



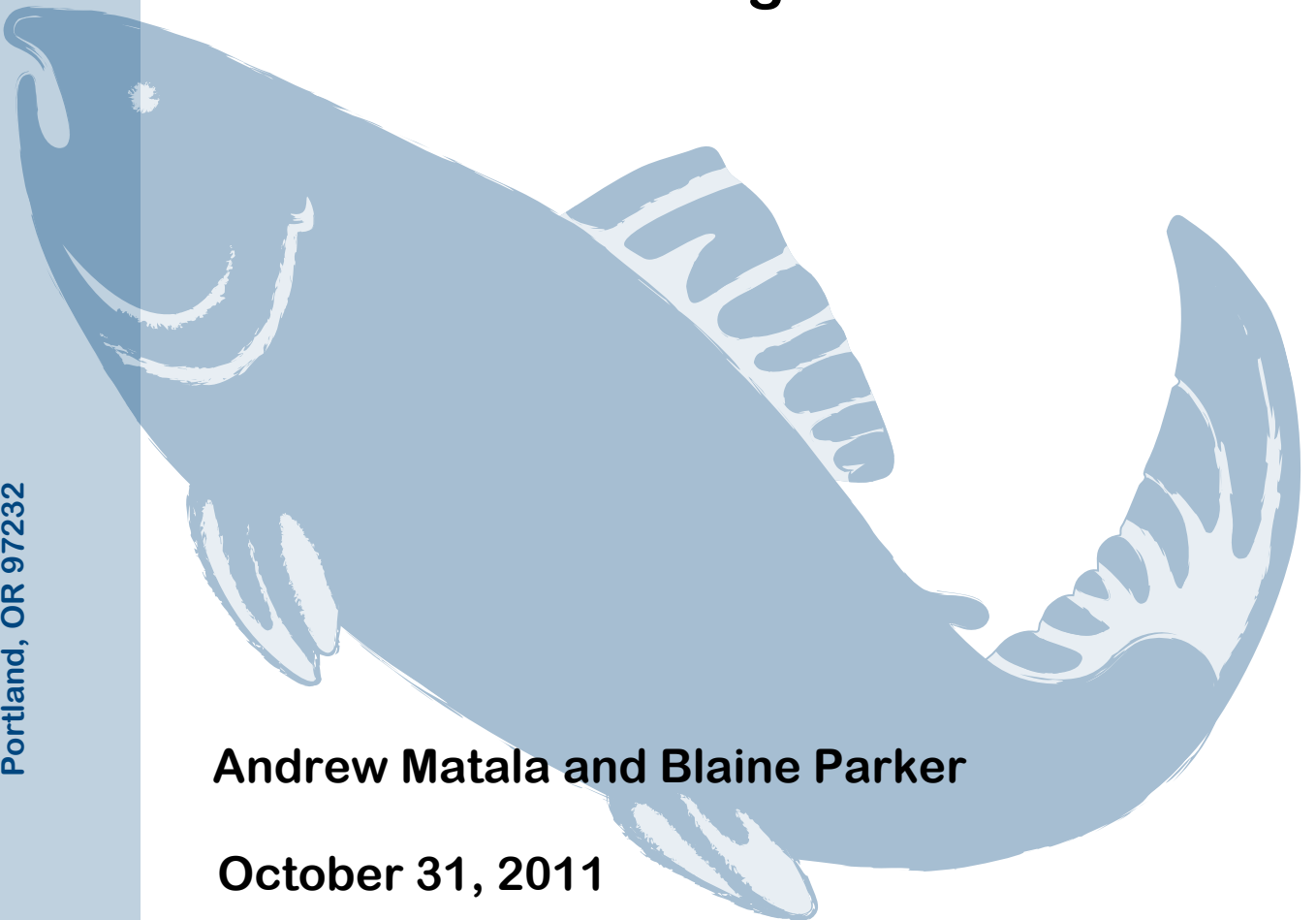
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Genetic Stock Structure, Relative Productivity and Migration (Gene Flow) of White Sturgeon Among Bonneville, The Dalles, John Day and McNary Reservoirs in the Lower Mid-Columbia River Region



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2011 Annual Progress Report

**Genetic stock structure, relative productivity and migration (gene flow) of
white sturgeon among Bonneville, The Dalles, John Day and McNary reservoirs
in the lower mid-Columbia River region.**

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Abstract

This report presents the results of genetic monitoring of white sturgeon (*Acipenser transmontanus*) in the second of a ten year implementation period for the project. These results will be used to address long-term objectives for monitoring and conservation of populations among four upstream impoundments in the mid Columbia River Basin (CRB): Bonneville, The Dalles, John Day, and McNary reservoirs. Our project objectives include evaluation of population differentiation and migration (gene flow) among reservoirs, and relatedness and effective population size within each reservoir. Further, long-term goals also include exploring parentage assignment between sampled young-of-the-year and mature adult individuals, and the eventual genetic characterization of individuals captured for broodstock in a proposed Yakama Nation sturgeon hatchery program.

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Introduction

Our long-term objectives are to characterize the genetic population structure of white sturgeon among four impoundments, to assess migration and gene flow, and effective population size, and relative productivity. In 2011 white sturgeon collections were comprised of 1032 individuals described in the previous (2010) report, and an additional 599 sturgeon sampled in 2010-2011 field efforts. Fish were sampled during young of the year (YOY) gill net surveys, during tribal broodstock collection efforts, and during Yakama Nation cooperative tagging efforts. Some individuals were pared from the data set due to incomplete genotypes and duplicate sampling (see Table 1 for sample sizes) as determined by identical genotypes for a pair of sampled fish. In 2011, the sampling surveys were focused on The Dalles reservoir and therefore a disproportionate number of individuals were collected and analyzed from among the four described reservoirs sampled in 2011. Between 2010 and 2011, the largest number of samples overall have been collected from John Day Reservoir (Table 1). Additional collections evaluated this report year include a sample from the lower Columbia River below Bonneville dam, and a Snake River reference group for comparison (Table 1). Sampled individuals were young of the year (YOY) and/or juvenile fish. In addition we also analyzed a limited number of fish considered to be potentially mature adults based on fork length measurements. However given the disproportionate numbers of adults across impoundments, the current data set is not yet appropriate for evaluating effective population size and productivity (e.g. through parentage analysis), which will require genotypes from a greater number of sexually mature fish that better represent inclusive populations. Based on the preliminary results presented here, we offer some reasonable speculation on likely genetic structure and the prevalence of gene flow, along with project efforts in the following years to benefit increased population structure resolution and clarification of results. Projected efforts (projected $n=1000$ per year) in subsequent years will continue to address project needs; the current baseline of genotypes, as additional data accumulates annually, will be valuable over the course of the next few years in evaluating all relevant and feasible population parameter estimates.

Methods

Genetic evaluation of population structure was largely conducted using the program GenAlEx version 6.41 (Peakall and Smouse 2006). To understand relative levels of population diversity, we evaluated genotypes across a suite of 13 microsatellite loci (μ SAT). Observed amplified DNA fragments (here after referred to as alleles) may number up to eight for octoploid white sturgeon. Therefore, alleles are treated as individual loci, and were scored by presence (1) or absence (0) for each individual fish. We calculated sample allele frequencies, defined here as the proportion of individuals within a given population for which a specific allele was observed. In addition, we calculated numbers of observed alleles per collection and locus, and private alleles (occurring in one population exclusively) among collections. Multivariate principle coordinates analysis (PCA; Orloci 1978) was performed to describe population similarities and distinctions. The method reduces redundant variables into a smaller subset of the most informative, where each successive PCA axis explains proportionately less of the total variation. Generally the first 2-3 axes will reveal most of the separation among distinct groups. We used the standardized covariance matrix option based on Nei's unbiased genetic distance (Nei 1978); this measure is one of the most widely used for estimating genetic distance among populations. Partitioning of within- and among- components of total genetic variation were evaluated with analysis of molecular variance (AMOVA) and pairwise genetic distance (Φ PT) in GenAlEx. The Φ PT statistic is a Euclidean metric analogous to Wrights F_{st} , and appropriate for binary data. Bayesian cluster analysis was performed using the program STRUCTURE version 2 (Pritchard and Donnelly 2000) to estimate the membership coefficients (Q), or fractional membership in k

inferred populations for each individual sample in each population. The STRUCTURE results infer levels of gene flow or proportional migration between reservoirs.

Results

In the 2011 report year we included additional temporal collections from the four impoundments as well as several additional collections (Table 1) including a group of juvenile sturgeon that are the progeny of broodstock captured in the Snake River between Brownlee Dam and Bliss Dam (Linda Lemmon pers. comm.; Kruse-Malle 1993; Patterson et al. 1992), and a collection from the Willamette River in the lower Columbia. A second temporal collection from the lower Columbia River was included, and although McNary Reservoir has seen limited numbers of sampled fish to date, we included a collection of adult sturgeon (many believed to be mature) sampled from below Priest Rapids Dam (PRD) downstream to McNary Reservoir (Table 1). In our 2010 report, results of spatial ordination of data using PCA (Figure 1) indicated a distinct sub-cluster of individuals within the John Day impoundment sample, and a second from the Yakama Hatchery broodstock (reference) group. The previously described distinctions in the John Day Reservoir (“type-1 in this report) and in the Yakama captive broodstock both persist in the current analysis. Further, in the updated PCA analysis, we have identified the Snake River collection as a third similarly distinct but unique collection. The remainder of samples from the John Day, Bonneville, McNary, and The Dalles (TDA) impoundments, as well as the Lower Columbia River samples all tended to overlap substantially in PCA (Figure 2). The cumulative percent of total variation among groups that is explained by the first three axes is 82.4%, and is partitioned as follows: x-axis (45.9%), y-axis (21.5%), z-axis (15.0%).

In AMOVA analysis, a significant proportion of the total variation across the data set (5%) was attributable to variation among collections, and it was significant ($P < 0.001$). The AMOVA results also revealed significant among-group variation between collections from below Bonneville Dam and those above, but this was largely driven by a small number of pairwise Φ_{PT} comparisons (Table 2). In fact, Willamette River was only significantly different from PRD – MCN 2011 in pairwise comparisons with temporal collections from the four impoundments (Table 2). Based on AMOVA and PCA results, it was deemed appropriate to combine temporal samples by impoundment-of-origin from 2010 and 2011.

Numbers of observed alleles and allele frequency (indicating degree of heterozygosity) was highly variable among collections (Figure 1; Table 3). Numbers of alleles was greatest in the four impoundments but varied across years, likely an artifact of sample sizes. Fewest number of observed alleles occurred in the John Day “type-1” collection, followed by the two domesticated stocks in the Snake River and Yakama hatchery. When collections within each impoundment were pooled across years the numbers of observed alleles was relatively stable (Figure 1). The John Day Reservoir collections had the greatest number of private alleles, followed by Bonneville impoundment (Figure 1; Table 3). For eight of the 13 loci involved, John Day reservoir collections accounted for the greatest number of observed alleles, and at three loci John Day shared that distinction with at least one other group (Table 3). This is not surprising given that the John Day sample sizes are significantly larger than the other collections. This may indicate that actual genetic diversity in the other impoundments and collections has not yet been well represented or accurately estimated.

Results of Bayesian cluster analysis revealed five likely or inferred populations ($k=5$). Assigning group membership of individual fish across collections (Table 1; Figure 4) to inferred clusters gave results that substantiated the PCA analysis. In addition, the Bayesian results indicated high mean membership fidelity (76%) of Yakama broodstock to cluster #2 (Q2 in Table 1), Snake River (96.5%) to cluster #4 (Q4 in Table 1), and John Day (“type-1) to cluster #3

(98%). In fact, in all three “outlier” groups nearly all individuals could be characterized by greater than 9% membership to respective group (Figure 4; first three histograms). In the Yakama broodstock there are 12 individuals that appear to be of an entirely different origin than the remainder of that collection. The LCR collections were predominately highest for membership coefficient Q1 (75%), and to a lesser degree (64%) the Willamette River collection. By comparison, the McNary, John Day, and Bonneville impoundment collections were generally evenly split between Q1 and Q5. Note that in a plot of allele frequencies, the Yakama, Snake River and John Day “type-1” collections have relatively high frequencies or complete absence of the allele, while all other collections track very closely with one another (Figure 5; example alleles are depicted from among those with the greatest variation across collections). This indicates occurrence of relatively rare alleles, but also less diversity in these populations.

Of special interest among clustering analysis results was the observation of three individuals in the PRD to McNary collection that appear to share a high degree of similarity to the John Day “type-1” group from 2010 (Figure 4d). Similarly, there are several individuals from throughout the remaining collections that belong to the Snake River population with membership coefficients in excess of 50%. For a separate analysis, those individuals were pared from their respective collections (impoundment) of origin. A group named “like Snake River” and identified by greater than 50% membership in the Snake River group included: 1 Bonneville individual, 3 PRD-McNary individuals, 3 The Dalles individuals, and 19 John Day individuals. A group named “PRD (like JD type-1)” included three individuals collected from near Priest Rapids Dam with greater than 94% membership in the John Day “type-1” group. The two additional populations were treated uniquely in PCA analysis and results confirmed their population similarities (Figure 6). By portioning these individuals from their original putative populations of origin, the overall PCA results more accurately resolved the total variation in the data set. The cumulative percent of total variation among groups that is explained by the first three axes was revised to 92.2%, and is partitioned as follows: x-axis (59.7%), y-axis (19.7%), z-axis (12.9%).

