Gerd Alberti
Zoologisches Institut I, Universität Heidelberg,
Im Neuenheimer Feld 230, D-6900 Heidelberg, FR Germany

SPERM AGGREGATIONS IN ARACHNIDA

Within the Arachnida sperm transfer and sperm ultrastructure differ considerably. Modifications or probable adaptions to different fertilization procedures may not be simply reflected in structural deviations but also by different types of sperm arrangement. The following possibilities are hitherto known from Arachnida:

1) Spermatozoa connected by secretion: This type is found in Scorpiones, Solifugae, and certain actinotrichid mites. Individual cells are combined by a secretory product. It is not known whether the sperm involved are descendants of the same stem cell or whether aggregation occurs freely. In Solifugae, notably, the sperm aggregates are established within the testicular epithelium already.

2) Individual spermatozoa surrounded by a common sheath: Such aggregates are represented by coenospermia of certain Araneae (Theraphosidae, Filistatidae). Formation of the sheath occurs in the vasa deferentia. The peculiar "spermatophores" described from Telemidae are considered here to be complex coenospermia.

3) Syncytial spermatozoa: These were recently distinguished ultrastructurally from coenospermia and termed synspermia. These unique aggregates were found in the spider families Dysderidae, Segestriidae and Scytodidae. They are formed already in the testicular cysts and thus most likely derive from a common stem cell.

4) Sperm aggregations involving dimorph spermatozoa: This type previously described from Siro rubens (Opiliones) is also present in S. duricorius. Functional spermatozoa are surrounded by abnormal sperm cells. Individual groups are embedded in a complex secretion. This arrangement developes within the testicular cysts and thus cells involved may represent descendants of the same stem cell.