

Normal and Abnormal Fertilization in Mammals

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Denker: You have presented a table of characteristic stages of fertilization events. I have observed in the rabbit, that correlated to sperm penetration, the extrusion of some acid mucosubstances into the perivitelline space can be demonstrated. I should like to ask you if you have seen something like this, too. Figure 1 demonstrates an unpenetrated rabbit egg 12 hours p. c. The perivitelline space is free of any substance. Figure 2 shows a penetrated egg, also 12 hours p. c. The egg is not yet fertilized in the cytogenetic sense. Here you can see mucosubstances in the perivitelline space.

Denker: I have worked with various modifications of the glutaraldehyde fixative. The extrusion of these substances into the perivitelline space can be shown also, if the eggs are fixed at other values of osmotic pressure than used in the case shown here. In these other cases, the shrinkage can be much lesser. In most instances I have used a fixation at high osmotic pressure, after which the perivitelline space is large, as can be seen in my fotos. Here the substances in the perivitelline space can most easily be detected, but you may see them in the other cases, too. The most important is to have a special fixation for acid mucosubstances and a special stain for them. I don't think that the substances demonstrated are an artifact. I have found them in the perivitelline space of ageing nonfertilized eggs, too, and in fragmentating eggs in follicles which are in the process of atresy. In my opinion there could be a correlation to the activation of the egg.

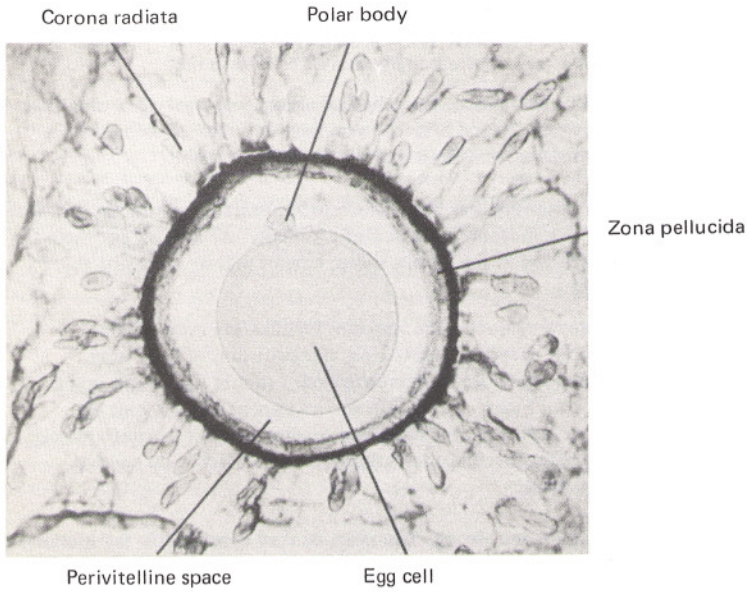


Fig. 1

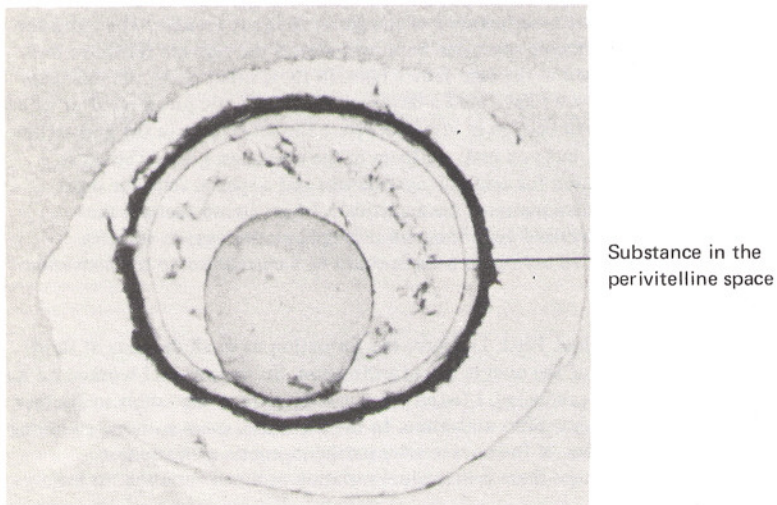


Fig. 2

Fig. 1 and 2. Rabbit eggs, fixed by glutaraldehyde – 1% CaCl_2 , paraffin sections, stained by the Hale reaction (360 x). Fig. 1. Unpenetrated egg. Fig. 2. Penetrated egg. Note substances in the perivitelline space.

(From Denker, H. W., 1969: Dissertation Nat. Fak. Marburg, Zool. Jb. Physiol. 75, 141–245 (1970), by courtesy of the editor.)

Advances in the Biosciences 6

**Schering Symposium
on Intrinsic and Extrinsic Factors
in Early Mammalian Development
Venice, April 20 to 23, 1970**

Editor: Gerhard Raspé

Pergamon Press · Vieweg

Oxford · Edinburgh · New York · Toronto · Sidney · Braunschweig

Pergamon Press Ltd., Headington Hill Hall, Oxford
Pergamon Press (Scotland) Ltd., 2 & 3 Teviot Place, Edinburgh 1
Pergamon Press Inc., Maxwell House, Fairview Park, Elmsford, New York 10523
Pergamon of Canada Ltd., 207 Queen's Quay West, Toronto 1
Pergamon Press (Aust.) Pty. Ltd., 19a Boundary Street, Rushcutters Bay,
N. S. W. 2011, Australia
Vieweg + Sohn GmbH., Burgplatz 1, Braunschweig

Editorial Assistance: *Bernhard Lewerich*

0 08 0175716 (Pergamon)

ISBN 3 528 07688 7 (Vieweg)

1971

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Library of Congress Catalog Card No. 74-76593

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Set by Friedr. Vieweg + Sohn GmbH, Braunschweig

Printed by E. Hunold, Braunschweig

Bookbinder: W. Langelüddecke, Braunschweig

Cover design: Herbert W. Kapitzki, Frankfurt

Printed in Germany-West