

# dyno: INFERRING, VISUALIZING AND INTERPRETING TRAJECTORIES



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► dyno is a **toolkit** for inferring, visualizing and interpreting **trajectories** in R → [dyno.dynverse.org](https://dyno.dynverse.org)



## Selecting the most optimal method(s)

### Choice of method depends on the:

**User** Expectations about the topology  
Available computing resources  
Relative importance to particular trajectory aspects

**Data** Number of cells and features  
Prior information (such as start cells)

### Examples:

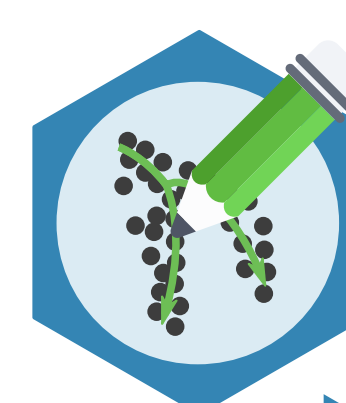
► Our app gives **recommendations** based on these criteria

Install locally in R: `devtools::install_github("dynverse/dynguidelines")`

Or go to: [guidelines.dynverse.org](https://guidelines.dynverse.org)

► They are based on the results from our **benchmark**:

Robrecht Cannoodt @ **Poster 1033** and [benchmark.dynverse.org](https://benchmark.dynverse.org)



## Inferring trajectories

### 71 tools for trajectory inference

...and counting  
...each with their own input/output interface

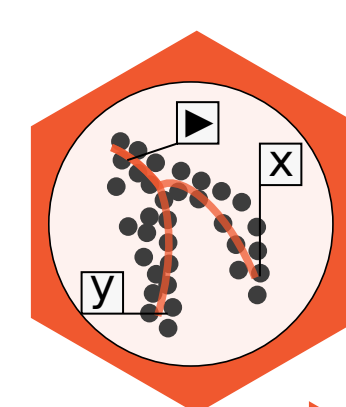
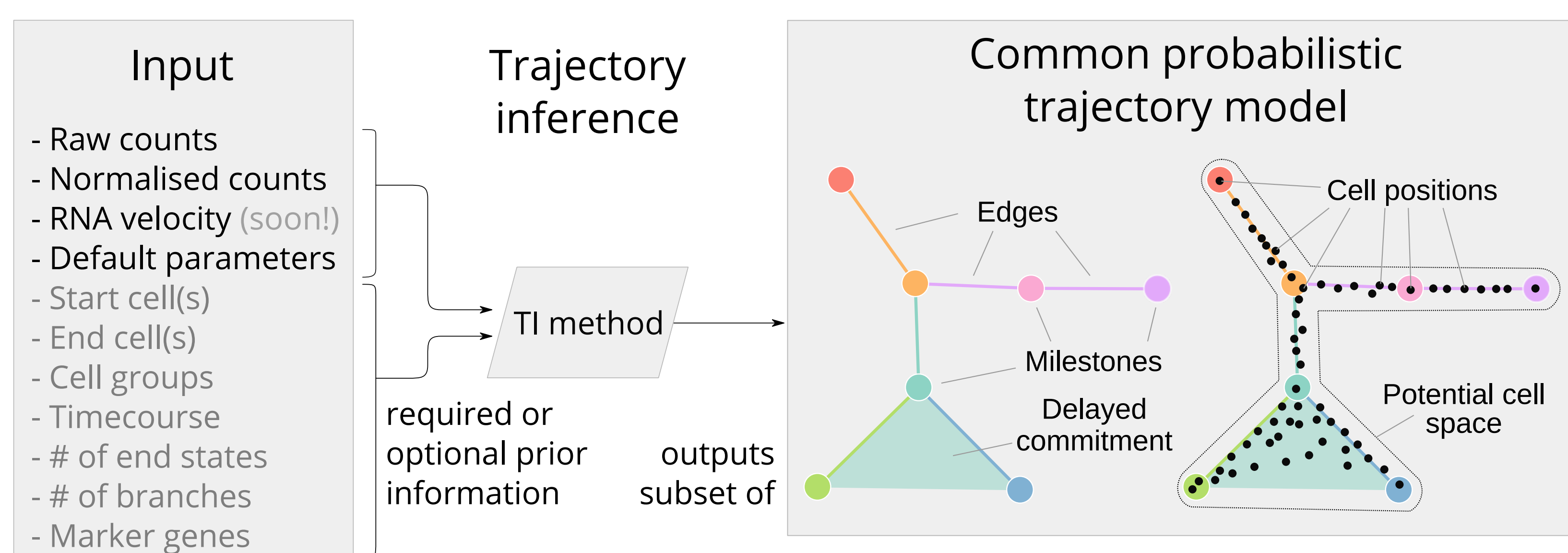
► We developed a **common input and output interface** for **55 methods**

