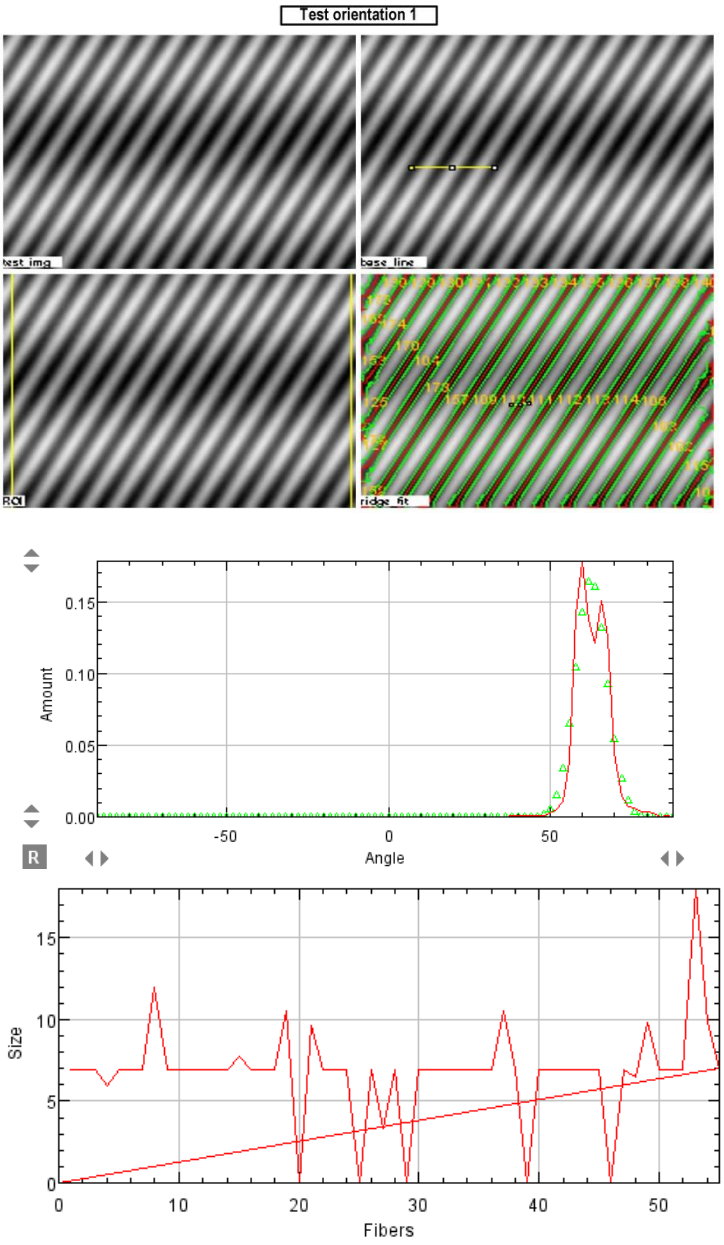
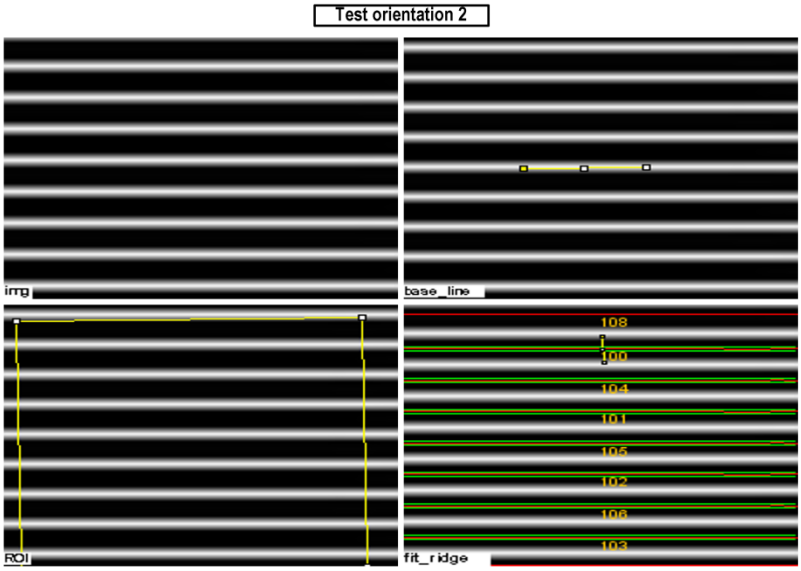
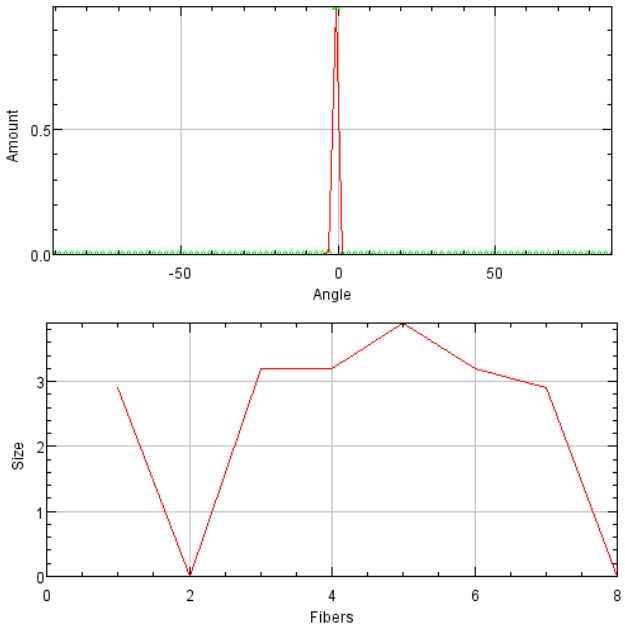
Test macro collagen_orientation

