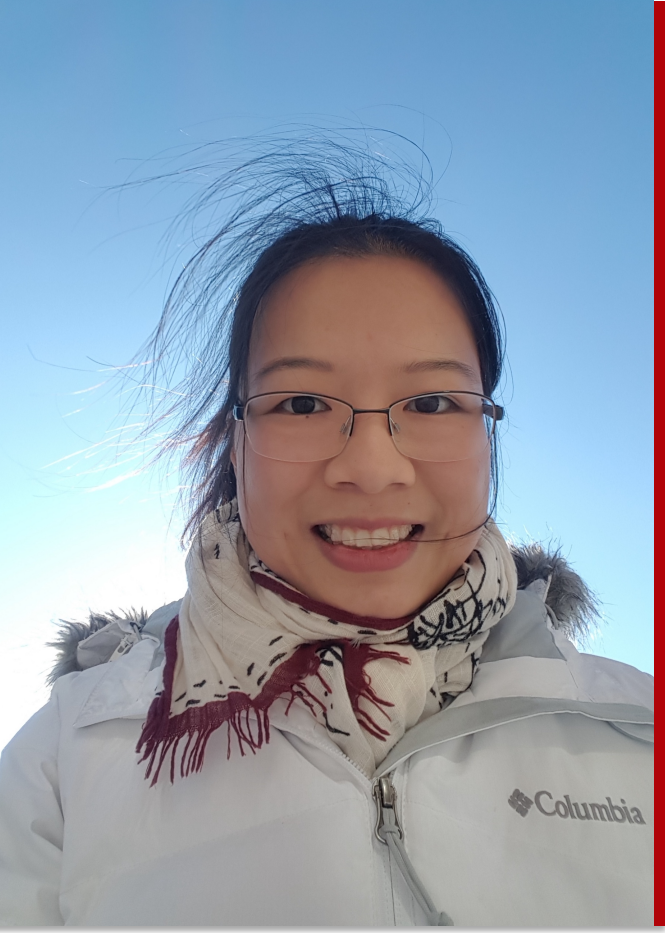


# SPE-51, a secreted protein with Immunoglobulin-like fold, is required for sperm-egg fusion in *C. elegans*

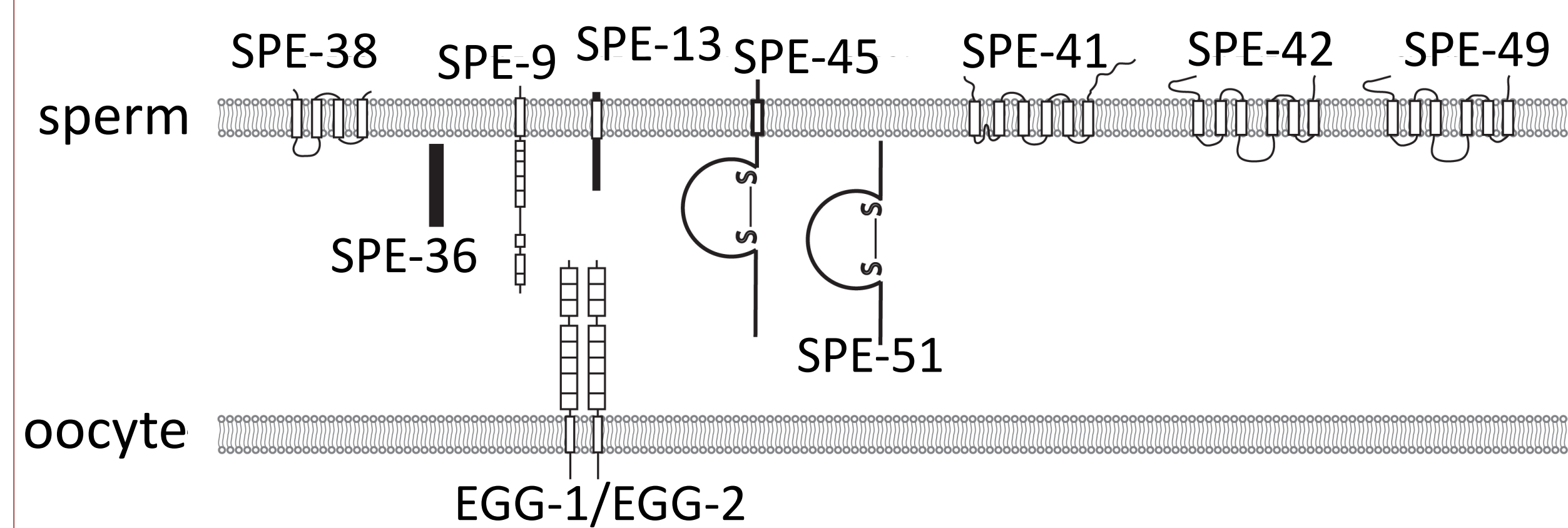
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Live Q&A:  
Thursday 4/30 12:30-1pm  
xue.mei@rutgers.edu

