```python
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.preprocessing import StandardScaler
from sklearn.cluster import AgglomerativeClustering
from scipy.cluster.hierarchy import dendrogram, linkage


# Load the dataset from Excel
df = pd.read_excel("/content/data.xlsx")  # Use the correct path if different
print(df.head())
```

```
⇥    Person_No  Weight (KG)  Height (CM)
    0   Person1    67.062924   176.086355
    1   Person2    68.804094   178.388669
    2   Person3    60.930863   170.284496
    3   Person4    59.733843   168.691992
    4   Person5    65.431230   173.763679
```

```python
# Select relevant features
features = df[['Weight (KG)', 'Height (CM)']]

# Standardize the features
scaler = StandardScaler()
scaled_features = scaler.fit_transform(features)


# Create and fit the Agglomerative Clustering model
agg_cluster = AgglomerativeClustering(n_clusters=3, linkage='ward')
df['Cluster'] = agg_cluster.fit_predict(scaled_features)

# Show the dataset with cluster labels
print(df.head())
```

```
⇥    Person_No  Weight (KG)  Height (CM)  Cluster
    0   Person1    67.062924   176.086355        2
    1   Person2    68.804094   178.388669        2
    2   Person3    60.930863   170.284496        0
    3   Person4    59.733843   168.691992        0
    4   Person5    65.431230   173.763679        2
```

```python
# Create linkage matrix for dendrogram
linked = linkage(scaled_features, method='ward')

# Plot the dendrogram
plt.figure(figsize=(10, 6))
dendrogram(linked, labels=df['Person_No'].values, orientation='top',
           distance_sort='descending', show_leaf_counts=True)
plt.title('Hierarchical Clustering Dendrogram')
plt.xlabel('Person')
plt.ylabel('Distance')
plt.tight_layout()
plt.show()
```

Hierarchical Clustering Dendrogram
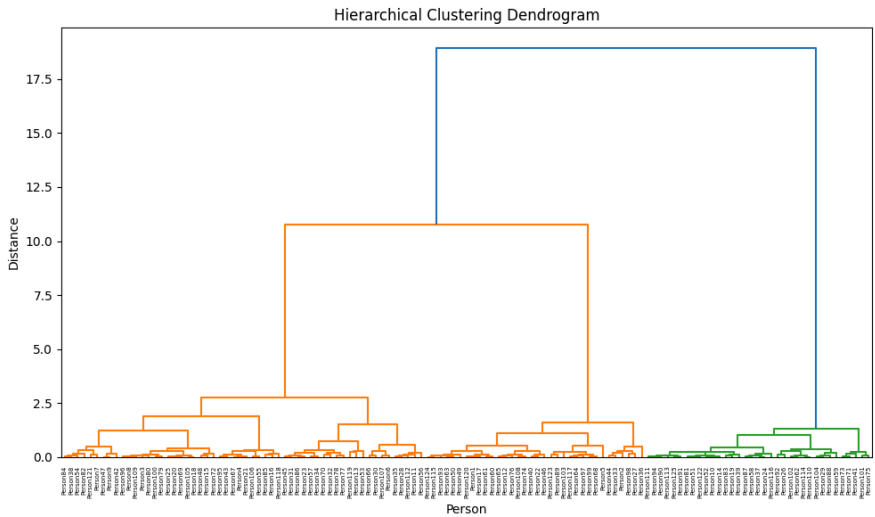
```
plt.figure(figsize=(8, 6))
plt.scatter(df['Weight (KG)'], df['Height (CM)'], c=df['Cluster'], cmap='rainbow')
plt.title('Agglomerative Clustering Results')
plt.xlabel('Weight (KG)')
plt.ylabel('Height (CM)')
plt.grid(True)
plt.show()
```

Agglomerative Clustering Results