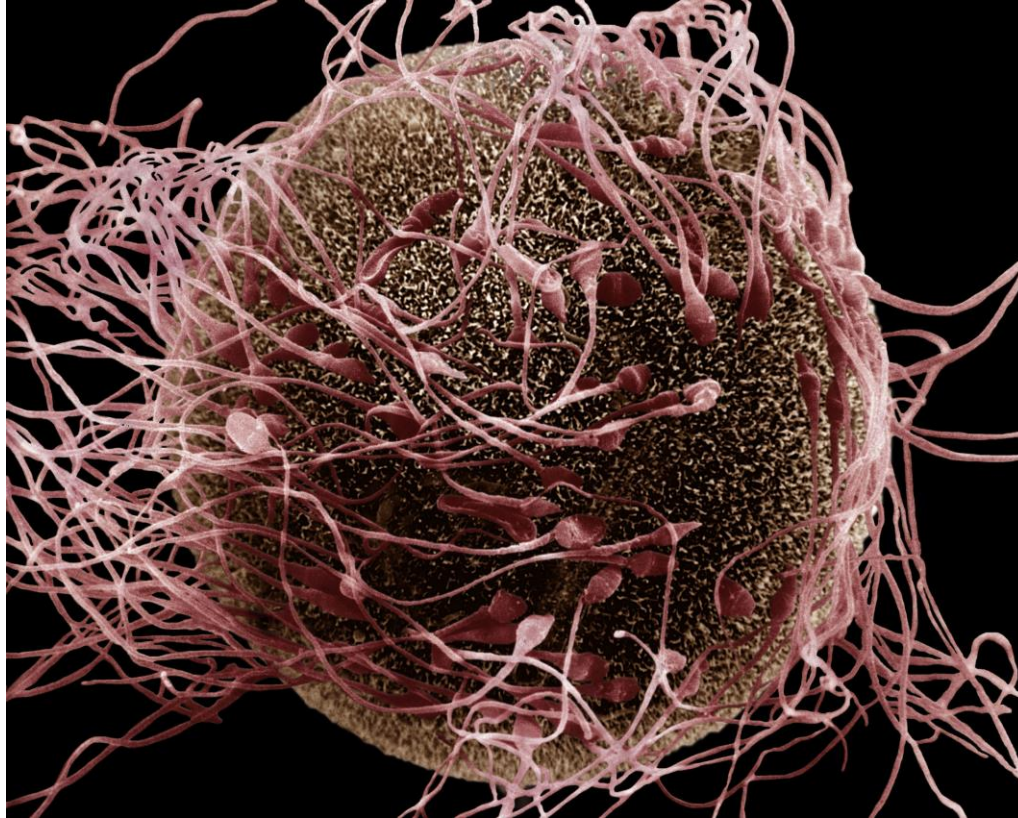


Fecundación




Gonzalo Aparicio


gaparicio@fcien.edu.uy

Fecundación  Fusión de los gametos

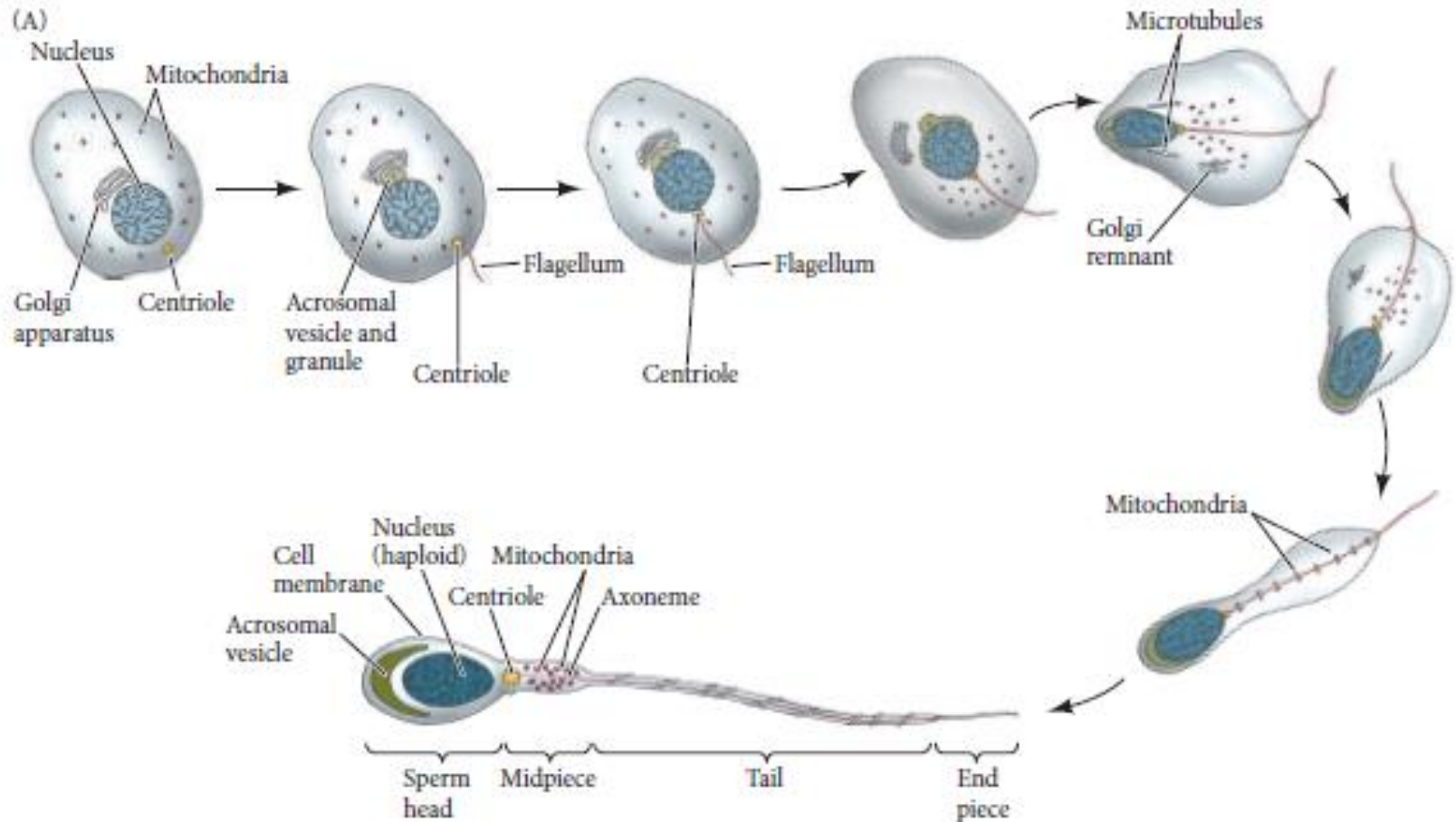
Combinación de genes
de ambos parentales

Generación de un
nuevo organismo

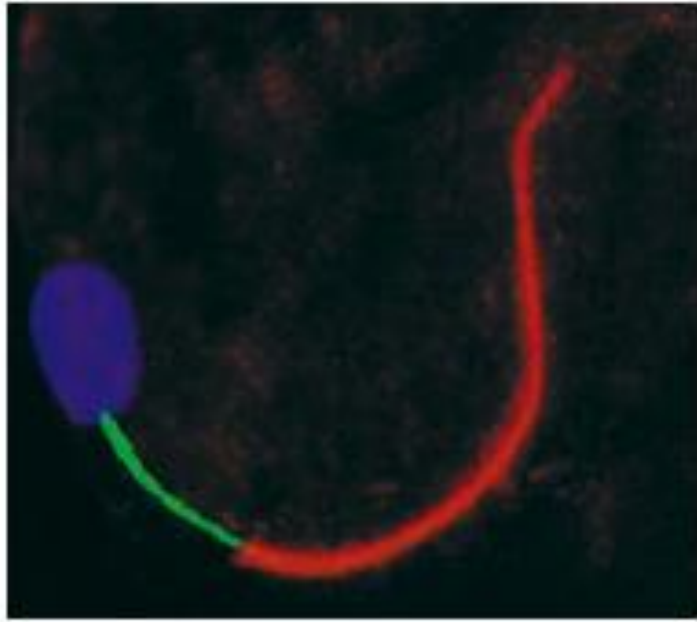

Transmisión de genes
parentales a la
descendencia


Activación del
citoplasma del ovocito

Estructura de los gametos

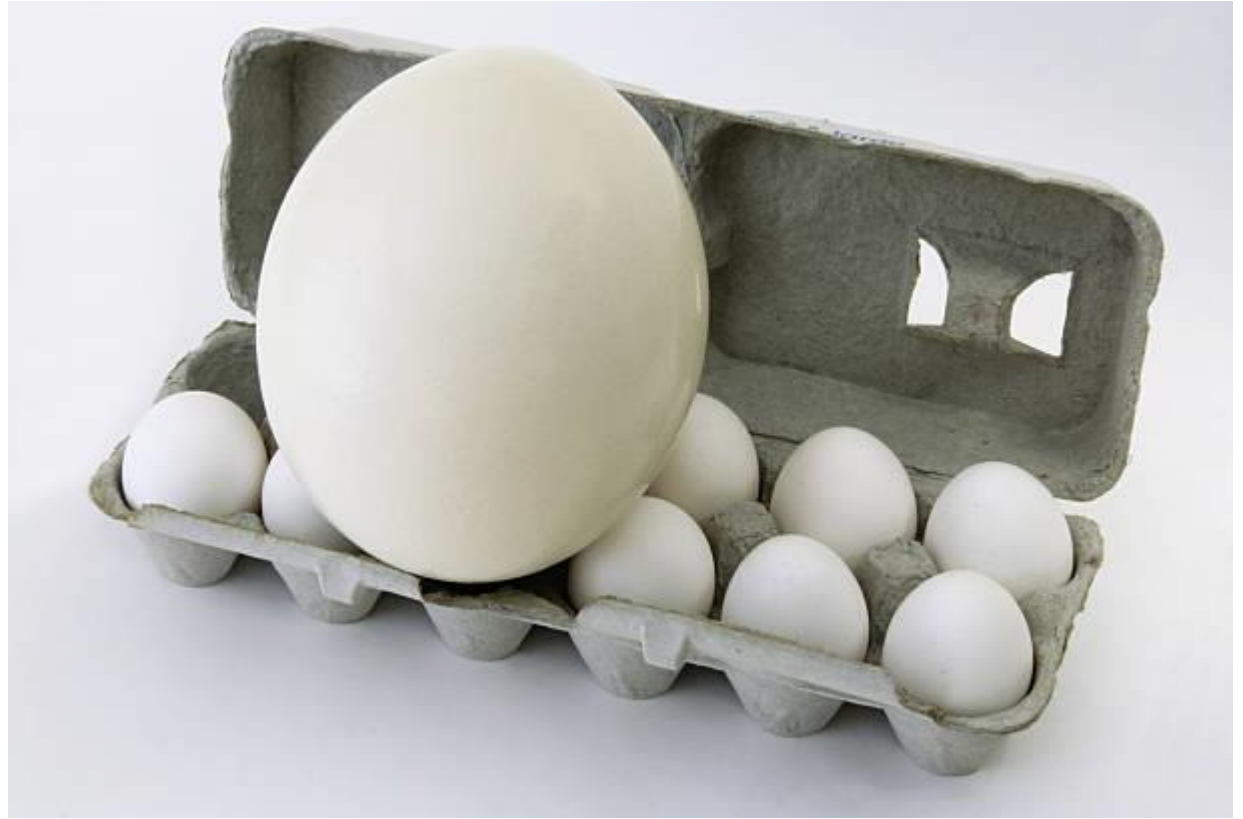
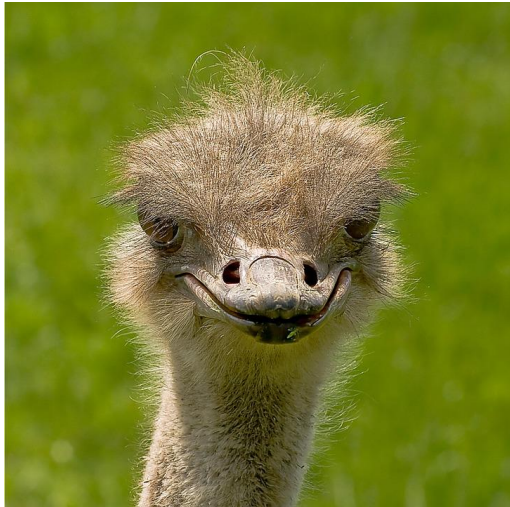


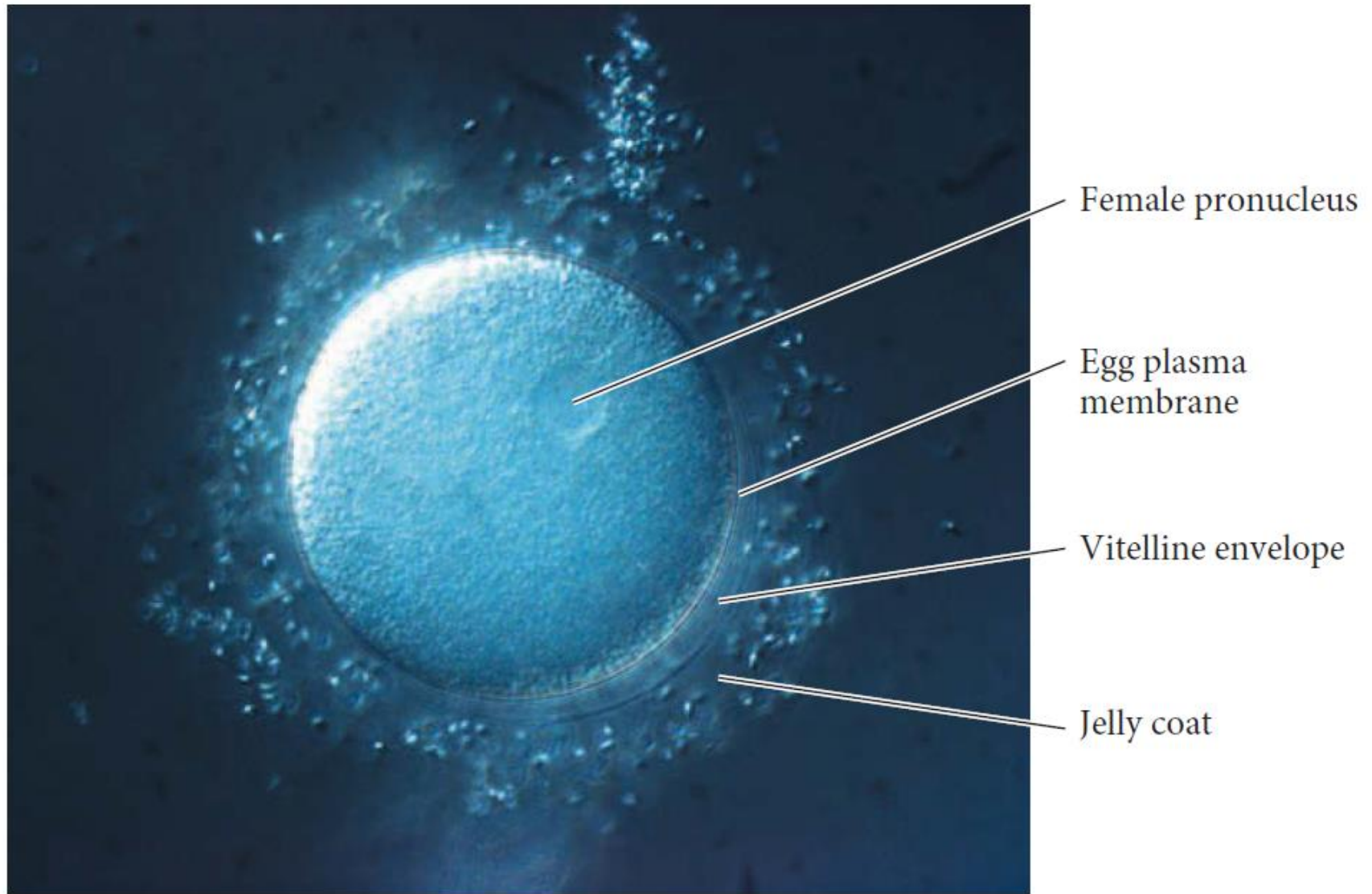
(B)



