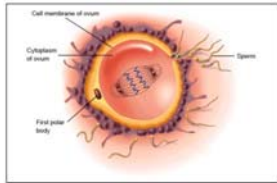
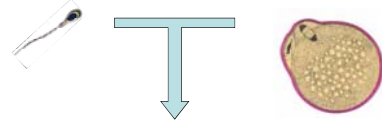


受精 Fertilization



受精の成立

受精能をもった精子と 受精能をもった卵子が



同時に存在する必要がある

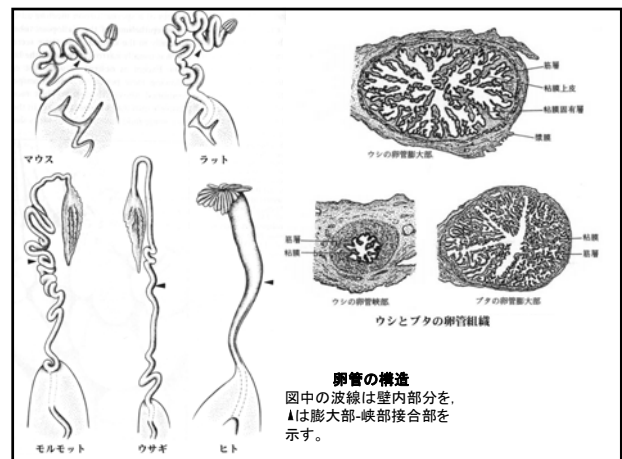
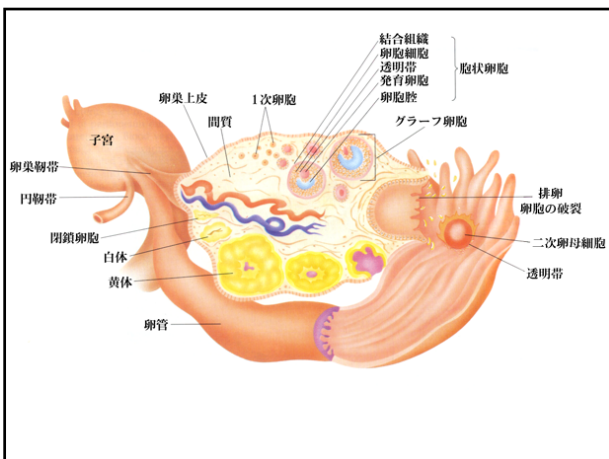
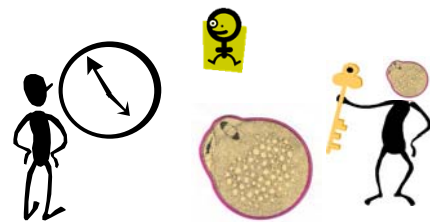


