

Diagnostic Imaging Practice in the Oral and  
Maxillofacial Region  
I A • II A, IB • IIB

Install of “ImageJ” and today’s practice.

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# About DICOM viewer soft

- In this practice, we use “ImageJ” by NIH.
- Other software can be used to manage the DICOM format, but some practices include the tasks specific to “ImageJ”.
  - <https://imagej.nih.gov/ij/>
- You can also use “ImageJ2”, especially “Fiji”.
  - <https://imagej.net/software/fiji/>
- “ImageJ” can be used on multiplatform (Windows, MacOS, and UNIX).
- You can use the PC in the conference room of A8 floor, if you cannot install the “ImageJ” to your PC.
- You can access the online manual of “ImageJ”.

# Don't use Browser version

- A browser version of ImageJ is available, but its use in this exercise is prohibited.
- The image data in this exercise is close to clinical.
- Using the browser version of ImageJ is the act of sending "almost clinical data" to a system on an off-campus network.

[home](#) | [news](#) | [docs](#) | [download](#) | [plugins](#) | [resources](#) | [list](#) | [links](#)

**ImageJ**

Image Processing and Analysis in Java

Search

◦ [Features](#)

◦ [News](#)

◦ [Documentation](#)

◦ [Download](#)

◦ [Run ImageJ in Browser!](#) New

◦ [Plugins](#)



# Download and install of “ImageJ”

- Please refer the online site.
- Online manuals.
  - <https://imagej.nih.gov/ij/docs/guide/index.html>
  - <https://imagej.nih.gov/ij/docs/install/windows.html>

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## Documentation

- Introduction
- Basic Concepts
- Installation
- *ImageJ User Guide* (download PDF)
  - User Interface and Tools
  - Menu Commands
  - Extending ImageJ
  - Keyboard Shortcuts

❌ The plugins can be installed  
(Unnecessary on this time)

home | news | docs | download | plugins | resources | list | links

## Plugins

**Contents**

- Acquisition
- Analysis**
- Collections
- Color
- Filters
- Segmentation
- Graphics
- Input/Output
- Programming Examples
- Scripting
- Stacks
- Tools New
- Toolsets New
- Utilities
- Links to External Sites

**Acquisition [top]**

- Hamamatsu Orca 12-bit Camera
- Shading Corrector
- QuickTime Capture (Capture images using

