Tutorial 1: First *in-silico* microscopy image

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1. Generate the the PSF

   The point spread function (PSF) is generted using the following command

   ```
   term$ python run_genpsf.py
   ```

   It will create two PSF for wavelength 670 nm ("img100_lam670_fs800.dat") and 518 nm ("img100_lam670_fs800.dat").

2. Generate *in-silico* monochrome images.

   (a) Image data files

   The image data file containing resultant fluorescence intensity for each pixel can be calculated using the following commands,

   ```
   term$ ../../gen_mono -p parameters.dat -f dp100.gro -o img100
   ```

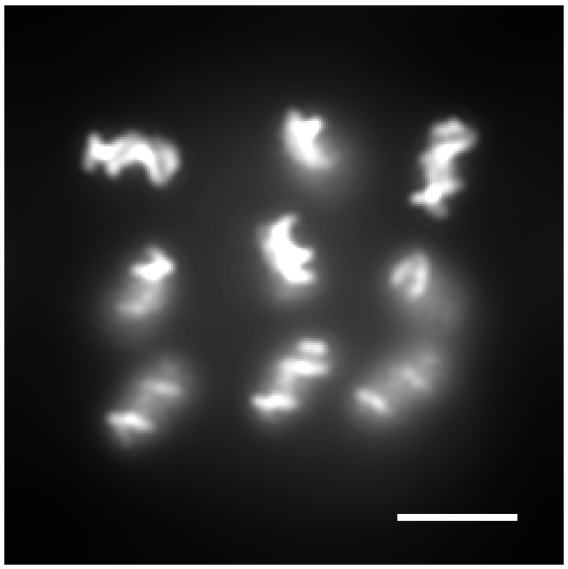
   ```
   term$ ../../gen_mono -p parameters.dat -f dp2000.gro -o img2000
   ```

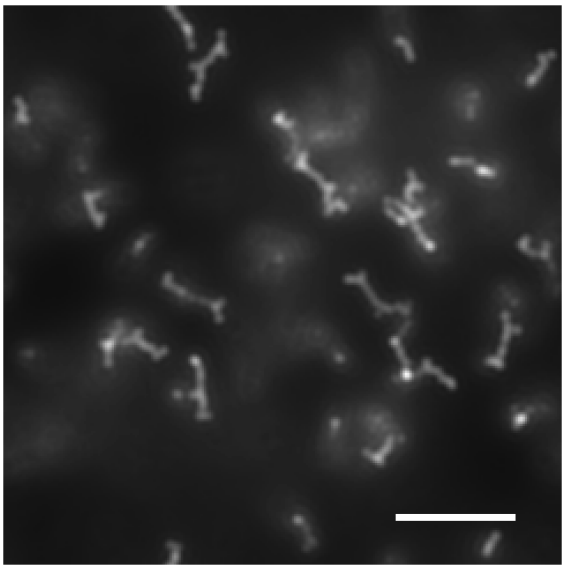
   It will generate two pairs of files "img100_lam670_fs800.dat", "img100_lam518_fs800.dat", "img2000_lam670_fs800.dat", and "img2000_lam518_fs800.dat".

