3.2. CHIAS - Straight

CHIAS, which runs as a plug-in of the public-domain image-processing software ImageJ (http://imagej.nih.gov/ij/) developed by the National Institute of Health (NIH; Bethesda, MD, USA) using the Java programming language (9). ImageJ is the host application for CHIAS IV (10); for both operating systems, the software requires version 1.48 or later of ImageJ (http://rsb.info.nih.gov/ij/download.html). The CHIAS IV plug-in file must then be installed. The "CHIAS4_.jar" file was obtained from the CHIAS website.

CHIAS-Straight is an appropriate application to measure the image of fiber-FISH and immunostained chromatin fiber (11). Routinely 25–100 signal tracks are screened to measure the length of fluorescent signal tracks on EDFs.

1. Download the plug-in files CHIAS-Straight from the CHIAS website. The plugin is distributed free of charge, but a registration is required for download based on the user instruction.

2. Install the plugin file 'CHIAS_st.jar' and copy it into the 'plug-ins' folder of the 'ImageJ' folder.

3. Click 'CHIAS-Straight' on the menu bar to display the command menu (Fig. 1A).

4. Select command:

 a) Open: Select image of fiber-FISH (Fig. 1B).

 b) Set scale: Enter the distance in pixels based on the magnification of the CCD camera and microscope.

 c) Select segmented line tool: Decide the width of the region of interest in pixels and draw each segment line along the fiber image click by click;

 d) Straighten: Turn the selected region to the straightened image (Fig. 1C).

 e) Select line tool: Measure the intensity of fluorescent signals and then draw a line to measure the selected region click by click (Fig. 1D)..

 f) Measure: Measure the length and density of selected line in the straightened image;

 g) Plot profile: Plot the intensity of selected line (Fig. 1E).

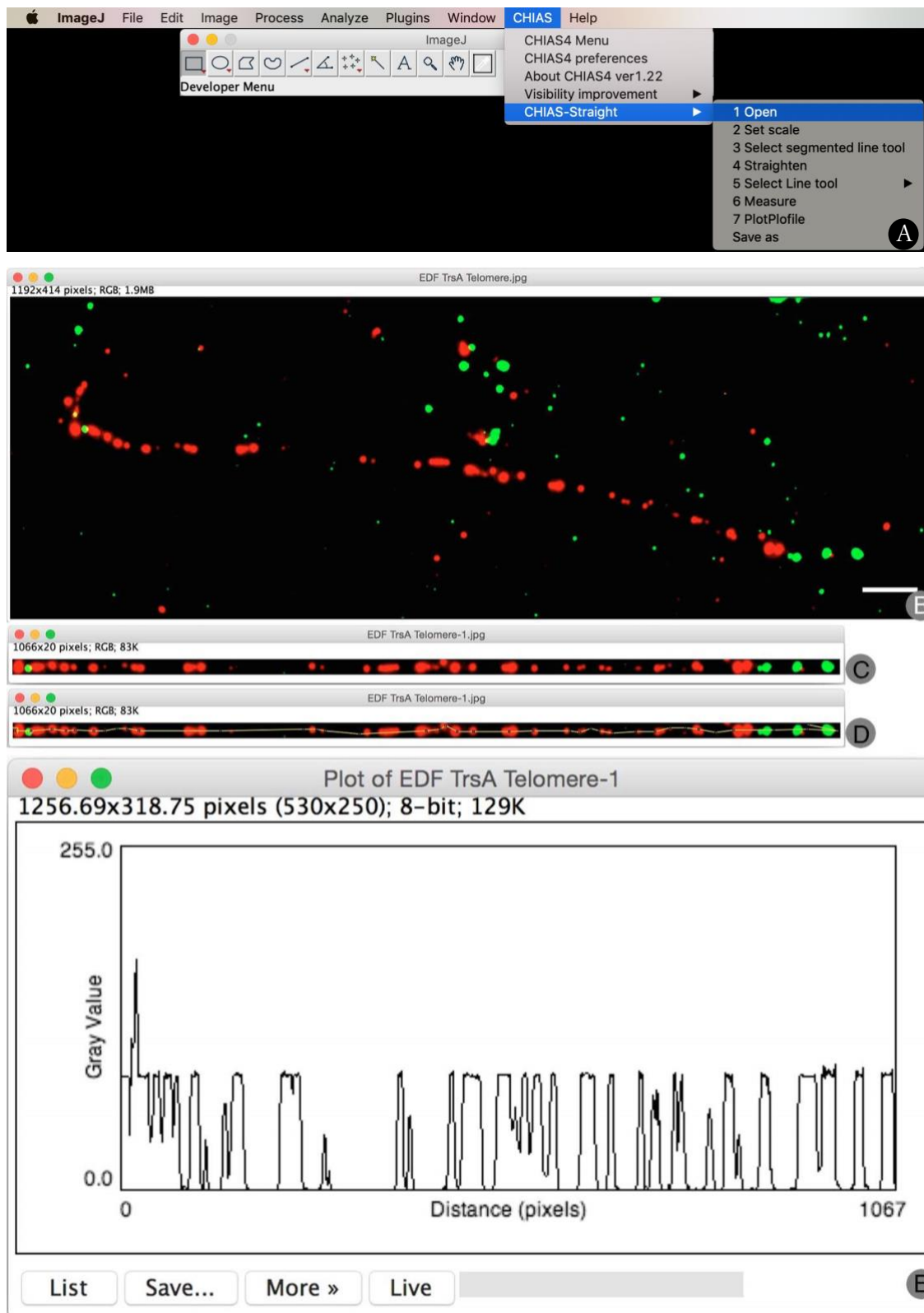 h) Save as: Save image data and/or tables as an Excel file.

Fig.1