Celloras

Know your cells.

Celloras is an AI research partner that tells plant scientists what each of their cells is, and shows why.

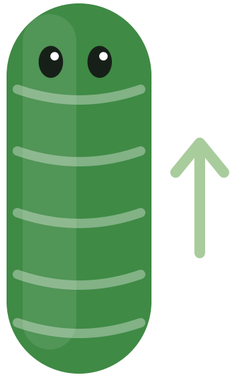


Each dot is one real plant cell.

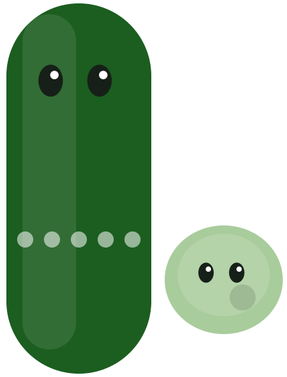
A plant is built from millions of tiny cells, each with its own job.



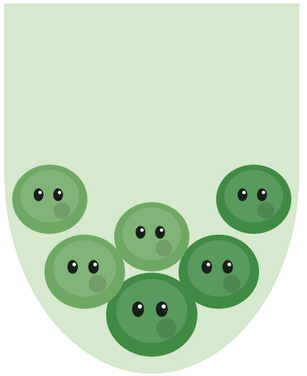
Root hair cell
soaks up water



Xylem cell
carries water upward



Phloem cell
carries sugar

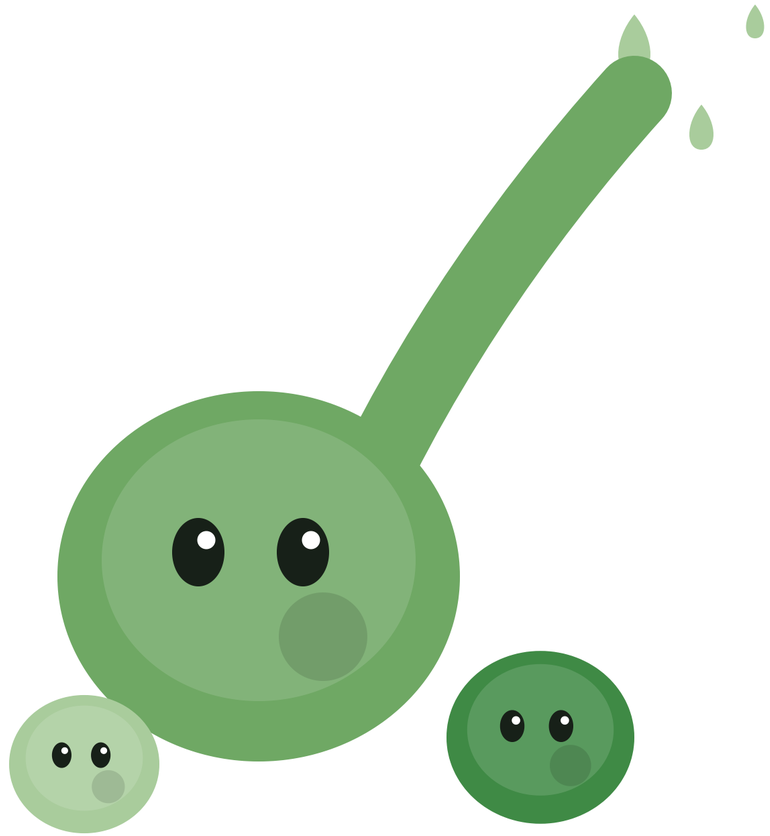


Root cap cell
protects the growing tip

- Why it matters

Knowing which cell is which shows how a plant drinks, grows and copes with stress.

That is groundwork for breeding sturdier crops.

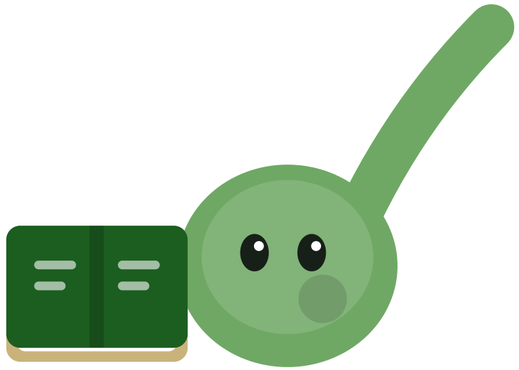


Every cell has the same recipe book. Each type cooks different recipes.

