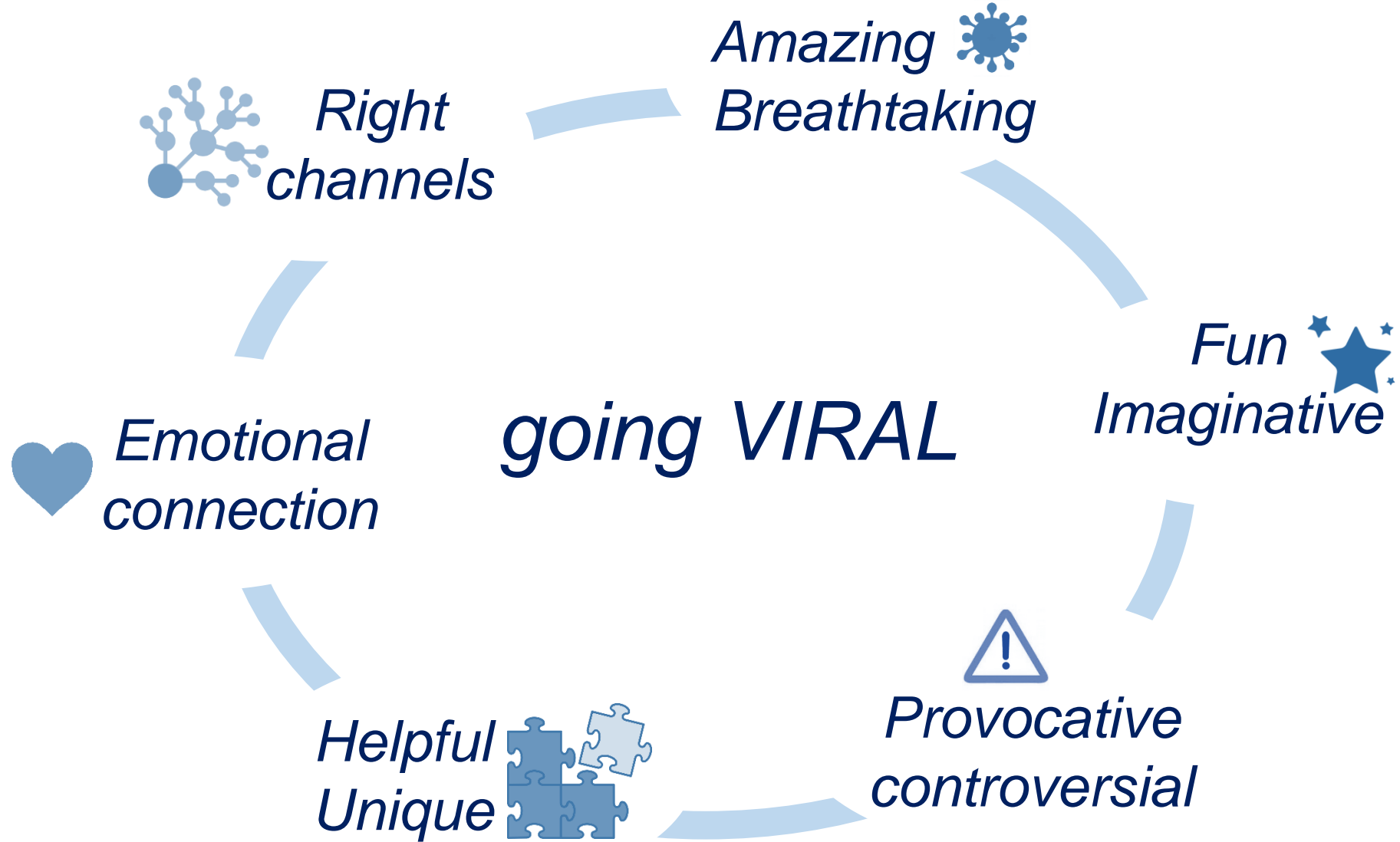




going VIRAL...

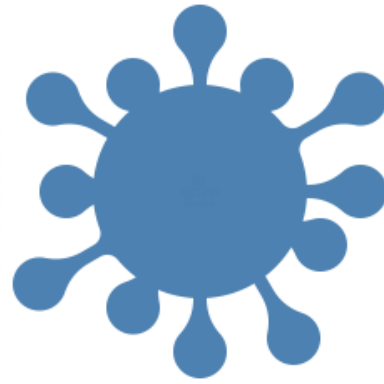
Carmen Galán, INGENASA, Madrid, Spain

*European Veterinary Vaccinology Workshop 2018
The Roslin Institute, Edinburgh, 21th May 2018*



going VIRAL

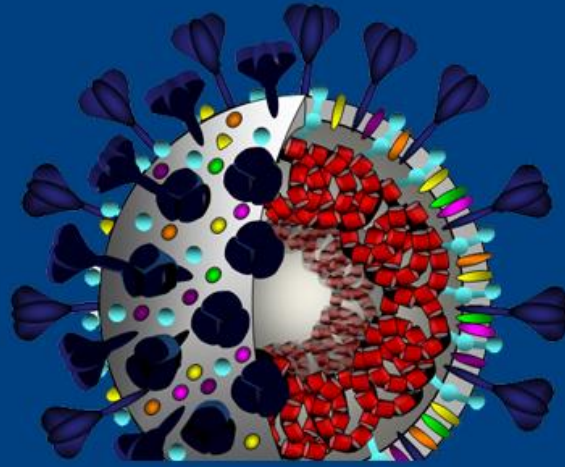
Amazing..



