



Dip.to Scienze Agrarie, Alimentari
ed Agro-ambientali



UNIVERSITA' DI PISA

***XX Convegno Nazionale
Società Italiana di Patologia Vegetale
(S.I.Pa.V.)***

***Environmentally loyal plant
protection: from nano- to field-scale***

Pisa, 22-23-24 Settembre 2014

Aula Magna Polo didattico delle Piagge

Università di Pisa

Viale Giacomo Matteotti, 3 Pisa



Dip.to Scienze Agrarie, Alimentari
ed Agro-ambientali



Società Italiana di Patologia Vegetale (S.I.Pa.V.)
Italian Phytopathological Society



UNIVERSITA' DI PISA

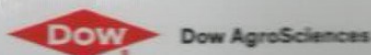
***XX Convegno Nazionale
Società Italiana di Patologia Vegetale
(S.I.Pa.V.)***

***Environmentally loyal plant protection:
from nano- to field-scale***

Comitato Scientifico	Comitato Organizzatore	Segreteria del Convegno
Giovanni Vannacci Giuseppe Firrao Alberto Materazzi Susanna Pecchia Pasquale Saldarelli	Giovanni Vannacci Alberto Materazzi Susanna Pecchia Sabrina Sarrocco Mariarosaria Vergara	Sabrina Sarrocco Grazia Puntoni Lisa Fiorini XXSIPaV@unipi.it

Con il Contributo di:

Università di Pisa
Dipartimento di Scienze Agrarie, Alimentari e Agro-ambientali
DOW AgroSciences
Isagro S.p.A.
Biolchim S.p.A.



**XX CONVEGNO NAZIONALE
SOCIETÀ ITALIANA DI PATOLOGIA VEGETALE
DIPARTIMENTO DI SCIENZE AGRARIE, ALIMENTARI ED AGRO-AMBIENTALI
PISA, 22-23-24 SETTEMBRE 2014**

PROGRAMMA

Lunedì 22 Settembre 2014

14.00 Registrazione dei partecipanti e affissione Poster numeri pari

15.00 Apertura lavori e saluti delle Autorità

15.30 Conferimento del Premio "G. Scaramuzzi" 2014

Prima Sessione. Moderatori: A. Ippolito e F. Scala

16.00 - 16.30 Relazione su invito

THE STATUS AND PROSPECTS FOR BIOTECHNOLOGICAL APPROACHES TO ATTAINING SUSTAINABLE DISEASE RESISTANCE. D. B. Collinge

16.30 - 17.00 Relazione su invito

BIOLOGICAL CONTROL OF PLANT DISEASES: STATUS AND PERSPECTIVES FOR THE FUTURE. D. F. Jensen, M. Dubey, N. Samils, C. Kosawang, M. Karlsson

17.00 - 17.12 BENEFICIAL MICROBE-PATHOGEN-PLANT INTERACTIONS: THE RECOGNIZED ROLE OF SECONDARY METABOLITES. F. Vinale, M. Ruocco, R. Marra, N. Lombardi, A. Pascale, S. Lanuise, R. Varlese, G. Manganiello, D. Stellitano, F. Zecca, S.L. Woo, M. Lorito

17.12 - 17.24 FIMICOLOUS FUNGI: AN UNDEREXPLORED RESERVOIR OF NEW COMPOUNDS TO BE EMPLOYED FOR THE CONTROL OF PLANT PATHOGENS. S. Sarrocco, S. Diquattro, F. Avolio, A. Cimmino, A. Andolfi, G. Puntoni, F. Doveri, A. Evidente, G. Vannacci

17.24 - 17.36 MINING THE GENOME OF *LYSOBACTER CAPSICI* AZ78 TO IDENTIFY THE MECHANISMS INVOLVED IN THE BIOLOGICAL CONTROL OF *PHYTOPHTHORA INFESTANS* AND *PLASMOPARA VITICOLA*. G. Puopolo, P. Sonego, K. Engelen, I. Pertot

17.36 - 17.48 BIOCONTROL ACTIVITY OF A NOVEL ENDOCHITINASE FROM *METSCHNIKOWIA FRUCTICOLA* EXPRESSED IN *PICHIA PASTORIS* AGAINST POSTHARVEST PATHOGENS OF FRUITS. H. Banani, D. Spadaro, M.L. Gullino, A. Garibaldi

