**69090\_screenshot\_1.mp4**

1.1 Ensure your gel image is stored as a .tif file in the same folder as the scripts, then open “gel\_processing.m” in MATLAB, (Version R2024a, The MathWorks, Inc.) (00:00-00:14).

1.2 Enter the name of the gel image as “image\_name” (00:15-00:17).

1.3 Enter the index of one ladder lane as “index\_marker” (00:18-00:34).

1.4 Run the script. The completion of the steps will be indicated in the Command Window, and four windows will pop up on the screen. (00:35-00:55).

**69090\_screenshot\_2.mp4**

2.1 Open “Figure 1”. It contains the original gel image (top) and its correction for the “oblique-lane effect” (bottom) (00:00-00:05).

2.2 Correction parameters can be tuned by modifying “left\_corr” and “right\_corr” parameters (00:06-00:00:20)

**69090\_screenshot\_3.mp4**

3.1 Open “Figure 2”. It contains the image corrected for the oblique lane effect (top) and the background-removed image (bottom) (00:00-00:10).

3.2 Background removal can be tuned by adjusting “bkg\_par\_x” in the script (00:10-00:17).

3.3 All the identified lanes are indicated as vertical white lines in “Figure 2” (00:18-00:25).

**69090\_screenshot\_4.mp4**

4.1 Open “Figure 3.” It contains the intensity profile of the marker lane, showing the detected peaks corresponding to known bands (left) and a nonlinear fit (with the R² value reported) used to convert pixel displacement to molecular weight (right) (00:00-00:13).

4.2 Double-check that the number of expected bands in the ladder lane matches the number of detected peaks used for the fitting procedure (00:14-00:22).

4.3 Open “Figure 4.” It contains the normalized intensity profiles for all detected lanes in the gel (00:23-00:29).

**69090\_screenshot\_5.mp4**

5.1 Set “export\_par = 1” to export the intensity profiles as functions of molecular weights in an .xlsx file (00:00-00:07).

5.2 Run the script. After completion, “exported\_profiles.xlsx” will be generated in the working folder. It contains the exported absolute and normalized profiles as functions of molecular weight (first column) (00:08-00:35).

5.3 Open “gel\_profiles\_pro.m” and run the script. Four windows will pop up on the screen (00:36-00:58).

**69090\_screenshot\_6.mp4**

6.1 Open “Figure 5”. It contains the absolute intensity profiles (top) and the corresponding total intensities (bottom) for each lane (00:00-00:12).

6.2 Open “Figure 6”. It contains the normalized intensity profiles for each lane. The molecular weight axis is subdivided according to the ranges specified as “reg” in the script (00:13-00:29).

6.3 Set “export\_data = 1” to export the absolute and normalized integral areas computed within the desired molecular weight ranges to an .xlsx file (00:30-00:32).

6.4 Run the script. After completion, “exported\_areas.xlsx” will be generated in the working folder. It contains the exported absolute and normalized areas within the specified molecular weight ranges (00:33-00:59).

6.5 Open “Figure 7” and “Figure 8”. They contain the histogram of absolute and normalized areas for each lane, grouped by lane and by area, respectively. (01:00-01:25).