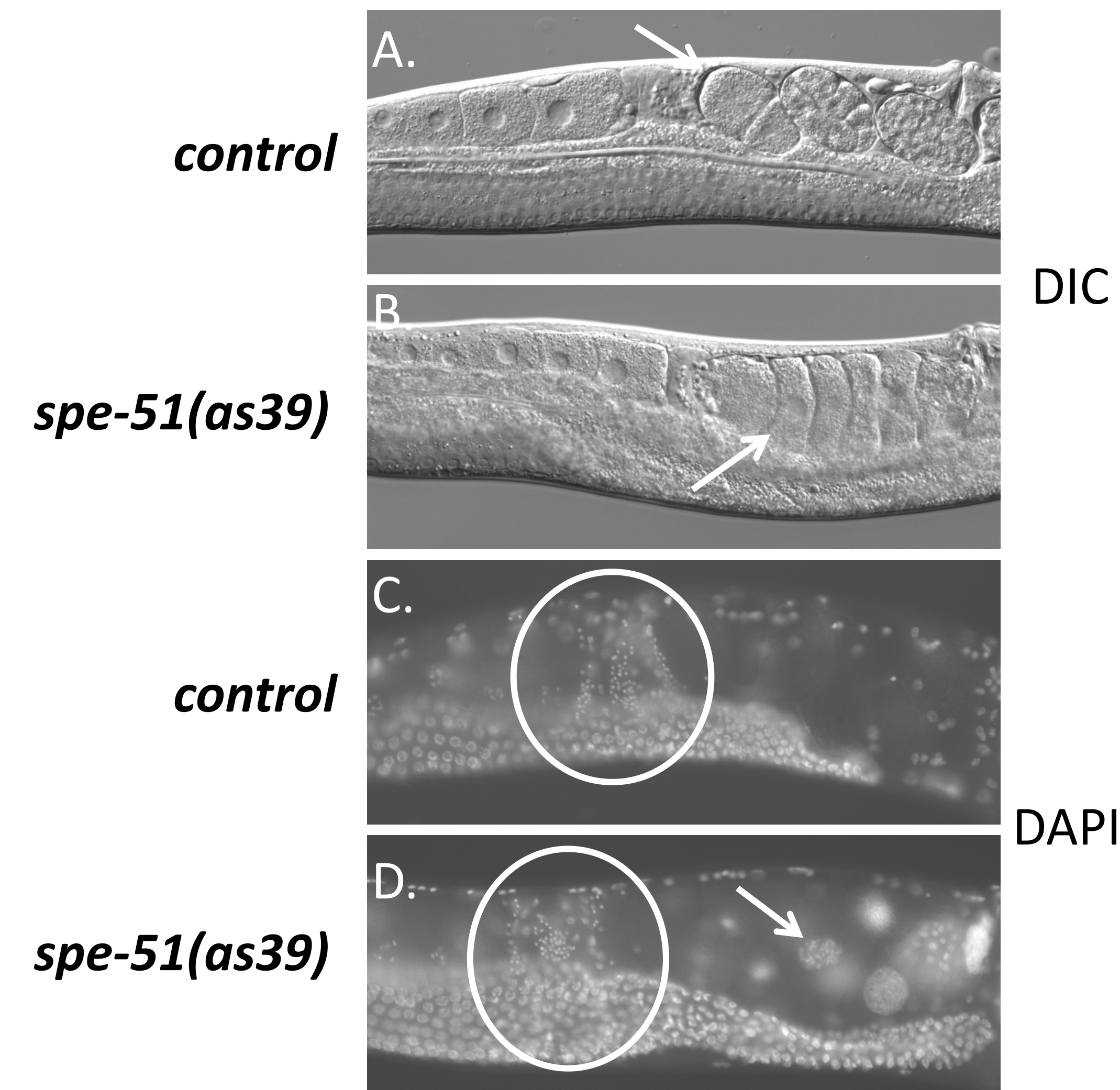


## Background and Introduction

- Fertilization: species-specific recognition, adhesion and fusion between the sperm and egg
- Unknown: the molecular basis of fertilization, particularly during sperm-egg interactions.
- In mammals, the only known receptor pair:
  - Juno: GPI-anchored protein in the egg [1]
  - Izumo: Ig-domain containing transmembrane protein in the sperm [2]
- In *C. elegans*, the *spe-9* class of proteins mediate the binding, adhesion or fusion between the sperm and the egg [3,4].

