



LEAFWORKS

LEAFWORKS INC.  
200 S. MAIN ST. #130-150  
SEBASTOPOL, CA, 95472  
PH: (800) 549-1731

**LEAFWORKS® CONSULTING SERVICE  
CERTIFICATE OF ANALYSIS  
RESULTS REPORT**

**SAMPLE INFORMATION**

ORGANIZATION: HERBSNOW  
ORDER #: 4172  
NO. SAMPLES TESTED: 6

RECEIVED DATE: 10/31/25  
DATE ANALYSIS COMMENCED: 12/12/25  
RESULTS DATE: 01/02/26

**PROJECT:** POLYEMBRYONIC SEED PROJECT

**DELIVERABLES:** A REPORT ILLUSTRATING HOW DIFFERENT SUBMITTED SAMPLES ARE TO THE LEAFWORKS CANNABIS DNA DATABASE AND TO THEMSELVES.

**METHOD:** ANALYSIS IDENTIFIED THE UNIQUE GENETIC FINGERPRINTS OF THE SIX SUPPLIED SAMPLES AND COMPARED THESE FINGERPRINTS TO THE LEAFWORKS' CANNABIS DNA DATABASE. THE GENETIC FINGERPRINTS INCORPORATE THOUSANDS OF POLYMORPHIC SITES AND THE LEAFWORKS' CANNABIS DATA INCLUDES THOUSANDS OF INDIVIDUALS. GENETIC RELATIONSHIPS BETWEEN SAMPLES AND THE DATABASE ARE SUMMARIZED USING TWO METRICS: 1) A MEASURE OF UNIQUENESS 2) A PRINCIPAL COMPONENT ANALYSIS (PCA).