17.48 - 18.00 PRODUCTION OF VOLATILE ORGANIC COMPOUNDS FROM *AUREOBASIDIUM PULLULANS* STRAINS AS A MECHANISM OF ACTION AGAINST POSTHARVEST PATHOGENS. A. Di Francesco, L. Ugolini, C. Martini, M. Mari

18.00 - 18.12 POSTHARVEST TREATMENTS WITH RESISTANCE INDUCERS STIMULATE THE EXPRESSION OF DEFENCE GENES IN STRAWBERRY FRUITS. L. Landi, E. Feliziani, G. Romanazzi

18.15 - 19.15 Prima sessione Poster (numeri pari)

19.15 - 20.30 "Apericena" di benvenuto (Gli Autori dei Poster pari sono pregati di liberare i porta poster prima dell'inizio dell'Opificio delle idee).

Sessione serale Opificio delle idee

20.30 - 21.00 Relazione su invito

SCIENCE AND SOCIAL MEDIA: A GUIDE FOR SCIENTISTS IN THE HYPER-CONNECTED ERA. L. Mannella

Prima Sessione. Moderatori: L. Giordano e R. Baroncelli

21.00 - 21.10 *COLLETOTRICHUM ACUTATUM* SPECIES COMPLEX: LINKING BIOLOGY, EVOLUTION AND GENOMICS. R. Baroncelli, S. Sreenivasaprasad, S. Sukno, E. Holub, M. Thon

21.10 - 21.20 RELATIONS BETWEEN THE CLIMATE AND THE INCIDENCE OF THE NUT ROT OF CHESTNUTS CAUSED BY *GNOMONIOPSIS CASTANEA*. L. Giordano, G. Lione, F. Sillo, P. Gonthier

- 21.20 - 21.30 INCUBATION TIME, TEMPERATURE AND WATER ACTIVITY EFFECTS ON *ASPERGILLUS CARBONARIUS* GERMINATION ON GRAPE SKIN AND FLESH. M. Camardo Leggieri, P. Battilani, D. Mitchell, R. Withe, D. Aldred, N. Magan
- 21.30 - 21.40 AFLATOXIN CONTROL IN FEED BY *TRAMETES VERSICOLOR*. M. Scarpari, M. Reverberi, C. Fanelli, A. Fabbri, C. Bello, C. Dall'Asta, F. Righi, A. Angelucci, L. Bertocchi
- 21.40 - 21.50 TWO *FUSARIUM CULMORUM* GENES INVOLVED IN FOOT AND ROOT ROT AND HEAD BLIGHT PATHOGENICITY ON DURUM WHEAT. F. Spanu, I. Camboni, B. Scherm, V. Balmas, M. Pasquali, Q. Migheli
- 21.50 - 22.00 *TRICHODERMA HARZIANUM* 6776 ON TOMATO: A SINGLE BENEFICIAL ISOLATE FOR TWO CULTIVATION SYSTEMS. L. Fiorini, L. Guglielminetti, L. Mariotti, M. Curadi, G. Puntoni, A. Scartazza, P. Picciarelli, S. Sarrocco, G. Vannacci

