

Who are you? Identifying cell types in a mixed culture using Knime Analytics Platform

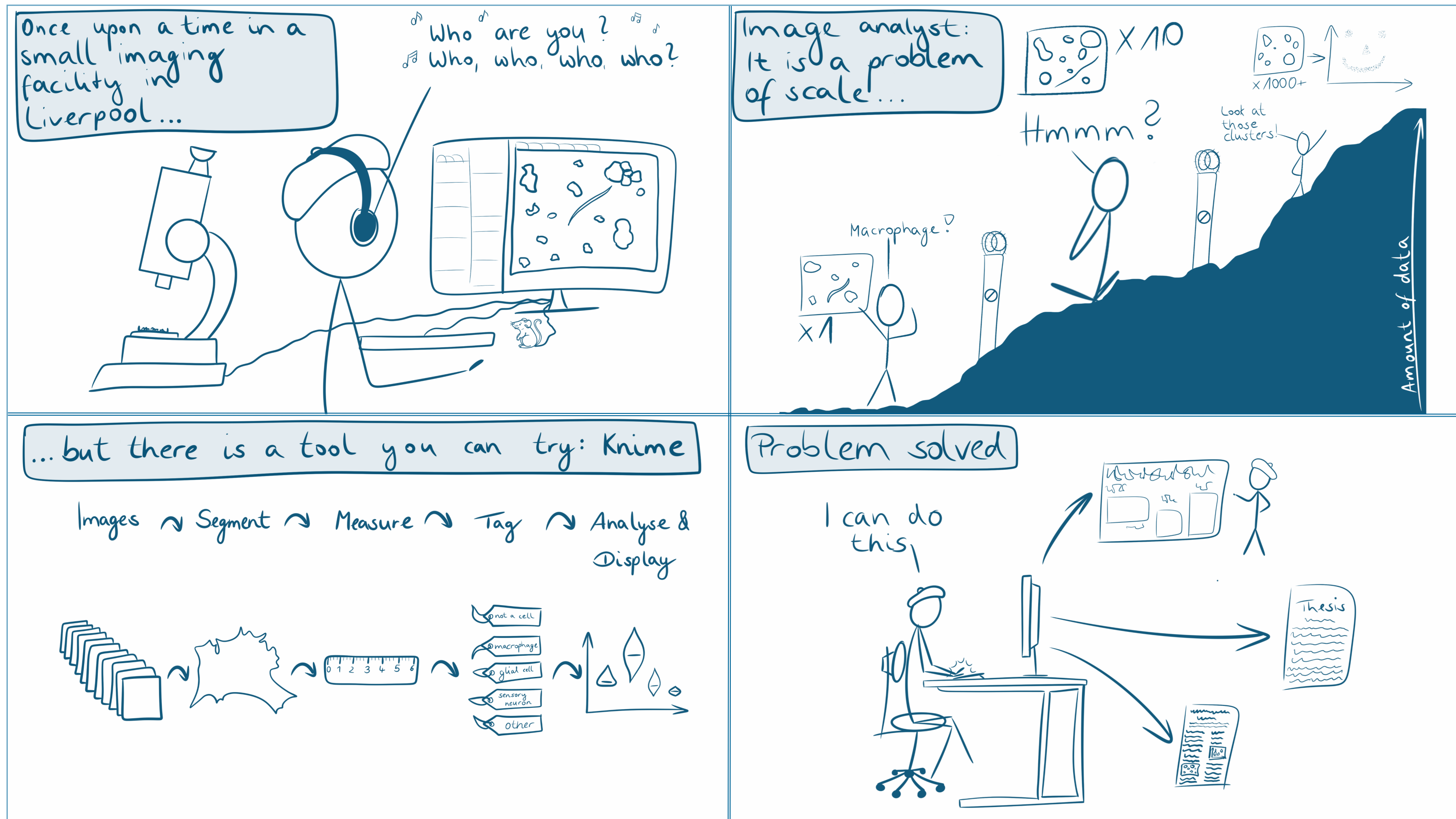
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Poster #21

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@MaKaefer



Background

- Mixed cell populations represent physiological systems better than single populations.
- Identifying cell types in mixed populations is difficult.