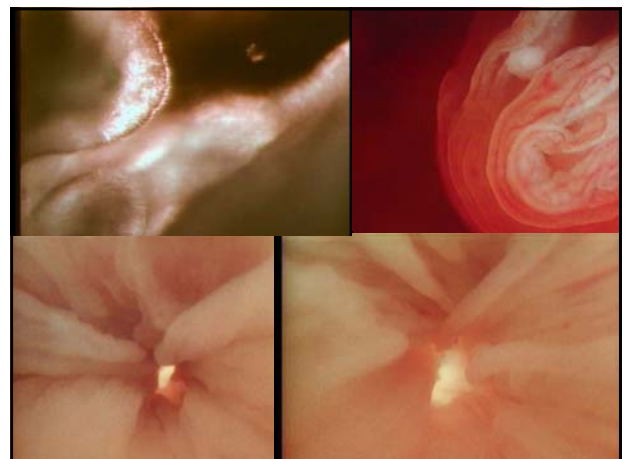
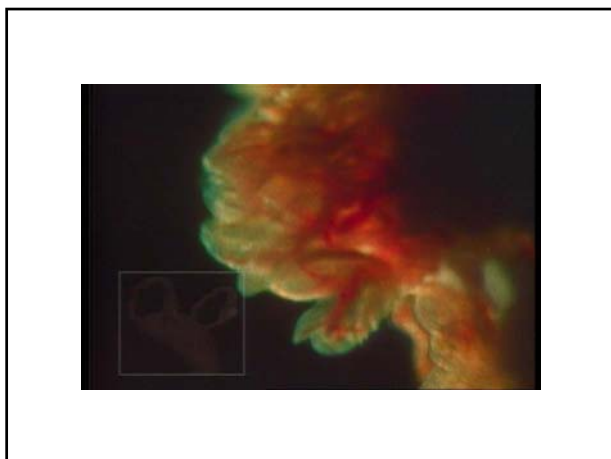
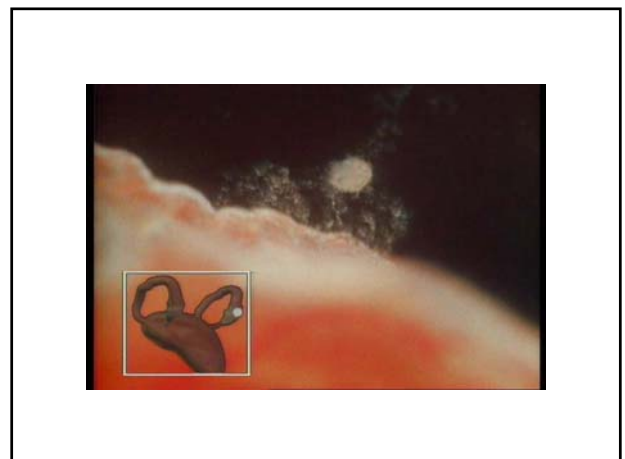
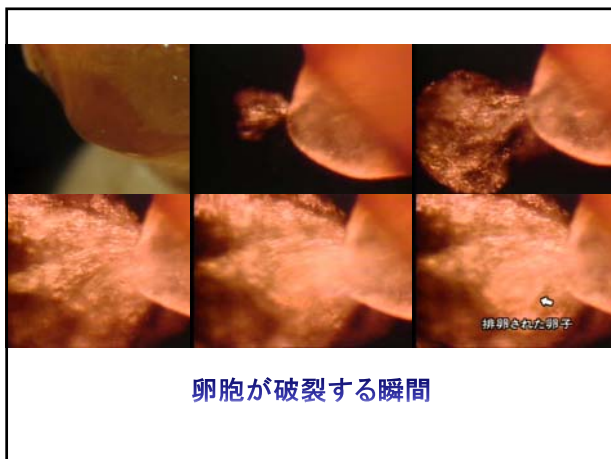
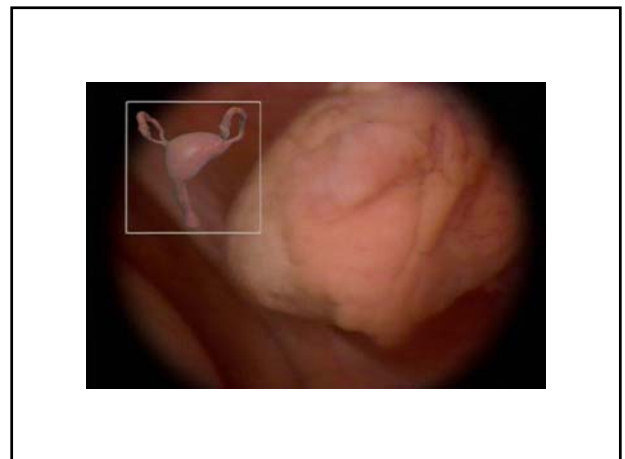
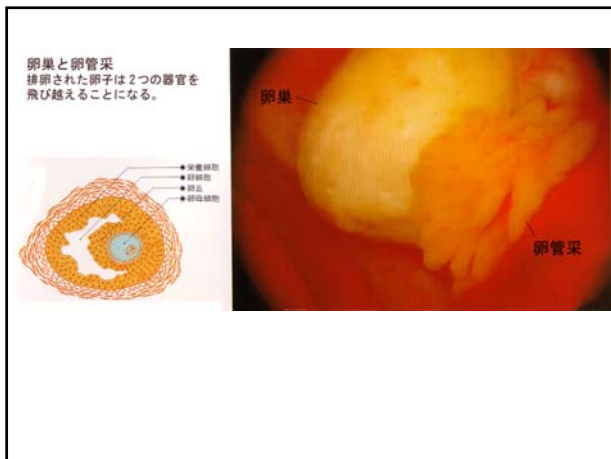
卵子および精子の受精能

