

# **OrgaSegNet 実装 (Mac OS)**

# 1. Anacondaのインストール

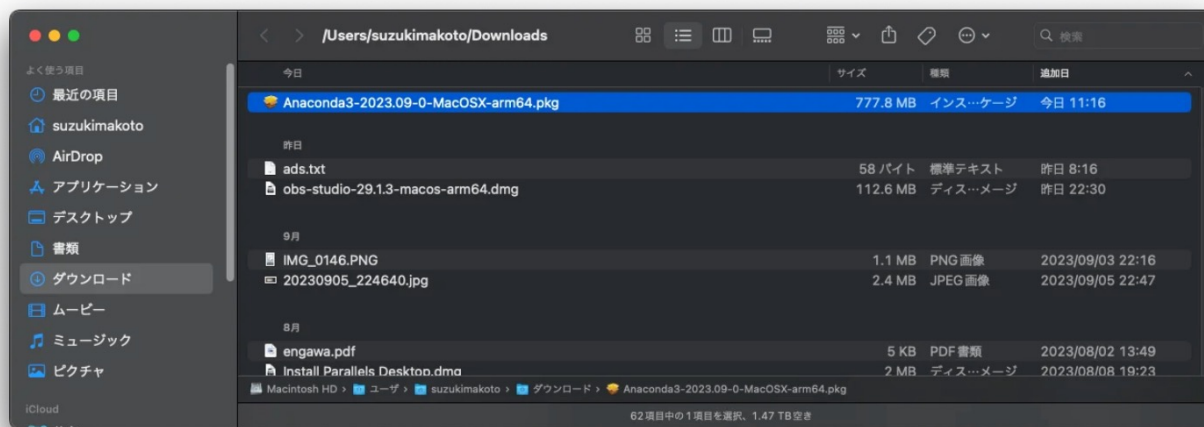
以下のHP (<https://gpt4jp.com/740/>)を参照して、**Anaconda**をインストールする

## グラフィカルインターフェースを使用したインストール

1. **ダウンロード**: 各OS毎に用意されている**グラフィカルインストーラー**をダウンロードし、保存します。
2. **インストール開始**: ダウンロードしたファイルをダブルクリックして、 **Allow** をクリックします。
3. **ライセンス同意**: ライセンス契約を読み、 **Agree** をクリックします。
4. **インストール**: **Install** をクリックしてインストールを開始します。

STEP  
1

Macの場合は “.pkg” でくるのでそれをダブルクリック




## 2. ターミナルからAnacondaを起動し、OrgaSegNetを実装する

### 2-1. ターミナルを開く



## 2. ターミナルからAnacondaを起動し、OrgaSegNetを実装する

2-2. ターミナル上で、”**conda create -n MitoSegNet python==3.7**”と入力し、**Enter**キーを押す

A screenshot of a macOS terminal window. The title bar at the top shows three colored window control buttons (red, yellow, green) on the left, and a folder icon followed by the text "taikibaba — zsh — 117x37" on the right. The terminal content shows "Last login: Mon Feb 26 10:41:30 on ttys000" followed by the prompt "taikibaba@TaikinoMacBook-Pro ~ %". The command "conda create -n MitoSegNet python==3.7" is entered and highlighted with a black background. The cursor is at the end of the command line.

```
taikibaba@TaikinoMacBook-Pro ~ % conda create -n MitoSegNet python==3.7
```

## 2. ターミナルからAnacondaを起動し、OrgaSegNetを実装する

### 2-2. Proceed ([y]/n) と表示されたら、”y”と入力する

```
taikibaba — conda create -n MitoSegNet python==3.7 — 124x40

## Package Plan ##

environment location: /Users/taikibaba/anaconda3/envs/MitoSegNet

added / updated specs:
- python==3.7

The following packages will be downloaded:

package | build | size
-----|-----|-----
libedit-3.1.20230828 | h6c40b1e_0 | 166 KB
xz-5.4.5 | h6c40b1e_0 | 464 KB
ca-certificates-2023.12.12 | hecd8cb5_0 | 134 KB
-----|-----|-----
Total: | 763 KB

The following NEW packages will be INSTALLED:

ca-certificates: 2023.12.12-hecd8cb5_0
certifi: 2022.12.7-py37hecd8cb5_0
libcxx: 14.0.6-h9765a3e_0
libedit: 3.1.20230828-h6c40b1e_0
libffi: 3.2.1-h0a44026_1007
ncurses: 6.4-hceec6c5f_0
openssl: 1.0.2u-h1de35cc_0
pip: 22.3.1-py37hecd8cb5_0
python: 3.7.0-hc167b69_0
readline: 7.0-h1de35cc_5
setuptools: 65.6.3-py37hecd8cb5_0
sqlite: 3.33.0-hffcf06c_0
tk: 8.6.12-h5d9f67b_0
wheel: 0.38.4-py37hecd8cb5_0
xz: 5.4.5-h6c40b1e_0
zlib: 1.2.13-h4dc903c_0

Proceed ([y]/n)?
```