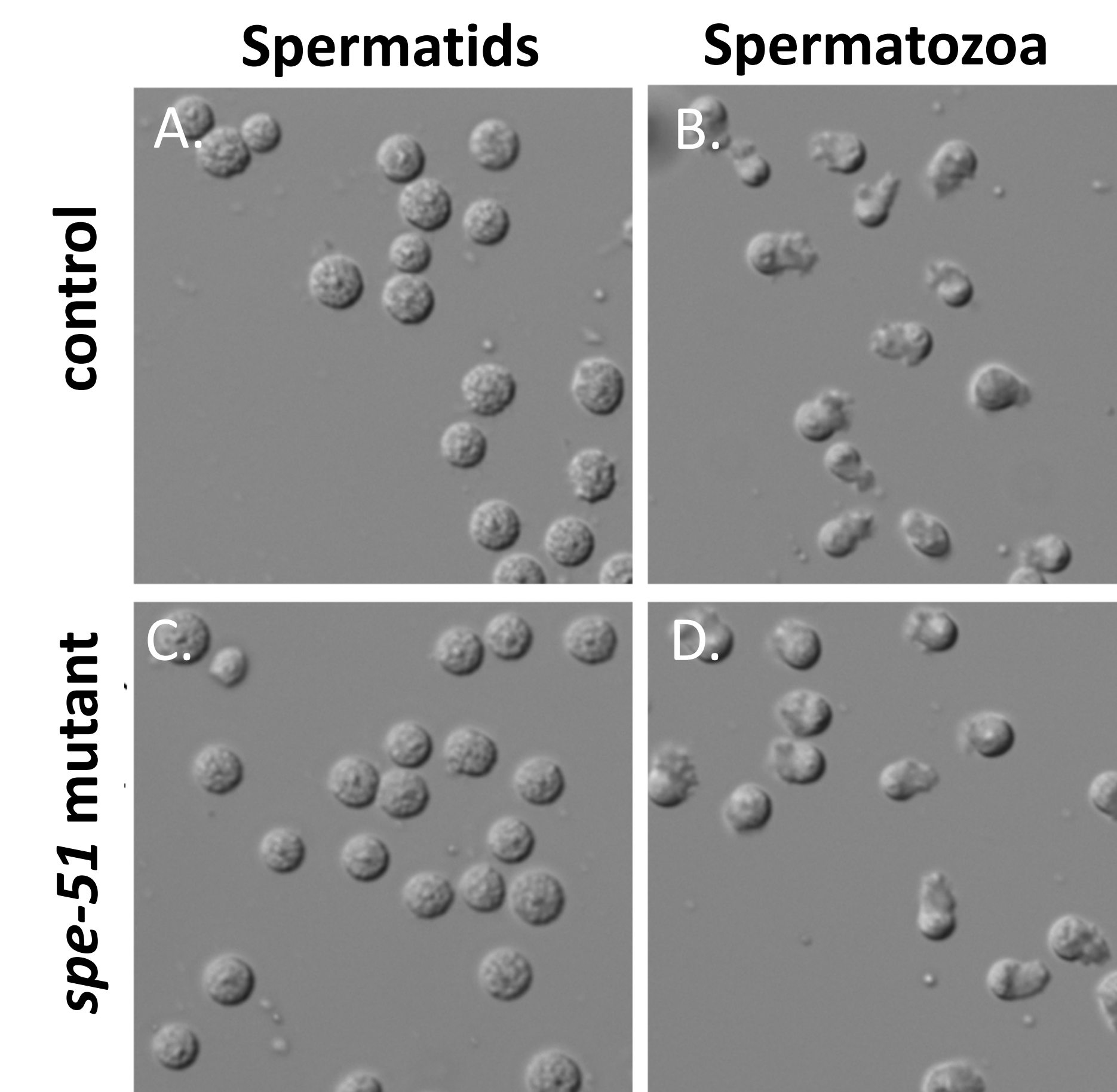


## Result 1: *spe-51(as39)* is a sperm-sterile mutant