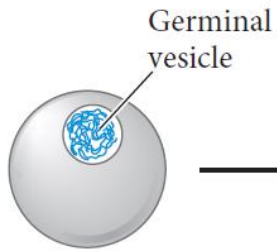
(C)



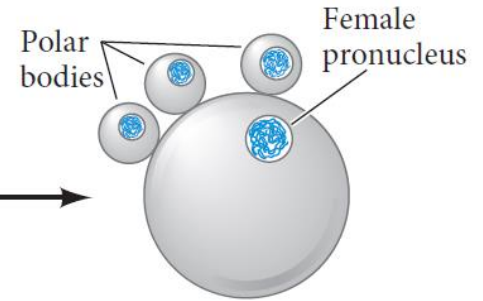
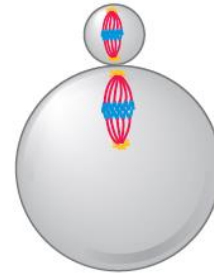




Ovocito Erizo de mar: volumen de 200 picolitros
>10.000 volumen de espermatozoide



Germinal vesicle



Primary oocyte

First metaphase

Second metaphase

Meiosis complete

The roundworm *Ascaris*
 The mesozoan *Dicyema*
 The sponge *Grantia*
 The polychaete worm
Myzostoma
 The clam worm *Nereis*
 The clam *Spisula*
 The echiuroid worm *Urechis*
 Dogs and foxes

The nemertean worm
Cerebratulus
 The polychaete worm
Chaetopterus
 The mollusk *Dentalium*
 The core worm *Pectinaria*
 Many insects
 Starfish

The lancelet *Branchiostoma*
 Amphibians
 Most mammals
 Fish

Cnidarians
 (e.g., anemones)
 Sea urchins

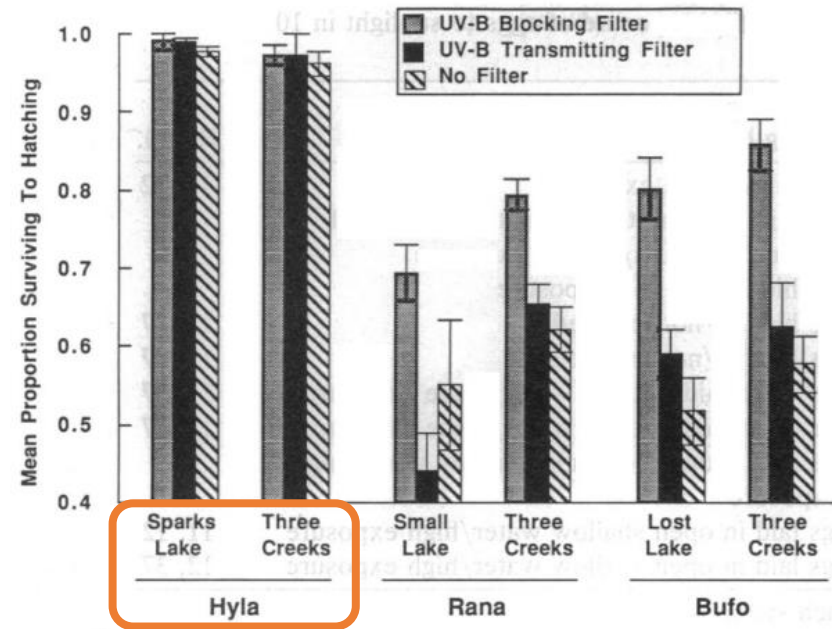
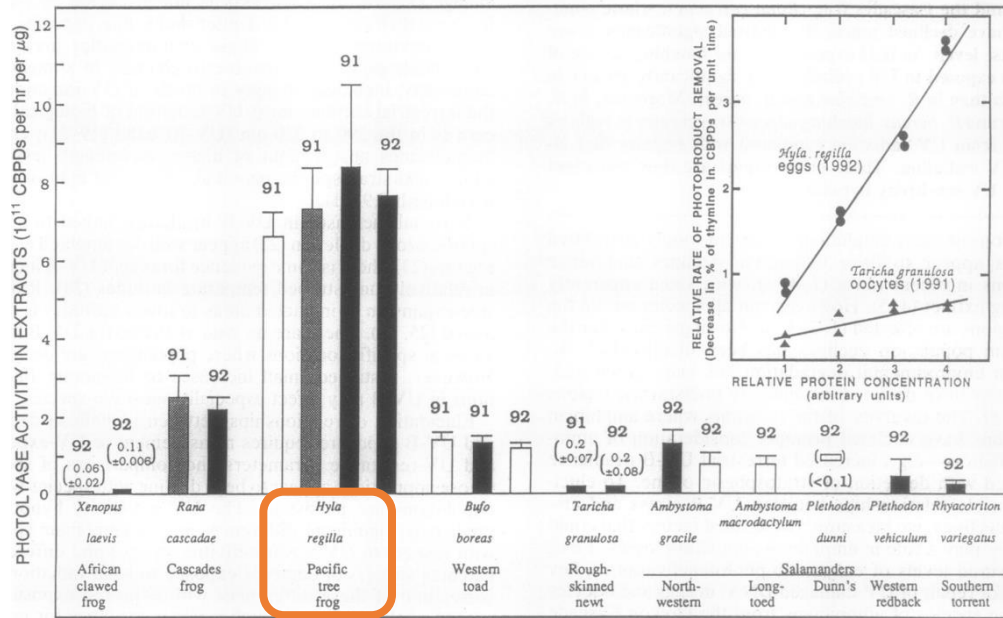
UV repair and resistance to solar UV-B in amphibian eggs: A link to population declines?

(UV radiation/DNA repair)

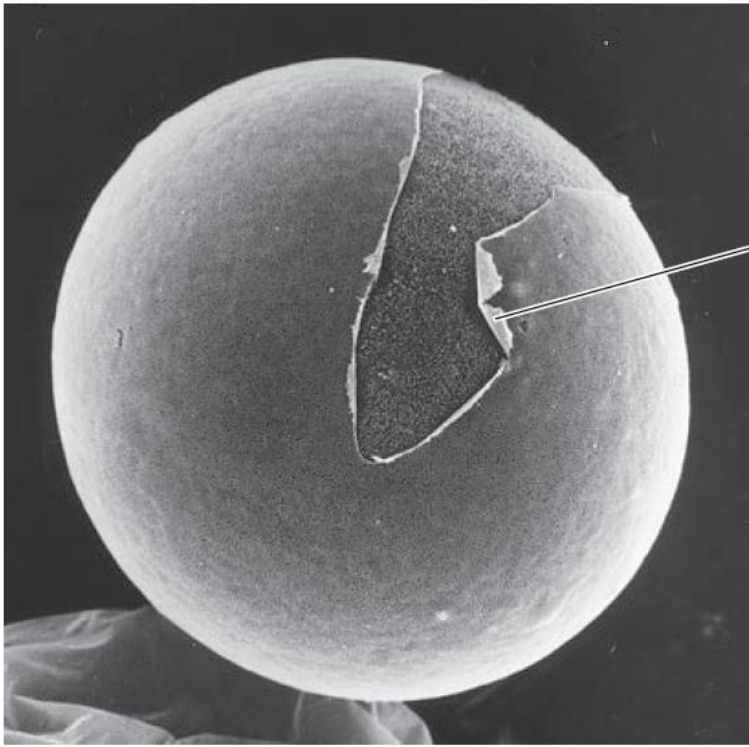
ANDREW R. BLAUSTEIN*, PETER D. HOFFMAN†, D. GRANT HOKIT*, JOSEPH M. KIESECKER*, SUSAN C. WALLS*, AND JOHN B. HAYS†

Departments of *Zoology and †Agricultural Chemistry, Oregon State University, Corvallis, OR 97331

Communicated by George N. Somero, November 12, 1993 (received for review October 27, 1993)



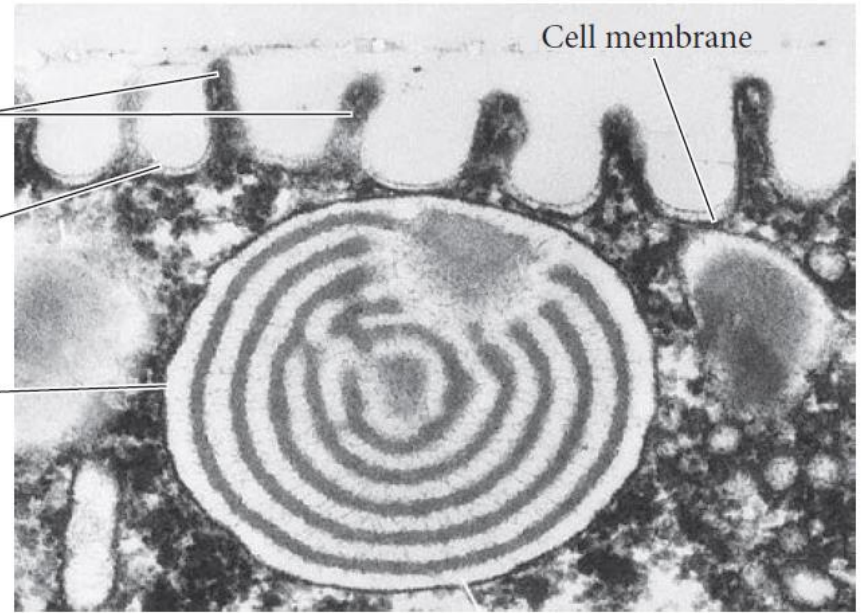
cyclobutane pyrimidine dimers (CPDs)
dímeros timina o citocina



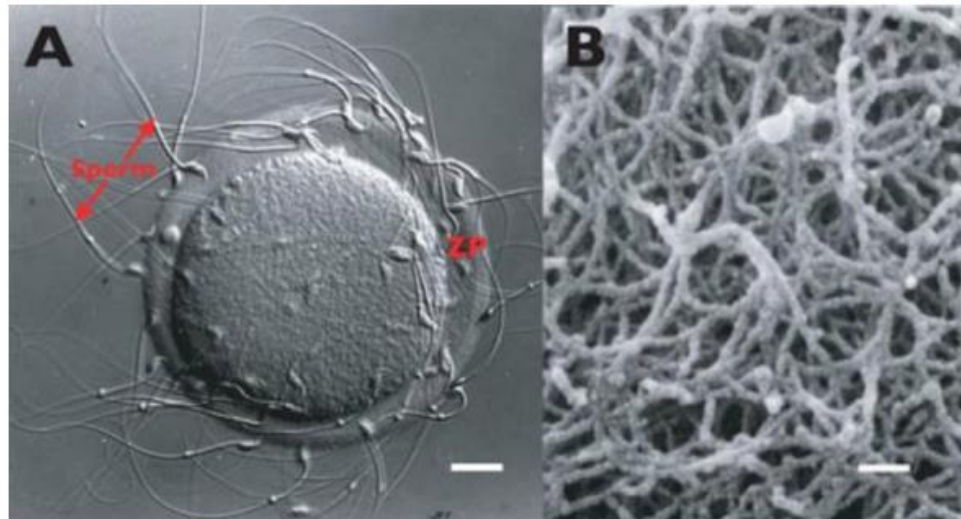
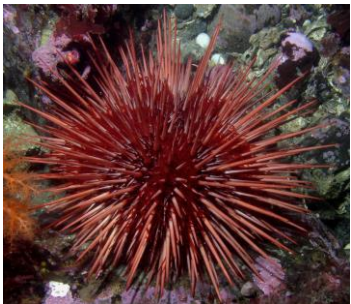
Microvilli

Vitelline envelope

Cortical granule



Cell membrane

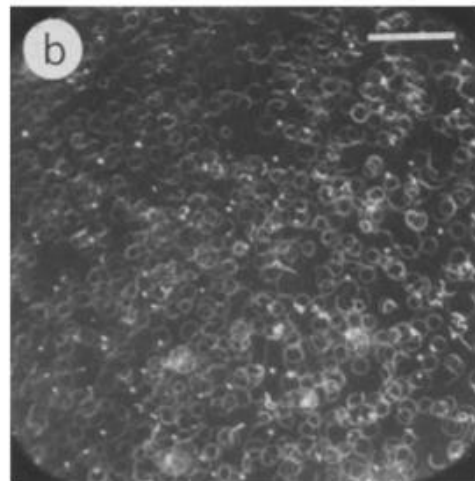
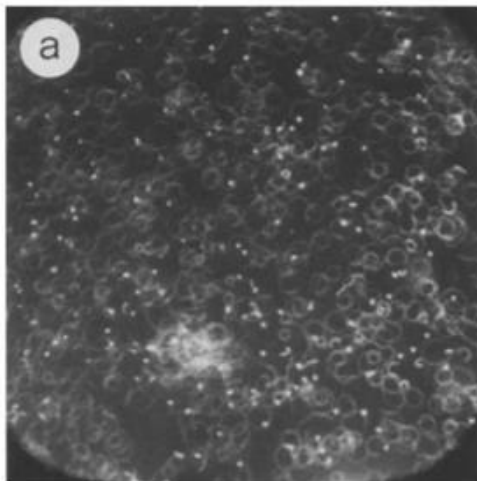
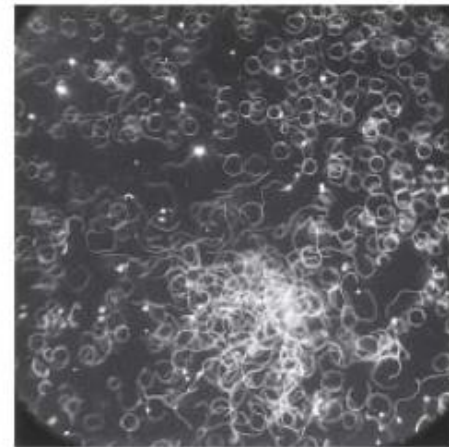
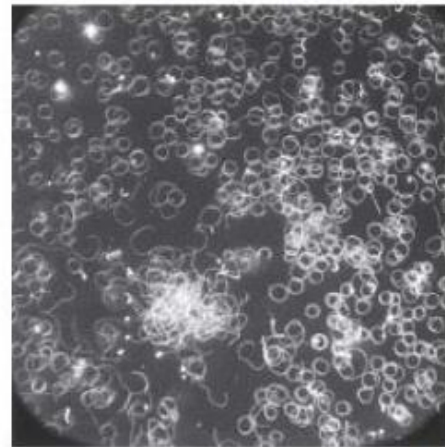
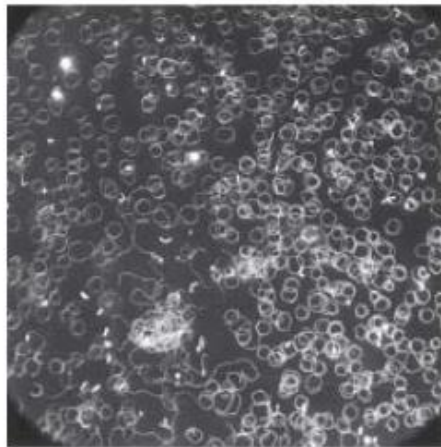
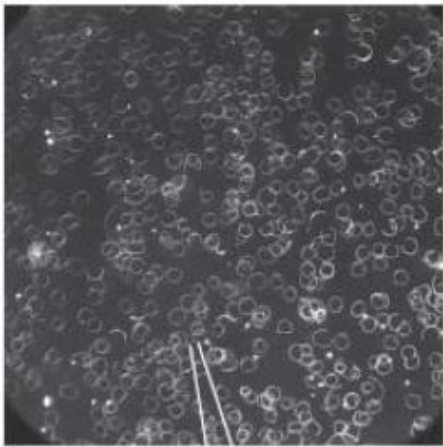