CORONAVIRUS LABORATORY



Department of Molecular and Cell Biology
Spanish National Centre for Biotechnology
C/ Darwin no. 3 - Campus de Cantoblanco
28049 Madrid - Spain
Lab Chairs: Luis Enjuanes and Isabel Sola



Research Interest

Group Members

Projects

Publications

CNB

CSIC

Coronavirus replication mechanism

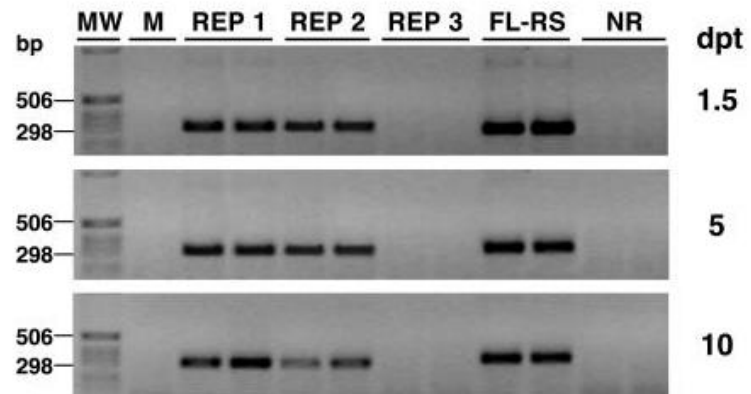
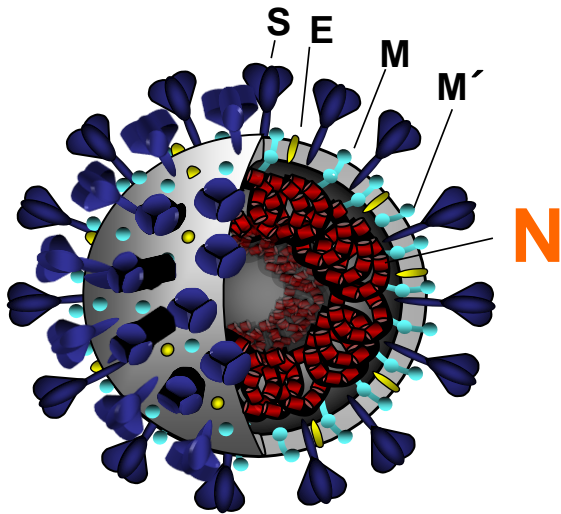
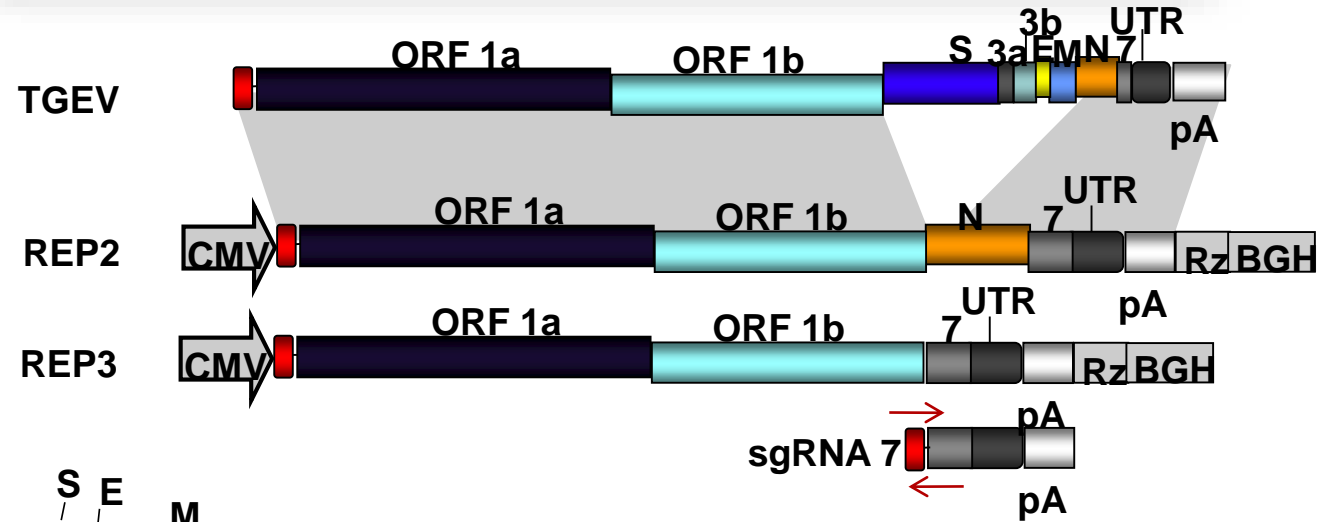
- Sequences required
- Viral/cellular proteins involved

The Nucleoprotein Is Required for Efficient Coronavirus Genome Replication

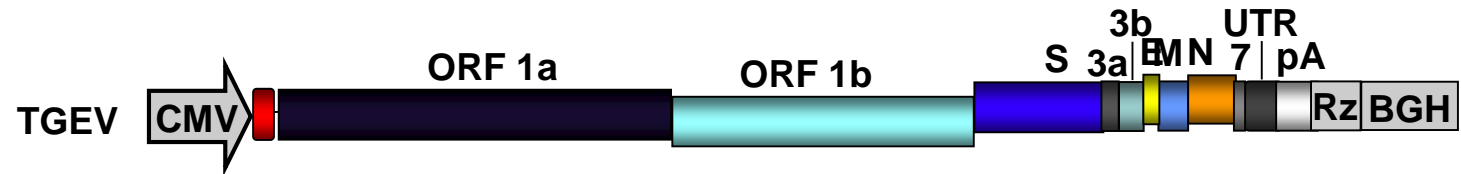
Fernando Almazán, Carmen Galán, and Luis Enjuanes*

Department of Molecular and Cell Biology, Centro Nacional de Biotecnología, Consejo Superior de Investigaciones Científicas, Campus Universidad Autónoma, Cantoblanco, Madrid, Spain

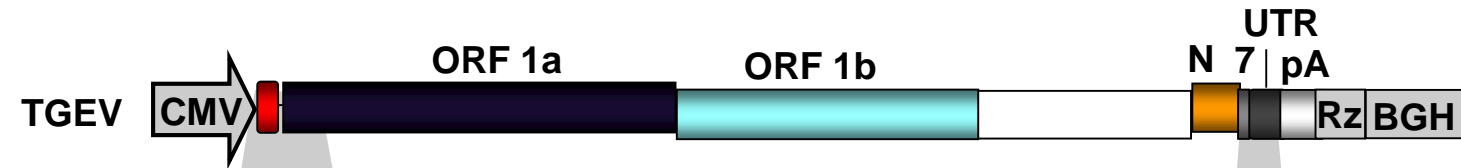
Received 13 March 2004/Accepted 14 June 2004



