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S3. Structural dynamics and function of embryonic coats.

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The extracellular embryonic coats (embryo/blastocyst coverings) that surround early mammalian embryos are most often still referred to as zona pellucida. Accumulating evidence from a number of earlier and recent studies clearly indicates that this is an oversimplification which cannot be defended anymore, at least in many species. Structural modifications of the coats occur during cleavage and blastocyst stages; these are most obvious in a number of species with the central type of implantation and, related to this, a high degree of blastocyst expansion, notably the rabbit and the horse. In this presentation, formation and transformation of the various layers of coats (zona pellucida, mucoprotein layer, neozona and gloiolemma in the rabbit, capsule in the horse) will be reviewed, as will be comparable structures seen *e.g.* in the fur seal (subzonal layer) and the baboon. These phenomena will be discussed in the context of structurally more subtle changes found in other species, including such with small blastocysts and other types of implantation, in particular with biochemical modifications which may be physiologically quite important. Molecular mechanisms of deposition of coats and of their transformation and shedding/dissolution will be briefly addressed. The possible functional significance of the coats and of their transformation will be discussed (mechanical, morphogenetic and immunological role, transport control, blastocyst positioning, implantation, trap and reservoir function for signalling molecules).