## 2. ターミナルからAnacondaを起動し、OrgaSegNetを実装する

### 2-3. "conda activate MitoSegNet"と入力し、Enterキーを押す

```
taikibaba — zsh — 124x40

The following NEW packages will be INSTALLED:

ca-certificates: 2023.12.12-hecd8cb5_0
certifi:         2022.12.7-py37hecd8cb5_0
libcxx:         14.0.6-h9765a3e_0
libedit:        3.1.20230828-h6c40b1e_0
libffi:         3.2.1-h0a44026_1007
ncurses:        6.4-hcec6c5f_0
openssl:        1.0.2u-h1de35cc_0
pip:            22.3.1-py37hecd8cb5_0
python:         3.7.0-hc167b69_0
readline:       7.0-h1de35cc_5
setuptools:     65.6.3-py37hecd8cb5_0
sqlite:         3.33.0-hffcf06c_0
tk:             8.6.12-h5d9f67b_0
wheel:          0.38.4-py37hecd8cb5_0
xz:             5.4.5-h6c40b1e_0
zlib:           1.2.13-h4dc903c_0

Proceed ([y]/n)? y

Downloading and Extracting Packages
libedit-3.1.20230828 | 166 KB | ##### | 100%
xz-5.4.5            | 464 KB | ##### | 100%
ca-certificates-2023 | 134 KB | ##### | 100%
Preparing transaction: done
Verifying transaction: done
Executing transaction: done
#
# To activate this environment, use
#
#     $ conda activate MitoSegNet
#
# To deactivate an active environment, use
#
#     $ conda deactivate

taikibaba@TaikinoMacBook-Pro ~ % conda activate MitoSegNet
```

## 2. ターミナルからAnacondaを起動し、OrgaSegNetを実装する

### 2-4. "pip install keras==2.3.0"と入力し、Enterキーを押す

```
taikibaba — pip install keras==2.3.0 — 124x40

ca-certificates: 2023.12.12-hecd8cb5_0
certifi:         2022.12.7-py37hecd8cb5_0
libcxx:         14.0.6-h9765a3e_0
libedit:        3.1.20230828-h6c40b1e_0
libffi:         3.2.1-h0a44026_1007
ncurses:        6.4-hcec6c5f_0
openssl:        1.0.2u-h1de35cc_0
pip:            22.3.1-py37hecd8cb5_0
python:         3.7.0-hc167b69_0
readline:       7.0-h1de35cc_5
setuptools:     65.6.3-py37hecd8cb5_0
sqlite:         3.33.0-hffcf06c_0
tk:             8.6.12-h5d9f67b_0
wheel:          0.38.4-py37hecd8cb5_0
xz:             5.4.5-h6c40b1e_0
zlib:           1.2.13-h4dc903c_0

Proceed ([y]/n)? y

Downloading and Extracting Packages
libedit-3.1.20230828 | 166 KB | ##### | 100%
xz-5.4.5            | 464 KB | ##### | 100%
ca-certificates-2023 | 134 KB | ##### | 100%
Preparing transaction: done
Verifying transaction: done
Executing transaction: done
#
# To activate this environment, use
#
#     $ conda activate MitoSegNet
#
# To deactivate an active environment, use
#
#     $ conda deactivate

taikibaba@TaikinoMacBook-Pro ~ % conda activate MitoSegNet
(MitoSegNet) taikibaba@TaikinoMacBook-Pro ~ % pip install keras==2.3.0
```

## 2. ターミナルからAnacondaを起動し、OrgaSegNetを実装する

### 2-5. "conda install tensorflow==1.14.0"と入力し、Enterキーを押す

```
taikibaba — zsh — 124x40

Downloading and Extracting Packages
libedit-3.1.20230828 | 166 KB | ##### | 100%
xz-5.4.5 | 464 KB | ##### | 100%
ca-certificates-2023 | 134 KB | ##### | 100%
Preparing transaction: done
Verifying transaction: done
Executing transaction: done
#
# To activate this environment, use
#
#     $ conda activate MitoSegNet
#
# To deactivate an active environment, use
#
#     $ conda deactivate

[taikibaba@TaikinoMacBook-Pro ~ % conda activate MitoSegNet
(MitoSegNet) taikibaba@TaikinoMacBook-Pro ~ % pip install keras==2.3.0
Collecting keras==2.3.0
  Using cached Keras-2.3.0-py2.py3-none-any.whl (377 kB)
Collecting pyyaml
  Using cached PyYAML-6.0.1-cp37-cp37m-macosx_10_9_x86_64.whl (189 kB)
Collecting six>=1.9.0
  Using cached six-1.16.0-py2.py3-none-any.whl (11 kB)
Collecting h5py
  Using cached h5py-3.8.0-cp37-cp37m-macosx_10_9_x86_64.whl (3.2 MB)
Collecting numpy>=1.9.1
  Using cached numpy-1.21.6-cp37-cp37m-macosx_10_9_x86_64.whl (16.9 MB)
Collecting keras-preprocessing>=1.0.5
  Using cached Keras_Preprocessing-1.1.2-py2.py3-none-any.whl (42 kB)
Collecting scipy>=0.14
  Using cached scipy-1.7.3-cp37-cp37m-macosx_10_9_x86_64.whl (33.0 MB)
Collecting keras-applications>=1.0.6
  Using cached Keras_Applications-1.0.8-py3-none-any.whl (50 kB)
Installing collected packages: six, pyyaml, numpy, scipy, keras-preprocessing, h5py, keras-applications, keras
Successfully installed h5py-3.8.0 keras-2.3.0 keras-applications-1.0.8 keras-preprocessing-1.1.2 numpy-1.21.6 pyyaml-6.0.1 s
cipy-1.7.3 six-1.16.0
(MitoSegNet) taikibaba@TaikinoMacBook-Pro ~ % conda install tensorflow==1.14.0
```



