-09	***
## PLOT6030	-26.22403	3.93140	-6.670	2.76e-11	***
## PLOT6034	-11.47381	4.99404	-2.298	0.021621	*
## PLOT6060	-19.37915	3.56112	-5.442	5.46e-08	***
## PLOT6089	-18.01752	4.38493	-4.109	4.02e-05	***
## PLOT6090	-1.00109	4.35765	-0.230	0.818307	

## PLOT6107	-21.42655	4.38539	-4.886	1.05e-06	***
## PLOT6109	-14.97651	4.38504	-3.415	0.000641	***
## PLOT6193	-13.74498	4.09328	-3.358	0.000790	***
## PLOT6222	-10.44902	3.59061	-2.910	0.003625	**
## PLOT6233	-18.75947	4.99954	-3.752	0.000177	***
## PLOT6244	-19.33297	4.38542	-4.408	1.06e-05	***
## PLOT6249	-28.14779	3.93171	-7.159	9.00e-13	***
## PLOT6300	-2.20506	4.35730	-0.506	0.612831	
## PLOT6335	-21.47913	4.38548	-4.898	9.92e-07	***
## PLOT6376	-16.23922	3.72464	-4.360	1.32e-05	***
## PLOT6380	-16.81155	3.78312	-4.444	8.98e-06	***
## PLOT6385	-26.98603	3.72502	-7.245	4.83e-13	***
## PLOT6461	-15.96603	4.38387	-3.642	0.000273	***
## PLOT6483	-21.56315	4.87246	-4.426	9.78e-06	***
## PLOT6625	-20.22186	4.35730	-4.641	3.54e-06	***
## PLOT6665	-13.21517	3.55827	-3.714	0.000206	***
## PLOT6670	-24.92736	4.87335	-5.115	3.23e-07	***
## PLOT6701	-24.34681	6.29390	-3.868	0.000111	***
## PLOT6738	-23.17524	4.38517	-5.285	1.30e-07	***
## PLOT6765	-24.09664	4.35978	-5.527	3.38e-08	***
## PLOT6793	-9.97051	4.24894	-2.347	0.018976	*
## PLOT6924	-28.06305	3.77412	-7.436	1.17e-13	***
## PLOT6968	3.49564	3.55779	0.983	0.325874	
## PLOT6976	-10.84300	4.38401	-2.473	0.013412	*
## PLOT6978	-20.80090	4.38528	-4.743	2.15e-06	***
## PLOT7028	-12.46684	4.35758	-2.861	0.004237	**
## PLOT7042	-20.76621	4.38474	-4.736	2.23e-06	***
## PLOT7086	-13.09794	4.49386	-2.915	0.003573	**
## PLOT7088	-21.79385	4.35797	-5.001	5.85e-07	***
## PLOT7148	-20.70098	4.38609	-4.720	2.41e-06	***
## PLOT7178	-16.89448	4.38525	-3.853	0.000118	***
## PLOT7196	-5.65692	4.38363	-1.290	0.196935	
## PLOT7245	-21.37810	3.44094	-6.213	5.52e-10	***
## PLOT7274	8.59626	6.29306	1.366	0.171988	
## PLOT7495	-17.11977	6.16424	-2.777	0.005497	**
## PLOT7514	-19.99782	4.35882	-4.588	4.56e-06	***
## PLOT7517	-9.35863	6.25996	-1.495	0.134963	
## PLOT7574	-25.87370	4.36128	-5.933	3.13e-09	***
## PLOT7578	-12.99002	3.98641	-3.259	0.001125	**
## PLOT7599	-8.86089	4.38381	-2.021	0.043292	*
## PLOT7612	-20.57271	6.18206	-3.328	0.000880	***
## PLOT7686	-26.38808	4.49438	-5.871	4.53e-09	***
## PLOT7720	-23.14833	4.49436	-5.151	2.67e-07	***
## PLOT7725	-15.43759	3.93080	-3.927	8.68e-05	***
## PLOT7802	-33.18139	3.77350	-8.793	< 2e-16	***
## PLOT7841	-23.94076	4.99458	-4.793	1.68e-06	***
## PLOT7849	-22.15964	3.87047	-5.725	1.08e-08	***
## PLOT7869	-20.10478	3.80619	-5.282	1.32e-07	***
## PLOT7885	-5.88438	4.35784	-1.350	0.176967	
## PLOT7968	-19.20615	4.35797	-4.407	1.06e-05	***
## PLOT8024	-15.21381	3.51453	-4.329	1.52e-05	***
## PLOT8060	-16.80038	4.49435	-3.738	0.000187	***
## PLOT8087	-14.68789	4.10454	-3.578	0.000348	***
## PLOT8105	-20.51413	4.53996	-4.519	6.33e-06	***

## PLOT8109	-14.79794	4.54060	-3.259	0.001124	**
## PLOT8173	-14.81906	3.64809	-4.062	4.92e-05	***
## PLOT8175	-14.77202	3.93222	-3.757	0.000174	***
## PLOT8219	-16.87696	4.35727	-3.873	0.000108	***
## PLOT8266	-12.01225	3.73758	-3.214	0.001316	**
## PLOT8291	-24.85793	6.29239	-3.950	7.88e-05	***
## PLOT8297	-18.79909	4.35868	-4.313	1.63e-05	***
## PLOT8299	-13.53017	4.89548	-2.764	0.005729	**
## PLOT8321	-21.36133	6.18317	-3.455	0.000554	***
## PLOT8329	-10.77596	4.35834	-2.472	0.013442	*
## PLOT8382	-14.70640	4.05093	-3.630	0.000285	***
## PLOT8394	-7.37761	4.36094	-1.692	0.090741	.
## PLOT8428	-9.78529	4.54194	-2.154	0.031243	*
## PLOT8434	-12.30803	4.35846	-2.824	0.004758	**
## PLOT8473	-13.55301	3.77595	-3.589	0.000334	***
## PLOT8623	-19.70098	4.38609	-4.492	7.19e-06	***
## PLOT8663	-19.16892	4.38592	-4.371	1.26e-05	***
## PLOT8736	-17.70916	4.10525	-4.314	1.63e-05	***
## PLOT8752	-34.46052	4.35797	-7.907	3.06e-15	***
## PLOT8809	-16.41499	6.18188	-2.655	0.007942	**
## PLOT8816	-13.32965	3.40950	-3.910	9.34e-05	***
## PLOT8825	-16.54383	4.49525	-3.680	0.000235	***
## PLOT8861	-20.88547	3.68374	-5.670	1.49e-08	***
## PLOT8919	-17.74832	4.38519	-4.047	5.24e-05	***
## PLOT8940	-25.75126	3.98330	-6.465	1.09e-10	***
## PLOT8973	-16.60724	3.61118	-4.599	4.33e-06	***
## PLOT9029	-1.80365	6.26442	-0.288	0.773418	
## PLOT9086	-24.11582	3.93068	-6.135	8.99e-10	***
## PLOT9111	-18.84663	3.93054	-4.795	1.66e-06	***
## PLOT9168	-10.95971	4.38421	-2.500	0.012450	*
## PLOT9220	-10.15460	4.22918	-2.401	0.016374	*
## PLOT9231	-13.91237	4.38479	-3.173	0.001516	**
## PLOT9287	-29.30432	4.87370	-6.013	1.92e-09	***
## PLOT9290	-19.34292	3.93024	-4.922	8.79e-07	***
## PLOT9322	-6.58442	3.56269	-1.848	0.064624	.
## PLOT9348	-10.28491	4.35814	-2.360	0.018307	*
## PLOT9375	-12.51453	3.89668	-3.212	0.001326	**
## PLOT9455	-29.15380	3.55954	-8.190	3.10e-16	***
## PLOT9465	3.98211	4.35729	0.914	0.360805	
## PLOT9476	-15.32249	4.38404	-3.495	0.000477	***
## PLOT9510	-21.90418	3.98292	-5.500	3.95e-08	***
## PLOT9522	-15.50858	4.38517	-3.537	0.000408	***
## PLOT9547	-30.16810	3.72635	-8.096	6.72e-16	***
## PLOT9633	-26.73495	4.35843	-6.134	9.06e-10	***
## PLOT9641	-14.59270	3.93093	-3.712	0.000207	***
## PLOT9665	-20.78535	6.16606	-3.371	0.000753	***
## PLOT9703	-20.13532	4.38407	-4.593	4.45e-06	***
## PLOT9757	-2.72814	4.10409	-0.665	0.506242	
## PLOT9810	-20.76923	3.61574	-5.744	9.65e-09	***
## PLOT9824	-5.73209	3.93432	-1.457	0.145179	
## PLOT9825	-35.76440	4.35819	-8.206	2.72e-16	***
## PLOT9852	-4.54363	4.35727	-1.043	0.297093	
## PLOT9855	-21.52007	3.55990	-6.045	1.57e-09	***
## PLOT9860	-20.91580	4.35905	-4.798	1.64e-06	***

## PLOT9910	-17.02856	4.49446	-3.789	0.000153	***
## PLOT9938	-13.01752	4.38493	-2.969	0.003001	**
## PLOT9956	-22.65707	4.36188	-5.194	2.12e-07	***
## PLOT9999	-11.00995	3.72361	-2.957	0.003120	**
## PLOT10006	-11.16796	3.89701	-2.866	0.004173	**
## PLOT10062	-6.61295	4.04920	-1.633	0.102485	
## PLOT10350	-16.25378	3.59097	-4.526	6.11e-06	***
## PLOT10399	-14.11743	3.80477	-3.710	0.000209	***
## PLOT10483	-22.47643	3.72380	-6.036	1.67e-09	***
## PLOT10494	-17.99440	4.38461	-4.104	4.11e-05	***
## PLOT10545	-26.18356	4.22196	-6.202	5.92e-10	***
## PLOT10547	-24.19241	4.87166	-4.966	7.01e-07	***
## PLOT10631	-23.43397	6.18090	-3.791	0.000151	***
## PLOT10655	-3.60711	3.55799	-1.014	0.310713	
## PLOT10658	-19.47426	4.35736	-4.469	7.98e-06	***
## PLOT10662	-23.81565	3.93185	-6.057	1.46e-09	***
## PLOT10726	-19.58951	4.38678	-4.466	8.12e-06	***
## PLOT10727	-20.64317	4.38504	-4.708	2.56e-06	***
## PLOT10729	-16.34562	4.38426	-3.728	0.000194	***
## PLOT10733	-13.15243	4.54076	-2.897	0.003786	**
## PLOT10781	-28.00306	4.35982	-6.423	1.43e-10	***
## PLOT10789	-22.95862	4.38554	-5.235	1.70e-07	***
## PLOT10928	-32.37696	4.87157	-6.646	3.25e-11	***
## PLOT10929	-11.31602	3.64694	-3.103	0.001925	**
## PLOT10944	-13.07381	3.69897	-3.534	0.000411	***
## PLOT10963	-14.48888	6.16338	-2.351	0.018762	*
## PLOT10979	-12.24410	3.93042	-3.115	0.001846	**
## PLOT10993	-14.10815	3.64900	-3.866	0.000112	***
## PLOT11039	-0.25567	4.36308	-0.059	0.953274	
## PLOT11052	-5.61191	6.16314	-0.911	0.362560	
## PLOT11087	-14.02385	4.38438	-3.199	0.001388	**
## PLOT11143	-18.46865	6.18108	-2.988	0.002819	**
## PLOT11166	-4.97345	4.38380	-1.135	0.256624	
## PLOT11229	-7.14110	3.80448	-1.877	0.060559	.
## PLOT11234	-21.44045	4.36251	-4.915	9.11e-07	***
## PLOT11261	-11.26416	3.93409	-2.863	0.004207	**
## PLOT11265	-4.25131	3.77350	-1.127	0.259943	
## PLOT11282	-11.77777	4.38491	-2.686	0.007250	**
## PLOT11300	-4.59169	3.55813	-1.290	0.196929	
## PLOT11303	-20.92736	4.35926	-4.801	1.62e-06	***
## PLOT11332	-26.28905	4.36094	-6.028	1.75e-09	***
## PLOT11350	-24.25457	3.93032	-6.171	7.18e-10	***
## PLOT11374	-17.90081	4.38463	-4.083	4.51e-05	***
## PLOT11400	-22.57795	4.38652	-5.147	2.72e-07	***
## PLOT11420	-13.26287	4.35728	-3.044	0.002345	**
## PLOT11439	-15.29776	3.93136	-3.891	0.000101	***
## PLOT11453	-14.06414	4.35727	-3.228	0.001254	**
## PLOT11454	-17.82963	4.35746	-4.092	4.33e-05	***
## PLOT11477	-15.55539	3.93182	-3.956	7.69e-05	***
## PLOT11520	-20.58982	4.53979	-4.535	5.85e-06	***
## PLOT11530	-19.19837	4.38557	-4.378	1.22e-05	***
## PLOT11637	-23.30351	4.38576	-5.313	1.11e-07	***
## PLOT11681	-10.94815	4.38410	-2.497	0.012541	*
## PLOT11744	-25.93978	3.72432	-6.965	3.60e-12	***

## PLOT11786	-22.94327	4.49477	-5.104	3.41e-07	***
## PLOT11849	-10.30823	6.25936	-1.647	0.099636	.
## PLOT11921	-27.23886	4.22198	-6.452	1.18e-10	***
## PLOT11946	-15.91237	4.38479	-3.629	0.000287	***
## PLOT11998	-21.32428	3.77739	-5.645	1.72e-08	***
## PLOT12000	-20.02351	5.03585	-3.976	7.08e-05	***
## PLOT12043	-2.54887	3.77376	-0.675	0.499434	
## PLOT12072	2.51069	3.55768	0.706	0.480394	
## PLOT12137	-25.31238	4.49411	-5.632	1.85e-08	***
## PLOT12141	-31.42474	4.35879	-7.210	6.24e-13	***
## PLOT12154	-34.24866	6.28774	-5.447	5.31e-08	***
## PLOT12175	-29.46181	3.93179	-7.493	7.60e-14	***
## PLOT12187	-16.93586	4.35727	-3.887	0.000103	***
## PLOT12236	-23.46793	4.35726	-5.386	7.46e-08	***
## PLOT12265	-12.72170	3.98409	-3.193	0.001414	**
## PLOT12390	-20.45746	6.16249	-3.320	0.000906	***
## PLOT12470	-9.18789	4.38411	-2.096	0.036145	*
## PLOT12552	-3.28943	4.07584	-0.807	0.419663	
## PLOT12597	-9.79340	3.72551	-2.629	0.008590	**
## PLOT12603	-16.15899	4.24895	-3.803	0.000144	***
## PLOT12685	-14.99440	4.38461	-3.420	0.000631	***
## PLOT12700	-9.20337	3.98272	-2.311	0.020873	*
## PLOT12734	-16.20179	4.36000	-3.716	0.000204	***
## PLOT12746	-14.17052	3.33701	-4.246	2.20e-05	***
## PLOT12774	-25.12609	4.35942	-5.764	8.60e-09	***
## PLOT12884	-11.94390	4.51418	-2.646	0.008168	**
## PLOT12900	-17.13945	3.73412	-4.590	4.52e-06	***
## PLOT12917	-21.68129	4.36007	-4.973	6.77e-07	***
## PLOT12921	-25.19656	4.35896	-5.780	7.79e-09	***
## PLOT12992	-16.20417	3.72469	-4.350	1.38e-05	***
## PLOT13074	-22.12422	3.93043	-5.629	1.89e-08	***
## PLOT13082	-12.06486	3.64543	-3.310	0.000939	***
## PLOT13133	-17.26569	3.93149	-4.392	1.14e-05	***
## PLOT13135	7.66885	6.16319	1.244	0.213434	
## PLOT13194	-19.30984	4.38504	-4.404	1.08e-05	***
## PLOT13317	-30.84359	3.56004	-8.664	< 2e-16	***
## PLOT13466	-24.43516	6.29325	-3.883	0.000104	***
## PLOT13497	-18.16892	6.18239	-2.939	0.003306	**
## PLOT13521	-5.40488	4.35788	-1.240	0.214925	
## PLOT13539	-8.15554	4.35908	-1.871	0.061398	.
## PLOT13627	-11.76178	4.87212	-2.414	0.015801	*
## PLOT13633	-14.17524	4.38517	-3.233	0.001233	**
## PLOT13643	-23.82848	4.53971	-5.249	1.58e-07	***
## PLOT13679	-20.13532	4.38407	-4.593	4.45e-06	***
## PLOT13720	-16.89448	4.38525	-3.853	0.000118	***
## PLOT13817	-19.51304	4.53965	-4.298	1.75e-05	***
## PLOT13835	-16.30280	3.71471	-4.389	1.16e-05	***
## PLOT13856	-26.97218	4.99532	-5.399	6.92e-08	***
## PLOT13865	-6.36350	3.47846	-1.829	0.067385	.
## PLOT13871	-24.87370	4.36128	-5.703	1.23e-08	***
## PLOT13880	-12.60055	4.49374	-2.804	0.005062	**
## PLOT13914	-11.85819	3.93046	-3.017	0.002563	**
## PLOT13933	-28.33245	3.93091	-7.208	6.33e-13	***
## PLOT13949	-13.78933	4.38509	-3.145	0.001671	**