Fecundación externa: erizo de mar



Chemotaxis of *Arbacia punctulata* Spermatozoa to Resact, a Peptide from the Egg Jelly Layer

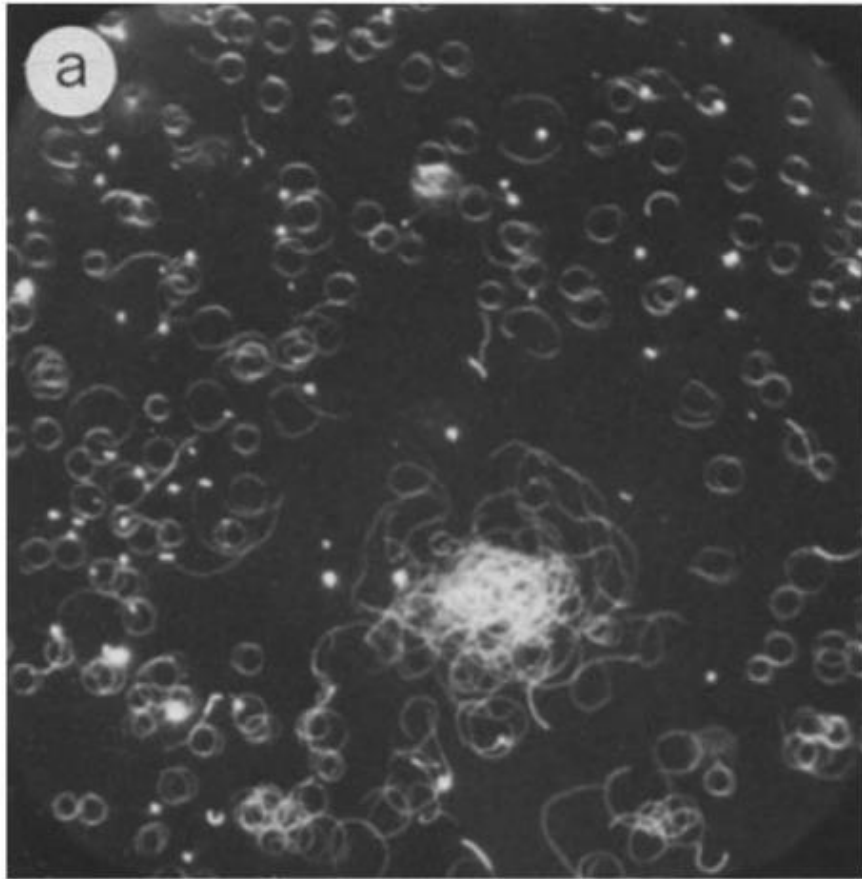
GARY E. WARD,* CHARLES J. BROKAW,† DAVID L. GARBERS,[§] and
VICTOR D. VACQUIER*



Pretratamiento
con Resact

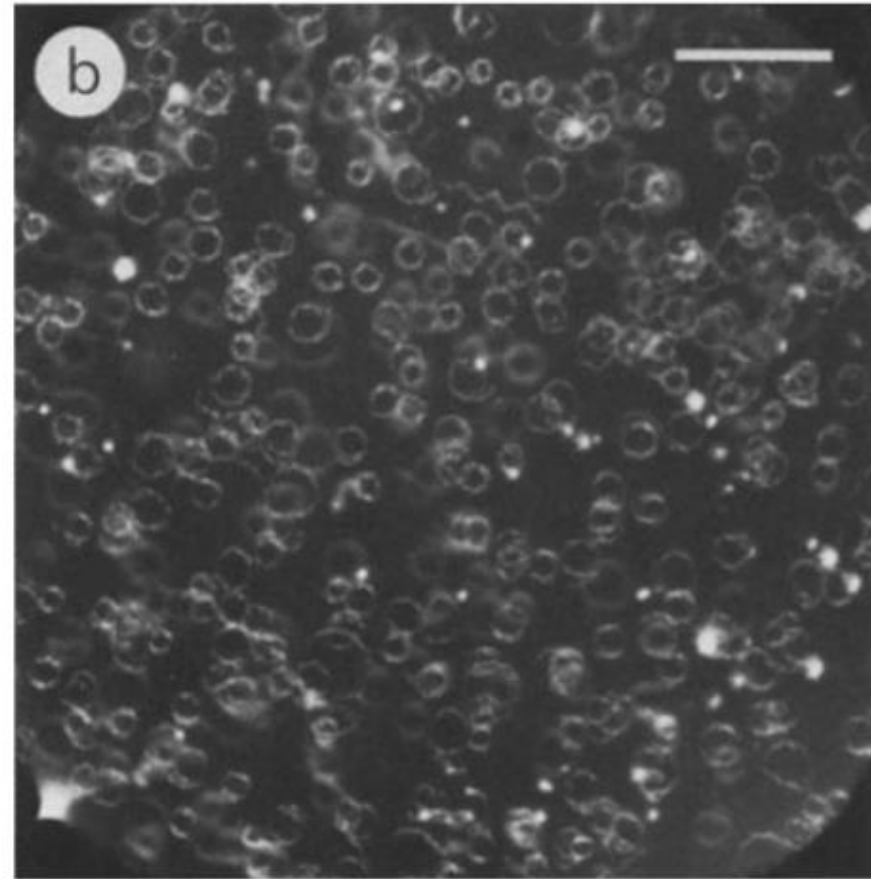
Chemotaxis of *Arbacia punctulata* Spermatozoa to Resact, a Peptide from the Egg Jelly Layer

GARY E. WARD,* CHARLES J. BROKAW,† DAVID L. GARBERS,§ and
VICTOR D. VACQUIER*



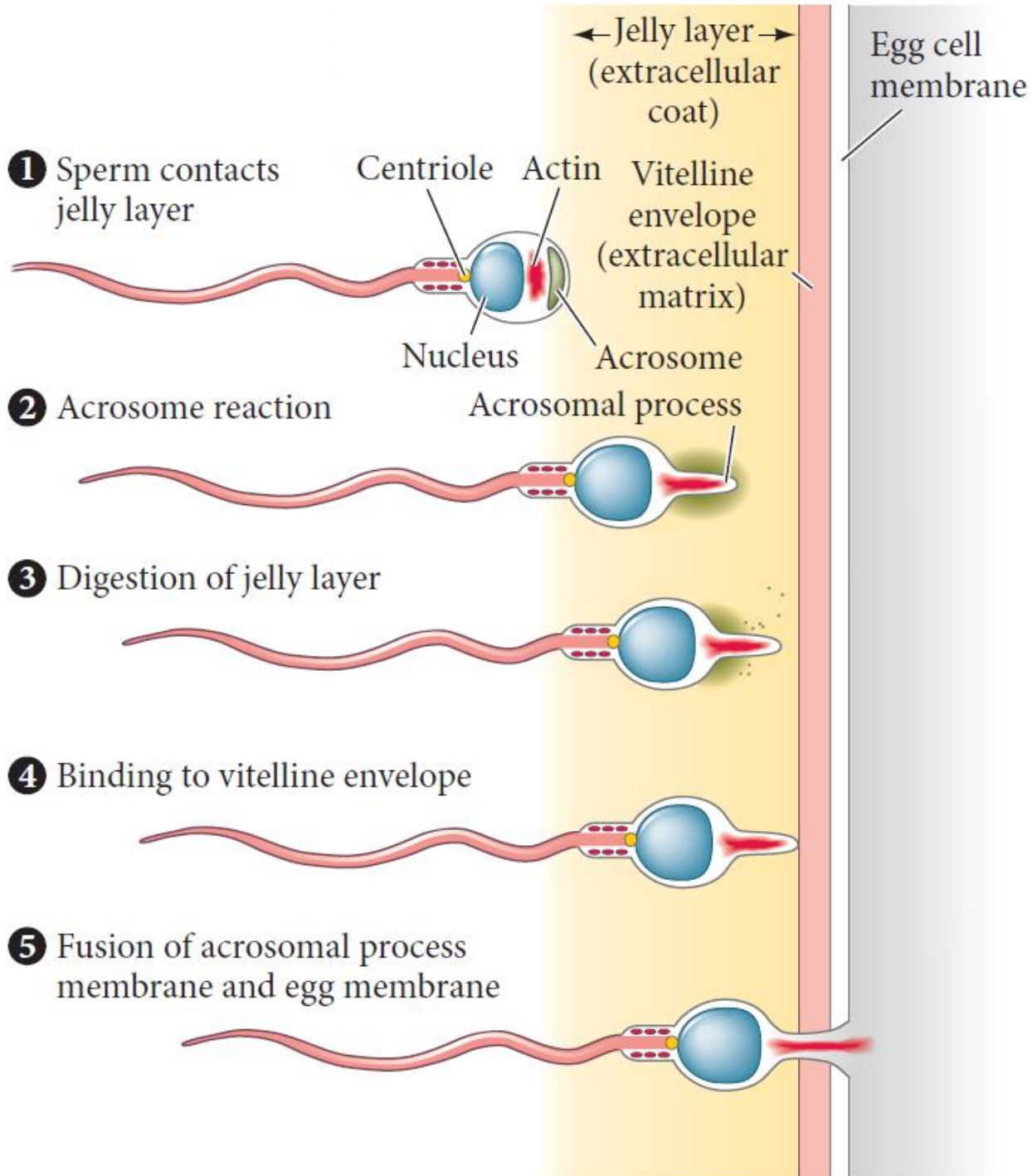
Resact

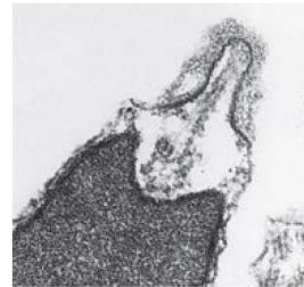
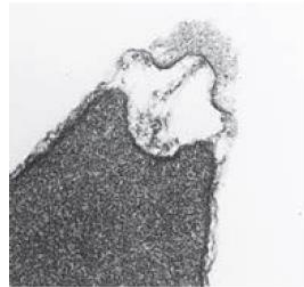
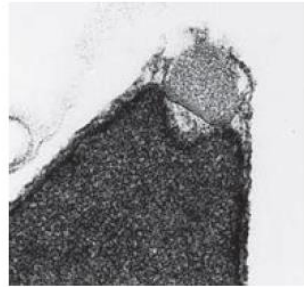
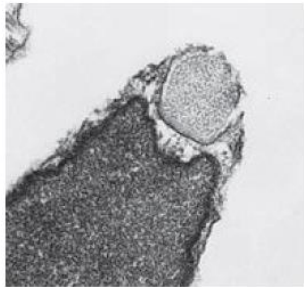
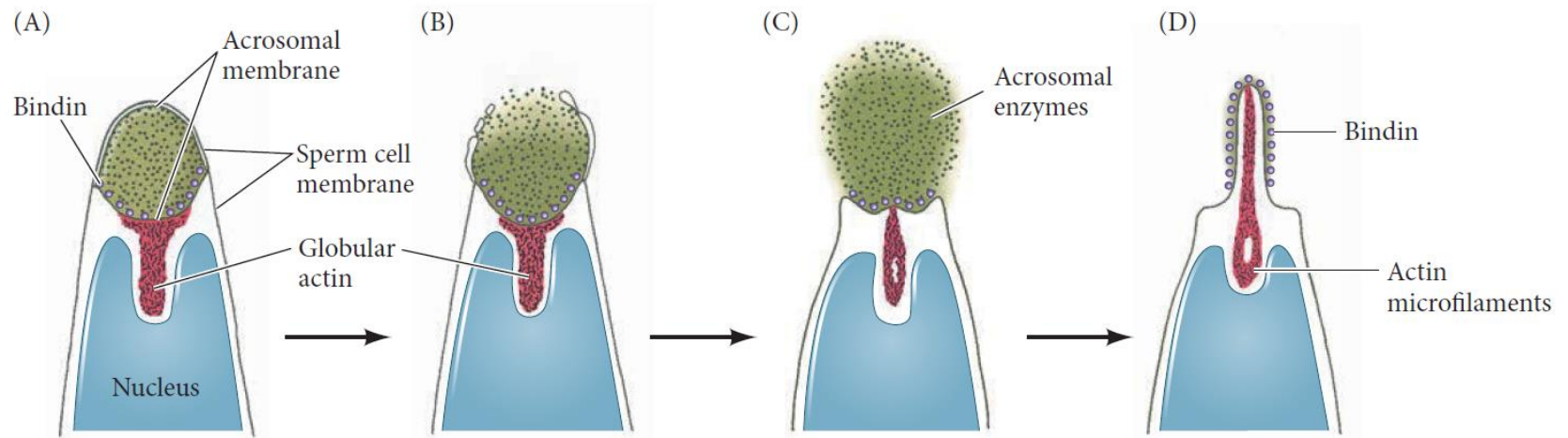
Arbacia punctulata