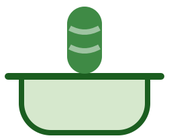


cooking

grow a long hair

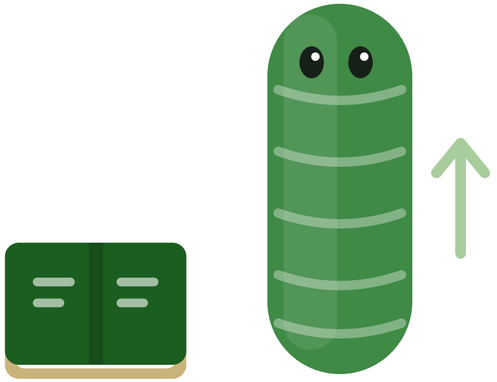


Root hair cell



cooking

build a water pipe

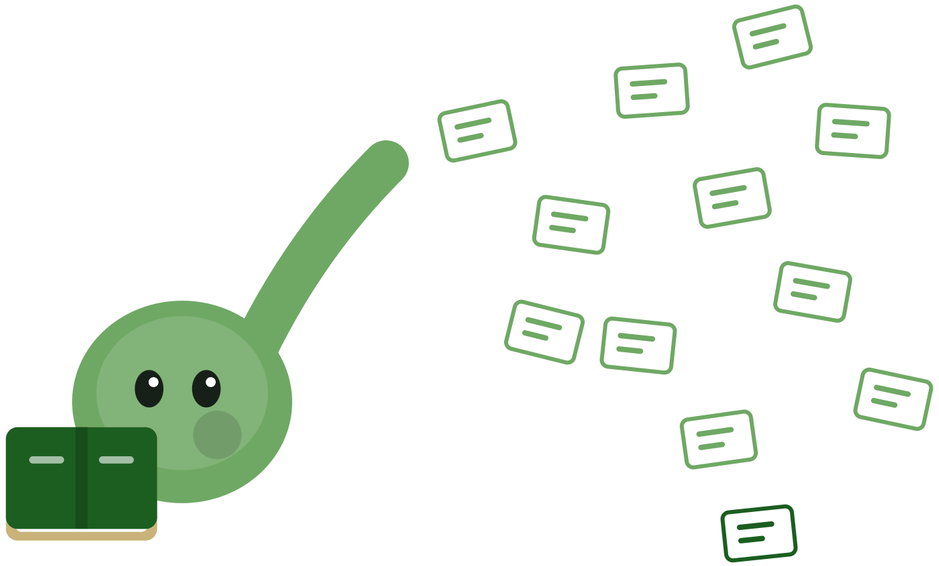


Xylem cell

The book is DNA. Each recipe is a gene.

The new tool

To cook, a cell copies the recipe. Machines can now count those copies in every single cell.





this cell, counted

hair recipe	**×12**
pipe recipe	**×1**

Many copies = that recipe is in use. That's how we see which genes are active.

The copy is RNA. Counting copies cell by cell is called single-cell sequencing.

The problem

The machine groups cells that cook the same recipes, but the groups come without names.

Each dot is one cell. Twelve groups, zero names.