Discussion

Interpretation of the body of results from this second year of analysis in the proposed ongoing ten year project, may represent unique population distinctions, but should be approached with caution. There are obvious biases in the data largely related to skewed and deficient sample sizes for some collections. Moreover, in the absence of more definitive relatedness data and results, it is difficult to evaluate relative productivity or even population structure among the CRB impoundments. With that caveat, it appears that collections among lower Columbia River, Willamette River, Bonneville, The Dalles, John Day and McNary impoundments are largely similar with little discernible genetic differentiation. However, the similarity appears to occur on somewhat of a cline. Recall that mid Columbia collections are more similar to each other in the STRUCTURE analysis, split between two inferred population clusters. The proportional similarity of downstream (below Bonneville Dam) collections is more homogeneous. Further, those collections located geographically intermediate (i.e., the mid Columbia from McNary reservoir to Bonneville Dam) exhibit an influence by a possible distinct upstream population/s in the Snake River (a second potentially distinct influence may also originate from the upper Columbia River above Priest Rapids Dam). One may speculate that this is indicative of a high rate of gene flow that is one-directional, as juveniles may be more likely to migrate downstream through the reservoirs while tendencies to travel upstream via ladders is less likely. The Snake River collection may confirm to this suggestion, yet the barriers involved in the Snake River region may not provide comparable juvenile passage capability, and adults are essentially excluded from upstream movement. Given that the lower Columbia River sturgeon populations is large (total abundance) in comparison, influences from smaller upstream populations may be more difficult to detect.

Lastly, there is reasonable evidence to suggest that impoundment specific productivity varies, where a likely cohort of individuals that is markedly different in genetic signature was identified in the John Day reservoir in 2010 (John Day “type-1”). However, in 2011 we observed large, potentially mature individuals far upstream that appear to be of the same origin. This may suggest the influence of an as yet unidentified population (e.g., Kootenai or other upstream population) contributing to the populations sampled in the data set. The degree of distinction of the John Day “type-1” collection in comparison to the other (natural-origin) sampled individuals is on par with the degree of distinction recognized among a long established broodstock of unknown origin at the Yakama Hatchery (YAK) and a newly added aquaculture collection originating from the Snake River. Lower observed allelic diversity may suggest a founder effect and small effective population sizes. Alternatively, rather than representing unique populations it could be argued that those broodstock and/or artificially reared individuals (and natural origin groups) share either a high level of relatedness (i.e., full siblings) or are exhibiting a high degree of inbreeding among individuals sampled from each group.

With the continuation of this project and a more balanced sampling approach that represents all reservoirs equally, we expect that the current two-year accumulation of results will be greatly clarified and/or validated with improved estimates and conclusions regarding the genetic relationship (e.g. gene flow) between the four impoundments. Of particular concern or specific interest is a private sturgeon hatchery operated by Henry Pelfry that has contributed to both mitigation releases in the John Day Reservoir and in the Willamette River. Moreover, it is believed that much of the current domesticated stock at the Yakama artificial propagation facility originated from Henry Pelfry’s hatchery (Donella Miller, pers. comm.). Lastly, a hatchery stock reared at Abernathy Fish Technology Center was recently transferred to the Yakama artificial propagation facility (Smith and Godfrey 2009), and this stock also originated from Henry Pelfry’s hatchery. It will therefore be beneficial to genetically characterize this stock in order to discern what influences it may have imparted on the current population structure among the mid-Columbia River impoundments. We will continue to target both YOY and older (mature) fish in subsequent years to allow for implementation of additional kinds of proposed analyses defined in our overall objectives (e.g. parentage), which will help to better understand the relative sizes and productivity potentials of populations among the four impoundments

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Table 1.) Description of nine white sturgeon collections analyzed between 2010 and 2011. Some collections are described in our 2010 report. Temporal collections were combined for analysis. Note the limited availability of samples from the Willamette River and McNary impoundment. Values in parenthesis indicate number of excluded individuals due to duplicate sampling. The symbol (*) indicates a sample size less than the total due to incomplete data for all individuals. The (---) entry represents no available data. The mean Q-values from the program STRUCTURE (Pritchard et al. 2007) are proportional membership in $k=5$ inferred groups (Q1-5). Bolded values indicate the highest proportional membership assignment.

| population | total (n) | fork length (cm) | | | | life history stage | membership coefficient | | | | |
|------------------------|-----------|------------------|-------|-------|-------|--------------------|------------------------|-------|--------------|-------|--------------|
| | | (n) | min | max | mean | | Q1 | Q2 | Q3 | Q4 | Q5 |
| Lower Columbia | 81 | 34* | 18.5 | 42.4 | 22.9 | YOY/juvenile | | | | | |
| | | 2* | 71.6 | 88.9 | 80.3 | subadult | 0.748 | 0.023 | 0.019 | 0.015 | 0.194 |
| | | 0 | 0.0 | 0.0 | 0.0 | adult | | | | | |
| Willamette | 14 | --- | --- | --- | --- | YOY/juvenile | | | | | |
| | | --- | --- | --- | --- | subadult | 0.645 | 0.024 | 0.021 | 0.016 | 0.294 |
| | | --- | --- | --- | --- | adult | | | | | |
| Bonneville | 227 | 178 | 13.8 | 50.0 | 24.7 | YOY/juvenile | | | | | |
| | | 49 | 51.5 | 90.8 | 67.5 | subadult | 0.474 | 0.017 | 0.015 | 0.035 | 0.458 |
| | | 0 | 0.0 | 0.0 | 0.0 | adult | | | | | |
| The Dalles | 498; (6) | 267* | 17.4 | 50.0 | 29.7 | YOY/juvenile | | | | | |
| | | 218* | 51.0 | 147.0 | 63.1 | subadult | 0.383 | 0.021 | 0.017 | 0.040 | 0.540 |
| | | 4* | 178.0 | 225.0 | 192.3 | adult | | | | | |
| John Day ("type-1") | 42; (1) | 0 | 0.0 | 0.0 | 0.0 | YOY/juvenile | | | | | |
| | | 41 | 77.0 | 106.0 | 89.8 | subadult | 0.005 | 0.004 | 0.980 | 0.006 | 0.006 |
| | | 0 | 0.0 | 0.0 | 0.0 | adult | | | | | |
| John Day | 578; (10) | 8 | 25.0 | 49.0 | 31.6 | YOY/juvenile | | | | | |
| | | 541 | 51.0 | 150.0 | 98.7 | subadult | 0.416 | 0.022 | 0.019 | 0.065 | 0.479 |
| | | 19 | 158.0 | 268.0 | 203.6 | adult | | | | | |
| PRD - McNary | 44; (1) | 4 | 22.7 | 25.9 | 24.0 | YOY/juvenile | | | | | |

| | | | | | | | | | | | |
|---------------|----------|----------|---------------|----------------|----------------|-------------------|--------------|--------------|-------|--------------|--------------|
| | | 27 12 | 62.3 181.0 | 152.9 274.6 | 101.6 227.2 | subadult adult | 0.590 | 0.009 | 0.085 | 0.114 | 0.202 |
| Snake River | 102; (1) | --- | --- | --- | --- | broodstock | 0.016 | 0.005 | 0.006 | 0.965 | 0.008 |
| YN broodstock | 53 | --- | --- | --- | --- | broodstock | 0.042 | 0.761 | 0.006 | 0.007 | 0.184 |

Table 2: Population pairwise matrix of among-group variation (Φ_{PT}). The Φ_{PT} values reside below the diagonal, and the corresponding P -values are above the diagonal. Significant pairwise comparisons ($P < 0.01$) are indicated by bold italics.

| Φ_{PT} | PRD - MCN (2010) | PRD - MCN (2011) | Snake River (2011) | Bonneville (2010) | Bonneville (2011) | John Day ("type-1") | John Day (2010) | John Day (2011) | Lower Columbia (2010) | Lower Columbia (2011) | The Dalles (2010) | The Dalles (2011) | Willamette (2011) | YN brostock (2009) |
|-----------------------|------------------|------------------|--------------------|-------------------|-------------------|---------------------|-----------------|-----------------|-----------------------|-----------------------|-------------------|-------------------|-------------------|--------------------|
| PRD - MCN (2010) | --- | 0.003 | 0.001 | 0.307 | 0.293 | 0.001 | 0.351 | 0.468 | 0.024 | 0.090 | 0.317 | 0.474 | 0.454 | 0.002 |
| PRD - MCN (2011) | 0.051 | --- | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Snake River (2011) | 0.168 | 0.178 | --- | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Bonneville (2010) | 0.005 | 0.042 | 0.111 | --- | 0.467 | 0.001 | 0.001 | 0.008 | 0.001 | 0.001 | 0.340 | 0.002 | 0.027 | 0.001 |
| Bonneville (2011) | 0.007 | 0.057 | 0.167 | 0.000 | --- | 0.001 | 0.158 | 0.141 | 0.001 | 0.136 | 0.337 | 0.194 | 0.030 | 0.001 |
| John Day ("type-1") | 0.229 | 0.199 | 0.376 | 0.171 | 0.199 | --- | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| John Day (2010) | 0.004 | 0.048 | 0.099 | 0.002 | 0.003 | 0.175 | --- | 0.001 | 0.001 | 0.001 | 0.040 | 0.001 | 0.016 | 0.001 |
| John Day (2011) | 0.000 | 0.053 | 0.158 | 0.010 | 0.007 | 0.235 | 0.012 | --- | 0.001 | 0.003 | 0.004 | 0.014 | 0.020 | 0.001 |
| Lower Columbia (2010) | 0.026 | 0.051 | 0.177 | 0.015 | 0.016 | 0.188 | 0.016 | 0.025 | --- | 0.356 | 0.001 | 0.001 | 0.046 | 0.001 |
| Lower Columbia (2011) | 0.017 | 0.042 | 0.161 | 0.006 | 0.004 | 0.184 | 0.010 | 0.015 | 0.001 | --- | 0.001 | 0.001 | 0.410 | 0.001 |
| The Dalles (2010) | 0.005 | 0.049 | 0.111 | 0.000 | 0.001 | 0.187 | 0.001 | 0.013 | 0.018 | 0.009 | --- | 0.432 | 0.005 | 0.001 |
| The Dalles (2011) | 0.000 | 0.046 | 0.108 | 0.002 | 0.003 | 0.175 | 0.001 | 0.009 | 0.015 | 0.009 | 0.000 | --- | 0.017 | 0.001 |
| Willamette (2011) | 0.002 | 0.028 | 0.182 | 0.009 | 0.012 | 0.215 | 0.011 | 0.017 | 0.011 | 0.001 | 0.014 | 0.010 | --- | 0.001 |
| YN brostock (2009) | 0.130 | 0.159 | 0.256 | 0.111 | 0.124 | 0.294 | 0.107 | 0.137 | 0.107 | 0.117 | 0.115 | 0.107 | 0.134 | --- |

Figure 1. Numbers of observed alleles (fragments) per temporal collection from 2010 to 2011. Number of observed private alleles (secondary axis) are indicated by filled circles. Dashed lines represent numbers of observed alleles for each location when temporal collections are pooled; note similar numbers for four mid-Columbia impoundments.

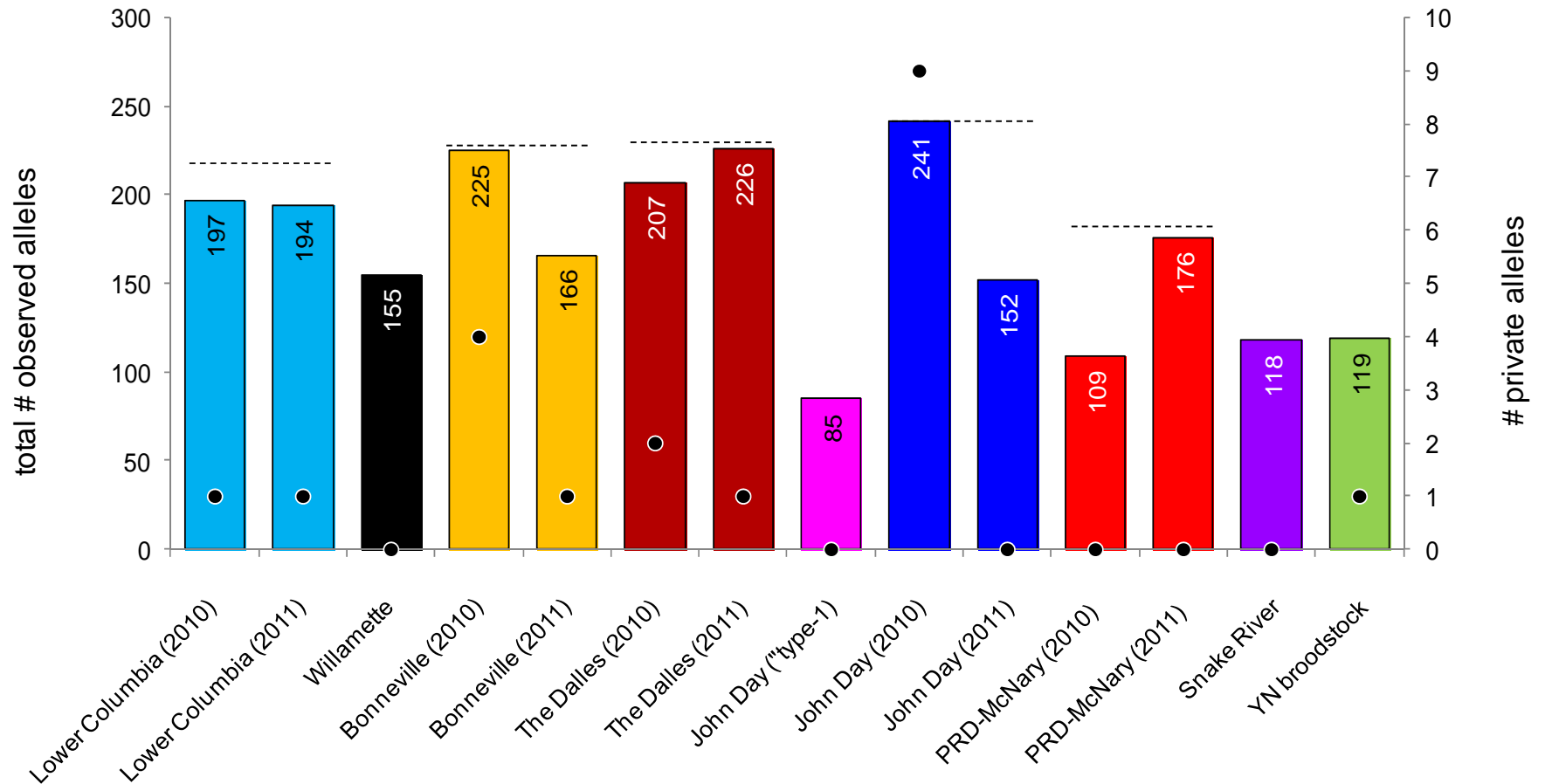


Figure 2. Principle coordinates analysis plots. The two perspectives (A and B) show the same ordination of the data points in space but with different rotations on the x and y axes to show depth and separation in three dimensions.