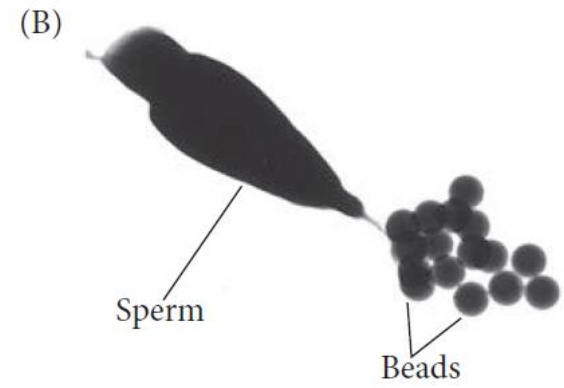
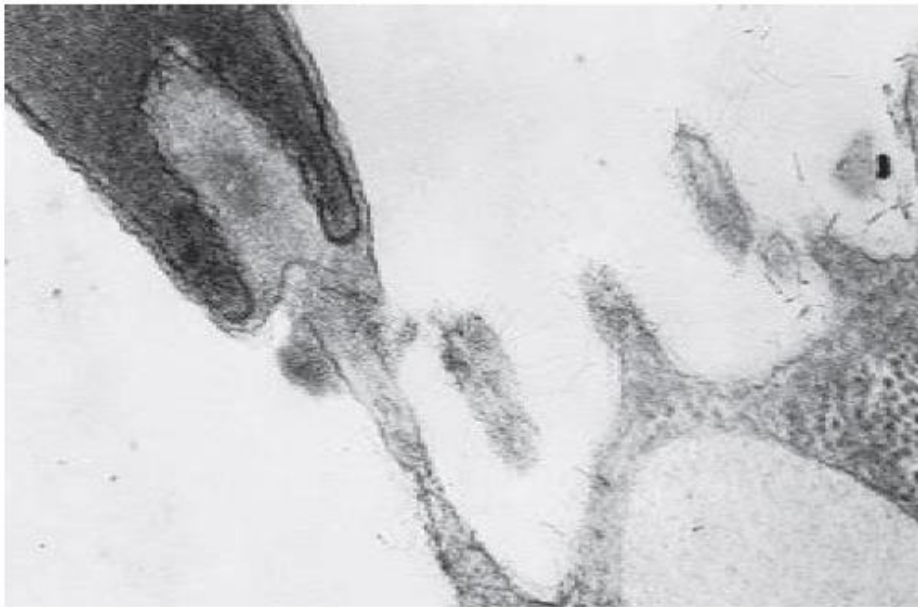


Speract

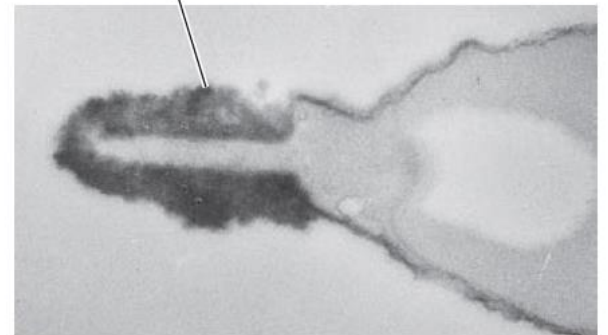
Strongylocentrotus purpuratus







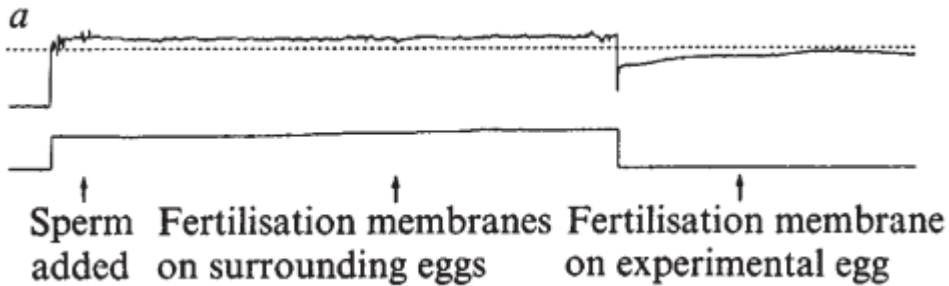
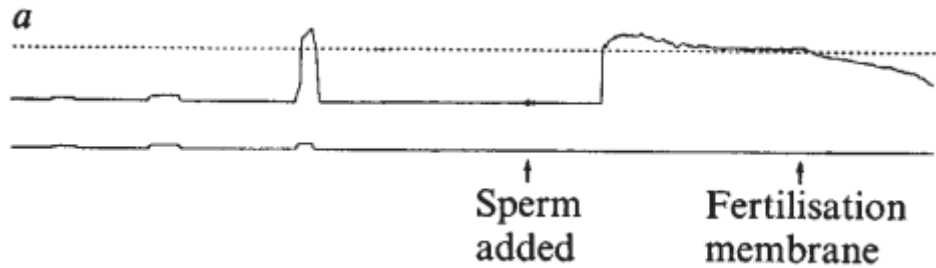
(C) DAB precipitate
(indicates bindin present)



Fast block to polyspermy in sea urchin eggs is electrically mediated

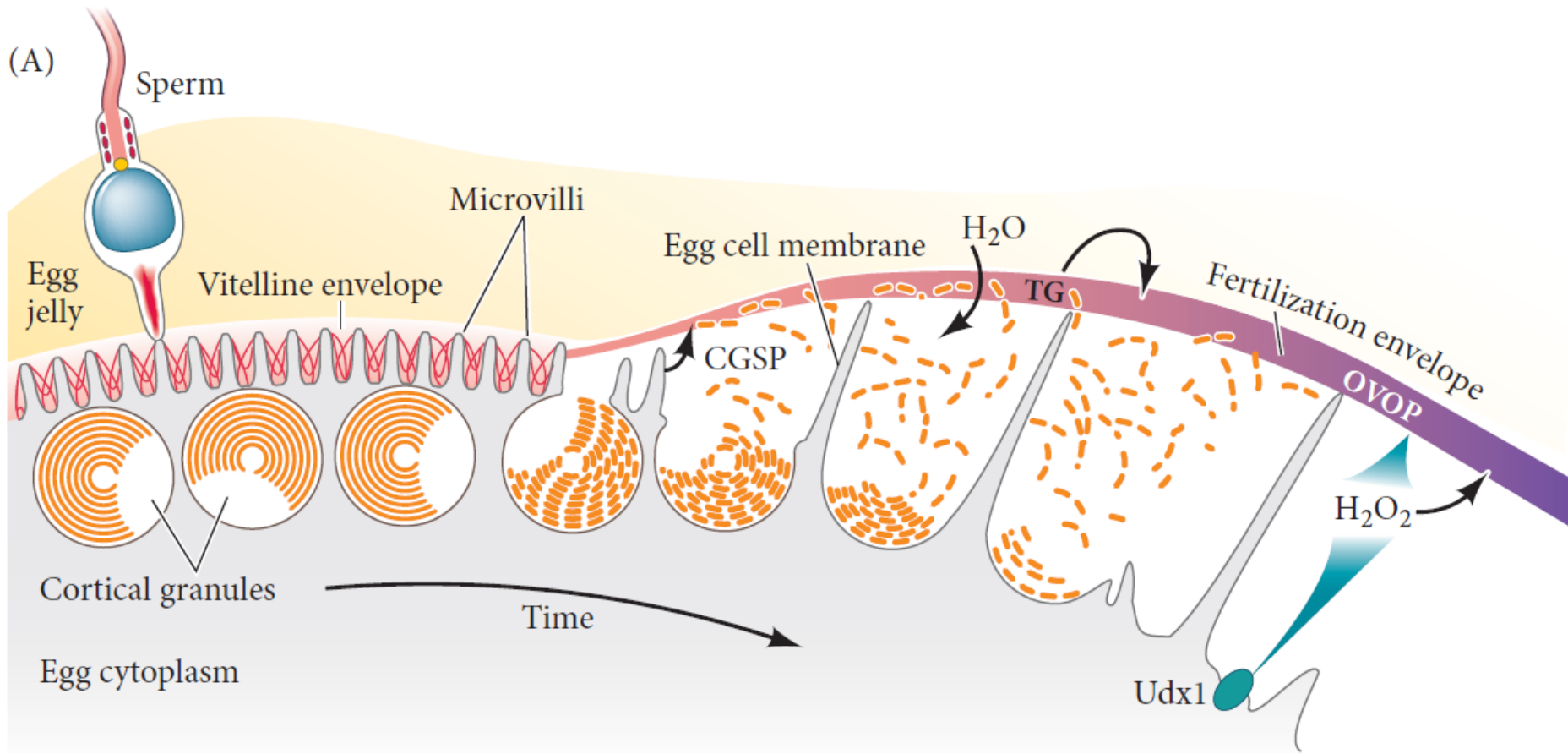
LAURINDA A. JAFFE

*Physiology Department,
University of California,
Los Angeles, California 90024*

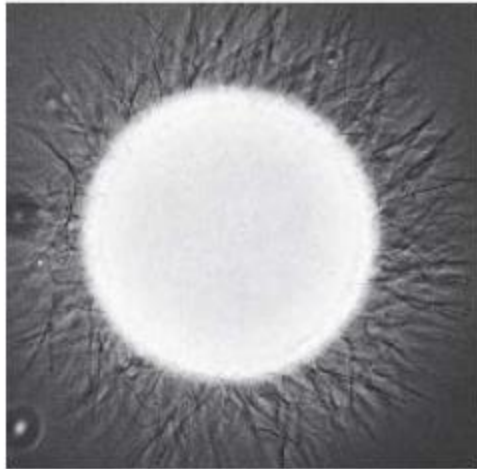


Cambio potencial de reposo: bloqueo rápido polispermia

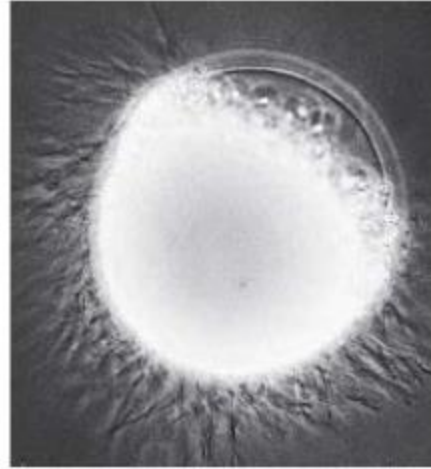
Bloqueo lento polispermia



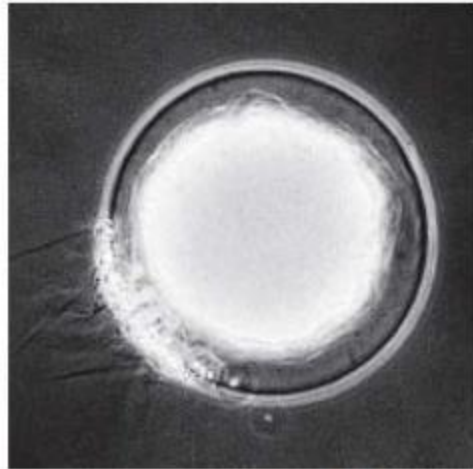
(A)



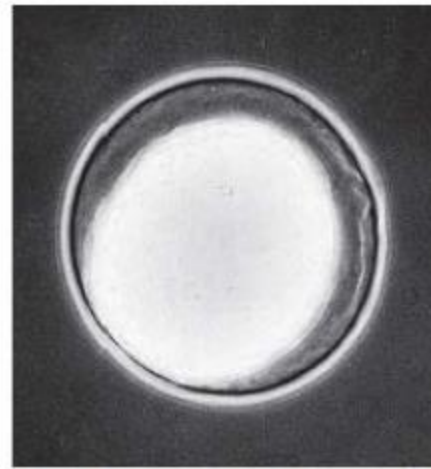
(B)



(C)



(D)

