

# BBA

Gene Regulatory  
Mechanisms

Volume 1859, Issue 1, January 2016

# SPECIAL ISSUE

## Clues to long noncoding RNA taxonomy

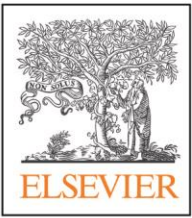
EDITED BY **Tetsuro Hirose**, Institute for Genetic Medicine, Hokkaido University and  
**Shinichi Nakagawa**, Nakagawa RNA Biology laboratory, RIKEN

This special issue aims to assemble available knowledge on long noncoding RNAs (lncRNAs) and provide future research directions for discovering the molecular functions of this emerging family of molecules. The genomes of eukaryotes, particularly mammalian species including human and mouse, possess large chunks of nonprotein-coding regions. Only 2% of the human genome is dedicated to coding for proteins; the remainder is constituted of noncoding regions, which are for the most part functionally unannotated. At the beginning of the postgenomic era, transcriptome genome-wide analyses in various organisms unexpectedly revealed that large portions of the mammalian genome produce numerous transcripts that lack protein-coding potential. Among these RNAs, noncoding transcripts longer than 200 nt are arbitrarily referred to as "lncRNAs". As in the case of proteins, ncRNAs are extremely diverse and have specific characteristics that determine their functions. However, lncRNAs have been collectively and passively defined as RNA molecules without polypeptide-coding capacity, with no consideration for their functions. However, it is now broadly accepted that a certain subset of lncRNAs possess

specific regulatory functions that control a wide range of physiological events. In light of this, it is the time to establish a new classification, which we tentatively call "lncRNA taxonomy", which classifies lncRNAs into functional groups according to the type(s) of function-conferring RNA element(s) they possess. This approach should make it possible to predict the functions of unannotated lncRNAs and improve our understanding of their biological significance. In this special issue, we have assembled as much information as possible to provide "clues to lncRNA taxonomy", including clues about their genomic organization, expression, processing, structure, chemical modifications, and interacting factors, as well as their molecular and physiological functions and putative involvement in various diseases.



NOW AVAILABLE  
[www.elsevier.com/locate/bbagrm](http://www.elsevier.com/locate/bbagrm)



# Clues to long noncoding RNA taxonomy

Volume 1859, Issue 1, January 2016

## Contents:

### Clues to long noncoding RNA Taxonomy

Edited by Tetsuro Hirose and Shinichi Nakagawa

**Discovery and functional analysis of lncRNAs: methodologies to investigate an uncharacterized transcriptome**  
Carninci Piero

**The specificity of long noncoding RNA expression**  
Dinger Marcel E.

**Bioinformatics tools for lncRNA research**  
Asai Kiyoshi

**Methods for distinguishing between protein-coding and long noncoding RNAs and the elusive biological purpose of translation of long noncoding RNAs**  
Ulitsky Igor

**Towards structural classification of long non-coding RNAs**  
Sanbonmatsu Karissa

**The ins and outs of lncRNA structure: how, why and what comes next?**  
Bond Charles S

**The Emerging Epitranscriptomics of Long Noncoding RNAs**  
Preiss Thomas

**RISC assembly: coordination between small RNAs and Argonaute proteins**  
Tomari Yukihide

**piRNA biogenesis in the germline: from transcription of piRNA genomic sources to piRNA maturation**  
Siomi Mikiko C.

**Pervasive lncRNA binding by chromatin modifying complexes - the challenges ahead**  
Betancur Juan G.

**Long noncoding RNAs: Lessons from Genomic imprinting**  
Kanduri Chandrasekhar

**Dynamic interplay and function of multiple noncoding genes governing X chromosome inactivation**  
Ogawa Yuya

**Insight into lncRNA biology using hybridization capture analyses**  
Simon Matthew D.

**Long noncoding RNAs: Re-writing dogmas of RNA processing and stability**  
Wilusz Jeremy E.

**Architectural RNAs (arcRNAs): a class of long noncoding RNAs that function as the scaffold of nuclear bodies**  
Hirose Tetsuro

**The long non-coding RNA world in yeasts**  
Yamashita Akira

**Circular RNAs: Identification, Biogenesis and Function** P.A. Del Hansen Thomas B.

**lncRNAs and microRNAs with a role in cancer development**  
Esteller Manel

**Lessons from reverse-genetic studies of lncRNAs**  
Nakagawa Shinichi

**Stressing out over long noncoding RNA**  
Lee Stephen

**MALAT1 long non-coding RNA in cancer**  
Yoshimoto Rei

**Expanding the p53 regulatory network: lncRNAs take up the challenge**  
Huarte Maite

**Long noncoding RNAs in Diseases of Aging**  
Gorospe Myriam

**NOW AVAILABLE**  
[www.elsevier.com/locate/bbagrm](http://www.elsevier.com/locate/bbagrm)