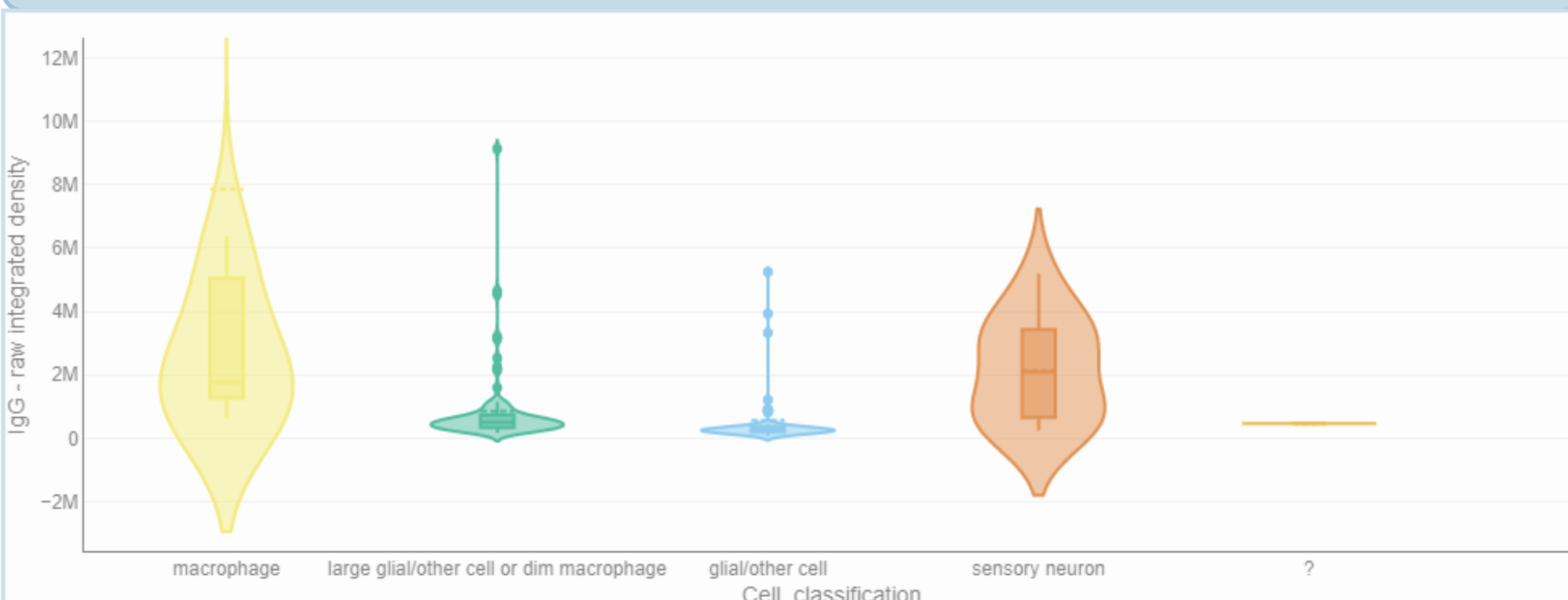
Aim

- Identify cells and assign cell types.
- How much IgG does each cell type bind?