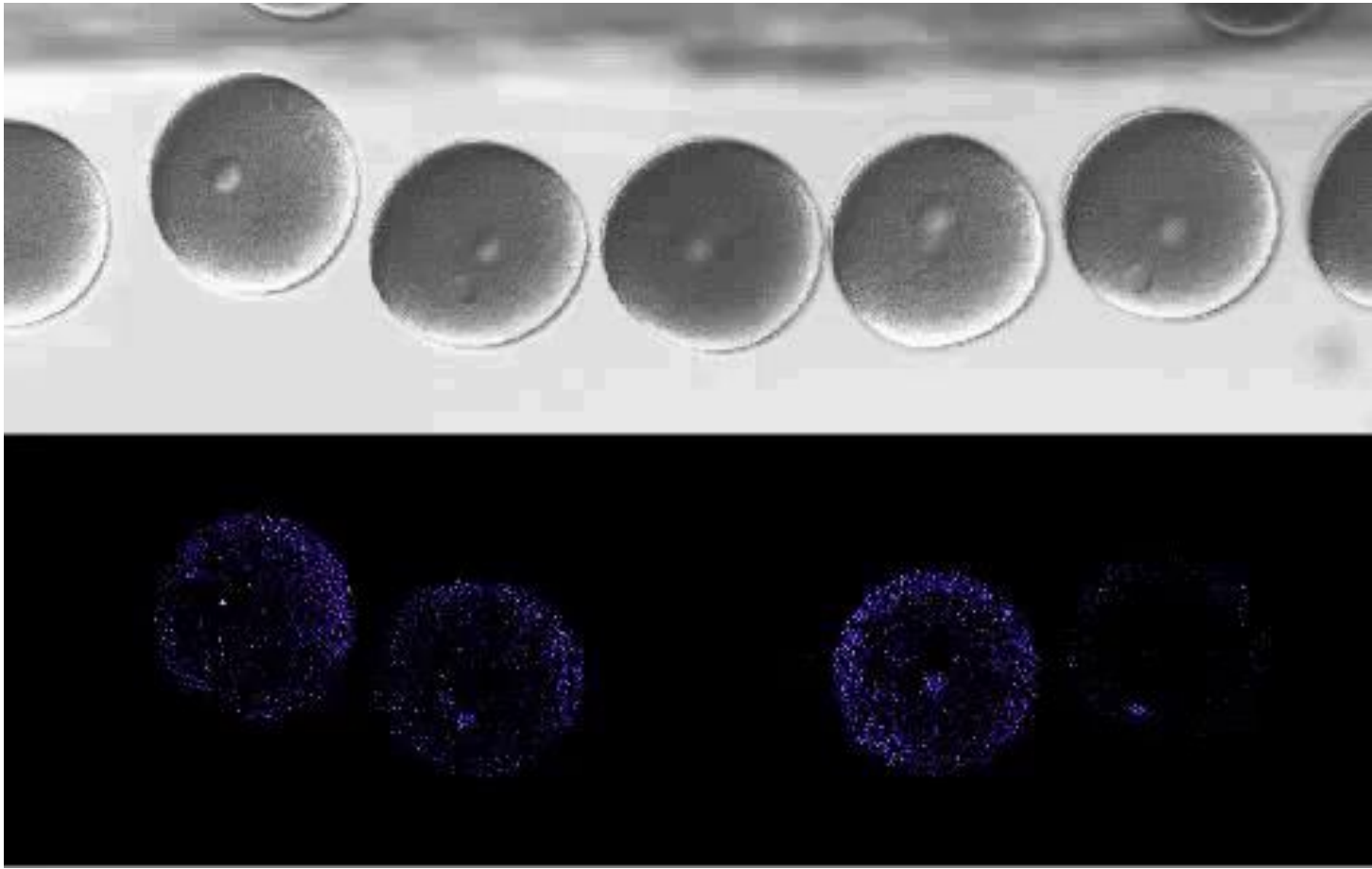


V. D. Vasoquier and J. E. Payne. 1973. *Exp Cell Res* 82: 227-235, courtesy of V. D. Vasoquier

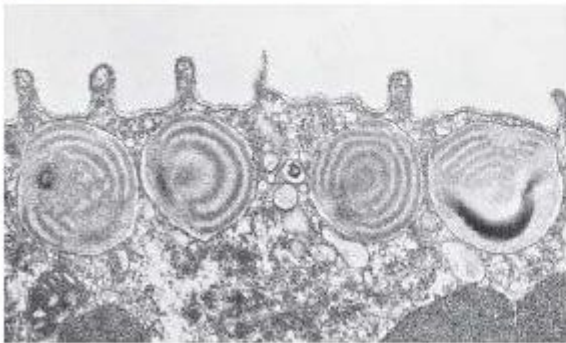
Envoltura de fecundación



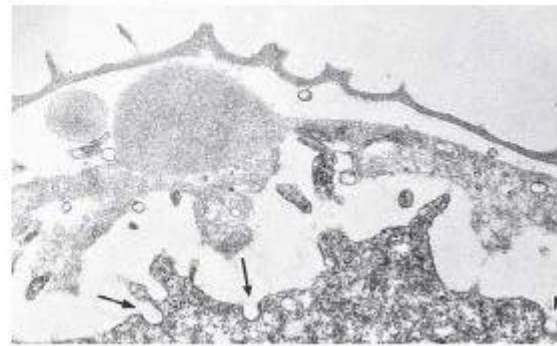
Onda de Calcio

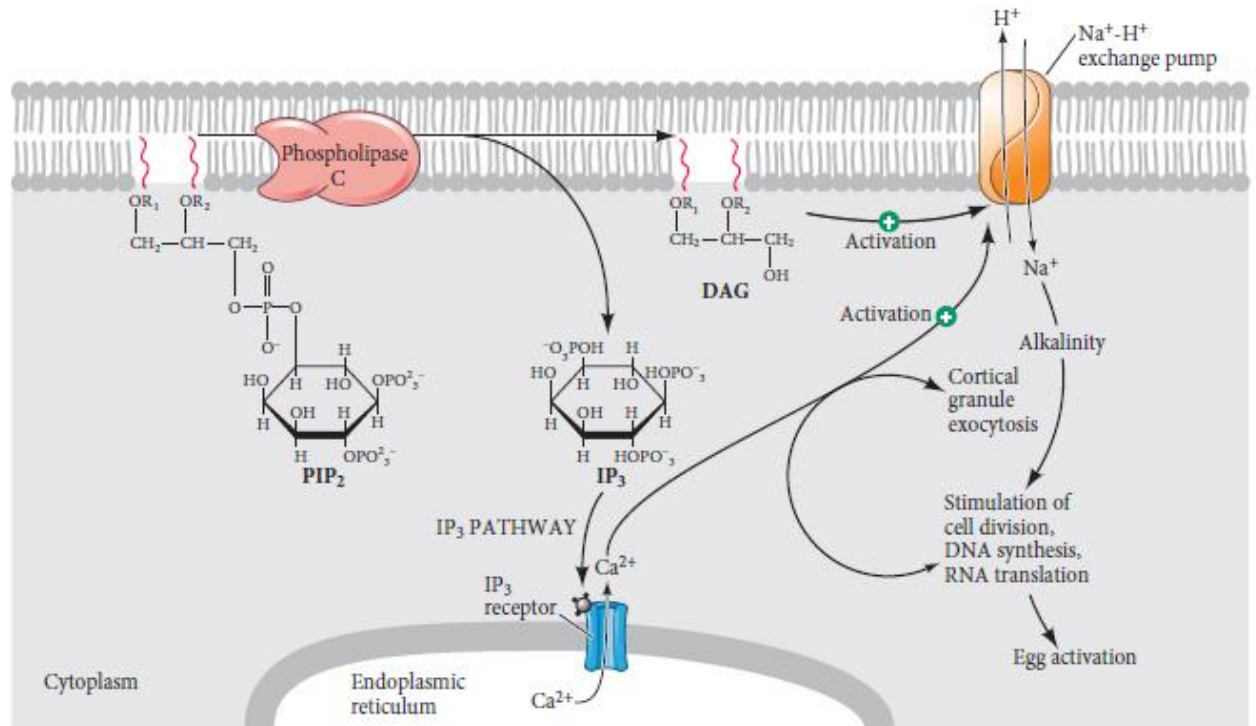
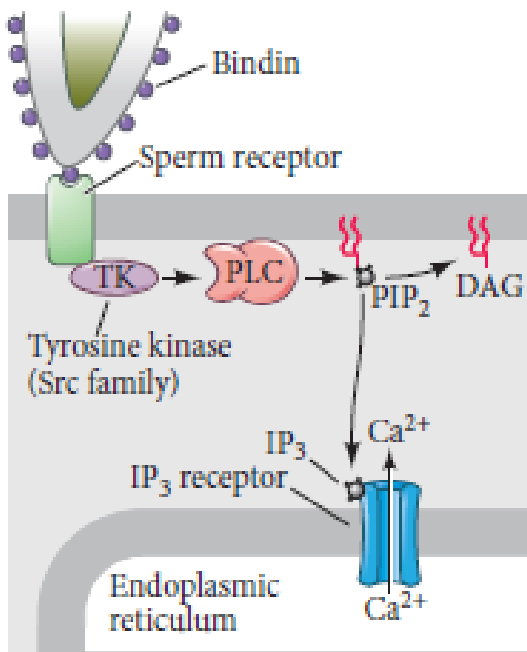


(B) Unfertilized



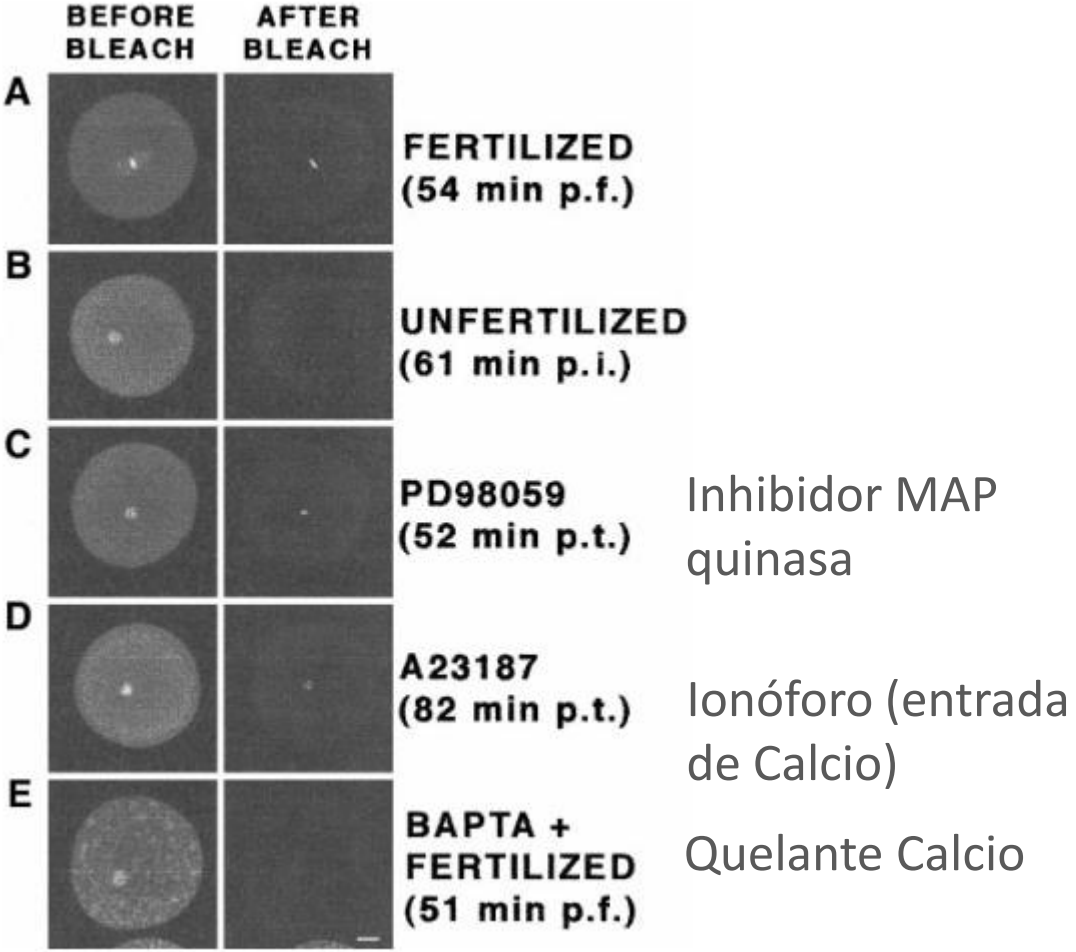
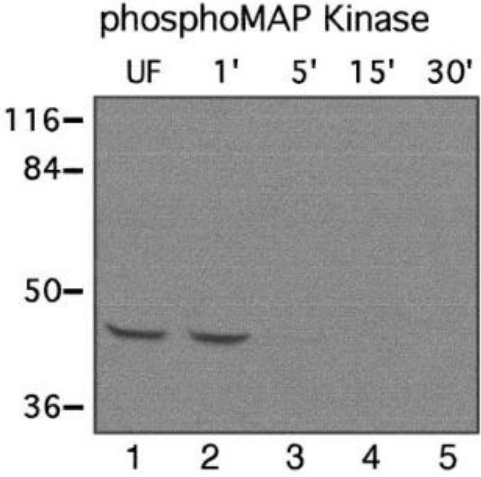
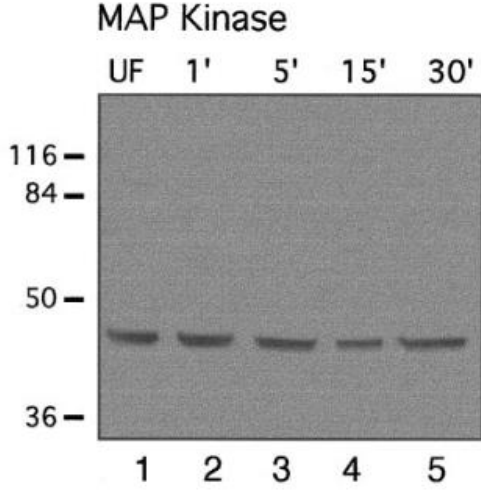
(C) Recently fertilized





The Relationship between Calcium, MAP Kinase, and DNA Synthesis in the Sea Urchin Egg at Fertilization

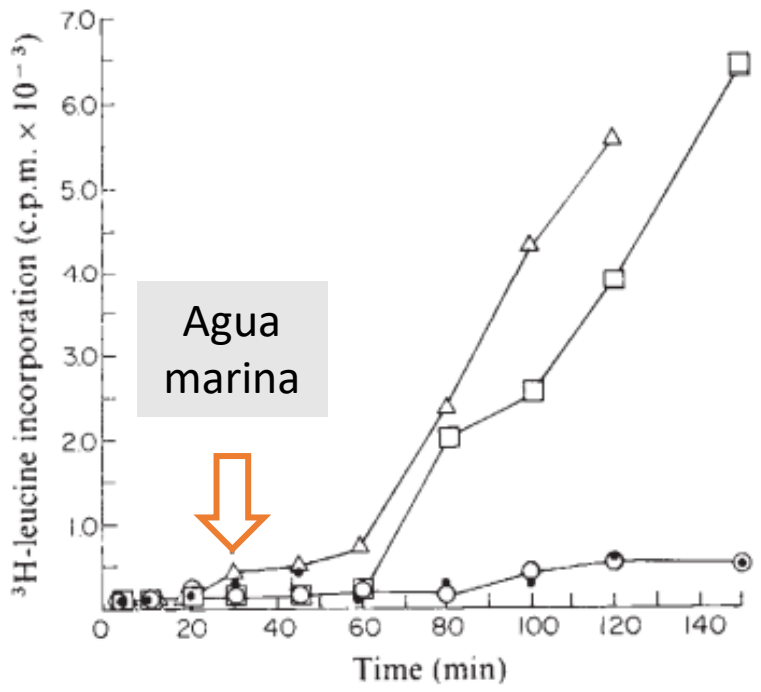
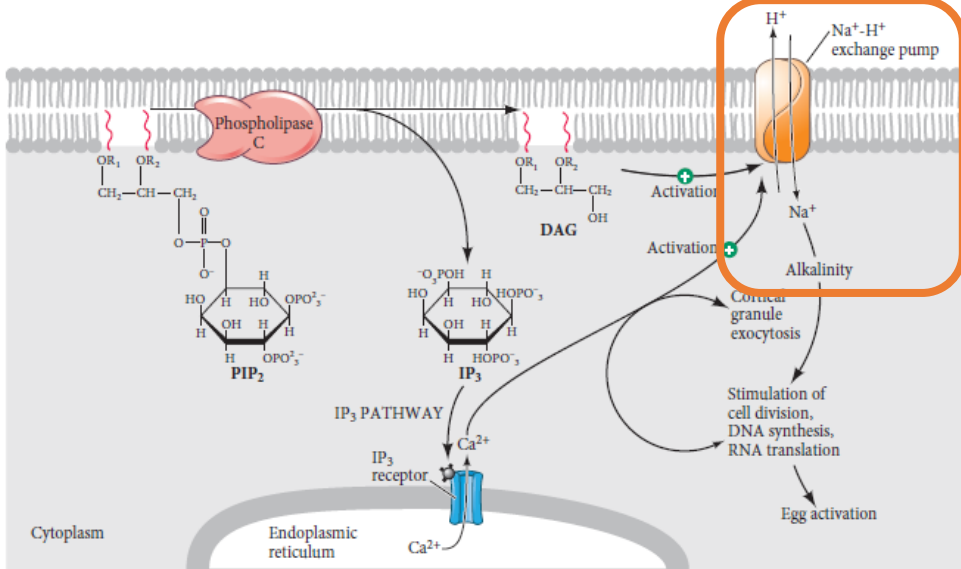
David J. Carroll,^{1,2} Diana T. Albay,¹ Kenneth M. Hoang,
Forest J. O'Neill, Maya Kumano, and Kathy R. Foltz³



Dual ionic controls for the activation of protein synthesis at fertilization

M. M. Winkler, R. A. Steinhardt,* J. L. Grainger & L. Minning

Department of Zoology, University of California, Berkeley, California 94720
Nature Vol. 287 9 October 1980



- Fecundado en agua marina, pasado a medio sin Sodio
- △ Fecundado en agua marina
- Fecundado en agua marina, pasado a medio sin Sodio
- No fecundado

