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Silencing RNAs: organizers and coordinators of complexity in eukaryotic organisms

SIROCCO Partners describe mechanism of silencing suppressor protein


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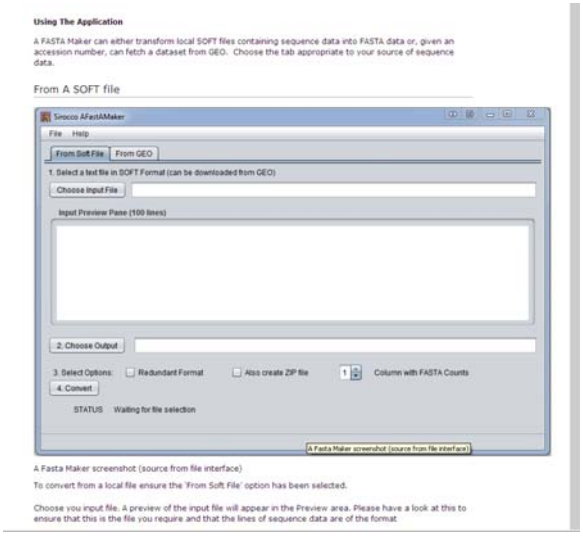
Jozsef Burgyan and Gyorgy Hutvagner with their co-authors Tibor Csorba and Rita Lozsa have published a paper elucidating the mechanism by which Polerovirus protein P0 interferes with the assembly of the RNA-induced silencing complex.
Abstract: RNA silencing plays an important role in plants in defence against viruses. To overcome this defence plant viruses encode suppressors of RNA silencing. The most common mode of silencing suppression is the sequestration of double-stranded RNAs involved in the antiviral silencing pathways. Viral suppressors can also overcome silencing responses through protein-protein interaction. The poleroviral P0 silencing suppressor protein targets for degradation the Argonaute (AGO) proteins which are the core component of the RNA Induced Silencing Complex (RISC). We found that P0 does not interfere with the slicer activity of pre-programmed siRNA/miRNA containing AGO1, but prevents de novo formation of siRNA/miRNA containing AGO1. We show that AGO1 protein is part of a high molecular weight complex, suggesting the existence of a multiprotein RISC in plants. We propose that 39 P0 prevents RISC assembly by interacting with one of its protein components, thus inhibiting 40 formation of siRNA/miRNA-RISC, and ultimately leading to AGO1 degradation. Our findings also suggest that siRNAs enhance the stability of co-expressed AGO1 both in the presence and absence of P0.

Polerovirus protein P0 prevents the assembly of small RNA containing RISC complexes and leads to degradation of ARGONAUTE1. Csorba T, Lózsa R, Hutvágner G, Burgyán J. Plant J. 2010 Feb 1. [Epub ahead of print]

New Utility for FASTA File Conversion

Many toolkits (for example the UEA Small Plant and Animal toolkit) require data to be provided in FASTA format. However sequence data sets from GEO often come in the SOFT format, and hence need to be converted before they can be used by many of the tools used in the bioinformatic sphere. SIROCCO has released A FASTA Maker – a Java based tool to help perform these SOFT to FASTA file conversions in an easy to use GUI.
This utility operates in two modes – it can either transform local SOFT files containing sequence data into FASTA data or, given an accession number, can fetch a dataset from GEO. It also allows the creation of a ZIP version of the newly created FASTA file and a choice or redundant or non-redundant FASTA formats.



http://www.sirocco-project.eu/a-fasta-maker-soft-to-fasta-file-conversion-utility/

For help with the FASTA maker or any other tool on the SIROCCO website please contact the bioinformatics team bioinformatics@plantsci.cam.ac.uk

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RESEARCH SPOTLIGHT

Polerovirus protein P0 prevents the assembly of small RNA containing RISC complexes and leads to degradation of ARGONAUTE1.
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Methods Mol Biol. 2009;555:77-86.

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A Locus on Mouse Chromosome 2 Is Involved in Susceptibility to Congenital Hypothyroidism and Contains an Essential Gene Expressed in Thyroid.
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Endocrinology. 2010 Feb 16. [Epub ahead of print]

Admin Update

FUNDING:

The third pre-financing funding was sent to Partners on 2nd February 2010, and should now be in Partner bank accounts. Please email Aileen fah37@cam.ac.uk or call +44 1223 748975 with any concerns about the payment.

REPORT:

The Period 3 (2009) Activity report was submitted to the European Commission for evaluation, together with the Detailed Implementation Plan for Month 37-54

UPCOMING EVENTS

4th ESF CONFERENCE on Functional Genomics and Disease

April 14-17, 2010 • Dresden, Germany

SIROCCO will be contributing a symposium session at the 4th European Science Foundation Conference on Functional Genomics and Disease 14-17th April 2010 in Dresden, Germany.
SIROCCO will be represented by Thomas F. Meyer, Jørgen Kjems, Eric Miska and Gunter Meister.