The problem

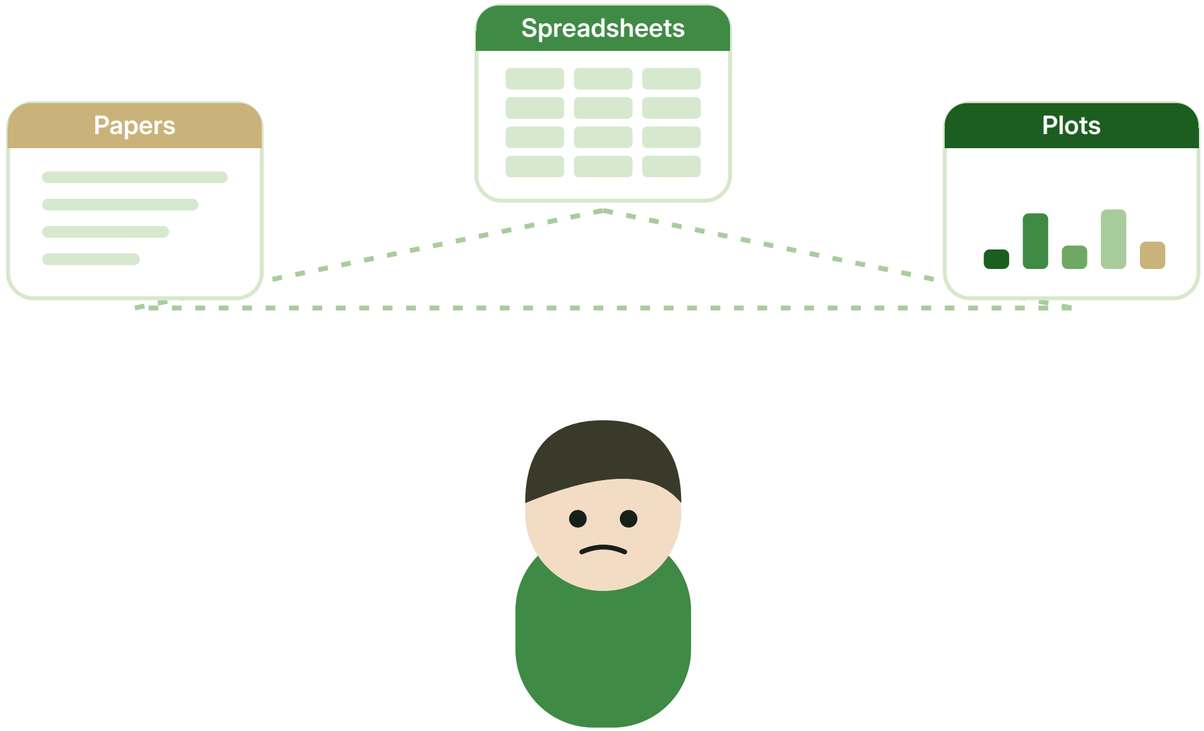
Scientists name each group by its signature dish, then check it in papers, by hand.

A kitchen baking croissants

→ probably a bakery

A cell cooking root-hair recipes

→ probably a root hair cell



The product

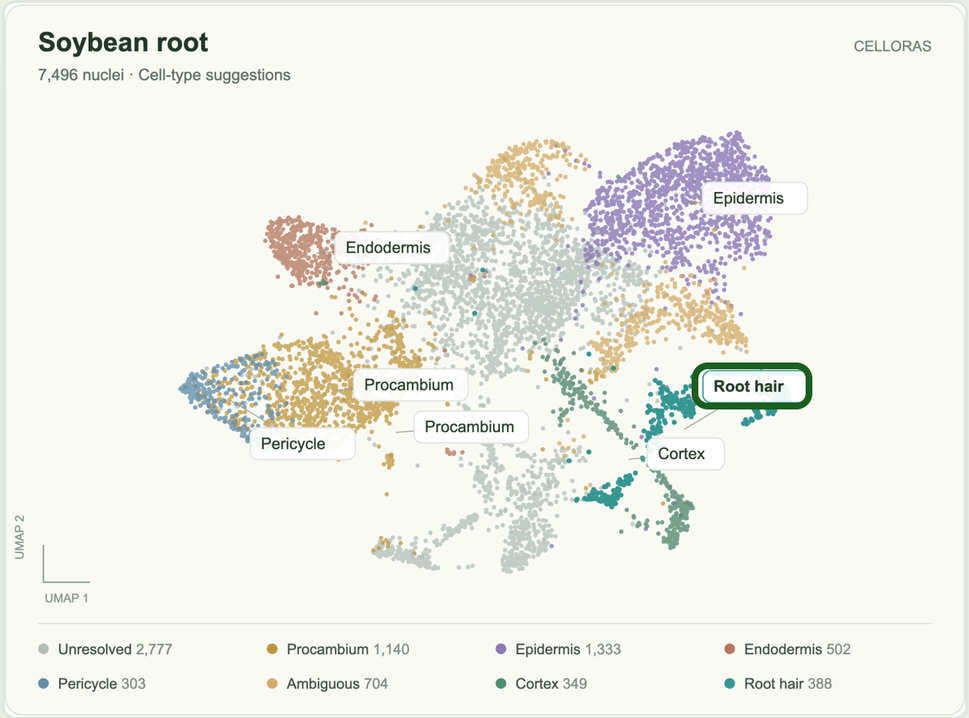
Celloras does that detective work in one request.

7 groups get a suggested name

1 is too close to call

4 stay open: not enough evidence

Circled: group 6, suggested as root hair.



The product

Group 6 is probably root hair: 29% of its cells cook a root-hair signature dish.

Gene / source	Detected in cluster	Detected elsewhere
Glyma.01G224900 ↗ ▶ Exact values & source	29.124%	5.8385%
Glyma.17G030700 ↗ ▶ Exact values & source	16.495%	8.6382%

29% of cells here. 6% everywhere else.

