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A TILLING approach to generate broad-spectrum resistance to potyviruses in tomato is hampered by eIF4E gene redundancy

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ASSOCIATION OF APPLIED BIOLOGISTS

President: Professor Bill Davies



International Advances in Plant Virology

7-9 September 2016

in conjunction with COST Action FA1407

PROVISIONAL PROGRAMME

**The University of Greenwich,
Old Royal Naval College
30 Park Row
London
SE10 9LS
UK**

**Association of Applied Biologists
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International Advances in Plant Virology

in conjunction with Cost Action FA1407

to be held at University of Greenwich, UK

on 7–9 September 2016

PROGRAMME

WEDNESDAY 7 SEPTEMBER 2016

11:00 CONFERENCE REGISTRATION

12:00 LUNCH

12:40 **WELCOME & HOUSEKEEPING**
MARUTHI GOWDA (University of Greenwich, UK)

Session 1

Chair: MARUTHI GOWDA (University of Greenwich, UK)

12:45 *Invited Speaker*
Plant-virus interactions
MICHAEL TALIANSKY (The James Hutton Institute, Dundee, UK)

13:30 **Next-generation sequencing for virus detection: covering all the bases**
MARIKE VISSER (Agricultural Research Council, Infruitec-Nietvoorbij: Institute for Deciduous Fruit, Vines and Wine, South Africa; Stellenbosch University, Matieland, South Africa),
RACHELLE BESTER, JOHAN T BURGER (Stellenbosch University, Matieland, South Africa) &
HANS J MAREE (Agricultural Research Council, Infruitec-Nietvoorbij: Institute for Deciduous Fruit, Vines and Wine, South Africa; Stellenbosch University, Matieland, South Africa)

13:45 **Contribution of NGS to the analysis of French winter barley crops virological status**
MATHIEU ROLLAND (GEVES, Beaucauzé, France), ARMELLE MARAIS, SEBASTIEN THEIL (INRA, University of Bordeaux, France), JULIE VILLEMOT (GEVES, Beaucauzé, France),
CHANTAL FAURE (INRA, University of Bordeaux, France), VALERIE CADOT (GEVES, Beaucauzé, France), ROMAIN VALADE (ARVALIS – Institut du végétal, Thiverval-Grignon, France), REGIS FOURNIER (IFBM, Arzacq Arraziguët, France) & THIERRY CANDRESSE (INRA, University of Bordeaux, France)

14:00 **Next generation sequencing for quality control of routine diagnostic: seed potato certification as a case study**
OLIVIER SCHUMPP (Agroscope, Nyon, Switzerland)

- 14:15 **Validation of smallRNA NGS based virus diagnostics by RT-PCR**
NIKOLETTA CZOTTER (Agricultural Biotechnology Research Institute, NARIC, Gödöllő, Hungary), JÁNOS MOLNÁR, GÁBOR E TUSNÁDY (Research Center of Natural Sciences, HAS, Budapest, Hungary), LÁSZLÓ KOCSIS (University of Pannonia, Keszthely, Hungary), JÓZSEF BURGYÁN & ÉVA VÁRALLYAY (Agricultural Biotechnology Research Institute, NARIC, Gödöllő, Hungary)
- 14:30 **High Throughput Sequencing and virus diagnostic: does bioinformatics really matter? Results of an international bioinformatic proficiency testing**
SEBASTIEN MASSART, ANTONIO OLMOS, IAN ADAMS, KRIS DE JONGHE, ANNALISA GIAMPETRUZZI, IGOR KOLONIUK, PETR KOMINEK, JAN KREUZE, DENIS KUTNJAK, LEONIDAS LOTOS, HANS J MAREE, THIBAUT OLIVIER, MIKHAIL POOGGIN, DANA SAFAROVA, P H H SCHNEEBERGER, NOA SELA, CANDRESSE THIERRY, EVA VARALLYAY, EEVA VAINIO, ERIC VERDIN, MARCEL WESTENBERG & YVES BROSTAU (University of Liège, Gembloux, Belgium)
- 14:45 **Framework for the evaluation of biosecurity commercial, regulatory and scientific impacts of plant viruses and viroids identified by NGS technologies**
SEBASTIEN MASSART, THIERRY CANDRESSE, JOSÉ GIL, CHRISTOPHE LACOMME, LUKAS PREDAJNA, MAJA RAVNIKAR, JEAN-SÉBASTIEN REYNARD, ARTEMIS ROMBOU, PASQUALE SALDARELLI, DIJANA ŠKORIĆ, EEVA VAINIO, JARI P T VALKONEN, HERVÉ VANDERSCHUREN, CHRISTINA VARVERI and THIERRY WETZEL (Institut für Phytomedizin (Institute of Plant Protection), Weinstraße, Germany)
- 15:00 **TEA**
- Session 2*
Chair:TBC
- 15:30 **Analysis of the wastewater virome using CIM monoliths and next generation sequencing (NGS)**
MAJA RAVNIKAR, ANJA PECMAN, ION GUTIÉRREZ-AGUIRRE, NATAŠA MEHLE, NASTJA PAVLIČ, MAGDA TUŠEK ŽNIDARIČ, NEJC RAČKI & DENIS KUTNJAK (National Institute of Biology, Department of Biotechnology and Systems Biology, Ljubljana, Slovenia)
- 15:45 **Enrichment of viral RNA by immunocapture for deep sequencing compared to a standard method**
DENNIS KNIERIM & STEPHAN WINTER (Leibniz-Institute DSMZ-German Collection of Microorganisms and Cell Cultures GmbH, Braunschweig, Germany)
- 16:00 **Assessment of changes in a plant virus genome during forced adaptation to a new host achieved through deep sequencing of vsiRNAs**
CLÉMENT BOUTON, ROBERT KING, KIM HAMMOND-KOSACK (Rothamsted Research, Harpenden, UK), STEPHANE BIERI (Syngenta, Stein, Switzerland) & KOSTYA KANYUKA (Rothamsted Research, Harpenden, UK)
- 16:15 **Next generation sequencing technology to support virology diagnostics, biosecurity and research at AgriBio, Victoria, Australia**
FIONA CONSTABLE (AgriBio, Victoria, Australia), WYCLIF KINOTI, BRITTNEY CARUANA (AgriBio, Victoria, Australia; La Trobe University, Victoria, Australia), JASON SHILLER, LINDA ZHENG (AgriBio, Victoria, Australia), KIM PLUMMER (La Trobe University, Victoria, Australia) & BRENDAN RODONI (AgriBio, Victoria, Australia; La Trobe University, Victoria, Australia)

