

# **PROGRAM**

## **Cantoblanco Workshops on Biology**

### **“REPLICATION AND RECOMBINATION OF RNA VIRUS GENOMES”**

The Workshop “Replication and recombination of RNA viral genomes”, mainly sponsored by the “Instituto Juan March de Estudios e Investigaciones”, will take place in the auditorium of “Centro Nacional de Biotecnología” (CSIC) in Madrid, from October 19 to 21st 2009. The main topic of the meeting will be the study of the replication, transcription and recombination of RNA virus genomes. Particular emphasis will be provided to discontinuous RNA synthesis involving recombination and template switching. Five sessions are being considered on:

1. Replication of RNA virus genomes.
2. Transcription of RNA virus genomes.
3. Recombination in the RNA virus World.
4. Discontinuous RNA synthesis: Transcription requiring recombination.
5. Virus and host cell factors involved in RNA virus genomes replication and recombination.

Template switching takes place mainly in HIV and Nidovirales. Recombination mechanisms have been studied in detail in the plant RNA virus world.

**OCTOBER 19<sup>TH</sup>**

**SESSION 1. REPLICATION OF RNA VIRUS GENOMES**

**Chair: Ben Berkhout**

**8:45-9:00 WELCOME. MEETING INFORMATION**

**9:00-9:35 Ralf Bartenschlager (1)**  
University of Heidelberg, Heidelberg, Germany  
**New insights into hepatitis C virus replication and assembly: The intimate relation between the virus and its host**

**9:35-10:10 Andrea V. Gamarnik (2)**  
Fundación Instituto Leloir, Buenos Aires, Argentina  
**Circular and linear conformations of the dengue virus genome are necessary for viral RNA amplification**

**10:10-10:45 Eckard Wimmer (3)**  
Stony Brook University, NY, USA  
**Studies of viruses by whole genome synthesis**

**10:45-11:15 COFFEE**

**11:15-11:50 Anne Simon (4)**  
University of Maryland, MD, USA  
**RNA conformational shifts controls translation and replication of a plus-strand RNA virus**

**11:50-12:25 Ricardo Flores (5)**  
Instituto de Biología Molecular y Celular de Plantas (UPV-CSIC). Valencia. Spain  
**Analysis of viroid replication**

**12:25-12:40 José Antonio Darós (6)**  
Instituto de Biología Molecular y Celular de Plantas (UPV-CSIC). Valencia. Spain  
**RNA processing during viroid replication**

**12:40-12:55 Selma Gago (7)**  
Instituto de Biología Molecular y Celular de Plantas (UPV-CSIC). Valencia. Spain  
**The mutation rate of a hammerhead viroid: a new upper limit for RNA replication fidelity**

**13:00-14:30 LUNCH AND POSTERS**

## **SESSION 2. TRANSCRIPTION OF RNA VIRUS GENOMES**

**Chair: Eckard Wimmer**

- 14:45-15:20**    **Luis Enjuanes (8)**  
CNB-CSIC. Madrid. Spain  
**Coronavirus discontinuous RNA synthesis**
- 15:20-15:55**    **Raoul de Groot (9)**  
Utrecht University, The Netherlands  
**Discontinuous and non-discontinuous subgenomic RNA transcription in a nidovirus**
- 15:55-16:30**    **Andrew White (10)**  
York University, Toronto, Canada  
**Subgenomic mRNA transcription in Tombusviridae**
- 16:30-17:00**    **COFFEE**
- 17:00-17:15**    **Isabel Sola (11)**  
CNB-CSIC, Madrid, Spain  
**Polypyrimidine tract-binding protein affects coronavirus RNA synthesis**
- 17:15-17:30**    **Aartjan J. W. te Velthuis (12)**  
Leiden University Medical Center, The Netherlands  
**Towards a reconstituted SARS coronavirus replicase: *in vitro* RNA synthesis by the nsp12 RdRp and the nsp8 primase**
- 17:30-17:45**    **Hélène Verheije (13)**  
Utrecht University, The Netherlands  
**Dynamics of coronavirus replication complexes**
- 17:45-18:00**    **Igor D. Vilfan (14)**  
Delft University of Technology, The Netherlands  
**Single-molecule techniques for monitoring viral polymerase action**
- 18:00-18:15**    **Rosa Esteban (15)**  
Universidad de Salamanca, Spain  
**20S RNA narnavirus defies the anti-viral activity of SKI1/XRN1 in *Saccharomyces cerevisiae***