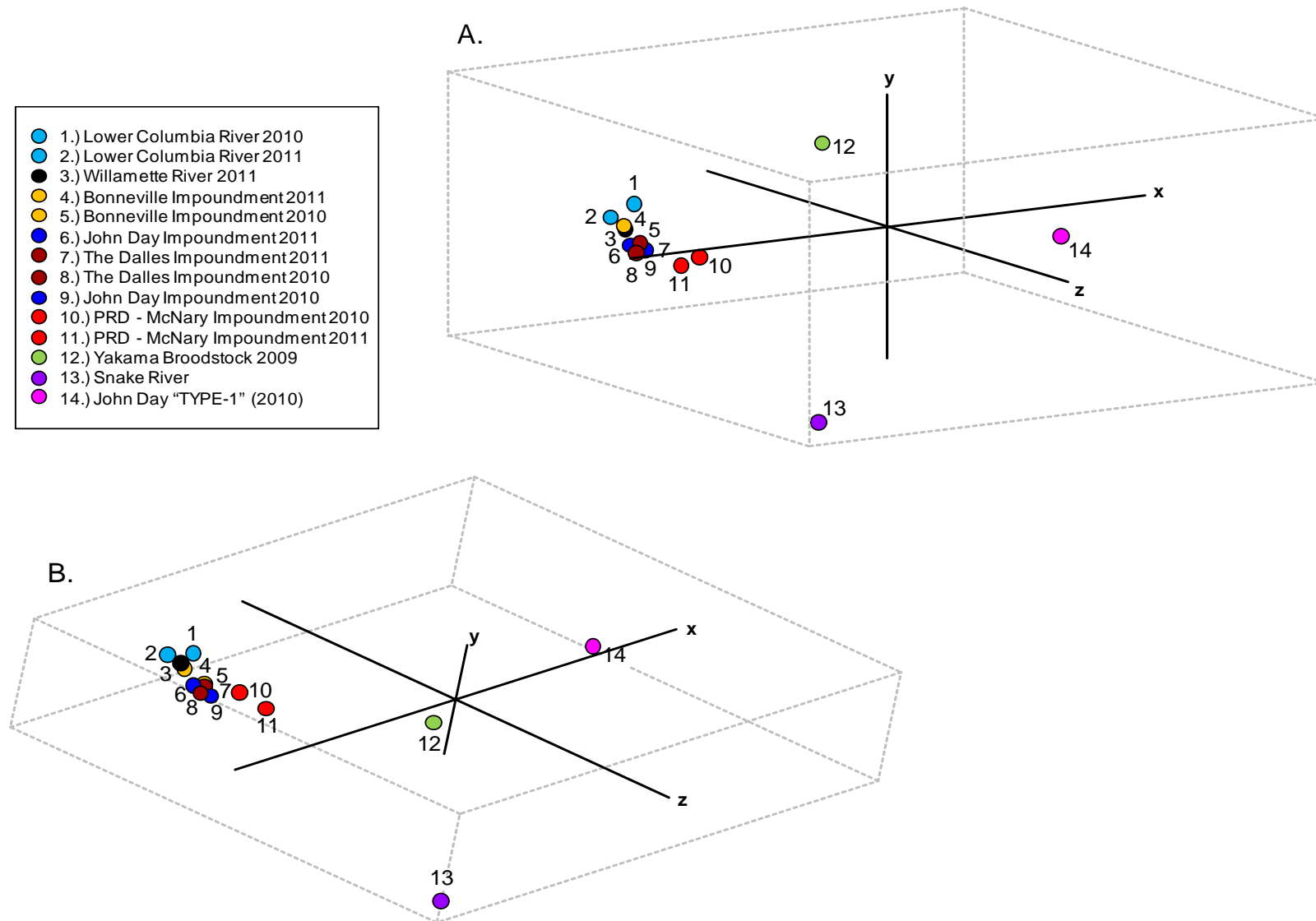


Figure 3. Scatter plots showing allele frequencies for all 13 microsatellite loci employed. Plots represent alleles with representatively high variation among all alleles observed. A list of all observed alleles is presented in Table 2.

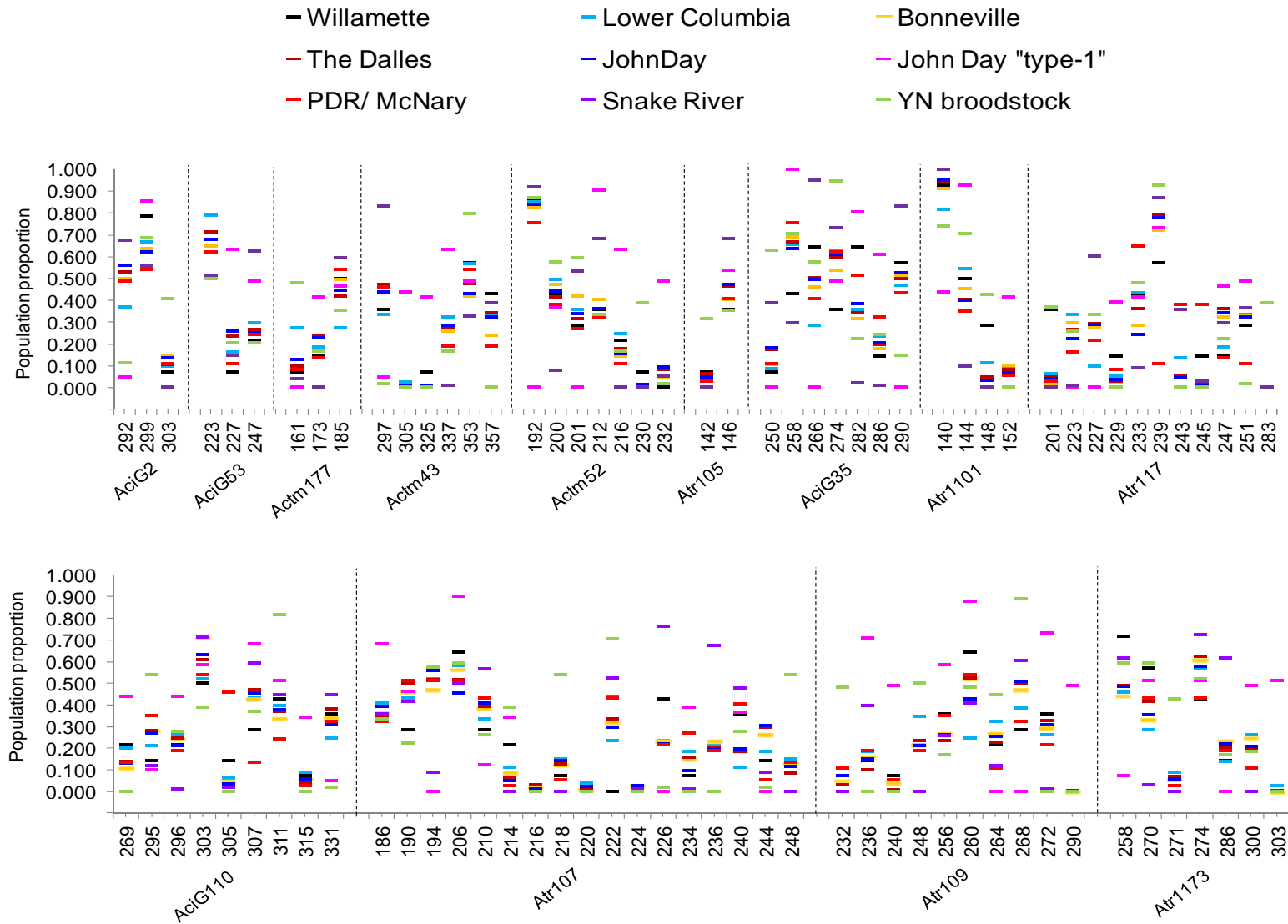
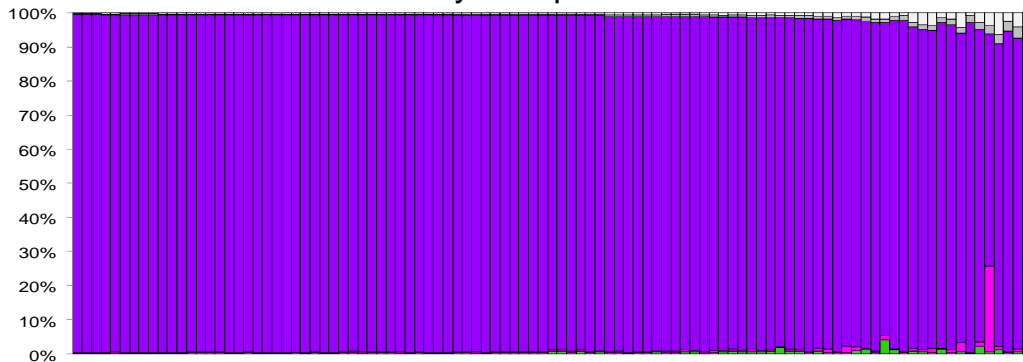
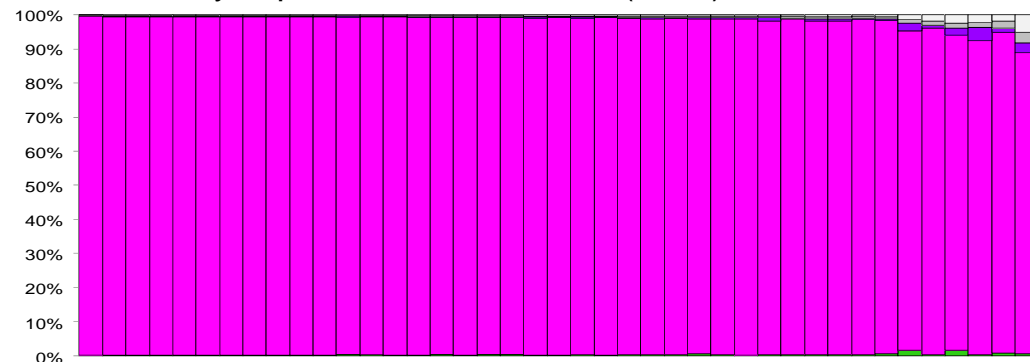


Figure 4. Bayesian Cluster Analysis histograms generated using the program STRUCTURE. The x-axis is individual sample and the y-axis is proportional membership. Note the first three panels (A-C) represent highly homogenous collections: Snake River is Q4, John Day “type-1” is Q3, and Yakama broodstock is Q2 (Table 1). The remaining panels (D-M) depict temporal collections in the Lower Columbia River where Q1 is represented by dark grey and Q5 is represented by light grey.

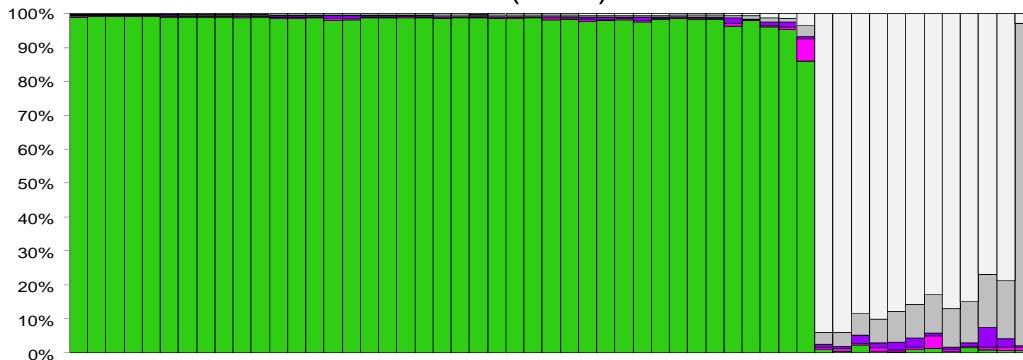
A. Snake River : Blind Canyon Aqua-Ranch



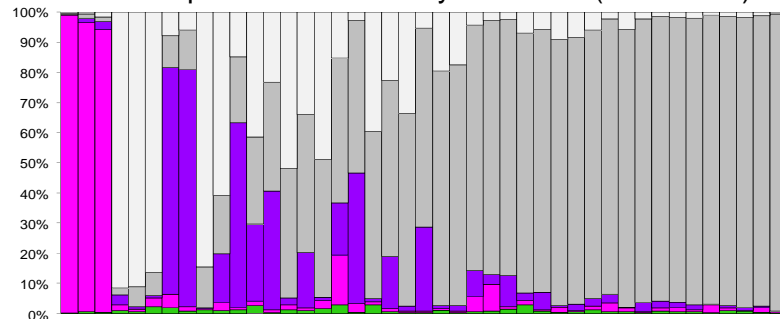
B. John Day Impoundment “TYPE-1” (2010)