Seconda Sessione. Moderatori: S. Proietti e A. Giampetruzzi

- 22.00 - 22.10 NETWORKING BY STRESS SIGNALLING PATHWAYS: IDENTIFICATION OF NOVEL REGULATORS OF COMBINATORIAL STRESS TOLERANCE. S. Proietti, S. Coolen, S.C.M. Van Wees, C.M.J. Pieterse
- 22.10 - 22.20 ADVANTAGES AND LIMITATIONS OF USING NGS IN PLANT VIRUS DIAGNOSIS: A CASE STUDY OF FOUR CV PRIMITIVO CLONES. A. Giampetruzzi, P. La Notte, C. Pirolo, P. Saldarelli
- 22.20 - 22.30 SNF1 PROTEIN KINASE IS IMPORTANT FOR GROWTH AND FULL VIRULENCE OF *BOTRYTIS CINEREA*. Sz. Lengyel, C. Rascle, L. Sella, F. Favaron, M. Choquer
- 22.30 - 22.40 A NEW MEMBER OF THE FAMILY *CLOSTEROVIRIDAE* IDENTIFIED FROM SYMPTOMATIC KIWIFRUIT (*ACTINIDIA* SPP) PLANTS SHOWING MULTIPLE VIRAL INFECTION. R. Biccheri, A. G. Blouin, C. Poggi Pollini, D. Cohen, M.N. Pearson, C. Ratti
- 22.40 - 22.50 THE ENDOPHYTES *PANTOEIA AGGLOMERANS* AND *ERWINIA OLEAE* COLOCALIZE WITH *PSEUDOMONAS SAVASTANOI* PV. *SAVASTANOI* IN THE OLIVE KNOTS. C. Cortese, I. Pérez-Martínez, C. Ramos, R. Buonaurio, C. Moretti
- 22.50 - 23.00 EARLY DETECTION OF *PSEUDOMONAS SYRINGAE* PV. *ACTINIDIAE* FROM 'BLEEDING SAP' IN CHILE. S. Ardizzi, E. Biondi, S. Perez, Ca. Lucchese, P. Minardi, J. Carrasco Figueroa, C. Ureta Olivares, C. Soto Pereira, C. Cerpa, J. A. Molina, E. Vega Berroeta, A. Zamorano, X. Gonzalez, N. Fiore, A. Bertaccini

Martedì 23 Settembre 2014

Seconda Sessione. Moderatori: P. Battilani e A. Moretti

- 8.15 - 8.45 Affissione Poster dispari
- 8.45 - 9.15 Relazione su invito
MAPK CASCADES MEDIATING SIGNAL SENSING AND TRANSDUCTION DURING INFECTIOUS GROWTH OF *FUSARIUM OXYSPORUM*. D. Turrà, M. El Ghalid, A. Di Pietro
- 9.15 - 9.27 OXYLIPIN INVOLVEMENT IN THE CROSS-TALK *FUSARIUM VERTICILLIOIDES* AND MAIZE. V. Scala, C. Dall'Asta, P. Giorni, R. Gregori, M. Cirilini, M. Reverberi, M. Ludovici, E. Camera, C. Fanelli, P. Battilani
- 9.27 - 9.39 THE WHEAT XYLANASE INHIBITOR TAXI-III INTERACTS WITH A XYLANASE SECRETED BY *FUSARIUM GRAMINEARUM* AND LIMITS WHEAT CELL DEATH. I. Moschetti, L. Sella, F. Faoro, S. Moro, F. Favaron, R. D'Ovidio
- 9.39 - 9.51 TRANSCRIPTOME ANALYSIS OF TWO RICE GENOTYPES IN RESPONSE TO *FUSARIUM FUJIKUROI*. S. Matic, P. Bagnaresi, C. Biselli, G. Valé, A. Garibaldi, M.L. Gullino, D. Spadaro
- 9.51 - 10.03 MULTI-TOXIN AND RELATED FUNGAL CONTAMINATION OF CEREAL KERNELS IN ITALY. A.F. Logrieco, M. Sulyok, R. Krska, G. Mulè, A. Susca, L. Mugnai, A. Moretti
- 10.03 - 10.15 INVESTIGATION ON THE RESISTANCE-INDUCING ABILITY OF CERATO-PLATANIN ON CROPS. I. Baccelli, S. Luti, L. Lombardi, C. Comparini, R. Bernardi, P. Picciarelli, L. Pazzagli, A. Scala
- 10.15 - 10.27 *PHYTOPHTHORA* SPECIES EMERGE AS A SERIOUS THREAT TO MEDITERRANEAN ECOSYSTEMS. B. Scanu, B. T. Linaldeddu, A. Deidda, L. Maddau, A. Franceschini
- 10.27 - 10.39 ANALYSIS OF THE POPULATION STRUCTURE OF *PHYTOPHTHORA NICOTIANAE* USING MICROSATELLITE MARKERS. A. Biasi, F.N. Martin, S.O. Cacciola, N.J. Grünwald, M. Evoli, L. Schena
- 10.40 - 10.55 Pausa caffè
- 10.55 - 11.55 Seconda sessione Poster (numeri dispari)