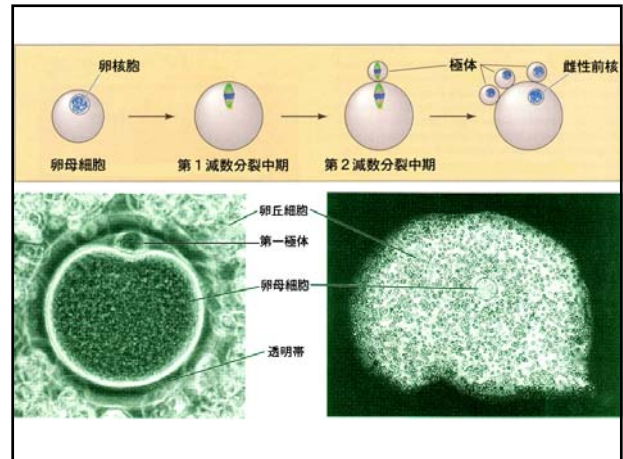
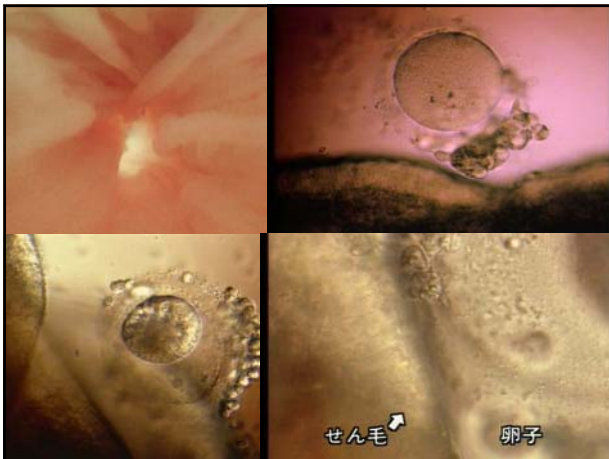
動物種	卵子 受精能保有時間 (排卵後)	精子	
		受精能獲得時間 (雌性生殖道内)	受精能保有時間 (雌性生殖道内)
ウシ	18-20 時間	5-6 時間	24-48 時間
ウマ	4-20	—	144-164
ブタ	8-12	2-4	24-48
ヒツジ	12-15	2-4	24-48
イヌ	4.5 日	7	168
ウサギ	6-8	5-6	30-32
モルモット	20	4-6	22
ラット	12	2-3	14
マウス	6-15	1-2	6-12

一般に、精子の受精能保有時間は1-2日、卵子は1日以内

卵子の移動







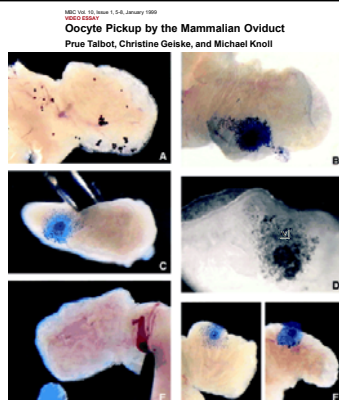
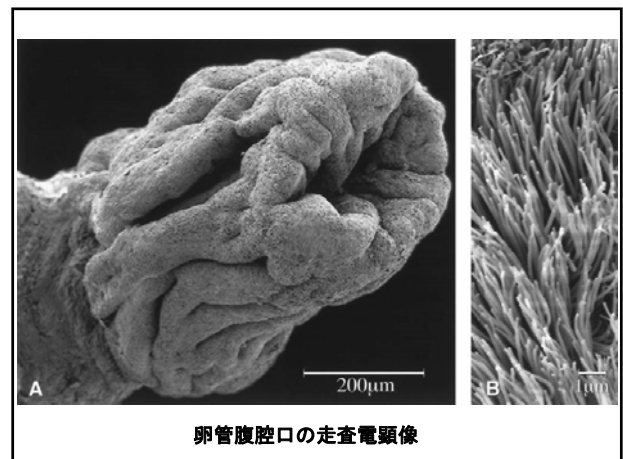
卵管上皮とCOC+細胞外基質との接着

卵母細胞pick-up時の細胞外基質の役割

COC基質

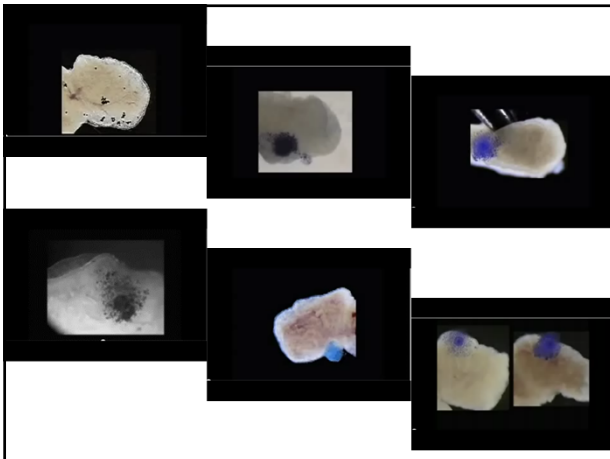
- ・ヒアルロナン（グルクロン酸とN-アセチルグルコサミンからなる直鎖多糖）
- ・種々のタンパク質
- ・inter- α -trypsin inhibitor
- ・dermatin sulfate proteoglycan
- ・46-kDa protein

COC, 卵丘細胞-卵母細胞複合体



<http://www.molbiolcell.org/cgi/content/full/10/1/5>

Figure 2. Movies showing movement of **Lycopodium spores** and OCCs on the surface of hamster infundibula. ヒカゲノカズラの類の胞子
(A) Lycopodium spores being picked up by currents above hamster oviductal cilia.
(B) Stained OCC traveling over the surface of a hamster infundibulum.
(C) Bird's eye view of the ostium showing entry of a stained OCC.
(D) Higher-magnification video showing movement of an OCC into the ostium.
(E) Video showing pickup of an OCC that has been recovered from inside an infundibulum. The matrix of the OCC has been compacted and is no longer elastic.
(F) Pair of movies showing the effect of cigarette smoke on OCC pickup. The infundibulum on the left has been exposed to sidestream smoke solution, whereas the one on the right was incubated in control medium only.