## PLOT13964	-21.65925	4.35806	-4.970	6.87e-07	***
## PLOT13973	-16.68826	3.77398	-4.422	9.94e-06	***
## PLOT14058	-8.49235	3.93437	-2.159	0.030925	*
## PLOT14072	-16.85347	4.38536	-3.843	0.000123	***
## PLOT14100	-23.53064	3.93042	-5.987	2.25e-09	***
## PLOT14108	-22.73146	3.55857	-6.388	1.80e-10	***
## PLOT14131	-19.27515	4.38454	-4.396	1.12e-05	***
## PLOT14138	-15.68942	4.38585	-3.577	0.000350	***
## PLOT14200	-14.56748	4.38463	-3.322	0.000897	***
## PLOT14278	-23.11002	4.38671	-5.268	1.42e-07	***
## PLOT14331	-21.87660	4.38579	-4.988	6.25e-07	***
## PLOT14337	-27.89682	4.36192	-6.396	1.71e-10	***
## PLOT14352	-17.68419	4.38493	-4.033	5.57e-05	***
## PLOT14360	-20.88816	4.38602	-4.762	1.95e-06	***
## PLOT14389	-20.22891	4.38405	-4.614	4.02e-06	***
## PLOT14424	-25.37642	4.05071	-6.265	3.97e-10	***
## PLOT14474	-28.87400	3.93166	-7.344	2.32e-13	***
## PLOT14499	-23.35490	3.68079	-6.345	2.37e-10	***
## PLOT14509	-18.57904	4.38479	-4.237	2.29e-05	***
## PLOT14515	-18.22077	4.35795	-4.181	2.94e-05	***
## PLOT14517	-20.60906	3.93378	-5.239	1.66e-07	***
## PLOT14540	-25.49704	3.93202	-6.484	9.55e-11	***
## PLOT14607	-25.11888	3.93126	-6.390	1.78e-10	***
## PLOT14614	-19.37398	4.38531	-4.418	1.01e-05	***
## PLOT14700	-10.93912	6.25930	-1.748	0.080570	.
## PLOT14710	-7.41055	3.72360	-1.990	0.046615	*
## PLOT14756	-13.91580	4.35905	-3.192	0.001418	**
## PLOT14765	-23.38196	4.49903	-5.197	2.08e-07	***
## PLOT14773	-10.78114	4.53996	-2.375	0.017591	*
## PLOT14775	-14.18520	4.49371	-3.157	0.001603	**
## PLOT14790	-23.10895	3.61573	-6.391	1.76e-10	***
## PLOT14811	-12.67128	3.75712	-3.373	0.000749	***
## PLOT14832	-8.09540	4.38364	-1.847	0.064831	.
## PLOT14885	-25.80432	4.35965	-5.919	3.40e-09	***
## PLOT14889	-3.77886	4.38389	-0.862	0.388725	
## PLOT14935	-34.22088	4.87229	-7.024	2.38e-12	***
## PLOT14951	-9.60344	4.87747	-1.969	0.049002	*
## PLOT14983	-22.02727	4.35853	-5.054	4.45e-07	***
## PLOT14991	-18.21102	4.38435	-4.154	3.31e-05	***
## PLOT14992	-24.12718	4.35797	-5.536	3.21e-08	***
## PLOT15047	-6.07590	3.93188	-1.545	0.122324	
## PLOT15137	-8.73019	3.54415	-2.463	0.013793	*
## PLOT15201	-15.40343	4.38501	-3.513	0.000446	***
## PLOT15282	-4.87690	3.54560	-1.375	0.169030	
## PLOT15335	-4.33514	3.80393	-1.140	0.254474	
## PLOT15337	-13.66765	3.77492	-3.621	0.000296	***
## PLOT15343	-13.53315	3.59033	-3.769	0.000165	***
## PLOT15363	-18.49701	4.38498	-4.218	2.49e-05	***
## PLOT15381	-13.76717	3.77668	-3.645	0.000269	***
## PLOT15401	-15.85980	4.38472	-3.617	0.000300	***
## PLOT15482	-26.70134	4.49881	-5.935	3.08e-09	***
## PLOT15528	-20.88764	4.49399	-4.648	3.42e-06	***
## PLOT15536	-9.09026	4.54069	-2.002	0.045330	*
## PLOT15588	-18.98102	4.35793	-4.356	1.35e-05	***

## PLOT15613	-16.48545	4.38481	-3.760	0.000172	***
## PLOT15625	-17.32661	3.89667	-4.447	8.87e-06	***
## PLOT15633	-11.06543	3.93432	-2.813	0.004930	**
## PLOT15710	-7.76134	4.35766	-1.781	0.074945	.
## PLOT15725	-18.42132	4.38459	-4.201	2.69e-05	***
## PLOT15773	-16.36242	4.38511	-3.731	0.000192	***
## PLOT15793	-18.80177	3.92740	-4.787	1.73e-06	***
## PLOT15817	-21.93368	4.35856	-5.032	4.97e-07	***
## PLOT15824	-16.79494	3.77355	-4.451	8.70e-06	***
## PLOT15846	4.99482	3.98295	1.254	0.209869	
## PLOT15864	-24.54161	3.68453	-6.661	2.94e-11	***
## PLOT15960	-26.45113	4.35749	-6.070	1.35e-09	***
## PLOT15977	-21.03798	3.76752	-5.584	2.44e-08	***
## PLOT15993	-22.20993	4.38579	-5.064	4.22e-07	***
## PLOT16062	-9.44444	3.80539	-2.482	0.013095	*
## PLOT16103	-3.60406	4.87199	-0.740	0.459477	
## PLOT16115	-16.47389	4.38465	-3.757	0.000173	***
## PLOT16182	-10.71364	4.38467	-2.443	0.014574	*
## PLOT16258	-16.20047	3.93057	-4.122	3.81e-05	***
## PLOT16262	-0.31150	6.26262	-0.050	0.960331	
## PLOT16284	-32.38264	4.36090	-7.426	1.26e-13	***
## PLOT16306	-11.73490	4.53971	-2.585	0.009761	**
## PLOT16307	-29.93042	4.27206	-7.006	2.69e-12	***
## PLOT16332	-19.14688	4.38417	-4.367	1.28e-05	***
## PLOT16435	-35.33115	6.16319	-5.733	1.03e-08	***
## PLOT16439	-14.10297	4.35899	-3.235	0.001221	**
## PLOT16469	-27.82438	4.49824	-6.186	6.56e-10	***
## PLOT16476	-14.97470	4.35846	-3.436	0.000594	***
## PLOT16521	-6.29937	4.38387	-1.437	0.150782	
## PLOT16532	-8.39928	4.38367	-1.916	0.055404	.
## PLOT16534	-15.74480	3.78235	-4.163	3.19e-05	***
## PLOT16544	-8.77690	3.71426	-2.363	0.018155	*
## PLOT16590	-20.59926	4.36037	-4.724	2.36e-06	***
## PLOT16622	-10.55591	4.38448	-2.408	0.016087	*
## PLOT16643	-19.04064	4.38531	-4.342	1.43e-05	***
## PLOT16737	-19.00596	4.38476	-4.335	1.48e-05	***
## PLOT16769	-25.53740	3.93083	-6.497	8.81e-11	***
## PLOT16782	-26.94305	3.77640	-7.135	1.07e-12	***
## PLOT16804	-30.65007	3.93396	-7.791	7.66e-15	***
## PLOT16841	7.83295	4.54000	1.725	0.084517	.
## PLOT16901	-22.41323	5.03705	-4.450	8.74e-06	***
## PLOT16991	-16.04396	3.42705	-4.682	2.90e-06	***
## PLOT17050	-18.18455	3.61289	-5.033	4.95e-07	***
## PLOT17060	4.05672	4.35827	0.931	0.351986	
## PLOT17076	-15.92502	4.38391	-3.633	0.000283	***
## PLOT17162	-19.22710	6.16231	-3.120	0.001816	**
## PLOT17175	5.71053	4.50219	1.268	0.204703	
## PLOT17210	4.43848	4.35726	1.019	0.308411	
## PLOT17284	-11.11889	4.35848	-2.551	0.010761	*
## PLOT17288	-12.83901	6.16432	-2.083	0.037308	*
## PLOT17355	-17.42132	4.38459	-3.973	7.16e-05	***
## PLOT17365	-14.15431	4.04955	-3.495	0.000477	***
## PLOT17382	-14.84626	3.72364	-3.987	6.76e-05	***
## PLOT17383	-15.86342	3.93024	-4.036	5.49e-05	***

## PLOT17384	-18.78933	4.38509	-4.285	1.85e-05	***
## PLOT17397	-6.46865	4.38407	-1.475	0.140128	
## PLOT17400	-14.95090	3.94240	-3.792	0.000151	***
## PLOT17415	-13.99548	6.18086	-2.264	0.023586	*
## PLOT17475	-14.08986	3.72361	-3.784	0.000156	***
## PLOT17476	-19.67841	4.89625	-4.019	5.91e-05	***
## PLOT17488	-18.83558	4.38592	-4.295	1.78e-05	***
## PLOT17508	-7.32488	5.03629	-1.454	0.145877	
## PLOT17535	-26.07243	4.36151	-5.978	2.38e-09	***
## PLOT17596	-22.28491	3.77452	-5.904	3.72e-09	***
## PLOT17601	-18.06196	4.35910	-4.144	3.46e-05	***
## PLOT17743	-39.18017	4.50922	-8.689	< 2e-16	***
## PLOT17811	-23.74508	4.99437	-4.754	2.03e-06	***
## PLOT17854	-20.45943	4.35942	-4.693	2.74e-06	***
## PLOT17919	-14.59380	3.55827	-4.101	4.16e-05	***
## PLOT17931	-20.82221	4.35908	-4.777	1.82e-06	***
## PLOT17940	-23.08166	4.38519	-5.264	1.46e-07	***
## PLOT17958	-11.21791	4.49826	-2.494	0.012661	*
## PLOT18000	-13.71364	4.38467	-3.128	0.001770	**
## PLOT18005	-1.08383	6.18077	-0.175	0.860805	
## PLOT18009	-24.24084	4.35763	-5.563	2.76e-08	***
## PLOT18038	-29.34899	4.53970	-6.465	1.09e-10	***
## PLOT18063	-22.59407	3.77657	-5.983	2.31e-09	***
## PLOT18090	-21.99331	4.38623	-5.014	5.47e-07	***
## PLOT18111	-16.19765	4.35772	-3.717	0.000203	***
## PLOT18125	-33.94628	6.29242	-5.395	7.10e-08	***
## PLOT18183	-29.00197	4.36221	-6.648	3.20e-11	***
## PLOT18188	-17.90605	4.38545	-4.083	4.50e-05	***
## PLOT18200	-23.61408	4.49770	-5.250	1.57e-07	***
## PLOT18233	-20.10644	4.49742	-4.471	7.93e-06	***
## PLOT18340	-1.30596	3.77392	-0.346	0.729318	
## PLOT18342	-7.82439	4.35726	-1.796	0.072586	.
## PLOT18389	-18.41499	6.18188	-2.979	0.002904	**
## PLOT18397	-14.35085	4.38493	-3.273	0.001070	**
## PLOT18409	-5.65836	6.25931	-0.904	0.366032	
## PLOT18480	-4.94503	3.68256	-1.343	0.179376	
## PLOT18580	-17.93142	3.89678	-4.602	4.27e-06	***
## PLOT18650	-16.58021	3.50953	-4.724	2.36e-06	***
## PLOT18715	-16.71810	4.53967	-3.683	0.000233	***
## PLOT18718	-4.85089	4.27103	-1.136	0.256095	
## PLOT18720	-24.14418	4.49369	-5.373	8.01e-08	***
## PLOT18757	-3.24302	4.36073	-0.744	0.457093	
## PLOT18839	-4.71473	4.38379	-1.075	0.282194	
## PLOT18859	-18.45600	4.38509	-4.209	2.60e-05	***
## PLOT18913	-2.59169	4.38391	-0.591	0.554419	
## PLOT18918	-21.08608	3.72604	-5.659	1.59e-08	***
## PLOT18945	-13.46575	4.35868	-3.089	0.002014	**
## PLOT18955	-24.72971	4.35779	-5.675	1.45e-08	***
## PLOT18972	-10.64968	3.62240	-2.940	0.003294	**
## PLOT19021	-21.44305	3.77640	-5.678	1.42e-08	***
## PLOT19051	-14.78410	4.38437	-3.372	0.000751	***
## PLOT19090	4.81174	4.35767	1.104	0.269547	
## PLOT19108	-16.30111	3.59038	-4.540	5.72e-06	***
## PLOT19148	-16.42992	3.98335	-4.125	3.76e-05	***

## PLOT19210	-31.60991	5.00446	-6.316	2.85e-10	***
## PLOT19220	-18.40866	4.38595	-4.197	2.74e-05	***
## PLOT19223	-14.60216	3.80566	-3.837	0.000126	***
## PLOT19252	-34.15025	3.98274	-8.575	< 2e-16	***
## PLOT19279	-13.96205	6.16400	-2.265	0.023539	*
## PLOT19339	-14.05330	4.38419	-3.205	0.001355	**
## PLOT19388	-20.84717	3.61658	-5.764	8.57e-09	***
## PLOT19399	-3.33333	3.77349	-0.883	0.377077	
## PLOT19415	-13.86431	4.35772	-3.182	0.001472	**
## PLOT19494	1.25634	4.49698	0.279	0.779966	
## PLOT19511	-5.67081	3.77459	-1.502	0.133051	
## PLOT19580	-19.78078	4.36098	-4.536	5.84e-06	***
## PLOT19587	-16.83506	3.93064	-4.283	1.87e-05	***
## PLOT19609	-16.76326	4.54021	-3.692	0.000224	***
## PLOT19673	-23.49448	4.05133	-5.799	6.97e-09	***
## PLOT19713	-1.62564	4.05084	-0.401	0.688206	
## PLOT19722	-8.81718	3.93041	-2.243	0.024909	*
## PLOT19760	-21.74941	4.38403	-4.961	7.19e-07	***
## PLOT19764	-16.81526	3.68275	-4.566	5.06e-06	***
## PLOT19766	-23.38896	4.35993	-5.365	8.39e-08	***
## PLOT19800	-13.90713	4.89564	-2.841	0.004515	**
## PLOT19860	-25.71183	4.35812	-5.900	3.82e-09	***
## PLOT19923	-3.69632	6.26092	-0.590	0.554956	
## PLOT19950	-17.05318	3.84348	-4.437	9.27e-06	***
## PLOT19960	-21.76512	4.38644	-4.962	7.16e-07	***
## PLOT19972	-25.87913	3.93124	-6.583	4.97e-11	***
## PLOT20001	-25.26271	3.98399	-6.341	2.43e-10	***
## PLOT20061	-21.02638	3.93036	-5.350	9.10e-08	***
## PLOT20223	-8.90605	4.38545	-2.031	0.042314	*
## PLOT20393	-19.23414	4.38463	-4.387	1.17e-05	***
## PLOT20440	-19.63000	4.49382	-4.368	1.27e-05	***
## PLOT20459	-19.29501	4.04985	-4.764	1.93e-06	***
## PLOT20492	-15.20469	4.38488	-3.468	0.000529	***
## PLOT20524	-18.04402	3.98330	-4.530	6.00e-06	***
## PLOT20584	-19.82628	3.78295	-5.241	1.65e-07	***
## PLOT20646	-12.46974	4.38363	-2.845	0.004460	**
## PLOT20658	-23.09576	3.93096	-5.875	4.42e-09	***
## PLOT20688	-23.91294	3.93332	-6.080	1.27e-09	***
## PLOT20709	-18.93679	3.83088	-4.943	7.87e-07	***
## PLOT20711	-10.88955	4.22423	-2.578	0.009962	**
## PLOT20760	-17.29667	4.49382	-3.849	0.000120	***
## PLOT20779	-7.49593	3.55821	-2.107	0.035185	*
## PLOT20816	-24.52682	3.84344	-6.381	1.87e-10	***
## PLOT20824	-2.24156	6.18078	-0.363	0.716866	
## PLOT20836	-21.92393	4.38496	-5.000	5.89e-07	***
## PLOT20873	-22.73910	4.36151	-5.214	1.91e-07	***
## PLOT20921	-29.58246	4.35905	-6.786	1.25e-11	***
## PLOT20951	-15.75465	4.38459	-3.593	0.000329	***
## PLOT20962	-15.01571	4.87255	-3.082	0.002067	**
## PLOT21015	-7.93994	3.73694	-2.125	0.033648	*
## PLOT21138	-14.18608	4.35762	-3.255	0.001138	**
## PLOT21166	-12.80018	4.35758	-2.937	0.003321	**
## PLOT21167	-16.12151	3.91014	-4.123	3.79e-05	***
## PLOT21187	-8.70550	4.35871	-1.997	0.045837	*

## PLOT21205	-15.40452	4.38394	-3.514	0.000445	***
## PLOT21278	-19.04697	4.38467	-4.344	1.42e-05	***
## PLOT21296	-18.87136	4.38488	-4.304	1.70e-05	***
## PLOT21379	-19.73215	3.78400	-5.215	1.90e-07	***
## PLOT21501	-9.72142	3.77521	-2.575	0.010044	*
## PLOT21521	-25.11983	3.51354	-7.149	9.65e-13	***
## PLOT21540	-18.85347	4.38536	-4.299	1.74e-05	***
## PLOT21562	-29.25393	4.07591	-7.177	7.89e-13	***
## PLOT21564	-10.30912	4.35748	-2.366	0.018018	*
## PLOT21576	-20.55736	3.93140	-5.229	1.76e-07	***
## PLOT21597	-16.93658	4.38400	-3.863	0.000113	***
## PLOT21637	-9.87364	6.29335	-1.569	0.116719	
## PLOT21641	-27.34510	4.49539	-6.083	1.25e-09	***
## PLOT21645	-9.92736	6.16350	-1.611	0.107300	
## PLOT21646	-18.24570	4.38479	-4.161	3.21e-05	***
## PLOT21657	-15.71025	3.84390	-4.087	4.42e-05	***
## PLOT21683	-13.39349	3.61346	-3.707	0.000212	***
## PLOT21702	-13.17483	3.68270	-3.577	0.000349	***
## PLOT21743	-8.70804	3.78124	-2.303	0.021312	*
## PLOT21763	-21.07880	3.89858	-5.407	6.64e-08	***
## PLOT21764	-7.54645	4.99500	-1.511	0.130887	
## PLOT21788	-22.17234	4.36041	-5.085	3.78e-07	***
## PLOT21793	-19.99963	4.38542	-4.560	5.20e-06	***
## PLOT21818	-23.02908	4.38511	-5.252	1.55e-07	***
## PLOT21872	-18.57525	3.55034	-5.232	1.73e-07	***
## PLOT21884	-6.49051	4.87171	-1.332	0.182812	
## PLOT21908	-16.47913	4.38548	-3.758	0.000173	***
## PLOT22038	-23.88292	4.38506	-5.446	5.32e-08	***
## PLOT22113	-19.52014	4.38536	-4.451	8.68e-06	***
## PLOT22242	-31.10406	6.16243	-5.047	4.60e-07	***
## PLOT22290	-19.85347	4.38536	-4.527	6.08e-06	***
## PLOT22291	-4.78338	4.35727	-1.098	0.272336	
## PLOT22296	-19.63089	4.35741	-4.505	6.75e-06	***
## PLOT22303	-16.73043	6.18225	-2.706	0.006823	**
## PLOT22346	-5.61824	4.35814	-1.289	0.197396	
## PLOT22347	-26.85921	3.72352	-7.213	6.07e-13	***
## PLOT22399	-20.71706	4.35890	-4.753	2.05e-06	***
## PLOT22478	-19.76097	4.38413	-4.507	6.68e-06	***
## PLOT22493	-21.82281	3.98526	-5.476	4.51e-08	***
## PLOT22563	-1.73427	4.50343	-0.385	0.700175	
## PLOT22575	-9.63480	4.99581	-1.929	0.053826	.
## PLOT22601	-26.24275	6.29281	-4.170	3.08e-05	***
## PLOT22604	-19.14807	4.54160	-4.216	2.52e-05	***
## PLOT22659	-12.91870	4.38428	-2.947	0.003224	**
## PLOT22695	-5.47340	4.10425	-1.334	0.182383	
## PLOT22702	-19.83667	4.38442	-4.524	6.16e-06	***
## PLOT22704	-21.28293	4.49428	-4.736	2.23e-06	***
## PLOT22758	-24.59614	3.51474	-6.998	2.85e-12	***
## PLOT22828	17.83377	4.35929	4.091	4.35e-05	***
## PLOT22865	-21.22476	3.72395	-5.700	1.25e-08	***
## PLOT22904	-17.70664	4.07593	-4.344	1.42e-05	***
## PLOT22921	-33.54778	4.35848	-7.697	1.60e-14	***
## PLOT22959	-9.00949	4.07602	-2.210	0.027114	*
## PLOT23012	-24.10930	4.35834	-5.532	3.29e-08	***