Sequence requirement for coronavirus replication



1. Autonomous replication "cis"



2. Helper-dependent replication "trans"

GENUS VIRUS

α TGEV 649

492 An

A Point Mutation within the Replicase Gene Differentially Affects Coronavirus Genome versus Minigenome Replication

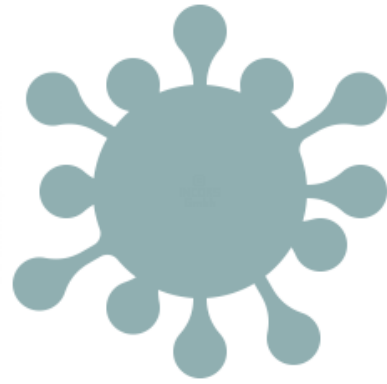
Carmen Galán, Luis Enjuanes,* and Fernando Almazán

Centro Nacional de Biotecnología, CSIC, Department of Molecular and Cell Biology, Campus Universidad Autónoma, Cantoblanco, Darwin St. 3, 28049 Madrid, Spain

Received 13 June 2005/Accepted 20 September 2005

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Breathtaking!!



SARS coronavirus
China, february 2003
>8000 infected
774 death



Generation of a SARS coronavirus
infectious clon and Replicon



JOURNAL OF VIROLOGY, Nov. 2006, p. 10900-10906
0022-538X/06/808.00+0 doi:10.1128/JVI.00385-06
Copyright © 2006, American Society for Microbiology. All Rights Reserved. Vol. 80, No. 21

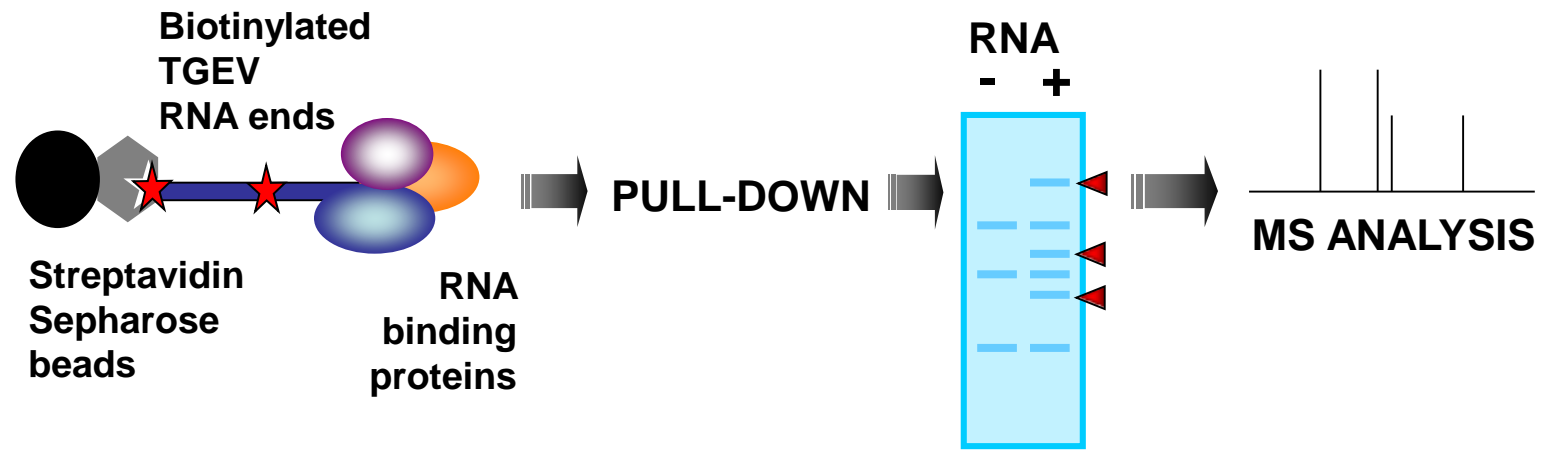
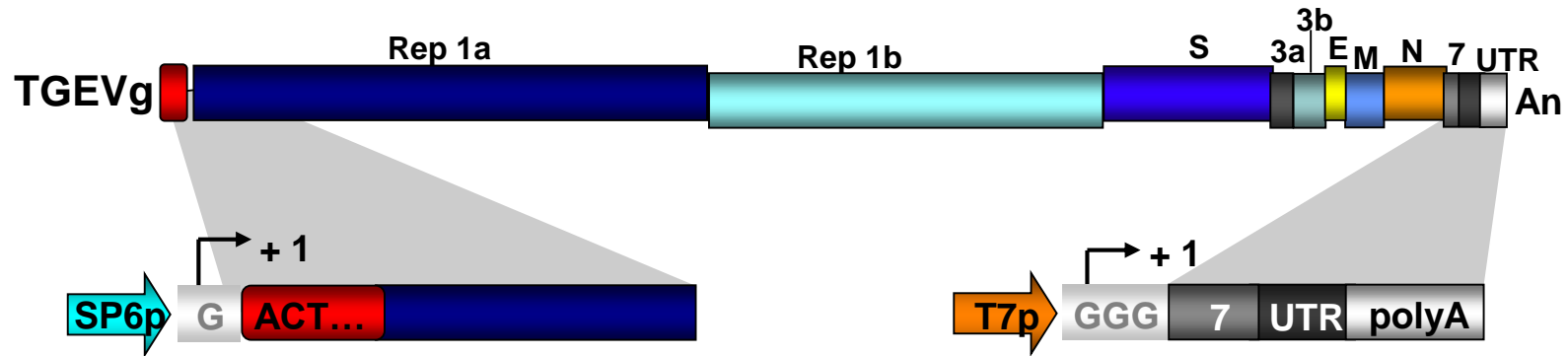
**Construction of a Severe Acute Respiratory Syndrome Coronavirus
Infectious cDNA Clone and a Replicon To Study
Coronavirus RNA Synthesis⁷**

Fernando Almazán, Marta L. DeDiego, Carmen Galán, David Escors, Enrique Álvarez, Javier Ortego,
Isabel Sola, Sonia Zuñiga, Sara Alonso, Jose L. Moreno, Aitor Nogales,
Carmen Capiscol, and Luis Enjuanes*