## 2. ターミナルからAnacondaを起動し、OrgaSegNetを実装する

### 2-6. "pip install opencv-python"と入力し、Enterキーを押す

```
taikibaba -- zsh -- 124x40

h5py: 3.7.0-py37h4a1dd59_0
hdf5: 1.10.6-h10fe05b_1
importlib-metadata: 4.11.3-py37hecd8cb5_0
intel-openmp: 2021.4.0-hecd8cb5_3538
keras-applications: 1.0.8-py_1
keras-preprocessing: 1.1.2-pyhd3eb1b0_0
libgfortran: 5.0.0-11_3_0-hecd8cb5_28
libgfortran5: 11.3.0-h9dfd629_28
libprotobuf: 3.20.3-hfff2838_0
llvm-openmp: 14.0.6-h0dcd299_0
markdown: 3.4.1-py37hecd8cb5_0
markupsafe: 2.1.1-py37hca72f7f_0
mkl: 2021.4.0-hecd8cb5_637
mkl-service: 2.4.0-py37h9ed2024_0
mkl_fft: 1.3.1-py37h4ab4a9b_0
mkl_random: 1.2.2-py37hb2f4e1b_0
numpy: 1.21.5-py37h2e5f0a9_3
numpy-base: 1.21.5-py37h3b1a694_3
protobuf: 3.20.3-py37hcec6c5f_0
scipy: 1.7.3-py37h214d14d_2
six: 1.16.0-pyhd3eb1b0_1
tensorboard: 1.14.0-py37h80053f4_0
tensorflow: 1.14.0-mkl_py37h085be34_0
tensorflow-base: 1.14.0-mkl_py37h5a24fda_0
tensorflow-estimator: 1.14.0-py_0
termcolor: 2.1.0-py37hecd8cb5_0
typing_extensions: 4.4.0-py37hecd8cb5_0
werkzeug: 2.2.2-py37hecd8cb5_0
wrapt: 1.14.1-py37hca72f7f_0
zipp: 3.11.0-py37hecd8cb5_0

Proceed ([y]/n)? y

Downloading and Extracting Packages
c-ares-1.19.1 | 105 KB | ##### | 100%
Preparing transaction: done
Verifying transaction: done
Executing transaction: done
(MitoSegNet) taikibaba@TaikinoMacBook-Pro ~ % pip install opencv-python
```