## PLOT23035	-9.67076	4.53967	-2.130	0.033186	*
## PLOT23060	-17.77596	3.77475	-4.709	2.54e-06	***
## PLOT23066	-12.23203	3.59139	-3.406	0.000663	***
## PLOT23085	-26.47337	3.93160	-6.733	1.80e-11	***
## PLOT23111	-8.77254	3.80462	-2.306	0.021155	*
## PLOT23135	-15.02333	4.49520	-3.342	0.000836	***
## PLOT23140	-18.16207	3.93035	-4.621	3.89e-06	***
## PLOT23159	-18.57271	4.38545	-4.235	2.32e-05	***
## PLOT23187	-16.11977	6.16424	-2.615	0.008942	**
## PLOT23220	-34.88111	4.35848	-8.003	1.42e-15	***
## PLOT23292	-9.38139	4.38379	-2.140	0.032390	*
## PLOT23374	-13.68870	4.35786	-3.141	0.001690	**
## PLOT23384	-18.47913	3.80605	-4.855	1.23e-06	***
## PLOT23438	-17.51072	3.68087	-4.757	2.00e-06	***
## PLOT23450	-10.11168	4.49620	-2.249	0.024549	*
## PLOT23497	-3.69305	6.25938	-0.590	0.555209	
## PLOT23561	-15.26883	4.38514	-3.482	0.000501	***
## PLOT23568	-12.42132	4.38459	-2.833	0.004626	**
## PLOT23569	-9.68666	3.59081	-2.698	0.007001	**
## PLOT23623	-24.27967	3.77390	-6.434	1.33e-10	***
## PLOT23680	-15.09099	3.77751	-3.995	6.54e-05	***
## PLOT23683	-12.03498	4.23367	-2.843	0.004487	**
## PLOT23710	-16.72520	4.38484	-3.814	0.000138	***
## PLOT23723	-20.44482	3.84420	-5.318	1.08e-07	***
## PLOT23730	-4.07165	3.93046	-1.036	0.300277	
## PLOT23741	-19.18683	4.99504	-3.841	0.000124	***
## PLOT23745	-18.53170	4.38557	-4.226	2.42e-05	***
## PLOT23791	-10.19765	4.35772	-2.340	0.019306	*
## PLOT23796	-21.36242	4.38511	-4.872	1.13e-06	***
## PLOT23841	-9.89900	4.35808	-2.271	0.023154	*
## PLOT23933	-17.11588	3.90832	-4.379	1.21e-05	***
## PLOT23957	-12.78698	4.07803	-3.136	0.001723	**
## PLOT23983	-5.75540	3.84928	-1.495	0.134913	
## PLOT24009	-26.14092	4.49662	-5.813	6.41e-09	***
## PLOT24070	-19.44065	4.49444	-4.325	1.54e-05	***
## PLOT24073	-15.29994	4.49864	-3.401	0.000675	***
## PLOT24092	-19.57271	4.38545	-4.463	8.21e-06	***
## PLOT24109	-26.12521	4.49414	-5.813	6.42e-09	***
## PLOT24124	-19.43811	4.38560	-4.432	9.48e-06	***
## PLOT24168	-16.76738	3.78371	-4.431	9.51e-06	***
## PLOT24174	-22.59294	4.36142	-5.180	2.28e-07	***
## PLOT24238	-23.77591	3.98276	-5.970	2.50e-09	***
## PLOT24340	-20.11977	6.16424	-3.264	0.001104	**
## PLOT24344	-23.58050	6.16265	-3.826	0.000131	***
## PLOT24361	-16.49270	3.64520	-4.524	6.16e-06	***
## PLOT24400	-18.20993	4.38579	-4.152	3.34e-05	***
## PLOT24410	-22.95810	3.93083	-5.841	5.45e-09	***
## PLOT24514	-26.68292	4.87205	-5.477	4.49e-08	***
## PLOT24595	-19.96531	6.16213	-3.240	0.001201	**
## PLOT24603	-17.32088	3.93105	-4.406	1.07e-05	***
## PLOT24628	-14.04173	4.38408	-3.203	0.001367	**
## PLOT24635	-38.32721	6.26019	-6.122	9.75e-10	***
## PLOT24707	-22.49215	4.35753	-5.162	2.52e-07	***
## PLOT24755	-12.10930	4.35834	-2.778	0.005478	**

## PLOT24764	0.10334	4.38363	0.024	0.981193	
## PLOT24782	-18.09685	6.25932	-2.891	0.003850	**
## PLOT24787	-28.61161	3.84675	-7.438	1.15e-13	***
## PLOT24809	1.29232	4.35726	0.297	0.766788	
## PLOT24843	24.97253	6.25935	3.990	6.69e-05	***
## PLOT24855	-7.03074	6.26252	-1.123	0.261619	
## PLOT24869	-20.56748	4.38463	-4.691	2.78e-06	***
## PLOT24891	-17.82548	4.35753	-4.091	4.35e-05	***
## PLOT24905	-12.39807	3.77887	-3.281	0.001040	**
## PLOT24973	-22.04064	4.38531	-5.026	5.14e-07	***
## PLOT25021	-16.38030	4.38467	-3.736	0.000189	***
## PLOT25054	-29.52247	4.36212	-6.768	1.42e-11	***
## PLOT25067	-28.00409	4.53967	-6.169	7.29e-10	***
## PLOT25094	-20.36060	4.35853	-4.671	3.05e-06	***
## PLOT25104	-31.31959	4.35863	-7.186	7.42e-13	***
## PLOT25203	-20.00785	4.87181	-4.107	4.06e-05	***
## PLOT25223	1.55280	3.73684	0.416	0.677761	
## PLOT25315	-19.51402	5.03654	-3.874	0.000108	***
## PLOT25346	-14.82337	3.59053	-4.128	3.70e-05	***
## PLOT25361	-22.62368	6.25930	-3.614	0.000303	***
## PLOT25371	-29.26702	4.35856	-6.715	2.04e-11	***
## PLOT25542	-17.04697	4.38467	-3.888	0.000102	***
## PLOT25563	-22.23144	3.93025	-5.656	1.61e-08	***
## PLOT25590	-12.83220	3.89739	-3.293	0.000998	***
## PLOT25612	-11.76984	4.49368	-2.619	0.008834	**
## PLOT25638	-10.94182	4.38454	-2.496	0.012601	*
## PLOT25684	-12.14319	3.89741	-3.116	0.001843	**
## PLOT25696	-23.48166	4.49436	-5.225	1.80e-07	***
## PLOT25729	-14.24775	3.55894	-4.003	6.31e-05	***
## PLOT25742	-28.15745	3.68542	-7.640	2.48e-14	***
## PLOT25828	-16.21039	4.99414	-3.246	0.001177	**
## PLOT25832	-25.99041	4.36188	-5.959	2.68e-09	***
## PLOT25840	-22.68846	4.22572	-5.369	8.18e-08	***
## PLOT25878	-0.53497	4.38386	-0.122	0.902878	
## PLOT25880	-19.92393	4.38496	-4.544	5.63e-06	***
## PLOT25935	-13.70731	4.38531	-3.126	0.001781	**
## PLOT26008	-11.28511	3.93047	-2.871	0.004102	**
## PLOT26012	-26.86301	3.66235	-7.335	2.48e-13	***
## PLOT26015	-14.31210	3.78229	-3.784	0.000156	***
## PLOT26021	-23.51002	3.93224	-5.979	2.37e-09	***
## PLOT26026	-17.70731	4.38531	-4.038	5.45e-05	***
## PLOT26027	-14.97361	4.36022	-3.434	0.000598	***
## PLOT26075	-35.60793	4.27029	-8.339	< 2e-16	***
## PLOT26081	-24.90846	3.84320	-6.481	9.76e-11	***
## PLOT26117	-20.01337	4.38366	-4.565	5.07e-06	***
## PLOT26157	-24.58572	3.93284	-6.251	4.32e-10	***
## PLOT26168	-22.61816	3.83119	-5.904	3.73e-09	***
## PLOT26218	-19.70207	4.38452	-4.494	7.12e-06	***
## PLOT26233	-22.59060	4.38496	-5.152	2.65e-07	***
## PLOT26246	-19.60035	4.35856	-4.497	7.01e-06	***
## PLOT26288	-24.13423	4.38528	-5.503	3.86e-08	***
## PLOT26308	-20.80613	4.38630	-4.743	2.15e-06	***
## PLOT26321	-20.95266	4.35736	-4.809	1.55e-06	***
## PLOT26335	-6.30400	4.10017	-1.537	0.124219	

## PLOT26368	-19.97651	4.38504	-4.556	5.32e-06	***
## PLOT26370	-10.37638	4.10464	-2.528	0.011496	*
## PLOT26376	-24.28121	4.24913	-5.714	1.15e-08	***
## PLOT26393	-8.29114	3.72685	-2.225	0.026135	*
## PLOT26413	-24.30165	4.53993	-5.353	8.95e-08	***
## PLOT26440	-16.81609	6.25933	-2.687	0.007237	**
## PLOT26443	-20.33929	4.38476	-4.639	3.57e-06	***
## PLOT26470	-21.88816	4.38602	-4.990	6.18e-07	***
## PLOT26486	-17.78933	4.38509	-4.057	5.03e-05	***
## PLOT26574	-14.36648	3.72547	-3.856	0.000116	***
## PLOT26625	-16.99150	4.35958	-3.898	9.81e-05	***
## PLOT26628	-18.40216	3.77418	-4.876	1.11e-06	***
## PLOT26650	-26.44065	3.93110	-6.726	1.89e-11	***
## PLOT26679	-27.66884	3.93098	-7.039	2.14e-12	***
## PLOT26699	-11.35827	4.38369	-2.591	0.009590	**
## PLOT26741	-4.97682	3.98375	-1.249	0.211607	
## PLOT26756	-12.16949	4.99527	-2.436	0.014869	*
## PLOT26769	-13.25727	6.18171	-2.145	0.032022	*
## PLOT26777	-12.77570	3.80440	-3.358	0.000789	***
## PLOT26821	-21.05040	6.16325	-3.415	0.000641	***
## PLOT26822	-8.51599	4.38375	-1.943	0.052104	.
## PLOT26926	-20.19241	4.87166	-4.145	3.44e-05	***
## PLOT26964	-21.97018	4.38576	-5.009	5.60e-07	***
## PLOT26983	-14.70679	4.49434	-3.272	0.001072	**
## PLOT26998	-19.57271	4.38545	-4.463	8.21e-06	***
## PLOT27141	-23.97993	4.35935	-5.501	3.92e-08	***
## PLOT27174	-12.98231	3.93185	-3.302	0.000966	***
## PLOT27228	-31.72753	4.36120	-7.275	3.87e-13	***
## PLOT27229	-12.29647	6.16282	-1.995	0.046055	*
## PLOT27293	-28.94939	4.36207	-6.637	3.46e-11	***
## PLOT27335	-21.36765	4.38609	-4.872	1.13e-06	***
## PLOT27358	-10.65481	3.84359	-2.772	0.005585	**
## PLOT27385	-17.15212	4.38481	-3.912	9.26e-05	***
## PLOT27396	-11.45998	4.10441	-2.792	0.005252	**
## PLOT27402	-16.78882	3.73709	-4.492	7.16e-06	***
## PLOT27403	-14.62757	6.29383	-2.324	0.020150	*
## PLOT27458	-18.41852	3.77355	-4.881	1.08e-06	***
## PLOT27489	-14.09685	3.93027	-3.587	0.000337	***
## PLOT27542	-15.19313	4.38472	-3.465	0.000534	***
## PLOT27589	-13.19855	3.78173	-3.490	0.000486	***
## PLOT27698	-28.67496	3.77789	-7.590	3.64e-14	***
## PLOT27744	-10.20868	3.68272	-2.772	0.005586	**
## PLOT27794	-23.42910	4.35885	-5.375	7.92e-08	***
## PLOT27806	-20.43811	4.38560	-4.660	3.22e-06	***
## PLOT27828	-27.00959	4.49368	-6.011	1.95e-09	***
## PLOT27856	-18.60688	4.49396	-4.140	3.51e-05	***
## PLOT27913	-20.88816	6.18246	-3.379	0.000733	***
## PLOT27916	-16.17256	4.27092	-3.787	0.000154	***
## PLOT27923	-22.03360	4.35799	-5.056	4.40e-07	***
## PLOT27963	-25.11256	6.26036	-4.011	6.10e-05	***
## PLOT28052	-21.86322	4.35896	-5.016	5.42e-07	***
## PLOT28056	-16.17524	4.38517	-3.689	0.000227	***
## PLOT28072	-17.11111	4.38491	-3.902	9.62e-05	***
## PLOT28100	-14.62457	4.35770	-3.356	0.000795	***

## PLOT28148	-5.46161	4.35730	-1.253	0.210091	
## PLOT28193	-26.50459	4.36302	-6.075	1.31e-09	***
## PLOT28194	-20.59837	4.49462	-4.583	4.67e-06	***
## PLOT28204	-25.21444	4.35848	-5.785	7.58e-09	***
## PLOT28230	-7.92357	3.78185	-2.095	0.036195	*
## PLOT28283	-8.42692	4.35725	-1.934	0.053156	.
## PLOT28373	-19.39851	4.54137	-4.272	1.97e-05	***
## PLOT28384	-12.57110	4.49370	-2.797	0.005165	**
## PLOT28402	-16.60666	4.04938	-4.101	4.16e-05	***
## PLOT28421	1.10406	4.87199	0.227	0.820731	
## PLOT28457	-12.39005	4.35827	-2.843	0.004484	**
## PLOT28466	-19.59584	4.38589	-4.468	8.03e-06	***
## PLOT28549	-3.25210	3.37635	-0.963	0.335483	
## PLOT28553	-8.54056	3.77883	-2.260	0.023847	*
## PLOT28574	-12.67804	3.78177	-3.352	0.000806	***
## PLOT28644	-15.89267	6.16308	-2.579	0.009939	**
## PLOT28666	-15.43920	4.38424	-3.522	0.000432	***
## PLOT28733	-28.45208	3.68089	-7.730	1.24e-14	***
## PLOT28766	-22.47913	4.38548	-5.126	3.05e-07	***
## PLOT28787	-16.29793	4.22170	-3.861	0.000114	***
## PLOT28800	-20.53170	4.38557	-4.682	2.90e-06	***
## PLOT28878	-23.39601	6.18381	-3.783	0.000156	***
## PLOT28900	-18.78411	3.42561	-5.483	4.33e-08	***
## PLOT28975	-6.92207	3.98277	-1.738	0.082257	.
## PLOT28979	-19.86799	3.53321	-5.623	1.95e-08	***
## PLOT28982	-22.72862	4.35910	-5.214	1.90e-07	***
## PLOT28991	-15.99062	3.59120	-4.453	8.62e-06	***
## PLOT29008	-5.63171	4.07584	-1.382	0.167102	
## PLOT29052	-22.18680	4.38536	-5.059	4.32e-07	***
## PLOT29071	-22.11002	4.38671	-5.040	4.77e-07	***
## PLOT29170	-9.10696	4.38366	-2.077	0.037796	*
## PLOT29194	-20.28039	4.38533	-4.625	3.82e-06	***
## PLOT29259	-7.07235	3.78226	-1.870	0.061546	.
## PLOT29283	-21.22022	3.40770	-6.227	5.04e-10	***
## PLOT29341	-19.39536	3.55773	-5.452	5.17e-08	***
## PLOT29359	-18.66530	4.04923	-4.610	4.11e-06	***
## PLOT29394	-6.00129	4.49768	-1.334	0.182149	
## PLOT29407	-21.50265	3.82101	-5.627	1.90e-08	***
## PLOT29430	-8.77073	4.35773	-2.013	0.044189	*
## PLOT29480	-17.83667	4.38442	-4.068	4.79e-05	***
## PLOT29501	4.84786	4.99553	0.970	0.331864	
## PLOT29506	-20.29195	4.38554	-4.627	3.78e-06	***
## PLOT29546	-17.82262	6.26799	-2.843	0.004477	**
## PLOT29559	-16.34562	6.18121	-2.644	0.008203	**
## PLOT29638	-22.72971	4.35779	-5.216	1.89e-07	***
## PLOT29644	-11.39549	3.93023	-2.899	0.003751	**
## PLOT29687	-19.19285	3.77705	-5.081	3.85e-07	***
## PLOT29722	2.75393	6.16214	0.447	0.654954	
## PLOT29815	-20.69632	6.26092	-3.306	0.000953	***
## PLOT29959	-10.40162	4.35843	-2.387	0.017035	*
## PLOT30003	-28.56369	3.93086	-7.267	4.11e-13	***
## PLOT30065	-14.10260	3.68223	-3.830	0.000129	***
## PLOT30073	-17.91971	3.93053	-4.559	5.23e-06	***
## PLOT30083	-12.36895	3.98301	-3.105	0.001908	**