*Centro Nacional de Biotecnología, CSIC, Department of Molecular and Cell Biology, Darwin 3,
Campus Universidad Autónoma, Cantoblanco, Madrid, Spain*

Received 23 February 2006/Accepted 15 August 2006

Cellular proteins Interacting with TGEV genome ends

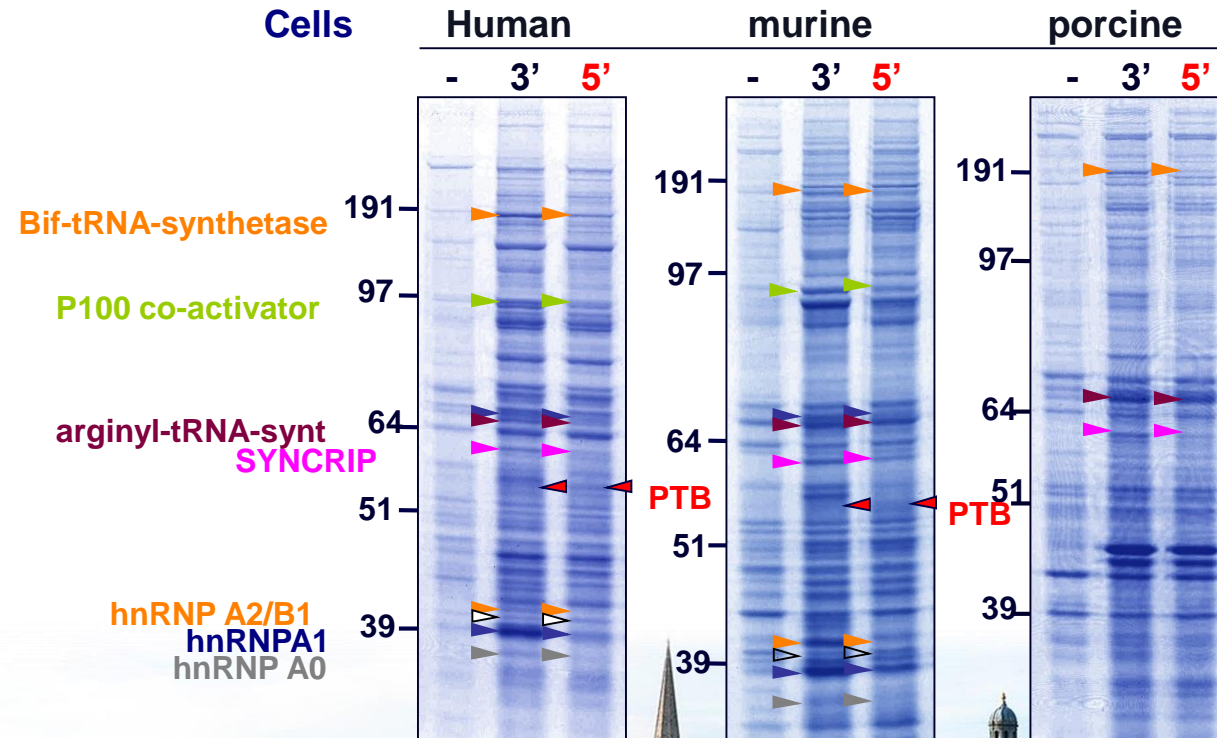


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Right channels

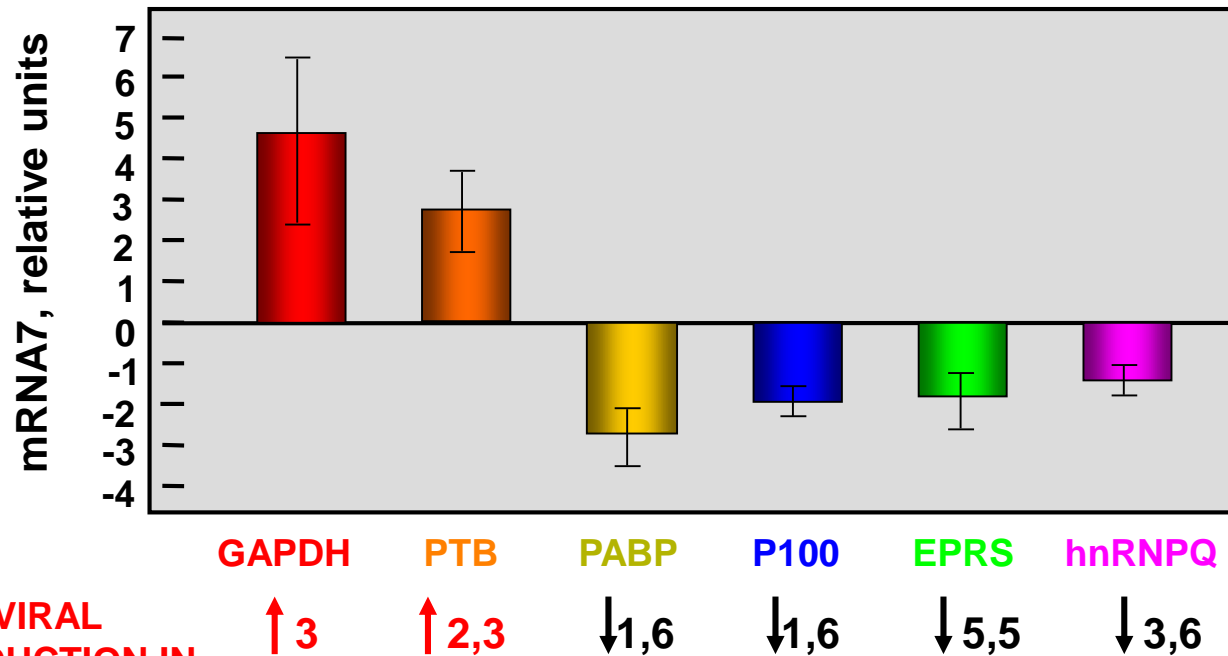


cellular proteins interacting with the genome ends of TGEV coronavirus



ROLE OF CELLULAR PROTEINS ON TGEV RNA SYNTHESIS

REP2 ACTIVITY IN 293T CELLS, 100 hpt of siRNAs



VIRAL PRODUCTION IN Huh7 cells (72hpt)

