

# Author's Accepted Manuscript

Developmental origin and morphogenesis of the diaphragm, an essential mammalian muscle

Elizabeth M Sefton, Mirialys Gallardo, Gabrielle Kardon



PII: S0012-1606(18)30146-5  
DOI: <https://doi.org/10.1016/j.ydbio.2018.04.010>  
Reference: YDBIO7738

To appear in: *Developmental Biology*

Received date: 6 March 2018  
Revised date: 14 April 2018  
Accepted date: 14 April 2018

Cite this article as: Elizabeth M Sefton, Mirialys Gallardo and Gabrielle Kardon, Developmental origin and morphogenesis of the diaphragm, an essential mammalian muscle, *Developmental Biology*, <https://doi.org/10.1016/j.ydbio.2018.04.010>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# Developmental origin and morphogenesis of the diaphragm, an essential mammalian muscle

Elizabeth M Sefton<sup>1</sup>

Mirialys Gallardo<sup>1</sup>

Gabrielle Kardon<sup>\*</sup>

Department of Human Genetics University of Utah Salt Lake City, UT 84112

<sup>\*</sup>Corresponding author

## Abstract

The diaphragm is a mammalian skeletal muscle essential for respiration and for separating the thoracic and abdominal cavities. Development of the diaphragm requires the coordinated development of muscle, muscle connective tissue, tendon, nerves, and vasculature that derive from different embryonic sources. However, defects in diaphragm development are common and the cause of an often deadly birth defect, Congenital Diaphragmatic Hernia (CDH). Here we comprehensively describe the normal developmental origin and complex spatial-temporal relationship between the different developing tissues to form a functional diaphragm using a developmental series of mouse embryos genetically and immunofluorescently labeled and analyzed in whole mount. We find that the earliest developmental events are the emigration of muscle progenitors from cervical somites followed by the projection of phrenic nerve axons from the cervical neural tube. Muscle progenitors and phrenic nerve target the pleuroperitoneal folds

---

<sup>1</sup> Co-first authors

Download English Version:

<https://daneshyari.com/en/article/8467130>

Download Persian Version:

<https://daneshyari.com/article/8467130>

[Daneshyari.com](https://daneshyari.com)