## PLOT30121	-15.37533	4.87258	-3.155	0.001610	**
## PLOT30148	-24.82167	4.87403	-5.093	3.63e-07	***
## PLOT30158	-20.42655	4.38539	-4.658	3.26e-06	***
## PLOT30178	-20.12790	4.38605	-4.589	4.53e-06	***
## PLOT30223	-26.82023	3.93181	-6.821	9.82e-12	***
## PLOT30293	-22.64660	4.35935	-5.195	2.11e-07	***
## PLOT30294	-6.43977	4.49742	-1.432	0.152225	
## PLOT30297	-14.35863	6.25996	-2.294	0.021837	*
## PLOT30313	-24.31854	4.22283	-5.759	8.85e-09	***
## PLOT30348	-7.65293	4.35863	-1.756	0.079167	.
## PLOT30425	-9.02203	4.35786	-2.070	0.038464	*
## PLOT30491	-26.18381	3.72381	-7.031	2.25e-12	***
## PLOT30504	-26.31218	4.36155	-6.033	1.70e-09	***
## PLOT30564	-17.68419	4.38493	-4.033	5.57e-05	***
## PLOT30590	-12.45025	3.93200	-3.166	0.001550	**
## PLOT30594	-14.64463	4.35786	-3.361	0.000782	***
## PLOT30600	-7.24156	6.18078	-1.172	0.241390	
## PLOT30649	-13.92736	3.77581	-3.689	0.000227	***
## PLOT30692	-4.39658	6.25961	-0.702	0.482471	
## PLOT30723	-16.02136	4.50541	-3.556	0.000379	***
## PLOT30724	-21.18498	3.88261	-5.456	5.04e-08	***
## PLOT30809	-21.89433	3.53829	-6.188	6.47e-10	***
## PLOT30853	-12.78698	4.87339	-2.624	0.008715	**
## PLOT30906	-13.08611	4.04929	-3.232	0.001237	**
## PLOT30943	-13.60587	3.80462	-3.576	0.000351	***
## PLOT30957	-20.57271	4.38545	-4.691	2.77e-06	***
## PLOT30971	-22.21705	3.72388	-5.966	2.56e-09	***
## PLOT30980	-14.42764	4.38413	-3.291	0.001004	**
## PLOT31021	-35.91845	3.41825	-10.508	< 2e-16	***
## PLOT31034	-17.00845	3.48167	-4.885	1.06e-06	***
## PLOT31052	-14.37066	3.61285	-3.978	7.03e-05	***
## PLOT31056	-10.92210	3.73055	-2.928	0.003426	**
## PLOT31060	-3.01680	3.77370	-0.799	0.424072	
## PLOT31063	-8.27166	3.59058	-2.304	0.021270	*
## PLOT31065	-17.98755	4.49439	-4.002	6.34e-05	***
## PLOT31121	-4.24280	6.16393	-0.688	0.491270	
## PLOT31154	-12.77482	4.54033	-2.814	0.004913	**
## PLOT31178	-17.48545	4.38481	-3.988	6.74e-05	***
## PLOT31201	-17.01047	3.77406	-4.507	6.68e-06	***
## PLOT31221	-30.54056	4.49403	-6.796	1.17e-11	***
## PLOT31236	-15.84554	4.49368	-3.526	0.000424	***
## PLOT31255	-16.29828	4.38486	-3.717	0.000203	***
## PLOT31279	-33.99879	3.76771	-9.024	< 2e-16	***
## PLOT31280	-5.32286	4.35775	-1.221	0.221951	
## PLOT31286	-6.96966	3.93071	-1.773	0.076253	.
## PLOT31291	-20.76134	4.35766	-4.764	1.94e-06	***
## PLOT31304	-21.04588	4.38633	-4.798	1.64e-06	***
## PLOT31336	-21.88816	3.80667	-5.750	9.33e-09	***
## PLOT31346	-25.93063	4.35747	-5.951	2.80e-09	***
## PLOT31350	-30.23559	4.99502	-6.053	1.50e-09	***
## PLOT31390	-15.70731	4.38531	-3.582	0.000344	***
## PLOT31412	-22.33929	4.38476	-5.095	3.59e-07	***
## PLOT31415	-6.27624	4.38374	-1.432	0.152274	
## PLOT31458	-9.93368	4.35856	-2.279	0.022692	*

## PLOT31472	-8.50806	3.72442	-2.284	0.022380	*
## PLOT31486	-28.23233	3.77445	-7.480	8.41e-14	***
## PLOT31509	-14.50785	4.35753	-3.329	0.000875	***
## PLOT31531	-32.18629	3.72427	-8.642	< 2e-16	***
## PLOT31533	-19.99963	4.38542	-4.560	5.20e-06	***
## PLOT31633	-28.57525	4.49435	-6.358	2.18e-10	***
## PLOT31648	-30.52356	4.35975	-7.001	2.79e-12	***
## PLOT31666	-15.36874	4.38452	-3.505	0.000459	***
## PLOT31679	-12.04516	4.35812	-2.764	0.005728	**
## PLOT31713	-17.93550	4.38514	-4.090	4.36e-05	***
## PLOT31714	-14.49551	3.56131	-4.070	4.75e-05	***
## PLOT31730	-15.91761	4.38566	-3.629	0.000286	***
## PLOT31749	-1.66558	6.16236	-0.270	0.786952	
## PLOT31760	-37.30606	4.35853	-8.559	< 2e-16	***
## PLOT31762	-6.16883	4.04998	-1.523	0.127763	
## PLOT31775	-6.88111	4.35848	-1.579	0.114433	
## PLOT31814	-3.43127	6.25943	-0.548	0.583590	
## PLOT31815	-12.35301	3.62448	-3.408	0.000658	***
## PLOT31868	-30.85166	4.35876	-7.078	1.61e-12	***
## PLOT31897	-15.86975	6.25939	-2.535	0.011256	*
## PLOT31947	-19.17606	3.40214	-5.636	1.81e-08	***
## PLOT31982	-19.90894	3.68282	-5.406	6.67e-08	***
## PLOT32015	-2.04516	4.35812	-0.469	0.638889	
## PLOT32028	-7.91772	3.68140	-2.151	0.031533	*
## PLOT32042	-19.59553	6.27096	-3.125	0.001787	**
## PLOT32051	-15.34381	4.35775	-3.521	0.000433	***
## PLOT32055	-21.62368	4.99396	-4.330	1.51e-05	***
## PLOT32083	-23.70877	3.68607	-6.432	1.35e-10	***
## PLOT32106	-26.57505	4.36226	-6.092	1.18e-09	***
## PLOT32119	-17.46756	4.38528	-3.983	6.87e-05	***
## PLOT32136	-25.63415	3.72392	-6.884	6.37e-12	***
## PLOT32194	-16.51272	3.95410	-4.176	3.00e-05	***
## PLOT32210	-27.94001	4.35801	-6.411	1.54e-10	***
## PLOT32252	-20.36584	4.35945	-4.672	3.05e-06	***
## PLOT32346	-24.78011	4.36133	-5.682	1.39e-08	***
## PLOT32368	-28.00113	4.10043	-6.829	9.33e-12	***
## PLOT32377	-10.92277	4.87243	-2.242	0.025011	*
## PLOT32396	-23.55737	4.35834	-5.405	6.70e-08	***
## PLOT32424	-25.12086	4.35851	-5.764	8.60e-09	***
## PLOT32432	-20.54161	3.68453	-5.575	2.57e-08	***
## PLOT32443	-9.06828	4.35843	-2.081	0.037506	*
## PLOT32460	-16.76621	4.38474	-3.824	0.000133	***
## PLOT32538	-20.01752	4.38493	-4.565	5.08e-06	***
## PLOT32594	-22.54152	3.55774	-6.336	2.51e-10	***
## PLOT32600	-27.00676	4.10197	-6.584	4.94e-11	***
## PLOT32621	-7.29758	4.23367	-1.724	0.084808	.
## PLOT32734	-18.84823	4.38457	-4.299	1.74e-05	***
## PLOT32759	-17.09954	4.38474	-3.900	9.72e-05	***
## PLOT32779	-16.57723	4.35823	-3.804	0.000144	***
## PLOT32815	-19.00399	4.38497	-4.334	1.49e-05	***
## PLOT32851	-11.53803	6.18166	-1.866	0.062017	.
## PLOT32888	-18.59457	4.87265	-3.816	0.000137	***
## PLOT32970	-18.45835	4.10655	-4.495	7.08e-06	***
## PLOT32978	-3.10063	4.38382	-0.707	0.479411	

## PLOT33079	-23.62980	4.35830	-5.422	6.11e-08	***
## PLOT33107	-26.19988	3.73682	-7.011	2.60e-12	***
## PLOT33111	-16.66567	3.93125	-4.239	2.27e-05	***
## PLOT33300	-23.24280	4.35985	-5.331	1.01e-07	***
## PLOT33347	-4.88602	3.84432	-1.271	0.203784	
## PLOT33354	-14.78249	3.72399	-3.970	7.28e-05	***
## PLOT33359	-27.78718	3.93023	-7.070	1.71e-12	***
## PLOT33438	-16.21625	4.38506	-3.698	0.000219	***
## PLOT33478	-12.43127	4.49386	-2.766	0.005686	**
## PLOT33488	-16.42341	4.22233	-3.890	0.000101	***
## PLOT33497	-13.09521	4.99505	-2.622	0.008771	**
## PLOT33508	-7.72971	4.35779	-1.774	0.076148	.
## PLOT33516	-38.71835	4.49422	-8.615	< 2e-16	***
## PLOT33650	-16.00020	3.93242	-4.069	4.78e-05	***
## PLOT33658	5.42672	6.26065	0.867	0.386084	
## PLOT33780	-10.06486	3.80470	-2.645	0.008179	**
## PLOT33784	-8.46072	3.72388	-2.272	0.023118	*
## PLOT33868	-29.31445	4.99511	-5.869	4.61e-09	***
## PLOT33896	-19.16368	4.38498	-4.370	1.26e-05	***
## PLOT33955	-20.37921	4.38633	-4.646	3.45e-06	***
## PLOT33985	-26.66854	3.72354	-7.162	8.80e-13	***
## PLOT34039	-14.19313	4.38472	-3.237	0.001214	**
## PLOT34074	-23.63524	3.93023	-6.014	1.91e-09	***
## PLOT34161	-29.16513	4.49524	-6.488	9.33e-11	***
## PLOT34181	-31.29647	4.35830	-7.181	7.69e-13	***
## PLOT34200	-5.52289	6.26429	-0.882	0.378000	
## PLOT34238	-9.74418	3.80401	-2.562	0.010443	*
## PLOT34240	-34.80427	6.29274	-5.531	3.31e-08	***
## PLOT34256	-27.63918	4.36276	-6.335	2.53e-10	***
## PLOT34258	-16.97381	6.25937	-2.712	0.006710	**
## PLOT34279	-26.09177	3.55899	-7.331	2.55e-13	***
## PLOT34282	-9.40247	3.84456	-2.446	0.014485	*
## PLOT34330	-17.75988	4.38539	-4.050	5.19e-05	***
## PLOT34417	-18.77777	4.38491	-4.282	1.88e-05	***
## PLOT34427	-32.13044	4.49472	-7.148	9.72e-13	***
## PLOT34515	-25.88240	3.93118	-6.584	4.94e-11	***
## PLOT34572	-19.26307	3.93194	-4.899	9.86e-07	***
## PLOT34581	-21.71047	4.51433	-4.809	1.55e-06	***
## PLOT34596	-28.64655	6.29265	-4.552	5.40e-06	***
## PLOT34606	-21.03541	4.38452	-4.798	1.64e-06	***
## PLOT34723	-20.79457	4.38605	-4.741	2.17e-06	***
## PLOT34725	-19.58969	3.78254	-5.179	2.30e-07	***
## PLOT34752	-20.66449	4.35882	-4.741	2.17e-06	***
## PLOT34803	-12.25203	4.38428	-2.795	0.005212	**
## PLOT34805	0.42277	4.35823	0.097	0.922725	
## PLOT34822	-14.38030	6.18151	-2.326	0.020030	*
## PLOT34874	-21.79457	4.38605	-4.969	6.90e-07	***
## PLOT34884	-22.82402	4.38569	-5.204	2.01e-07	***
## PLOT34891	-21.52356	3.77637	-5.700	1.25e-08	***
## PLOT34928	-28.96334	3.93040	-7.369	1.93e-13	***
## PLOT34982	-14.84663	4.49395	-3.304	0.000959	***
## PLOT34995	-32.63628	3.77631	-8.642	< 2e-16	***
## PLOT35018	-15.75465	4.38459	-3.593	0.000329	***
## PLOT35034	-21.84082	4.38710	-4.978	6.57e-07	***

## PLOT35043	-20.64317	4.38504	-4.708	2.56e-06	***
## PLOT35060	-19.53642	3.93039	-4.971	6.84e-07	***
## PLOT35084	-16.41556	4.99590	-3.286	0.001022	**
## PLOT35120	-13.77010	3.68385	-3.738	0.000187	***
## PLOT35129	-8.97708	6.26099	-1.434	0.151674	
## PLOT35171	-11.28672	4.38470	-2.574	0.010071	*
## PLOT35245	-16.46033	4.05029	-4.064	4.88e-05	***
## PLOT35289	-20.04173	4.38408	-4.571	4.93e-06	***
## PLOT35296	-14.84642	3.77438	-3.933	8.46e-05	***
## PLOT35312	-24.33136	4.49370	-5.415	6.36e-08	***
## PLOT35401	-21.29195	4.38554	-4.855	1.23e-06	***
## PLOT35410	-14.84026	4.10020	-3.619	0.000297	***
## PLOT35438	-7.57489	4.38364	-1.728	0.084037	.
## PLOT35587	-20.02638	3.93036	-5.095	3.58e-07	***
## PLOT35589	-3.44408	3.55774	-0.968	0.333053	
## PLOT35649	-6.47006	4.07604	-1.587	0.112484	
## PLOT35704	-19.57271	6.18206	-3.166	0.001552	**
## PLOT35743	-24.77596	4.35834	-5.685	1.37e-08	***
## PLOT35765	-13.80038	4.99456	-2.763	0.005742	**
## PLOT35774	-2.22349	3.77411	-0.589	0.555785	
## PLOT35776	-21.65849	4.27172	-5.070	4.08e-07	***
## PLOT35780	-20.44444	4.38491	-4.662	3.19e-06	***
## PLOT35861	-1.66143	4.35738	-0.381	0.702999	
## PLOT35891	-13.55820	6.29305	-2.154	0.031239	*
## PLOT35902	-10.60668	4.35801	-2.434	0.014966	*
## PLOT35938	-27.49520	4.35841	-6.309	3.00e-10	***
## PLOT35939	-28.91893	3.84482	-7.522	6.13e-14	***
## PLOT35964	-8.03017	6.18102	-1.299	0.193932	
## PLOT35981	-13.39819	4.38431	-3.056	0.002253	**
## PLOT36073	-15.12215	3.93115	-3.847	0.000121	***
## PLOT36077	-8.71203	3.93048	-2.217	0.026689	*
## PLOT36095	-20.62782	4.49440	-4.590	4.52e-06	***
## PLOT36137	-19.60030	3.98282	-4.921	8.81e-07	***
## PLOT36221	-12.07590	3.93188	-3.071	0.002140	**
## PLOT36262	-24.03598	3.93383	-6.110	1.05e-09	***
## PLOT36268	-15.97993	4.35935	-3.666	0.000249	***
## PLOT36276	-19.96495	3.80534	-5.247	1.60e-07	***
## PLOT36289	0.68850	6.26262	0.110	0.912462	
## PLOT36309	-22.27122	3.98293	-5.592	2.34e-08	***
## PLOT36351	-13.46174	3.36412	-4.002	6.36e-05	***
## PLOT36466	-27.93151	4.36297	-6.402	1.64e-10	***
## PLOT36581	-32.51635	4.99495	-6.510	8.08e-11	***
## PLOT36603	-19.08166	4.38519	-4.351	1.37e-05	***
## PLOT36611	-8.31698	3.64789	-2.280	0.022643	*
## PLOT36624	-19.43843	6.29278	-3.089	0.002017	**
## PLOT36626	-16.15352	4.54242	-3.556	0.000379	***
## PLOT36646	-27.31218	4.36155	-6.262	4.04e-10	***
## PLOT36656	-16.97361	4.36022	-3.893	0.000100	***
## PLOT36710	-21.58850	3.64607	-5.921	3.36e-09	***
## PLOT36717	-6.35117	4.54065	-1.399	0.161939	
## PLOT36744	-19.30823	6.25936	-3.085	0.002046	**
## PLOT36765	-0.87696	4.87157	-0.180	0.857145	
## PLOT36797	-20.50963	3.73728	-5.488	4.22e-08	***
## PLOT36818	-15.46666	3.78290	-4.089	4.39e-05	***