↑ 3
 ↑ 2,3
 ↓ 1,6
 ↓ 1,6
 ↓ 5,5
 ↓ 3,6

Virology 391 (2009) 304–314

Contents lists available at ScienceDirect

Virology

journal homepage: www.elsevier.com/locate/yviro

Host cell proteins interacting with the 3' end of TGEV coronavirus genome influence virus replication

Carmen Galán^a, Isabel Sola^a, Aitor Nogales^a, Benjamin Thomas^b, Alexandre Akoulitchev^{b,1}, Luis Enjuanes^{a,*}, Fernando Almazán^a

^a Department of Molecular and Cell Biology, Centro Nacional de Biotecnología, CSIC, C/Darwin 3, Cantoblanco, 28049 Madrid, Spain
^b Oxford Central Proteomics Facility, Sir William Dunn School of Pathology, University of Oxford, UK

JOURNAL OF VIROLOGY, May 2011, p. 5136–5149
 0022-538X/11/\$12.00 doi:10.1128/JVI.00195-11
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Vol. 85, No. 10

The Polypyrimidine Tract-Binding Protein Affects Coronavirus RNA Accumulation Levels and Relocalizes Viral RNAs to Novel Cytoplasmic Domains Different from Replication-Transcription Sites[∇]

Isabel Sola, Carmen Galán,† Pedro A. Mateos-Gómez, Lorena Palacio, Sonia Zúñiga, Jazmina L. Cruz, Fernando Almazán, and Luis Enjuanes*

Department of Molecular and Cell Biology, Centro Nacional de Biotecnología, CSIC, Darwin 3, Cantoblanco, 28049 Madrid, Spain

Received 28 January 2011/Accepted 2 March 2011

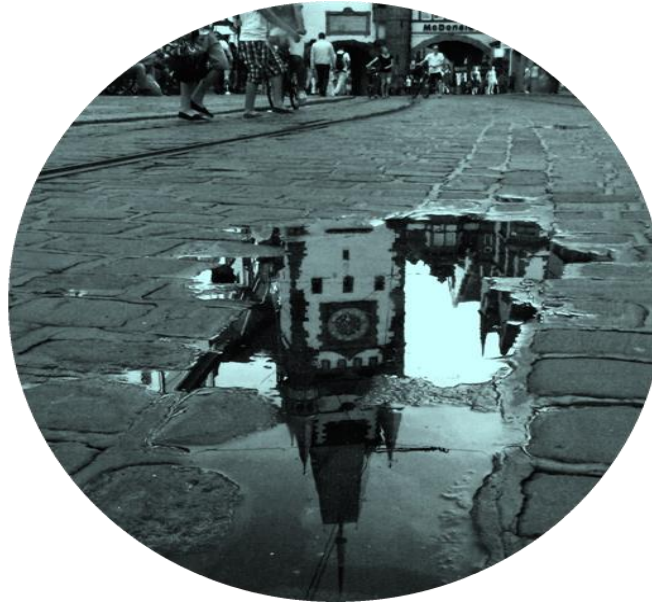


*challenging project
non-coding genome*

*going for a POSTDOC
decision-making
process*



*Strong
institution*



*low-cost
direct flight*

*place
to enjoy* 



MAX PLANCK INSTITUTE OF IMMUNOBIOLOGY AND EPIGENETICS



LABORATORY THOMAS JENUWEIN

Euchromatin
(transcriptionally competent)

Heterochromatin
(transcriptionally silent)

Epigenetic events:
DNA methylation
Histone modification

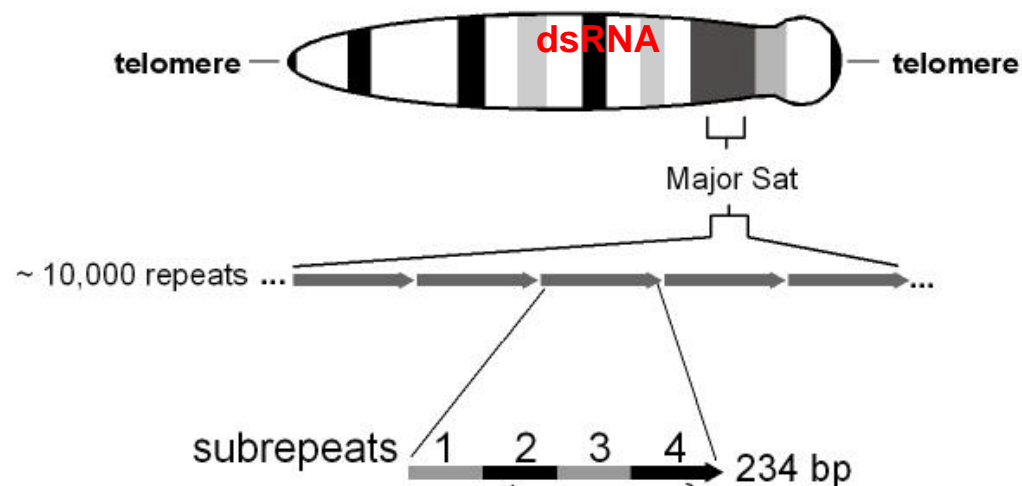
going VIRAL

*Provocative
controversial*



Mouse pericentric heterochromatin:

- genome-wide epigenetic map of heterochromatin
- structure of pericentric non-coding RNA: methylated?, triple helix?,
- Function: protein recruitment, epigenetic inheritance



