# Description of the PCA plot for the Phytosaur

In this Principal component Analysis plot we have PC1 on the x-axis and PC2 on the y-axis. PC1 always represents the maximum distance or difference between the data points of each species. And given that PC1 is 61.14% greater in variance meaning its representation of most of the population, PC1 is more likely to be accurate in determining the difference between the species.

## Slide 1:

* There are two clusters (1,2) containing the same expression profiles in each.

### Similar species between 1 and 2

|  |
| --- |
| UCMP 27036 V27(2) |
| Smilosuchus adamanensis(2) |
| Machaeroprosopus(2) |
| Garjainia prima(2) |
| Nundasuchus songeaensis(2) |
| AMNH FARB 7262(2) |
| 2 of Machaeroprosopus mccauleyi(2) |
| Leidyosuchus formidabilis(2) |
| Aetosauroides scagliai(1) |
| TTU P11354(1) |
| UCMP 27036 V26(1) |
| TTU P14494(1) |
| Smilosuchus adamanensis(1) |
| Borealosuchus wilsoni(1) |
| NMMNH P-60252 |
| AMNH FARB 1(1) |

Most different species guide:  
The farther down in each cluster a species is, the farther they are apart of each other, relatively. Ex. Alligator Mississippiensis is relatively most farther from the 2 specimens of Gumby

### Different species

(Cluster 1):

|  |
| --- |
| NMMNH P-60253 (1) |
| UMMP 13762(1) |
| 2 of Smilosuchus sp.(1) |
| 2 of Gumby(1) |
|  |
|  |

(Cluster 2):

|  |
| --- |
| 2 of Pseudopalatus(2) |
| Gumby(2) |
| Crocodylidae(2) |
| Machaeroprosopus mccauleyi |
| 2 of Alligataor mississippiensis(2) |
|  |

Out of clusters:

Batrachotomus kupferzellensis

## Slide 2:

* There are three clusters (1,2,3) containing the same expression profiles in each.

### Similar species between 1, 2 and 3:

Machaeroprosopus mccauleyi

### Similar species in 1 and 3:

|  |
| --- |
| Pseudopalatus(1) |
| AMNH FARB 7262(1) |
| Machaeroprosopus mccauleyi(1) |
| Leidyosuchus formidabilis(1) |
| Crocodylidae(1) |
| Gumby(3) |

### Similar species in 1 and 2:

|  |
| --- |
| TTU P14494(1) |
| AMNH FARB 7262(2) |
| Smilosuchus adamanensis(2) |
| NMMNH P-60252(2) |
| Borealosuchus wilsoni |
|  |

### Most different species:

### Most different species guide:

Cluster 2 and 3 are most different, The farther down in each cluster(2 and 3) a species is, the farther they are apart of each other, relatively. Ex. Alligator Mississippiensis is relatively most farther from the 2 specimens of Gumby

Cluster 1 is in the middle. Greater up each species is in cluster 1, the further it is from both cluster 2 and 3.

Cluster 3:

|  |
| --- |
| Crocodylidae(3) |
| Machaeroprosopus mccauleyi(3) |
| Pseudopalatus(3) |
| 2 of Alligator mississippiensis(3) |

Cluster 2:

|  |
| --- |
| UMMP 13762(2) |
| 2 of Smilosuchus sp. (2) |
| NMMNH P-60253(2) |
| 2 of Gumby(2) |
|  |

Cluster 1:

|  |
| --- |
| UCMP 27036 V27(1) |
| Aetosauroides scagliai(1) |
| Smilosuchus adamanensis(1) |
| TTU P11354(1) |
| UCMP 27036 V26(1) |
| Machaeroprosopus(1) |
| Garjainia prima(1) |
| Nundasuchus songeaensis(1) |
|  |

## Slide 3:

### Similar between 2, 3, and 4

|  |
| --- |
| Leidyosuchus formidabilis(4) |
| Machaeroprosopus mccauleyi(4) |
| Machaeroprosopus mccauleyi(3) |
|  |
|  |

### Similar between 2 and 3

|  |
| --- |
| AMNH FARB 7262(3) |
| Crocodylidae(3) |
| Pseudopalatus(3) |
|  |
|  |

### Similar between 3 and 4

|  |
| --- |
| Machaeroprosopus(3) |
| Garjainia prima(3) |
| Nundasuchus songeaensis(3) |
| Smilosuchus adamanensis(3) |
|  |

### Similar between 1 and 4

|  |
| --- |
| TTU 14494(4) |
| AMNH FARB 7262(4) |
| Smilosuchus adamanensis(1) |
| UMMP 13762 |
| NMMNH P-60252 |

### Different species:

Different species guide:

Cluster 1 and 2 are most different, The farther down in each cluster(1 and 2) a species is, the farther they are apart of each other, relatively. Ex. The 2 specimens Alligator Mississippiensis is relatively most farther from the 2 specimens of Gumby

Cluster 2:

|  |
| --- |
| Gumby(2) |
| Machaeroprosopus mccauleyi(2) |
| Crocodylidae(2) |
| Pseudopalatus(2) |
| 2 of Alligator mississippiensis(2) |

Cluster 1:

|  |
| --- |
| 2 of Smilosuchus sp.(1) |
| NMMNH P-60253(1) |
| 2 of Gumby(1) |
|  |
|  |

Cluster 3:

|  |
| --- |
| Batrachotomus kupferzellensis |
| UCMP 27036 V27 |

Cluster 4:

|  |
| --- |
| Aetosauroides scagliai |
| TTU P11351 |
| UCMP 27036 V26 |
| Borealosuchus wilson |

## Slide 4:

### Similarity between 1, 3, 4

|  |
| --- |
| Aetosauroides scagliai |
|  |

### Similarity between 2, 3, 4

|  |
| --- |
| Pseudopalatus(4) |
| AMNH FARB 7262(4) |
| 2 of Machaeroprosopus mccauleyi(3) |
| Leidyosuchus formidabilis(3) |
| Crocodylidae(3) |
| Gumby(2) |

### Similarity between 1, 3, 5

|  |
| --- |
| NMMNH P-60252(3) |
| AMNH FARB 7262(1) |
| Smilosuchus adamanensis(1) |

### Similarity between 1 and 5

|  |
| --- |
| UMMP 13762(5) |
| 2 of Smilosuchus sp.(5) |

Similarity between 3 and 4

|  |
| --- |
| UCMP 27036 V27(4) |
| Smilosuchus adamanensis(4) |
| Machaeroprosopus(4) |
| Garjainia prima(3) |
| Nundasuchus songeaensis |
|  |

### Similarity between 1 and 3

|  |
| --- |
| TTU P11351(1) |
| UCMP 27036 V26(1) |
| TTU P14494(1) |

### Different species:

Different species guide:

Cluster 2 and 5 are most different, The farther down in each cluster(2 and 5) a species is, the farther they are apart of each other, relatively. Ex. 2 of the Alligator Mississippiensis is relatively most farther from the 2 specimens of Gumby

Cluster 2:

|  |
| --- |
| Crocodylidae(2) |
| Machaeroprosopus mccauleyi(2) |
| Pseudopalatus(2) |
| 2 of Alligator mississippiensis(2) |

Cluster 5:

|  |
| --- |
| NMMNH P-60253(5) |
| 2 of Gumby(5) |

Cluster 4:

Batrachotomus kupferzellensis

Something I noticed:

In many of the data points, Alligator mississippiensis and Gumby seems to be the farthest apart. While Batrachotomus kupferzellensis seems to be the outlier.