

**Reproducibility report for:** Sperm migration in the genital tract - in silico experiments identify key factors for reproductive success.

**Submitted to:** PLoS Computational Biology

**Manuscript number/identifier:** PCOMPBIOL-D-20-01294

**Curation outcome summary:** Unable to determine the reproducibility of the work presented.

**Box 1: Criteria for repeatability and reproducibility**

**Model source code provided:**

- Source code: a standard procedural language is used (e.g. MATLAB, Python, C)
  - There are details/documentation on how the source code was compiled
  - There are details on how to run the code in the provided documentation
  - The initial conditions are provided for each of the simulations
  - Details for creating reported graphical results from the simulation results
- Source code: a declarative language is used (e.g. SBML, CellML, NeuroML)
  - The algorithms used are defined or cited in previous articles
  - The algorithm parameters are defined
  - Post-processing of the results are described in sufficient detail

**Executable model provided:**

- The model is executable without source (e.g. desktop application, compiled code, online service)
  - There are sufficient details to repeat the required simulation experiments

**The model is described mathematically in the article(s):**

- Equations representing the biological system
- There are tables or lists of parameter values
- There are tables or lists of initial conditions
- Machine-readable tables of parameter values
- Machine-readable tables of initial conditions

**The simulation experiments using the model are described mathematically in the article:**

- Integration algorithms used are defined
- Stochastic algorithms used are defined
- Random number generator algorithms used are defined
- Parameter fitting algorithms are defined
- The paper indicates how the algorithms yield the desired output

**Box 2: Criteria for accessibility**

- Model/source code is available at a public repository or researcher's web site
  - Prohibitive license provided
  - Permissive license provided
  - Open-source license provided
- All initial conditions and parameters are provided
- All simulation experiments are fully defined (events listed, collection times and measurements specified, algorithms provided, simulator specified, etc.)

**Box 3: Rules for Credible practice of Modeling and Simulation<sup>a</sup>**

<sup>a</sup>Model credibility is assessed using the Interagency Modeling and Analysis Group conformance rubric:  
<https://www.imagwiki.nibib.nih.gov/content/10-simple-rules-conformance-rubric>

- Define context clearly: Extensive
- Use appropriate data: Extensive
- Evaluate within context: Extensive
- List limitations explicitly: Insufficient
- Use version control: Insufficient
- Document adequately: Extensive
- Conform to standards: Insufficient

**Box 4: Evaluation**

- Model and its simulations could be repeated using provided declarative or procedural code
- Model and its simulations could be reproduced



**Summary comments:** No model source code or data was submitted for download as a zip file, Github link or in any other format. As a result we are unable to determine the reproducibility of the work presented.

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