16:30 POSTERS

18:00 MIKE THRESH MEMORIAL LECTURE

19:00 BBQ DINNER

THURSDAY 8 SEPTEMBER 2016

Session 3

Chair:TBC

08:30 *Invited Speaker*

Plant resistance to viruses (eIF4E)

SYLVIE GERMAN-RETANA (INRA, Bordeaux, France)

09:15 **A novel open reading frame in the potyvirus P1 region is expressed by polymerase slipping and encodes a protein suppressing RNA silencing**

MILTON UNTIVEROS (University of Helsinki, Helsinki, Finland), ALLAN OLSPERT (University of Cambridge, UK), KATRIN ARTOLA (University of Helsinki, Helsinki, Finland), ANDREW E FIRTH (University of Cambridge, UK), JAN F KREUZE (International Potato Center, Lima, Peru) & JARI P T VALKONEN (University of Helsinki, Helsinki, Finland)

09:30 **How the triple R connection of replication, recombination and repair determines geminivirus and alpha-satellite DNA populations**

K S RICHTER (Universität Stuttgart, Germany), M GÖTZ, S WINTER (Leibniz Institute DSMZ-German Collection of Microorganisms and Cell Cultures, Braunschweig, Germany) & H UND JESKE (Universität Stuttgart, Germany)

09:45 **Unravelling protein-protein interactions to better understand Grapevine fanleaf replication**

FRANÇOIS BERTHOLD, LÉA ACKERER, ADRIEN TROLET, CHRISTOPHE RITZENTHALER & CORINNE SCHMITT-KEICHINGER (Université de Strasbourg, Strasbourg, France)

10:00 **Analysis of the interacting partners eIF4F and 3'-CITE required for MNSV cap-independent translation**

MANUEL MIRAS, VERÓNICA TRUNIGER (Centro de Edafología y Biología Aplicada del Segura (CEBAS)- CSIC, Murcia, Spain), JORDI QUEROL-AUDI (Molecular Biology Institute of Barcelona (IBMB-CSIC), Barcelona Spain) & MIGUEL A ARANDA (Centro de Edafología y Biología Aplicada del Segura (CEBAS)- CSIC, Murcia, Spain)

10:15 **Structural and functional diversity of plant virus 3'-cap-independent translational enhancers**

V TRUNIGER, M MIRAS (Centro de Edafología y Biología Aplicada del Segura (CEBAS-CSIC), Murcia, Spain), A M RODRÍGUEZ-HERNÁNDEZ (Consejo Nacional de Ciencia y Tecnología (CONACYT), Coahuila, México) & M A ARANDA (Centro de Edafología y Biología Aplicada del Segura (CEBAS-CSIC), Murcia, Spain)

10:30 **A TILLING approach to generate broad-spectrum resistance to potyviruses in tomato is hampered by eIF4E gene redundancy**

CAMILLE GAUFFIER, CAROLINE LEBARON, ANNA BASTET, ANDRE MORETTI (INRA-UR, Montfavet, France), CAROLE CONSTANT (Sakata Vegetables Europe, Uchaud, France), FREDERIC MOQUET (Gautier Semences, Eyragues, France), GREGORI BONNET (Syngenta, Sarrians, France), CAROLE CARANTA & JEAN-LUC GALLOIS (INRA-UR, Montfavet, France)