## PLOT36819	-18.38030	4.38467	-4.192	2.80e-05	***
## PLOT36829	-6.33442	6.16236	-1.028	0.304025	
## PLOT36915	-27.31218	4.36155	-6.262	4.04e-10	***
## PLOT36969	-28.96728	4.36124	-6.642	3.34e-11	***
## PLOT37004	-14.53043	3.77463	-3.849	0.000119	***
## PLOT37005	-18.76180	3.41014	-5.502	3.90e-08	***
## PLOT37009	-23.26250	4.38589	-5.304	1.17e-07	***
## PLOT37087	-26.91580	4.35905	-6.175	7.02e-10	***
## PLOT37112	-5.72686	4.49868	-1.273	0.203060	
## PLOT37113	-17.09954	6.18156	-2.766	0.005687	**
## PLOT37125	-25.15031	3.77464	-6.663	2.90e-11	***
## PLOT37190	-14.29021	3.55771	-4.017	5.97e-05	***
## PLOT37199	-9.09657	3.78144	-2.406	0.016174	*
## PLOT37267	-22.77668	4.38671	-5.192	2.14e-07	***
## PLOT37443	-13.44037	3.78285	-3.553	0.000384	***
## PLOT37488	5.10821	4.36003	1.172	0.241401	
## PLOT37678	-18.16892	4.38592	-4.143	3.48e-05	***
## PLOT37695	-13.87282	4.35797	-3.183	0.001463	**
## PLOT37832	-16.13235	3.77626	-4.272	1.96e-05	***
## PLOT37877	-26.75698	4.36073	-6.136	8.96e-10	***
## PLOT37894	-3.49529	3.49824	-0.999	0.317755	
## PLOT37927	-23.75807	4.35879	-5.451	5.20e-08	***
## PLOT37969	-12.76823	3.41854	-3.735	0.000189	***
## PLOT37980	-17.85275	4.35762	-4.097	4.24e-05	***
## PLOT38008	-25.46990	6.16542	-4.131	3.66e-05	***
## PLOT38094	-26.31762	3.93138	-6.694	2.35e-11	***
## PLOT38105	-7.65836	3.93025	-1.949	0.051389	.
## PLOT38117	-9.94743	3.68405	-2.700	0.006949	**
## PLOT38135	-19.00326	3.93027	-4.835	1.36e-06	***
## PLOT38164	-9.02312	4.35728	-2.071	0.038415	*
## PLOT38202	0.46140	6.26114	0.074	0.941257	
## PLOT38319	-24.49209	6.29364	-3.892	0.000101	***
## PLOT38357	-35.55125	4.49826	-7.903	3.16e-15	***
## PLOT38446	-22.46913	3.84340	-5.846	5.27e-09	***
## PLOT38451	-22.15901	3.79494	-5.839	5.50e-09	***
## PLOT38494	-18.19837	4.38557	-4.150	3.37e-05	***
## PLOT38542	-15.24123	3.77713	-4.035	5.52e-05	***
## PLOT38571	-5.99548	4.38377	-1.368	0.171466	
## PLOT38575	-22.41427	4.35754	-5.144	2.77e-07	***
## PLOT38583	-19.00677	3.77502	-5.035	4.91e-07	***
## PLOT38617	-15.82884	4.99769	-3.167	0.001546	**
## PLOT38664	-19.50225	4.38592	-4.447	8.87e-06	***
## PLOT38669	-21.39091	3.72366	-5.745	9.62e-09	***
## PLOT38693	-4.56696	4.49489	-1.016	0.309651	
## PLOT38751	-13.19765	4.35772	-3.029	0.002467	**
## PLOT38864	-17.51962	4.49430	-3.898	9.79e-05	***
## PLOT38878	-16.34562	4.89573	-3.339	0.000846	***
## PLOT38896	-3.58120	3.43653	-1.042	0.297406	
## PLOT38919	-25.81609	6.25933	-4.124	3.76e-05	***
## PLOT38927	-15.37398	4.38531	-3.506	0.000458	***
## PLOT38929	-19.21625	4.38506	-4.382	1.19e-05	***
## PLOT38944	5.76025	4.35725	1.322	0.186217	
## PLOT39038	-15.36350	4.38399	-3.504	0.000461	***
## PLOT39089	-27.46466	4.36057	-6.298	3.20e-10	***

## PLOT39093	-12.67190	4.35738	-2.908	0.003648	**
## PLOT39116	-16.19759	4.53967	-3.568	0.000362	***
## PLOT39145	-28.07570	4.35729	-6.443	1.25e-10	***
## PLOT39156	-8.67343	4.87275	-1.780	0.075124	.
## PLOT39170	-28.26811	3.77380	-7.491	7.75e-14	***
## PLOT39206	-16.50967	4.38401	-3.766	0.000167	***
## PLOT39216	-16.38665	3.93213	-4.167	3.12e-05	***
## PLOT39234	-17.02749	3.39031	-5.022	5.24e-07	***
## PLOT39241	-20.60216	4.38514	-4.698	2.68e-06	***
## PLOT39255	-28.15969	4.36266	-6.455	1.16e-10	***
## PLOT39318	-28.12713	3.98271	-7.062	1.81e-12	***
## PLOT39399	-24.36516	5.00068	-4.872	1.13e-06	***
## PLOT39400	-25.42032	4.07603	-6.237	4.75e-10	***
## PLOT39452	-33.80185	4.22208	-8.006	1.39e-15	***
## PLOT39459	-19.43288	4.38474	-4.432	9.49e-06	***
## PLOT39536	-6.69632	6.26092	-1.070	0.284864	
## PLOT39541	-1.47726	3.98293	-0.371	0.710725	
## PLOT39543	-27.43334	3.93023	-6.980	3.24e-12	***
## PLOT39554	-28.02421	6.26108	-4.476	7.74e-06	***
## PLOT39619	-20.82402	4.38569	-4.748	2.10e-06	***
## PLOT39643	-27.74869	3.77350	-7.354	2.16e-13	***
## PLOT39714	-14.02095	4.35923	-3.216	0.001304	**
## PLOT39762	-22.55549	4.04982	-5.569	2.66e-08	***
## PLOT39764	-21.85493	4.35767	-5.015	5.43e-07	***
## PLOT39770	-15.92393	4.38496	-3.631	0.000284	***
## PLOT39799	-9.08420	4.35905	-2.084	0.037200	*
## PLOT39900	-20.68048	3.61024	-5.728	1.06e-08	***
## PLOT39969	-23.26250	4.38589	-5.304	1.17e-07	***
## PLOT39979	-14.09664	4.35978	-3.233	0.001230	**
## PLOT40035	-14.23938	4.38545	-3.247	0.001172	**
## PLOT40062	-22.69465	4.27078	-5.314	1.11e-07	***
## PLOT40064	-21.74257	4.49512	-4.837	1.35e-06	***
## PLOT40086	-11.15269	3.93328	-2.835	0.004590	**
## PLOT40089	-21.24879	3.93030	-5.406	6.66e-08	***
## PLOT40093	-22.39658	4.49411	-4.984	6.40e-07	***
## PLOT40219	-19.83506	4.22174	-4.698	2.68e-06	***
## PLOT40227	-26.42247	3.72354	-7.096	1.42e-12	***
## PLOT40270	-9.20501	4.07629	-2.258	0.023967	*
## PLOT40312	-21.37921	4.38633	-4.874	1.12e-06	***
## PLOT40387	-23.76512	4.38644	-5.418	6.24e-08	***
## PLOT40424	-24.74362	4.07724	-6.069	1.36e-09	***
## PLOT40430	-9.34455	4.99485	-1.871	0.061412	.
## PLOT40475	-21.79953	3.84414	-5.671	1.48e-08	***
## PLOT40492	-15.60668	4.35801	-3.581	0.000345	***
## PLOT40504	-4.63416	4.35945	-1.063	0.287814	
## PLOT40515	-15.82221	4.35908	-3.630	0.000286	***
## PLOT40717	-2.39005	4.35827	-0.548	0.583439	
## PLOT40856	-28.11582	4.22178	-6.660	2.96e-11	***
## PLOT40932	-25.82765	3.93033	-6.571	5.37e-11	***
## PLOT40957	-17.61372	4.38533	-4.017	5.97e-05	***
## PLOT40967	-19.68870	4.35786	-4.518	6.35e-06	***
## PLOT40981	-13.87768	4.38435	-3.165	0.001556	**
## PLOT41022	-23.27858	4.35874	-5.341	9.57e-08	***
## PLOT41102	-5.04841	4.05452	-1.245	0.213128	

## PLOT41116	-8.78861	6.16226	-1.426	0.153858	
## PLOT41161	-11.59685	4.99398	-2.322	0.020254	*
## PLOT41183	-27.58301	3.44604	-8.004	1.41e-15	***
## PLOT41239	-20.92211	4.04925	-5.167	2.45e-07	***
## PLOT41267	-20.36408	3.72893	-5.461	4.90e-08	***
## PLOT41287	-11.88546	4.49412	-2.645	0.008196	**
## PLOT41300	-5.97544	4.99429	-1.196	0.231562	
## PLOT41355	-14.13532	4.38407	-3.224	0.001269	**
## PLOT41381	2.94852	4.35769	0.677	0.498668	
## PLOT41413	-3.47949	3.77349	-0.922	0.356516	
## PLOT41483	-21.38554	4.38551	-4.876	1.11e-06	***
## PLOT41491	-39.61845	6.16663	-6.425	1.41e-10	***
## PLOT41545	7.77596	4.35834	1.784	0.074444	.
## PLOT41565	-28.38041	4.54488	-6.244	4.52e-10	***
## PLOT41579	-12.81355	4.38417	-2.923	0.003482	**
## PLOT41609	-25.46246	3.72375	-6.838	8.76e-12	***
## PLOT41642	-5.29937	4.38387	-1.209	0.226770	
## PLOT41651	-25.27858	4.35874	-5.800	6.96e-09	***
## PLOT41682	-32.47732	4.35887	-7.451	1.05e-13	***
## PLOT41743	-21.51631	4.54283	-4.736	2.22e-06	***
## PLOT41746	-2.40074	4.36037	-0.551	0.581940	
## PLOT41758	-23.45419	4.87268	-4.813	1.52e-06	***
## PLOT41822	-20.96291	3.46517	-6.050	1.53e-09	***
## PLOT41852	-9.30195	4.04977	-2.297	0.021655	*
## PLOT41943	-8.08075	3.78281	-2.136	0.032701	*
## PLOT41952	-27.04298	4.36202	-6.200	6.00e-10	***
## PLOT42035	-7.51003	4.35778	-1.723	0.084870	.
## PLOT42066	-7.79909	4.35868	-1.789	0.073609	.
## PLOT42087	8.68455	6.16212	1.409	0.158780	
## PLOT42106	-18.74941	6.18105	-3.033	0.002428	**
## PLOT42129	-1.12533	4.07706	-0.276	0.782545	
## PLOT42167	-14.21625	4.38506	-3.242	0.001193	**
## PLOT42199	-25.88635	4.35938	-5.938	3.03e-09	***
## PLOT42207	2.08903	5.00719	0.417	0.676542	
## PLOT42259	-16.43986	3.55787	-4.621	3.90e-06	***
## PLOT42286	-8.98102	4.35793	-2.061	0.039357	*
## PLOT42303	-16.56893	4.35819	-3.802	0.000145	***
## PLOT42316	-15.15412	3.54669	-4.273	1.96e-05	***
## PLOT42361	-11.74128	4.35791	-2.694	0.007073	**
## PLOT42366	-23.09275	3.68497	-6.267	3.92e-10	***
## PLOT42429	-25.64818	3.72367	-6.888	6.19e-12	***
## PLOT42446	7.29232	4.35726	1.674	0.094256	.
## PLOT42496	-19.89972	4.38626	-4.537	5.81e-06	***
## PLOT42544	-17.47470	3.77488	-4.629	3.74e-06	***
## PLOT42605	-17.40488	4.35788	-3.994	6.57e-05	***
## PLOT42614	-21.27225	4.35948	-4.880	1.09e-06	***
## PLOT42629	-26.81282	6.26235	-4.282	1.88e-05	***
## PLOT42648	-14.96916	3.59099	-4.169	3.10e-05	***
## PLOT42670	-36.86540	4.35726	-8.461	< 2e-16	***
## PLOT42691	7.99673	6.16458	1.297	0.194605	
## PLOT42749	-26.41618	5.03862	-5.243	1.63e-07	***
## PLOT42812	-17.68708	4.10546	-4.308	1.67e-05	***
## PLOT42892	-3.40162	4.35843	-0.780	0.435144	
## PLOT42920	-5.67734	4.99438	-1.137	0.255686	

## PLOT43011	-26.85799	6.16273	-4.358	1.33e-05	***
## PLOT43017	-10.32721	6.26019	-1.650	0.099059	.
## PLOT43026	-12.04121	4.49572	-2.678	0.007416	**
## PLOT43085	-7.20687	6.18078	-1.166	0.243651	
## PLOT43120	-36.81609	4.22141	-8.721	< 2e-16	***
## PLOT43166	-10.33405	4.38414	-2.357	0.018445	*
## PLOT43195	-23.27246	3.93024	-5.921	3.35e-09	***
## PLOT43202	-9.57380	4.38416	-2.184	0.029017	*
## PLOT43210	-9.72479	5.00060	-1.945	0.051851	.
## PLOT43284	-4.59512	4.35788	-1.054	0.291721	
## PLOT43290	-25.30279	4.35781	-5.806	6.68e-09	***
## PLOT43311	-14.90637	3.58680	-4.156	3.28e-05	***
## PLOT43317	-15.36408	4.49817	-3.416	0.000640	***
## PLOT43332	-13.08273	4.27053	-3.063	0.002197	**
## PLOT43484	-11.35251	4.49849	-2.524	0.011638	*
## PLOT43597	-25.17011	4.54431	-5.539	3.16e-08	***
## PLOT43663	-16.40789	4.53965	-3.614	0.000303	***
## PLOT43711	-6.32905	3.53967	-1.788	0.073816	.
## PLOT43744	-26.41318	4.35861	-6.060	1.44e-09	***
## PLOT43757	0.28797	6.25945	0.046	0.963307	
## PLOT43772	-8.07679	4.35745	-1.854	0.063847	.
## PLOT43842	-3.13008	4.38373	-0.714	0.475238	
## PLOT43859	-30.68238	4.35836	-7.040	2.12e-12	***
## PLOT43887	-9.78303	3.93123	-2.489	0.012851	*
## PLOT43903	-10.50064	6.25930	-1.678	0.093471	.
## PLOT43917	-15.59060	4.38496	-3.555	0.000380	***
## PLOT43925	2.29953	4.36413	0.527	0.598270	
## PLOT43996	-22.89267	4.35866	-5.252	1.55e-07	***
## PLOT44027	-23.60715	4.22186	-5.592	2.34e-08	***
## PLOT44072	-17.96988	3.77626	-4.759	1.99e-06	***
## PLOT44257	-13.98943	3.47831	-4.022	5.84e-05	***
## PLOT44300	-12.83667	4.38442	-2.928	0.003425	**
## PLOT44314	-4.61844	4.49388	-1.028	0.304121	
## PLOT44400	-16.46865	6.18108	-2.664	0.007732	**
## PLOT44424	-22.16892	6.18239	-3.586	0.000338	***
## PLOT44430	-19.04407	4.35968	-4.368	1.27e-05	***
## PLOT44458	-22.31327	4.35935	-5.118	3.17e-07	***
## PLOT44460	-24.36579	6.29268	-3.872	0.000109	***
## PLOT44461	-21.11271	4.22330	-4.999	5.91e-07	***
## PLOT44472	-8.49555	4.23368	-2.007	0.044827	*
## PLOT44480	-24.47317	4.35734	-5.617	2.03e-08	***
## PLOT44483	-9.59288	6.29341	-1.524	0.127488	
## PLOT44496	-12.64987	6.16222	-2.053	0.040130	*
## PLOT44515	-12.49793	3.77377	-3.312	0.000932	***
## PLOT44536	-22.99062	4.35902	-5.274	1.38e-07	***
## PLOT44542	-18.61822	3.52468	-5.282	1.32e-07	***
## PLOT44567	-3.32592	3.77443	-0.881	0.378257	
## PLOT44571	-13.81936	6.26121	-2.207	0.027339	*
## PLOT44653	-22.04588	6.18268	-3.566	0.000365	***
## PLOT44655	-8.91051	3.56137	-2.502	0.012374	*
## PLOT44745	-6.15079	3.89725	-1.578	0.114559	
## PLOT44771	-28.57110	3.93025	-7.270	4.02e-13	***
## PLOT44820	-23.63161	4.38486	-5.389	7.32e-08	***
## PLOT44856	-16.28926	4.49393	-3.625	0.000291	***

## PLOT44888	-20.62348	4.35893	-4.731	2.28e-06	***
## PLOT44932	-3.05366	4.35761	-0.701	0.483473	
## PLOT44949	-14.60600	4.50482	-3.242	0.001192	**
## PLOT44957	-18.00775	3.77942	-4.765	1.93e-06	***
## PLOT45043	-11.76569	4.49478	-2.618	0.008874	**
## PLOT45089	-15.28770	4.51449	-3.386	0.000712	***
## PLOT45095	-13.41311	4.22137	-3.177	0.001493	**
## PLOT45107	-19.17234	3.56155	-5.383	7.57e-08	***
## PLOT45129	-15.06486	6.18125	-2.437	0.014828	*
## PLOT45165	-14.15844	4.38429	-3.229	0.001247	**
## PLOT45187	-12.52232	3.58995	-3.488	0.000490	***
## PLOT45222	-15.23414	4.38463	-3.474	0.000515	***
## PLOT45231	-29.83812	4.49464	-6.639	3.42e-11	***
## PLOT45282	-10.52486	3.72375	-2.826	0.004721	**
## PLOT45289	-10.64136	4.35846	-2.442	0.014651	*
## PLOT45315	-25.96199	3.98345	-6.517	7.68e-11	***
## PLOT45323	-16.62005	4.38470	-3.790	0.000152	***
## PLOT45337	-18.73152	4.38431	-4.272	1.96e-05	***
## PLOT45342	-25.06631	4.49452	-5.577	2.54e-08	***
## PLOT45400	-23.82434	3.98328	-5.981	2.33e-09	***
## PLOT45431	-22.24835	4.99517	-4.454	8.57e-06	***
## PLOT45540	-16.62980	4.35830	-3.816	0.000137	***
## PLOT45553	-6.47208	4.35810	-1.485	0.137574	
## PLOT45586	-11.62348	4.35893	-2.667	0.007681	**
## PLOT45599	-19.15735	4.38569	-4.368	1.27e-05	***
## PLOT45629	-13.03469	4.35731	-2.991	0.002787	**
## PLOT45667	-12.66739	4.38414	-2.889	0.003873	**
## PLOT45694	-6.18909	6.29370	-0.983	0.325458	
## PLOT45706	-20.01119	6.18219	-3.237	0.001214	**
## PLOT45760	-14.62233	3.98402	-3.670	0.000244	***
## PLOT45827	-24.40814	4.49402	-5.431	5.80e-08	***
## PLOT45892	-17.56133	3.78154	-4.644	3.48e-06	***
## PLOT45933	-13.22258	4.38448	-3.016	0.002573	**
## PLOT45935	-26.79711	6.26005	-4.281	1.89e-05	***
## PLOT45952	-25.65204	3.93040	-6.527	7.23e-11	***
## PLOT46092	-25.89176	3.77707	-6.855	7.78e-12	***
## PLOT46097	-14.32068	4.35756	-3.286	0.001020	**
## PLOT46121	7.50394	4.99890	1.501	0.133373	
## PLOT46134	-17.02782	3.77426	-4.512	6.55e-06	***
## PLOT46135	-26.32721	4.49492	-5.857	4.94e-09	***
## PLOT46187	-23.89267	4.35866	-5.482	4.37e-08	***
## PLOT46219	-8.98283	4.38446	-2.049	0.040522	*
## PLOT46267	-16.89891	3.72596	-4.535	5.85e-06	***
## PLOT46314	-17.84315	3.42015	-5.217	1.87e-07	***
## PLOT46329	-4.59484	4.10016	-1.121	0.262478	
## PLOT46368	-21.02908	4.38511	-4.796	1.66e-06	***
## PLOT46405	-24.51635	6.26010	-3.916	9.08e-05	***
## PLOT46408	-33.69077	4.87299	-6.914	5.16e-12	***
## PLOT46422	-22.60216	4.38514	-5.154	2.62e-07	***
## PLOT46431	-13.97651	3.80554	-3.673	0.000242	***
## PLOT46462	-15.88744	4.35795	-3.646	0.000269	***
## PLOT46465	-17.67122	4.49930	-3.928	8.67e-05	***
## PLOT46525	-5.96762	3.72701	-1.601	0.109384	
## PLOT46540	-17.83206	3.78306	-4.714	2.48e-06	***