**OCTOBER 20<sup>th</sup>**

**SESSION 3. RECOMBINATION OF RNA VIRUS GENOMES**

**Chair: Ralf Bartenschlager**

- 9:00-9:35 Ben Berkhout (16)**  
University of Amsterdam, The Netherlands  
**HIV-1 as RNA evolution machine**
- 9:35-10:10 Matteo Negroni (17)**  
Université de Strasbourg, France  
**Mechanisms of recombination restriction in the envelope gene of the Human Immunodeficiency Virus**
- 10:10-10:45 Norbert Tautz (18)**  
University of Lübeck, Germany  
**Pestivirus persistence - lessons learned from RNA recombination**
- 10:45-11:15 COFFEE**
- 11:15-11:50 Jeffrey J. DeStefano (19)**  
University of Maryland, USA  
**Nucleocapsid protein (NC) and a very high binding specificity for reverse transcriptase (RT) play important roles in selecting the polypurine tract (PPT) as the primer for second strand synthesis in HIV**
- 11:50-12:05 Ignacio de la Higuera (20)**  
Centro de Biología Molecular "Severo Ochoa" CSIC-UAM, Madrid, Spain  
**Mutant polymerases with reduced sensitivity to ribavirin in foot-and-mouth disease virus**
- 12:05-12:20 Andres Merits (21)**  
University of Tartu, Estonia  
**Novel functions of the alphavirus non-structural protein nsP3 terminal region in replicase formation and virus replication**
- 12:20-12:35 Aleksei Lulla (22)**  
University of Tartu, Estonia  
**Arrangements for the regulated processing of alphaviral nonstructural polyprotein**

**12:35-12:45    GROUP PHOTO**

**13:00-14:30    LUNCH AND POSTERS**

**SESSION 4. DISCONTINUOUS RNA SYNTHESIS: TRANSCRIPTION  
REQUIRING RECOMBINATION**

**Chair:            Ralph Baric**

**14:30-15:05    John Ziebuhr (23)**  
Queen's University Belfast, UK  
**Nidovirus replicative enzymes: structures, functions and interactions**

**15:05-15:40    Robert Bambara (24)**  
University of Rochester School of Medicine and Dentistry,  
Rochester, NY, USA  
**A gene-length sequence similar to tRNA<sup>Lys3</sup> is embedded  
in the HIV-1 RNA U3/R regions and promotes minus strand  
transfer**

**15:40-16:15    Daniel Loeb (25)**  
University of Wisconsin, Madison, WI. USA  
**Hepatitis B viruses: The gymnastics of genome replication**

**16:15-16:45    COFFEE**

**16:45-17:20    Jean-Luc Darlix (26)**  
Ecole Normale Supérieure de Lyon, France  
**The roles of disordered RNA chaperone proteins in the  
replication of the human pathogens HIV-1, the AIDS virus,  
and the hepatitis C virus**

**17:20-17:35    Sonia Zuñiga (27)**  
CNB-CSIC. Madrid, Spain  
**Coronavirus nucleocapsid protein RNA chaperone activity  
facilitates template switch**

**17:35-17:50    Nicoletta Scheller (28)**  
University Pompeu Fabra, Barcelona, Spain  
**Translation and replication of hepatitis C virus genomic  
RNA depends on ancient cellular proteins that control  
mRNA fates**

**OCTOBER 21**

**SESSION 5. VIRAL AND CELL FACTORS INVOLVED IN RNA VIRUS REPLICATION AND RECOMBINATION**

**Chair: Anne Simon**

- 9:00-9:35**      **Renee Schroeder (29)**  
Max Perutz Laboratories, Vienna, Austria  
**RNA chaperones, RNA annealers and RNA helicases**
- 9:35-10:10**    **Peter Nagy (30)**  
University of Kentucky, Lexington, KY, USA  
**A systems biology approach to dissect the roles of host proteins in tombusvirus RNA replication**
- 10:10-10:45**   **Ralph Baric (31)**  
University of North Carolina, Chapel Hill, NC, USA  
**Coronavirus ORF1a replicase proteins processing in replication**
- 10:45-11:15**   **COFFEE**
- 11:15-11:50**   **Juan Ortin (32)**  
CNB-CSIC, Madrid, Spain  
**Replication and transcription of influenza virus ribonucleoprotein complexes**
- 11:50-12:05**   **J.C.F.M. Dortmans (33)**  
Utrecht University, Faculty of Veterinary Medicine, Utrecht, The Netherlands.  
**The virulence of pigeon paramyxovirus type 1 (PPMV-1) is determined by its replication complex**
- 12:05-12:20**   **Juan A. García (34)**  
CNB-CSIC. Madrid, Spain  
**Small RNAs and silencing suppressors: Two key challengers in potyviral infections**
- 12:20-12:35**   **E. Martinez Salas (35)**  
Centro de Biología Molecular "Severo Ochoa" CSIC-UAM, Madrid, Spain  
**Identification of novel IRES transacting factors**
- 12:35-12:50**   **Fernando Almazán (36)**  
CNB, CSIC, Madrid, Spain  
**Host cell proteins involved in coronavirus replication**