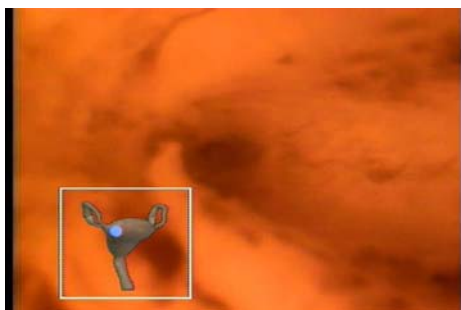
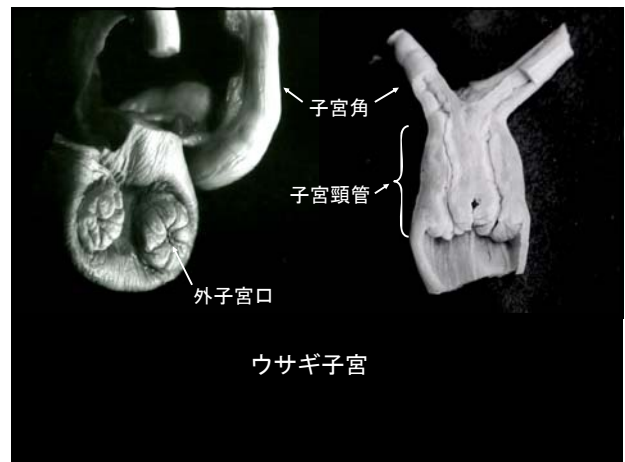
卵のpickup

細胞接着と受精

卵管上皮とCOC+細胞外基質との接着

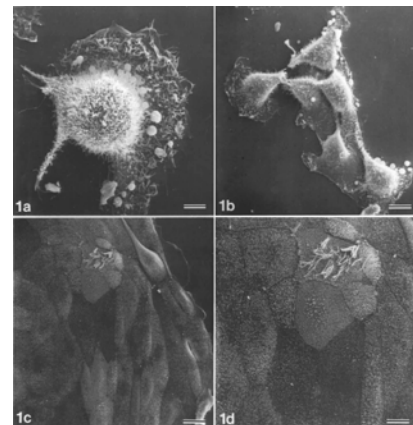
- 接着特性  子宮外妊娠
- 線毛上皮

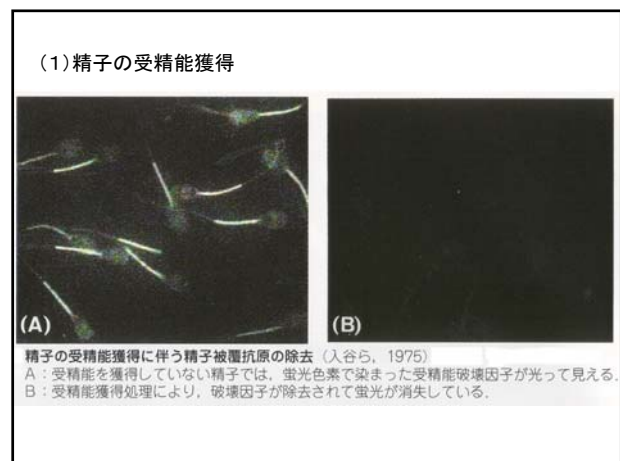
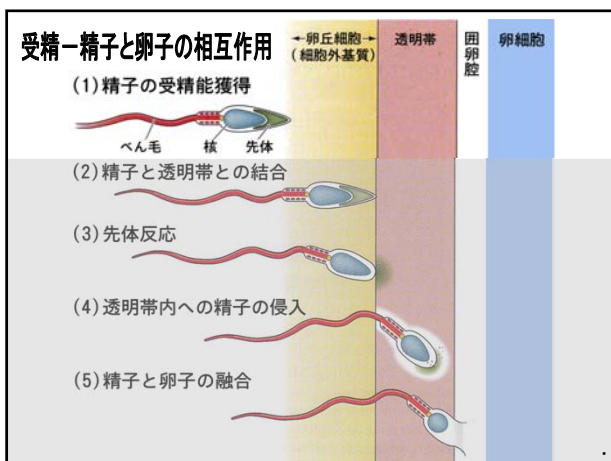
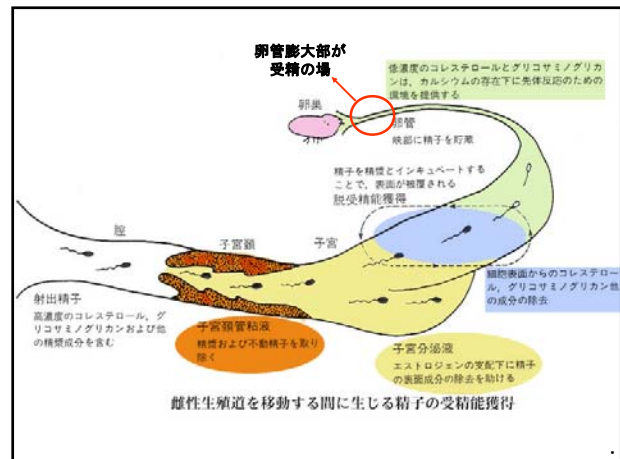
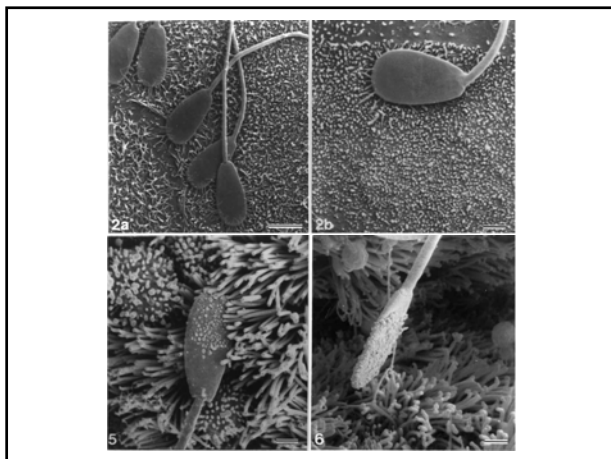
精子の移動