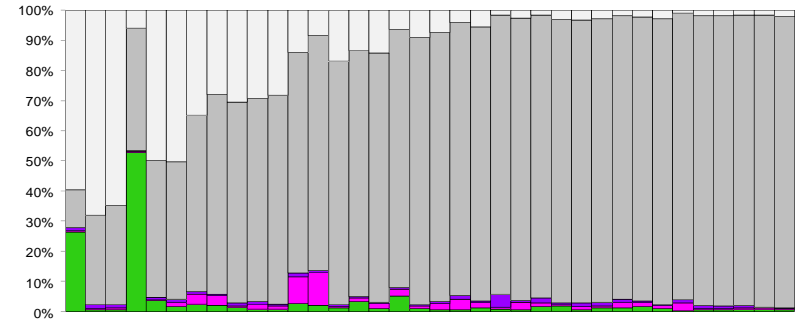
C. Yakama Nation Broodstock (2009)



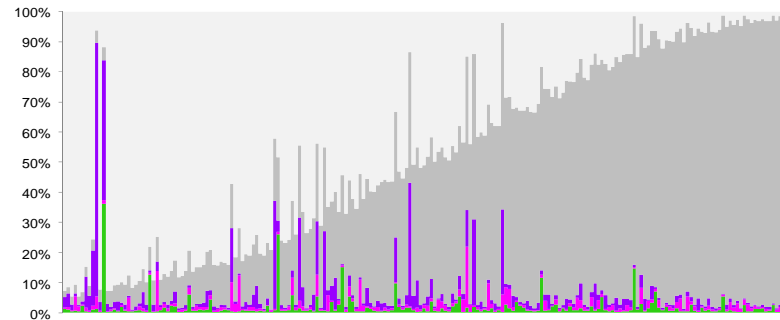
D. Priest Rapids Dam to McNary Reservoir (2010-2011)



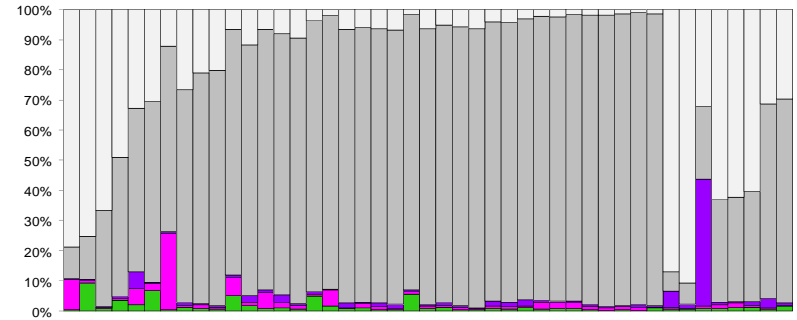
G. Lower Columbia River 2010



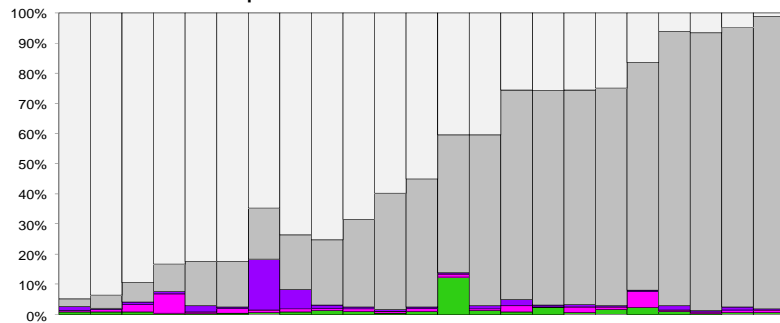
E. Bonneville Impoundment 2010



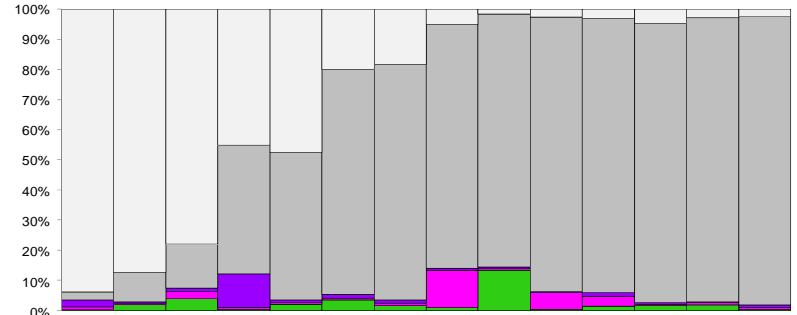
H. Lower Columbia River 2011



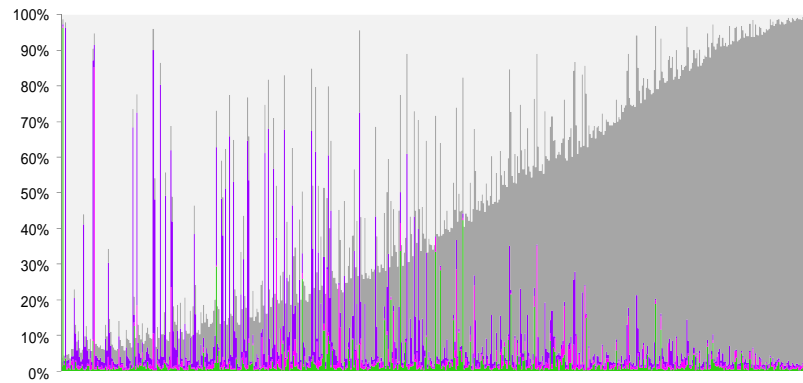
F. Bonneville Impoundment 2011



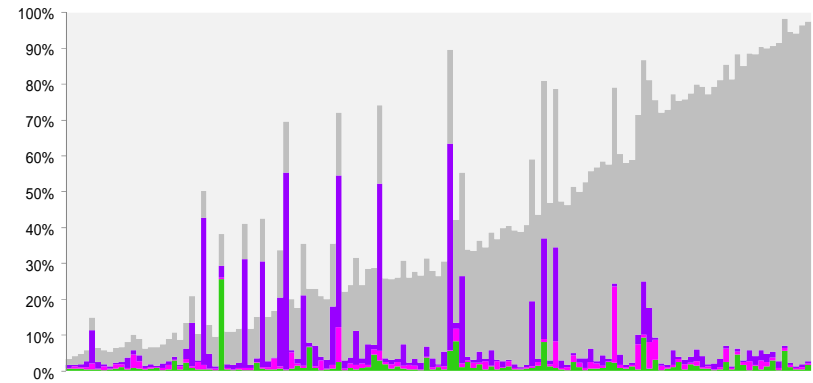
I. Willamette River 2011



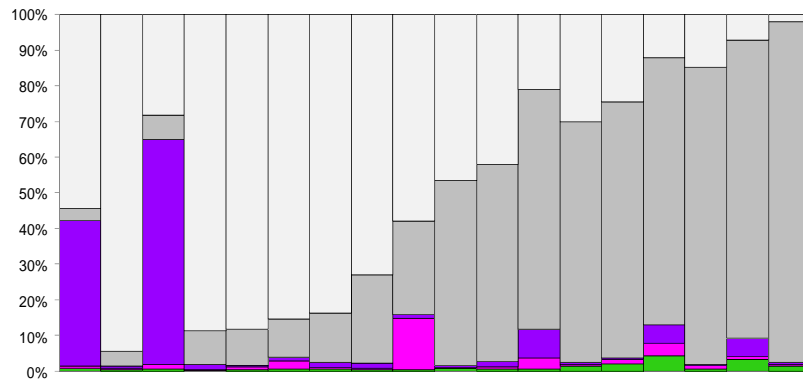
J. John Day Impoundment 2010



L. The Dalles Impoundment 2010



K. John Day Impoundment 2011



M. The Dalles Impoundment 2011

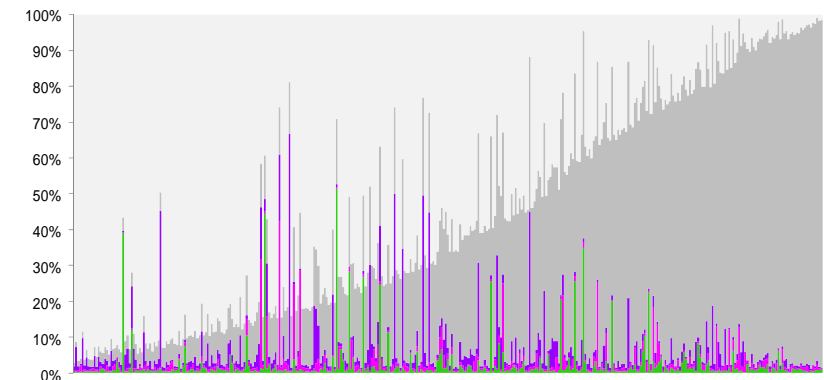


Figure 5. Scatter plots showing allele frequencies for all 13 microsatellite loci employed (see Figure 3). All collections except the three “outlier” collections are represented by black dashes, and the connecting dashed lines indicate similarity in trend of allele frequencies across collections.

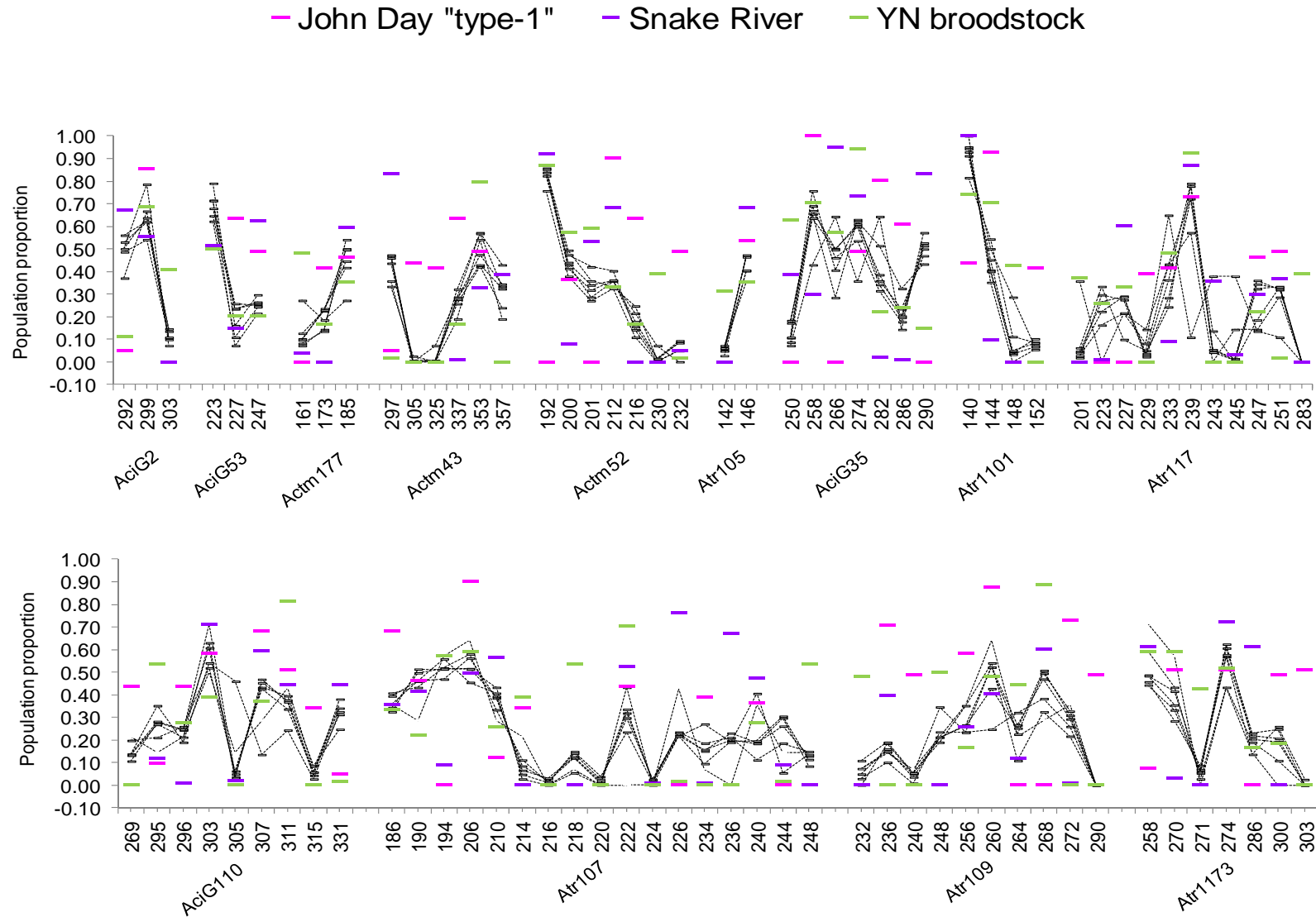


Figure 6. Principle coordinates analysis plots. The two perspectives (A and B) show the same ordination of the data points in space but with different rotations on the x and y axes to show depth and separation in three dimensions. Plots show association or similarity in clustering between collections (Table 1) and outlier individuals identified as members of groups different from collection of origin (Figure 4).