Terza Sessione. Moderatori: A. Catara e P. Saldarelli

- 11.55 - 12.25 Relazione su invito
 EPIDEMIC OF *XYLELLA FASTIDIOSA* AND OLIVE QUICK DECLINE SYNDROME: A PROBLEM LIMITED TO THE SALENTO PENINSULA? D. Boscia
- 12.25 - 12.37 VIRUS AND VIROID COMMUNITY DETECTION BY METAGENOMIC ANALYSIS. G. Licciardello, R. Ferraro, M. Russo, S. M. Dai, Z.N. Deng, A. Catara
- 12.37 - 12.49 *BEET NECROTIC YELLOW VEIN VIRUS* AND *BEET SOIL-BORNE MOSAIC VIRUS*: A PRELIMINARY STUDY OF RNAs REASSORTMENT. M. Dall'Ara, A. Delbianco, S. Bouzoubaa, E. Klein, D. Gilmer, C. Ratti
- 12.49 - 13.01 SEQUENCING AN UNCONVENTIONAL VIRUS GENOME: THE MULBERRY BADNAVIRUS-1 CASE. M. Chiumenti, M. Morelli, T. Elbeaino, L. Stavolone, A. De Stradis, A. Minafra, G. P. Martelli
- 13.01 - 13.13 EVIDENCES OF THE EXISTENCE OF GRAPEVINE PINOT GRIS VIRUS ISOLATES SHOWING DIVERSE PATHOGENICITY. M. Morelli, A. Giampetruzzi, P. Bianchedi, P. Saldarelli, V. Gualandri
- 13.13 - 13.25 VALIDATION OF A RAPID AND SENSITIVE DIAGNOSTIC PROTOCOL FOR THE IDENTIFICATION OF *PLUM POX VIRUS*: LAMP RT-PCR. G. Pasquini, L. Ferretti, S. Lopriore, G. Airoidi, M. Barba
- 13.30 - 14.30 Pranzo di lavoro

Quarta Sessione. Moderatori: P. Ermacora e M. Scortichini

- 14.30 - 14.42 DRAFT GENOMES OF AN ITALIAN STRAIN OF *PSEUDOMONAS SAVASTANOI* PV. *SAVASTANOI* AND OF TWO ENDOPHYTES LIVING IN THE OLIVE KNOTS. C. Moretti, C. Cortese, D. Passos da Silva, G. DeVescovi, E. Torelli, C. Ramos, V. Venturi, G. Firrao, R. Buonauro
- 14.42 - 14.54 A *XYLELLA FASTIDIOSA* STRAIN WITH UNIQUE BIOLOGY AND PHYLOGENY IS ASSOCIATED WITH A SEVERE DISEASE OF OLIVE IN SOUTHERN APULIA. G. Loconsole, D. Boscia, F. Palmisano, V. Savino, O. Potere, G.P. Martelli, M. Saponari
- 14.54 - 15.06 BACTERIAL COMMUNITIES OF CITRUS PLANTS AFFECTED BY HUANGLONGBING AND *CANDIDATUS LIBERIBACTER ASIATICUS* CONCENTRATION. A. Campisano, C.P. Strano, P. Bella, G. Licciardello, Z. Deng, X. Deng, R. La Rosa, V. Catara.
- 15.06 - 15.18 HOST-PATHOGEN INTERACTION IN *ACTINIDIA*-BACTERIAL CANKER PATHOSYSTEM: INVESTIGATION ON THE LATENCY PERIOD IN ASYMPTOMATIC PLANTS. P. Minardi, S. Ardizzi, A. Bertaccini
- 15.18 - 15.30 ISOLATION AND CHARACTERIZATION OF AN ENDOPHYTE FROM *ACTINIDIA* SP. SHOWING A STRONG ANTAGONISTIC ACTIVITY AGAINST *PSEUDOMONAS SYRINGAE* PV. *ACTINIDIAE*. R. Tontou, F. Gaggia, L. Baffoni, V. Venturi, E. Stefani
- 15.30 - 15.42 PEPTIDES AS INHIBITORS OF TYPE THREE SECRETION SYSTEM FOR ECOFRIENDLY CONTROL OF BACTERIAL DISEASES OF PLANTS. C. Biancalani, M. Cerboneschi, S. Macconi, M.R. Moncelli, S. Smeazzetto, S. Biricolti, P. Bogani, S. Tegli
- 15.42 - 15.54 IN VINEYARD GENETIC VARIABILITY OF '*CANDIDATUS PHYTOPLASMA SOLANI*'. S. Murolo, V. Mancini, G. Romanazzi
- 15.54 - 16.06 MORPHOLOGICAL AND MOLECULAR IDENTIFICATION OF PHYTOPLASMAS IN CULTURE FROM PLANTS SOURCED IN THE FIELD. N. Contaldo, E. Satta, Y. Zambon, A. Canel, S. Paltrinieri, A. Bertaccini
- 16.10 - 16.25 Pausa caffè
- 16.30 Assemblea sociale
- 20.30 Cena sociale
 Chiostro della Chiesa di S. Maria del Carmine, *Corso Italia 88, Pisa*