10:45 **COFFEE**

Session 4

Chair:TBC

- 11:15 **The generation of modified plant virus-like particles by transient expression for potential bionanotechnological applications**
KEITH SAUNDERS, ROGER CASTELLS-GRAELLS & GEORGE P LOMONOSSOFF (John Innes Centre, Norwich, UK)
- 11:30 **Massive up-regulation of Expansins and Lateral Organ Boundaries Domain transcription factors by rhizomania disease complex mimics action of phytohormone auxin**
JOSE FERNANDO GIL (Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden), SEBASTIAN LIEBE (Institute of Sugar Beet Research, Göttingen, Germany), BRITT-LOUISE LENNEFORS, THOMAS KRAFT (Syngenta Seeds AB, Landskrona, Sweden), MARK VARRELMANN (Institute of Sugar Beet Research, Göttingen, Germany) & EUGENE SAVENKOV (Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden)
- 11:45 **Cutting the gordian knot: Replication and encapsidation in cowpea mosaic virus**
HADRIEN PEYRET, POOJA SAXENA & GEORGE LOMONOSSOFF (John Innes Centre, Norwich, UK)
- 12:00 **TMV adapter assemblies promoting label-free biosensing**
C KOCH (University of Stuttgart, Germany), M BÄCKER (Institute of Nano- and Biotechnologies, Jülich, Germany), S EIBEN, F C GEIGER1, F J EBER (University of Stuttgart, Germany), H GLIEMANN (Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen, Germany), A POGHOSSIAN, M J SCHÖNING (Institute of Nano- and Biotechnologies, Jülich, Germany; Peter Grünberg Institute, Forschungszentrum Jülich GmbH, Jülich, Germany) & C WEGE (University of Stuttgart, Germany)
- 12:15 **A field-applicable method for potyvirus detection in yam**
GONÇALO SILVA, MORITZ BÖMER (University of Greenwich, Kent, UK), P LAVA KUMAR (International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria) & SUSAN E SEAL (University of Greenwich, Kent, UK)

12:30 **LUNCH**

Session 5

Chair:TBC

- 13:30 **Differential expression analysis of small RNAs in Grapevine leafroll-associated virus 3 infected plants**
RACHELLE BESTER, JOHAN T BURGER (Stellenbosch University, Matieland, South Africa) and HANS J MAREE (Agricultural Research Council, Infruitec-Nietvoorbij: Institute for Deciduous Fruit, Vines and Wine, South Africa; Stellenbosch University, Matieland, South Africa)
- 13:45 **Developing an integrated approach for control of persistently transmitted viruses**
DIANA KATSCHNIG, ANGELA HAMBIDGE, GUY C BARKER, JOHN A WALSH (University of Warwick, Wellesbourne, UK), SIMON JACKSON, CARL SHARP, ANDY RICHARDSON (Allium and Brassica Agronomy, Kirton, UK), ALEX F C GREENSLADE, ANDREW MEAD & MARTIN WILLIAMSON (Rothamsted Research, Harpenden, UK)

- 14:00 **Identification of an avirulence factor of Grapevine fanleaf virus in *Nicotiana occidentalis***
ISABELLE MARTIN, EMMANUELLE VIGNE, VERONIQUE KOMAR (INRA, Université de Strasbourg, Colmar, France), MARC FUCHS (Cornell University, New York State Agricultural Experiment Station, USA), OLIVIER LEMAIRE (INRA, Université de Strasbourg, Colmar, France) & CORINNE SCHMITT-KEICHINGER (Université de Strasbourg, Strasbourg, France)
- 14:15 **Study of pathogenicity determinants in Cassava brown streak virus (CBSV)**
J L PABLO-RODRIGUEZ, A M BAILEY & G D FOSTER (Bristol University, UK)
- 14:30 **Epidemiology and molecular variability of little cherry virus on prunus in Belgium**
RACHID TAHZIMA (Institute for Agricultural and Fisheries Research (ILVO), Merelbeke, Belgium; Université de Liège (ULg) / Gembloux Agro-Bio Tech, Belgium), YOIKA FOUCART (Institute for Agricultural and Fisheries Research (ILVO), Merelbeke, Belgium), GERTIE PEUSENS, TIM BELIËN (Proefcentrum Fruitteelt (Pcfruit), Sint-Truiden, Belgium), SÉBASTIEN MASSART (Université de Liège (ULg) / Gembloux Agro-Bio Tech, Belgium) & KRIS DE JONGHE (Institute for Agricultural and Fisheries Research (ILVO), Merelbeke, Belgium)
- 14:45 **S-Acylation: A prospective mechanism for membrane sorting and plasmodesmal enrichment of viral movement proteins**
ANGUS AITKEN (University of St Andrews, St Andrews, UK), EMMANUELLE M BAYER (Université Bordeaux Segalen Bâtiment A3 - INRA Bordeaux Aquitaine, France), PIERS A HEMSLEY (James Hutton Institute, Dundee, UK) & JENS TILSNER (University of St Andrews, St Andrews, UK; James Hutton Institute, Dundee, UK)

15:00 **TEA**

Session 6

Chair:TBC

- 15:30 **Disrupting insect-mediated transmission of plant viruses**
ANA BRAVO-CAZAR, SIMON C GROEN, ALEX M MURPHY, ADRIENNE E PATE & JOHN P CARR (University of Cambridge, Cambridge, UK)
- 15:45 **Resistance to Turnip mosaic virus (TuMV) in Brassica juncea and introgression of resistance from *Brassica rapa*, *Brassica napus* and *Brassica nigra* in to *Brassica juncea***
TONGTONG WANG & JOHN A WALSH (University of Warwick, Wellesbourne, UK)
- 16:00 **Special Talk**
Plant Viruses – the past, the present and the future
ROGER HULL (Blandford Forum, Dorset, UK)
- 16:45 **POSTERS**
- 19:00 **CRUISE DINNER ON THE RIVER THAMES**