## 2. ターミナルからAnacondaを起動し、OrgaSegNetを実装する

同様に…

2-7. **"conda install matplotlib"**と入力し、**Enterキー**を押す

2-8. **"conda install scikit-image"**と入力し、**Enterキー**を押す

2-9. **"conda install pandas"**と入力し、**Enterキー**を押す

2-10. **"conda install seaborn"**と入力し、**Enterキー**を押す

## 2. ターミナルからAnacondaを起動し、OrgaSegNetを実装する

2-11. ”**sudo pip uninstall h5py**”と入力し、 **Enterキー**を押す

このときにパスワードが要求されるので、PCに登録しているパスワードを入力し（入力しても、ターミナル画面上には表示されないので注意！）、Enterキーを押す

2-12. ” **sudo pip install h5py==2.10.0** ”と入力し、 **Enterキー**を押す

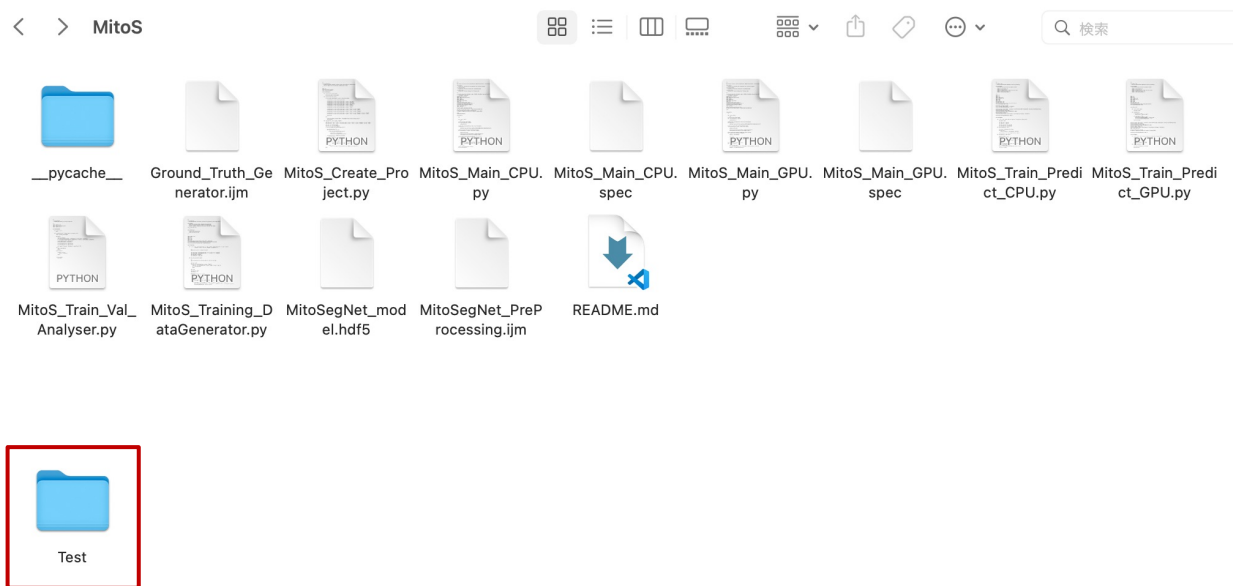
### 3. OrgaSegNetを使う

#### 3-1. /Users/"ユーザー名"のディレクトリ内に、MitoSフォルダを保存する



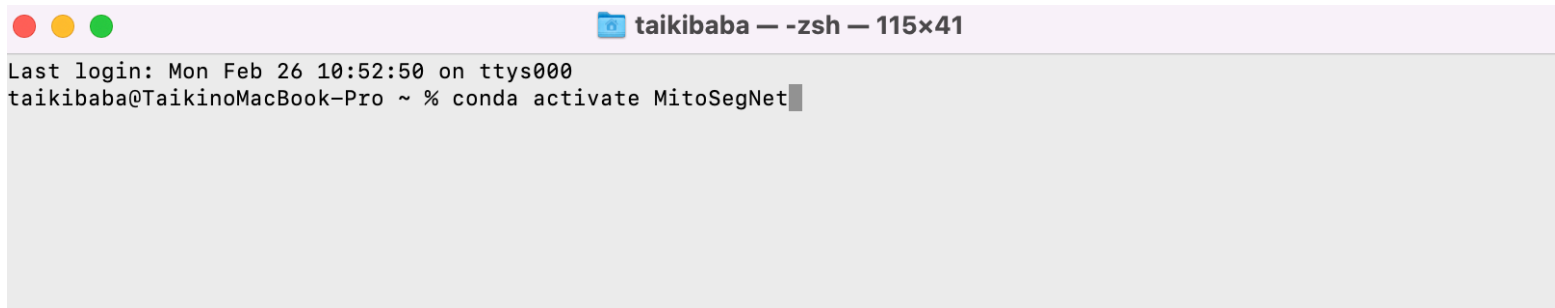
### 3. OrgaSegNetを使う

#### 3-2. MitoSフォルダ内に、解析したい画像データを保存したフォルダを加える



### 3. OrgaSegNetを使う

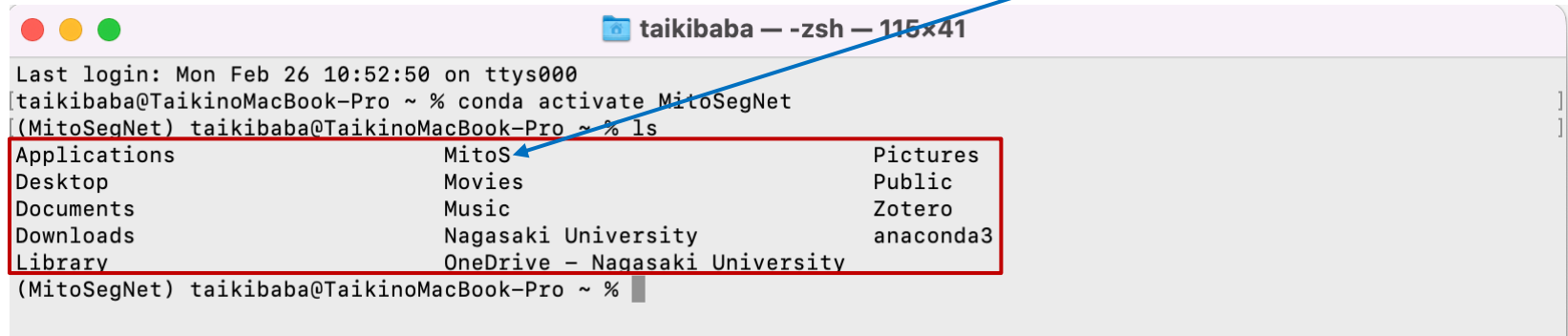
3-3. ターミナルを開いて、“**conda activate MitoSegNet**”と入力し、**Enterキー**を押す

A screenshot of a macOS terminal window. The title bar at the top shows three colored window control buttons (red, yellow, green) on the left, and a blue folder icon followed by the text "taikibaba — -zsh — 115x41" on the right. The terminal content shows the login message "Last login: Mon Feb 26 10:52:50 on ttys000" and the prompt "taikibaba@TaikinoMacBook-Pro ~ %". The command "conda activate MitoSegNet" has been entered, and a cursor is visible at the end of the line.

```
Last login: Mon Feb 26 10:52:50 on ttys000
taikibaba@TaikinoMacBook-Pro ~ % conda activate MitoSegNet
```

### 3. OrgaSegNetを使う

3-4. "ls"と入力し、Enterキーを押して、"ユーザー名"フォルダ直下にMitoSフォルダがあることを確認



```
taikibaba — -zsh — 115x41
Last login: Mon Feb 26 10:52:50 on ttys000
taikibaba@TaikinoMacBook-Pro ~ % conda activate MitoSegNet
(MitoSegNet) taikibaba@TaikinoMacBook-Pro ~ % ls
Applications      MitoS             Pictures
Desktop           Movies            Public
Documents         Music             Zotero
Downloads         Nagasaki University  anaconda3
Library           OneDrive - Nagasaki University
(MitoSegNet) taikibaba@TaikinoMacBook-Pro ~ %
```

