How to install Bowtie, TopHat and Cufflinks on your own laptop

1. Bowtie2

Download: http://sourceforge.net/projects/bowtie-bio/files/bowtie2/

For individual user, it's much easier to install a pre-compiled binary release than building Bowtie2 from source. Bowtie2 provide three different versions fit for Windows, Linux and Mac OS, so just choose one, download and unzip it.

We use these three tools in Bowtie2 package:

```
bowtie2     bowtie2-build          bowtie2-inspect
```

Now you can try to use Bowtie2 like this:

```
cd ~/software/bowtie2-2.2.5     #your path where bowtie2 saved
./bowtie2       #you should see a list of usage.  [ ./ ] means execute
```

To use programs more smoothly, we often create a symbolic link to PATH. For example in Mac OS, try commands like this (PATH directory can be different in different systems) :

```
cd /usr/local/bin        #assuming /usr/local/bin is my PATH directory
ln -s ~/software/bowtie2-2.2.5/bowtie2 .
ln -s ~/software/bowtie2-2.2.5/bowtie2-build .
ln -s ~/software/bowtie2-2.2.5/bowtie2-inspect .
```

Now you can use bowtie2 in any directory. Try:

```
cd ~
bowtie2
```

2. TopHat2

Download: https://ccb.jhu.edu/software/tophat/index.shtml

Install a pre-compiled binary release as Bowtie2. Download, unzip and create a symbolic link. In TopHat2, we only need to use [tophat2].

For example:

Unzip:

```
tar xvfz ~/software/tophat-2.1.0.OSX_x86_64.tar.gz
```

create a symbolic link:

```
cd /usr/local/bin
ln -s ~/software/tophat-2.1.0.OSX_x86_64/tophat2 .
cd ~
tophat2
```

In TopHat2 package, there is another important tool called Samtools used for processing files in sam format. Create a symbolic link for it too:

```
cd /usr/local/bin
ln -s ~/software/tophat-2.1.0.OSX_x86_64/samtools_0.1.18 .
```

I don't like the link name 'samtools_0.1.18'. It's too long to use. Change it:

```
mv samtools_0.1.18 samtools
samtools
```

3. Cufflinks

Download: http://cole-trapnell-lab.github.io/cufflinks/install/
As we what we did to Bowtie2 and TopHat2, try to install the pre-compiled Cufflinks on your own. In this case, you should add these 4 tools into PATH (you can add all tools if you want) :

```
cufflinks
cuffcompare
cuffdiff
cuffmerge
```

4. Notes

1). Creating symbolic links is not the only way to add variables into PATH. You can try to modify your shell profiles (ex. for bash shell in Mac OS: ~/.bash_profile).

2). It will be a good learning experience if you try to build programs from source. You may meet with amounts of warnings, errors and failures, but try to solve them and you'll understand better on how Linux environment works.

3). Here are official links for getting start. Also there are some tips on building programs from source.

https://ccb.jhu.edu/software/tophat/tutorial.shtml
http://cole-trapnell-lab.github.io/cufflinks/getting_started/

Enjoy!
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