Contents

1	Hippocampal Formation in the Mouse and Rat – Structural Organization and Development: A Review	1
1.1 1.1.1	Structural Organization of the Hippocampus General Ideas on the Hippocampus, Nomenclature,	1
	and Topography	1
1.1.2	Structural Organization of Ammon's Horn and the Dentate Gyrus	3
1.1.3	Afferent, Efferent, and Longer Intrinsic Connections in the Hippocampus	4
1.1.4	Functions of the Hippocampus	6
1.2 1.2.1	Development of the Hippocampus	6
1.2.1	Neurogenesis and Gliogenesis in the Hippocampus Differentiation in the Hippocampus	9
1.3	Conclusion	11
2	Materials and Methods	12
2.1	Animals, Histological Procedures, and Autoradiography	12
2.2	Description of Experiments and Methods of Their Analysis	13
2.2.1	Mapping and Quantitative Analysis of Mitoses and Pyknoses in the Developing Hippocampus	13
2.2.2	Postnatal Cell Genesis and Death in the Mouse Dentate Gyrus Under Normal Conditions	1.5
2.2.3	and Under Experimental Influences Study of Spatiotemporal Sequences of Neurogenesis	15
2.2.3	in the Hippocampus and Neocortex	17
3	Cell Proliferation and Cell Death in the Developing Hippocampus of a Mouse	19
3.1	Some Aspects of the Study of Cell Proliferation	1,7
J.1	and Cell Death in the Developing Hippocampus.	19
3.2	Results of the Study	20



3.2.1	Registration of Arrangement of Mitoses	
3.2.2	and Pyknoses	20
	and Cell Death	25
3.3	Discussion	28
3.3.1	Cell Proliferation in the Developing Hippocampus	28
3.3.2	Cell Death in the Developing Hippocampus	29
3.4	Conclusion	31
4	Postnatal Production and Death of Cells	
	in the Mouse Dentate Gyrus	33
4.1	The Dentate Gyrus as an Object for Experimental	22
4.2	and Clinical Investigations	33
7.2	the Dentate Gyrus During Postnatal Development	33
4.3	Study of Postnatal Cytogenesis in the Dentate Gyrus	39
4.4	Kinetics of Cell Proliferation and Death	39
	in the Subgranular Zone of the Dentate Gyrus	
	in Normal and Undernourished Mice	44
4.5	Study of the Regenerative Capacity	• •
	of the Dentate Gyrus	50
4.6	Conclusion	50
5	Neurogenesis in the Hippocampus and Neocortex as the Embryonic Basis for Brain Module Formation.	52
5.1		
5.2	Neural Modules in the Neocortex and Hippocampus Sequences of Neurogenesis and Formation of Modules in the Archi- and Neocortex:	52
	Problems of Interrelationship	53
5.3 5.3.1	Results of the Study	54
	in the Neocortex	54
5.3.2	Spatial and Temporal Sequences of Neurogenesis	
	in Field CA1 of Ammon's Horn	59
5.4	Discussion	63
5.5	Conclusion	69
6	Summary	71
	References	75
	Subject Index	82