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Biography

Ralf Huss joined Definiens in 2013 and has more than 20 years of training and experience in histopathology and cancer research. He also co-founded the biotech company APCETH. He has published more than 100 papers, and has worked with the Nobel Laureates Rolf Zinkernagel and E. Donnell Thomas.

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**IDENTIFICATION OF CANCER
STEM CELL (CSC) IN ITS
SPATIAL CONTEXT AND IMMUNE
ENVIRONMENT THROUGH THE
APPLICATION OF COGNITIVE AND
MACHINE LEARNING**

The identification of Cancer Stem Cells (CSC) or better cancer initiating cells (CIC) as therapeutic targets is of pivotal importance to limit the progression, recurrence and metastasis of cancer. This requires the understanding of the residence of CSC/CIC in their tissue environment with contextual information on their spatial connectivity with many different surrounding structures. Advanced tissue diagnostic including multiplexing immunohistochemistry and the integration of all available data has become key to predict the response to treatment and can be used to target CSC/CIC. With the ability to combine cognitive learning technologies with sophisticated analytics assessing the tumor-forming cells, its environment and immune cells including its spatial relationship, image analysis can identify complex and meaningful signatures that incorporate new knowledge into existing (empirical) wisdom to better predict patient response. Artificial intelligence and machine learning applied to image analysis offer an automated solution using quantitative measurements of unique cellular features to objectively and accurately assess a patient's tumor composition. The improved and increased use of immunotherapies (alone or in combination) to target CSC/CIC will be a result of the automation of contextual cell identification, cell counting and algorithm application to deal with n-dimensional complexity of different stem cell compartments.