**Analysis [top]**

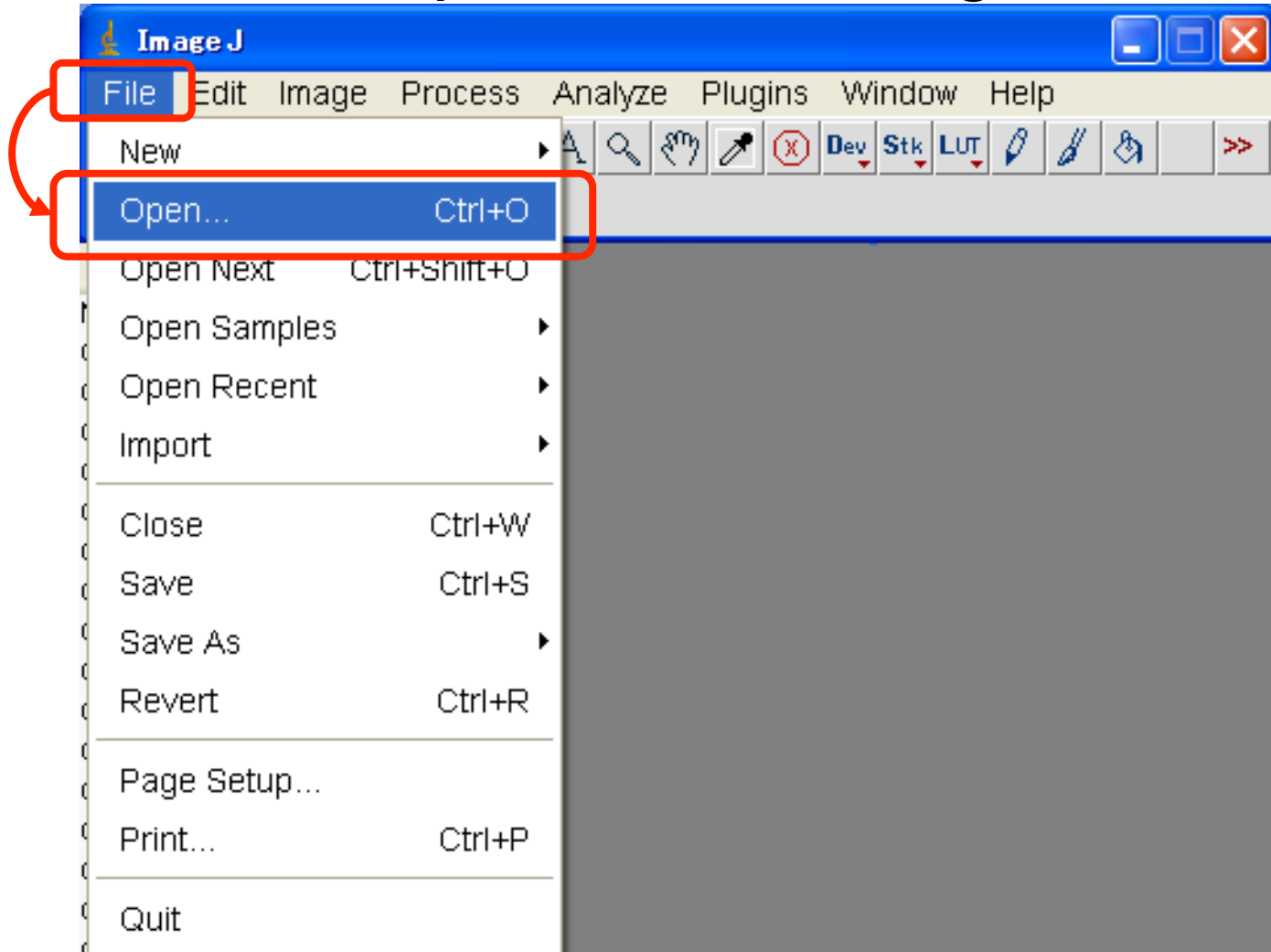
- Autocorrelation
- MRI t<sub>2</sub> calculations
- Line Analyzer
- Image Correlation (Image correlation)
- Particle Removal
- Circularity
- Modulation Transfer Function
- Specify ROI
- Specify Line Segment
- Comment Writer
- 16-bit Histogram
- Results and Text
- Draw line or polygon
- Moment Calculator
- Batch Statistics
- Cell Counter
- Oval Profile Plot
- Color Comparison
- Radial Profile Plot
- Microscope Scale
- MRI Analysis Calculator**
- Sync Measure 3D
- ...

In the 15th practice, you need to install a plug-in to calculate DWI, MRI ADC.