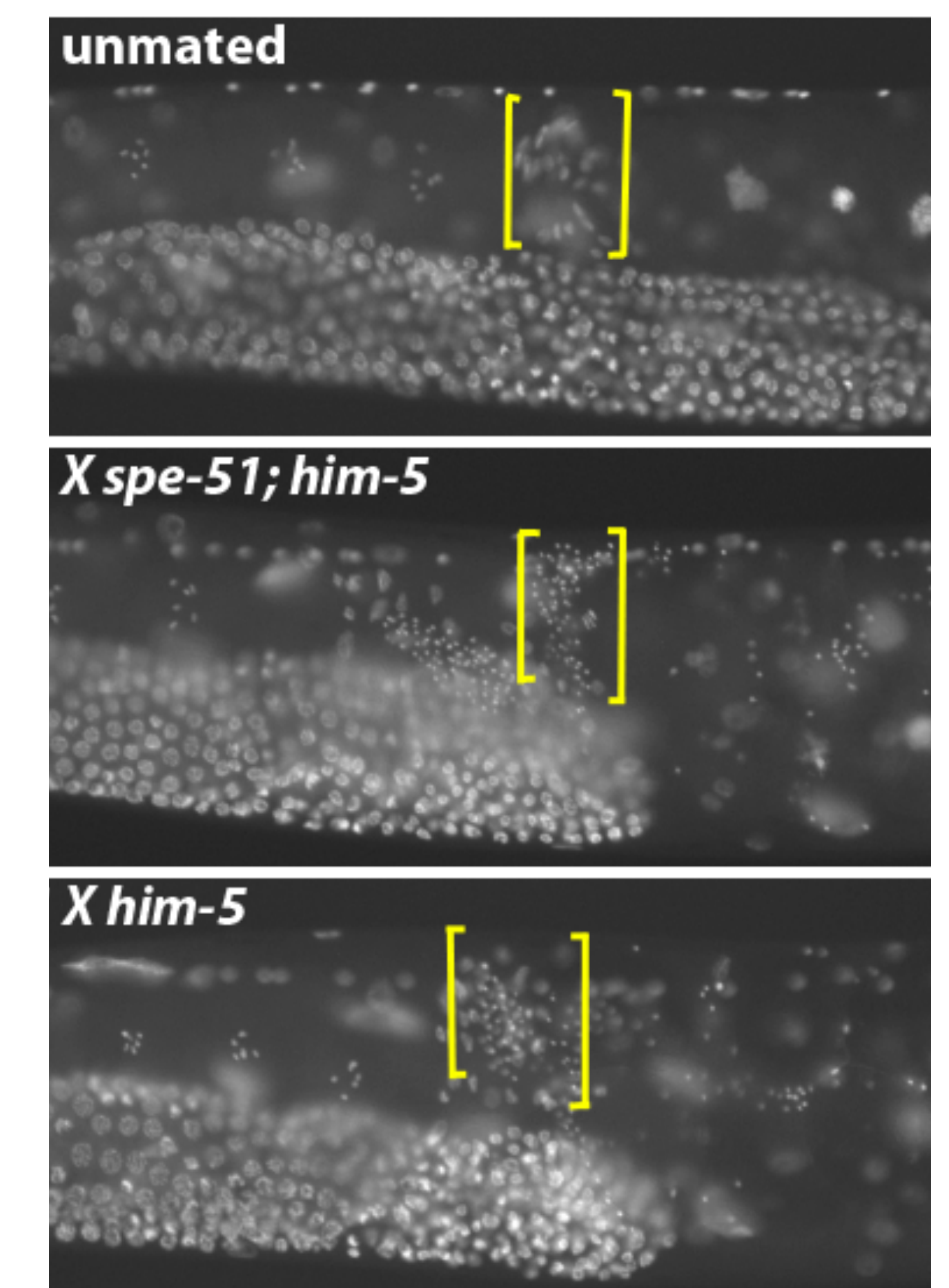


Mutant *spe-51(as39)* fertility can be rescued by mating with wildtype males (not shown)