Mercoledì 24 Settembre 2014

MINI SIMPOSIO

VERSO EXPO 2015. NUTRIRE IL MONDO: PRODURRE DI PIÙ, PRODURRE MEGLIO CON AIPP, SEI/SEA E SIGA

e con il patrocinio di EXPO2015 e Ministero Affari Esteri

8.30 - 9.30 Apertura lavori e saluti delle Autorità e dei Presidenti delle Società organizzatrici

9.30 - 9.40 **C. Maggipinto (Ministro Plenipotenziario - Direzione Generale per la Cooperazione allo Sviluppo - Ministero degli Affari Esteri)**

Moderatore: F. Melloni (Direzione Generale per la Cooperazione allo Sviluppo - Ministero degli Affari Esteri)

9.40 - 11.00 Relazioni dei delegati SIPaV, AIPP, SEI/SEA, SIGA.

9.40 - 10.00 PLANT PATHOLOGY AND COOPERATION FOR THE DEVELOPMENT. P.A. Bianco (SIPaV)

10.00 - 10.20 INTERNATIONAL COOPERATION IN PLANT PROTECTION. A.Vercesi, M. Piattella (AIPP)

10.20 - 10.40 ASPECTS RELATED TO DECISION SUPPORT TOOLS AND INTEGRATED PEST MANAGEMENT OF STORED PRODUCT PROTECTION IN AFRICA. P. Trematerra (SEI/SEA)

10.40 - 11.00 INTERNATIONAL EFFORTS IN THE CONTROL OF PLANT PESTS AND DISEASES. E. Porceddu (SIGA)

11.00 - 11.15 Pausa caffè

11.15 - 11.35 Relazione su invito

MANAGING PLANT DISEASE THREATS FOR ENHANCED FOOD SECURITY: CHALLENGES AND APPROACHES OF FAO. F. Dusunceli, M. Allara

11.35 - 11.50 IPM IN SOMALIA AND ORGANIC PLANT PROTECTION PERSPECTIVES. Balestra G.M.

11.50 - 12.05 POTENTIAL VECTORS OF 'CANDIDATUS PHYTOPLASMA PHOENICIUM' IN LEBANON. R. Tedeschi, F. Quaglino, L. Picciau, M. Jawhari, Y. Abou-Jawdah, M. Molino Lova, P. Casati, E. Choueiri, H. Abdul-Nour, P.A. Bianco, A. Alma

12.05 - 12.20 TECHNICAL AND INSTITUTIONAL STRENGTHENING IN PLANT PROTECTION TO ENHANCE FOOD SECURITY IN MEDITERRANEAN REGIONS THROUGH INTERNATIONAL COOPERATION. B. Di Terlizzi, D. Petruzzella, A. Dragotta, A.M. D'Onghia

12.20 - 12.35 MAIZE RESISTANCE TO *FUSARIUM VERTICILLIOIDES* AND FUMONISIN REDUCTION, A SHARED APPROACH. P. Battilani, P. Giorni, R. Bandyopadhyay, A. Pietri, A. Marocco

12.35 - 12.50 USING GENETIC DIVERSITY OF ETHIOPIAN DURUM WHEAT TO CHALLENGE CLIMATE CHANGE. D.K. Mengistu, Y. Kidane, C. Mancini, M. Dell'Acqua, C. Fadda, M.E. Pè