FRIDAY 9 SEPTEMBER 2016

Session 7

Chair:TBC

- 08:30 **Invited Speaker**
Virus replication
PETER NAGY (University of Kentucky, USA)

- 09:15 **Distinct effects of p19 RNA silencing suppressor on small RNA mediated pathways in plants**
JÓZSEF BURGYÁN (National Agricultural Research and Innovation Centre, Gödöllő, Hungary)
- 09:30 **MicroRNA based interactions between Euphorbiaceae and their viruses**
FATEMEH MAGHULY (University of Natural Resources and Life Sciences, Vienna, Austria),
ROSE C RAMKAT (Moi University, Eldoret, Kenya) & MARGIT LAIMER (University of Natural
Resources and Life Sciences, Vienna, Austria)
- 09:45 **The peculiar pathosystem of *Brevipalpus* mites (Acari: Tenuipalpidae)- transmitted plant viruses**
ELLIOT W KITAJIMA (ESALQ/USP, San Paulo, Brazil), JULIANA FREITAS-ASTÚA (Embrapa
Mandioca e Fruticultura, Brazil; Instituto Biológico, San Paulo, Brazil), GILBERTO J MORAES
(ESALQ/USP, San Paulo, Brazil), VALDENICE MOREIRA NOVELLI (CCSM, San Paulo, Brazil),
PEDRO L RAMOS-GONZÁLEZ (Instituto Biológico, San Paulo, Brazil) & ALINE DANIELE TASSI
(ESALQ/USP, San Paulo, Brazil)
- 10:00 **Cucumber mosaic virus has plant species-specific effects on host-vector interactions**
TRISNA TUNGADI, ALEX M MURPHY, ADRIENNE E PATE, JAVAID IQBAL &
JOHN P CARR (University of Cambridge, Cambridge, UK)
- 10:15 **Virus infection of plants alters pollinator preference: A payback for susceptible hosts?**
SANJIE JIANG, SIMON C GROEN, ALEX M MURPHY, NIK J CUNNIFFE, JACK H WESTWOOD,
MATTHEW P DAVEY (University of Cambridge, UK), TOBY J A BRUCE, JOHN C CAULFIELD
(Rothamsted Research, Harpenden, UK), OLIVER J FURZER, ALISON REED,
SOPHIE I ROBINSON, ELIZABETH MILLER, CHRISTOPHER N DAVIS (University of Cambridge,
UK), JOHN A PICKETT (Rothamsted Research, Harpenden, UK), HEATHER M WHITNEY
(University of Bristol, UK), BEVERLEY J GLOVER & JOHN P CARR (University of Cambridge,
UK)
- 10:30 **Molecular analysis of the complete genomes of novel yam badnaviruses using multiply-primed rolling circle amplification**
MORITZ BÖMER, ALIYU A TURAKI, GONÇALO SILVA (University of Greenwich, Kent, UK),
P LAVA KUMAR (International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria) &
SUSAN E SEAL (University of Greenwich, Kent, UK)

10:45 **COFFEE**

Session 8

Chair:TBC

- 11:15 **First Report of Grapevine Pinot gris virus in German vineyards**
JEAN-SÉBASTIEN REYNARD (Agroscope, Institut des sciences en production végétale IPV,
Nyon, Switzerland), STEFAN SCHUMACHER, PATRICIA BOHNERT, RENE FUCHS (Staatliches
Weinbauinstitut, Freiburg, Germany), WULF MENZEL (Leibniz Institute DSMZ, Braunschweig,
Germany), MIROSLAV GLASA (Slovak Academy of Sciences, Bratislava, Slovakia) &
THIERRY WETZEL (Institute of Plant Protection, Neustadt an der Weinstrasse, Germany)
- 11:30 **Red clover vein mosaic virus — A novel virus to New Zealand that is widespread in legumes**
J FLETCHER, J TANG, A BLOUIN, L WARD, R MACDIARMID & H ZIEBELL (Institute for
Epidemiology and Pathogen Diagnostics, Julius Kühn-Institut, Braunschweig, Germany)