## PLOT46596	-14.81806	4.35739	-3.401	0.000676	***
## PLOT46601	-9.60035	4.35856	-2.203	0.027654	*
## PLOT46698	-5.20247	3.70013	-1.406	0.159765	
## PLOT46707	-11.89702	3.93086	-3.027	0.002483	**
## PLOT46713	-6.17887	4.49368	-1.375	0.169174	
## PLOT46790	-12.99891	4.35765	-2.983	0.002865	**
## PLOT46813	-30.43461	3.77972	-8.052	9.58e-16	***
## PLOT46831	-11.73204	3.81815	-3.073	0.002130	**
## PLOT46848	-22.66721	3.61296	-6.274	3.75e-10	***
## PLOT46968	-12.71203	3.93048	-3.234	0.001226	**
## PLOT46972	-14.85347	4.38536	-3.387	0.000711	***
## PLOT47020	-20.55301	4.35938	-4.715	2.47e-06	***
## PLOT47049	-16.02836	3.77379	-4.247	2.19e-05	***
## PLOT47096	-26.54414	3.63029	-7.312	2.95e-13	***
## PLOT47099	-13.77254	4.38424	-3.141	0.001689	**
## PLOT47110	-20.58396	4.49900	-4.575	4.84e-06	***
## PLOT47133	-18.08021	3.78379	-4.778	1.81e-06	***
## PLOT47149	-22.58013	4.38384	-5.151	2.67e-07	***
## PLOT47150	-19.29195	4.89687	-3.940	8.24e-05	***
## PLOT47215	-27.11256	6.26036	-4.331	1.51e-05	***
## PLOT47255	-29.90423	4.35885	-6.861	7.48e-12	***
## PLOT47267	-20.64841	4.38599	-4.708	2.55e-06	***
## PLOT47302	-11.15031	4.35825	-2.558	0.010537	*
## PLOT47304	-29.51882	3.72421	-7.926	2.63e-15	***
## PLOT47309	-5.55410	4.35795	-1.274	0.202540	
## PLOT47318	-32.05283	4.10132	-7.815	6.34e-15	***
## PLOT47391	-32.47099	4.35965	-7.448	1.07e-13	***
## PLOT47403	-12.17976	3.77438	-3.227	0.001257	**
## PLOT47420	3.89828	4.38367	0.889	0.373889	
## PLOT47487	-11.02442	3.93414	-2.802	0.005090	**
## PLOT47504	-11.22077	4.35795	-2.575	0.010052	*
## PLOT47553	-19.14194	3.59211	-5.329	1.02e-07	***
## PLOT47564	-27.09685	6.25932	-4.329	1.52e-05	***
## PLOT47575	-18.99082	4.50092	-4.219	2.48e-05	***
## PLOT47582	-36.18717	4.35725	-8.305	< 2e-16	***
## PLOT47629	-8.42873	4.38364	-1.923	0.054552	.
## PLOT47642	-13.49541	3.93035	-3.434	0.000599	***
## PLOT47830	-37.97470	4.35846	-8.713	< 2e-16	***
## PLOT47945	-23.27334	4.35801	-5.340	9.59e-08	***
## PLOT48011	-8.96603	4.38387	-2.045	0.040871	*
## PLOT48020	-17.04312	3.59115	-4.746	2.12e-06	***
## PLOT48050	-18.21625	4.38506	-4.154	3.31e-05	***
## PLOT48097	-22.48888	4.35908	-5.159	2.55e-07	***
## PLOT48103	-24.17452	3.77381	-6.406	1.60e-10	***
## PLOT48127	-24.93280	4.49380	-5.548	3.00e-08	***
## PLOT48150	-12.17447	3.77897	-3.222	0.001281	**
## PLOT48176	-23.76406	4.99396	-4.759	1.99e-06	***
## PLOT48225	-7.74737	4.04961	-1.913	0.055777	.
## PLOT48233	-32.35734	4.36628	-7.411	1.41e-13	***
## PLOT48275	-20.28039	4.38533	-4.625	3.82e-06	***
## PLOT48334	-8.35013	4.35744	-1.916	0.055371	.
## PLOT48368	-16.46759	4.22273	-3.900	9.72e-05	***
## PLOT48434	-24.89392	3.51564	-7.081	1.58e-12	***
## PLOT48461	-11.75320	3.49438	-3.363	0.000774	***

## PLOT48482	-21.35033	4.49460	-4.750	2.07e-06	***
## PLOT48521	-14.03463	3.98310	-3.524	0.000429	***
## PLOT48528	-16.32207	3.44903	-4.732	2.27e-06	***
## PLOT48530	-5.84555	4.36115	-1.340	0.180172	
## PLOT48550	-13.44372	4.35743	-3.085	0.002042	**
## PLOT48561	-22.04588	6.18268	-3.566	0.000365	***
## PLOT48562	-13.74288	3.61296	-3.804	0.000144	***
## PLOT48800	-27.71074	4.35968	-6.356	2.21e-10	***
## PLOT48816	-13.17524	4.38517	-3.005	0.002670	**
## PLOT48850	-20.04064	4.38531	-4.570	4.97e-06	***
## PLOT48883	-27.05971	4.22328	-6.407	1.58e-10	***
## PLOT48904	-24.99515	3.98278	-6.276	3.70e-10	***
## PLOT48916	-32.21743	4.22356	-7.628	2.72e-14	***
## PLOT48917	-21.59117	4.49614	-4.802	1.60e-06	***
## PLOT48942	-25.99362	4.53994	-5.726	1.08e-08	***
## PLOT48948	-24.60035	4.35856	-5.644	1.73e-08	***
## PLOT48950	-20.84946	3.72477	-5.598	2.26e-08	***
## PLOT48956	-11.70985	4.49426	-2.606	0.009194	**
## PLOT49006	-17.32773	4.38461	-3.952	7.83e-05	***
## PLOT49069	-15.88401	4.38396	-3.623	0.000293	***
## PLOT49177	-27.10208	4.49395	-6.031	1.72e-09	***
## PLOT49207	-12.26722	4.49374	-2.730	0.006353	**
## PLOT49208	-6.18105	4.49497	-1.375	0.169146	
## PLOT49217	2.34884	3.73059	0.630	0.528968	
## PLOT49251	-15.39187	4.38484	-3.510	0.000451	***
## PLOT49262	-11.99258	4.35806	-2.752	0.005943	**
## PLOT49302	-18.60526	3.84424	-4.840	1.33e-06	***
## PLOT49305	-28.79909	4.35868	-6.607	4.22e-11	***
## PLOT49317	-14.47389	4.38465	-3.301	0.000968	***
## PLOT49349	-24.03158	3.61315	-6.651	3.14e-11	***
## PLOT49375	-19.45439	4.49376	-4.329	1.52e-05	***
## PLOT49381	-26.79385	4.35797	-6.148	8.29e-10	***
## PLOT49402	5.58028	4.36395	1.279	0.201040	
## PLOT49403	-26.91936	3.62322	-7.430	1.23e-13	***
## PLOT49475	-15.64157	4.49377	-3.481	0.000503	***
## PLOT49485	-18.95157	3.55877	-5.325	1.04e-07	***
## PLOT49510	-16.64317	3.80554	-4.373	1.24e-05	***
## PLOT49550	-17.25836	4.38391	-3.937	8.34e-05	***
## PLOT49565	-22.07955	3.55774	-6.206	5.76e-10	***
## PLOT49568	-17.20081	3.77383	-4.558	5.26e-06	***
## PLOT49584	-24.57416	4.49573	-5.466	4.77e-08	***
## PLOT49585	-29.01478	4.05020	-7.164	8.70e-13	***
## PLOT49698	-28.88546	3.93074	-7.349	2.24e-13	***
## PLOT49711	-22.88899	3.85300	-5.941	2.98e-09	***
## PLOT49715	-20.87533	4.87258	-4.284	1.86e-05	***
## PLOT49742	-6.67823	4.35726	-1.533	0.125406	
## PLOT49793	-21.83712	3.61298	-6.044	1.58e-09	***
## PLOT49810	-6.36911	3.77367	-1.688	0.091502	.
## PLOT49860	-25.08654	4.22253	-5.941	2.98e-09	***
## PLOT49874	-24.09488	3.93485	-6.123	9.68e-10	***
## PLOT49882	-19.13044	3.93143	-4.866	1.17e-06	***
## PLOT49892	-11.31565	3.93185	-2.878	0.004016	**
## PLOT50141	-4.19037	3.59013	-1.167	0.243176	
## PLOT50157	-16.23414	4.38463	-3.703	0.000215	***

## PLOT50206	-14.13423	4.38528	-3.223	0.001274	**
## PLOT50223	-36.49309	3.55935	-10.253	< 2e-16	***
## PLOT50247	-15.67053	4.05785	-3.862	0.000114	***
## PLOT50271	-17.47208	4.35810	-4.009	6.16e-05	***
## PLOT50282	-15.32919	3.77459	-4.061	4.94e-05	***
## PLOT50318	-13.07481	3.62644	-3.605	0.000314	***
## PLOT50348	-21.71887	4.38551	-4.952	7.51e-07	***
## PLOT50359	-23.31327	4.35935	-5.348	9.20e-08	***
## PLOT50361	0.82201	4.50104	0.183	0.855097	
## PLOT50381	-21.39710	4.38573	-4.879	1.09e-06	***
## PLOT50431	-11.94634	4.35761	-2.741	0.006133	**
## PLOT50434	-27.54778	4.35848	-6.320	2.78e-10	***
## PLOT50437	-14.78613	3.38079	-4.374	1.24e-05	***
## PLOT50498	11.64432	4.99883	2.329	0.019867	*
## PLOT50645	-8.68232	3.77893	-2.298	0.021618	*
## PLOT50687	-19.65836	6.25931	-3.141	0.001693	**
## PLOT50691	-20.55301	3.77595	-5.443	5.42e-08	***
## PLOT50772	-10.93389	4.49374	-2.433	0.014995	*
## PLOT50821	-29.34523	3.66385	-8.009	1.35e-15	***
## PLOT50845	-16.95375	4.35735	-3.891	0.000101	***
## PLOT50900	-33.42145	3.72370	-8.975	< 2e-16	***
## PLOT50966	-6.20284	3.70568	-1.674	0.094203	.
## PLOT50968	-20.88744	4.35795	-4.793	1.68e-06	***
## PLOT50996	-5.80038	6.25978	-0.927	0.354163	
## PLOT51009	-12.27348	3.63233	-3.379	0.000732	***
## PLOT51041	-1.64878	4.35729	-0.378	0.705149	
## PLOT51161	-13.51082	3.72358	-3.628	0.000287	***
## PLOT51164	-9.56564	3.93676	-2.430	0.015133	*
## PLOT51241	-30.79167	4.36164	-7.060	1.84e-12	***
## PLOT51249	16.10406	4.35773	3.696	0.000221	***
## PLOT51278	-19.84240	3.54950	-5.590	2.36e-08	***
## PLOT51435	-16.67895	4.38426	-3.804	0.000144	***
## PLOT51483	-8.25655	4.35745	-1.895	0.058161	.
## PLOT51487	-21.89114	3.77366	-5.801	6.90e-09	***
## PLOT51496	-22.59620	4.35728	-5.186	2.21e-07	***
## PLOT51548	-12.64660	6.16357	-2.052	0.040226	*
## PLOT51656	-10.71400	3.77361	-2.839	0.004537	**
## PLOT51669	-18.96865	3.64514	-5.204	2.01e-07	***
## PLOT51683	-11.85799	6.16273	-1.924	0.054379	.
## PLOT51711	-30.71530	6.26314	-4.904	9.61e-07	***
## PLOT51768	-26.12400	3.68089	-7.097	1.41e-12	***
## PLOT51845	-24.85710	3.93026	-6.325	2.71e-10	***
## PLOT51890	-8.07679	4.35745	-1.854	0.063847	.
## PLOT51937	-19.45600	4.38509	-4.437	9.28e-06	***
## PLOT51972	-13.15844	4.38429	-3.001	0.002699	**
## PLOT51974	-7.47037	3.78184	-1.975	0.048273	*
## PLOT52012	-19.85980	4.38472	-4.529	6.02e-06	***
## PLOT52042	-11.95277	3.40975	-3.505	0.000459	***
## PLOT52093	-19.12215	3.93115	-4.864	1.18e-06	***
## PLOT52117	-12.88518	3.78231	-3.407	0.000661	***
## PLOT52131	-9.27858	4.35874	-2.129	0.033313	*
## PLOT52136	-16.50858	4.38517	-3.765	0.000168	***
## PLOT52144	-26.41263	3.77601	-6.995	2.92e-12	***
## PLOT52186	-16.58416	3.89844	-4.254	2.13e-05	***

## PLOT52192	-19.00596	4.38476	-4.335	1.48e-05	***
## PLOT52204	-24.53992	3.77388	-6.503	8.47e-11	***
## PLOT52227	-20.00829	3.77789	-5.296	1.22e-07	***
## PLOT52261	-10.70768	3.55769	-3.010	0.002625	**
## PLOT52267	-22.56115	4.38525	-5.145	2.76e-07	***
## PLOT52273	-24.99782	3.77530	-6.621	3.84e-11	***
## PLOT52308	-12.35570	3.92794	-3.146	0.001665	**
## PLOT52309	-23.91761	4.38566	-5.454	5.12e-08	***
## PLOT52314	-17.83558	4.38592	-4.067	4.83e-05	***
## PLOT52317	-32.79167	4.36164	-7.518	6.29e-14	***
## PLOT52365	-14.35901	3.61675	-3.970	7.26e-05	***
## PLOT52399	-11.99115	4.99411	-2.401	0.016375	*
## PLOT52437	-20.20179	4.36000	-4.633	3.67e-06	***
## PLOT52493	-21.50225	3.80656	-5.649	1.68e-08	***
## PLOT52570	-12.63725	4.22985	-2.988	0.002822	**
## PLOT52586	-9.92756	3.93023	-2.526	0.011562	*
## PLOT52636	-2.97861	3.93087	-0.758	0.448629	
## PLOT52645	-5.64655	5.03569	-1.121	0.262199	
## PLOT52658	-26.25862	3.44580	-7.620	2.88e-14	***
## PLOT52707	-9.81093	4.10436	-2.390	0.016859	*
## PLOT52710	-28.12086	4.35851	-6.452	1.18e-10	***
## PLOT52725	-16.03790	6.29660	-2.547	0.010886	*
## PLOT52776	-23.39710	4.38573	-5.335	9.88e-08	***
## PLOT52823	-17.97651	6.18176	-2.908	0.003650	**
## PLOT52827	-21.46756	4.38528	-4.895	1.00e-06	***
## PLOT52844	-14.79566	3.80492	-3.889	0.000102	***
## PLOT52872	-26.04318	6.25972	-4.160	3.22e-05	***
## PLOT52919	11.44569	6.25952	1.829	0.067516	.
## PLOT52958	-16.01571	4.35836	-3.675	0.000240	***
## PLOT52964	2.75212	4.38366	0.628	0.530149	
## PLOT52967	-13.73043	6.18225	-2.221	0.026389	*
## PLOT52977	-27.94160	3.72357	-7.504	7.01e-14	***
## PLOT53035	-19.71426	3.78477	-5.209	1.96e-07	***
## PLOT53072	-4.47135	3.55988	-1.256	0.209145	
## PLOT53106	-32.94407	3.72383	-8.847	< 2e-16	***
## PLOT53113	0.93405	4.38367	0.213	0.831275	
## PLOT53126	-31.47148	4.27044	-7.370	1.92e-13	***
## PLOT53172	-28.84228	4.35726	-6.619	3.89e-11	***
## PLOT53198	-27.79603	4.35742	-6.379	1.90e-10	***
## PLOT53294	-33.94001	4.35801	-7.788	7.86e-15	***
## PLOT53359	-5.27168	3.61287	-1.459	0.144574	
## PLOT53377	-13.93368	3.77500	-3.691	0.000225	***
## PLOT53386	-12.50044	4.35929	-2.868	0.004150	**
## PLOT53393	-28.84603	3.77675	-7.638	2.52e-14	***
## PLOT53399	-10.69684	4.38399	-2.440	0.014714	*
## PLOT53410	-11.08529	3.77794	-2.934	0.003355	**
## PLOT53462	-26.45175	3.68080	-7.186	7.38e-13	***
## PLOT53506	-19.61372	4.38533	-4.473	7.86e-06	***
## PLOT53615	-12.57064	3.80478	-3.304	0.000959	***
## PLOT53629	-6.76730	4.38382	-1.544	0.122709	
## PLOT53655	-27.58879	4.35839	-6.330	2.61e-10	***
## PLOT53661	-12.05040	4.35890	-2.765	0.005716	**
## PLOT53663	-31.28274	3.72664	-8.394	< 2e-16	***
## PLOT53738	-20.25457	6.25935	-3.236	0.001219	**

