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Visual analytics for spatially resolved omics data at single cell resolution: methods & applications

Somarakis, A.

Citation

Somarakis, A. (2022, January 20). *Visual analytics for spatially resolved omics data at single cell resolution: methods & applications*. Retrieved from <https://hdl.handle.net/1887/3250550>

Version: Publisher's Version

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Stellingen

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VISUAL ANALYTICS FOR SPATIALLY RESOLVED DATA AT SINGLE CELL RESOLUTION: METHODS AND APPLICATIONS

door

Antonios Somarakis

1. Non-biological variation of signal intensities between tissues samples could lead to inaccurate findings. Hence, they should be dealt at the beginning of the analysis pipeline. (This thesis.)
2. Due to the insufficient preprocessing algorithms, the inspection of any finding in the tissue context is imperative. (This thesis.)
3. Multi-level visual approaches enable the user to explore in great detail the spatial cellular patterns formed in the single-cell tissue images. (This thesis.)
4. Comparative visualization enables researchers to identify in an efficient manner the differences in clinically distinct cohorts of tissue samples. (This thesis.)
5. High occurrence of spatial interactions between specific cell types does not necessarily imply significance of that interaction.
6. The rarity of annotated/ground truth spatially resolved omics data hinders the development of fully supervised solutions for the analysis of such data.
7. The novelty, complexity and volume of spatially resolved omics data asks for the collaboration of multidisciplinary groups of scientists for their efficient analysis.
8. A successful incorporation of novel visual representations in an analysis pipeline should be accompanied by close collaboration between the designer and the domain expert.
9. Technological developments can be more beneficial for society if they are accompanied by progress in humanities and social sciences.
10. A successful PhD is not essential and sufficient for a long career in science.
11. "This world is too old to change, but also too young not to try." M. Kasolas, 2020.