子宮卵管接合部

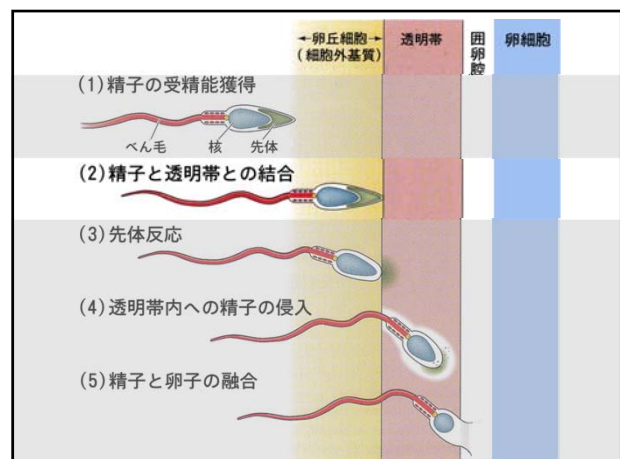
子宮内腔から卵管を見たところ

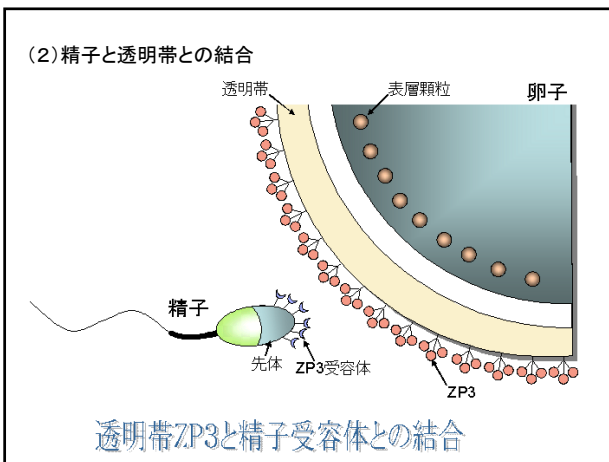
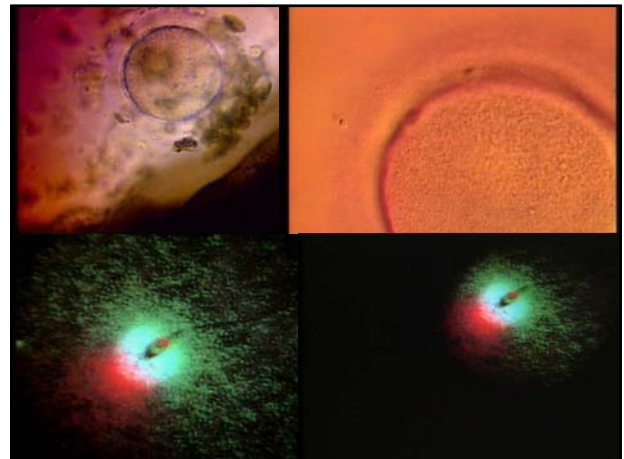