12.50 - 13.20 **Conclusioni. Claudia Sorlini (Presidente Comitato Scientifico EXPO2015)**

13.20 **Chiusura XX Convegno Nazionale SIPaV. G. Vannacci (Presidente SIPaV)**

PREMIO SCARAMUZZI

PREMIO SCARAMUZZI

CP FROM *CERATOCYSTIS PLATANI*: PRIMARY ROLE IN THE FUNGAL LIFE AND FUNCTIONS IN INTERACTION WITH PLANTSS. Luti^{1*}, I. Baccelli², L. Lombardi³, F. Martellini¹, R. Bernardi⁴, P. Picciarelli⁴, A. Scala², L. Pazzagli¹¹Department of Biomedical, Experimental and Clinical Sciences, University of Florence, Florence, Italy.²Department of Agri-food Production and Environmental Sciences, University of Florence, Florence, Italy.³Department of Biology, University of Pisa, Pisa, Italy.⁴Department of Agriculture, Food and Environment, University of Pisa, Pisa, Italy.

* E-mail: simone.luti@unifi.it

Cerato-platanin family (CPF) includes about one hundred of cysteine-rich proteins, secreted by both *Ascomycete* and *Basidiomycete*, characterized by the presence of two intra-molecular disulfide bridges. All the proteins possess a signal peptide of about 16-19 aminoacids and are 120-134 aminoacids long. The core member of the family is Cerato-platanin (CP) from *Ceratocystis platani*, a necrotrophic fungus that infects plane trees (*Platanus* sp.). It is a non-catalytic double ψ - β -barrel protein¹ and behave as MAMP in fact induces defense-related responses in plants^{2,3}.

Cerato-populin (Pop1), secreted by *C. populicola*, is a homologous protein showing low sequence identity and some differences in the secondary structure with CP. The molecular mechanism of host-microbe interaction and the primary biological role in fungal lifestyle are little-known aspects in the overall CPF. The aim of this work is to deepen the knowledge about these two aspects of cerato-platanins.

1) Primary role of CP: on the basis of the structural data we hypothesize an expansin-like function concerning CP. Expansins are proteins mainly found in plants, where they have cell wall-loosening activity and various roles in growth and developmental processes. Like expansins, CP and Pop1 are able to weaken filter paper in a concentration-dependent manner and without the production of reducing sugars. CP is also able to cause fragmentation of the crystalline cellulose Avicel and the breakage and defibration of cotton fibers. On the other hand, CP

and Pop1 bound quickly to chitin and colloidal chitin but these two matrices don't appear damaged and/or altered⁴. Site specific mutagenesis performed in the recombinant protein expressed in the *E. coli*-Shuffle system is under investigation to detect the residues involved in chitin and cellulose binding.

2) Role of CP as a MAMP: the ability of CP to interact with both host and non-host plants has been determined. CP is able to induce the production of reactive oxygen species (ROS) and nitric oxide, the activation of MAPKs cascade, the induction of phytoalexins accumulation and the overexpression of defense-related genes in *Platanus acerifolia* and *Arabidopsis thaliana* leaves. In addition recent results suggest that CP is sensed firstly at stomata level where ROS accumulated and that it induces the closure of stomata themselves. Finally, it has been shown that in *Arabidopsis* CP triggers salicylic acid and ethylene signaling pathways³. The role of CP as MAMP is actually studied by a proteomic approach to underlie the protein expressed in the plant interaction: *Arabidopsis* leaves treated for 8h with CP and control leaves are analyzed for protein content by 2D-electrophoresis and protein will be identify by mass spectrometry.

3) Role of CP in induction of resistance: the ability of CP to reduce the infection of *Botrytis cinerea* and *Pseudomonas syringae* pv. tomato has been determined on *Arabidopsis* leaves³. The role of CP in resistance induction is under investigation in other plants.

¹ *de Oliveira et al.*, 2011; *J Biol Chem* 286: 17560–17568.² *Pazzagli et al.*, 2014; *Plant Sci in press* doi.org/10.1016/j.plantsci.2014.02.009³ *Baccelli et al.*, 2014; *PLoS One* 9: e100959⁴ *Baccelli et al.*, 2014; *Appl Microbiol Biotechnol* 98:175–184.