silencing mechanism for endogenous retroviruses & LINEs

Molecular Cell All Content
Molecular Cell All J

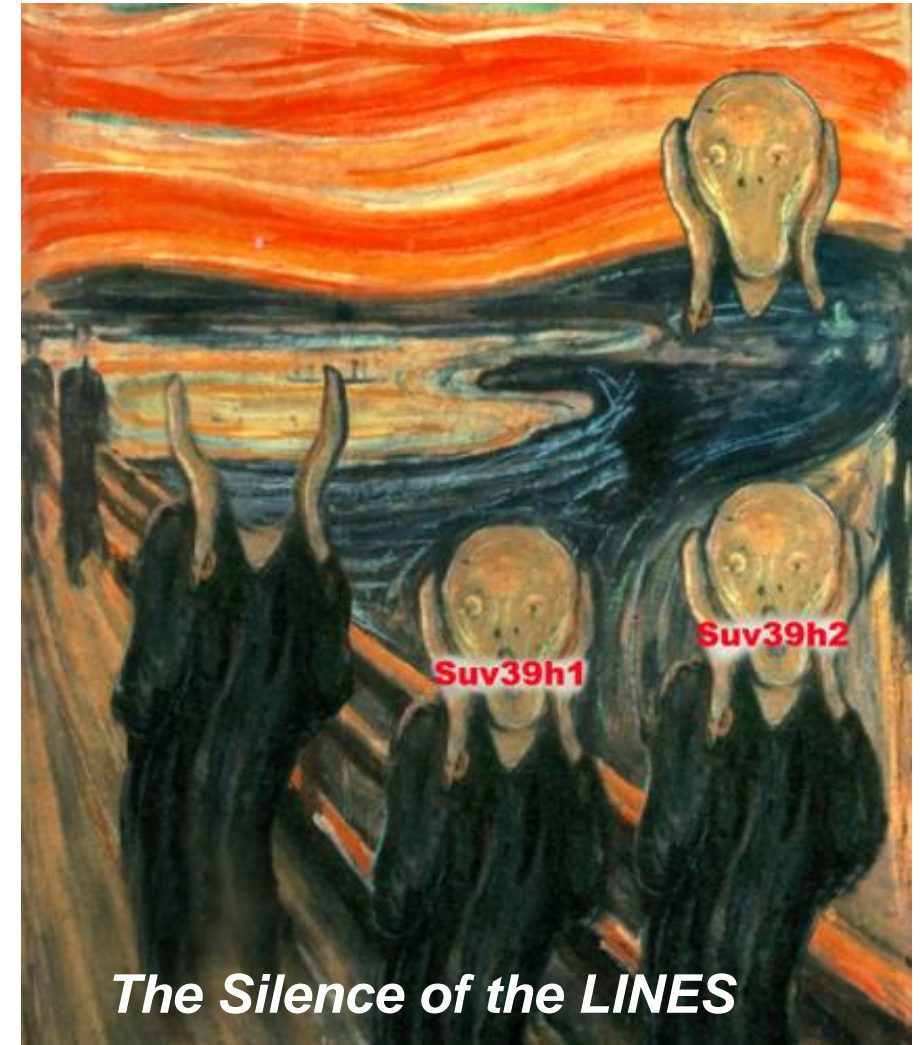
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< Previous Article Volume 55, Issue 2, p277-290, 17 July 2014

Article Switch to Standard View

Suv39h-Dependent H3K9me3 Marks Intact Retrotransposons and Silences LINE Elements in Mouse Embryonic Stem Cells

Aydan Bulut-Karslioglu⁴¹¹, Inti A. De La Rosa-Velázquez¹¹, Fidel Ramirez, Maxim Barenboim⁵, Megumi Onishi-Seebacher, Julia Arand⁶, Carmen Galán, Georg E. Winter⁷, Bettina Engist, Borbala Gerle⁸, Roderick J. O'Sullivan⁹, Joost H.A. Martens¹⁰, Jörn Walter, Thomas Manke, Monika Lachner, Thomas Jenuwein¹²