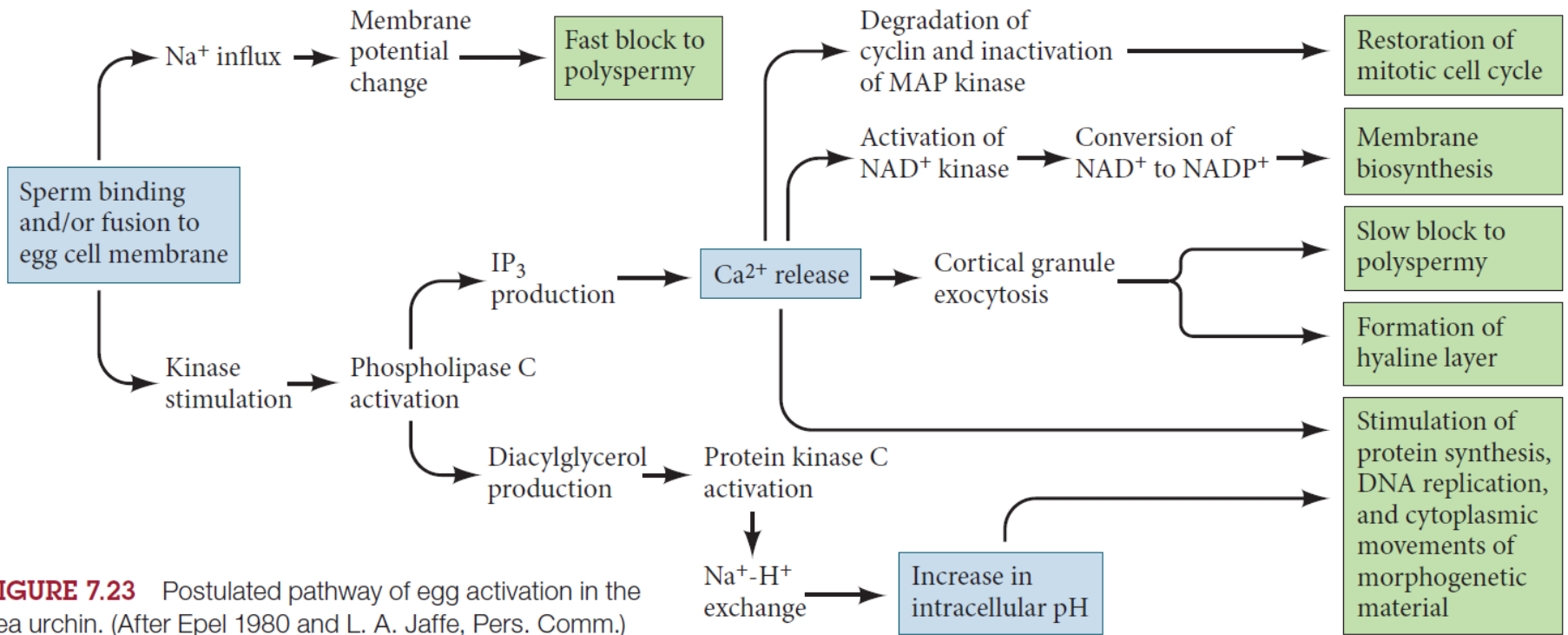
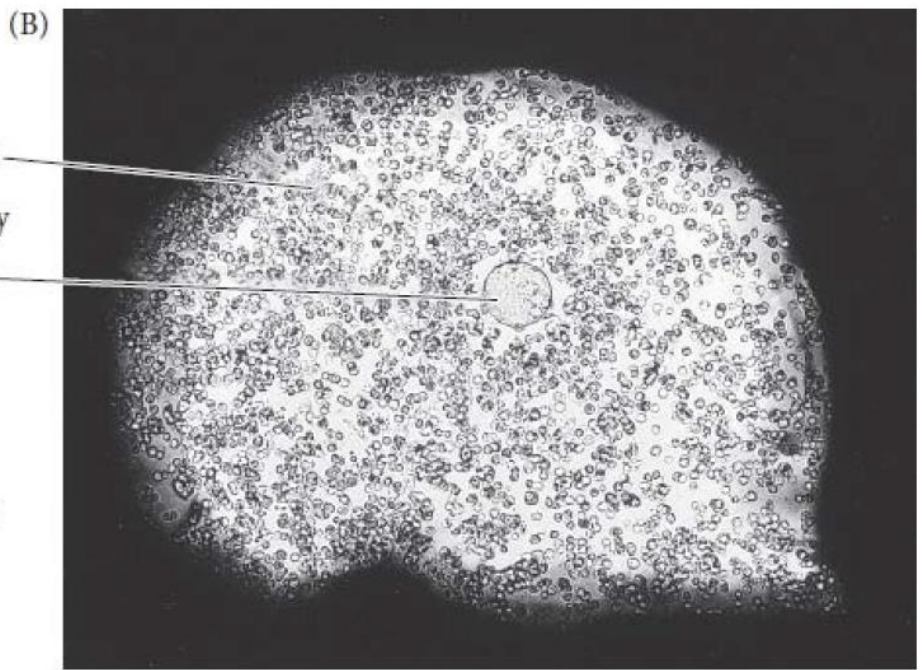
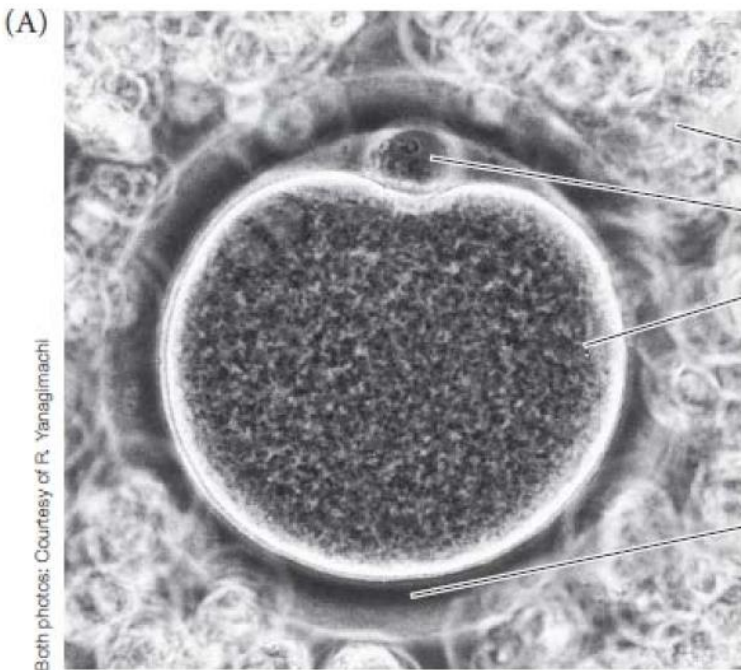


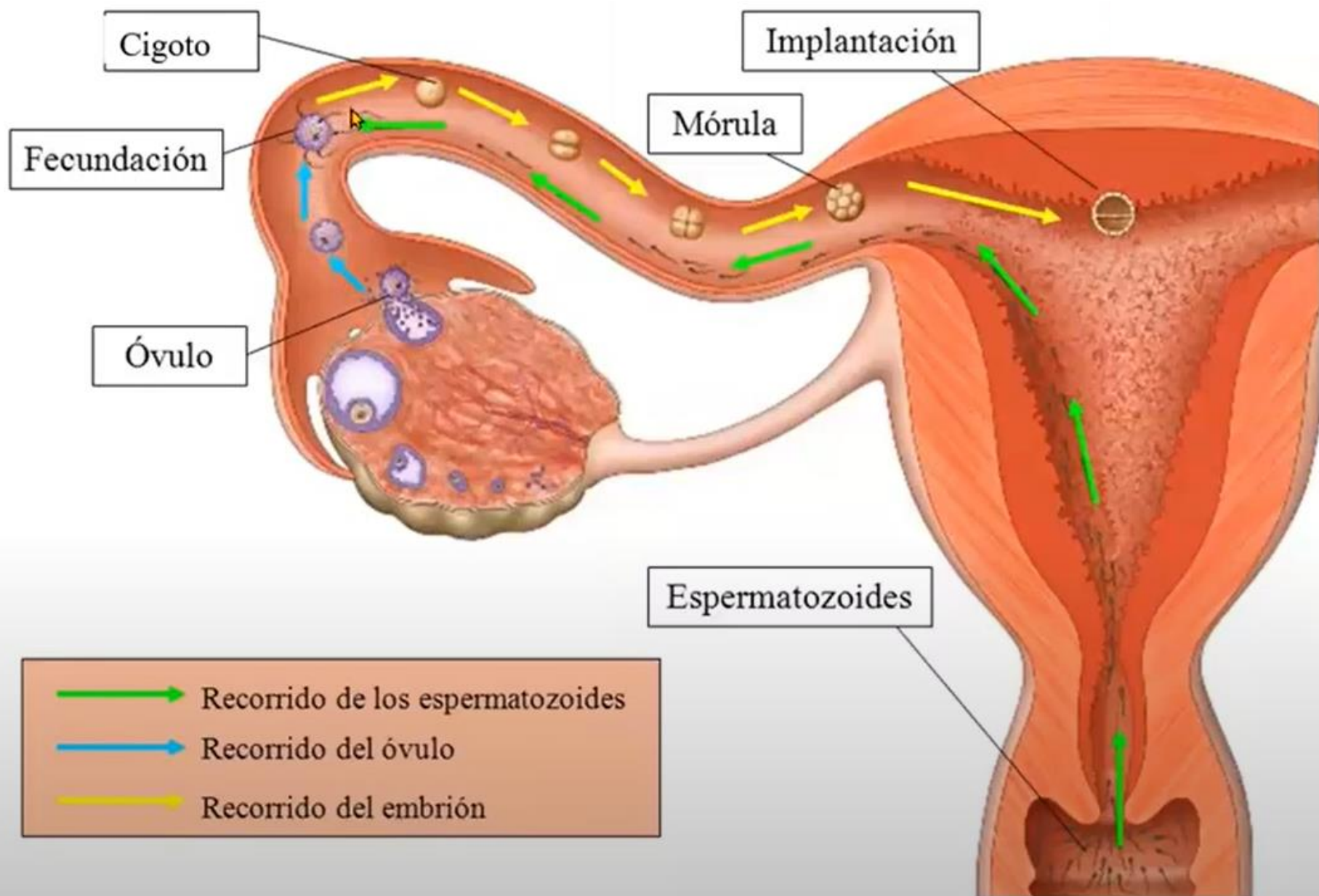
FIGURE 7.23 Postulated pathway of egg activation in the sea urchin. (After Epel 1980 and L. A. Jaffe, Pers. Comm.)

Fecundación interna: mamíferos



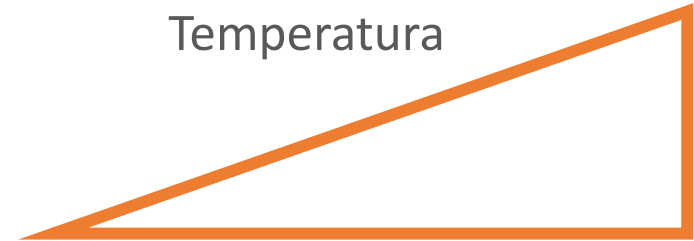
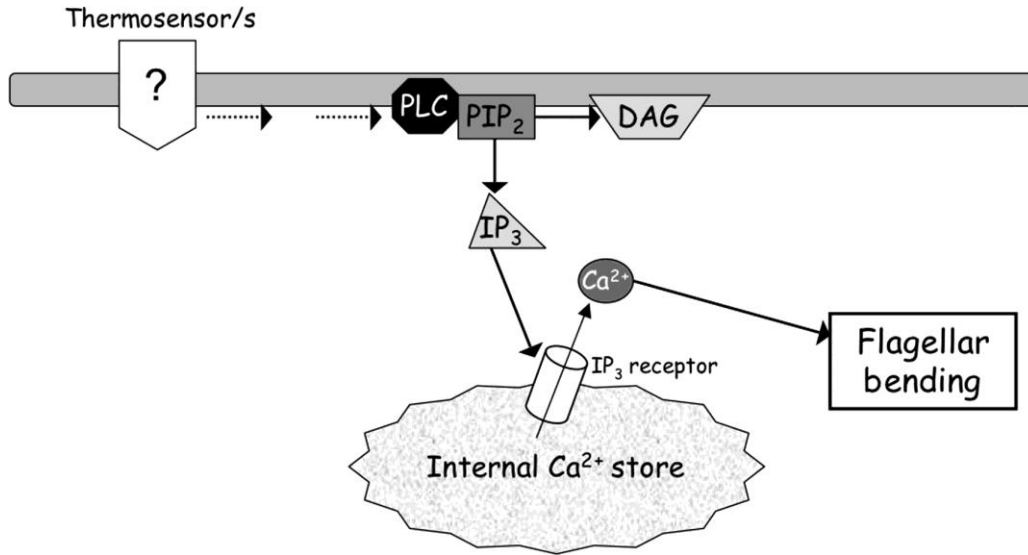
Both photos: Courtesy of R. Yanagimachi

Cumulus
Polar body
Ovum
Zona pellucida

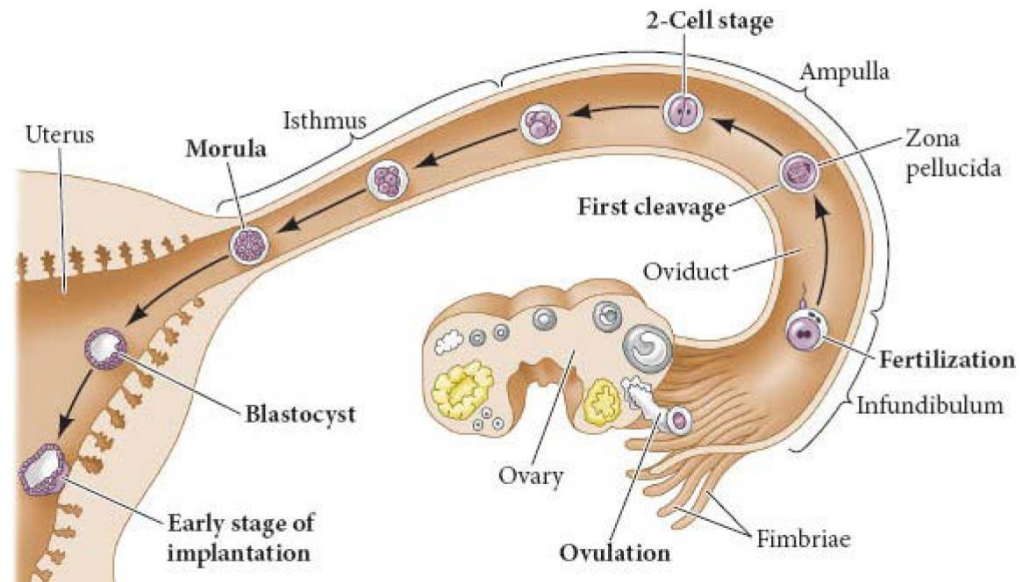


Human Sperm Thermotaxis Is Mediated by Phospholipase C and Inositol Trisphosphate Receptor Ca^{2+} Channel¹

Anat Bahat and Michael Eisenbach²

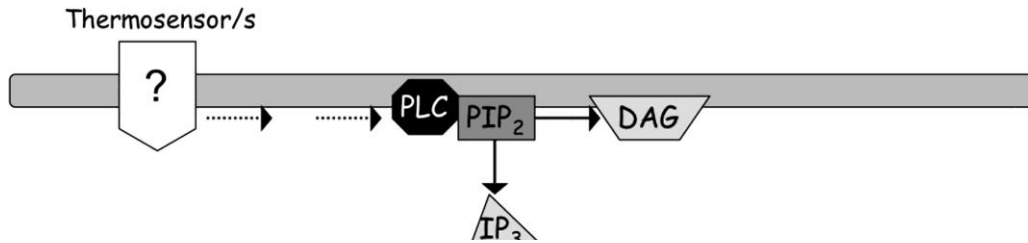


Thermotaxis



Human Sperm Thermotaxis Is Mediated by Phospholipase C and Inositol Trisphosphate Receptor Ca^{2+} Channel¹

