

## Accepted Manuscript

Title: Nuclear export of RNA: Different sizes, shapes and functions

Authors: Tobias Williams, Linh H. Ngo, Vihandha O. Wickramasinghe



PII: S1084-9521(17)30059-9  
DOI: <http://dx.doi.org/10.1016/j.semcdb.2017.08.054>  
Reference: YSCDB 2363

To appear in: *Seminars in Cell & Developmental Biology*

Received date: 6-6-2017  
Revised date: 28-8-2017  
Accepted date: 29-8-2017

Please cite this article as: Williams Tobias, Ngo Linh H, Wickramasinghe Vihandha O. Nuclear export of RNA: Different sizes, shapes and functions. *Seminars in Cell and Developmental Biology* <http://dx.doi.org/10.1016/j.semcdb.2017.08.054>

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 proof before it is published in its final 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.

## Nuclear export of RNA: Different sizes, shapes and functions

Tobias Williams\*, Linh H. Ngo\* and Vihandha O. Wickramasinghe<sup>1†</sup>

<sup>1</sup>RNA Biology and Cancer Laboratory, Peter MacCallum Cancer Centre, Melbourne,  
Victoria 3000, Australia

\* These authors contributed equally to this work

<sup>†</sup>Correspondence should be addressed to [V.O.W., \(vi.wickramasinghe@petermac.org\)](mailto:V.O.W., (vi.wickramasinghe@petermac.org)).

**Export of protein-coding and non-coding RNA molecules from the nucleus to the cytoplasm is critical for gene expression. This necessitates the continuous transport of RNA species of different size, shape and function through nuclear pore complexes via export receptors and adaptor proteins. Here, we provide an overview of the major RNA export pathways in humans, highlighting the similarities and differences between each. Its importance is underscored by the growing appreciation that deregulation of RNA export pathways is associated with human diseases like cancer.**

### 1. Introduction

The central dogma of molecular biology states that the flow of biological information is from DNA to RNA to protein. However, this flow of information encounters a physical barrier, the nuclear envelope, which encapsulates the genome and physically separates transcription within the nucleus from translation in the cytoplasm. This necessitates the continuous transport of RNA through the inner channel of nuclear pore complexes (NPCs). Cellular functions depend on accurate expression of both protein-coding and non-coding RNAs, which have important functions both in the nucleus and the cytoplasm. Non-coding

Download English Version:

<https://daneshyari.com/en/article/8479744>

Download Persian Version:

<https://daneshyari.com/article/8479744>

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