ARC graphs

```
In [1]: import pandas as pd
        import numpy as np
        import matplotlib
        import matplotlib.pyplot as plt
        import seaborn as sns
```

```
In [2]: # seaborn style
        sns.set_context("talk")
        sns.set_style("whitegrid")
        plt.tight_layout() # for saving
```

<Figure size 432x288 with 0 Axes>

```
In [3]: # categories
        con_set = {1,2,3,4,9,11,14,15,17,18,21,22}
        csd_set = {5,6,7,8,10,12,13,16,19,20,23,24}
```

```
In [4]: # data file
        f = "Data/02/processed/arc_01.csv"
        df1 = pd.read_csv(f)
```

```
In [5]: # drop NaN from Sample Name
        df1 = df1.dropna(subset =['Sample Name'])

        # convert sample name to number
        df1['Sample Name'] = df1['Sample Name'].str.split(expand = Tru
        e)[1]
        df1['Sample Name'] = pd.to_numeric(df1['Sample Name'])
```

```
In [6]: df1["CON"] = df1["Sample Name"].isin(con_set)
        df1['CSD'] = df1["Sample Name"].isin(csd_set)

        df1["Check Category"] = df1["CON"] ^ df1["CSD"]
```

```
In [7]: # check if all the samples are labeled (OK if 0)
        df1[df1['Check Category'] == False].size
```

Out[7]: 0

```
In [8]: # create string column with category labels
        df1['Category'] = 'CSD'
        df1.loc[ df1['CON'] == True, 'Category'] = 'CON'
```

```
In [9]: # drop sample 18
        df1 = df1[df1['Sample Name'] != 18]
```
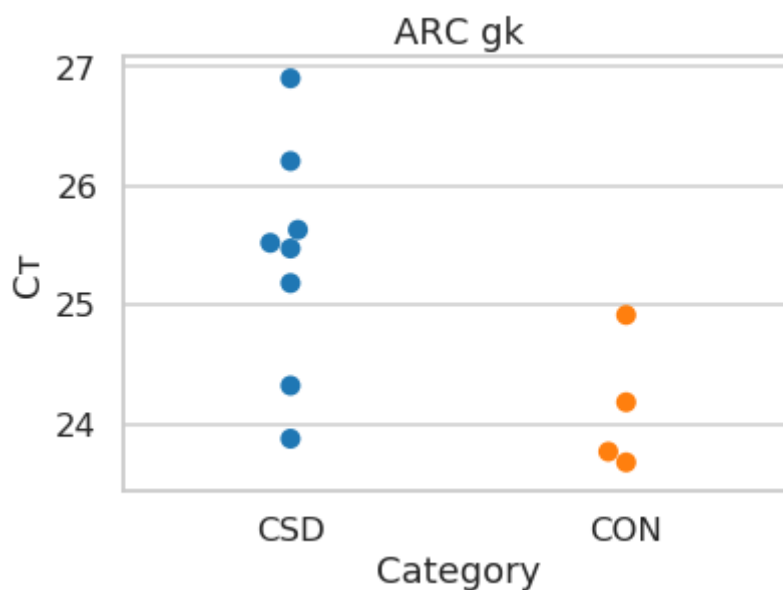
```
In [10]:  # drop samples with Ct mean > 29

          for sn in df1[df1['Cт Mean']>29]['Sample Name'].unique():
              df1 = df1[df1['Sample Name'] != sn]
```
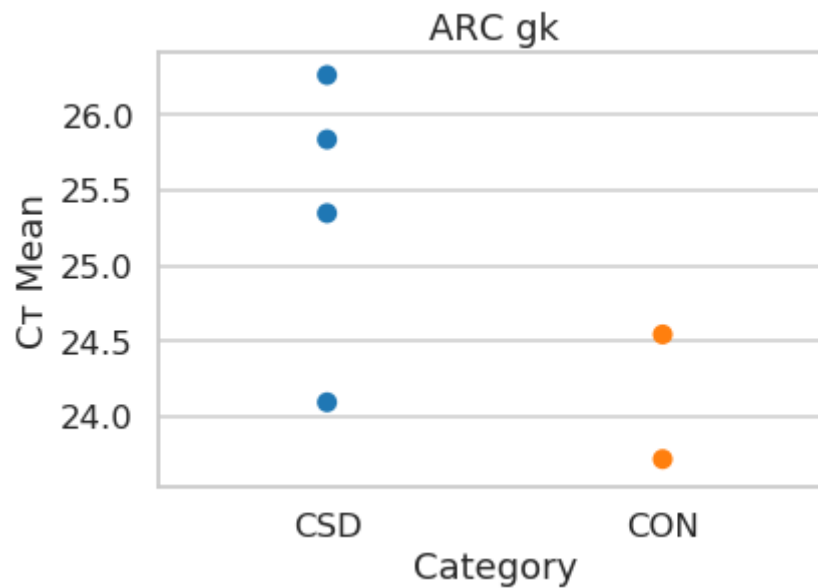
# Generating plots