The evidence comes attached, with a link to the published source.

• The product

When a group is unclear, Celloras investigates instead of guessing.

Mixed evidence

Epidermis

One epidermis marker (Glyma.08G014900) supports, but other epidermis markers are not informative; co-detection shows many nuclei express both epidermis and root hair markers.

▶ See the evidence

Mixed evidence

Root hair

Two root hair markers (Glyma.20G032500, Glyma.01G224900) support, but other root hair markers are not informative; co-detection shows overlap with epidermis markers.

▶ See the evidence

What would help next?

Curated soybean-specific root hair and epidermis markers could resolve ambiguity

Suggested check, not yet performed.

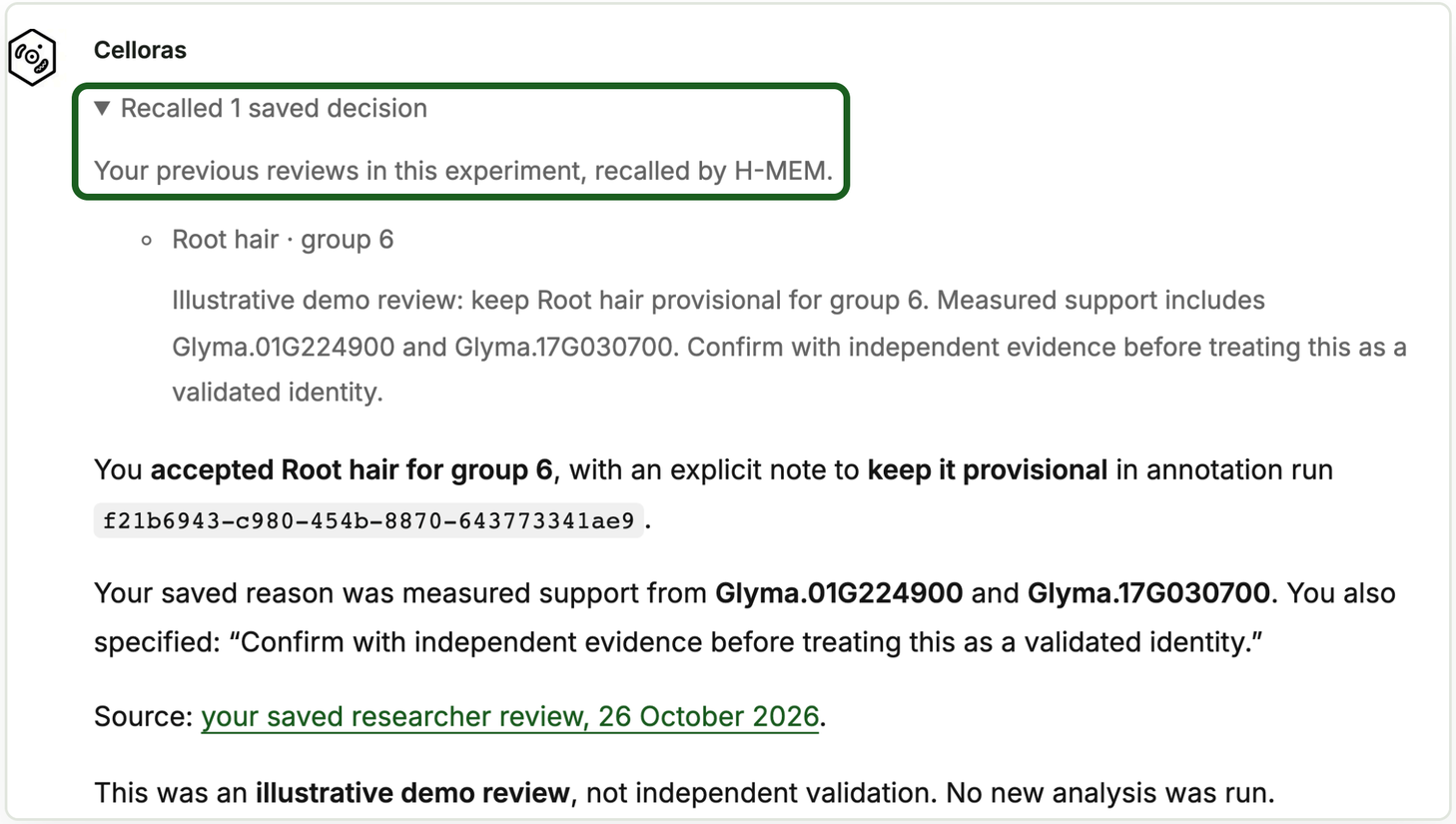
Search the available papers ↗

Group 3 could be outer skin or root hair.

