# Transcription factor binding sites detection in *Paramecium*

**Matthias Grenié** [*], **Jean-François Goût** [†] **and Michael Lynch** [†]

[*]ENS de Lyon, Département de Biologie, and [†]Indiana University, Biology Department, Lynch Lab

Submitted to Proceedings of the National Academy of Sciences of the United States of America

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Keyword1 | Keyword2 | Keyword3

Abbreviations: SAM, self-assembled monolayer ; OTS, octadecyltrichlorosilane

## Introduction

Structure of the introduction

- Whole Genome Duplications background
- WGD influences on Transcription Factor Binding Sites ?
- the *Paramecium* project, experimental part, etc. some work is done and random sequences ?
- Here, focusing on the computational part, developing pipeline, showed that etc.

## Results

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### Simulations.

### Simulation 1

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### Simulation 2

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## Discussion

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**Reserved for Publication Footnotes**

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## Materials and Methods

-¿ developped a whole pipeline (show simple pipeline graph) From annotations and assembly files -¿ extracted upstream sequences of given length minimum length 15nt cutoff at 250nt. From families with specific conditions. X families identified, In each family CDSs were retrieved, aligned using protein-guided alignment (TranslatorX) and ML tree (PhyML) was computed -¿ used BigFoot to consider the phylogenetic signal + Comparison with MEME.

From this, X motifs matched partially (quantify !) between MEME and BigFoot -¿ search through the genome this motifs in each species. Using publicly available RNA expression data, search correlations between motifs and expression level.

**Definition 1.** *A bounded function $\theta$ is a weak solution of QG if for any $\phi \, \epsilon \, C_0^\infty(\mathbb{R}/\mathbb{Z} \times \mathbb{R} \times [0, \varepsilon])$ we have*

$$\begin{aligned} & \int_{\mathbb{R}^+ \times \mathbb{R}/\mathbb{Z} \times \mathbb{R}} \theta(x,y,t)\, \partial_t \phi\,(x,y,t) dy dx dt + \\ + \quad & \int_{\mathbb{R}^+ \times \mathbb{R}/\mathbb{Z} \times \mathbb{R}} \theta\,(x,y,t) u(x,y,t) \cdot \nabla \phi\,(x,y,t) dy dx dt = 0 \end{aligned} \quad \textbf{[1]}$$

*where $u$ is determined previously.*

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**Theorem 1.** *If the active scalar $\theta$ satisfies the equation* **[1]**, *then $\varphi$ satisfies the equation*

$$\begin{aligned} \frac{\partial \varphi}{\partial t}(x,t) \quad = \quad & \int_{\mathbb{R}/\mathbb{Z}} \frac{\frac{\partial \varphi}{\partial x}(x,t) - \frac{\partial \varphi}{\partial u}(u,t)}{\left[(x-u)^2 + (\varphi(x,t) - \varphi(u,t))^2\right]^{\frac{1}{2}}} \\ & \chi(x-u, \varphi(x,t) - \varphi(u,t)) du \; + \\ + \quad & \int_{\mathbb{R}/\mathbb{Z}} \Big[ \frac{\partial \varphi}{\partial x}(x,t) - \frac{\partial \varphi}{\partial u}(u,t) \Big] \\ & \eta(x-u, \varphi(x,t) - \varphi(u,t)) du + Error \end{aligned} \quad \textbf{[2]}$$

*with $|Error| \leq C\, \delta |log \delta|$ where $C$ depends only on $\|\theta\|_{L^\infty}$ and $\|\nabla \varphi\|_{L^\infty}$.*

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## Appendix

An appendix without a title.

## Appendix: Appendix title

An appendix with a title.

**ACKNOWLEDGMENTS.** This work was partially supported by a grant from the Spanish Ministry of Science and Technology.


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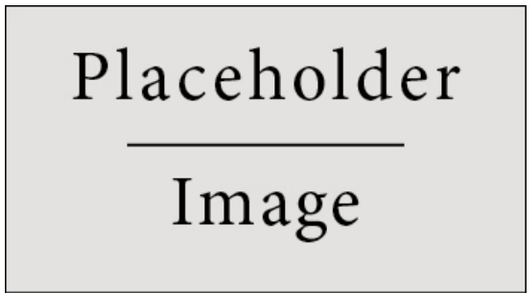


FIGURE **1.** Figure caption

TABLE **1. Table caption**

| **Treatments** | **Response 1** | **Response 2** |
|---|---|---|
| Treatment 1 | 0.0003262 | 0.562 |
| Treatment 2 | 0.0015681 | 0.910 |
| Treatment 3 | 0.0009271 | 0.296 |