精子の受精能獲得に伴う変化

- ▶ **細胞外因子**
重炭酸イオン、カルシウムイオン、アルブミン等(コレステロール結合因子)
- ▶ **精子被覆物質の除去**
受精能獲得抑制因子(decapacitation factor; DF)
- ▶ **細胞膜のコレステロール除去**
コレステロール結合因子
- ▶ **細胞内因子の変化**
重炭酸イオン↑ アデニレートシクラーゼ活性化 cAMP ↑ PKA活性化
チロシンキナーゼ活性化 種々のタンパク質のチロシンリン酸化
- ▶ **超活性化運動**
尾部の細胞膜結合タンパク質のチロシンリン酸化
カルシウムイオンが必須





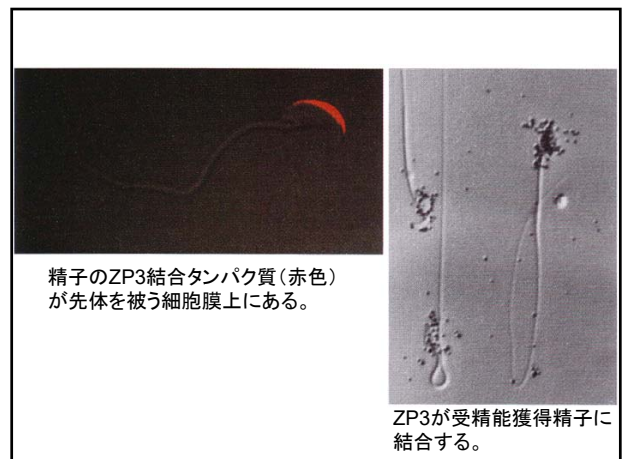
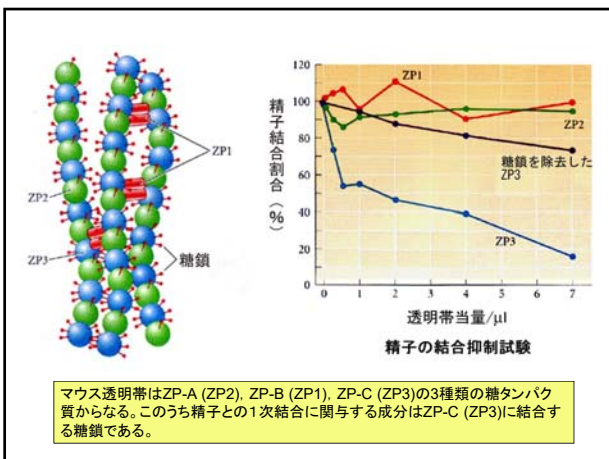
透明帯 Zona pellucida

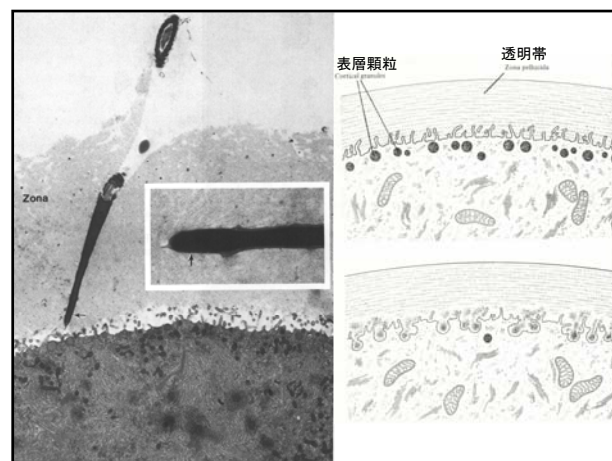
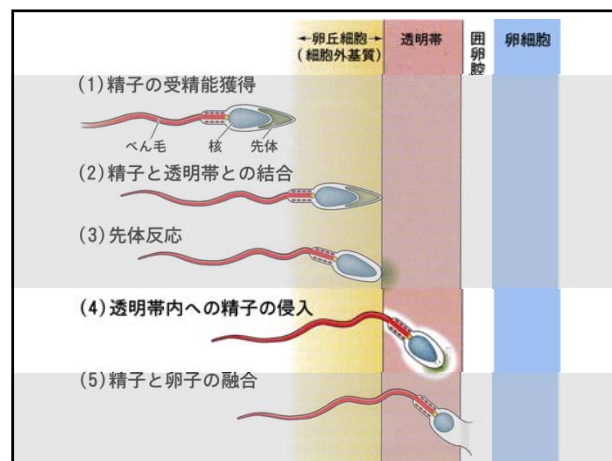
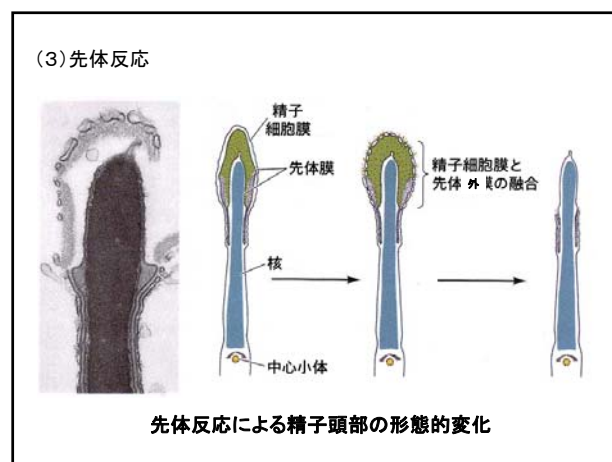
糖タンパク質 glycoprotein