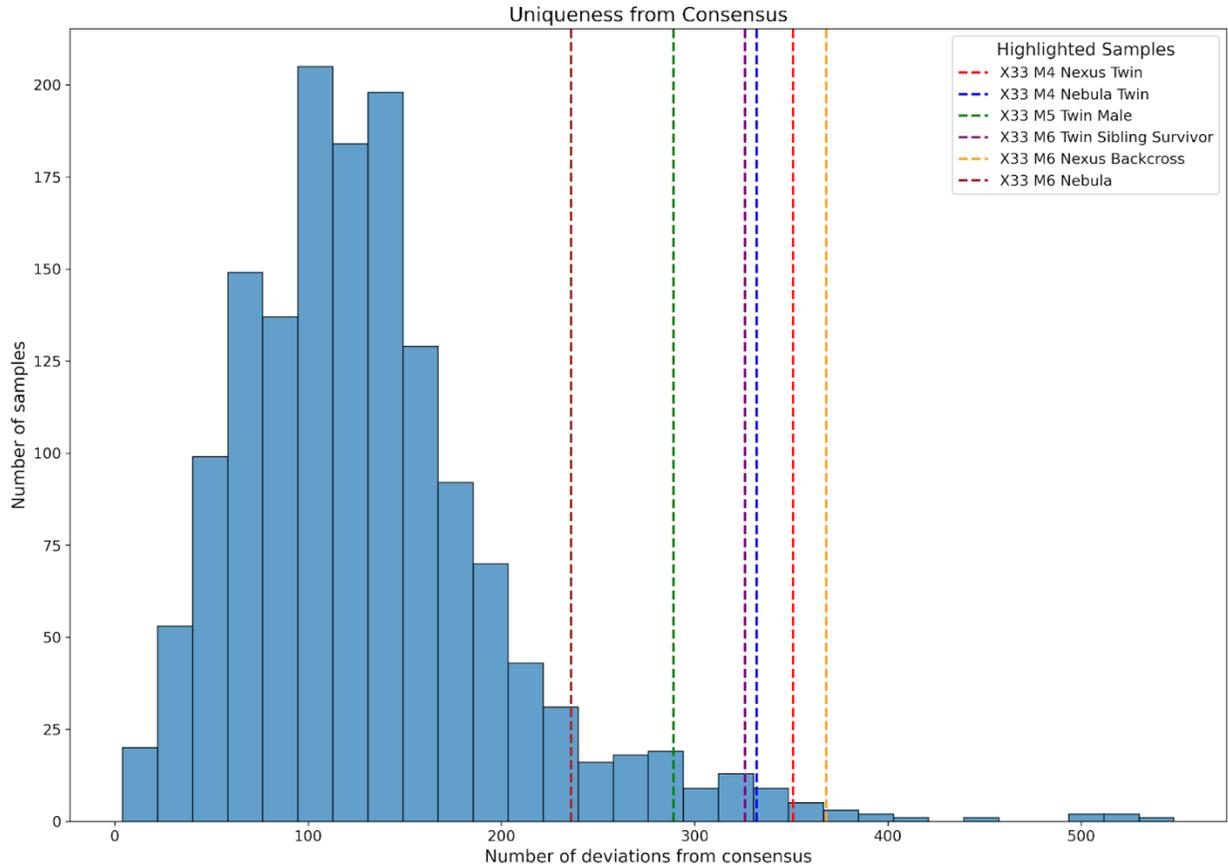
**RESULTS**

**UNIQUENESS**

UNIQUENESS IS A METRIC THAT ALLOWS ONE TO UNDERSTAND HOW DIFFERENT A SAMPLE IS TO OTHERS. THIS METRIC IS MEASURED AS THE NUMBER OF DIFFERENCES BETWEEN THE CONSENSUS SEQUENCE ACROSS THE EXTENSIVE LEAFWORKS CANNABIS DATABASE AND EACH INDIVIDUAL SAMPLE. THE CONSENSUS SEQUENCE IS THE NUCLEOTIDE STATE THAT THE MAJORITY OF INDIVIDUALS HAVE AT A GIVEN SITE. A UNIQUENESS OF 0 MEANS NONE OF THE SITES ARE DIFFERENT FROM THE MAJORITY AND A UNIQUENESS VALUE OF 500 MEANS 500 SITES ARE DIFFERENT FROM THE CONSENSUS. AMBIGUOUS VALUES ARE NOT COUNTED.

THE HISTOGRAM BELOW SHOWS THE DISTRIBUTION OF THE NUMBER OF DEVIATIONS FROM CONSENSUS. THE HIGHER NUMBER OF DEVIATIONS, THE MORE UNIQUE A SAMPLE IS. EACH INDIVIDUAL'S UNIQUENESS HAS BEEN OVERLAID ON THIS DISTRIBUTION TO VISUALIZE ITS LOCATION IN THE HISTOGRAM.

THE SIX SUPPLIED SAMPLES ARE MUCH MORE UNIQUE THAN THE AVERAGE SAMPLE.



AVERAGE NUMBER OF DEVIATIONS FROM CONSENSUS ACROSS ALL SAMPLES: 130.86

SAMPLE 'X33 M4 NEXUS TWIN' FALLS IN THE 98.9 PERCENTILE OF THE DISTRIBUTION (DEVIATION = 351)  
 SAMPLE 'X33 M4 NEBULA TWIN' FALLS IN THE 98.4 PERCENTILE OF THE DISTRIBUTION (DEVIATION = 332)  
 SAMPLE 'X33 M5 TWIN MALE' FALLS IN THE 96.4 PERCENTILE OF THE DISTRIBUTION (DEVIATION = 289)  
 SAMPLE 'X33 M6 TWIN SIBLING SURVIVOR' FALLS IN THE 98.1 PERCENTILE OF THE DISTRIBUTION (DEVIATION = 326)  
 SAMPLE 'X33 M6 NEXUS BACKCROSS' FALLS IN THE 99.3 PERCENTILE OF THE DISTRIBUTION (DEVIATION = 368)  
 SAMPLE 'X33 M6 NEBULA' FALLS IN THE 93.1 PERCENTILE OF THE DISTRIBUTION (DEVIATION = 236)

