

# DC-TAP-seq Computational Analysis Tools

Work In-progress

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# Preface

## Purpose

Todo.

## Structure

Todo.

## Acknowledgements

Todo.

## Chapter 1. qPCR Analysis Tools used in DC-TAP


### 1.1 Installation

Before we download and run the qPCR analysis script, check if your developer environment is properly setup.

#### Developer Environment Setup

- We recommend working with the Command Prompt using the [Terminal App](#) which you can download off the Microsoft Store.
- We also recommend the [Visual Studio Code](#) as your text editor.
- Ensure that **Python** is installed on your machine. You can check if it installed with the command below:

##### Check Python Installation

 PowerShell

```
1 python -V
```

#### Downloading and Installing the Script

1. Download the qPCR Analysis Script.

Note: This script is still a work in-progress inside a private git repo hence the roundabout method of downloading a compressed file. Also, the script only supports  $\Delta\Delta C_t$

##### Downloading and Unzipping Script


 PowerShell

```
1 $zipUrl = "https://drive.google.com/uc?id=1efuTbsrjgHvpBp1zUw_U-RhnmE96hX8_"
2 $zipPath = "$env:TEMP\tempfile.zip"
3 $destPath = "$PWD"
4 Invoke-WebRequest -Uri $zipUrl -OutFile $zipPath; Expand-Archive -Path $zipPath -
  DestinationPath $destPath -Force; Remove-Item $zipPath
```

2. Setup a Python Virtual Environment

Change your directory to the qPCR script's root directory. Then create a virtual environment with the following commands below.


##### Create a Python Virtual Environment

 PowerShell

```
1 python -m venv .venv
2 . .\.venv\Scripts\activate
```

Once you create the virtual environment, install the required Python packages listed in *requirements.txt*.

##### Setup Virtual Environment


 PowerShell

```
1 pip install --upgrade pip
2 pip install -r requirements.txt
```

#### Complete

You can start editing and running the qPCR analysis scripts.

##### Open IDE

 PowerShell

```
1 code .
```

## 1.2 Running the qPCR Script

### Before you begin

Every time you exit out of your editor or the CMD or restart the qPCR analysis, you **MUST** activate the python virtual environment first before running the script.

### 1. Structuring the data

In order to process your data, we need to know where the data lives and be organized in a format that the script expects the data to be in.

The complete qPCR data files we required are listed below:

1. Raw Ct values
2. Template layout
3. Primer layout

The expected structure we expect the data to be organized in are detailed below:

1. Raw Ct values Table

	Exam 1	Exam 2	Exam 3
John	N/A	N/A	N/A
Mary	N/A	N/A	N/A
Robert	N/A	N/A	N/A