- 11:45 **Emaraviruses affecting important deciduous tree species in Europe**
SUSANNE VON BARGEN, JENNY ROßBACH (Humboldt-Universität zu Berlin, Berlin, Germany), HANS-PETER MÜHLBACH (University of Hamburg, Hamburg, Germany), ARTEMIS RUMBOU (Humboldt-Universität zu Berlin, Berlin, Germany), MARKUS ROTT (Mohriner Allee 137, Berlin, Germany), MARTINA BANDTE & CARMEN BÜTTNER (Humboldt-Universität zu Berlin, Berlin, Germany)
- 12:00 **Efficacy of electrolytic disinfection of nutrient solution to hamper dispersal of plant viruses in irrigation water**
MARTINA BANDTE (Humboldt-Universität zu Berlin, Berlin, Germany), MARLON HANS RODRIGUEZ (Humboldt-Universität zu Berlin, Berlin, Germany; Francisco de Paula Santander University, Cúcuta, Colombia), UWE SCHMIDT & CARMEN BÜTTNER (Humboldt-Universität zu Berlin, Berlin, Germany)
- 12:15 **Ionic derivatives of BTH as inducers of systemic resistance against plant viruses**
MARCIN ŚMIGŁAK (Adam Mickiewicz University Foundation, Poland), MARTA BUDZISZEWSKA, ALEKSANDRA OBREPALSKA-STEŃPŁOWSKA & HENRYK POSPIESZNY (Institute of Plant Protection – National Research Institute, Poznań, Poland)
- 12:30 **Variability in response in different host plants to infection by Wheat dwarf virus**
JIM NYGREN, ELHAM YAZDKHASTI, NADEEM SHAD (Swedish University of Agricultural Sciences, Uppsala, Sweden), RICHARD HOPKINS (University of Greenwich, Kent, UK), ANDERS KVARNHEDEN & ANNA WESTERBERGH (Swedish University of Agricultural Sciences, Uppsala, Sweden)
- 12:45 **Viruses of plum (*Prunus domestica* L.) in Bosnia and Herzegovina**
ARNELA OKIĆ (University of Sarajevo, Bosnia), BOGDAN CVJETKOVIĆ (University of Zagreb, Croatia), MIRSAĐ KURTOVIĆ¹, LEJLA GRBO, JASMIN GRAHIĆ (University of Sarajevo, Bosnia) & DARKO VONČINA (University of Zagreb, Croatia)
- 13:00 **Improving genetically encoded fluorescent rna sensors for plants**
DAVID BURNETT (University of St Andrews, St Andrews, UK) and JENS TILSNER (University of St Andrews, St Andrews, UK; James Hutton Institute, Dundee, UK)
- 13:15 **Identifying apple viruses using molecular techniques**
MARYAM JAFARKHANI KERMANI & FARHAD MASOOMI ALADIZGEH (Agricultural Biotechnology Research Institute of Iran (ABRII), Education and Extension Organization (AREEO) Karaj, Iran)
- 13:30 **Isolation, characterization and use of bacteriophages associated with *Xanthomonas axonopodis* pv. *citri* for disease control**
HAMID ALI SHAH, ZAHID ALI & SAADIA NASEEM (COMSATS Institute of Information Technology, Islamabad, Pakistan)
- 13:45 **PACKED LUNCH and CONFERENCE CLOSURE**

Posters

The molecular characterization of a leaf curl disease infecting zucchini squash in Iraq

NAWRES A ALKUWAITI (University of Baghdad, Iraq)

A survey of viruses of ornamental Solanum in UK gardens

ANNA PLATONI & GERARD CLOVER (RHS Garden Wisley, Surrey, UK)

Phomopsis longicolla RNA virus 1 – a new mycovirus at the edge of myco- and plant viruses

LENKA HRABÁKOVÁ (Institute of Plant Molecular Biology, České Budějovice, Czech Republic; University of South Bohemia České Budějovice, Czech Republic), IGOR KOLONIUK & KAREL PETRZIK (Institute of Plant Molecular Biology, České Budějovice, Czech Republic)

Stronger and more durable gene silencing in grasses using an improved Brome mosaic virus (BMV)-based gene silencing vector

XIN SHUN DING & RICHARD S NELSON (The Samuel Roberts Noble Foundation, Oklahoma, USA)

Viruses infecting brassicas in Brazil: survey, genetic diversity and incidence

LEILANE K RODRIGUES, AGATHA M OLIVEIRA, ALEXANDRE L R CHAVES (Instituto Biológico, Sao Paulo, Brazil), KATIA R BRUNELLI (Sakata Seed Sudamerica, Sao Paulo, Brazil), RICARDO HARAKAVA (Instituto Biológico, Sao Paulo, Brazil), ELLIOT W KITAJIMA (University of Sao Paulo, Brazil), JOHN A WALSH (University of Warwick, Wellesbourne, UK) & MARCELO EIRAS (Instituto Biológico, Sao Paulo, Brazil)

Primary studies on viral screening in pomegranate trees by next-generation sequencing

EMINUR ELCI (Niğde University, Niğde, Turkey), MONA GAZEL (Mustafa Kemal University, Hatay, Turkey), ARMELLE MARAIS, CHANTAL FAURE, SEBASTIEN THEIL, THIERRY CANDRESSE (INRA, University of Bordeaux, France) & KADRIYE CAGLAYAN (Mustafa Kemal University, Hatay, Turkey)

An overview of fig mosaic disease agents in Turkey: Virus incidence, distribution and genetic diversity

EMINUR ELCI (Niğde University, Niğde, Turkey), KADRIYE CAGLAYAN & MONA GAZEL (Mustafa Kemal University, Hatay, Turkey)

One-step multiplex quantitative RT-PCR for the simultaneous detection of three viruses of pome fruit trees

IOANNA MALANDRAKI (Benaki Phytopathological Institute, Athens, Greece), ANTONIO OLMOS (Instituto Valenciano de Investigaciones Agrarias (IVIA), Valencia, Spain), NIKON VASSILAKOS & CHRISTINA VARVERI (Benaki Phytopathological Institute, Athens, Greece)

First detection and characterization of Little cherry virus 1 in sweet cherry in Spain

