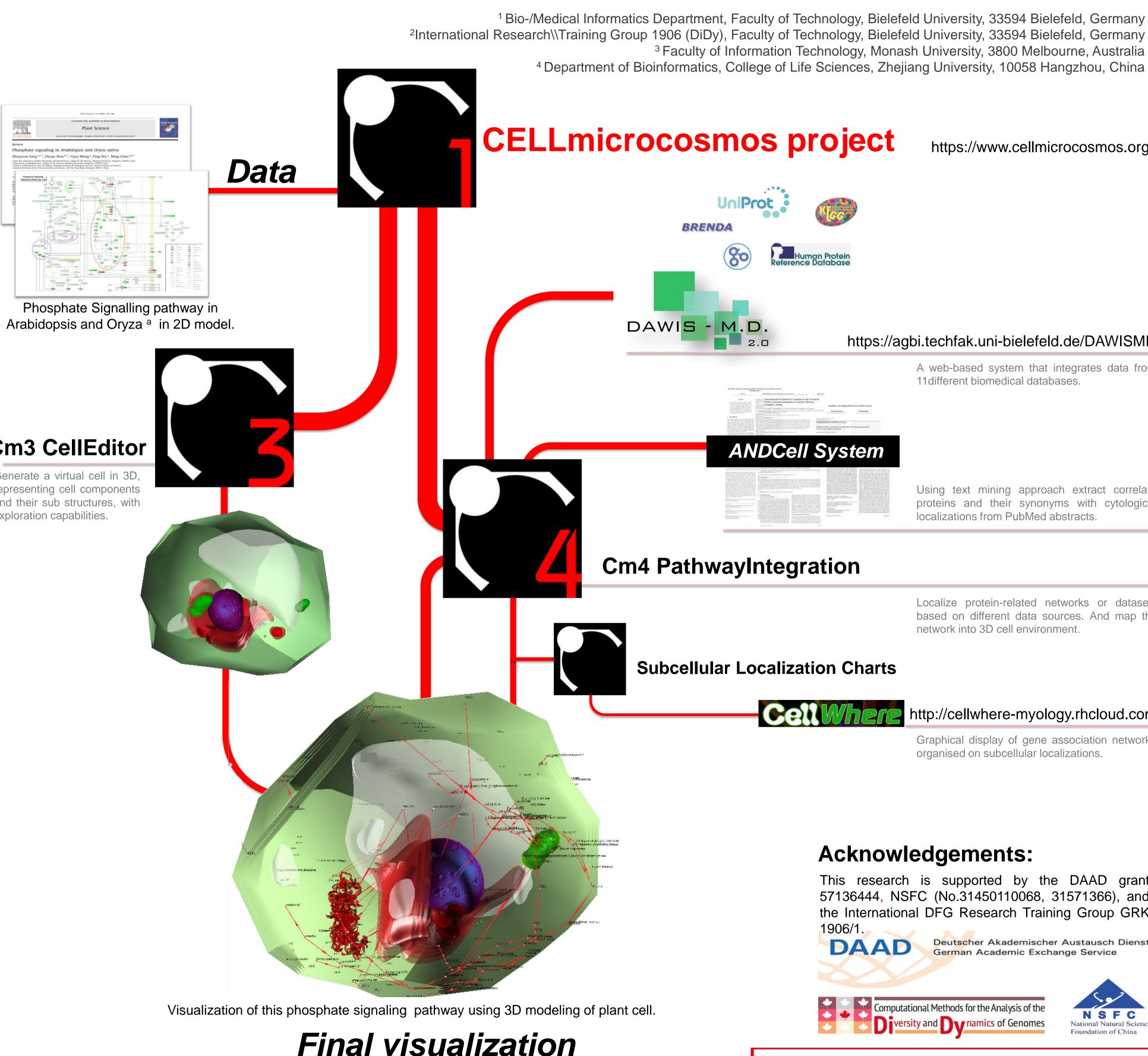
Universität Bielefeld

Virtual Plant Cell Modeling and 3D Visualization Lu Zhu^{1, 2}, Björn Sommer^{1, 3}, Christoph Brinkolf¹, Lili Liu³, Xiangwen Meng⁴, Ming Chen⁴, Ralf Hofestädt¹

Abstract:

Cell modeling is an important task in systems biology to gain a deeper understanding of complex mechanisms and processes in cells. This requires creating a computational model that could be applied to different fields of biology science such as plant science. The aim of this collaborative project is to develop a program that is able to automatically map a given pathway into different sub-cellular compartments in a virtual 3D cell model.