► Each method can be run with one line

`infer_trajectory(dataset, "my_favorite_ti_method")`

► New methods can be included through

[methods.dynverse.org](https://methods.dynverse.org)



## Annotating the trajectory

► Include additional information on top of the trajectory to make it **interpretable**

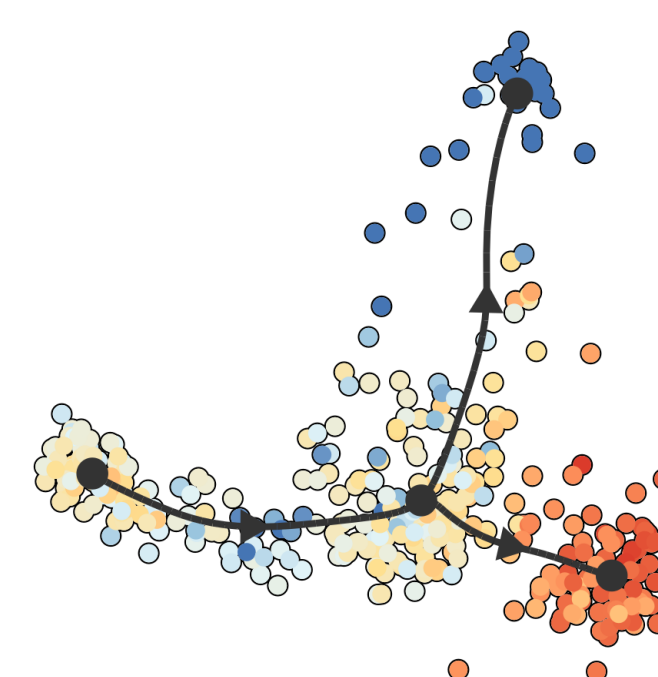
- Rooting based on markers (or manually)
- (soon!) Directionality of edges based on RNA velocity
- Labelling milestones based on markers (or manually)
- We welcome additional ideas about common operations