ANA BELÉN RUIZ-GARCÍA, CARMEN MARTÍNEZ (Instituto Valenciano de Investigaciones Agrarias (IVIA), Valencia, Spain), REMEDIOS SANTIAGO (Servicio de Sanidad Vegetal de Badajoz, Badajoz, Spain), MARÍA TERESA GARCÍA (Servicio de Sanidad Vegetal de Plasencia, Cáceres, Spain), NURIA DE PRADO (Estación de Avisos Agrícolas del Bierzo, León, Spain) & ANTONIO OLMOS (Instituto Valenciano de Investigaciones Agrarias (IVIA), Valencia, Spain)

Detection and identification of a cryptic virus in a Persimmon growing area in Spain

ANTONIO OLMOS, CARMEN MARTÍNEZ (Instituto Valenciano de Investigaciones Agrarias (IVIA), Valencia, Spain), NICOLAS CHAMBERLAND SEBASTIEN MASSART (Université de Liège, Gembloux, Belgium), JOSE ANTONIO PINA & ANA BELÉN RUIZ-GARCÍA (Instituto Valenciano de Investigaciones Agrarias (IVIA), Valencia, Spain)

Virus diagnosis in grapevine plantations with next generation sequencing metagenomic approach

NIKOLETTA CZOTTER (Agricultural Biotechnology Research Institute, NARIC, Gödöllő, Hungary), JÁNOS MOLNÁR (Research Center of Natural Sciences, HAS, Budapest, Hungary), TAMÁS DEÁK (Corvinus University of Budapest, Budapest, Hungary), GÁBOR E TUSNÁDY (Research Center of Natural Sciences, HAS, Budapest, Hungary), LÁSZLÓ KOCSIS 4, JÓZSEF BURGYÁN & ÉVA VÁRALLYAY (Agricultural Biotechnology Research Institute, NARIC, Gödöllő, Hungary)

The analysis of small RNAs in *Vitis vinifera* reveals a link between enations, a virus-like disease, and host miRNAs involved in morphogenetic alteration

CHIUMENTI MICHELA (CNR - IPSP, Bari, Italy), MOHORIANU IRINA (University of East Anglia, Norwich, UK), ROSETI VINCENZO, GIAMPETRUZZI ANNALISA (Università degli Studi di Bari "Aldo Moro", Bari, Italy), SALDARELLI PASQUALE (CNR - IPSP, Bari, Italy), SAVINO VITO (Università degli Studi di Bari "Aldo Moro", Bari, Italy), DALMAY TAMAS (University of East Anglia, Norwich, UK) & MINAFRA ANGELANTONIO (CNR - IPSP, Bari, Italy)

***Phomopsis longicolla* RNA virus 1 – a new mycovirus at the edge of myco- and plant viruses**

LENKA HRABÁKOVÁ (Biology Centre of Academy of Science of the Czech Republic, České Budějovice, Czech Republic; University of South Bohemia in České Budějovice, Czech Republic), IGOR KOLONIUK & KAREL PETRZIK (Biology Centre of Academy of Science of the Czech Republic, České Budějovice, Czech Republic)

Characterization of gene expression and physiological changes in different host-virus interactions

RÉKA PESTI (Agricultural Biotechnology Research Institute, Gödöllő, Hungary), JÁNOS MOLNÁR (Hungarian Academy of Sciences Research Centre for Natural Sciences, Budapest, Hungary), KENNY PAUL, IMRE VASS (Hungarian Academy of Sciences, Szeged, Hungary), GÁBOR E TUSNÁDY (Hungarian Academy of Sciences Research Centre for Natural Sciences, Budapest, Hungary), ZOLTÁN HAVELDA & ÉVA VÁRALLYAY (Agricultural Biotechnology Research Institute, Gödöllő, Hungary)

Multiple grapevine infection with viruses of family *Tymoviridae*

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Efficacy of electrolytic disinfection of nutrient solution to hamper dispersal of plant viruses in irrigation water

MARTINA BANDTE (Humboldt-Universität zu Berlin, Berlin, Germany), MARLON HANS RODRIGUEZ (Humboldt-Universität zu Berlin, Berlin, Germany; Francisco de Paula Santander University, Cúcuta, Colombia), UWE SCHMIDT & CARMEN BÜTTNER (Humboldt-Universität zu Berlin, Berlin, Germany)

Cloning of a full-length clone of a slovak isolate of grapevine rupestris stem pitting associated virus

ALŽBETA NAGYOVA (Slovak Academy of Sciences, Bratislava, Slovakia), JEAN-SÉBASTIEN REYNARD (Institut des sciences en production végétale IPV, Nyon, Switzerland), MIROSLAV GLASA (Slovak Academy of Sciences, Bratislava, Slovakia) & THIERRY WETZEL (Institute of Plant Protection, Breitenweg, Germany)

First report of Little cherry virus 2 in Slovakia

LUKÁŠ PREDAJŇA, NINA SIHELSKÁ, ALŽBETA NAGYOVÁ & MIROSLAV GLASA (Slovak Academy of Sciences, Bratislava, Slovakia)

Identification of a novel potential benyvirus in mango

NOA SELA, NETA LURIA, MOR YAARI, DOV PRUSKY & AVIV DOMBROVSKY (Volcani Agriculture Research Center, Israel)