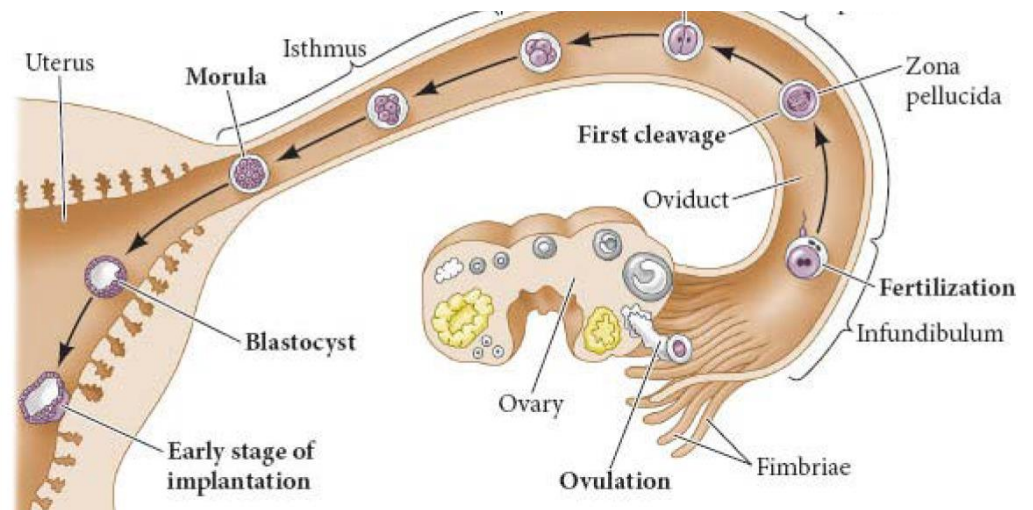
Anat Bahat and Michael Eisenbach²

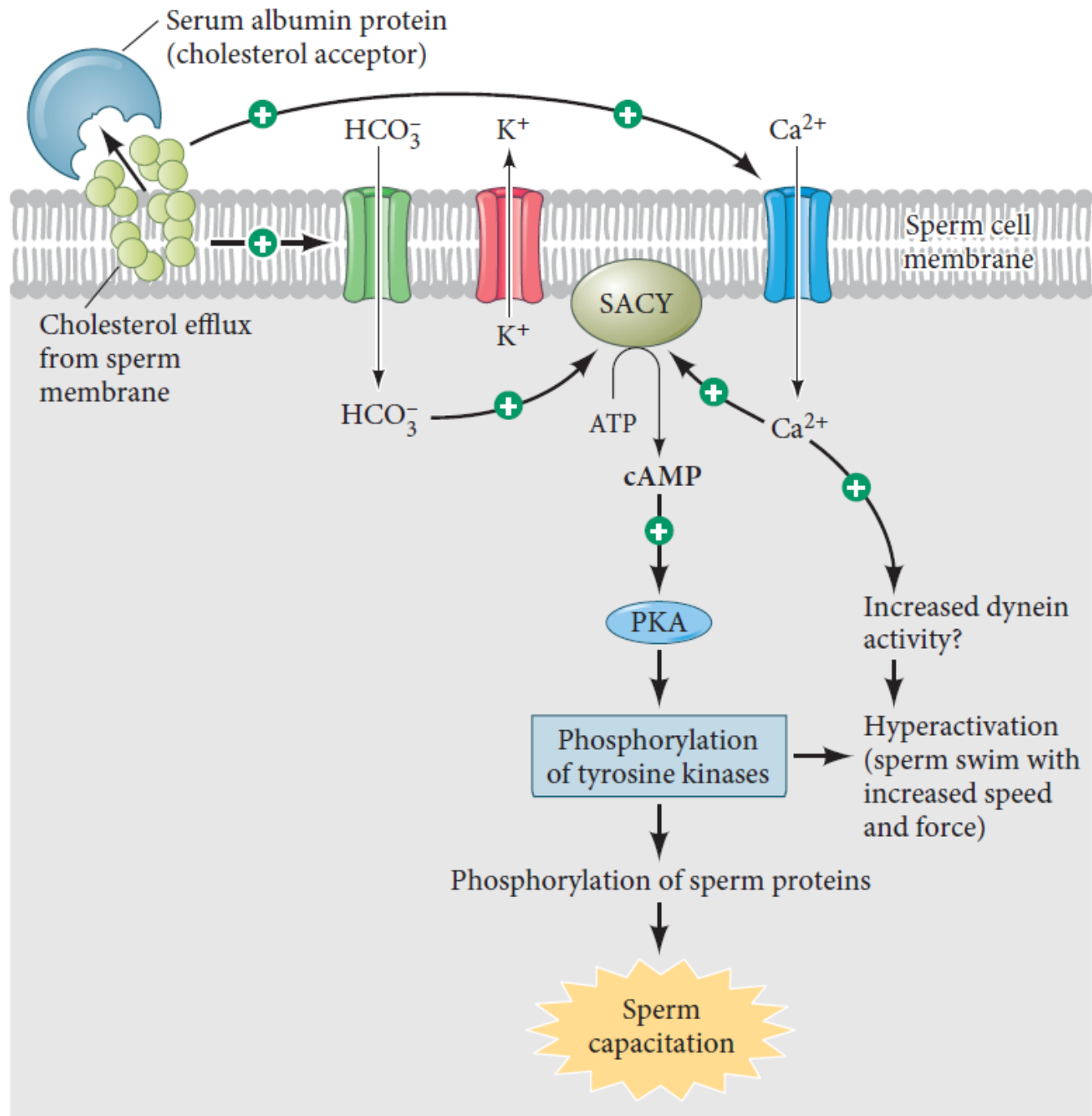


Progesterone from the Cumulus Cells Is the Sperm Chemoattractant Secreted by the Rabbit Oocyte Cumulus Complex

Héctor Alejandro Guidobaldi, María Eugenia Teves, Diego Rafael Uñates, Agustín Anastasía, Laura Cecilia Giojalas*

Thermotaxis







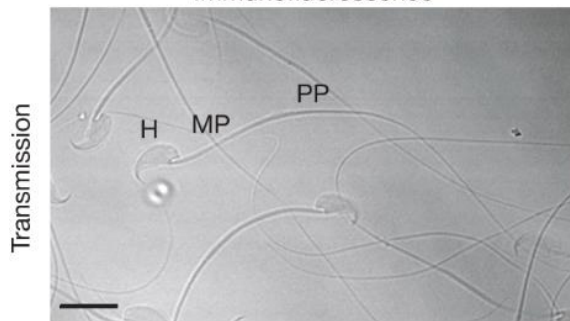
activated



hyperactivated

CatSper

Immunofluorescence



Transmission



Fluorescence

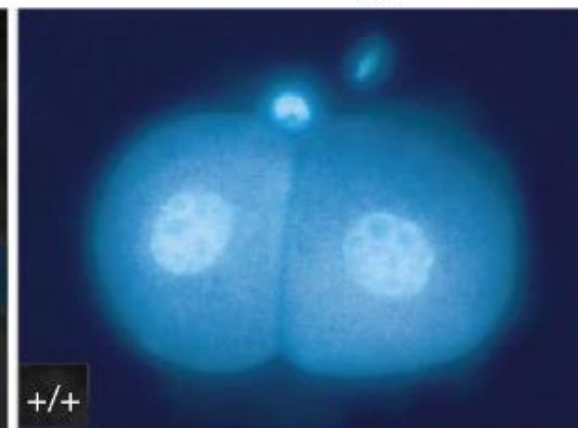
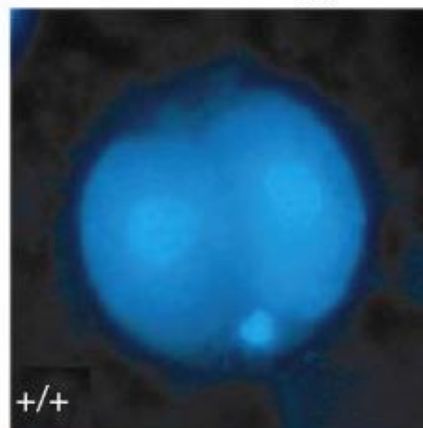


Merge

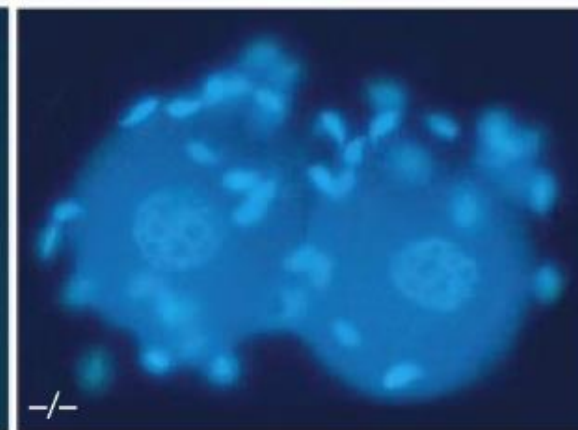
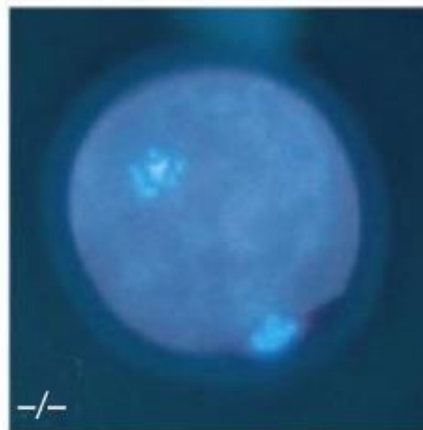
ZP-intact egg

ZP-free egg

Wild-type sperm

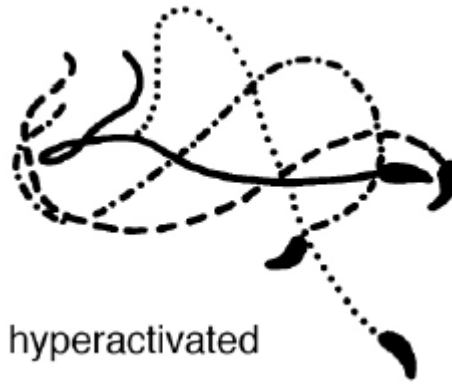


Mutant sperm

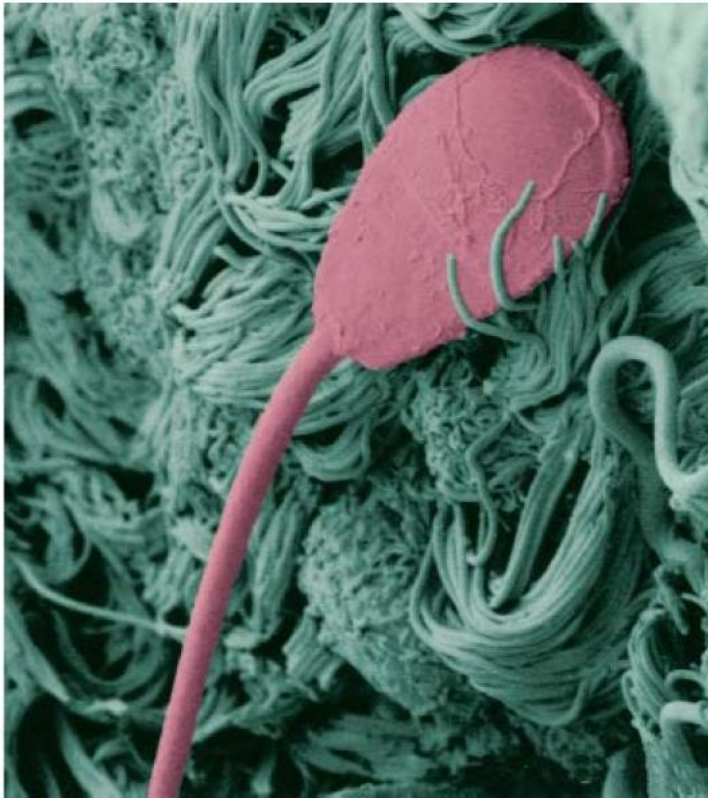




activated



hyperactivated

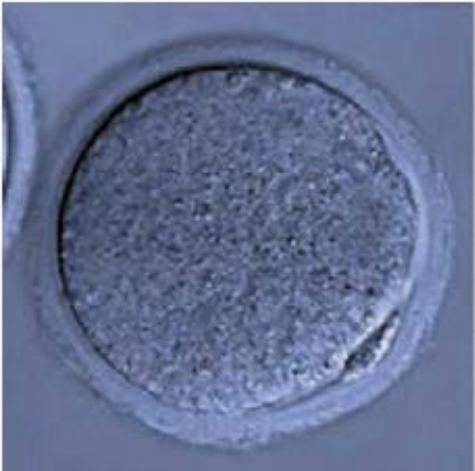


Courtesy of S. Suarez

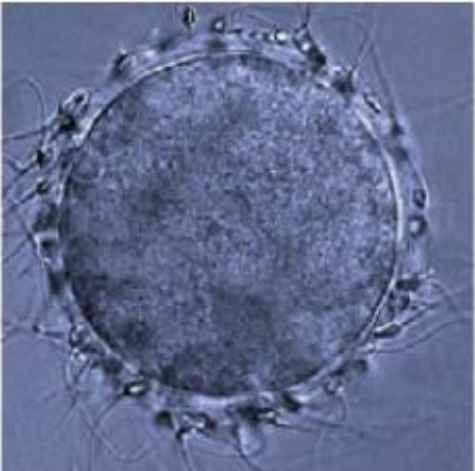
Células epiteliales
del oviducto



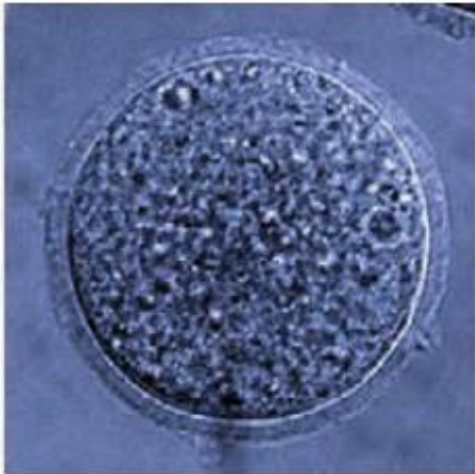
Proteínas zona pelúcida



ZP1



ZP2



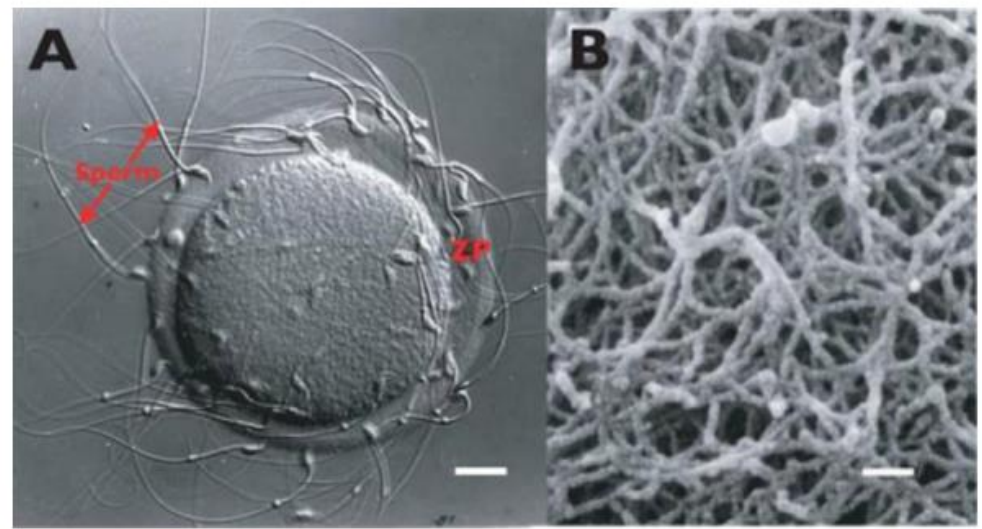
ZP3



ZP4

Oocitos de ratón
Expresando proteínas ZP humanas

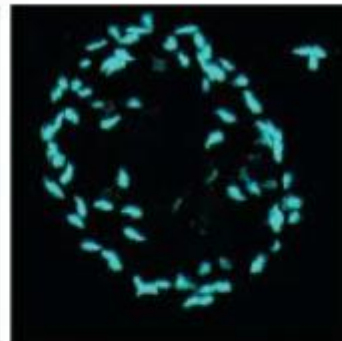
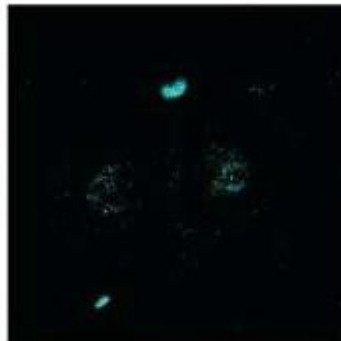
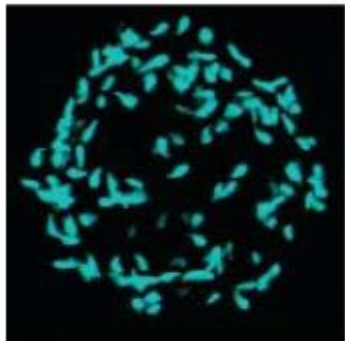
Bloqueo polispermia