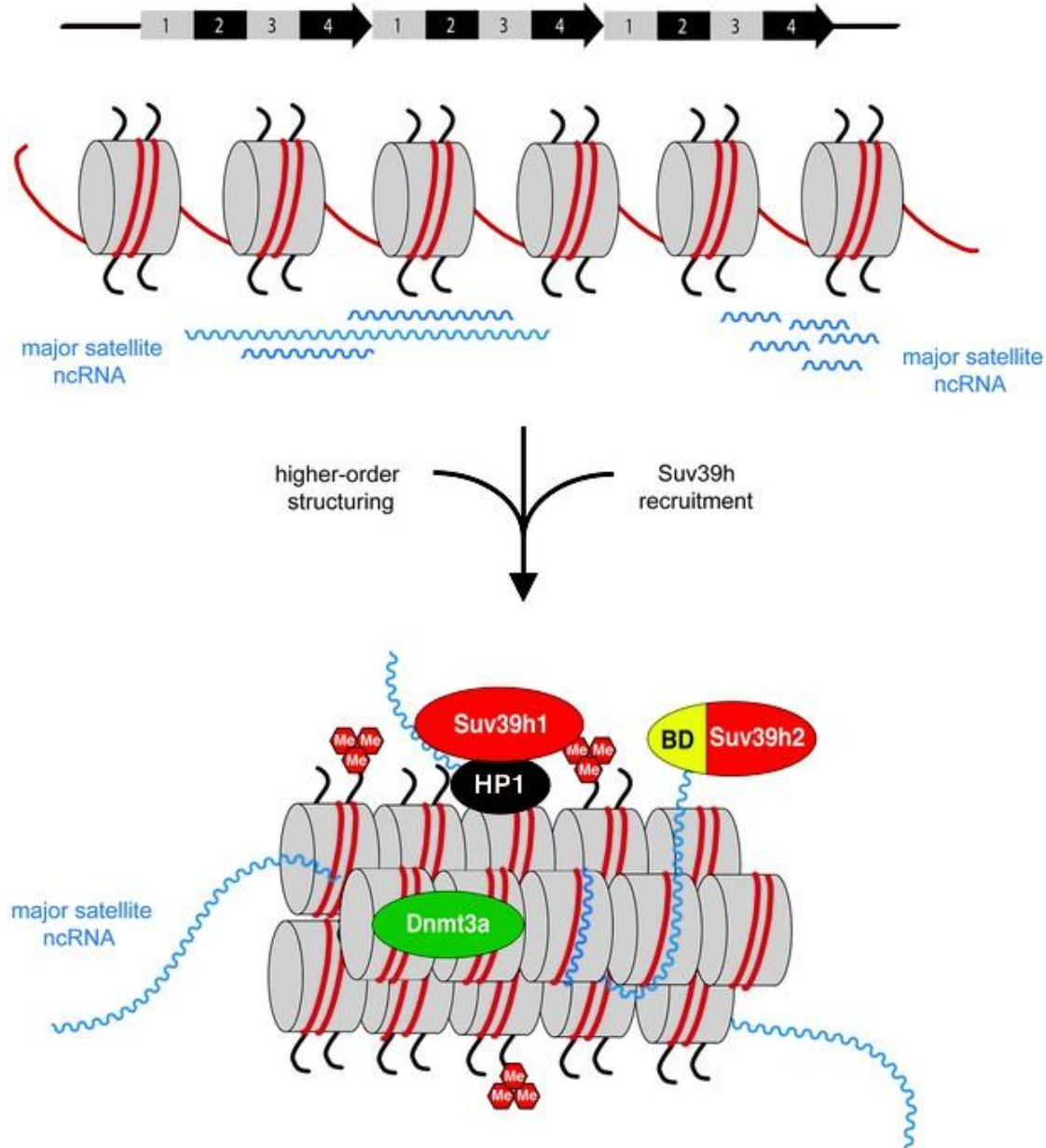


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Imaginative, Fun



major satellite repeats



Major satellite repeat RNA stabilize heterochromatin retention of Suv39h enzymes by RNA-nucleosome association and RNA:DNA hybrid formation

Oscar Velazquez Camacho^{1,2,3}, Carmen Galan^{1†}, Kalina Swist-Rosowska^{1,2,3}, Reagan Ching¹, Michael Gamalinda¹, Fethullah Karabiber⁴, Inti De La Rosa-Velazquez^{1†}, Bettina Engist¹, Birgit Koschorz¹, Nicholas Shukeir¹, Megumi Onishi-Seebacher¹, Suzanne van de Nobelen^{1§}, Thomas Jenuwein^{1*}

¹Max Planck Institute of Immunobiology and Epigenetics, Freiburg, Germany;





Carmen Galán

(Ávila, Spanien, 1979)

Öl und Acryl

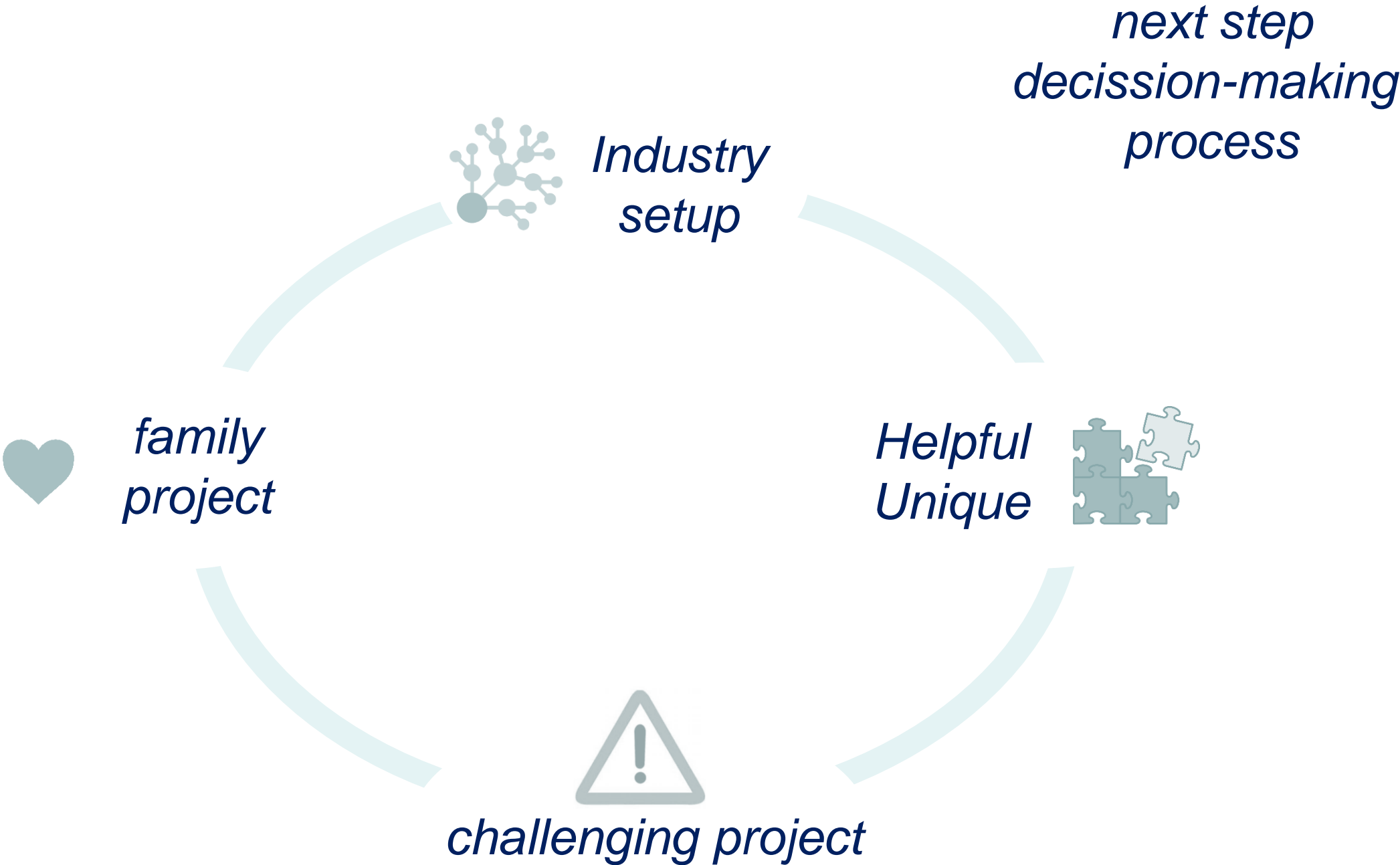
Ausstellung

„Casa Española“ Restaurant
Adelhauser Straße 9, Freiburg

21 Mai bis 14 Juni

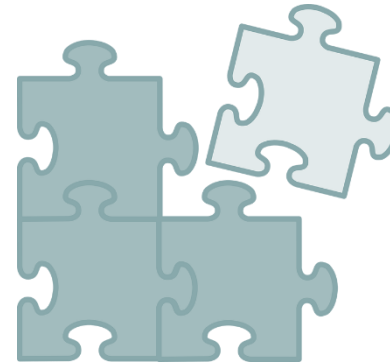
Kontakt: argininal6@hotmail.com





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Helpful



Management Fundamentals for Scientists and Researchers



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Useful, unique



INGENASA



INmunología y **GEN**ética Aplicada, **S.A.**

biotechnology applied to animal health and food quality

R&D

Projects

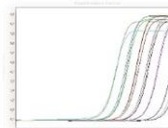
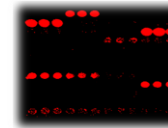
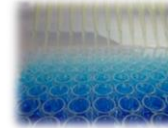
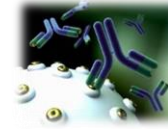
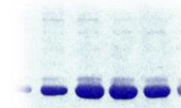
-  Para-FISH-Control (H2020)
-  SAPHIR (H2020)
-  SMARTER (H2020)
-  Multi DETECT (Eurostars)
-  VIVAC (MINECO)
-  TQ Fish (Torres Quevedo)
-  ASF-STOP (Cost)