## PLOT53762	-0.98916	4.38404	-0.226	0.821498	
## PLOT53799	-17.04318	6.25972	-2.723	0.006493	**
## PLOT53840	-15.54959	4.38506	-3.546	0.000394	***
## PLOT53854	-27.51635	3.72486	-7.387	1.68e-13	***
## PLOT53862	-21.30912	3.55796	-5.989	2.22e-09	***
## PLOT53863	-20.84715	4.38616	-4.753	2.05e-06	***
## PLOT53881	-20.08964	3.93658	-5.103	3.43e-07	***
## PLOT53885	-13.68877	3.59063	-3.812	0.000139	***
## PLOT53898	-13.47208	4.35810	-3.091	0.002001	**
## PLOT53902	-22.50282	3.93191	-5.723	1.09e-08	***
## PLOT53945	-26.16622	6.25959	-4.180	2.95e-05	***
## PLOT54028	-27.11977	4.36030	-6.220	5.29e-10	***
## PLOT54069	-21.83027	3.93047	-5.554	2.90e-08	***
## PLOT54072	-17.20112	4.50024	-3.822	0.000133	***
## PLOT54080	-27.31365	3.64551	-7.492	7.65e-14	***
## PLOT54133	-10.60587	3.80462	-2.788	0.005325	**
## PLOT54184	-29.14398	4.35887	-6.686	2.48e-11	***
## PLOT54190	-16.10587	4.38424	-3.674	0.000241	***
## PLOT54256	-15.65583	4.38404	-3.571	0.000358	***
## PLOT54295	-19.76459	3.68338	-5.366	8.33e-08	***
## PLOT54395	-4.08726	4.35732	-0.938	0.348268	
## PLOT54480	-22.81246	4.38548	-5.202	2.03e-07	***
## PLOT54491	-22.30429	3.37685	-6.605	4.28e-11	***
## PLOT54560	-23.08479	3.55807	-6.488	9.33e-11	***
## PLOT54604	-17.25457	3.93032	-4.390	1.15e-05	***
## PLOT54611	-11.28039	4.38533	-2.572	0.010124	*
## PLOT54612	-18.53803	6.18166	-2.999	0.002720	**
## PLOT54681	-13.66967	3.98337	-3.432	0.000604	***
## PLOT54682	-13.87768	4.38435	-3.165	0.001556	**
## PLOT54712	-17.45600	4.38509	-3.981	6.94e-05	***
## PLOT54742	-23.00487	4.38648	-5.244	1.62e-07	***
## PLOT54777	-21.31979	4.49373	-4.744	2.14e-06	***
## PLOT54879	-13.87136	4.38488	-3.163	0.001566	**
## PLOT54895	-17.02272	3.39565	-5.013	5.50e-07	***
## PLOT54899	-18.38422	3.98273	-4.616	3.99e-06	***
## PLOT54920	-18.03360	4.35799	-4.138	3.55e-05	***
## PLOT55003	-27.10297	4.35899	-6.218	5.35e-10	***
## PLOT55017	-11.03017	4.38399	-2.516	0.011893	*
## PLOT55022	-16.29195	6.18212	-2.635	0.008425	**
## PLOT55049	-9.32830	4.49667	-2.074	0.038072	*
## PLOT55056	-17.49215	6.16228	-2.839	0.004545	**
## PLOT55151	-14.94379	3.57746	-4.177	2.99e-05	***
## PLOT55193	-26.40597	4.49409	-5.876	4.42e-09	***
## PLOT55195	-5.17670	6.16246	-0.840	0.400917	
## PLOT55204	-18.73515	4.49378	-4.169	3.10e-05	***
## PLOT55355	-26.09773	4.35819	-5.988	2.23e-09	***
## PLOT55369	5.27967	4.35761	1.212	0.225709	
## PLOT55371	-18.46124	3.80671	-4.850	1.27e-06	***
## PLOT55373	-1.08726	4.35732	-0.250	0.802963	
## PLOT55389	-14.16236	3.98271	-3.556	0.000379	***
## PLOT55390	-29.36495	4.49415	-6.534	6.88e-11	***
## PLOT55408	-16.61689	4.10548	-4.047	5.24e-05	***
## PLOT55409	-34.49629	4.35746	-7.917	2.84e-15	***
## PLOT55499	-18.09322	4.38539	-4.126	3.74e-05	***

## PLOT55500	-10.80427	3.98328	-2.712	0.006697	**
## PLOT55544	-28.30714	4.49377	-6.299	3.18e-10	***
## PLOT55563	-17.54026	3.85395	-4.551	5.43e-06	***
## PLOT55618	-29.35799	3.77454	-7.778	8.50e-15	***
## PLOT55628	-14.84395	3.45322	-4.299	1.74e-05	***
## PLOT55654	-29.53424	4.49442	-6.571	5.37e-11	***
## PLOT55742	3.13025	6.25939	0.500	0.617030	
## PLOT55773	-13.27704	3.72362	-3.566	0.000366	***
## PLOT55801	-7.63933	3.54577	-2.154	0.031238	*
## PLOT55808	-29.43376	4.04922	-7.269	4.04e-13	***
## PLOT55828	-15.60216	4.38514	-3.558	0.000376	***
## PLOT55834	-23.89070	4.49470	-5.315	1.10e-07	***
## PLOT55847	-27.53231	3.77891	-7.286	3.57e-13	***
## PLOT55907	-20.83776	6.18082	-3.371	0.000752	***
## PLOT55918	-23.67786	4.38563	-5.399	6.94e-08	***
## PLOT55947	-20.84425	4.36178	-4.779	1.80e-06	***
## PLOT55958	-26.51635	6.26010	-4.236	2.31e-05	***
## PLOT56009	-27.76222	4.36216	-6.364	2.09e-10	***
## PLOT56028	-18.81251	4.10015	-4.588	4.55e-06	***
## PLOT56036	-26.37049	3.55769	-7.412	1.40e-13	***
## PLOT56038	-18.04326	3.80641	-4.740	2.18e-06	***
## PLOT56084	-20.53747	3.76734	-5.451	5.18e-08	***
## PLOT56109	-17.50334	6.18133	-2.832	0.004645	**
## PLOT56116	-6.31048	3.73216	-1.691	0.090915	.
## PLOT56145	-20.68942	4.38585	-4.717	2.44e-06	***
## PLOT56198	-23.44968	4.38582	-5.347	9.26e-08	***
## PLOT56201	-21.89412	3.78209	-5.789	7.41e-09	***
## PLOT56279	-22.53170	4.38557	-5.138	2.86e-07	***
## PLOT56281	-21.43288	4.38474	-4.888	1.04e-06	***
## PLOT56283	-26.06719	4.36018	-5.978	2.37e-09	***
## PLOT56329	-27.83486	3.77423	-7.375	1.85e-13	***
## PLOT56398	-16.71887	4.38551	-3.812	0.000139	***
## PLOT56405	-26.98952	6.26060	-4.311	1.65e-05	***
## PLOT56406	-18.90081	4.38463	-4.311	1.65e-05	***
## PLOT56434	-5.77700	4.53981	-1.273	0.203233	
## PLOT56483	-8.61953	3.93154	-2.192	0.028385	*
## PLOT56505	-24.36133	4.38702	-5.553	2.92e-08	***
## PLOT56539	-7.17670	3.55833	-2.017	0.043749	*
## PLOT56567	-12.07041	3.77999	-3.193	0.001413	**
## PLOT56581	-7.40539	3.59208	-2.062	0.039286	*
## PLOT56612	-20.18731	3.89898	-5.178	2.31e-07	***
## PLOT56665	-28.52356	6.16385	-4.628	3.77e-06	***
## PLOT56679	-29.46704	4.49435	-6.556	5.93e-11	***
## PLOT56761	-9.79994	3.72385	-2.632	0.008516	**
## PLOT56775	-14.32277	3.57839	-4.003	6.33e-05	***
## PLOT56784	-12.05366	4.35761	-2.766	0.005689	**
## PLOT56826	-9.12673	3.72551	-2.450	0.014320	*
## PLOT56834	-12.83486	4.35790	-2.945	0.003239	**
## PLOT56896	-14.05040	6.16325	-2.280	0.022657	*
## PLOT56918	-15.38502	3.93085	-3.914	9.17e-05	***
## PLOT56932	-16.79810	4.87156	-3.448	0.000568	***
## PLOT56979	-18.74832	4.38519	-4.275	1.94e-05	***
## PLOT57057	-12.60777	4.35731	-2.893	0.003823	**
## PLOT57058	-17.99258	4.35806	-4.129	3.70e-05	***

## PLOT57099	-9.79042	4.38397	-2.233	0.025567	*
## PLOT57106	-15.18157	4.38457	-3.463	0.000539	***
## PLOT57123	-6.38809	4.87288	-1.311	0.189922	
## PLOT57170	-17.68258	4.49380	-3.935	8.41e-05	***
## PLOT57211	-20.73360	4.51423	-4.593	4.45e-06	***
## PLOT57237	-22.46756	4.38528	-5.123	3.09e-07	***
## PLOT57263	-18.42655	4.38539	-4.202	2.68e-05	***
## PLOT57273	-21.93550	4.38514	-5.002	5.81e-07	***
## PLOT57296	-16.03328	4.10590	-3.905	9.52e-05	***
## PLOT57322	-19.64293	3.57316	-5.497	4.00e-08	***
## PLOT57402	-11.64652	3.78129	-3.080	0.002078	**
## PLOT57412	-9.34381	4.35775	-2.144	0.032055	*
## PLOT57416	-23.85871	4.38641	-5.439	5.54e-08	***
## PLOT57448	-25.02095	3.77577	-6.627	3.70e-11	***
## PLOT57466	-31.93390	6.16595	-5.179	2.30e-07	***
## PLOT57517	-24.70550	4.35871	-5.668	1.51e-08	***
## PLOT57534	-19.12267	3.80560	-5.025	5.17e-07	***
## PLOT57546	2.78841	4.49718	0.620	0.535255	
## PLOT57547	-20.79857	3.59155	-5.791	7.32e-09	***
## PLOT57561	-8.81412	4.49759	-1.960	0.050068	.
## PLOT57605	-24.11977	3.77701	-6.386	1.82e-10	***
## PLOT57630	-9.84064	4.87219	-2.020	0.043449	*
## PLOT57760	-21.27744	5.03626	-4.225	2.42e-05	***
## PLOT57897	-20.09895	3.72353	-5.398	6.98e-08	***
## PLOT57923	-18.79603	4.35742	-4.314	1.63e-05	***
## PLOT57934	-10.81987	4.38385	-2.468	0.013608	*
## PLOT57968	-15.49072	3.71477	-4.170	3.08e-05	***
## PLOT58091	-11.97470	4.35846	-2.747	0.006022	**
## PLOT58093	-23.98122	4.49401	-5.336	9.80e-08	***
## PLOT58145	1.18150	3.55889	0.332	0.739910	
## PLOT58218	-9.27618	3.55784	-2.607	0.009148	**
## PLOT58240	-14.09359	4.35725	-3.235	0.001225	**
## PLOT58257	-13.30942	3.61744	-3.679	0.000236	***
## PLOT58261	-23.38067	4.35736	-5.366	8.33e-08	***
## PLOT58265	-18.33061	3.77631	-4.854	1.24e-06	***
## PLOT58297	-19.76460	4.49386	-4.398	1.11e-05	***
## PLOT58311	-13.47317	6.16215	-2.186	0.028818	*
## PLOT58341	-17.90942	4.54024	-3.945	8.08e-05	***
## PLOT58409	-18.12267	3.80560	-4.762	1.96e-06	***
## PLOT58436	-20.40343	4.38501	-4.653	3.34e-06	***
## PLOT58457	-25.41862	3.93024	-6.467	1.07e-10	***
## PLOT58478	-18.40830	3.78270	-4.866	1.16e-06	***
## PLOT58565	-27.55213	3.72405	-7.398	1.55e-13	***
## PLOT58575	-12.83522	3.78267	-3.393	0.000695	***
## PLOT58598	-20.35013	3.44494	-5.907	3.65e-09	***
## PLOT58607	-29.77378	4.36251	-6.825	9.58e-12	***
## PLOT58608	-19.18499	4.35876	-4.401	1.09e-05	***
## PLOT58613	-10.41950	3.51391	-2.965	0.003036	**
## PLOT58635	-11.98916	4.38404	-2.735	0.006260	**
## PLOT58708	-28.51718	3.98387	-7.158	9.06e-13	***
## PLOT58715	-10.70264	3.93383	-2.721	0.006532	**
## PLOT58729	-19.74832	4.38519	-4.503	6.80e-06	***
## PLOT58749	-28.76958	5.03557	-5.713	1.16e-08	***
## PLOT58770	-20.49758	3.93300	-5.212	1.93e-07	***

## PLOT58792	-18.43288	4.38474	-4.204	2.66e-05	***
## PLOT58833	-1.88171	3.61285	-0.521	0.602497	
## PLOT58837	-5.34292	6.25930	-0.854	0.393359	
## PLOT58842	-7.81878	4.38481	-1.783	0.074608	.
## PLOT58855	-1.43018	4.49371	-0.318	0.750296	
## PLOT58856	-18.62005	4.38470	-4.247	2.20e-05	***
## PLOT58861	-19.69435	4.50732	-4.369	1.26e-05	***
## PLOT58871	-13.87717	3.93203	-3.529	0.000420	***
## PLOT58887	-12.55591	4.38448	-2.864	0.004200	**
## PLOT58890	-17.71473	3.64480	-4.860	1.20e-06	***
## PLOT58983	-20.91689	4.35776	-4.800	1.62e-06	***
## PLOT59026	-3.01571	6.16287	-0.489	0.624621	
## PLOT59038	-14.42764	3.80449	-3.792	0.000151	***
## PLOT59089	-4.77577	4.04990	-1.179	0.238349	
## PLOT59102	-15.29828	4.38486	-3.489	0.000488	***
## PLOT59115	-13.22891	4.38405	-3.018	0.002558	**
## PLOT59293	-10.90713	6.18114	-1.765	0.077680	.
## PLOT59305	-10.39823	3.61316	-2.878	0.004016	**
## PLOT59376	-14.81878	6.18160	-2.397	0.016547	*
## PLOT59403	-21.14922	4.35989	-4.851	1.26e-06	***
## PLOT59452	-14.25675	4.49458	-3.172	0.001521	**
## PLOT59490	-21.11730	4.22246	-5.001	5.85e-07	***
## PLOT59584	-23.02529	3.93128	-5.857	4.94e-09	***
## PLOT59594	-22.01571	4.35836	-5.051	4.50e-07	***
## PLOT59602	-20.79623	3.93387	-5.286	1.29e-07	***
## PLOT59603	-13.82221	3.64801	-3.789	0.000153	***
## PLOT59674	-25.52247	4.36212	-5.851	5.12e-09	***
## PLOT59675	-16.59109	3.80898	-4.356	1.35e-05	***
## PLOT59707	-28.24824	3.93057	-7.187	7.36e-13	***
## PLOT59862	-16.26831	4.49445	-3.620	0.000297	***
## PLOT59869	-21.74664	3.72450	-5.839	5.51e-09	***
## PLOT59891	-22.86648	6.26086	-3.652	0.000262	***
## PLOT59908	-12.37924	4.99449	-2.479	0.013215	*
## PLOT59914	-20.43288	4.38474	-4.660	3.22e-06	***
## PLOT59947	-29.77392	3.55768	-8.369	< 2e-16	***
## PLOT59967	-19.60740	6.18253	-3.171	0.001524	**
## PLOT60009	-22.63851	3.93428	-5.754	9.10e-09	***
## PLOT60052	-0.62748	3.87165	-0.162	0.871255	
## PLOT60053	-20.66449	4.35882	-4.741	2.17e-06	***
## PLOT60078	-13.36553	4.07891	-3.277	0.001056	**
## PLOT60111	-6.05498	3.55866	-1.701	0.088901	.
## PLOT60115	-12.85347	6.18200	-2.079	0.037639	*
## PLOT60159	-4.22213	3.44472	-1.226	0.220361	
## PLOT60168	-22.16892	4.38592	-5.055	4.43e-07	***
## PLOT60287	-21.07009	4.38501	-4.805	1.58e-06	***
## PLOT60361	-16.12918	3.64876	-4.420	1.00e-05	***
## PLOT60403	-13.51942	4.35762	-3.102	0.001927	**
## PLOT60406	-17.78249	4.49407	-3.957	7.67e-05	***
## PLOT60433	-15.59169	6.18097	-2.523	0.011675	*
## PLOT60476	-17.08749	3.84605	-4.443	9.02e-06	***
## PLOT60488	-20.71074	4.35968	-4.751	2.07e-06	***
## PLOT60523	-12.96495	4.38486	-2.957	0.003120	**
## PLOT60545	-17.60649	4.22485	-4.167	3.12e-05	***
## PLOT60573	-8.28076	6.16209	-1.344	0.179052	

## PLOT60630	-17.41499	4.38519	-3.971	7.22e-05	***
## PLOT60664	-0.01591	4.49380	-0.004	0.997175	
## PLOT60670	-16.16368	4.38498	-3.686	0.000230	***
## PLOT60701	-25.87364	6.29335	-4.111	3.98e-05	***
## PLOT60784	-11.96443	3.93136	-3.043	0.002349	**
## PLOT60880	-14.90118	4.35737	-3.420	0.000631	***
## PLOT60887	-40.25457	6.25935	-6.431	1.36e-10	***
## PLOT60947	-23.49701	4.38498	-5.359	8.67e-08	***
## PLOT60954	-20.53974	3.78293	-5.430	5.85e-08	***
## PLOT60996	-4.06216	6.25930	-0.649	0.516374	
## PLOT61035	-17.09718	3.53989	-4.830	1.40e-06	***
## PLOT61061	-10.59169	6.18097	-1.714	0.086650	.
## PLOT61062	-8.41318	4.35861	-1.930	0.053619	.
## PLOT61063	-19.54778	4.35848	-4.485	7.41e-06	***
## PLOT61085	-19.40343	4.38501	-4.425	9.80e-06	***
## PLOT61092	-10.44553	3.59026	-2.909	0.003633	**
## PLOT61098	-20.89448	4.38525	-4.765	1.93e-06	***
## PLOT61117	-16.38554	4.38551	-3.736	0.000188	***
## PLOT61122	-3.08383	6.18077	-0.499	0.617838	
## PLOT61126	-24.39303	3.78387	-6.447	1.22e-10	***
## PLOT61144	-18.33115	4.87296	-3.762	0.000170	***
## PLOT61145	-11.68166	3.46399	-3.372	0.000750	***
## PLOT61150	-16.80090	4.38528	-3.831	0.000129	***
## PLOT61205	-18.94525	4.35874	-4.346	1.40e-05	***
## PLOT61252	-19.87136	4.38488	-4.532	5.95e-06	***
## PLOT61299	-4.80308	3.80392	-1.263	0.206755	
## PLOT61302	-23.68129	4.36007	-5.431	5.79e-08	***
## PLOT61311	-14.04697	4.38467	-3.204	0.001363	**
## PLOT61326	-12.36911	4.35741	-2.839	0.004544	**
## PLOT61358	-19.14922	4.35989	-4.392	1.14e-05	***
## PLOT61377	-5.62531	4.99491	-1.126	0.260118	
## PLOT61387	-25.41950	6.16265	-4.125	3.76e-05	***
## PLOT61418	-30.22315	6.26161	-4.827	1.42e-06	***
## PLOT61420	-5.82330	3.77410	-1.543	0.122887	
## PLOT61540	-22.54959	4.38506	-5.142	2.79e-07	***
## PLOT61565	-27.60144	4.35752	-6.334	2.54e-10	***
## PLOT61580	-17.92552	3.51319	-5.102	3.45e-07	***
## PLOT61659	-11.33115	3.55960	-3.183	0.001463	**
## PLOT61750	1.01454	4.07767	0.249	0.803519	
## PLOT61756	-23.11339	3.98427	-5.801	6.89e-09	***
## PLOT61799	-17.27749	4.87460	-3.544	0.000396	***
## PLOT61846	-20.35609	4.38585	-4.641	3.53e-06	***
## PLOT61894	-5.55846	4.36003	-1.275	0.202401	
## PLOT61915	-27.73097	4.27027	-6.494	8.97e-11	***
## PLOT61932	-12.35194	4.38390	-2.818	0.004853	**
## PLOT61952	-20.83901	4.36041	-4.779	1.80e-06	***
## PLOT61967	-19.85612	3.93121	-5.051	4.52e-07	***
## PLOT61981	-26.58770	4.36011	-6.098	1.14e-09	***
## PLOT62051	-19.58790	4.49375	-4.359	1.33e-05	***
## PLOT62069	-26.92736	4.35926	-6.177	6.92e-10	***
## PLOT62101	-21.43990	4.27112	-5.020	5.31e-07	***
## PLOT62115	-6.96603	4.38387	-1.589	0.112105	
## PLOT62117	-18.39248	3.68294	-4.994	6.07e-07	***
## PLOT62188	-2.67299	4.35733	-0.613	0.539602	