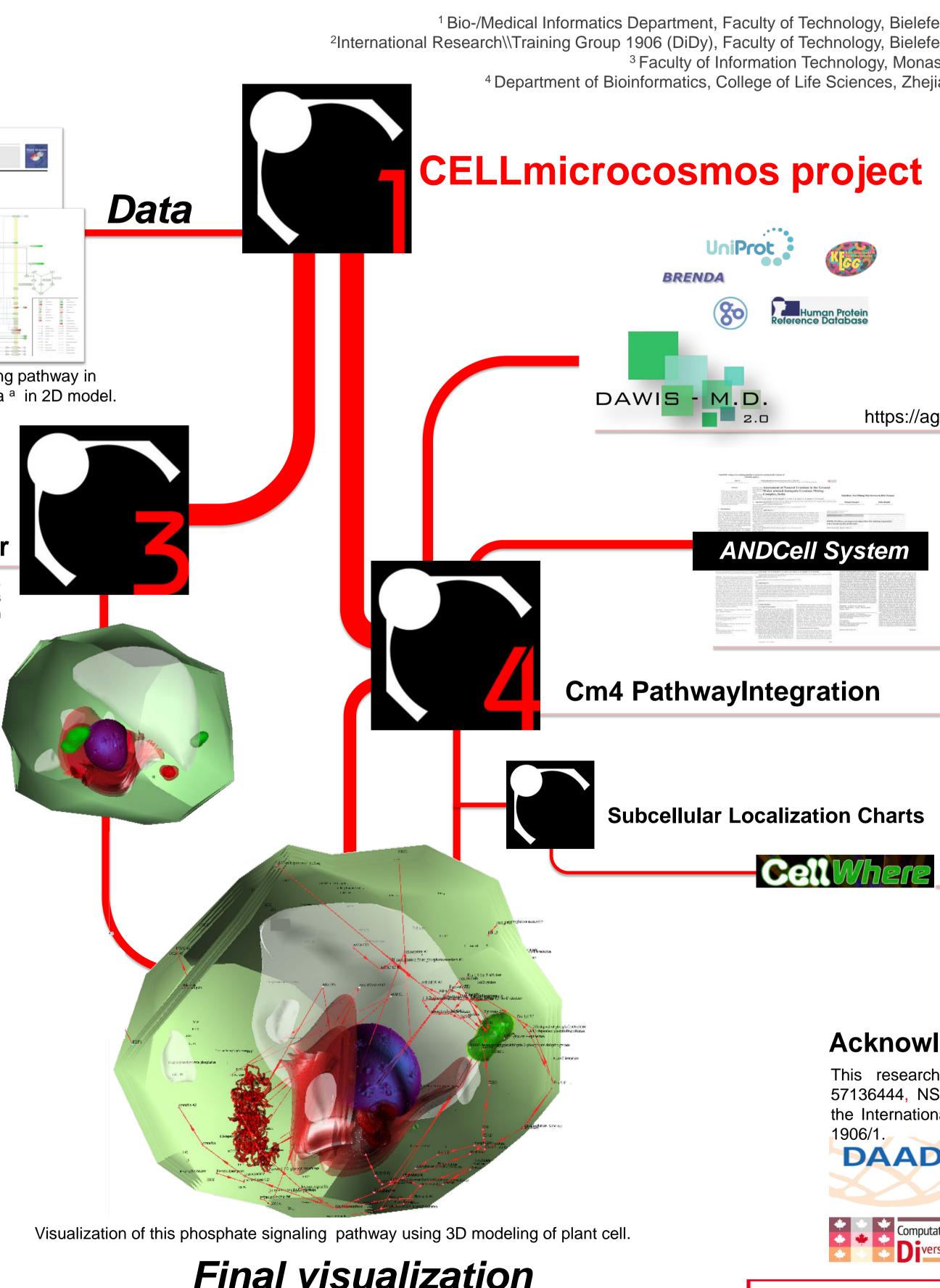


Application case:

Phosphate signaling pathway modeling and visualization in Arabidopsis and Oryza⁶.

Cm3 CellEditor

Generate a virtual cell in 3D, representing cell components and their sub structures, with exploration capabilities.



References:

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https://www.cellmicrocosmos.org

https://agbi.techfak.uni-bielefeld.de/DAWISMD

A web-based system that integrates data from 11 different biomedical databases

Using text mining approach extract correlate proteins and their synonyms with cytological localizations from PubMed abstracts.

Localize protein-related networks or datasets based on different data sources. And map the network into 3D cell environment.

http://cellwhere-myology.rhcloud.com

Graphical display of gene association networks organised on subcellular localizations.

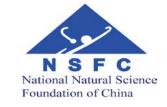
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