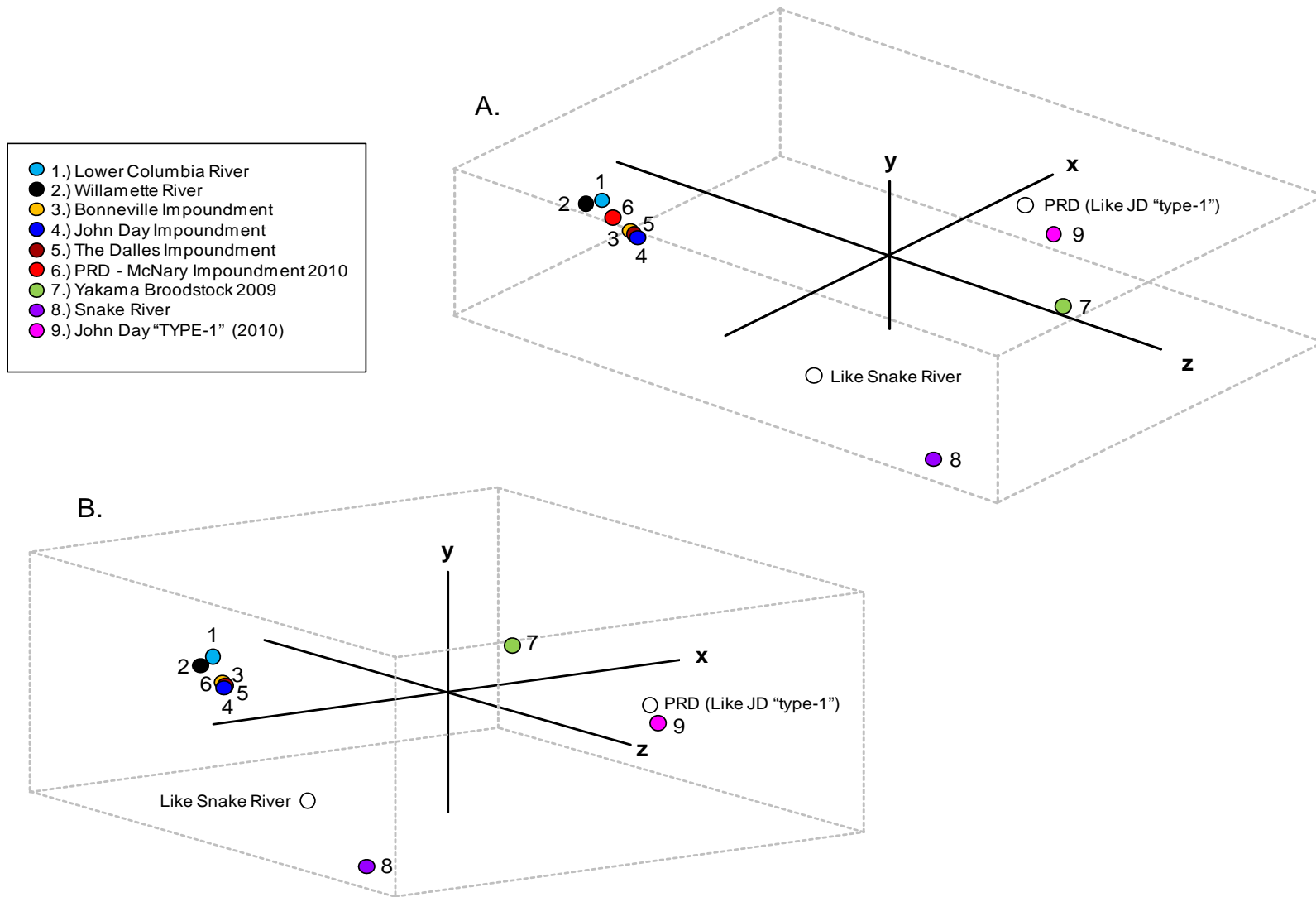


Table 3.) Allele (fragment) frequency comparisons at 13 μ SAT loci, among 14 collections from the Columbia River Basin sampled between 2010 and 2011 (see Figure 1). Collections are defined in Table 1. Alleles are designated by size in nucleotide base pairs (bp). Total number of observed alleles appears in parentheses for each locus overall, and within each collection. Private alleles (P) are those that were observed in only a single collection (underlined and bolded).

| Locus | Allele | Lower Columbia (2010) | Lower Columbia (2011) | Willamette | Bonneville (2010) | Bonneville (2011) | The Dalles (2010) | The Dalles (2011) | John Day ("type-1) | John Day (2010) | John Day (2011) | PRD-McNary (2010) | PRD-McNary (2011) | Snake River | YN broodstock |
|---------------|-------------|-----------------------|-----------------------|------------|-------------------|-------------------|-------------------|-------------------|--------------------|-----------------|-----------------|-------------------|-------------------|-------------|---------------|
| <u>AciG2</u> | (7) | (6) | (7) | (6) | (6) | (6) | (6) | (6) | (3) | (6) | (6) | (5) | (6) | (4) | (6) |
| | 275 | 0.083 | 0.178 | 0.071 | 0.123 | 0.087 | 0.118 | 0.071 | 0.000 | 0.053 | 0.167 | 0.000 | 0.108 | 0.000 | 0.170 |
| | 279 | 0.000 | <u>0.022P</u> | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 287 | 1.000 | 0.911 | 0.857 | 0.887 | 0.957 | 0.890 | 0.953 | 0.976 | 0.940 | 0.944 | 1.000 | 0.973 | 0.951 | 1.000 |
| | 291 | 0.250 | 0.222 | 0.214 | 0.279 | 0.217 | 0.220 | 0.233 | 0.000 | 0.233 | 0.333 | 0.167 | 0.081 | 0.129 | 0.132 |
| | 292 | 0.361 | 0.378 | 0.500 | 0.500 | 0.478 | 0.535 | 0.529 | 0.049 | 0.576 | 0.333 | 0.333 | 0.459 | 0.673 | 0.113 |
| | 299 | 0.583 | 0.733 | 0.786 | 0.632 | 0.652 | 0.661 | 0.608 | 0.854 | 0.616 | 0.778 | 0.667 | 0.568 | 0.554 | 0.698 |
| | 303 | 0.083 | 0.111 | 0.071 | 0.142 | 0.174 | 0.126 | 0.099 | 0.000 | 0.138 | 0.056 | 0.333 | 0.054 | 0.000 | 0.396 |
| <u>AciG53</u> | (10) | (8) | (8) | (6) | (9) | (8) | (8) | (8) | (4) | (9) | (5) | (3) | (6) | (5) | (6) |
| | 215 | 0.139 | 0.022 | 0.071 | 0.093 | 0.043 | 0.079 | 0.060 | 0.000 | 0.075 | 0.111 | 0.000 | 0.054 | 0.089 | 0.000 |
| | 219 | 0.972 | 0.911 | 1.000 | 0.971 | 0.957 | 0.929 | 0.959 | 1.000 | 0.982 | 0.889 | 1.000 | 0.892 | 0.970 | 1.000 |
| | 223 | 0.667 | 0.889 | 0.714 | 0.657 | 0.565 | 0.732 | 0.707 | 0.512 | 0.669 | 0.778 | 0.500 | 0.622 | 0.515 | 0.509 |
| | 227 | 0.167 | 0.156 | 0.071 | 0.225 | 0.304 | 0.244 | 0.233 | 0.634 | 0.247 | 0.278 | 0.000 | 0.216 | 0.149 | 0.208 |
| | 231 | 0.028 | 0.000 | 0.000 | 0.000 | 0.000 | 0.008 | 0.005 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 239 | 0.000 | 0.022 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 243 | 0.056 | 0.022 | 0.071 | 0.015 | 0.043 | 0.000 | 0.000 | 0.000 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.019 |
| | 247 | 0.333 | 0.267 | 0.214 | 0.265 | 0.174 | 0.268 | 0.263 | 0.488 | 0.255 | 0.278 | 0.167 | 0.297 | 0.624 | 0.208 |

| | | | | | | | | | | | | | | |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 251 | 0.056 | 0.067 | 0.000 | 0.020 | 0.043 | 0.024 | 0.016 | 0.000 | 0.018 | 0.000 | 0.000 | 0.054 | 0.000 | 0.113 |
| 255 | 0.000 | 0.000 | 0.000 | 0.010 | 0.043 | 0.016 | 0.005 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

| <u>Actm177</u> | (7) | (6) | (5) | (5) | (6) | (5) | (6) | (6) | (4) | (7) | (5) | (4) | (6) | (4) | (5) |
|----------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 161 | | 0.250 | 0.289 | 0.071 | 0.113 | 0.043 | 0.079 | 0.101 | 0.000 | 0.122 | 0.167 | 0.167 | 0.054 | 0.040 | 0.472 |
| 166 | | 0.056 | 0.000 | 0.000 | 0.039 | 0.000 | 0.016 | 0.038 | 0.000 | 0.049 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 169 | | 0.667 | 0.844 | 0.857 | 0.779 | 0.696 | 0.614 | 0.710 | 0.976 | 0.707 | 0.778 | 0.333 | 0.784 | 0.139 | 0.642 |
| 173 | | 0.194 | 0.178 | 0.143 | 0.225 | 0.217 | 0.236 | 0.233 | 0.415 | 0.224 | 0.222 | 0.000 | 0.189 | 0.000 | 0.170 |
| 177 | | 0.917 | 0.889 | 0.857 | 0.966 | 0.913 | 0.937 | 0.942 | 0.951 | 0.927 | 1.000 | 1.000 | 0.892 | 0.951 | 0.943 |
| 185 | | 0.222 | 0.311 | 0.500 | 0.500 | 0.435 | 0.409 | 0.425 | 0.463 | 0.458 | 0.333 | 0.333 | 0.541 | 0.594 | 0.340 |
| 189 | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.000 | 0.000 | 0.027 | 0.000 | 0.000 |

| Actm43 | (25) | (15) | (16) | (14) | (20) | (13) | (18) | (19) | (6) | (22) | (14) | (9) | (16) | (7) | (7) |
|--------|------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|-------|-------|-------|-------|-------|
| | 293 | 0.000 | 0.067 | 0.143 | 0.147 | 0.130 | 0.150 | 0.140 | 0.000 | 0.098 | 0.111 | 0.333 | 0.081 | 0.000 | 0.000 |
| | 297 | 0.222 | 0.422 | 0.357 | 0.475 | 0.435 | 0.535 | 0.452 | 0.049 | 0.440 | 0.667 | 0.667 | 0.432 | 0.832 | 0.019 |
| | 301 | 0.056 | 0.044 | 0.071 | 0.054 | 0.043 | 0.039 | 0.033 | 0.000 | 0.024 | 0.111 | 0.000 | 0.081 | 0.000 | 0.000 |
| | 305 | 0.028 | 0.022 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.439 | 0.004 | 0.056 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 309 | 0.083 | 0.133 | 0.000 | 0.078 | 0.000 | 0.063 | 0.049 | 0.000 | 0.055 | 0.000 | 0.000 | 0.081 | 0.000 | 0.000 |
| | 313 | 0.000 | 0.022 | 0.000 | 0.010 | 0.000 | 0.000 | 0.005 | 0.000 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.019 |
| | 317 | 0.000 | 0.000 | 0.000 | 0.015 | 0.000 | 0.008 | 0.019 | 0.000 | 0.013 | 0.000 | 0.000 | 0.027 | 0.000 | 0.000 |
| | 321 | 0.000 | 0.044 | 0.143 | 0.005 | 0.043 | 0.016 | 0.030 | 0.000 | 0.035 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 325 | 0.000 | 0.000 | 0.071 | 0.000 | 0.000 | 0.000 | 0.008 | 0.415 | 0.004 | 0.056 | 0.000 | 0.027 | 0.000 | 0.000 |
| | 333 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 337 | 0.361 | 0.289 | 0.286 | 0.245 | 0.348 | 0.291 | 0.268 | 0.634 | 0.282 | 0.111 | 0.167 | 0.216 | 0.010 | 0.170 |
| | 341 | 0.028 | 0.022 | 0.000 | 0.020 | 0.000 | 0.024 | 0.011 | 0.000 | 0.024 | 0.000 | 0.000 | 0.027 | 0.000 | 0.000 |
| | 345 | 0.083 | 0.067 | 0.071 | 0.078 | 0.130 | 0.134 | 0.107 | 0.000 | 0.089 | 0.333 | 0.167 | 0.081 | 0.000 | 0.000 |
| | 349 | 0.556 | 0.689 | 0.357 | 0.765 | 0.826 | 0.827 | 0.767 | 0.756 | 0.802 | 0.611 | 0.333 | 0.838 | 0.911 | 0.906 |
| | 353 | 0.556 | 0.578 | 0.571 | 0.417 | 0.478 | 0.425 | 0.490 | 0.488 | 0.427 | 0.500 | 0.833 | 0.459 | 0.327 | 0.792 |
| | 357 | 0.444 | 0.244 | 0.429 | 0.260 | 0.087 | 0.260 | 0.373 | 0.000 | 0.322 | 0.389 | 0.167 | 0.216 | 0.386 | 0.000 |
| | 361 | 0.306 | 0.267 | 0.214 | 0.201 | 0.087 | 0.165 | 0.184 | 0.000 | 0.216 | 0.167 | 0.167 | 0.162 | 0.010 | 0.019 |
| | 365 | 0.167 | 0.156 | 0.143 | 0.176 | 0.261 | 0.197 | 0.153 | 0.000 | 0.145 | 0.111 | 0.167 | 0.027 | 0.000 | 0.019 |
| | 369 | 0.028 | 0.067 | 0.143 | 0.044 | 0.174 | 0.094 | 0.060 | 0.000 | 0.071 | 0.056 | 0.000 | 0.027 | 0.000 | 0.000 |

| | | | | | | | | | | | | | | |
|-----|---------------|-------|-------|---------------|-------|---------------|-------|-------|---------------|-------|-------|-------|-------|-------|
| 373 | 0.056 | 0.000 | 0.071 | 0.020 | 0.043 | 0.008 | 0.008 | 0.000 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 377 | 0.028P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 381 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.008P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 385 | 0.000 | 0.000 | 0.000 | 0.005P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 389 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 393 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.024 | 0.014 | 0.000 | 0.018 | 0.111 | 0.000 | 0.081 | 0.040 | 0.000 |

