PRACTICE 2: FINDING BIOMARKERS

GL2

COBL9

CO2

COR

SCR

E30

S17

S18

S4

S32

APL

WOL

WOX5

PET111

WER

Root tip

Maturation zone

Meristematic zone

Hair cells

Non–hair cells

Developing cortex

Mature cortex

Endodermis & QC cells

Mature endodermis

Phloem pole pericycle

Developing xylem

Mature xylem pole

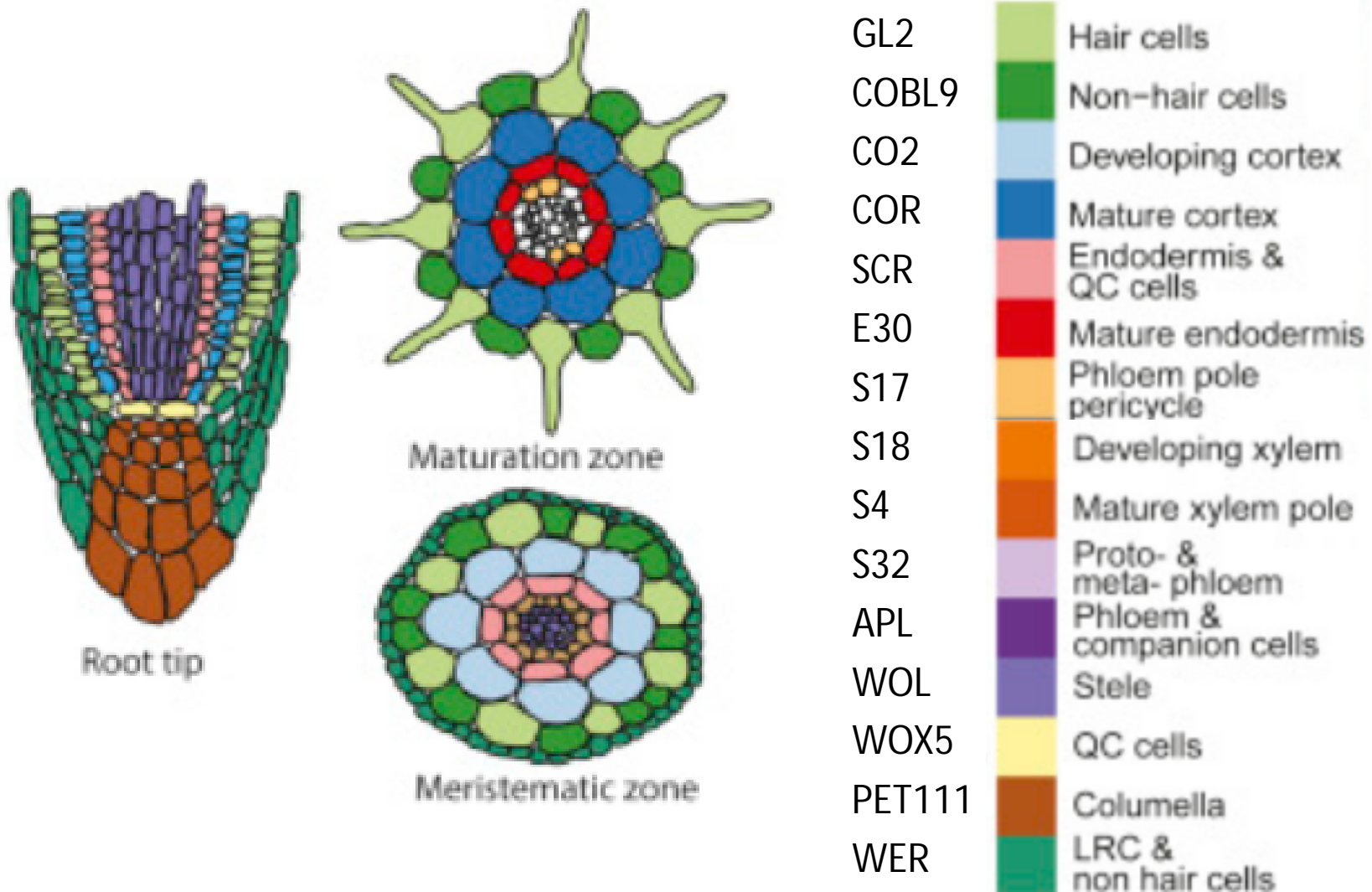Proto- & meta- phloem

Phloem & companion cells

Stele

QC cells

Columella

LRC & non hair cells

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PRACTICE 2 EXERCICES

1. – Visualize distribution of expression values across samples. Use function boxplot (). File = TableS5.csv

2.- Analyze whole transcriptome differences through PCA. Is there any possible relationship between expression values distribution and PCA separation?

3.- Find biomarkers for Stem Cells as those only expressed in WOX5 domain (threshold=1). Use function subset (). Obtain biomarker names and visualize expression patterns in a heatmap.

4.- Separate samples performing PCA in Stem Cell Biomarkers. Plot loadings and scores. What do you observe? Why?

5. Visualize PCA scores of Stem Cell biomarkers in PCA analysis of 2. Check first 4 components. Can biomarkers be easily identified from PCA scores?