### 3. OrgaSegNetを使う

#### 3-5. "cd MitoS"と入力し、Enterキーを押す

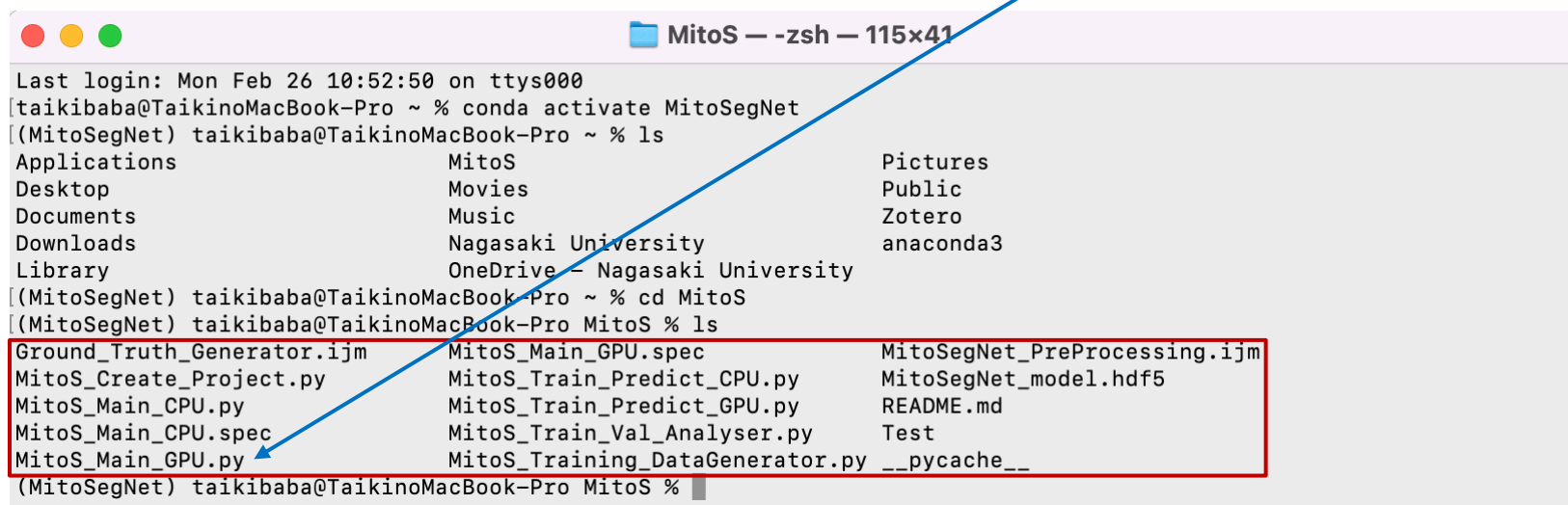


```
taikibaba — -zsh — 115x41
Last login: Mon Feb 26 10:52:50 on ttys000
taikibaba@TaikinoMacBook-Pro ~ % conda activate MitoSegNet
(MitoSegNet) taikibaba@TaikinoMacBook-Pro ~ % ls
Applications      MitoS             Pictures
Desktop           Movies            Public
Documents         Music             Zotero
Downloads         Nagasaki University  anaconda3
Library           OneDrive - Nagasaki University
(MitoSegNet) taikibaba@TaikinoMacBook-Pro ~ % cd MitoS
```



