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## **Models of stem cell differentiation in hematopoiesis and leukemia**

Cancers and hematologic malignancies differ with respect to interindividual symptomatology, course of disease, treatment susceptibility and prognosis. Over the last decades oncological treatment strategies have been elaborated and optimized, nevertheless important aspects remain unknown. A systematic mathematical approach may help to better understand treatment failures and clinical heterogeneity of different cancers. Based on a model of cell differentiation and signal feedback possible scenarios of cancer development and their impact on consequences for treatment concepts will be compared. A calibration of the model to the hematopoietic system will serve to transfer theoretical results to the understanding of leukemias and myelodysplastic syndromes.