**12:50-13:05 Ewelina Welnowska (37)**  
Centro de Biología Molecular “Severo Ochoa” CSIC-UAM,  
Madrid, Spain  
**Translation of mRNAs from vesicular stomatitis virus is differentially blocked in cells with depletion of eIF4GI and eIF4GII**

**13:05-13:20 MEETING REMARKS**

**13:20-14:20 LUNCH**

**END OF THE MEETING**

## **POSTER PRESENTATIONS**

### **RNA processing during viroid replication (6)**

Fernando Martínez, Jorge Marqués, María-Ángeles Nohales, María-Eugenia Gas, Diego Molina-Serrano, Ricardo Flores and José-Antonio Daròs  
Instituto de Biología Molecular y Celular de Plantas (CSIC-UPV), Valencia, Spain

### **The mutation rate of a hammerhead viroid: a new upper limit for RNA replication fidelity (7)**

Selma Gago<sup>1</sup>, Santiago F. Elena<sup>1</sup>, Ricardo Flores<sup>1</sup> & Rafael Sanjuán<sup>2</sup>  
<sup>1</sup>Instituto de Biología Molecular y Celular de Plantas (IBMCP), (CSIC-UPV), Valencia, Spain  
<sup>2</sup>Institut Cavanilles de Biodiversitat i Biologia Evolutiva, (UV), Valencia, Spain

### **Polypirimidine tract-binding protein affects coronavirus RNA synthesis (11)**

Isabel Sola, Carmen Galan, Sonia Zuñiga, Lorena Palacio and Luis Enjuanes  
Centro Nacional de Biotecnología (CNB-CSIC), Madrid, Spain

### **Towards a reconstituted SARS coronavirus replicase: *in vitro* RNA synthesis by the nsp12 RdRp and the nsp8 primase (12)**

Aartjan J.W. te Velhuis<sup>1</sup>, Isabelle Imbert<sup>2</sup>, Bruno Canard<sup>2</sup>, Sjoerd H. van den Worm<sup>1</sup>, and Eric. J. Snijder<sup>1</sup>  
<sup>1</sup>Leiden University Medical Center, The Netherlands  
<sup>2</sup>Centre National de la Recherche Scientifique and Universités d'Aix-Marseille I et II, Marseille, France

### **Dynamics of coronavirus replication complexes (13)**

Hélène Verheije<sup>1</sup>, Marne Hagemeijer<sup>1</sup>, Mustafa Ulasli<sup>2</sup>, Fulvio Reggiori<sup>2</sup>, Peter Rottier<sup>1</sup>, and Xander de Haan<sup>1</sup>  
<sup>1</sup>Utrecht University, Utrecht, The Netherlands

<sup>2</sup>University Medical Centre Utrecht, Utrecht, The Netherlands

**Single-molecule techniques for monitoring viral polymerase action (14)**

Igor D. Vilfan<sup>1</sup>, Susanne Hage<sup>1</sup>, Minna Poranen<sup>2</sup>, Dennis H. Bamford<sup>2</sup>, and Nynke H. Dekker<sup>1</sup>

<sup>1</sup>Delft University of Technology, Delft, The Netherlands

<sup>2</sup>University of Helsinki, Finland

**20S RNA narnavirus defies the anti-viral activity of *SKI1/XRN1* in *Saccharomyces cerevisiae* (15)**

Rosa Esteban, Lorena Vega and Tsutomu Fujimura

Instituto de Microbiología Bioquímica. CSIC/Universidad de Salamanca. Salamanca. Spain

**Mutant polymerases with reduced sensitivity to ribavirin in foot-and-mouth disease virus (20)**

Ignacio de la Higuera<sup>1</sup>, Cristina Ferrer-Orta<sup>2</sup>, Macarena Sierra<sup>1</sup>, Rubén Agudo<sup>1</sup>, Armando Arias<sup>1</sup>, Rosa Pérez-Luque<sup>2</sup>, Cristina Escarmís<sup>1</sup>, Esteban Domingo<sup>1,3</sup> and Nuria Verdaguer<sup>2</sup>