***Coleus blumei* viroids - searching for a suitable viroid study system**

DIJANA ŠKORIĆ, ANAMARIJA BUTKOVIĆ, KARLO JEZERNIK & SILVIJA ČERNI (University of Zagreb, Zagreb, Croatia)

Unveiling the etiology of a new lettuce disease using next generation sequencing of siRNAs

L KARAPETSI, V I MALIOGKA, C ORFANIDOU (Aristotle University of Thessaloniki, Thessaloniki, Greece), A OLMOS (Instituto Valenciano de Investigaciones Agrarias (IVIA), Valencia, Spain), L LOTOS (Aristotle University of Thessaloniki, Thessaloniki, Greece), E K CHATZIVASSILIOU (Agricultural University of Athens, Greece) & N I KATIS (Aristotle University of Thessaloniki, Thessaloniki, Greece)

The effect of genomic strands reassortations of Wal'03 and Kra Tomato torrado virus on its virulence
MARTA BUDZISZEWSKA & ALEKSANDRA OBREPALSKA-STEPLOWSKA (Institute of Plant Protection - National Research Institute, Poland)

Molecular survey and deep sequencing of Grapevine Pinot gris virus in Turkey
ÇIĞDEM ULUBAŞ SERÇE (Niğde University, Niğde, Turkey), SERKAN ÖNDER (Viticulture Research Institute, Manisa, Turkey), OSMAN ÇIFÇI (Diyarbakır Plant Protection Research Institute, Diyarbakır, Turkey), BÜLENT ALTAN (Alata Horticultural Research Institute, Mersin, Turkey), EMINUR ELÇİ & ZAHIDE NESLIHAN ÖZTÜRK (Niğde University, Niğde, Turkey)

A new HR-inducing domain encoded by tomato torrado virus (ToTV)
PRZEMYSŁAW WIECZOREK & ALEKSANDRA OBREPALSKA-STEPLOWSKA (Institute of Plant Protection – National Research Institute, Poznań, Poland)

Targeted virus detection in next-generation sequencing data using an automated e-probe based approach
MARIKE VISSER (Institute for Deciduous Fruit, Vines and Wine, Stellenbosch, South Africa; Stellenbosch University, Matieland, South Africa), JOHAN T BURGER (Stellenbosch University, Matieland, South Africa) & HANS J MAREE (Institute for Deciduous Fruit, Vines and Wine, Stellenbosch, South Africa; Stellenbosch University, Matieland, South Africa)

Harbin: An analysis tool for relative quantitation of real-time qPCR data and a quantile-based bootstrap test for data pooling
RACHELLE BESTER (Stellenbosch University, Matieland, South Africa), PIETER T PEPLER (University of Glasgow, Glasgow, UK) & HANS J MAREE (Stellenbosch University, Matieland, South Africa; Institute for Deciduous Fruit, Vines and Wine, Stellenbosch, South Africa)

Detection of possible new emaravirus in bramble
I MAVRĀC PLESKO (Agricultural Institute of Slovenia, Slovenia), S KOREN (Omega d.o.o., Ljubljana, Slovenia), P PAHLAVAN (Leibniz Institute DSMZ, Germany), M VĀRSCEK MARN (Agricultural Institute of Slovenia, Slovenia) & S WĀINTER (Leibniz Institute DSMZ, Germany)

Clover plants as factories for viral evolution
IGOR KOLONIUK, JANA FRĀNOVĀ, JAROSLAVA PŘIBYLOVĀ, KAREL PETRZIK, LENKA HRABĀKOVĀ, ONDŘEJ LENZ & JOSEF ŠPAK (Institute of Plant Molecular Biology, Biology Centre of Academy of Sciences of the Czech Republic, České Budějovice, Czech Republic)

Using deep sequencing of small RNAs to track plant virus population structure changes during experimental evolution
D KUTNJAK, I GUTIERREZ-AGUIRRE (National Institute of Biology, Ljubljana, Slovenia), S F ELENA (Instituto de Biología Molecular y Celular de Plantas (CSIC-UPV), Valencia, Spain) & M RAVNIKAR (National Institute of Biology, Ljubljana, Slovenia)

Manipulation of a Cassava Brown Streak Disease infectious clone for functional gene analysis and visualisation of in planta movement
KATIE TOMLINSON, A M BAILEY & G D FOSTER (University of Bristol, Bristol, UK)

Comparison of Potato virus Y (PVY) strains ability to infect different potato varieties
P PETERSON (Agricultural Research Centre, Saku, Harjumaa, Estonia; Tallinn University of Technology, Estonia) & L JĀRVEKŪLG (Tallinn University of Technology, Estonia)

Full genome characterisation of 10 tospoviruses by next generation sequencing
A M DULLEMANS, P J VAN BEKKUM (Wageningen University, The Netherlands), J W ROENHORST (National Plant Protection Organization, Wageningen, The Netherlands), R KORMELINK & R A A VAN DER VLUGT (Wageningen University, The Netherlands)

Application of Next generation sequencing for the study and diagnosis of plant virus diseases in agriculture