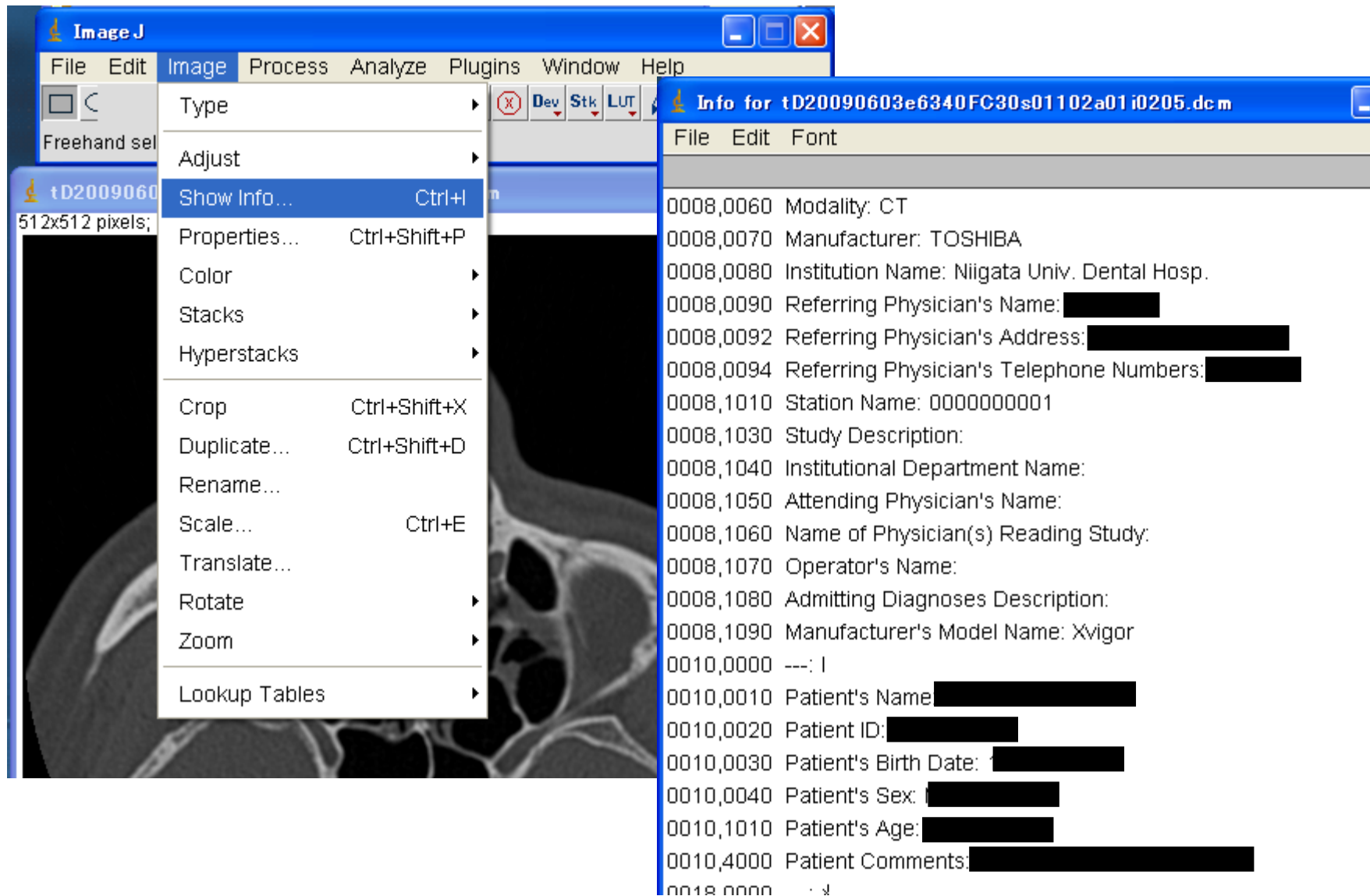
Plugins

- Analysis
- MRI Analysis Calculator

On the practice day, download the appropriate file from the URL in the text (PDF), and open it from ImageJ.



# On the practice day, please process the given file according to the instructions.



# Today's practice

- Please download the following file.
  - <https://www5.dent.niigata-u.ac.jp/~nisiyama/grad/image/2.dcm>
- Open the downloaded file from ImageJ (or DICOM viewer).
- Please answer the following questions about the opened file. (About 1 sheet in A4)
  1. What kind of modality is it?
  2. When was the examination performed? (\*)
    - \*attention: Adjusted to a fictitious date
    - \* If it's difficult to check, don't worry. It will be understandable in the next exercise.
  3. What is DICOM?
  4. What is the difference between DICOM formatted file and other image files that are generally handled?
- **Submission Deadline** (This is an adjustment for those who are late to register due to administrative procedures.)
  - For the first semester, until 14:40 on practice #2(S2).
  - For the second semester, until 14:40 on practice #17(S2)..
- Please email me if you can not do the assignment.
- I'll replace your attendance by receiving an email.



# Reference URL

- About ImageJ
  - NIH
    - <https://imagej.nih.gov/ij/>
  - ImageJ2; LOCI (Laboratory for Optical and Computational Instrumentation)
    - <https://eliceirilab.org/>
    - <https://imagej.net/>