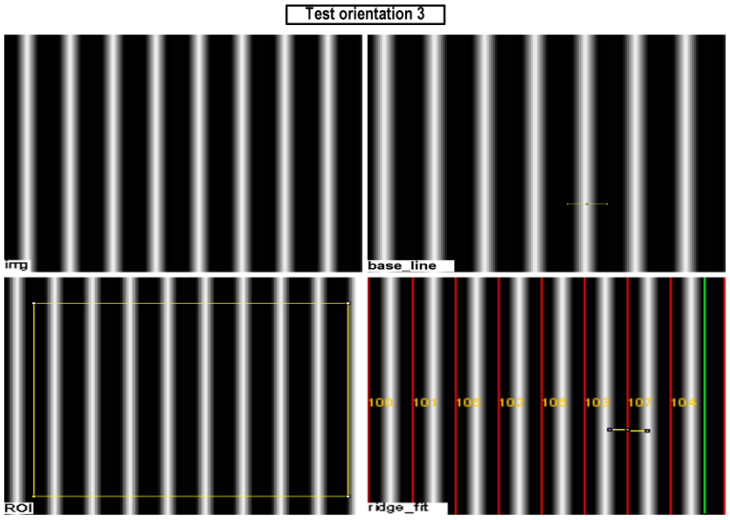


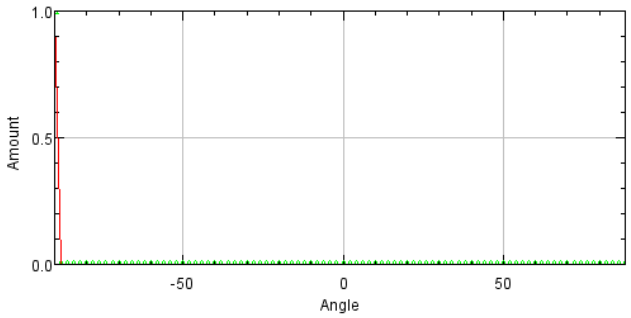
Parameter	Expected result	Obtained result	Conformity
Orientation	60-65°	63°	OK
Fiber width	15 px	6.7+/-3	NOK
Occupation ratio	50% (black area)	50.3621 %	OK

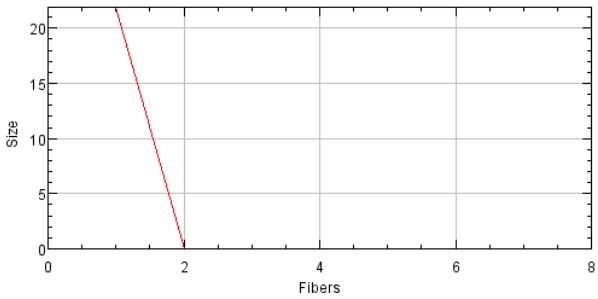




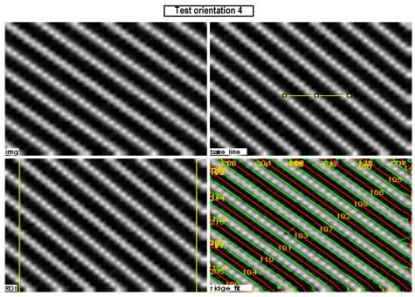
Parameter	Expected result	Obtained result	Conformity
Orientation	0°	-1°	OK
Fiber width	20px	2.1+/-1.6	NOK
Occupation ratio	50%	67.6768 %	NOK

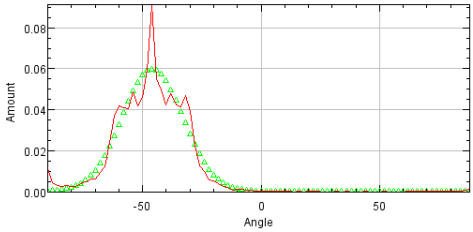


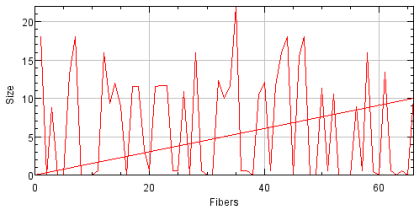




Parameter	Expected result	Obtained result	Conformity
Orientation	+/-90°	-90	OK
Fiber width	15px	7,3+/-2.4	NOK
Occupation ratio	50%	68%	NOK







Parameter	Expected result	Obtained result	Conformity
Orientation	-45°	-46	OK
Fiber width	15px	6.4+/-6.8	NOK
Occupation ratio	50%	68%	NOK

Conclusion

Orientation detection by the « directionnality » module (Jean-Yves Tivenez, 2010 [i]), using the local intensity gradient detection method, is able to give correct results in all cases.

Occupation ratio estimation heavily depend on the thresholding step. Here, an automatic method, IsoData, is used by the macro. Because of the image rescaling prior to the macro application, some error is induced since grey pixels appears at interfaces between black and white lines. Applied to pure binary image, the macro is able to give good results.

The fiber width estimation, using the « ridge detection » module (Thorsten Wagner, Mark Hiner [ii]) is not really accurate at this point. In these tests, the fit is correct half the time only. Entry parameters are the min and max grey intensities, along with a reference width. It will be necessary to try to improve these parameters (actually retrieved by measurments within the ROI) and see the influence on the final fit.

[i] http://imagej.net/Directionality
[ii] http://imagej.net/Ridge_Detection