## Result 2: *spe-51* mutant sperm activate and behave normally

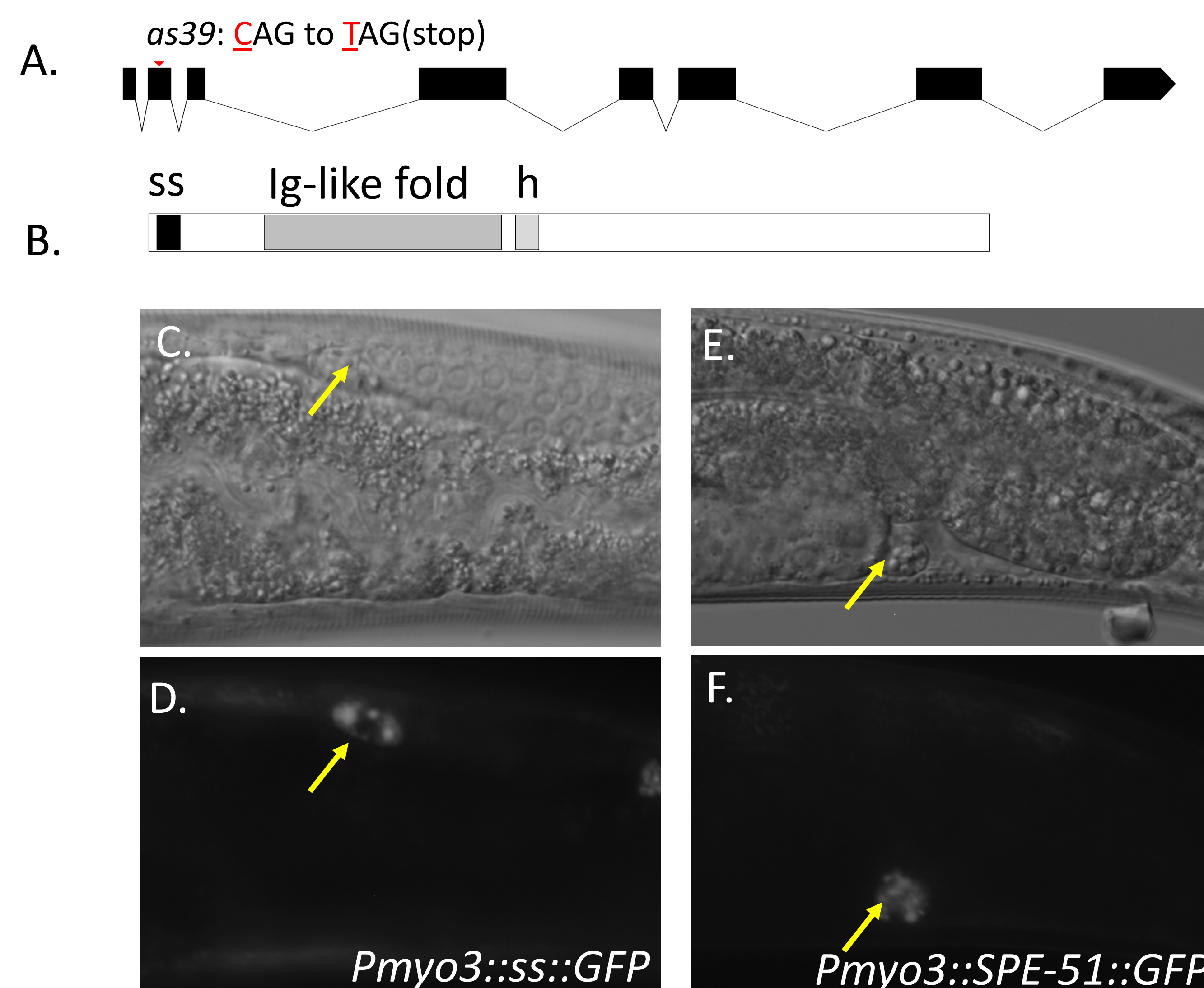


A-D. spermatids were dissected from males in sperm media without (A-B) or with pronase (C-D).



*fem-1(hc17)* hermaphrodites were mated with males for 24 hours and were used for DAPI staining.