### 3. OrgaSegNetを使う

3-6. "ls"と入力/Enterキーにて、MitoSフォルダの直下に"MitoS\_Main\_GPU.py"があることを確認

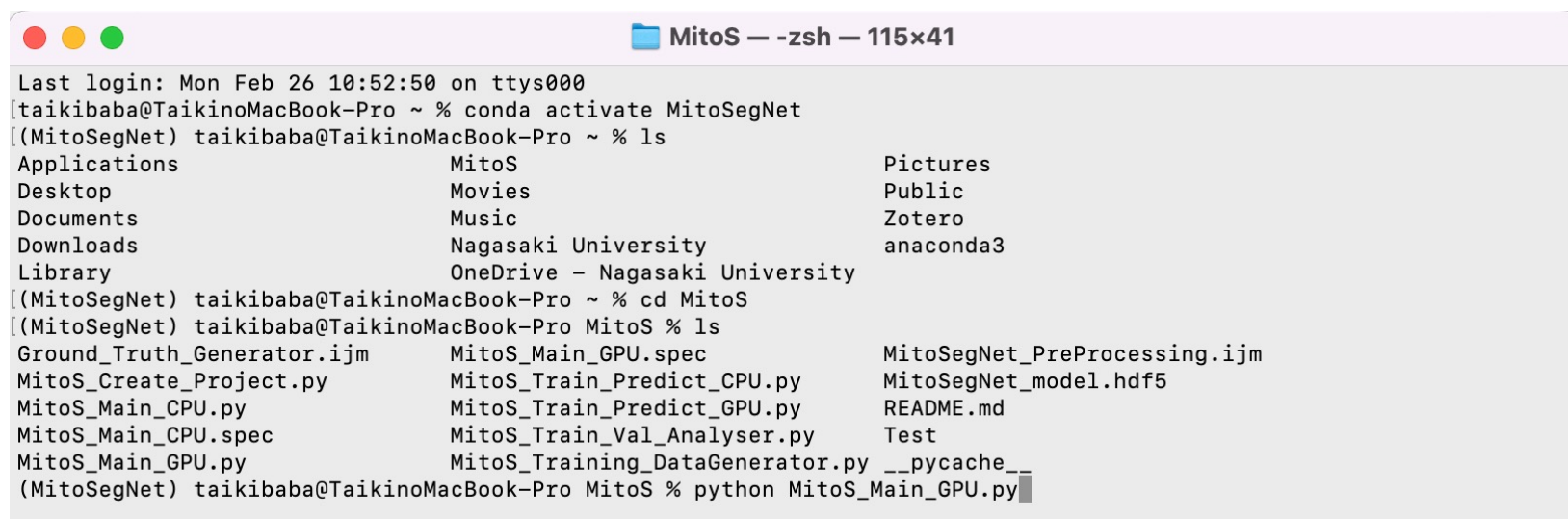


A terminal window titled "MitoS — -zsh — 115x41" showing the execution of commands to navigate into the MitoS directory and list its contents. The output shows a list of files and directories. A red box highlights the files listed in the MitoS directory, and a blue arrow points to "MitoS\_Main\_GPU.py".

```
Last login: Mon Feb 26 10:52:50 on ttys000
[taikibaba@TaikinoMacBook-Pro ~ % conda activate MitoSegNet
(MitoSegNet) taikibaba@TaikinoMacBook-Pro ~ % ls
Applications      MitoS              Pictures
Desktop           Movies             Public
Documents         Music             Zotero
Downloads         Nagasaki University  anaconda3
Library          OneDrive - Nagasaki University
(MitoSegNet) taikibaba@TaikinoMacBook-Pro ~ % cd MitoS
(MitoSegNet) taikibaba@TaikinoMacBook-Pro MitoS % ls
Ground_Truth_Generator.ijm  MitoS_Main_GPU.spec  MitoSegNet_PreProcessing.ijm
MitoS_Create_Project.py    MitoS_Train_Predict_CPU.py  MitoSegNet_model.hdf5
MitoS_Main_CPU.py         MitoS_Train_Predict_GPU.py  README.md
MitoS_Main_CPU.spec       MitoS_Train_Val_Analyser.py  Test
MitoS_Main_GPU.py         MitoS_Training_DataGenerator.py  __pycache__
(MitoSegNet) taikibaba@TaikinoMacBook-Pro MitoS %
```

### 3. OrgaSegNetを使う

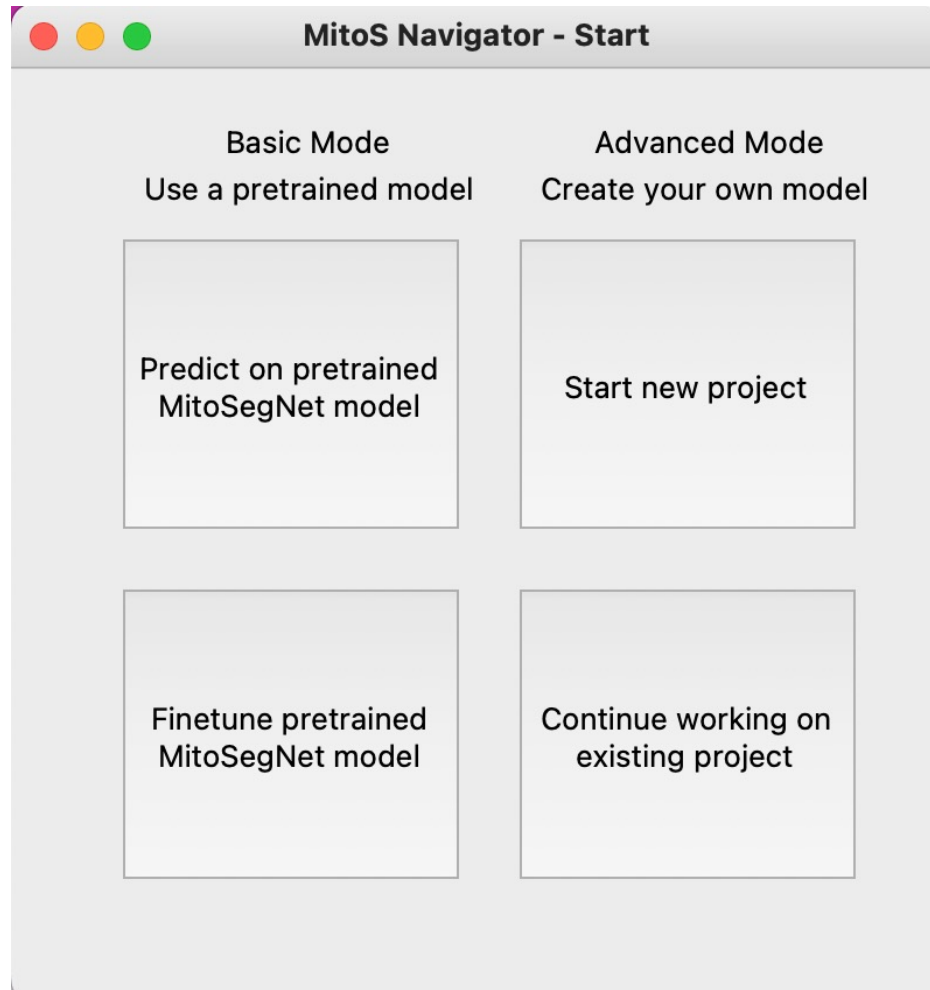
3-7. "python MitoS\_Main\_GPU.py"と入力して、Enterキーを押す



```
MitoS — -zsh — 115x41
Last login: Mon Feb 26 10:52:50 on ttys000
[taikibaba@TaikinoMacBook-Pro ~ % conda activate MitoSegNet
(MitoSegNet) taikibaba@TaikinoMacBook-Pro ~ % ls
Applications      MitoS              Pictures
Desktop           Movies             Public
Documents         Music              Zotero
Downloads         Nagasaki University  anaconda3
Library           OneDrive - Nagasaki University
(MitoSegNet) taikibaba@TaikinoMacBook-Pro ~ % cd MitoS
(MitoSegNet) taikibaba@TaikinoMacBook-Pro MitoS % ls
Ground_Truth_Generator.ijm  MitoS_Main_GPU.spec  MitoSegNet_PreProcessing.ijm
MitoS_Create_Project.py    MitoS_Train_Predict_CPU.py  MitoSegNet_model.hdf5
MitoS_Main_CPU.py         MitoS_Train_Predict_GPU.py  README.md
MitoS_Main_CPU.spec       MitoS_Train_Val_Analyser.py  Test
MitoS_Main_GPU.py         MitoS_Training_DataGenerator.py  __pycache__
(MitoSegNet) taikibaba@TaikinoMacBook-Pro MitoS % python MitoS_Main_GPU.py
```

