## Admixture

Используя результаты прошлого домашнего задания PCA, .ipynb прошлого домашнего задания воспользуемся Admixture

## Установим его

```
!wget https://dalexander.github.io/admixture/binaries/admixture_linux-1.3.0.tar.gz
!tar -xvzf admixture_linux-1.3.0.tar.gz
!chmod +x dist/admixture_linux-1.3.0/admixture
!mv dist/admixture_linux-1.3.0/admixture /usr/local/bin/
!admixture --version
```

Воспользуемся admixture для параметров K=3,4,5

```
import time

K_values = [3, 4, 5]

for K in K_values:
    start_time = time.time()
    print(f"Running ADMIXTURE for K = {K}...")

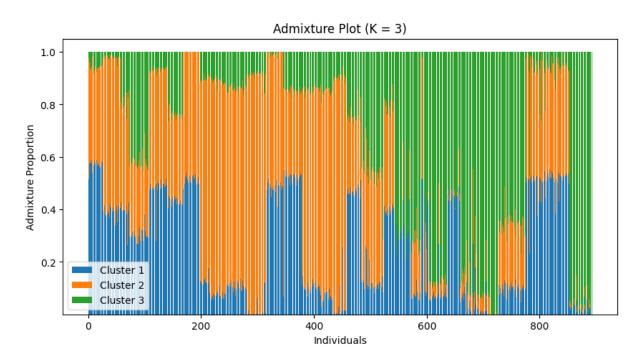
!admixture --cv biengi.bed {K}

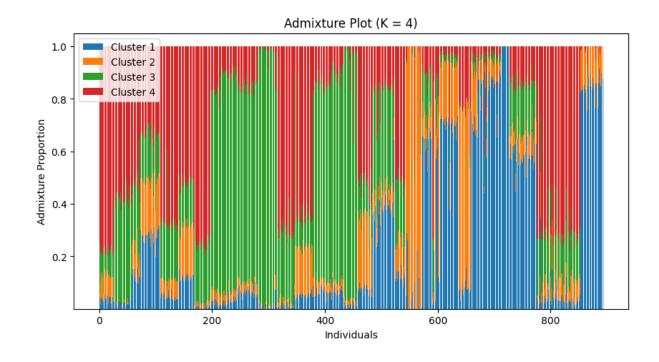
total_time = time.time() - start_time
    print(f"Completed ADMIXTURE for K = {K} in {total_time:.2f} seconds.")
```

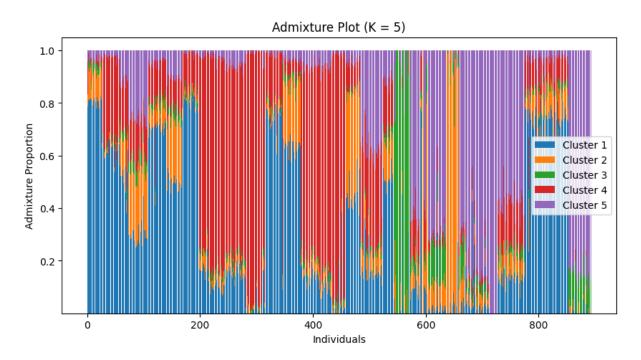
Построим Графики на основе полученных результатов:

```
Code
import matplotlib.pyplot as plt
import numpy as np
import pandas as pd
for K in K_values:
   q_file = f''biengi.\{K\}.Q''
   admixture_data = pd.read_csv(q_file, delim_whitespace=True, header=None)
   admixture data['IID'] = pca data['IID']
  fig, ax = plt.subplots(figsize=(10, 5))
  bottom array = np.zeros(admixture data.shape[0])
  for k in range(K):
      ax.bar(admixture_data.index,
         admixture data[k],
        bottom=bottom array,
        label=f'Cluster {k+1}')
     bottom array += admixture data[k]
   ax.set\_title(f'Admixture Plot (K = {K})')
   ax.set xlabel('Individuals')
   ax.set ylabel('Admixture Proportion')
   ax.legend()
  plt.show()
```

## Получим:







Также весь код можно посмотреть тут