Nightshift compares three reviews, running on NVIDIA Nemotron. The verdict stays open, with a next step to check.

- The product

The scientist makes the call, and Celloras remembers it next time.

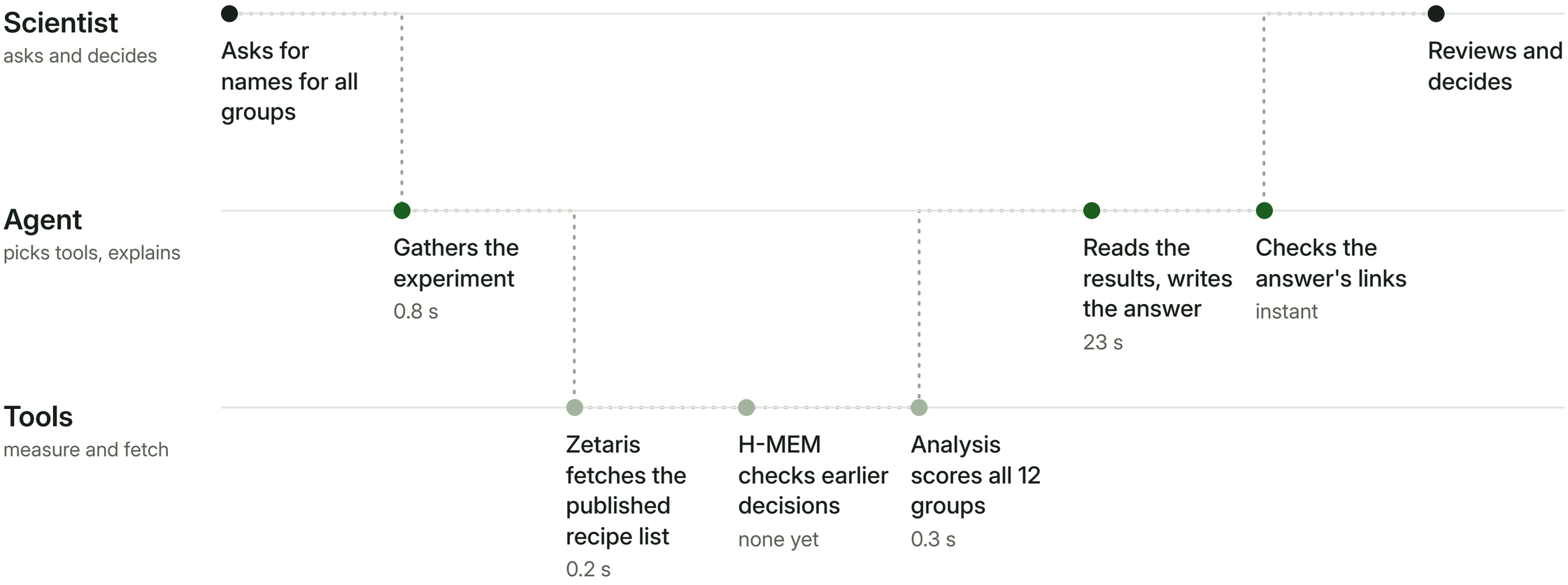


Recalled by Meterless H-MEM, with a link to the original decision.

Demo decision, for illustration.

How it works

One real request, 24 seconds: who did what.



Here a button started the analysis. When the question is free-form, the agent picks the tools itself.

How it works

Each part has one job. The numbers never come from the AI.

Zetaris

The published recipe list

Checked every time before use.

Meterless H-MEM

The memory

Remembers each decision and why.

Meterless Nightshift

The second opinion

Weighs unclear groups, on NVIDIA Nemotron.

NVIDIA OpenShell

The safe kitchen

Runs the agent in a locked sandbox.

The proof

In a first test, 6 of 7 suggested names matched the scientists' own labels.

Tested on

About 7,500 cells from published research data

Honest limit

Not independent proof yet

The labels came from the same study.

Scope

Works today on soybean roots

More plants next.

The market

The field our users work in is growing fast.

$1.95B

single-cell sequencing, 2025

$3.46B

expected by 2030, about 12% a year

Celloras

Know your cells.

celloras.com

Try the live demo. Login details are on the sign-in page.

Team

Catalin Waack linkedin.com/in/catalinwaack

Pengchong Ma linkedin.com/in/pengchong-m-18bb39135