<sup>1</sup>Centro de Biología Molecular “Severo Ochoa” CSIC-UAM, Madrid, Spain

<sup>2</sup>Institut de Biologia Molecular de Barcelona (CSIC), Barcelona, Spain

<sup>3</sup>Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Barcelona, Spain

**Novel functions of the alphavirus non-structural protein nsP3 C-terminal region in replicase formation and virus replication (21)**

Margus Varjak, Eva Žusinaite, Andres Merits

University of Tartu, Estonia

**Arrangements for the regulated processing of alphaviral nonstructural polyprotein (22)**

Aleksei Lulla<sup>1</sup> and Andrey Golubtsov<sup>2</sup>

<sup>1</sup>Institute of Technology, Tartu University, Estonia

<sup>2</sup>Institute of Biotechnology, University of Helsinki, Finland

**Coronavirus nucleocapsid protein RNA chaperone activity facilitates template switch (27)**

Sonia Zuñiga, Isabel Sola, Jazmina L. G. Cruz, and Luis Enjuanes

Centro Nacional de Biotecnología (CNB-CSIC), Madrid, Spain

**Translation and replication of hepatitis C virus genomic RNA depends on ancient cellular proteins that control mRNA fates (28)**

Nicoletta Scheller<sup>1,2\*</sup>, Leonardo Bruno Mina<sup>1\*</sup>, Rui Pedro Galão<sup>1\*</sup>, Ashwin Chari<sup>3</sup>, Mireia Giménez-Barcons<sup>1</sup>, Amine Noueiry<sup>4,5‡</sup>, Utz Fischer<sup>3</sup>, Andreas Meyerhans<sup>2</sup>, Juana Díez<sup>1</sup>.

<sup>1</sup>Universitat Pompeu Fabra, 08003 Barcelona, Spain

<sup>2</sup>Saarland University, Homburg, Germany

<sup>3</sup>University of Wuerzburg, Am Hubland, Wuerzburg, Germany

<sup>4</sup>Apath, LLC, St. Louis, MO 63110, USA

<sup>5</sup>Polsinelli, St. Louis, MO63102, USA

\*These authors contributed equally to this work

‡Current address

**The virulence of pigeon paramyxovirus type 1 (PPMV-1) is determined by its replication complex (33)**

J.C.F.M. Dortmans<sup>1,2</sup>, P.J.M. Rottier<sup>2</sup>, G. Koch<sup>1</sup> and B.P.H. Peeters<sup>1</sup>

<sup>1</sup>Central Veterinary Institute of Wageningen UR, Lelystad, The Netherlands

<sup>2</sup>Utrecht University, Faculty of Veterinary Medicine, Utrecht, The Netherlands

**Small RNAs and silencing suppressors: Two key challengers in potyviral infections (34)**

A.Valli, A. Carbonell, G. Dujovny, J.C. Oliveros, A. Molnar, D. Baulcombe, C. Simón-Mateo and J.A. García

Centro Nacional de Biotecnología (CNB-CSIC), Madrid, Spain

**Identification of novel IRES transacting factors (35)**

E. Martinez-Salas, D. Piñeiro, A. Pacheco, and J. Ramajo

Centro de Biología Molecular “Severo Ochoa” CSIC-UAM, Madrid, Spain

**Host cell proteins involved in coronavirus replication (36)**

Fernando Almazán, Carmen Galán, Aitor Nogales, Silvia Márquez and Luis Enjuanes

Centro Nacional de Biotecnología (CNB-CSIC), Madrid, Spain

**Translation of mRNAs from vesicular stomatitis virus is differentially blocked in cells with depletion of eIF4GI and eIF4GII (37)**

Ewelina Welnowska<sup>1</sup>, Alfredo Castello<sup>2</sup>, Luis Carrasco<sup>1</sup>

<sup>1</sup>Centro de Biología Molecular “Severo Ochoa” CSIC-UAM, Madrid, Spain

<sup>2</sup>European Molecular Biology Laboratory, Germany

**Evidence for low frequency of recombination in the crinivirus *Tomato chlorosis virus* (38)**

Ana Grande-Pérez<sup>1</sup>, Gloria Lozano, Isabel M. Fortes, Enrique Moriones, and Jesús Navas-Castillo<sup>2</sup>