## Result 3: SPE-51 is a secreted protein with an immunoglobulin-like fold

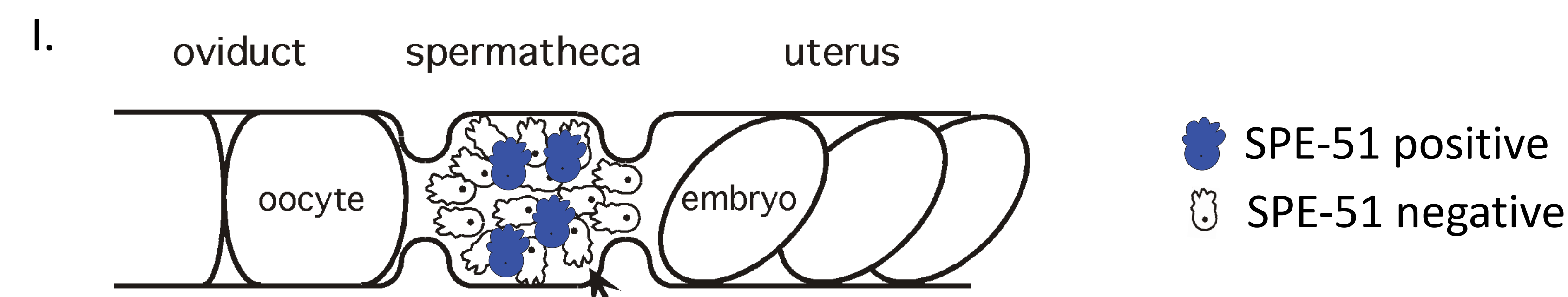


A. non-sense mutation in *as39*.

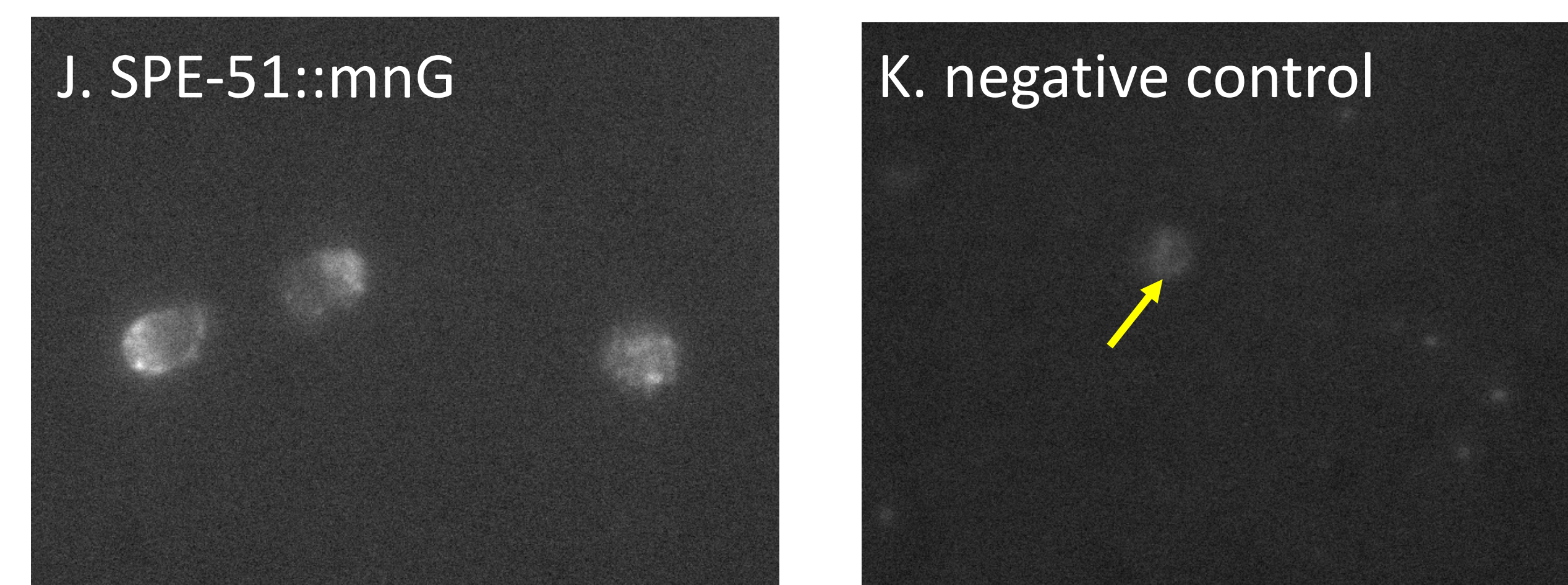
B. ss, signal sequence; h, hydrophobic region

C-F. Muscle-expressed SPE-51::GFP taken up by coelomocytes.