| | | | | | | | | | | | | | | | |
|---------------|-------------|-------------|-------------|---------------|---------------|-------------|-------------|-------------|---------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <u>Actm52</u> | (27) | (23) | (19) | (15) | (23) | (18) | (22) | (24) | (10) | (24) | (16) | (15) | (19) | (15) | (16) |
| 176 | 0.000 | 0.000 | 0.000 | 0.005P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 180 | 0.111 | 0.156 | 0.214 | 0.127 | 0.174 | 0.079 | 0.068 | 0.000 | 0.069 | 0.111 | 0.000 | 0.081 | 0.010 | 0.019 | 0.019 |
| 184 | 0.472 | 0.556 | 0.571 | 0.706 | 0.652 | 0.764 | 0.764 | 0.707 | 0.745 | 0.667 | 0.667 | 0.676 | 0.792 | 0.679 | 0.679 |
| 188 | 0.333 | 0.533 | 0.357 | 0.505 | 0.435 | 0.465 | 0.408 | 0.756 | 0.507 | 0.444 | 0.500 | 0.432 | 0.495 | 0.585 | 0.585 |
| 190 | 0.028 | 0.067 | 0.071 | 0.098 | 0.174 | 0.079 | 0.126 | 0.341 | 0.149 | 0.111 | 0.500 | 0.189 | 0.010 | 0.000 | 0.000 |
| 192 | 0.806 | 0.889 | 0.857 | 0.819 | 0.870 | 0.850 | 0.836 | 0.000 | 0.844 | 0.722 | 0.667 | 0.730 | 0.921 | 0.868 | 0.868 |
| 194 | 0.167 | 0.267 | 0.214 | 0.265 | 0.261 | 0.244 | 0.216 | 0.171 | 0.218 | 0.500 | 0.167 | 0.243 | 0.218 | 0.415 | 0.415 |
| 196 | 0.778 | 0.689 | 0.714 | 0.706 | 0.565 | 0.717 | 0.718 | 0.951 | 0.724 | 0.889 | 0.667 | 0.811 | 0.614 | 0.679 | 0.679 |
| 198 | 0.083 | 0.067 | 0.000 | 0.029 | 0.000 | 0.055 | 0.041 | 0.000 | 0.036 | 0.056 | 0.167 | 0.108 | 0.000 | 0.000 | 0.000 |
| 200 | 0.528 | 0.467 | 0.429 | 0.480 | 0.391 | 0.465 | 0.395 | 0.366 | 0.431 | 0.278 | 0.333 | 0.324 | 0.079 | 0.566 | 0.566 |
| 201 | 0.306 | 0.400 | 0.286 | 0.417 | 0.478 | 0.268 | 0.337 | 0.000 | 0.325 | 0.667 | 0.333 | 0.297 | 0.535 | 0.604 | 0.604 |
| 202 | 0.000 | 0.000 | 0.000 | 0.000 | 0.043P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 203 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.027 | 0.010 | 0.000 | 0.000 |
| 204 | 0.500 | 0.356 | 0.571 | 0.461 | 0.130 | 0.339 | 0.353 | 0.488 | 0.402 | 0.444 | 0.500 | 0.568 | 0.139 | 0.170 | 0.170 |
| 205 | 0.028 | 0.000 | 0.071 | 0.010 | 0.000 | 0.008 | 0.008 | 0.000 | 0.013 | 0.000 | 0.000 | 0.027 | 0.000 | 0.151 | 0.151 |
| 208 | 0.111 | 0.067 | 0.071 | 0.088 | 0.087 | 0.094 | 0.170 | 0.000 | 0.125 | 0.000 | 0.333 | 0.108 | 0.010 | 0.057 | 0.057 |
| 212 | 0.333 | 0.333 | 0.357 | 0.412 | 0.348 | 0.362 | 0.356 | 0.902 | 0.365 | 0.333 | 0.333 | 0.378 | 0.683 | 0.340 | 0.340 |
| 216 | 0.167 | 0.311 | 0.214 | 0.147 | 0.087 | 0.142 | 0.189 | 0.634 | 0.155 | 0.167 | 0.167 | 0.135 | 0.000 | 0.170 | 0.170 |
| 220 | 0.139 | 0.156 | 0.000 | 0.127 | 0.348 | 0.142 | 0.121 | 0.000 | 0.095 | 0.056 | 0.167 | 0.000 | 0.000 | 0.000 | 0.000 |
| 224 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 228 | 0.028 | 0.000 | 0.000 | 0.000 | 0.000 | 0.008 | 0.016 | 0.000 | 0.024 | 0.167 | 0.000 | 0.054 | 0.000 | 0.000 | 0.000 |
| 230 | 0.028 | 0.000 | 0.071 | 0.005 | 0.000 | 0.016 | 0.014 | 0.000 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.396 |
| 232 | 0.083 | 0.089 | 0.000 | 0.049 | 0.043 | 0.039 | 0.099 | 0.488 | 0.093 | 0.000 | 0.333 | 0.081 | 0.050 | 0.019 | 0.019 |
| 234 | 0.028 | 0.067 | 0.000 | 0.010 | 0.000 | 0.024 | 0.016 | 0.000 | 0.027 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.113 |

| | | | | | | | | | | | | | | |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 236 | 0.028 | 0.022 | 0.000 | 0.020 | 0.043 | 0.000 | 0.036 | 0.000 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 240 | 0.056 | 0.044 | 0.000 | 0.088 | 0.087 | 0.063 | 0.055 | 0.000 | 0.087 | 0.056 | 0.000 | 0.027 | 0.099 | 0.000 |
| 244 | 0.028 | 0.000 | 0.000 | 0.020 | 0.000 | 0.016 | 0.011 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

| | | | | | | | | | | | | | | | |
|---------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|---------------|------------|------------|------------|------------|------------|
| <u>Atr105</u> | (10) | (6) | (7) | (5) | (7) | (6) | (7) | (9) | (4) | (10) | (7) | (5) | (8) | (6) | (5) |
| 130 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.002 | 0.000 | 0.000 | 0.027 | 0.010 | 0.000 |
| 134 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 138 | 0.944 | 1.000 | 0.857 | 0.956 | 1.000 | 0.969 | 0.932 | 0.976 | 0.964 | 0.889 | 1.000 | 0.946 | 0.980 | 0.849 | |
| 142 | 0.028 | 0.067 | 0.071 | 0.059 | 0.043 | 0.039 | 0.071 | 0.000 | 0.047 | 0.056 | 0.000 | 0.027 | 0.000 | 0.302 | |
| 146 | 0.444 | 0.489 | 0.357 | 0.407 | 0.391 | 0.472 | 0.460 | 0.537 | 0.469 | 0.444 | 0.167 | 0.486 | 0.683 | 0.358 | |
| 150 | 0.944 | 0.844 | 0.857 | 0.887 | 0.826 | 0.906 | 0.871 | 0.976 | 0.889 | 0.778 | 1.000 | 0.676 | 0.871 | 0.887 | |
| 154 | 0.278 | 0.356 | 0.286 | 0.289 | 0.087 | 0.236 | 0.195 | 0.195 | 0.245 | 0.167 | 0.333 | 0.243 | 0.168 | 0.113 | |
| 158 | 0.000 | 0.022 | 0.000 | 0.044 | 0.000 | 0.008 | 0.049 | 0.000 | 0.047 | 0.167 | 0.000 | 0.108 | 0.050 | 0.000 | |
| 162 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.007 | 0.000 | 0.167 | 0.000 | 0.000 | 0.000 | |
| 166 | 0.056 | 0.022 | 0.000 | 0.015 | 0.043 | 0.024 | 0.014 | 0.000 | 0.011 | 0.111 | 0.000 | 0.054 | 0.000 | 0.000 | |

| | | | | | | | | | | | | | | | |
|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <u>AciG35</u> | (21) | (18) | (18) | (15) | (20) | (18) | (19) | (20) | (9) | (21) | (16) | (12) | (18) | (13) | (11) |
| 242 | 0.444 | 0.422 | 0.357 | 0.451 | 0.565 | 0.433 | 0.411 | 0.854 | 0.418 | 0.222 | 0.500 | 0.216 | 0.248 | 0.642 | |
| 246 | 0.139 | 0.289 | 0.357 | 0.152 | 0.217 | 0.157 | 0.164 | 0.000 | 0.162 | 0.167 | 0.167 | 0.135 | 0.000 | 0.415 | |
| 250 | 0.056 | 0.111 | 0.071 | 0.103 | 0.130 | 0.181 | 0.170 | 0.000 | 0.187 | 0.111 | 0.167 | 0.081 | 0.386 | 0.642 | |
| 254 | 0.833 | 0.800 | 0.857 | 0.833 | 0.913 | 0.850 | 0.847 | 0.537 | 0.853 | 1.000 | 0.667 | 0.892 | 0.990 | 0.981 | |
| 258 | 0.694 | 0.622 | 0.429 | 0.676 | 0.783 | 0.693 | 0.655 | 1.000 | 0.613 | 0.833 | 0.667 | 0.784 | 0.297 | 0.698 | |
| 262 | 0.139 | 0.089 | 0.000 | 0.147 | 0.087 | 0.071 | 0.093 | 0.073 | 0.056 | 0.056 | 0.000 | 0.108 | 0.010 | 0.000 | |
| 266 | 0.306 | 0.267 | 0.643 | 0.471 | 0.391 | 0.488 | 0.510 | 0.000 | 0.500 | 0.611 | 0.333 | 0.405 | 0.951 | 0.566 | |
| 270 | 0.528 | 0.644 | 0.571 | 0.603 | 0.783 | 0.559 | 0.581 | 0.537 | 0.544 | 0.500 | 0.667 | 0.541 | 0.099 | 0.000 | |
| 272 | 0.083 | 0.000 | 0.000 | 0.039 | 0.000 | 0.008 | 0.016 | 0.000 | 0.022 | 0.000 | 0.000 | 0.000 | 0.010 | 0.000 | |
| 274 | 0.694 | 0.578 | 0.357 | 0.534 | 0.522 | 0.583 | 0.603 | 0.488 | 0.609 | 0.667 | 0.500 | 0.649 | 0.733 | 0.962 | |
| 276 | 0.139 | 0.000 | 0.000 | 0.015 | 0.043 | 0.055 | 0.005 | 0.000 | 0.020 | 0.000 | 0.000 | 0.027 | 0.000 | 0.000 | |
| 278 | 0.472 | 0.533 | 0.429 | 0.564 | 0.391 | 0.591 | 0.619 | 0.805 | 0.549 | 0.444 | 1.000 | 0.730 | 0.644 | 0.774 | |
| 280 | 0.000 | 0.022 | 0.000 | 0.025 | 0.000 | 0.000 | 0.005 | 0.000 | 0.013 | 0.056 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 282 | 0.278 | 0.422 | 0.643 | 0.309 | 0.348 | 0.283 | 0.359 | 0.805 | 0.369 | 0.667 | 0.833 | 0.486 | 0.020 | 0.226 | |
| 286 | 0.278 | 0.200 | 0.143 | 0.181 | 0.130 | 0.189 | 0.197 | 0.610 | 0.204 | 0.000 | 0.167 | 0.324 | 0.010 | 0.245 | |

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|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 290 | 0.417 | 0.511 | 0.571 | 0.510 | 0.565 | 0.567 | 0.479 | 0.000 | 0.520 | 0.611 | 0.500 | 0.378 | 0.832 | 0.151 |
| 294 | 0.028 | 0.089 | 0.071 | 0.098 | 0.043 | 0.087 | 0.093 | 0.000 | 0.100 | 0.167 | 0.000 | 0.054 | 0.000 | 0.000 |
| 298 | 0.083 | 0.133 | 0.214 | 0.059 | 0.087 | 0.063 | 0.055 | 0.000 | 0.058 | 0.111 | 0.000 | 0.027 | 0.000 | 0.000 |
| 302 | 0.000 | 0.000 | 0.000 | 0.010 | 0.087 | 0.008 | 0.008 | 0.000 | 0.013 | 0.000 | 0.000 | 0.027 | 0.000 | 0.000 |
| 306 | 0.000 | 0.022 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 310 | 0.056 | 0.022 | 0.071 | 0.064 | 0.043 | 0.024 | 0.022 | 0.000 | 0.033 | 0.056 | 0.000 | 0.054 | 0.000 | 0.000 |

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|----------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| <u>Atr1101</u> | (9) | (8) | (7) | (6) | (9) | (7) | (9) | (9) | (5) | (9) | (5) | (4) | (7) | (5) | (5) |
| 132 | 0.083 | 0.022 | 0.000 | 0.005 | 0.043 | 0.032 | 0.008 | 0.000 | 0.036 | 0.000 | 0.000 | 0.027 | 0.010 | 0.000 | |
| 136 | 0.667 | 0.867 | 0.571 | 0.730 | 0.870 | 0.685 | 0.732 | 0.854 | 0.733 | 0.778 | 0.833 | 0.730 | 0.653 | 0.962 | |
| 140 | 0.806 | 0.822 | 0.929 | 0.902 | 1.000 | 0.961 | 0.937 | 0.439 | 0.949 | 1.000 | 1.000 | 0.946 | 1.000 | 0.755 | |
| 144 | 0.694 | 0.422 | 0.500 | 0.451 | 0.435 | 0.394 | 0.405 | 0.927 | 0.395 | 0.556 | 0.167 | 0.459 | 0.099 | 0.698 | |
| 148 | 0.083 | 0.133 | 0.286 | 0.044 | 0.000 | 0.063 | 0.044 | 0.000 | 0.035 | 0.000 | 0.000 | 0.000 | 0.000 | 0.415 | |
| 152 | 0.083 | 0.089 | 0.071 | 0.098 | 0.130 | 0.079 | 0.082 | 0.415 | 0.067 | 0.000 | 0.000 | 0.081 | 0.000 | 0.000 | |
| 156 | 0.139 | 0.289 | 0.214 | 0.191 | 0.174 | 0.134 | 0.175 | 0.415 | 0.169 | 0.278 | 0.333 | 0.243 | 0.000 | 0.000 | |
| 160 | 0.000 | 0.000 | 0.000 | 0.020 | 0.043 | 0.047 | 0.036 | 0.000 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.113 | |
| 164 | 0.056 | 0.000 | 0.000 | 0.005 | 0.000 | 0.024 | 0.025 | 0.000 | 0.013 | 0.056 | 0.000 | 0.027 | 0.010 | 0.000 | |