<sup>1</sup>Universidad de Málaga, Spain

<sup>2</sup>Estación Experimental “La Mayora”, CSIC, Málaga, Spain

**Contribution of individual proteins from the polymerase complex of low- and highly pathogenic influenza A viruses to the efficiency of replication in avian and human cell lines (39)**

Alan Rigter & Ben Peeters

Central Veterinary Institute of Wageningen UR, Lelystad, The Netherlands

**Functional analysis of the 3'-UTR of *Melon necrotic spot virus* (40)**

Veronica Truniger, Ana M. Rodríguez-Hernández and Miguel. A. Aranda

Centro de Edafología y Biología Aplicada del Segura (CEBAS)-CSIC, Espinardo, Murcia, Spain

**Attenuated strains of influenza A viruses do not induce degradation of RNA polymerase II (41)**

Ariel Rodriguez<sup>1,2</sup>, Alicia Pérez-González<sup>1,2</sup>, M. Jaber Hossain<sup>3</sup>, Li-Mei Chen<sup>3</sup>, Thierry Rolling<sup>4</sup>, Pilar Pérez-Breña<sup>5</sup>, Ruben Donis<sup>3</sup>, Georg Kochs<sup>4</sup> and Amelia Nieto<sup>1</sup>

<sup>1</sup>Centro Nacional de Biotecnología (CNB-CSIC), Madrid, Spain

<sup>2</sup>Ciber de Enfermedades Respiratorias, Mallorca, Illes Balears, Spain

<sup>3</sup>Centers for Disease Control and Prevention, Atlanta, Georgia, USA

<sup>4</sup>University of Freiburg, Germany

<sup>5</sup>National Center of Microbiology, Instituto de Salud Carlos III, Majadahonda, Spain

**Near full-length genome characterization of HIV-1 intra and inter-subtype recombinants in Panama (42)**

S. Ahumada-Ruiz<sup>1,2</sup>, D. Flores-Figueroa<sup>3</sup>, I. Toala-González<sup>3</sup> and M.M. Thomson-Okatsu<sup>1</sup>

<sup>1</sup>Centro Nacional de Microbiología, Instituto de Salud Carlos III, Madrid, Spain

<sup>2</sup>Universidad de Panamá, Panamá

**Characterization of tissue-culture adapted feline calicivirus variants with expanded cell tropism (43)**

Iván Angulo, Horacio Almanza, Carolina Cubillos, Mónica Morales, Ignacio Mena and Juan Bárcena

Centro de Investigación en Sanidad Animal (CISA-INIA). Madrid, Spain

**Comprehensive full length sequence analyses of human parechoviruses; diversity and recombination (44)**

K.S.M. Benschop<sup>1</sup>, M. de Vries<sup>2</sup>, R. Minnaar<sup>1</sup>, G. Stanway<sup>3</sup>, L. van der Hoek<sup>2</sup>, K.C. Wolthers<sup>1</sup>, P. Simmonds<sup>4</sup>

<sup>1</sup>Laboratory of Clinical Virology and <sup>2</sup>Laboratory of Experimental Virology, Dept. of Medical Microbiology, Academic Medical Center, Amsterdam, The Netherlands

<sup>3</sup>University of Essex, Colchester, CO4 3SQ, United Kingdom

<sup>4</sup>Centre for Infectious Diseases, University of Edinburgh, United Kingdom

**Prospective study of non-B genetic forms in the Basque Country, Spain: High genetic diversity and predominance of recombinant forms (45)**

M.T. Cuevas<sup>1</sup>, E. Delgado<sup>1</sup>, M. Thomson<sup>1</sup>, A. Fernández-García<sup>1</sup>, M. Muñoz-Nieto<sup>1</sup>, J. Arrizabalaga<sup>2</sup>, A. Sánchez<sup>1</sup>, J. Muñoz-Sánchez<sup>3</sup>, M. González-Galeano<sup>1</sup>, K. Aguirrebengoa<sup>4</sup>, M. Pinilla<sup>1</sup>, C. Ayensa<sup>5</sup>, V. García<sup>1</sup>, A. Labora<sup>6</sup>, L. Pérez-Álvarez<sup>1</sup>. and the Spanish Group of HIV-1 Antiretroviral Resistance Studies in the Basque Country

<sup>1</sup>Instituto de Salud Carlos III. Majadahonda, Madrid, Spain

<sup>2</sup>Complejo Hospitalario Donostia, San Sebastián, Guipúzcoa, Basque Country, Spain