## PLOT62211	-7.35829	3.93555	-1.870	0.061570	.
## PLOT62272	-12.77625	3.77647	-3.383	0.000721	***
## PLOT62488	-9.32503	4.49369	-2.075	0.038012	*
## PLOT62530	9.36673	4.49864	2.082	0.037369	*
## PLOT62537	-10.50596	3.80523	-2.761	0.005780	**
## PLOT62617	-14.67371	3.80415	-3.857	0.000116	***
## PLOT62621	-12.06595	4.38367	-2.752	0.005931	**
## PLOT62659	-15.21553	3.77376	-4.032	5.59e-05	***
## PLOT62677	-18.48516	3.55889	-5.194	2.12e-07	***
## PLOT62707	-20.93627	3.51522	-5.956	2.72e-09	***
## PLOT62749	-13.46530	3.54952	-3.794	0.000150	***
## PLOT62763	-15.10297	4.35899	-3.465	0.000534	***
## PLOT62820	-13.54959	4.38506	-3.090	0.002010	**
## PLOT62825	-8.14398	4.35887	-1.868	0.061755	.
## PLOT62830	-23.13423	6.18194	-3.742	0.000184	***
## PLOT62847	-19.16678	3.84441	-4.986	6.33e-07	***
## PLOT62873	-21.98102	6.16257	-3.567	0.000364	***
## PLOT62890	-16.36350	4.38399	-3.733	0.000191	***
## PLOT62894	-13.15212	4.38481	-2.999	0.002715	**
## PLOT62897	-23.17415	4.38710	-5.282	1.32e-07	***
## PLOT62973	-24.72448	4.35740	-5.674	1.45e-08	***
## PLOT63032	-12.47399	4.07587	-3.060	0.002219	**
## PLOT63074	-23.08814	4.27233	-5.404	6.74e-08	***
## PLOT63109	-9.43236	4.49478	-2.099	0.035898	*
## PLOT63136	-14.64950	4.38446	-3.341	0.000839	***
## PLOT63162	-24.12790	4.38605	-5.501	3.92e-08	***
## PLOT63166	-16.72141	4.49438	-3.721	0.000200	***
## PLOT63177	-25.21247	4.49456	-5.610	2.11e-08	***
## PLOT63238	-14.39658	4.49411	-3.203	0.001364	**
## PLOT63273	-21.16556	3.72353	-5.684	1.37e-08	***
## PLOT63277	-20.30984	4.38504	-4.632	3.70e-06	***
## PLOT63314	-10.94755	3.44811	-3.175	0.001506	**
## PLOT63373	-21.67136	3.77400	-5.742	9.76e-09	***
## PLOT63375	-1.46161	4.35730	-0.335	0.737305	
## PLOT63378	-18.57904	4.38479	-4.237	2.29e-05	***
## PLOT63405	12.91559	6.26454	2.062	0.039275	*
## PLOT63429	-3.33857	3.77364	-0.885	0.376346	
## PLOT63473	-0.93767	4.38363	-0.214	0.830629	
## PLOT63583	-27.35319	4.36137	-6.272	3.80e-10	***
## PLOT63589	-11.78861	6.16226	-1.913	0.055787	.
## PLOT63640	-17.41499	6.18188	-2.817	0.004860	**
## PLOT63642	-11.06343	3.62628	-3.051	0.002291	**
## PLOT63698	-11.73474	4.24931	-2.762	0.005768	**
## PLOT63719	-4.18168	3.77678	-1.107	0.268245	
## PLOT63757	-25.40807	3.72389	-6.823	9.71e-12	***
## PLOT63773	-21.96199	6.29285	-3.490	0.000486	***
## PLOT63775	-17.98174	4.38599	-4.100	4.18e-05	***
## PLOT63786	-14.15687	3.84458	-3.682	0.000233	***
## PLOT63818	-15.77464	3.60442	-4.376	1.22e-05	***
## PLOT63955	-17.91689	4.35776	-4.111	3.98e-05	***
## PLOT63959	-25.02276	4.38585	-5.705	1.21e-08	***
## PLOT63988	-21.92284	6.18300	-3.546	0.000394	***
## PLOT64010	-17.59864	4.10016	-4.292	1.79e-05	***
## PLOT64063	1.06088	6.25930	0.169	0.865418	


```

## PLOT64065      -16.08555      3.78114    -4.254  2.13e-05 ***
## PLOT64076      -16.28926      6.25948    -2.602  0.009280 **
## PLOT64145       -8.30722      3.80510    -2.183  0.029057 *
## PLOT64153      -25.16622      6.25959    -4.020  5.87e-05 ***
## PLOT64204      -18.81878      4.10529    -4.584  4.64e-06 ***
## PLOT64212      -21.46309      4.10592    -5.227  1.77e-07 ***
## PLOT64249      -26.79385      4.35797    -6.148  8.29e-10 ***
## PLOT64269       -8.31041      3.93293    -2.113  0.034635 *
## PLOT64295      -17.86503      3.80615    -4.694  2.74e-06 ***
## PLOT64323      -18.63161      4.38486    -4.249  2.18e-05 ***
## PLOT64345      -20.26587      3.98368    -5.087  3.73e-07 ***
## PLOT64384      -18.08855      3.93370    -4.598  4.34e-06 ***
## PLOT64407      -22.72250      3.93029    -5.781  7.75e-09 ***
## PLOT64414      -13.20679      3.68818    -3.581  0.000345 ***
## PLOT64443       -8.32177      4.35726    -1.910  0.056194 .
## PLOT64463      -21.64789      3.93061    -5.508  3.78e-08 ***
## PLOT64465       -8.92450      3.93304    -2.269  0.023294 *
## PLOT67852      -25.98140      4.04920    -6.416  1.49e-10 ***
## PLOT67854      -24.16731      3.93023    -6.149  8.25e-10 ***
## PLOT67857      -26.51744      4.49387    -5.901  3.80e-09 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 5.337 on 6600 degrees of freedom
## (82 observations deleted due to missingness)
## Multiple R-squared:  0.9151, Adjusted R-squared:  0.8901
## F-statistic: 36.69 on 1938 and 6600 DF, p-value: < 2.2e-16

```

Unfortunately, there are too many unique plots to visualize this linear regression, but the results indicate that, in general, plot and species have a significant influence on the height of the tree. These results will be confirmed with an ANOVA in the following analysis section.

Analysis

describe the results of the code but dont show it -apply to main hypothesis -hide codes and explain without them (this was sig different than this then show degrees of freedom etc, but add into explanation) -1 to 2 visulizations per argument

ANOVA Tests

```
##              Df Sum Sq Mean Sq F value Pr(>F)
## DIA              1 1351652 1351652 17894.8 <2e-16 ***
## Species          3  216899   72300   957.2 <2e-16 ***
## Residuals      8534  644599      76
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 82 observations deleted due to missingness
```

```
##              Df Sum Sq Mean Sq F value Pr(>F)
## DIA              1 1351652 1351652 47462.200 <2e-16 ***
## Species          3  216899   72300  2538.752 <2e-16 ***
## PLOT          1934  456641     236    8.291 <2e-16 ***
## Residuals      6600 187958      28
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 82 observations deleted due to missingness
```

The ANOVA results suggest that diameter has the highest influence on tree height, as expected. Additionally, it suggests that both species and plot number have a significant influence on tree height. The influence of plot is smaller than that of diameter and tree species. These results will be explored further in the following sections.

##ANOVA Test to Compare Mean Height Differences Between Species In order to properly understand the statistical differences present in mean species height, an ANOVA test will be conducted between each species in pairs.

```
##              Df Sum Sq Mean Sq F value Pr(>F)
## Species          1 363941  363941   2077 <2e-16 ***
## Residuals      4951 867673     175
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##              Df Sum Sq Mean Sq F value Pr(>F)
## Species          1  59934   59934   257.6 <2e-16 ***
## Residuals      3669 853755     233
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##              Df Sum Sq Mean Sq F value Pr(>F)
## Species          1  33524   33524   129.7 <2e-16 ***
## Residuals      3666 947667     259
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##           Df Sum Sq Mean Sq F value Pr(>F)
## Species      1 270470  270470    1392 <2e-16 ***
## Residuals  4948 961585     194
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##           Df Sum Sq Mean Sq F value Pr(>F)
## Species      1  38618   38618    361.7 <2e-16 ***
## Residuals  3052 325847     107
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##           Df Sum Sq Mean Sq F value Pr(>F)
## Species      1   7881    7881    29.45 5.99e-08 ***
## Residuals  5565 1489494     268
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Each ANOVA pairing between species is significantly different, having a p value below 0. This means that the null hypothesis is rejected, and the alternative hypothesis is accepted: tree height does vary significantly between species.

Because the anova test shows that all results are significant a pairwise comparison between species can be conducted using a Tukey Test HSD to show the confidence interval, p-value and difference in each species.

##Tukey Test HSD of Tree Species Mean Height Difference

```
## Tukey multiple comparisons of means
## 95% family-wise confidence level
##
## Fit: aov(formula = HT ~ Species, data = w.spruce.l.pine)
##
## $Species
##           diff      lwr      upr p adj
## White Spruce-Lodgepole Pine 9.442757 8.289179 10.59634 0
```

```
## Tukey multiple comparisons of means
## 95% family-wise confidence level
##
## Fit: aov(formula = HT ~ Species, data = l.pine.m.hemlock)
##
## $Species
##           diff      lwr      upr p adj
## Mountain Hemlock-Lodgepole Pine 7.063093 5.847069 8.279118 0
```

```
## Tukey multiple comparisons of means
## 95% family-wise confidence level
##
## Fit: aov(formula = HT ~ Species, data = b.spruce.m.hemlock)
##
## $Species
##           diff      lwr      upr p adj
## Mountain Hemlock-Black Spruce 14.89889 14.11595 15.68182 0
```

```

## Tukey multiple comparisons of means
## 95% family-wise confidence level
##
## Fit: aov(formula = HT ~ Species, data = b.spruce.l.pine)
##
## $Species
##              diff      lwr      upr p adj
## Lodgepole Pine-Black Spruce 7.835792 7.027957 8.643627 0

## Tukey multiple comparisons of means
## 95% family-wise confidence level
##
## Fit: aov(formula = HT ~ Species, data = b.w.spruces)
##
## $Species
##              diff      lwr      upr p adj
## White Spruce-Black Spruce 17.27855 16.53523 18.02187 0

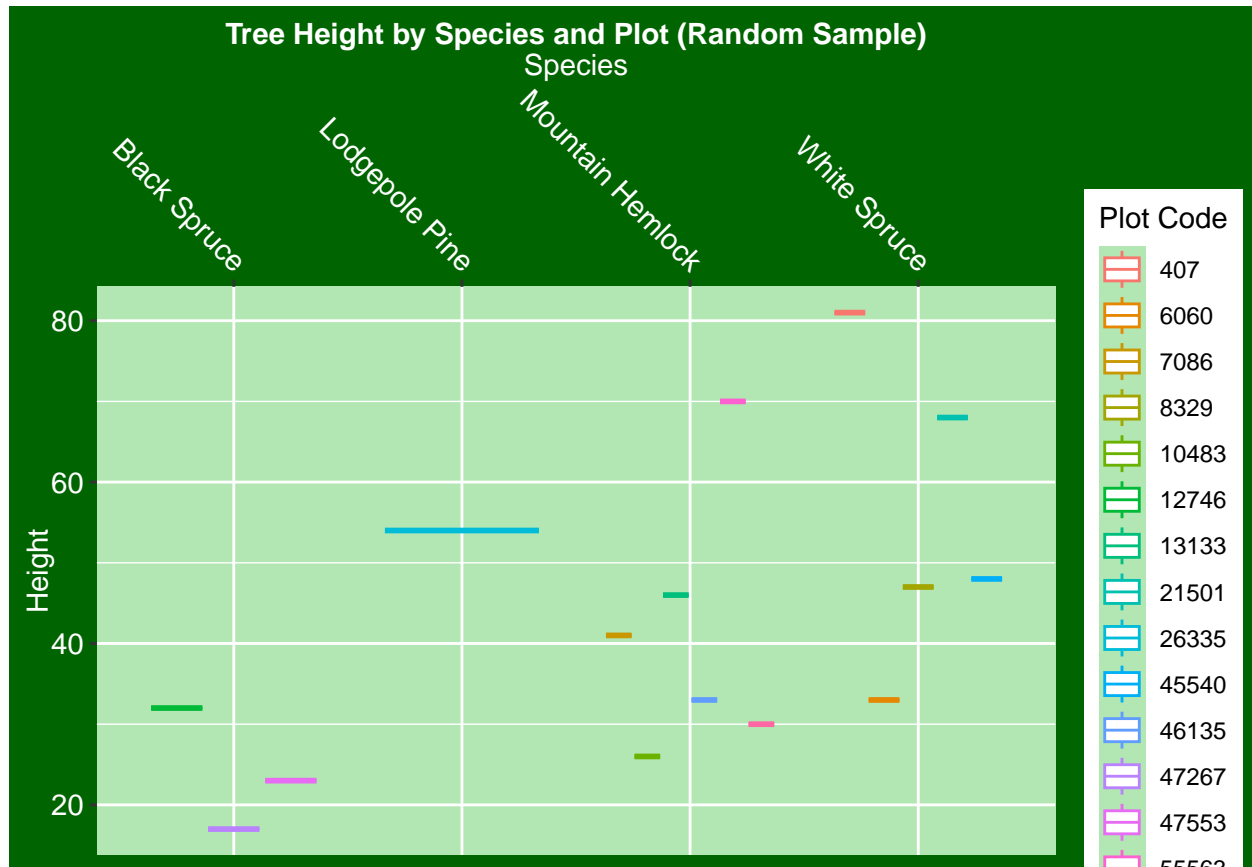
## Tukey multiple comparisons of means
## 95% family-wise confidence level
##
## Fit: aov(formula = HT ~ Species, data = w.spruce.m.hemlock)
##
## $Species
##              diff      lwr      upr p adj
## White Spruce-Mountain Hemlock 2.379664 1.51996 3.239367 1e-07

##              diff      lwr      upr      p adj
## White Spruce-Lodgepole Pine 9.442757 8.289179 10.596335 8.369286e-09
## Mountain Hemlock-Lodgepole Pine 7.063093 5.847069 8.279118 8.252223e-09
## Mountain Hemlock-Black Spruce 14.898886 14.115947 15.681825 3.501914e-09
## Lodgepole Pine-Black Spruce 7.835792 7.027957 8.643627 0.000000e+00
## White Spruce-Black Spruce 17.278550 16.535226 18.021873 2.937114e-09
## White Spruce-Mountain Hemlock 2.379664 1.519960 3.239367 5.994149e-08
## Comparison
## White Spruce-Lodgepole Pine White Spruce vs Lodgepole Pine
## Mountain Hemlock-Lodgepole Pine Lodgepole Pine vs Mountain Hemlock
## Mountain Hemlock-Black Spruce Black Spruce vs Mountain Hemlock
## Lodgepole Pine-Black Spruce Black Spruce vs Lodgepole Pine
## White Spruce-Black Spruce White Spruce vs Black Spruce
## White Spruce-Mountain Hemlock White Spruce vs Mountain Hemlock

```

According to the Tukey HSD Test, the largest difference in tree height means is between black spruce and white spruce (17.28 feet), followed by the difference of Mountain Hemlock and Black Spruce (14.89 feet). The trees with the least mean height difference are White Spruce and Mountain Hemlock (2.38 feet). The confidence intervals between true differences in height ranged throughout species with the biggest confidence interval being Mountain Hemlock versus Lodgepole Pine with a lower bound of 5.84 feet and a higher bound of 10.59 feet. The smallest confidence interval was found between Mountain Hemlock and Black Spruce and Lodgepole Pine and Black Spruce (14.11 to 15.69 feet, and 7.03 and 8.64 feet, respectively). Lastly, all p-values have stayed statistically significant. This means we can reject the null hypothesis and accept the alternative hypothesis: tree species in Alaska do vary by height.

Visualizing Interactions with Plot Differences



This data visualization emphasizes the results from the ANOVA tests, showing that plot is also a significant influencing factor on tree height. There were too many unique plots to visualize the results from the linear regression or show all plots in this figure, but even this random sample reemphasizes the findings from our ANOVA test.

Question 1: <insert specific question here and add additional subsections for additional questions below, if needed>

Q: How does tree height vary across Alaska's forests? - How does this height vary with DBH? - How does this height vary with species? -How does this height vary with plot?

Question 2:

Summary and Conclusions

References

<add references here if relevant, otherwise delete this section>

#Appendix