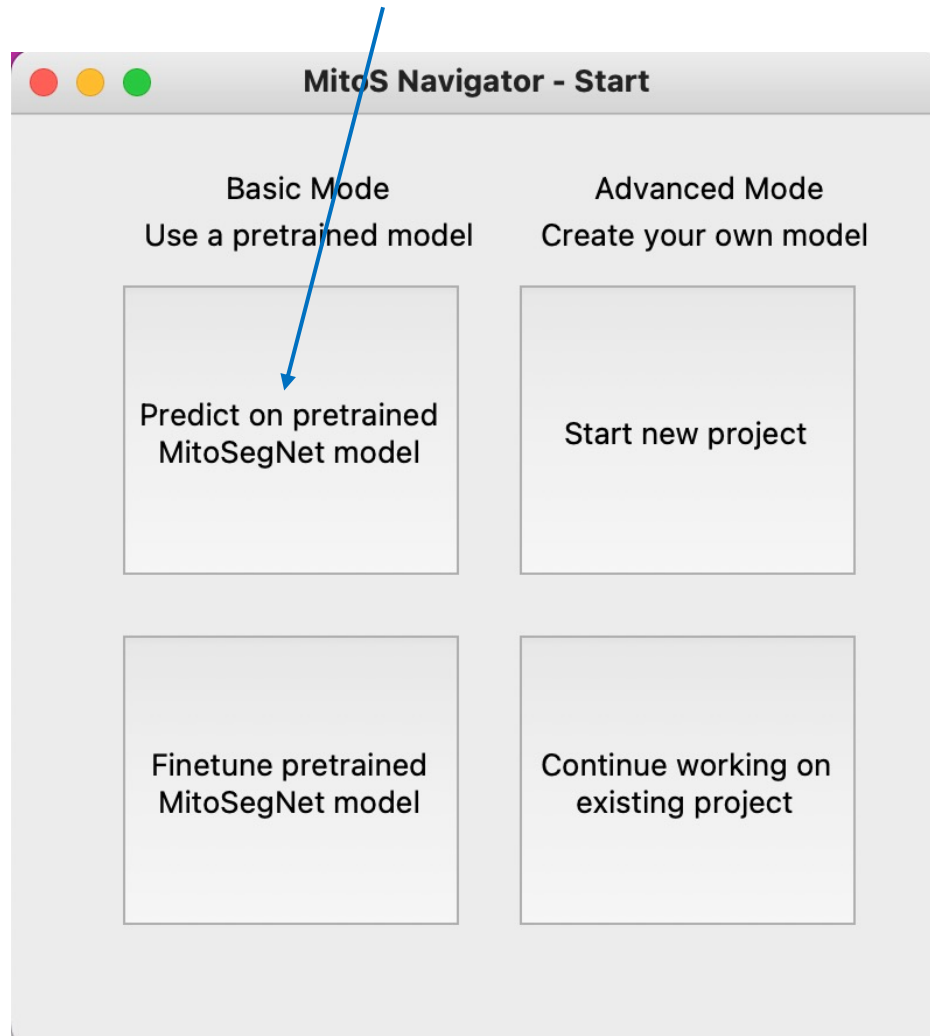
### 3. OrgaSegNetを使う

3-8. デスクトップ上に、下図のような**OrgaSegNetソフトウェア**が起動する



### 3. OrgaSegNetを使う

3-9. “**Predict on pretrained MitoSegNet model**” をクリックする



### 3. OrgaSegNetを使う

MitoS Navigator - Predict using pretrained MitoSegNet model

Select directory in which 8-bit raw images are stored

Browse

Select pretrained model file

Browse

Enter the minimum object size (in pixels) to filter out noise

0

オプション

Apply model prediction on one folder or multiple folders?