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|---------------|-------------|-------------|-------------|---------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|------------|-------------|-------------|-------------|
| <u>Atr117</u> | (31) | (20) | (19) | (17) | (25) | (14) | (23) | (26) | (6) | (28) | (15) | (8) | (16) | (12) | (11) |
| 199 | 1.000 | 0.933 | 1.000 | 0.975 | 1.000 | 1.000 | 0.984 | 0.976 | 0.991 | 1.000 | 1.000 | 0.946 | 0.990 | 0.887 | |
| 201 | 0.111 | 0.022 | 0.357 | 0.020 | 0.000 | 0.039 | 0.049 | 0.000 | 0.040 | 0.000 | 0.000 | 0.027 | 0.000 | 0.377 | |
| 203 | 0.028 | 0.000 | 0.071 | 0.005 | 0.000 | 0.016 | 0.003 | 0.000 | 0.007 | 0.000 | 0.000 | 0.027 | 0.000 | 0.000 | |
| 205 | 0.028 | 0.089 | 0.071 | 0.059 | 0.043 | 0.039 | 0.033 | 0.000 | 0.033 | 0.056 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 213 | 0.111 | 0.089 | 0.071 | 0.093 | 0.087 | 0.047 | 0.066 | 0.000 | 0.053 | 0.111 | 0.000 | 0.000 | 0.000 | 0.208 | |
| 217 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.170 | |
| 219 | 0.000 | 0.000 | 0.000 | 0.005P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 221 | 0.000 | 0.000 | 0.071 | 0.039 | 0.000 | 0.016 | 0.019 | 0.000 | 0.018 | 0.000 | 0.000 | 0.216 | 0.000 | 0.000 | |
| 223 | 0.306 | 0.356 | 0.000 | 0.289 | 0.348 | 0.268 | 0.260 | 0.000 | 0.216 | 0.333 | 0.333 | 0.108 | 0.010 | 0.245 | |
| 225 | 0.139 | 0.022 | 0.071 | 0.054 | 0.043 | 0.102 | 0.085 | 0.000 | 0.084 | 0.111 | 0.000 | 0.216 | 0.050 | 0.000 | |
| 227 | 0.083 | 0.111 | 0.214 | 0.279 | 0.217 | 0.252 | 0.301 | 0.000 | 0.298 | 0.389 | 0.833 | 0.108 | 0.604 | 0.340 | |
| 229 | 0.028 | 0.067 | 0.143 | 0.025 | 0.000 | 0.032 | 0.027 | 0.390 | 0.036 | 0.000 | 0.000 | 0.108 | 0.000 | 0.000 | |

| | | | | | | | | | | | | | | |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|----------------------|-------|-------|-------|-------|----------------------|
| 231 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.008 | 0.000 | 0.011 | 0.000 | 0.000 | 0.054 | 0.010 | 0.000 |
| 233 | 0.444 | 0.422 | 0.429 | 0.289 | 0.217 | 0.386 | 0.353 | 0.415 | 0.242 | 0.111 | 0.333 | 0.676 | 0.089 | 0.472 |
| 237 | 0.056 | 0.022 | 0.071 | 0.029 | 0.087 | 0.024 | 0.016 | 0.000 | 0.044 | 0.111 | 0.167 | 0.108 | 0.000 | 0.000 |
| 239 | 0.778 | 0.689 | 0.571 | 0.711 | 0.826 | 0.780 | 0.792 | 0.732 | 0.784 | 0.833 | 0.667 | 0.000 | 0.871 | 0.925 |
| 241 | 0.056 | 0.044 | 0.071 | 0.059 | 0.000 | 0.071 | 0.071 | 0.000 | 0.058 | 0.111 | 0.000 | 0.000 | 0.000 | 0.000 |
| 243 | 0.167 | 0.111 | 0.000 | 0.054 | 0.043 | 0.008 | 0.068 | 0.000 | 0.042 | 0.000 | 0.000 | 0.459 | 0.356 | 0.000 |
| 245 | 0.000 | 0.000 | 0.143 | 0.010 | 0.000 | 0.039 | 0.005 | 0.000 | 0.007 | 0.000 | 0.000 | 0.459 | 0.030 | 0.000 |
| 247 | 0.167 | 0.200 | 0.143 | 0.324 | 0.304 | 0.362 | 0.359 | 0.463 | 0.344 | 0.278 | 0.667 | 0.027 | 0.297 | 0.226 |
| 251 | 0.361 | 0.311 | 0.286 | 0.333 | 0.348 | 0.346 | 0.310 | 0.488 | 0.333 | 0.167 | 0.667 | 0.000 | 0.366 | 0.019 |
| 255 | 0.000 | 0.022 | 0.000 | 0.025 | 0.043 | 0.008 | 0.022 | 0.000 | 0.027 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 259 | 0.000 | 0.022 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 263 | 0.083 | 0.156 | 0.071 | 0.078 | 0.043 | 0.173 | 0.134 | 0.000 | 0.089 | 0.111 | 0.000 | 0.054 | 0.000 | 0.000 |
| 267 | 0.000 | 0.067 | 0.000 | 0.005 | 0.000 | 0.008 | 0.008 | 0.000 | 0.007 | 0.111 | 0.000 | 0.000 | 0.000 | 0.000 |
| 271 | 0.056 | 0.000 | 0.000 | 0.044 | 0.000 | 0.032 | 0.014 | 0.000 | 0.036 | 0.056 | 0.000 | 0.000 | 0.000 | 0.000 |
| 275 | 0.028 | 0.000 | 0.000 | 0.000 | 0.000 | 0.008 | 0.005 | 0.000 | 0.020 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 279 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 283 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | <u>0.396P</u> |
| 287 | 0.083 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.000 | 0.000 | 0.027 | 0.010 | 0.000 |
| 291 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | <u>0.005P</u> | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

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|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <u>AciG110</u> | (25) | (21) | (20) | (17) | (23) | (14) | (18) | (22) | (10) | (25) | (12) | (10) | (16) | (10) | (10) |
| 265 | 1.000 | 0.933 | 0.857 | 0.922 | 1.000 | 0.945 | 0.945 | 0.976 | 0.920 | 0.889 | 1.000 | 0.919 | 0.812 | 1.000 | |
| 269 | 0.167 | 0.222 | 0.214 | 0.103 | 0.130 | 0.102 | 0.148 | 0.439 | 0.125 | 0.222 | 0.167 | 0.162 | 0.000 | 0.000 | |
| 286 | 0.028 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 287 | 0.056 | 0.022 | 0.000 | 0.020 | 0.043 | 0.024 | 0.019 | 0.000 | 0.020 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 290 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 291 | 0.056 | 0.044 | 0.071 | 0.049 | 0.000 | 0.063 | 0.055 | 0.000 | 0.067 | 0.000 | 0.000 | 0.027 | 0.000 | 0.000 | |
| 295 | 0.139 | 0.267 | 0.143 | 0.270 | 0.348 | 0.283 | 0.282 | 0.098 | 0.265 | 0.278 | 0.333 | 0.297 | 0.119 | 0.528 | |
| 296 | 0.306 | 0.222 | 0.214 | 0.240 | 0.261 | 0.205 | 0.263 | 0.439 | 0.211 | 0.056 | 0.167 | 0.243 | 0.010 | 0.283 | |
| 299 | 0.722 | 0.711 | 0.786 | 0.760 | 0.696 | 0.693 | 0.740 | 0.878 | 0.749 | 0.889 | 1.000 | 0.784 | 0.822 | 0.962 | |
| 300 | 0.139 | 0.178 | 0.143 | 0.034 | 0.000 | 0.039 | 0.055 | 0.000 | 0.067 | 0.000 | 0.000 | 0.081 | 0.000 | 0.075 | |
| 303 | 0.472 | 0.556 | 0.500 | 0.716 | 0.696 | 0.685 | 0.581 | 0.585 | 0.638 | 0.444 | 0.167 | 0.595 | 0.713 | 0.396 | |

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|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 305 | 0.056 | 0.067 | 0.143 | 0.049 | 0.043 | 0.024 | 0.038 | 0.000 | 0.029 | 0.111 | 0.167 | 0.486 | 0.020 | 0.000 |
| 307 | 0.444 | 0.422 | 0.286 | 0.412 | 0.565 | 0.465 | 0.468 | 0.683 | 0.451 | 0.556 | 0.667 | 0.027 | 0.594 | 0.377 |
| 311 | 0.444 | 0.356 | 0.429 | 0.343 | 0.304 | 0.291 | 0.392 | 0.512 | 0.378 | 0.222 | 0.167 | 0.324 | 0.446 | 0.811 |
| 315 | 0.167 | 0.022 | 0.071 | 0.054 | 0.087 | 0.071 | 0.033 | 0.341 | 0.056 | 0.000 | 0.000 | 0.054 | 0.000 | 0.000 |
| 319 | 0.056 | 0.111 | 0.143 | 0.118 | 0.130 | 0.071 | 0.129 | 0.000 | 0.089 | 0.056 | 0.000 | 0.081 | 0.000 | 0.000 |
| 323 | 0.028 | 0.022 | 0.071 | 0.034 | 0.000 | 0.039 | 0.036 | 0.000 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 327 | 0.056 | 0.044 | 0.071 | 0.044 | 0.043 | 0.024 | 0.014 | 0.000 | 0.029 | 0.056 | 0.000 | 0.081 | 0.010 | 0.075 |
| 331 | 0.139 | 0.333 | 0.357 | 0.348 | 0.261 | 0.425 | 0.362 | 0.049 | 0.309 | 0.389 | 0.333 | 0.324 | 0.446 | 0.019 |
| 335 | 0.000 | 0.022 | 0.000 | 0.005 | 0.000 | 0.000 | 0.003 | 0.000 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 339 | 0.056 | 0.000 | 0.000 | 0.010 | 0.000 | 0.032 | 0.011 | 0.000 | 0.022 | 0.000 | 0.000 | 0.027 | 0.000 | 0.000 |
| 343 | 0.056 | 0.067 | 0.000 | 0.015 | 0.000 | 0.000 | 0.008 | 0.000 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 347 | 0.000 | 0.000 | 0.000 | 0.010 | 0.000 | 0.000 | 0.011 | 0.000 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 351 | 0.028 | 0.000 | 0.143 | 0.005 | 0.000 | 0.000 | 0.008 | 0.000 | 0.007 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 359 | 0.000 | 0.022 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

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|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <u>Atr107</u> | (29) | (22) | (24) | (16) | (26) | (18) | (27) | (26) | (8) | (27) | (20) | (11) | (20) | (15) | (16) |
| 182 | 0.000 | 0.044 | 0.000 | 0.029 | 0.000 | 0.016 | 0.019 | 0.000 | 0.005 | 0.000 | 0.000 | 0.108 | 0.000 | 0.000 | 0.000 |
| 186 | 0.361 | 0.444 | 0.357 | 0.343 | 0.522 | 0.346 | 0.345 | 0.683 | 0.402 | 0.167 | 0.167 | 0.378 | 0.356 | 0.340 | 0.340 |
| 190 | 0.472 | 0.400 | 0.286 | 0.466 | 0.391 | 0.425 | 0.521 | 0.463 | 0.451 | 0.667 | 0.500 | 0.541 | 0.416 | 0.226 | 0.226 |
| 194 | 0.556 | 0.489 | 0.571 | 0.451 | 0.609 | 0.488 | 0.526 | 0.000 | 0.542 | 0.667 | 0.500 | 0.486 | 0.089 | 0.566 | 0.566 |
| 198 | 0.278 | 0.267 | 0.143 | 0.157 | 0.304 | 0.173 | 0.189 | 0.000 | 0.160 | 0.333 | 0.000 | 0.108 | 0.000 | 0.019 | 0.019 |
| 202 | 0.083 | 0.111 | 0.071 | 0.137 | 0.043 | 0.142 | 0.134 | 0.000 | 0.076 | 0.000 | 0.000 | 0.027 | 0.000 | 0.000 | 0.000 |
| 206 | 0.583 | 0.578 | 0.643 | 0.564 | 0.565 | 0.567 | 0.501 | 0.902 | 0.458 | 0.333 | 0.333 | 0.568 | 0.495 | 0.604 | 0.604 |
| 210 | 0.361 | 0.311 | 0.286 | 0.397 | 0.304 | 0.409 | 0.389 | 0.122 | 0.405 | 0.444 | 0.333 | 0.459 | 0.564 | 0.264 | 0.264 |
| 214 | 0.111 | 0.111 | 0.214 | 0.083 | 0.087 | 0.055 | 0.068 | 0.341 | 0.047 | 0.056 | 0.167 | 0.054 | 0.000 | 0.377 | 0.377 |
| 216 | 0.000 | 0.022 | 0.000 | 0.020 | 0.000 | 0.024 | 0.033 | 0.000 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 218 | 0.111 | 0.178 | 0.071 | 0.123 | 0.087 | 0.165 | 0.110 | 0.000 | 0.144 | 0.056 | 0.000 | 0.054 | 0.000 | 0.528 | 0.528 |
| 220 | 0.056 | 0.022 | 0.000 | 0.010 | 0.000 | 0.008 | 0.019 | 0.000 | 0.024 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 222 | 0.278 | 0.200 | 0.000 | 0.333 | 0.217 | 0.386 | 0.321 | 0.439 | 0.307 | 0.389 | 0.667 | 0.378 | 0.525 | 0.717 | 0.717 |
| 224 | 0.028 | 0.000 | 0.000 | 0.025 | 0.000 | 0.016 | 0.016 | 0.000 | 0.022 | 0.111 | 0.000 | 0.000 | 0.010 | 0.000 | 0.000 |
| 226 | 0.167 | 0.289 | 0.429 | 0.221 | 0.304 | 0.228 | 0.216 | 0.000 | 0.229 | 0.167 | 0.333 | 0.216 | 0.762 | 0.019 | 0.019 |
| 230 | 0.028 | 0.067 | 0.214 | 0.088 | 0.130 | 0.110 | 0.104 | 0.000 | 0.084 | 0.000 | 0.000 | 0.027 | 0.000 | 0.132 | 0.132 |