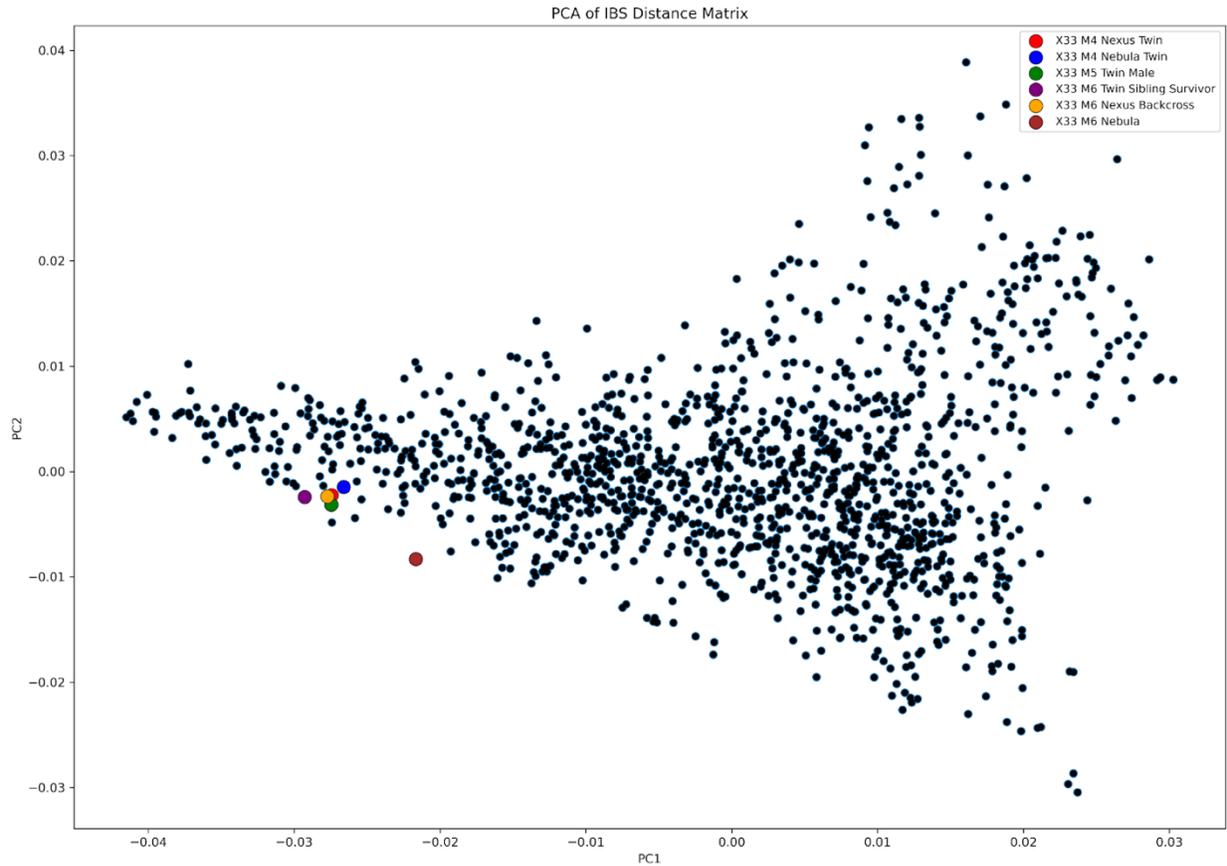
## PRINCIPAL COMPONENT ANALYSIS

PRINCIPAL COMPONENT ANALYSIS (PCA) IS A STATISTICAL TECHNIQUE USED TO REDUCE THE DIMENSIONALITY OF COMPLEX DATASETS WHILE PRESERVING AS MUCH OF THE VARIATION PRESENT IN THE DATA AS POSSIBLE IN ORDER TO VISUALIZE DIFFERENCES BETWEEN SAMPLES. IN THIS CASE, WE CAN VISUALIZE GENETIC DIFFERENCES AS GENETIC DISTANCE. THE MORE DISTANTLY RELATED, THE FURTHER THEY WILL BE. THE MORE CLOSELY RELATED, THE MORE THEY CLUSTER TOGETHER.

FOR EACH SET OF INDIVIDUALS, WE CALCULATED THE GENETIC DISTANCE BETWEEN THE TWO INDIVIDUALS. IF THEY ARE IDENTICAL THIS MEANS EACH OF THE SITES IS THE SAME AND THE GENETIC DISTANCE BETWEEN THEM

**Legal Disclaimers:** Acceptance of this report constitutes the acknowledgement and agreement of the Customer to the following: Customer is not entitled to use, and shall not use, any LeafWorks Certificate of Analysis, including without limitation one bearing a logo or Licensed Mark, on any Samples other than those passing certification hereunder. Customer has no rights to use, and shall not use, LeafWorks Certificate of Analysis, logo or Licensed Mark in any other way or on any other goods or services. This Certificate of Analysis is based on the Customer's stated sample information and LeafWorks has not made any objective determination or confirmation thereof for correctness. This service as accepted by the Customer is provided on an "as-is" basis and is subject to the LeafWorks Inc. Warranty and Disclaimer and Limitation of Liability policy available on the website: <https://www.leafworks.com/warranty>.