One folder

Train / Predict on

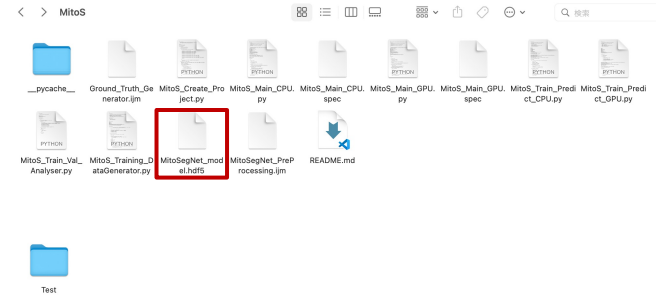
GPU

☐ Post-segmentation filtering

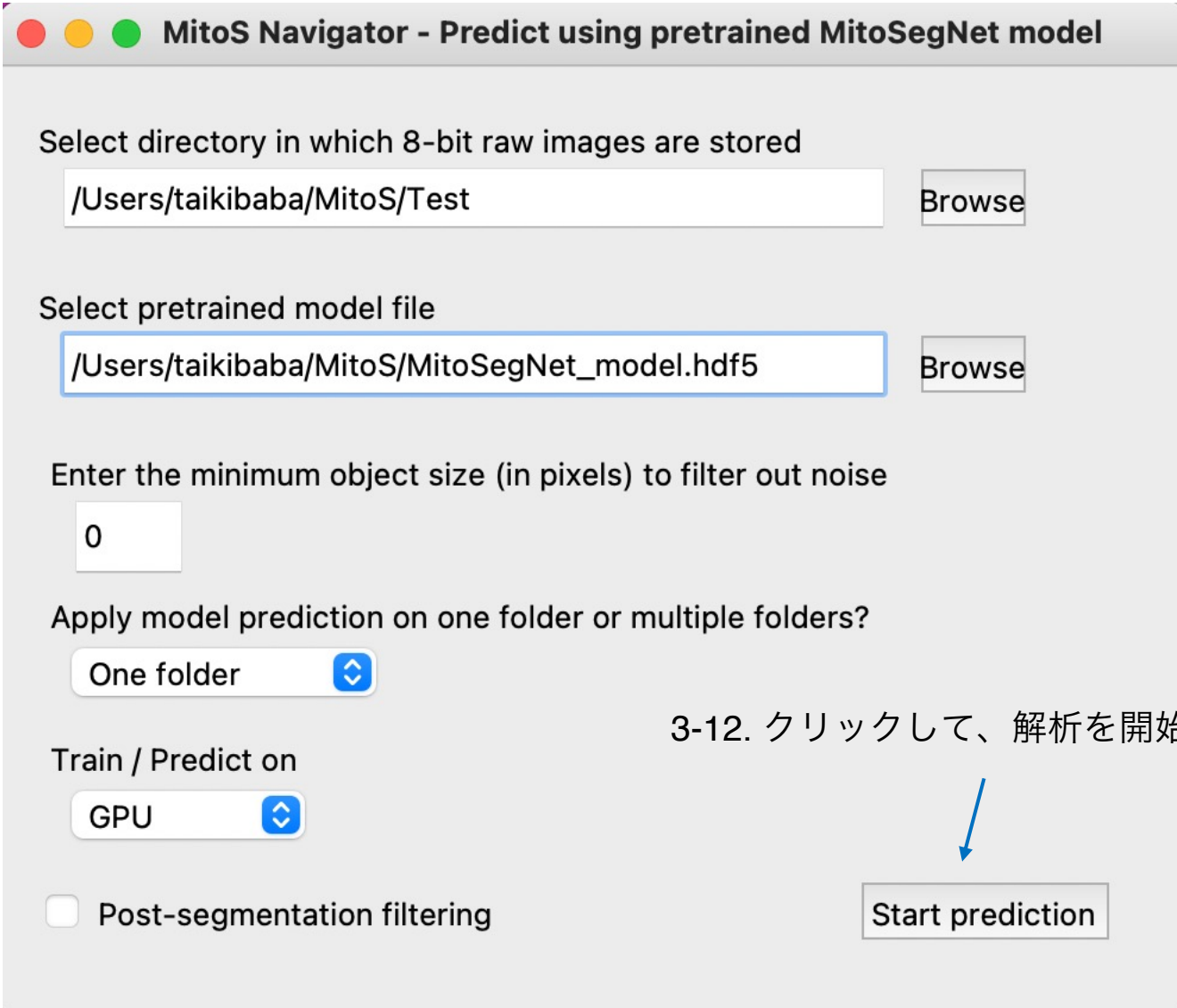
Start prediction

3-10. クリックして、解析したい画像を保存したフォルダを選択

3-11. クリックして、MitoSフォルダ内の”MitoSegNet\_model.hdf5”を選択



### 3. OrgaSegNetを使う



**MitoS Navigator - Predict using pretrained MitoSegNet model**

Select directory in which 8-bit raw images are stored

Select pretrained model file

Enter the minimum object size (in pixels) to filter out noise

Apply model prediction on one folder or multiple folders?

Train / Predict on

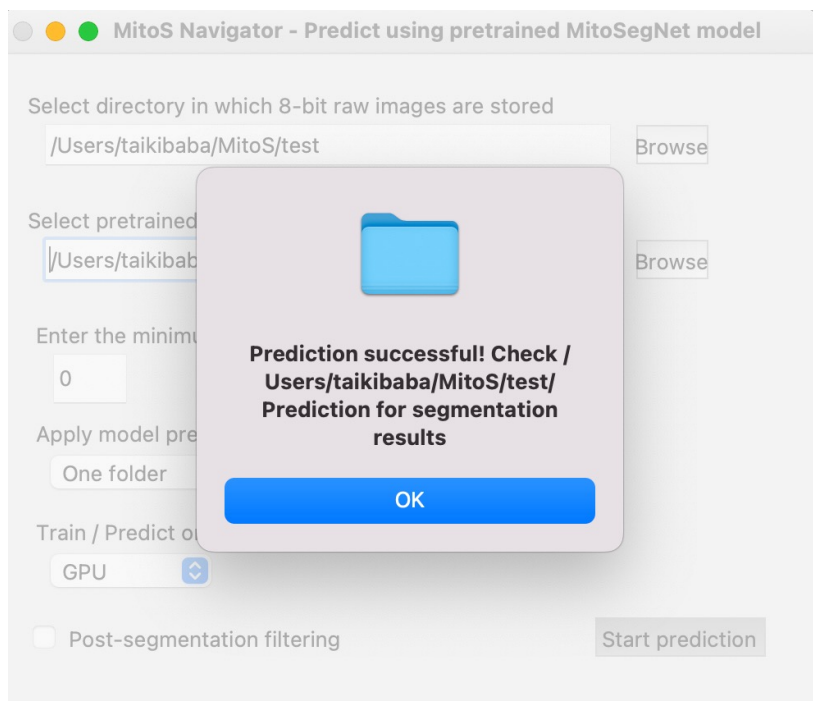
☐ Post-segmentation filtering

3-12. クリックして、解析を開始する！



### 3. OrgaSegNetを使う

3-13. 下図のポップアップが出たら解析終了



3-14. 解析画像を保存していたフォルダ内に作成された“Prediction”フォルダ内に結果が出力される