## Result 4: SPE-51 acts cell-autonomously and stays associated with the sperm



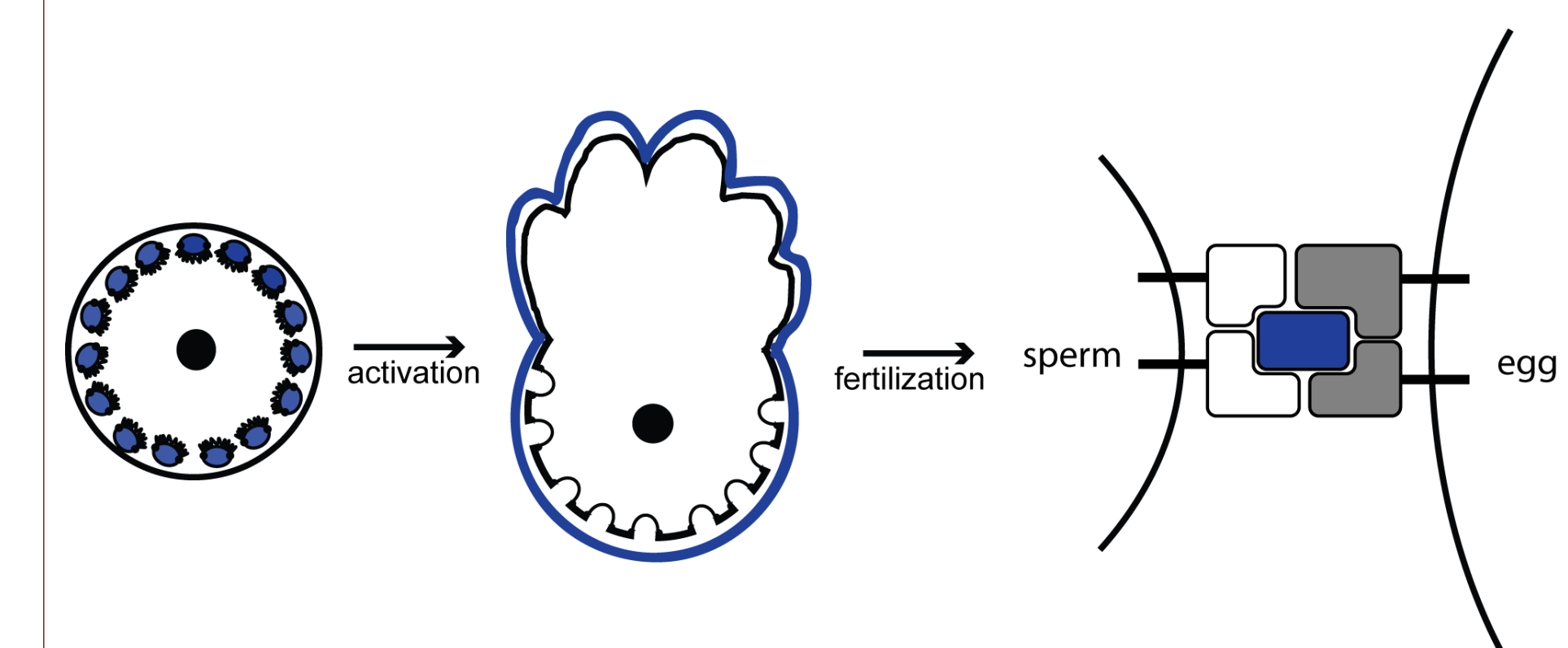
Sperm mixing experiments:  
the presence of SPE-51 does not allow mutant sperm to fertilize (data not shown)



J-K. Tagging SPE-51 by Crispr. Hermaphrodite sperm are shown.

In J, yellow arrow points to the sperm with only auto-fluorescence.

## Conclusions



SPE-51:

- contains an Ig-like fold
- required for sperm-egg interactions
- secreted by the sperm
- associated with the sperm
- part of a fusogenic complex?

## Acknowledgements

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## Reference

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