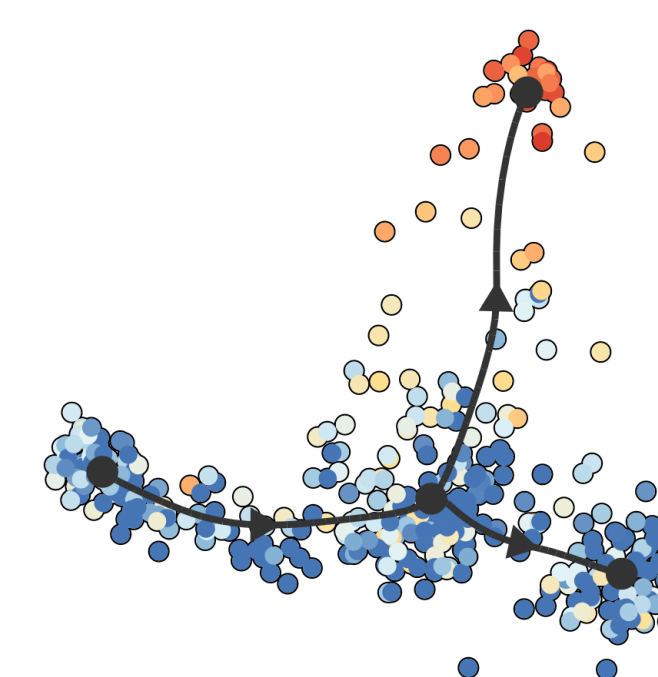
## Detecting differential expression

► Various **expression patterns** can be detected

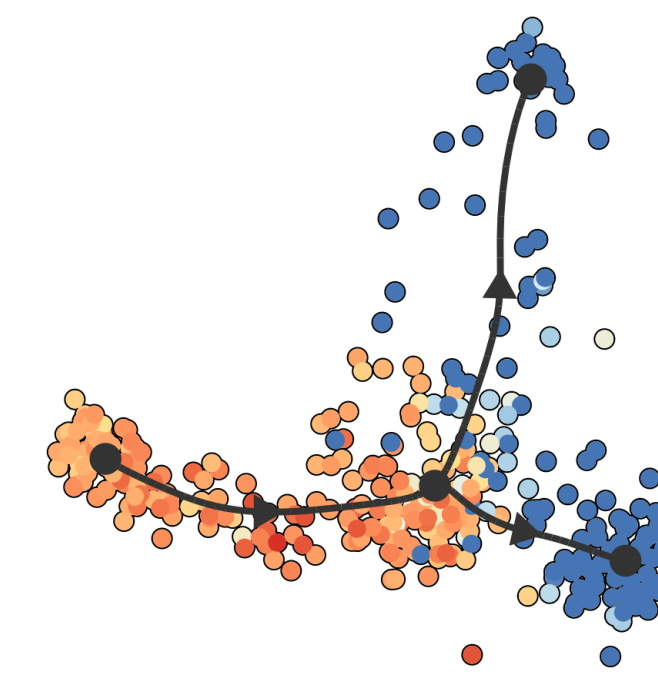
### Overall



### Branch

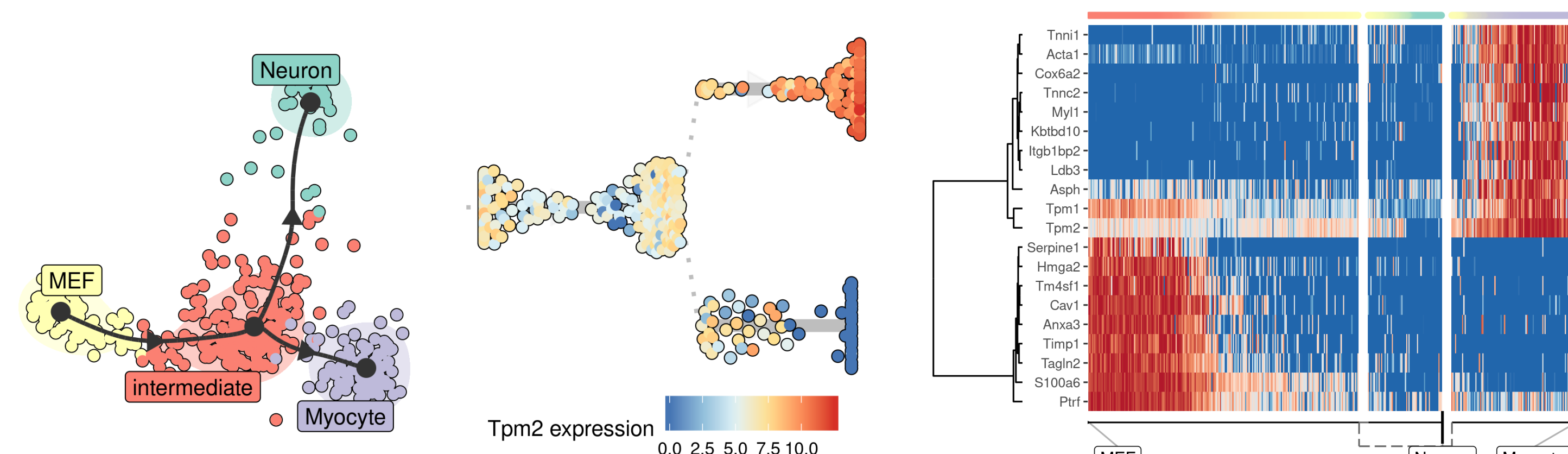


### Branch point



## Visualizing the trajectory

► Visualize a model in **multiple ways**



► Compare models on a **common embedding**