gk

```
In [11]:  plt.title("ARC gk")
          sns.swarmplot(x='Category', y='Cт', data=df1[df1['Target Name'] ==
          'gk'], size = 10)
          plt.savefig("arc_gk_ct.png",  bbox_inches = 'tight', dpi = 300)
```
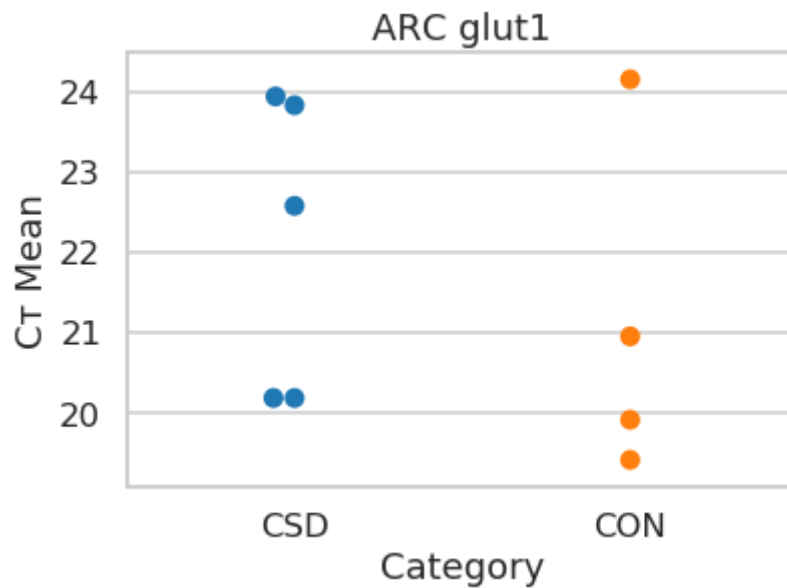
In [12]:
```python
plt.title("ARC gk")
sns.swarmplot(x='Category', y='Cт Mean', data=df1[df1['Target Name'] == 'gk'].drop_duplicates(subset=['Sample Name']), size = 10)
plt.savefig("arc_gk_ctmean.png",  bbox_inches = 'tight', dpi = 300)
```