Output

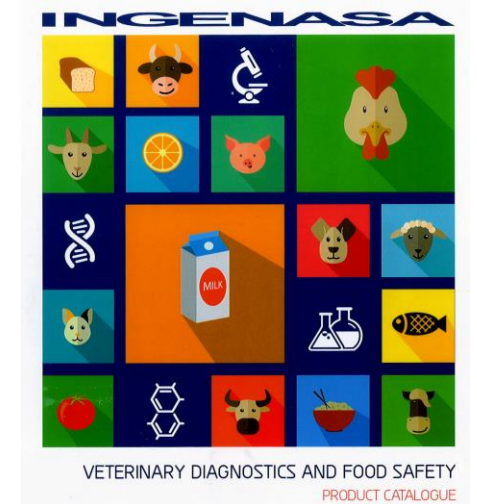
- 86 publications
- 64 patents
- 40 projects

Technologies

- Proteins
- Mabs
- ELISAs
- Microarrays
- LFDs
- Molecular



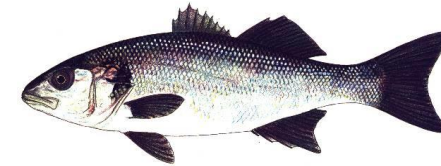
Products



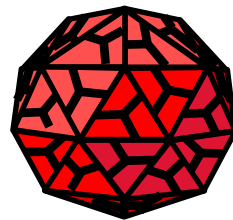
>100 references

diagnostics for aquaculture at INGENASA (poster)

*development of rapid on-site diagnostic tests
based on lateral flow chromatography*



virus



NNV, KHV...

parasites



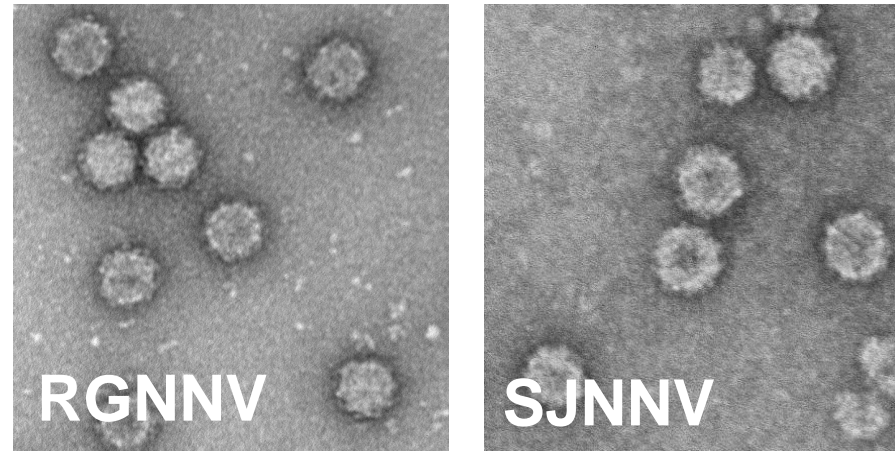
ParaFishControl

Enteromyxum, E.nucleophila

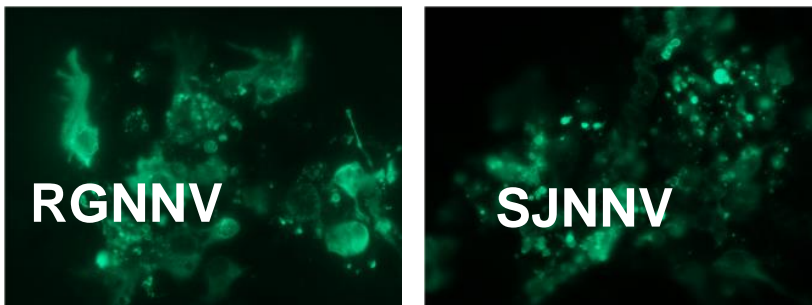


Tools for diagnostic & prevention of nodavirus outbreaks (poster)

Nodavirus-like particles



Specific antibodies

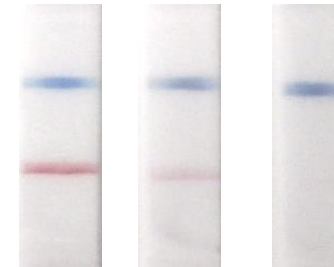
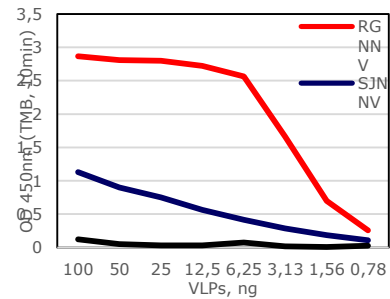


Diagnostic assays

ELISA



LFD



Vaccine candidates





INGENASA



MAX-PLANCK-GESELLSCHAFT

Right channels



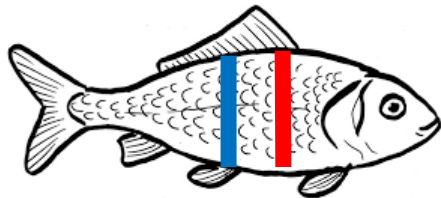
*Amazing
Breathtaking*



*Fun
Imaginative*



Helpful, Unique



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Emotional connection





Thank you

mcgalan@ingenasa.com