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|-----|-------|-------|-------|-------|-------|---------------|-------|-------|---------------|-------|-------|-------|-------|-------|
| 232 | 0.028 | 0.089 | 0.000 | 0.054 | 0.130 | 0.063 | 0.077 | 0.000 | 0.095 | 0.056 | 0.167 | 0.054 | 0.000 | 0.283 |
| 234 | 0.139 | 0.222 | 0.071 | 0.147 | 0.174 | 0.157 | 0.156 | 0.390 | 0.089 | 0.167 | 0.000 | 0.324 | 0.010 | 0.000 |
| 236 | 0.167 | 0.244 | 0.000 | 0.230 | 0.217 | 0.189 | 0.205 | 0.000 | 0.195 | 0.167 | 0.000 | 0.189 | 0.673 | 0.000 |
| 238 | 0.000 | 0.044 | 0.071 | 0.005 | 0.000 | 0.016 | 0.003 | 0.000 | 0.004 | 0.000 | 0.000 | 0.000 | 0.010 | 0.000 |
| 240 | 0.083 | 0.133 | 0.357 | 0.186 | 0.217 | 0.181 | 0.184 | 0.366 | 0.202 | 0.167 | 0.333 | 0.378 | 0.475 | 0.283 |
| 242 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.008 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.297 | 0.188 | 0.000 |
| 244 | 0.139 | 0.222 | 0.143 | 0.265 | 0.217 | 0.346 | 0.282 | 0.000 | 0.305 | 0.278 | 0.333 | 0.000 | 0.089 | 0.019 |
| 246 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.008P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 248 | 0.194 | 0.111 | 0.143 | 0.132 | 0.087 | 0.071 | 0.088 | 0.000 | 0.116 | 0.056 | 0.000 | 0.135 | 0.000 | 0.547 |
| 252 | 0.028 | 0.067 | 0.000 | 0.113 | 0.000 | 0.094 | 0.107 | 0.000 | 0.067 | 0.056 | 0.000 | 0.054 | 0.000 | 0.000 |
| 256 | 0.028 | 0.089 | 0.000 | 0.010 | 0.000 | 0.024 | 0.019 | 0.000 | 0.033 | 0.111 | 0.000 | 0.000 | 0.000 | 0.113 |
| 264 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 272 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.056 | 0.000 | 0.000 | 0.010 | 0.000 |

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|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|---------------|-------------|-------------|-------------|-------------|-------------|
| <u>Atr109</u> | (34) | (23) | (20) | (19) | (28) | (20) | (24) | (28) | (9) | (30) | (20) | (13) | (23) | (12) | (12) |
| 216 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 220 | 0.111 | 0.022 | 0.071 | 0.176 | 0.043 | 0.197 | 0.134 | 0.000 | 0.145 | 0.167 | 0.500 | 0.189 | 0.465 | 0.170 | |
| 224 | 0.083 | 0.089 | 0.143 | 0.093 | 0.174 | 0.047 | 0.107 | 0.000 | 0.107 | 0.056 | 0.000 | 0.108 | 0.119 | 0.000 | |
| 228 | 0.028 | 0.022 | 0.214 | 0.123 | 0.174 | 0.110 | 0.099 | 0.415 | 0.098 | 0.167 | 0.167 | 0.135 | 0.000 | 0.094 | |
| 232 | 0.000 | 0.000 | 0.071 | 0.049 | 0.043 | 0.032 | 0.027 | 0.000 | 0.073 | 0.056 | 0.167 | 0.108 | 0.000 | 0.491 | |
| 236 | 0.222 | 0.156 | 0.143 | 0.162 | 0.130 | 0.134 | 0.088 | 0.707 | 0.158 | 0.222 | 0.000 | 0.297 | 0.396 | 0.000 | |
| 240 | 0.028 | 0.067 | 0.071 | 0.025 | 0.130 | 0.000 | 0.011 | 0.488 | 0.049 | 0.056 | 0.000 | 0.081 | 0.000 | 0.000 | |
| 243 | 0.000 | 0.044 | 0.000 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 244 | 0.111 | 0.089 | 0.071 | 0.049 | 0.043 | 0.032 | 0.027 | 0.000 | 0.031 | 0.111 | 0.000 | 0.000 | 0.000 | 0.113 | |
| 248 | 0.389 | 0.311 | 0.214 | 0.211 | 0.217 | 0.283 | 0.216 | 0.000 | 0.209 | 0.167 | 0.000 | 0.189 | 0.000 | 0.509 | |
| 252 | 0.250 | 0.311 | 0.357 | 0.167 | 0.174 | 0.228 | 0.148 | 0.000 | 0.191 | 0.056 | 0.167 | 0.135 | 0.386 | 0.132 | |
| 256 | 0.194 | 0.267 | 0.357 | 0.250 | 0.391 | 0.283 | 0.214 | 0.585 | 0.249 | 0.389 | 0.333 | 0.405 | 0.257 | 0.170 | |
| 260 | 0.167 | 0.311 | 0.643 | 0.520 | 0.522 | 0.504 | 0.526 | 0.878 | 0.433 | 0.500 | 0.667 | 0.514 | 0.406 | 0.472 | |
| 262 | 0.056 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.027 | 0.000 | 0.000 | |
| 264 | 0.389 | 0.267 | 0.214 | 0.265 | 0.261 | 0.181 | 0.238 | 0.000 | 0.249 | 0.278 | 0.167 | 0.081 | 0.119 | 0.453 | |
| 268 | 0.472 | 0.311 | 0.286 | 0.466 | 0.522 | 0.472 | 0.504 | 0.000 | 0.505 | 0.500 | 0.500 | 0.270 | 0.604 | 0.887 | |
| 272 | 0.278 | 0.244 | 0.357 | 0.284 | 0.391 | 0.307 | 0.332 | 0.732 | 0.307 | 0.167 | 0.167 | 0.270 | 0.010 | 0.000 | |

| | | | | | | | | | | | | | | |
|-----|-------|-------|-------|-------|-------|-------|---------------|-------|---------------|-------|-------|-------|-------|-------|
| 274 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 276 | 0.389 | 0.333 | 0.429 | 0.260 | 0.391 | 0.268 | 0.293 | 0.317 | 0.269 | 0.333 | 0.333 | 0.216 | 0.000 | 0.170 |
| 278 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 279 | 0.028 | 0.000 | 0.000 | 0.015 | 0.000 | 0.008 | 0.005 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 280 | 0.306 | 0.200 | 0.214 | 0.221 | 0.391 | 0.205 | 0.255 | 0.000 | 0.222 | 0.278 | 0.167 | 0.162 | 0.000 | 0.245 |
| 282 | 0.000 | 0.000 | 0.000 | 0.020 | 0.000 | 0.039 | 0.022 | 0.000 | 0.031 | 0.000 | 0.000 | 0.027 | 0.000 | 0.000 |
| 283 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.010 | 0.000 |
| 284 | 0.278 | 0.156 | 0.071 | 0.127 | 0.043 | 0.205 | 0.184 | 0.000 | 0.176 | 0.167 | 0.167 | 0.081 | 0.396 | 0.000 |
| 286 | 0.083 | 0.000 | 0.000 | 0.025 | 0.000 | 0.008 | 0.033 | 0.000 | 0.033 | 0.056 | 0.000 | 0.000 | 0.000 | 0.000 |
| 288 | 0.056 | 0.111 | 0.071 | 0.118 | 0.174 | 0.102 | 0.096 | 0.122 | 0.102 | 0.000 | 0.000 | 0.054 | 0.010 | 0.000 |
| 290 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.488 | 0.000 | 0.000 | 0.000 | 0.081 | 0.000 | 0.000 |
| 291 | 0.000 | 0.000 | 0.071 | 0.010 | 0.043 | 0.008 | 0.011 | 0.000 | 0.005 | 0.000 | 0.000 | 0.027 | 0.000 | 0.000 |
| 292 | 0.083 | 0.022 | 0.000 | 0.069 | 0.130 | 0.110 | 0.077 | 0.000 | 0.075 | 0.056 | 0.167 | 0.135 | 0.000 | 0.000 |
| 294 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002P | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 295 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.008 | 0.014 | 0.000 | 0.011 | 0.000 | 0.000 | 0.027 | 0.000 | 0.000 |
| 296 | 0.028 | 0.089 | 0.000 | 0.044 | 0.000 | 0.039 | 0.030 | 0.000 | 0.036 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 298 | 0.028 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.007 | 0.056 | 0.000 | 0.000 | 0.000 | 0.000 |

| | | | | | | | | | | | | | | | |
|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|-------------|-------------|------------|
| <u>Atr1173</u> | (26) | (21) | (24) | (14) | (23) | (19) | (20) | (23) | (7) | (23) | (11) | (10) | (15) | (10) | (9) |
| 254 | 0.028 | 0.022 | 0.000 | 0.015 | 0.043 | 0.000 | 0.008 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.010 | 0.000 |
| 258 | 0.472 | 0.444 | 0.714 | 0.466 | 0.261 | 0.480 | 0.490 | 0.073 | 0.502 | 0.278 | 0.667 | 0.568 | 0.614 | 0.585 | |
| 262 | 0.111 | 0.111 | 0.071 | 0.113 | 0.043 | 0.087 | 0.118 | 0.244 | 0.093 | 0.000 | 0.167 | 0.135 | 0.347 | 0.000 | |
| 263 | 0.056 | 0.089 | 0.071 | 0.088 | 0.087 | 0.094 | 0.052 | 0.000 | 0.049 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 264 | 0.028 | 0.022 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 265 | 0.000 | 0.000 | 0.000 | 0.020 | 0.000 | 0.008 | 0.014 | 0.000 | 0.009 | 0.000 | 0.000 | 0.000 | 0.010 | 0.000 | |
| 266 | 0.056 | 0.178 | 0.214 | 0.152 | 0.130 | 0.134 | 0.173 | 0.000 | 0.176 | 0.222 | 0.000 | 0.189 | 0.020 | 0.000 | |
| 270 | 0.333 | 0.244 | 0.571 | 0.309 | 0.522 | 0.394 | 0.422 | 0.512 | 0.344 | 0.500 | 0.500 | 0.432 | 0.030 | 0.604 | |
| 271 | 0.167 | 0.022 | 0.000 | 0.054 | 0.043 | 0.055 | 0.071 | 0.000 | 0.058 | 0.000 | 0.167 | 0.000 | 0.000 | 0.434 | |
| 274 | 0.556 | 0.578 | 0.429 | 0.618 | 0.522 | 0.630 | 0.619 | 0.512 | 0.571 | 0.778 | 0.500 | 0.459 | 0.723 | 0.528 | |
| 275 | 0.028 | 0.133 | 0.000 | 0.015 | 0.043 | 0.008 | 0.008 | 0.000 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 278 | 0.194 | 0.222 | 0.071 | 0.123 | 0.043 | 0.142 | 0.118 | 0.000 | 0.158 | 0.056 | 0.000 | 0.189 | 0.129 | 0.019 | |
| 282 | 0.583 | 0.511 | 0.571 | 0.583 | 0.652 | 0.496 | 0.529 | 0.854 | 0.555 | 0.667 | 0.833 | 0.649 | 0.614 | 0.566 | |

| | | | | | | | | | | | | | | |
|-----|-------|-------|-------|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 286 | 0.083 | 0.178 | 0.143 | 0.225 | 0.304 | 0.205 | 0.208 | 0.000 | 0.227 | 0.278 | 0.167 | 0.216 | 0.614 | 0.170 |
| 288 | 0.000 | 0.000 | 0.000 | <u>0.005P</u> | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 290 | 0.000 | 0.022 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 292 | 0.028 | 0.022 | 0.071 | 0.044 | 0.043 | 0.032 | 0.014 | 0.000 | 0.024 | 0.000 | 0.000 | 0.054 | 0.000 | 0.000 |
| 296 | 0.167 | 0.200 | 0.214 | 0.225 | 0.391 | 0.260 | 0.197 | 0.000 | 0.195 | 0.278 | 0.333 | 0.027 | 0.000 | 0.245 |
| 300 | 0.361 | 0.178 | 0.000 | 0.235 | 0.348 | 0.173 | 0.197 | 0.488 | 0.198 | 0.222 | 0.167 | 0.135 | 0.000 | 0.189 |
| 303 | 0.000 | 0.044 | 0.000 | 0.000 | 0.000 | 0.008 | 0.003 | 0.512 | 0.000 | 0.000 | 0.000 | 0.027 | 0.000 | 0.000 |
| 304 | 0.139 | 0.022 | 0.071 | 0.039 | 0.043 | 0.016 | 0.025 | 0.000 | 0.029 | 0.000 | 0.000 | 0.054 | 0.000 | 0.000 |
| 308 | 0.056 | 0.044 | 0.071 | 0.000 | 0.000 | 0.000 | 0.016 | 0.000 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 312 | 0.000 | 0.022 | 0.000 | 0.005 | 0.000 | 0.016 | 0.003 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 316 | 0.028 | 0.022 | 0.000 | 0.010 | 0.043 | 0.000 | 0.008 | 0.000 | 0.007 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 320 | 0.028 | 0.022 | 0.071 | 0.049 | 0.087 | 0.102 | 0.099 | 0.000 | 0.055 | 0.056 | 0.167 | 0.027 | 0.000 | 0.000 |
| 324 | 0.028 | 0.022 | 0.000 | 0.029 | 0.087 | 0.024 | 0.014 | 0.000 | 0.031 | 0.111 | 0.000 | 0.027 | 0.000 | 0.000 |