ARC gk

In [13]:
```python
plt.title("ARC glut1")
sns.swarmplot(x='Category', y='Cт', data=df1[df1['Target Name'] == 'glut1'], size = 10)
plt.savefig("arc_glut1_ct.png",  bbox_inches = 'tight', dpi = 300)
```
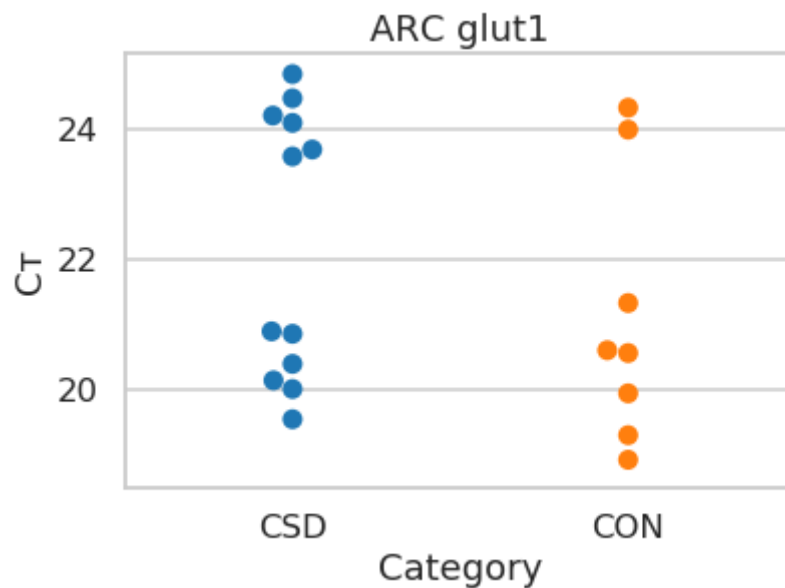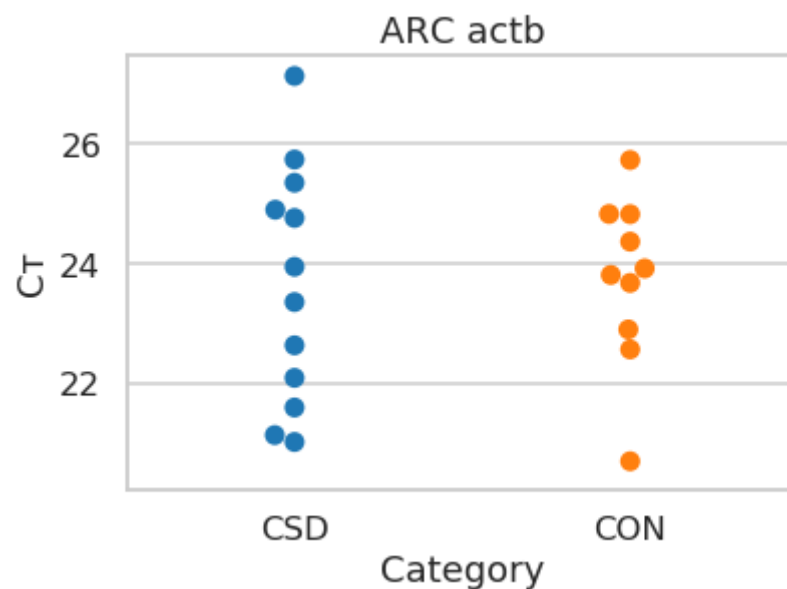
ARC glut1

In [14]:
```python
plt.title("ARC glut1")
sns.swarmplot(x='Category', y='Cт Mean', data=df1[df1['Target Name
'] == 'glut1'].drop_duplicates(subset=['Sample Name']), size = 10)
plt.savefig("arc_glut1_ctmean.png",  bbox_inches = 'tight', dpi =
300)
```
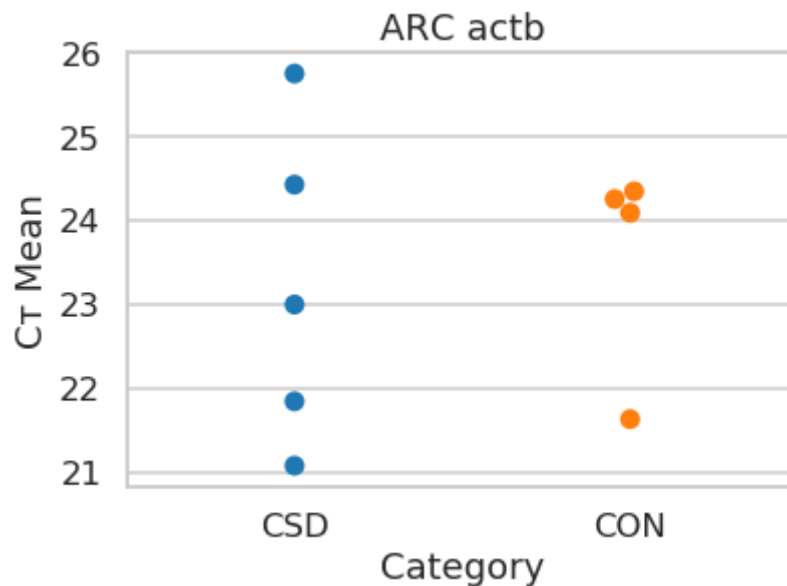

actb

In [15]:
```python
plt.title("ARC actb")
sns.swarmplot(x='Category', y='Cт', data=df1[df1['Target Name'] ==
'actb'], size = 10)
plt.savefig("arc_actb_ct.png",  bbox_inches = 'tight', dpi = 300)
```