Knime nodes used in workflow

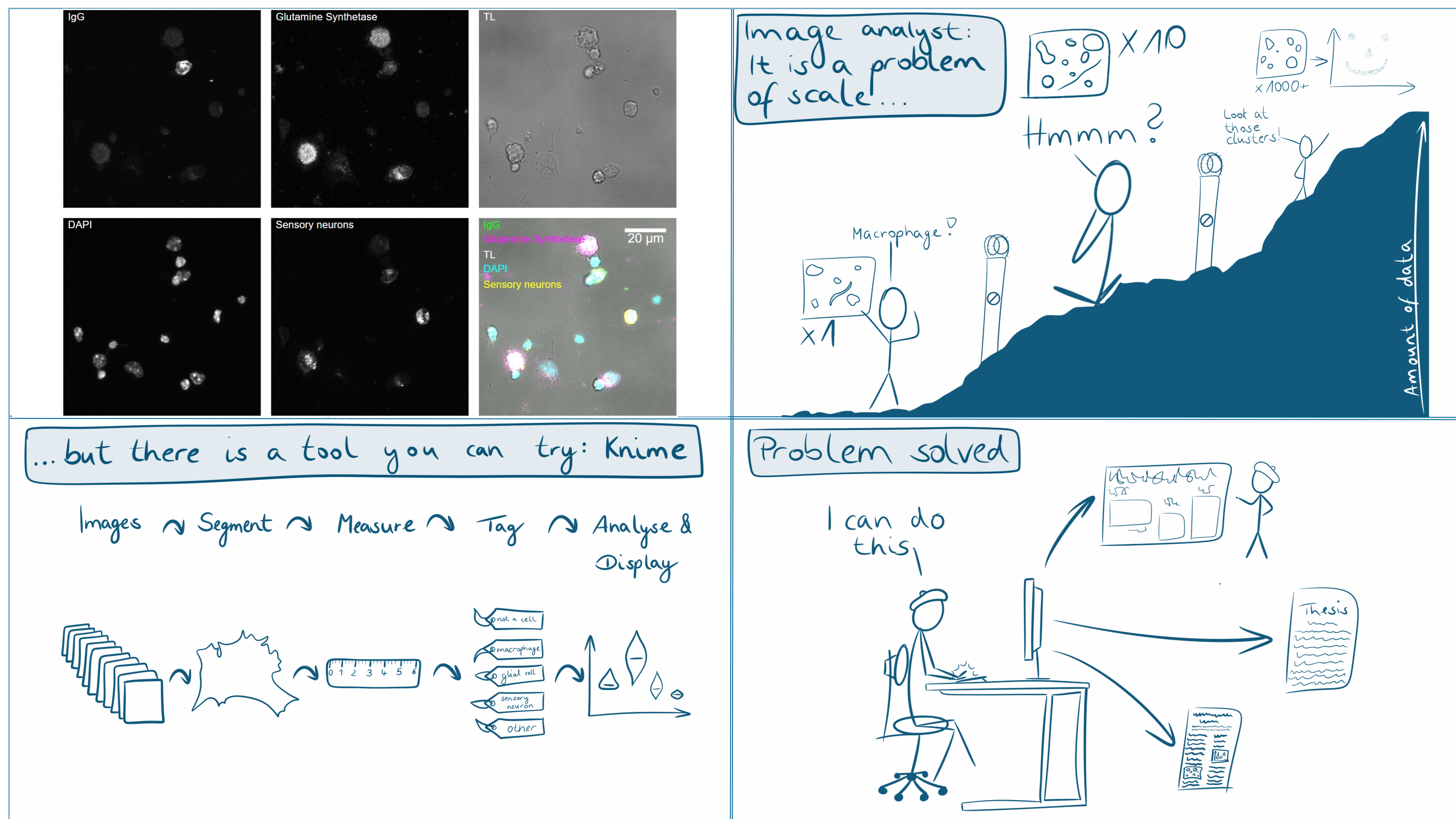
- Image reader (Table):** Reads images from various file formats supported by the Bio-Formats library and imports them to the KNIME-internal image format.
- Cell Segmentation with Cellpose:** apply one of the pretrained models ('nuclei' or 'cyto') on the input image.
- Labeling to image:** Converts segmentations in a (set of) column(s) to images.
- Feature Calculator (BETA):** Calculate numerical features of an image, segmentations or segment on an image.
- Image Segment Features:** Calculate features of an image under consideration of a given labelling.
- Rule Engine:** Matches each row of the input table to a list of user-defined rules.
- Violin Plot (Plotly):** Visualise multiple plots simultaneously across various categories or group-memberships.
- Image Writer:** Write image to formats support by scifio library.
- CSV Writer:** Write string/numerical data to file.

Results



Acknowledgements

- NEUBIAS Academy @ Home: Introduction to KNIME for Image Processing (4 & 11 March 2021, tinyurl.com/4csm5k3m)
- KNIME self-paced learning courses and community forum
- Development team of the KNIME Image Processing Extension (tinyurl.com/24enj9vt)