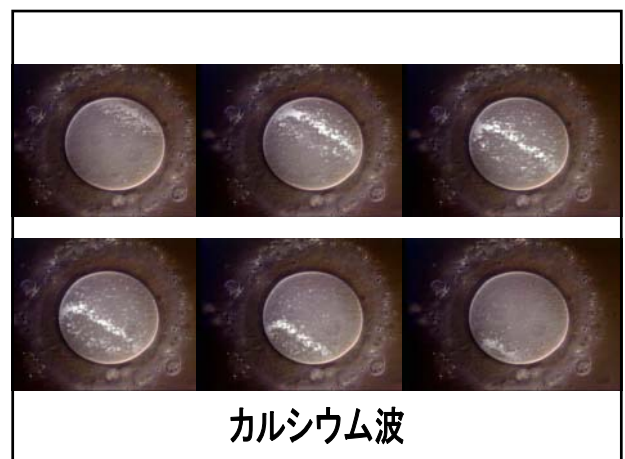
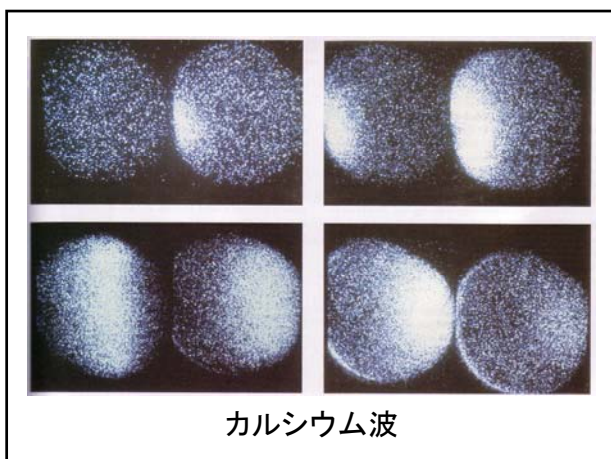
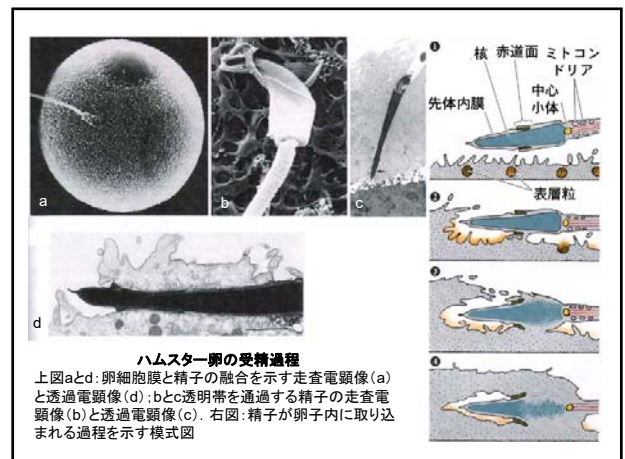
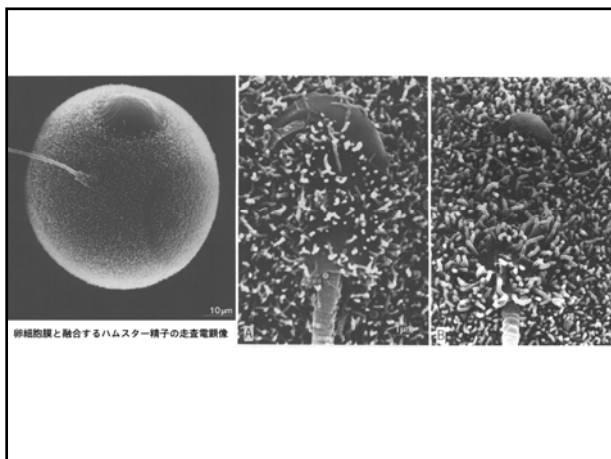
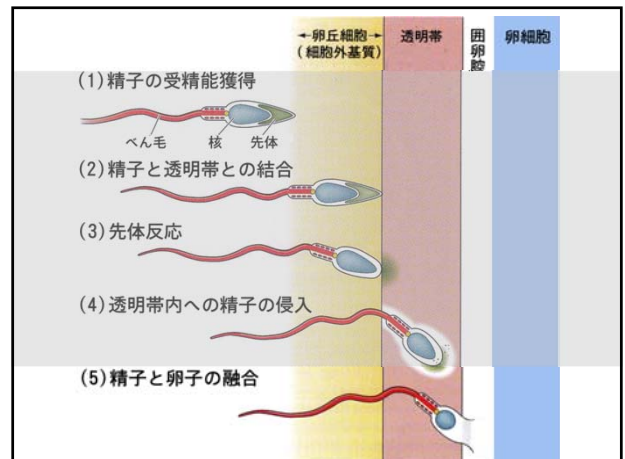
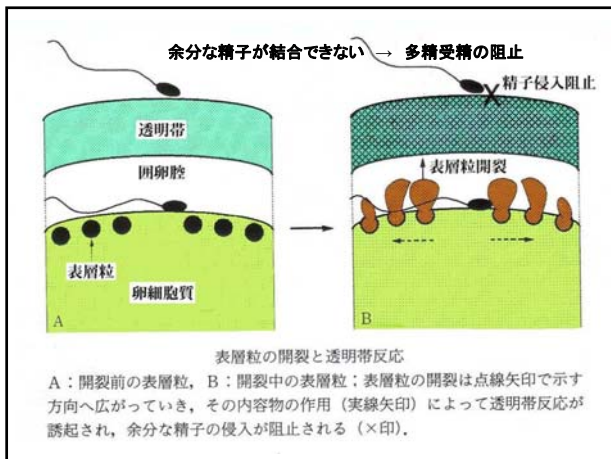
ZP1
ZP2
ZP3