In [16]:
```python
plt.title("ARC actb")
sns.swarmplot(x='Category', y='Cт Mean', data=df1[df1['Target Name'] == 'actb'].drop_duplicates(subset=['Sample Name']), size = 10)
plt.savefig("arc_actb_ctmean.png",  bbox_inches = 'tight', dpi = 300)
```


delta Ct

In [17]:
```python
data_gk = df1[df1['Target Name'] == 'gk'].drop_duplicates(subset=['Sample Name']).loc[:,['Sample Name','Cт Mean','Category']]
data_glut1 = df1[df1['Target Name'] == 'glut1'].drop_duplicates(subset=['Sample Name']).loc[:,['Sample Name','Cт Mean','Category']]
data_actb = df1[df1['Target Name'] == 'actb'].drop_duplicates(subset=['Sample Name']).loc[:,['Sample Name','Cт Mean','Category']]

data_actb1 = data_actb.drop(columns = ['Category']).rename({'Cт Mean':'Cт Mean actb'}, axis = 'columns')

data_gk = data_gk.merge(data_actb1[['Sample Name', 'Cт Mean actb']])
data_gk['ΔCт Mean'] = data_gk['Cт Mean'] -  data_gk['Cт Mean actb']

data_glut1 = data_glut1.merge(data_actb1[['Sample Name', 'Cт Mean actb']])
data_glut1['ΔCт Mean'] = data_glut1['Cт Mean'] -  data_glut1['Cт Mean actb']
```
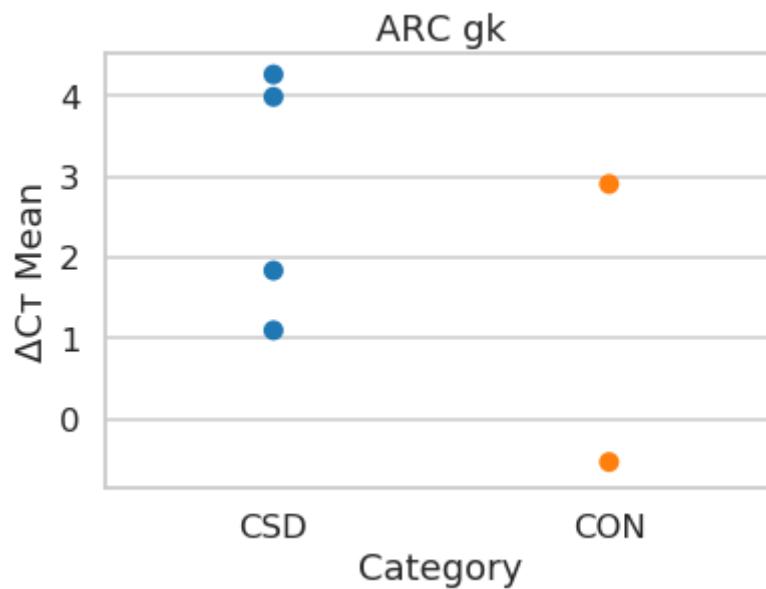
In [18]:
```python
data_gk.to_csv('arc_gk.csv')
data_glut1.to_csv('arc_glut1.csv')
```

gk

In [19]:
```python
plt.title("ARC gk")
sns.swarmplot(x='Category', y='ΔCт Mean', data=data_gk, size = 10)
plt.savefig("arc_gk_delta_ctmean.png",  bbox_inches = 'tight', dpi
= 300)
```


glut1

In [20]:
```python
plt.title("ARC glut1")
sns.swarmplot(x='Category', y='ΔCт Mean', data=data_glut1, size =
10)
plt.savefig("arc_glut1_delta_ctmean.png",  bbox_inches = 'tight',
dpi = 300)
```