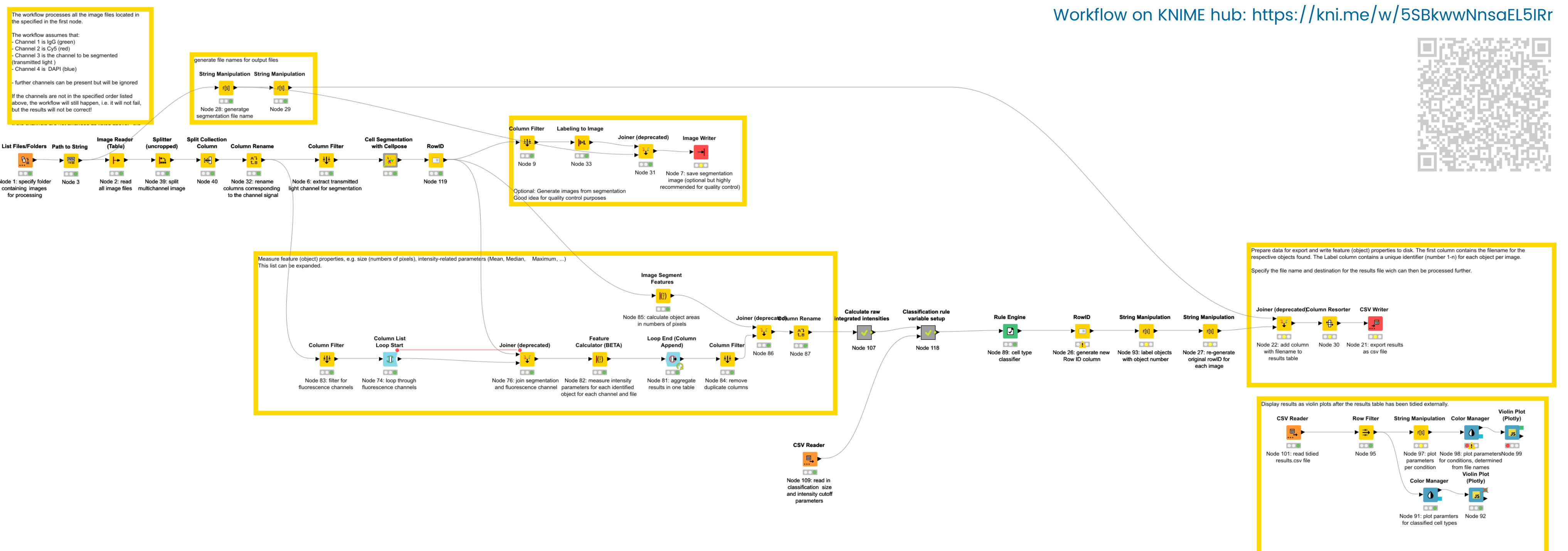
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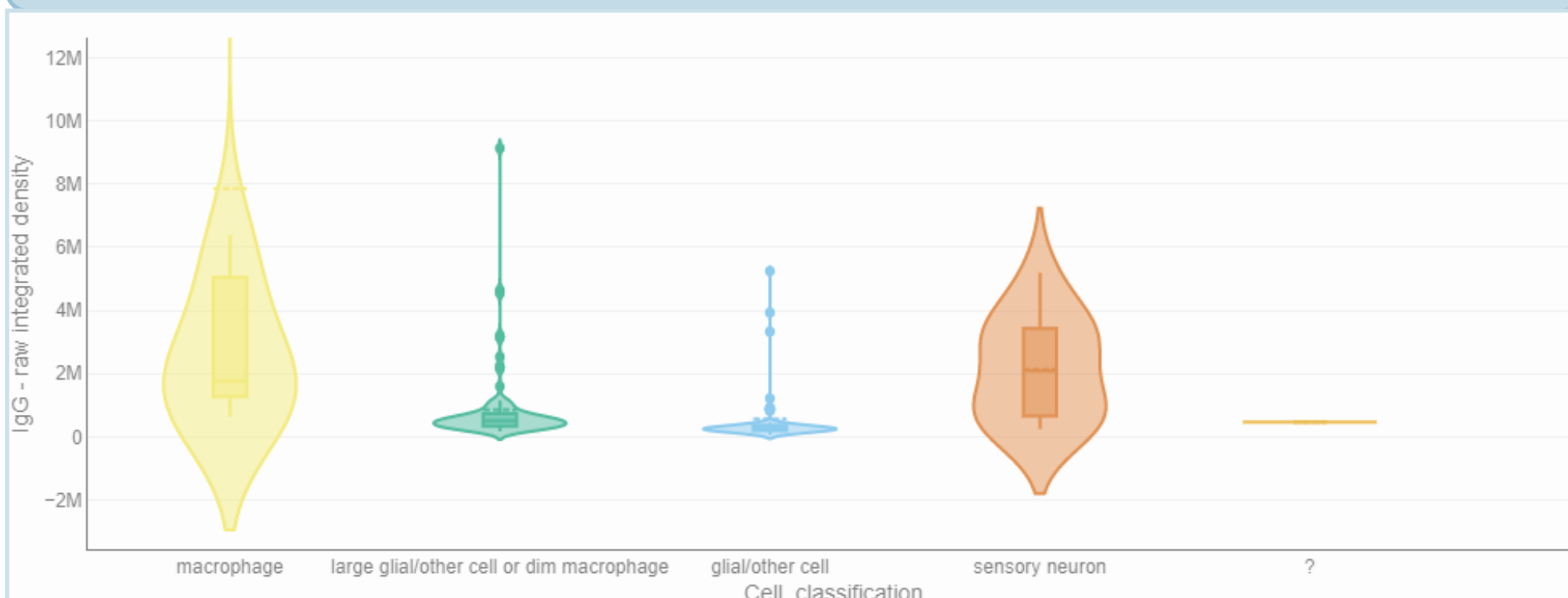
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Knime workflow



Results



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