RENÉ A A VAN DER VLUGT (Wageningen UR, Wageningen, The Netherlands), ANGELANTONIO MINAFRA (Institute for the Sustainable Plant Protection Via G. Amendola, Bari, Italy), ANTONIO OLMOS (Instituto Valenciana de Investigaciones Agrarias, Moncada, Spain), MAJA RAVNIKAR (National Institute of Biology, Ljubljana, Slovenia), THIERRY WETZEL (RLP Agrosience, Neustadt, Germany), CHRISTINA VARVERI (Benaki Phytopathological Institute, Kifissia, Greece) & SEBASTIEN MASSART (Gembloux Agro-Bio Tech Universite de Liege, Belgium)

Viruses associated with declining deciduous tree species

SUSANNE VON BARGEN, MARTINA BANDTE, ARTEMIS RUMBOU (Humboldt-Universität zu Berlin, Berlin, Germany), THIERRY WETZEL (DLR Rheinpfalz, Neustadt, Germany), THIERRY CANDRESSE3, ARMELLE MARAIS-COLOMBEL, CHANTAL FAURE (University of Bordeaux, France), MARIA LANDGRAF, JULIANE LANGER, JENNY ROßBACH & CARMEN BÜTTNER (Humboldt-Universität zu Berlin, Berlin, Germany)

Detection of a non-described virus in *Dracaena surculosa*?

C E DE KROM, J TH J VERHOEVEN (National Plant Protection Organization, Wageningen, The Netherlands), A M DULLEMANS, R A A VAN DER VLUGT (Wageningen University, The Netherlands) & J W ROENHORST (National Plant Protection Organization, Wageningen, The Netherlands)

Exploiting new sources of broad-spectrum resistance to turnip mosaic virus in brassicas

LAWRENCE BRAMHAM, GUY BARKER & JOHN WALSH (Warwick Crop Centre, University of Warwick, UK)

B-Fast ELISA – a newly developed ELISA technique allowing large scale testing in two hours

WULF MENZEL, DENNIS KNIERIM & STEPHAN WINTER (Leibniz-Institute DSMZ-German Collection of Microorganisms and Cell Cultures GmbH, Braunschweig, Germany)

Viral metagenomics using short RNAs in a *Cicer Arietinum* plant population

AYSAN GHASEMZADEH (BaseClear B.V., Leiden, The Netherlands; Institute for Sustainable Plant Protection, Torino, Italy), WALTER PIROVANO (BaseClear B.V., Leiden, The Netherlands), LAURA MIOZZI (Institute for Sustainable Plant Protection, Torino, Italy), MARTEN BOETZER (BaseClear B.V., Leiden, The Netherlands) & VITANTONIO PANTALEO (Institute for Sustainable Plant Protection, Bari, Italy)

Molecular detection of viruses associated with rhizomania disease and molecular characterisation of new Beet Soil Borne Mosaic Virus genotypes

EFSTRATIA POIMENOPOULOU, JOSE FERNANDO GIL (Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden), BRITT-LOUISE LENNEFORS, THOMAS KRAFT (Syngenta Seeds AB, Landskrona, Sweden), EUGENE SAVENKOV (Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden)

Design of a next generation sequencing approach for the study of viruses and transcriptome changes associated with rhizomania disease complex in sugar beet

JOSE FERNANDO GIL (Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden), BRITT-LOUISE LENNEFORS, THOMAS KRAFT (Syngenta Seeds AB, Landskrona, Sweden) & EUGENE SAVENKOV (Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden)

Broadening and improving the Turnip yellows virus resistance base in oilseed rape (OSR)

SHANNON EASTERLOW, GUY BARKER (The Univeristy of Warwick, Wellesbourne, UK), VASILIS GEGAS (Joseph Nickerson Research Centre, Market Rasen, UK) & JOHN WALSH (The Univeristy of Warwick, Wellesbourne, UK)

Virus indexing of international banana collection: insights from a multi-years collaborative effort

C DE CLERCK (Gembloux Agro-Bio Tech, University of Liège, Belgium), K. CREW (Queensland Department of Agriculture, Fisheries and Forestry (DAFF), Brisbane, Australia), I VANDENHOUWE (Bioversity Transit Centre, Leuven, Belgium), C BERHAL, L LASSOIS (Gembloux Agro-Bio Tech, University of Liège, Belgium), N ROUX (Parc Scientifique Agropolis II, Montpellier, France), M H JIJAKLI (Gembloux Agro-Bio Tech, University of Liège, Belgium), J THOMAS (Queensland Department of Agriculture, Fisheries and Forestry (DAFF), Brisbane, Australia) & S MASSART (Gembloux Agro-Bio Tech, University of Liège, Belgium)

Identification and characterisation of cassava genes conferring resistance to cassava mosaic virus

ERICA NGWENSANG, MARUTHI M N GOWDA & SOPHIE BOUVAINE (University of Greenwich, Kent, UK)

Ringspots in *Phalaenopsis*, is there a role for a putative new virus?

E T M MEEKES (Naktuinbouw, Roelofarendsveen, The Netherlands), A M DULLEMANS (Wageningen University and Research, Wageningen, The Netherlands), M HOOFTMAN, F GAWEHNS, M J M EBSKAMP (Naktuinbouw, Roelofarendsveen, The Netherlands), M VERBEEK, R A A VAN DER VLUGT & T A J VAN DER LEE (Wageningen University and Research, Wageningen, The Netherlands)