IS 0. A PAIRWISE MATRIX OF GENETIC DISTANCES BETWEEN EACH SAMPLE IS USED AS INPUT TO PCA. IN THIS PCA, YOU CAN SEE THE SUBMITTED SAMPLES HAVE CLUSTERED TIGHTLY TOGETHER, SUPPORTING THAT THEY ARE CLOSELY RELATED, AND ARE AT THE FRINGE OF THE CLUSTER, ADDITIONALLY SUPPORTING THEIR GENETIC UNIQUENESS. HOWEVER, IN THE PCA PLOT THEY STILL CLUSTER CLOSELY WITH OTHER SAMPLES IN THE DATABASE, INDICATING A HIGH DEGREE OF SIMILARITY TO EXISTING CANNABIS SAMPLES WITHIN THE LEAFWORKS CANNABIS DATABASE TO THE SUBMITTED SAMPLES (I.E., THE SUBMITTED SAMPLES ARE NOT NEW SPECIES OF CANNABIS).



THE FIRST TWO PRINCIPAL COMPONENTS ARE RESPONSIBLE FOR ABOUT 11% OF THE VARIATION IN THE DATASET.

EIGENVALUES:

PC1: 0.3302 (8.03%)

PC2: 0.1231 (2.99%)

## CONCLUSION

THESE SAMPLES ARE CLOSELY RELATED AND HIGHLY UNIQUE. THE SIX SAMPLES SUBMITTED HERE ARE GENETICALLY RELATED TO EACH OTHER DEMONSTRATED BY THE TIGHT CLUSTERING ON THE PCA PLOT. ADDITIONALLY, THE SIX SAMPLES ARE CONSIDERABLY MORE UNIQUE THAN THE AVERAGE SAMPLE. ALL SAMPLES FALL WITHIN THE 90% PERCENTILE OF THE UNIQUENESS DISTRIBUTION.

**Legal Disclaimers:** Acceptance of this report constitutes the acknowledgement and agreement of the Customer to the following: Customer is not entitled to use, and shall not use, any LeafWorks Certificate of Analysis, including without limitation one bearing a logo or Licensed Mark, on any Samples other than those passing certification hereunder. Customer has no rights to use, and shall not use, LeafWorks Certificate of Analysis, logo or Licensed Mark in any other way or on any other goods or services. This Certificate of Analysis is based on the Customer's stated sample information and LeafWorks has not made any objective determination or confirmation thereof for correctness. This service as accepted by the Customer is provided on an "as-is" basis and is subject to the LeafWorks Inc. Warranty and Disclaimer and Limitation of Liability policy available on the website: <https://www.leafworks.com/warranty>.

THE CUSTOMER AGREES THE SAMPLE INFORMATION PRESENTED ABOVE REGARDING THE TESTED BATCH LOT IS ACCURATE AND TRUE, AND THAT SAMPLES WERE SUBMITTED ON THE AFOREMENTIONED DATE PER THE INSTRUCTIONS OF THE SERVICE RENDERED.

ANALYSTS: KR, KZ

**Verified By:**

LAB STAFF NAME: KERIN LAW

LAB STAFF TITLE: CSO

LAB STAFF SIGNATURE:

**Legal Disclaimers:** Acceptance of this report constitutes the acknowledgement and agreement of the Customer to the following: Customer is not entitled to use, and shall not use, any LeafWorks Certificate of Analysis, including without limitation one bearing a logo or Licensed Mark, on any Samples other than those passing certification hereunder. Customer has no rights to use, and shall not use, LeafWorks Certificate of Analysis, logo or Licensed Mark in any other way or on any other goods or services. This Certificate of Analysis is based on the Customer's stated sample information and LeafWorks has not made any objective determination or confirmation thereof for correctness. This service as accepted by the Customer is provided on an "as-is" basis and is subject to the LeafWorks Inc. Warranty and Disclaimer and Limitation of Liability policy available on the website: <https://www.leafworks.com/warranty>.