   (b) Render grey-scale images

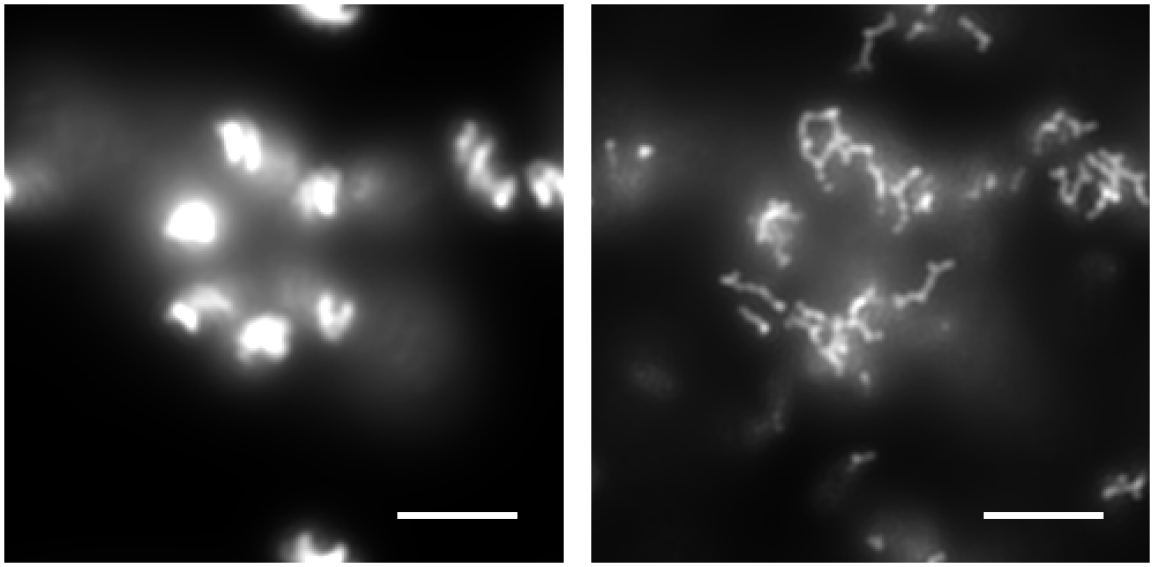
   In-silico monochrome images can be rendeted using the following commands,

   ```
   term$ python ../../render_mono.py -f img -p png_param.dat -t 100
   ```





   ```
   term$ python ../../render_mono.py -f img -p png_param.dat -t 2000
   ```

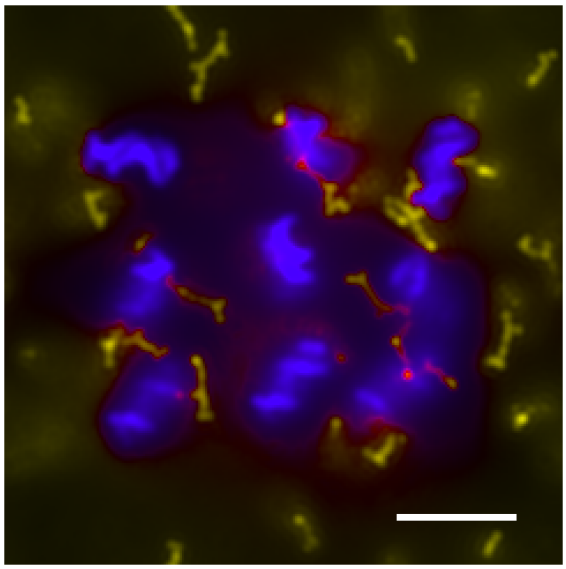


It generates four files “mono_img100_lam670_fs800_I0.13.png”, “mono_img100_lam518_fs800_I0.25.png”, “mono_img2000_lam670_fs800_I0.13.png”, and “mono_img2000_lam518_fs800_I0.25.png”

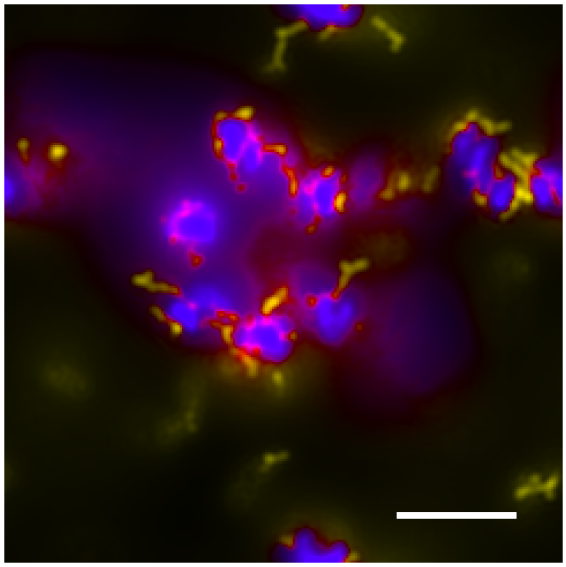
3. Generate colored *in-silico* microsocpy image.

   Colored *in-silico* microsocpy images can be generated using the following commands,

```
term$ python ../../mono2color.py -f img -p png_param.dat -t 100
```



```
term$ python ../../mono2color.py -f img -p png_param.dat -t 2000
```



It generates two files “img100_fs800_T1_I_0.13_0.25.png”, and “img2000_fs800_T1_I_0.13_0.25.png”.