<sup>3</sup>Hospital de Basurto. Bilbao, Basque Country, Spain

<sup>4</sup>Hospital de Cruces, Baracaldo, Bilbao, Basque Country, Spain

<sup>5</sup>Hospital Txagorritxu, Vitoria, Alava, Basque Country, Spain

<sup>6</sup>Hospital de Santiago Apóstol, Vitoria, Álava, Basque Country, Spain

**Identification of a new HIV-1 BF intersubtype circulating recombinant form in Spain (46)**

A. Fernández-García<sup>1</sup>, L. Pérez-Álvarez<sup>1</sup>, M.T. Cuevas<sup>1</sup>, E. Delgado<sup>1</sup>, M. Muñoz Nieto<sup>1</sup>, G. Cilla<sup>2</sup>, M. Pinilla<sup>1</sup>, A. Ocampo<sup>3</sup>, M. González Galeano<sup>1</sup>, M. J. Lezaun<sup>4</sup>, V. García<sup>1</sup>, A. M. Sánchez<sup>1</sup>, M. Thomson<sup>1</sup>

<sup>1</sup>Instituto de Salud Carlos III, Majadahonda, Madrid, Spain

<sup>2</sup>Complejo Hospitalario Donostia, San Sebastián, Guipúzcoa, País Vasco, Spain

<sup>3</sup>Complejo Hospitalario Universitario Xeral Cies de Vigo, Pontevedra, Galicia, Spain

<sup>4</sup>Hospital Txagorritxu, Vitoria, Álava, País Vasco, Spain

**Analyzing factors driving Hepatitis C Virus (HCV) RNA-dependent RNA polymerase oligomerization by a FRET-based in vitro system (47)**

Itxaso Bellón-Echeverría, Alberto José López-Jiménez, Pilar Clemente-Casares and Antonio Mas

Universidad de Castilla-La Mancha, Albacete, Spain

**In vitro and In vivo intersubtype BG recombinants of HIV-1 (48)**

Mercedes Muñoz-Nieto<sup>1</sup>, Milagros Pinilla<sup>1</sup>, Elena Delgado<sup>1</sup>, M<sup>a</sup> Teresa Cuevas<sup>1</sup>, Aurora Fernández-García<sup>1</sup>, Celia Miralles<sup>2</sup>, Yolanda Vega<sup>1</sup>, Valentina García<sup>1</sup>, Miguel Thomson<sup>1</sup>, Ana M<sup>a</sup> Sánchez<sup>1</sup> and Lucía Pérez-Álvarez<sup>1</sup>

<sup>1</sup>Instituto de Salud Carlos III. Madrid, Spain

<sup>2</sup>Hospital Xeral Cies, Vigo, Pontevedra, Spain

**Structural characterization of the minimal 3' RNA region essential for *Cocksfoot mottle virus* replication (49)**

Allan Olsper & Erkki Truve

Tallinn University of Technology, Estonia

**Evidence for genetic reassortment in betanodavirus isolated from naturally infected fish (50)**

S. Souto, J. G. Oliveira, C. P. Dopazo, J.L. Barja and I. Bandín

Universidad de Santiago de Compostela, Spain

**Genome organization and transcription strategy of the crinivirus (family *Closteroviridae*) *Sweet potato chlorotic stunt virus*-West African (51)**

Anelise F. Orílio, Helena P. Trenado, Jari P. T. Valkonen<sup>1</sup>, and Jesús Navas-Castillo

Estación Experimental "La Mayora", CSIC, 29760 Algarrobo-Costa (Málaga), Spain

<sup>1</sup>University of Helsinki, Finland

**Identification of double membrane vesicles in berne virus infected cells likely involved in virus replication (52)**

M.T. Rejas<sup>2</sup>, A. Garzón<sup>1</sup>, J. Pignatelli<sup>1</sup>, A. Maestre<sup>1</sup>, M. Jiménez<sup>1</sup>, D. Rodríguez<sup>1</sup>

<sup>1</sup>Centro Nacional de Biotecnología (CNB-CSIC), Madrid, Spain

<sup>2</sup>Electron Microscopy Facility. Centro de Biología Molecular Severo Ochoa. CBM-CSIC. Madrid, Spain

**Human respiratory syncytial virus p protein controls, through its phosphorylation, crucial steps of viral cycle growth. (53)**

A. Asenjo, M. Morales, J.C. González-Armas and N. Villanueva  
Instituto de Salud Carlos III. Majadahonda, Madrid, Spain