

SIROCCO

Silencing RNAs: organizers and coordinators of complexity in eukaryotic organisms

JUNE 2009 Newsletter 29

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MicroRNA Expression and Regulation of Muscle Cell Differentiation



SIROCCO Partner Annick Harel-Bellan and her CNRS colleague Anna Poleskaya are interested in understanding how microRNAs regulate gene expression during muscle cell differentiation. To identify microRNAs that are important in this process, they are collaborating with SIROCCO Partner Exiqon to monitor changes in microRNA

expression during myogenesis. In parallel, they are performing high-throughput screening with miRNA inhibitors using Exiqon's miRCURY LNA™ Knock-down Library.

Annick Harel-Bellan: "We have chosen a novel human skeletal myoblast cell line as our model system. These cells were transfected in 96 well plates with the Exiqon miRCURY LNA™ KD library of microRNA inhibitors. Differentiation was induced 24 h later, and the efficiency of differentiation was evaluated by immunofluorescent staining at 7-day time points. In a parallel approach, the expression of miRNAs during terminal differentiation of these cells was profiled by Exiqon array services.

The data show surprisingly dramatic changes over time. A large number of microRNAs are differentially regulated and they fall in different categories of expression kinetics: generally we observe up- and downregulated microRNAs, but a few microRNAs appear to be transiently differentially regulated during the process. Interestingly, many of the differentially regulated microRNAs are related – either belonging to the same family or closely associated on the chromosome, and possibly deriving from the same primary transcript."



Anna Poleskaya

David Baulcombe Receives Knighthood



SIROCCO Coordinator David Baulcombe received a knighthood for services to plant science in the honours list announced 13 June. Together with Andrew Hamilton, David discovered the small interfering RNA that is the specificity determinant in RNA-mediated gene silencing and helped to unravel the importance of small interfering RNA in defence against viruses and in epigenetics.

British honours are awarded on merit, for exceptional achievement or service. Anyone can recommend a British national for an honour, which consist of life peerages, knighthoods, appointments to the Order of the British Empire and gallantry awards to servicemen and women and civilians. Nominations, sent either by government ministers or by members of the public, are divided into subject areas and assessed by eight committees comprising both senior civil servants and independent experts. The selected list is submitted to Queen Elizabeth through the prime minister. The Queen formally approves the list of recipients.

The honour of knighthood comes from the days of medieval chivalry, as does the method used to confer the knighthood: the accolade, or the touch of a sword by the Sovereign.

Reporting Update

Deadline for scientific reporting for Year 3:
31 August 2009

No 6-monthly reports necessary for Year 3



RESEARCH SPOTLIGHT



Uniparental expression of PolIV-dependent siRNAs in developing endosperm of Arabidopsis.

Mosher RA, Melnyk CW, Kelly KA, Dunn RM, Studholme DJ, Baulcombe DC.
Nature. 2009 Jun 3. [Epub ahead of print]

Embryonic temperature affects muscle fibre recruitment in adult zebrafish: genome-wide changes in gene and microRNA expression associated with the transition from hyperplastic to hypertrophic growth phenotypes.

Johnston IA, Lee HT, Macqueen DJ, Paranthaman K, Kawashima C, Anwar A, Kinghorn JR, Dalmay T.
J Exp Biol. 2009 Jun;212(Pt 12):1781-93.

The 1001 Genomes Project for Arabidopsis thaliana.

Weigel D, Mott R.
Genome Biol. 2009 May 27;10(5):107. [Epub ahead of print]

RNA silencing: Recent developments on miRNAs.

Nicolas FE, Lopez-Gomollon S, Lopez-Martinez AF, Dalmay T.
Recent Pat DNA Gene Seq. 2009;3(2):77-87.

The GW182 protein family in animal cells: New insights into domains required for miRNA-mediated gene silencing.

Eulalio A, Triteschler F, Izaurralde E.
RNA. 2009 Jun 17. [Epub ahead of print]



Silence
A Journal of RNA regulation

Editors-in-Chief

David Baulcombe, University of Cambridge, UK
Phillip D Zamore, University of Massachusetts Medical School, Massachusetts, USA

Silence is an online, peer-reviewed open access journal that covers all aspects of genetic and epigenetic control that are mediated by RNA.

Silence aims to feature research involving small RNA molecules, and submissions are invited describing novel insights into the biogenesis and activity of such molecules. Manuscripts describing other RNA-mediated mechanisms in prokaryotes and eukaryotes are also of interest, particularly if they involve aspects of nucleic acid biochemistry that are relevant to processes involving small RNA. In addition to novel research findings, the Editors of *Silence* are particularly interested in receiving submissions describing novel methods for analysis and manipulation of RNA-mediated regulation. *Silence* also encourages bioinformatic and computational methods articles describing results and protocols that are accessible to molecular biologists and geneticists.

The inaugural issue of *Silence* will be heavily promoted by the publishers and there will be a print copy produced and distributed at the Keystone meetings.

Keystone Symposia on Molecular and Cellular Biology:

RNA Silencing: Mechanism, Biology and Application

Organizers: Philip Zamore and Beverly Davidson
14-19 January 2010
Keystone Resort, Keystone Colorado USA

RNA Silencing Mechanisms in Plants

Organizers: Marjori Ann Matzke and James C. Carrington
21 - 26 February 2010
Hilton Santa Fe/Historic Plaza
Santa Fe, New Mexico USA