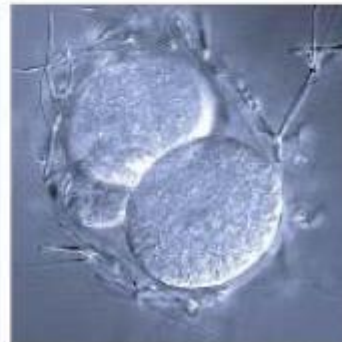
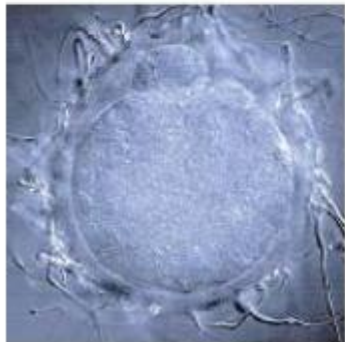
ZP2^{Mut} egg

Normal 2-cell

ZP2^{Mut} 2-cell

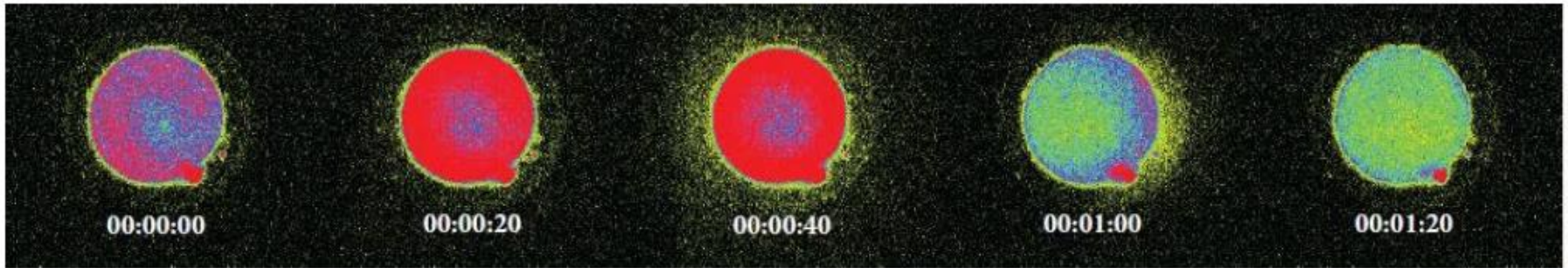


Sperm nuclei



Sperm tails

Bloqueo polispermia

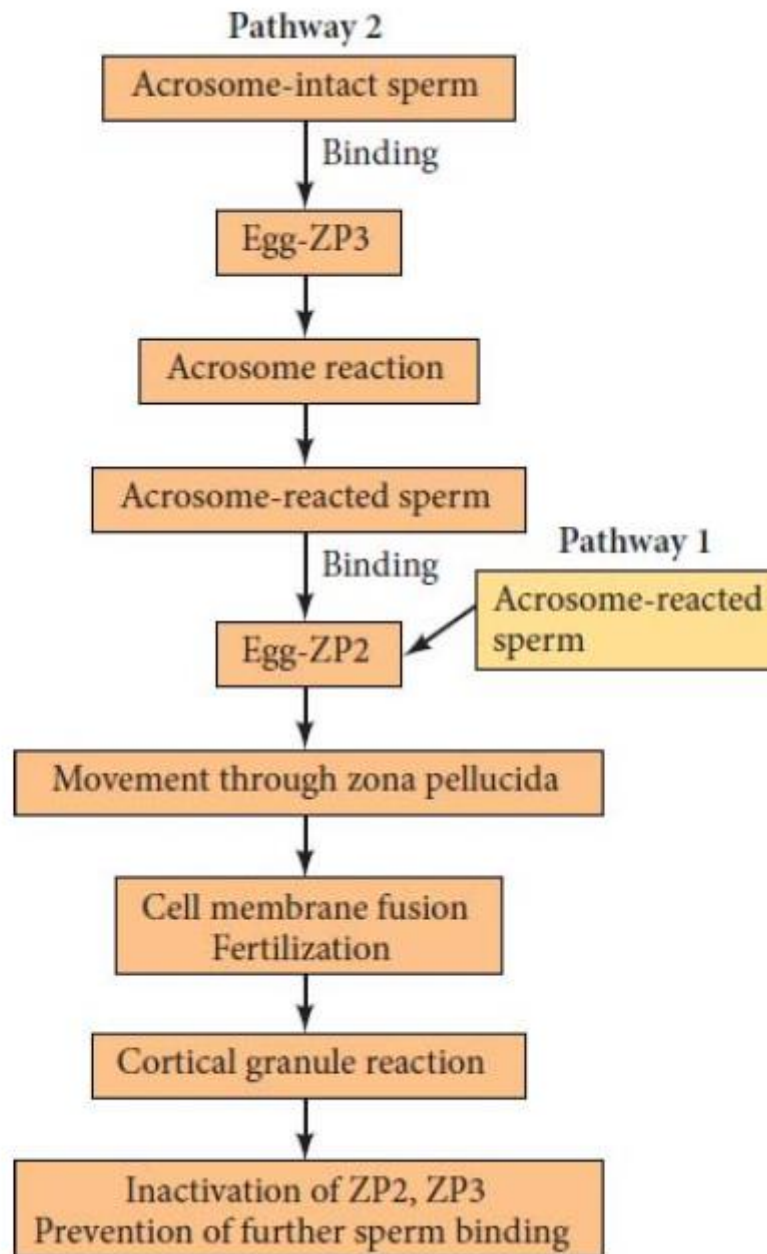


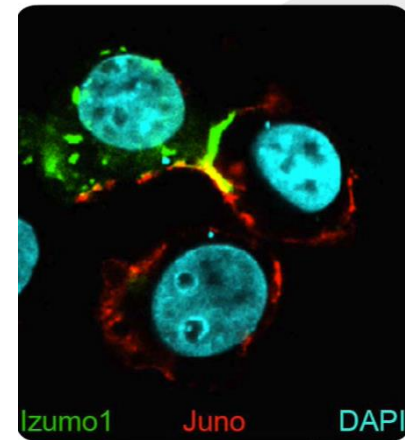
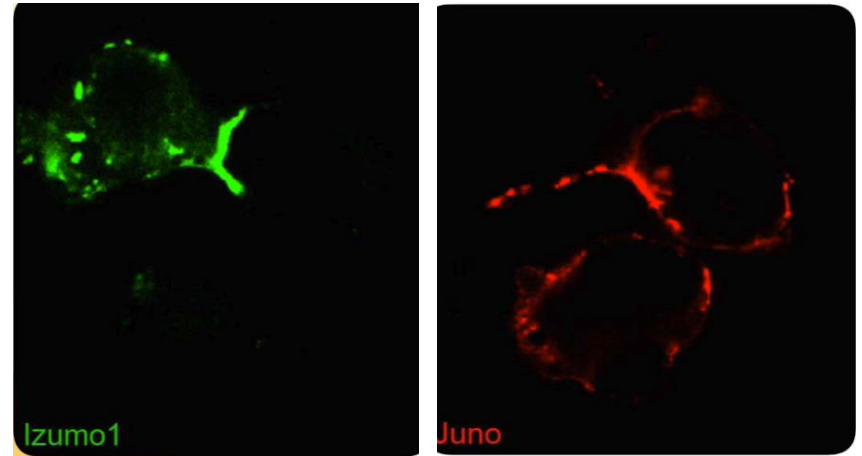
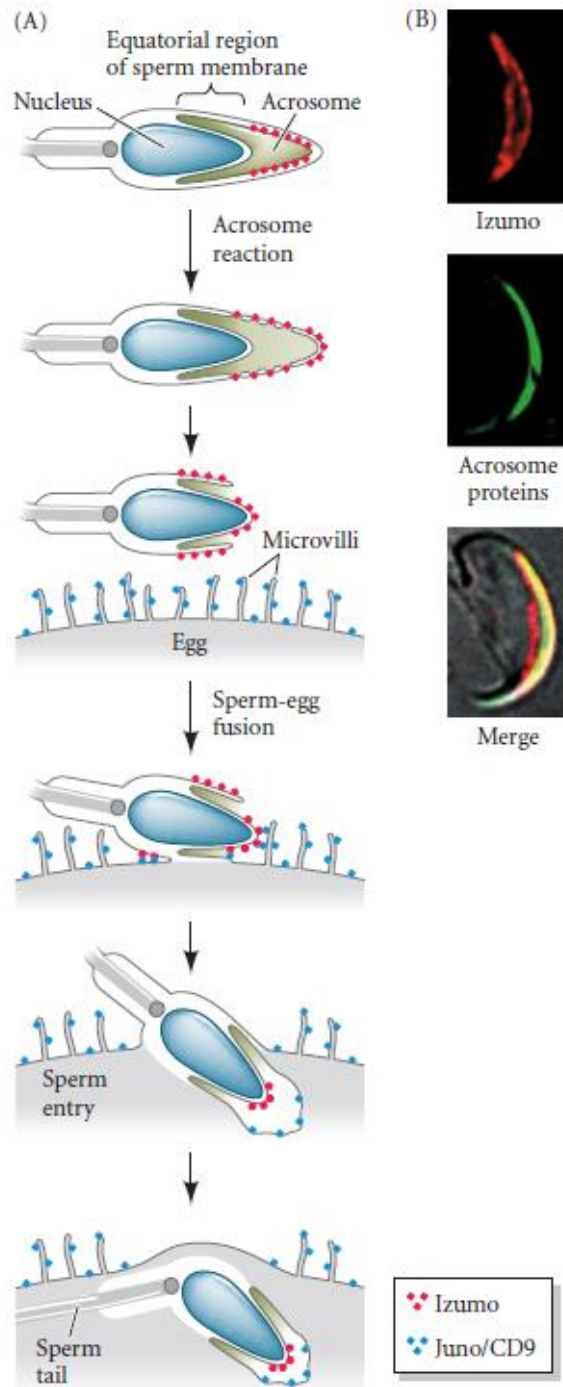
F. E. Duncan et al. 2018.
Sci Rep 8: 24737CC BY 4.0

Liberación de Zinc a la zona
pelúcida



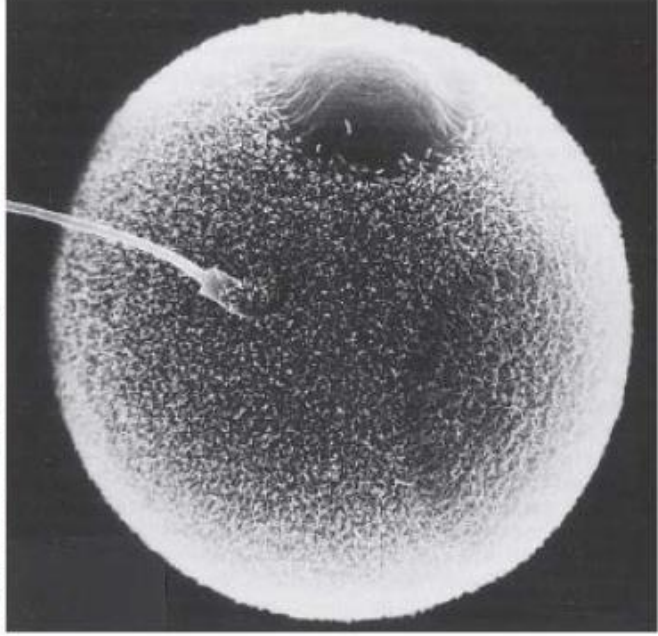
Enzimas del acrosoma





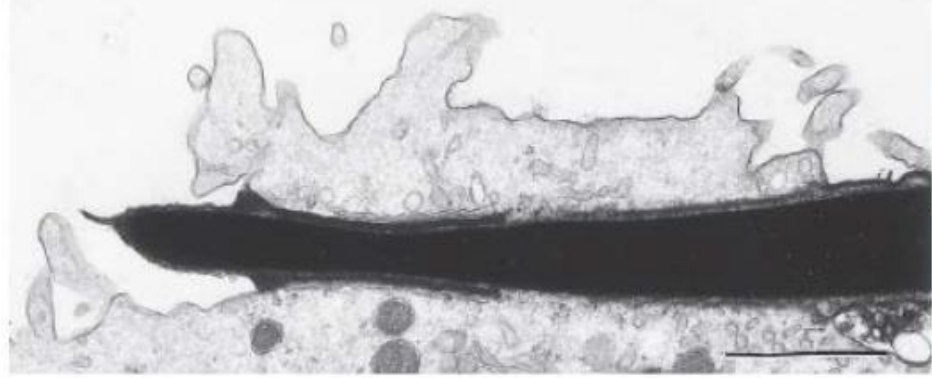
Células embrionarias humanas de riñón

(A)



R. Yanagimachi, 1981. In *Fertilization and Embryonic Development in Vitro*, L. Mastroianni and J. D. Biggers (Eds.), Springer: Boston, MA, courtesy of R. Yanagimachi

(B)



R. Yanagimachi
et al. 1980. *Dev Growth Differ* 22
281-288, courtesy of R. Yanagimachi