Table 1 Summary of Synaptogenesis and Overt Behaviour in the Chick Embryo from 2 to 19 Days of Incubation

Synaptic characteristics	Age 2 days	3 days	4.5 days	6 days	7 days	9 days	11 days	13 days	16 days	19 days
Pre-synaptic vesicle aggregation	+S	+S	+S	+S	+S	+S-F	+S-F	+S-F	+S-F	+S-F
No. synaptic vesicles	Very few	Very few	Few	Few	Cluster	Cluster	Large cluster	More than 11 days	Little change	More than 13 days
Dense core vesicles	+	+	+	+	+, few	Few	Few	Few	Few	Few
Membrane densities	—	Slight	Slight	+	+	+	+	+	+	+
Post-synaptic thickening	—	—	Rare	+	+	+	+	+	+	+
Synaptic cleft material	—	—	—	+	+	+	+	+	+	+
Axo-dendritic synapse	+	+	+	+	+	+	+	+	+	+
Axo-somatic synapse	?	?	?	—	—	+	+	+	+	+
Behaviour	None	Infrequent but regular contractions of cervical musculature only	Regular and periodic side-side flexions	Continuation of side-side flexions and first sign of limb movements	First response to tactile stimulation	The regular periodic activity changes to more uncoordinated jerky clonic movements	Little change except for an increased level of activity	Activity level reaches a peak and the movements are no longer periodic	Level of activity decreases in preparation for hatching, and movements are now more tonic in nature	Has assumed the hatching position by means of a highly organized behaviour pattern that first appeared on days 17-18

structure. The S and F-type synaptic vesicles become more clearly differentiated, and pure F-type synapses are now sometimes seen. Dense cored vesicles are present, but rare.

Further clarification of the cellular derivation of the presynaptic processes and the functional significance of specific events during synaptogenesis will require analytical methods such as embryonic microsurgery. We are currently using this technique with the chick in an attempt to answer some of the above questions.

Finally, with the simultaneous examination of embryonic behaviour and the ultrastructure of the nervous system, attempts to relate specific events during behavioural ontogeny to changes in developing neuroanatomy may at last advance beyond the high standards set more than 40 yr ago by Coghill[14] in his pioneering neuroembryological and behavioural investigations of the salamander.

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RONALD W. OPPENHEIM

Neuroembryology Laboratory,
Division of Research, Box 7532,
North Carolina Department of Mental Health,
Raleigh, North Carolina

RAINER F. FOELIX

Department of Entomology,
North Carolina State University,
Raleigh, North Carolina

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[1] Hamburger, V., in *The Neurosciences, 2nd Study Program* (edit. by F. O. Schmitt), 141 (Rockefeller University Press, New York, 1970).
[2] Sabatini, D. D., Bensch, K., and Barrnett, R. J., *J. Cell Biol.*, **17**, 19 (1963).
[3] Hamburger, V., *Quart. Rev. Biol.*, **38**, 342 (1963).
[4] Hamburger, V., Wenger, E., and Oppenheim, R., *J. Exp. Zool*,. **162**, 133 (1966)
[5] Wechsler, W., *Z. Zellforsch.*, **74**, 401 (1966).
[6] Glees, P., and Sheppard, B. L., *Z. Zellforsch.*, **62**, 356 (1964).
[7] Meller, K., Breipohl, W., Wagner, H. H., and Knuth, A., *Z. Zellforsch.*, **101**, 135 (1969).
[8] Aghajanian, G. K., and Bloom, F. E., *Brain Res.*, **6**, 716 (1967).
[9] Ochi, J., *Z. Zellforsch.*, **76**, 339 (1967).
[10] Peters, A., Palay, S. L., and Webster, H. de-F., *The Fine Structure of the Nervous System* (Hoeber, New York, 1970).
[11] Bunge, M. B., Bunge, R. P., and Peterson, E. R., *Brain Res.*, **6**, 728 (1967).
[12] Bodian, D., Melby, E. C., and Taylor, N., *J. Comp. Neurol.*, **133**, 113 (1968).
[13] Conradi, S., and Skoglund, S., *Acta Physiol. Scand.*, Suppl. 333 (1969).
[14] Coghill, G. E., *Anatomy and the Problem of Behavior* (Cambridge University Press, Cambridge, 1929).

Corrigendum

IN the article "Glucagon Affinity Absorbents: Selective Binding of Receptors of Liver Cell Membranes" by Folker Krug, Bernard Desbuquois and Pedro Cuatrecasas (*Nature New Biology*, **234**, 268; 1971), the heading to the second column of Table 2 should read "Specific activity (nmol cyclic AMP/min/mg protein)".

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