精子結合ーオリゴ糖鎖の serine/threonine (O-linked) 残基

- ☒ 1. α -galactose
- ☒ 2. β -N-acetylglucosamine (GlcNAc)
- ☒ 3. fucose
- ☒ 4. mannose







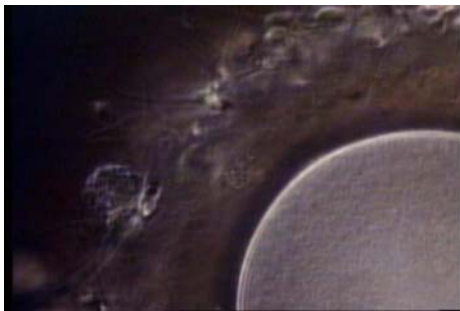
精子侵入のシグナル伝達

精子侵入

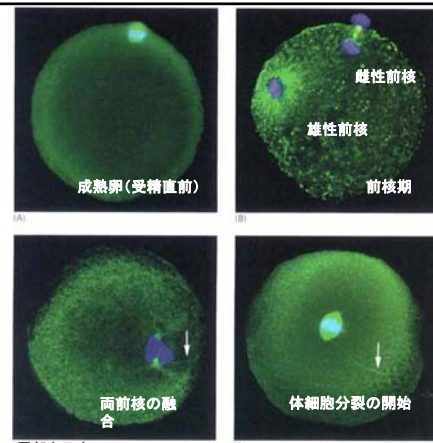
1. 表層反応
2. 減数分裂再開



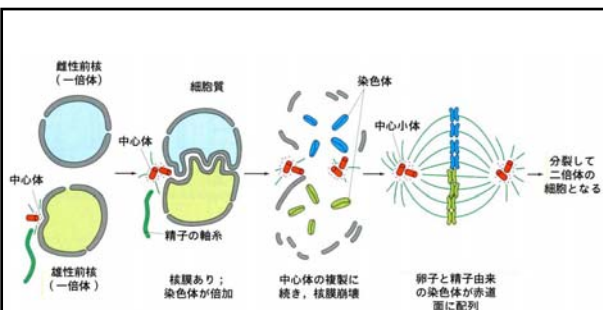
前核形成



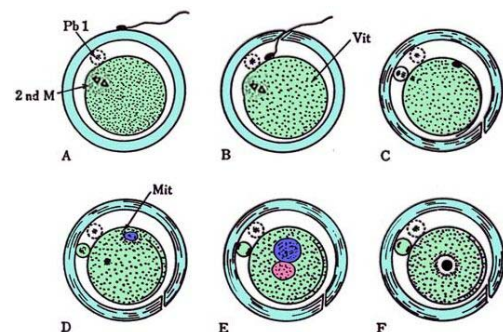
アクセサリー精子



矢印は精子の尾部を示す



前核形成から体細胞分裂までの変化



豚の受精過程の模式図 (Hafez, 1980)

