Materials List for:

Kinematic Analysis of Cell Division and Expansion: Quantifying the Cellular Basis of Growth and Sampling Developmental Zones in *Zea mays* Leaves

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Materials

Name	Company	Catalog Number	Comments
Pots	Any	Any	We use pots with the following measures, but can be different depending on the treatment/study: bottom diameter: 11 cm, opening diameter: 15 cm, height: 12 cm. We grow one maize plant per pot.
Planting substrate	Any	Any	We use potting medium (Jiffy, The Netherlands), but other substrates can be used, depending on treatment/study.
Ruler	Any	Any	An extension ruler that covers at least 1.5 meters is needed to measure the final leaf length of the plants.
Seeds	Any	NA	Seeds can be ordered from a breeder.
Scalpel	Any	Any	The scalpel is used during leaf harvesting to detach the leaf of interest from its surrounding leaves and right after harvesting to cut a proper sample for cell length and meristem length measurements.
15 mL falcon tubes	Any	Any	The 15 mL falcon tubes are used for storing samples used for cell length measurements during sample clearing with absolute ethanol and lactic acid.
Eppendorf tubes	Any	Any	The eppendorf tubes are used for storing samples used for meristem length measurements in ethanol:acetic acid 3:1 (v:v) solution.
Gloves	Any	Any	Latex gloves, which protect against corrosive reagents.
Acetic acid	Any	Any	CAUTION: Corrosive to metals, category 1 Skin corrosion, categories 1A,1B,1C Serious eye damage, category 1; Flammable liquids, categories 1,2,3
Absolute ethanol	Any	Any	CAUTION: Hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation. Slightly hazardous in case of skin contact (permeator), of ingestion

Lactic acid >98%	Any	Any	CAUTION: Corrosive to metals, category 1 Skin corrosion, categories 1A,1B,1C Serious eye damage, category 1
Sodium chloride (NaCl)	Any	Any	
Ethylenediaminetetraacetic acid (EDTA)	Any	Any	CAUTION: Acute toxicity (oral, dermal, inhalation), category 4 Skin irritation, category 2 Eye irritation, category 2 Skin sensitisation, category 1 Specific Target Organ Toxicity – Single exposure, category 3
Tris(hydroxymethyl)aminomethane hydrochloride (Tris-HCl)	Any	Any	This material can be an irritant, contact with eyes and skin should be avoided. Inhalation of dust may be irritating to the respiratory tract.
4′,6-Diamidine-2′-phenylindole dihydrochloride (DAPI)	Any	Any	Cell permeable fluorescent minor groove-binding probe for DNA. Causes skin irritation. May cause an allergic skin reaction. May cause respiratory irritation.
Ice	Any	NA	The DAPI solution has to be kept on ice.
Fluorescent microscope	AxioScope A1, Axiocam ICm1 from Zeiss or other		Any fluorescent microscope can be used for determining meristem length.
Microscopic slide	Any	Any	
Cover glass	Any	Any	
Tweezers	Any	Any	Tweezers are needed for unfolding the rolled maize leaf right after harvesting in order to cut a proper sample for cell length and meristem length measurements.
Image-analysis software	Axiovision (Release 4.8) from Zeiss	NA	The software can be downloaded at: http://www.zeiss.com/microscopy/en_de/downloads/axiovision.html. Other softwares such as ImageJ (https://imagej.nih.gov/ij/) could be used as well.
Microscope equipped with DIC	AxioScope A1, Axiocam ICm1 from Zeiss or other		Any microscope, equipped with differential interference contrast (DIC) can be used to measure cell lengths.
R statistical analysis software	R Foundation for Statistical Computing	NA	Open source; Could be downloaded at https://www.r-project.org/
R script	NA	NA	We use the kernel smoothing function locpoly of the Kern Smooth package (Wand MP, Jones MC. Kernel Smoothing: Chapman & Hall/CRC (1995)). The script is available for Mac and Windows upon inquiry with the corresponding author.