



5<sup>th</sup> **ISPMF**  
Conference  
Rome 2022

## 5<sup>th</sup> International Society for Plant Molecular Farming (ISPMF) Conference

26-28<sup>th</sup> September, 2022  
Villa Lubin, Rome, Italy

### SCIENTIFIC PROGRAMME

#### DAY 1 (Monday, September 26, 2022)

13:45 - 14:25	<i>Registration and Collection of badges</i>	
14:25 - 14:45	<b>Welcome Messages by</b> <i>ISPMF President (Inge Broer)</i> <i>President of ENEA</i> <i>Office of the Mayor of Rome</i>	
14:45 - 15:30	<b>KEYNOTE hosted by Eugenio Benvenuto, ENEA, Italy</b> Lessons learned from COVID-19 pandemic in Italy: critical issues and potential contribution to improve preparedness for a future pandemic; <i>Giuseppe Ippolito, Italian Ministry of Health</i>	
15:30 - 16:00	<i>Coffee Break</i>	
16:00 - 17:00	<b>Session chaired by Julian Ma, St George's University of London, UK</b>	
16:00 - 16:15	Preparing for the Next Pandemic: Preclinical and Clinical Testing of a Q-Griffithsin Nasal Spray; <i>Kenneth Palmer, University of Louisville, USA</i>	
16:15 - 16:30	Autoinhibited H <sup>+</sup> -ATPase isoform 2 (AHA2) controlled alkalinisation of the apoplast is detrimental to Agrobacteria during transient expression; <i>Isobel Dodds, University of Oxford, UK</i>	*
16:30 - 16:45	CRISPR/Cas9-mediated knockout of a prolyl-4-hydroxylase subfamily in <i>Nicotiana benthamiana</i> using DsRed2 for plant selection; <i>Pia Isabella Uetz, University of Natural Resources and Life Sciences, Austria</i>	*
16:45 - 17:00	Development of Plant-Produced Bispecific Antibody for Cancer Immunotherapy; <i>Christine Joy Bulaon, Chulalongkorn University, Thailand</i>	*
17:00 - 17:45	<b>Flash Talks for Posters #1-#14 moderated by Sancha Salgueiro, Chart Biotech, Denmark</b>	
17:45 - 18:00	<i>Day 1 Closing and Return of badges</i>	
19:00 - 21:00	<b>Cocktails &amp; Networking (includes finger food)</b>	

#### DAY 2 (Tuesday, September 27, 2022)

09:00 - 09:30	<i>Registration and Collection of badges</i>	
09:30 - 10:15	<b>KEYNOTE hosted by Inge Broer, University of Rostock, Germany</b> Applying CRISPR/Cas to Plants: From Gene Editing to Chromosome and Tissue Engineering; <i>Holger Puchta, Karlsruhe Institute of Technology, Germany</i>	
10:15 - 11:00	<b>Session chaired by Heribert Warzecha, Technical University of Darmstadt, Germany</b>	
10:15 - 10:30	The use of cowpea mosaic virus capsids to stabilise and deliver designer RNA molecules; <i>Hadrien Peyret, John Innes Centre, UK</i>	
10:30 - 10:45	InnCoCells – Innovative high-value cosmetic products from plants and plant cells for scientifically validated sustainable cosmetic ingredients; <i>Suvi T Häkkinen, VTT Technical Research Centre of Finland</i>	

10:45 - 11:00	Transient Expression of a Therapeutic HPV-16 Vaccine in <i>Nicotiana benthamiana</i> ; <i>Inga Hitzeroth, University of Cape Town, South Africa</i>	
11:00 - 11:30	<i>Coffee Break</i>	
11:30 - 13:00	<b>Session chaired by Barry Bratcher, KBio, USA</b>	
11:30 - 11:45	Clinical Trial Phase 1 of Plant-based COVID-19 Vaccine in Thailand; <i>Waranyoo Poolcharoen, Chulalongkorn University, Thailand</i>	
11:45 - 12:00	Expression of an extremophilic xylanase in <i>Nicotiana benthamiana</i> to produce probiotic xylooligosaccharides; <i>Maria Nicolau Sanus, Polytechnic University of Valencia, Spain</i>	*
12:00 - 12:15	Design of multi-layered protein bodies in <i>N. benthamiana</i> ; <i>Jennifer Schwestka, University of Natural Resources and Life Sciences, Austria</i>	*
12:15 - 12:30	Tomato Bushy Stunt Virus nanoparticles as a drug delivery vehicle to medulloblastoma; <i>Luca Marchetti, ENEA, Italy</i>	*
12:30 - 12:45	TuMV-Pru p 3 and TuMV-VIP: two different nanoparticles derived from Turnip mosaic virus with interest in nanobiomedicine; <i>Daniel Truchado, Polytechnic University of Madrid, Spain</i>	
12:45 - 13:00	Secreted subtilases cleave human IgG antibodies in the apoplast of <i>Nicotiana benthamiana</i> ; <i>Konstantina Beritza, University of Oxford, UK</i>	*
13:00 - 14:00	<i>Lunch</i>	
14:00 - 14:45	<b>Flash Talks for Posters #15-#28 moderated by Pooja Saxena, Medicago, Canada</b>	
14:45 - 15:45	<b>Session chaired by Anatoli Giritch, NOMAD Bioscience, Germany</b>	
14:45 - 15:00	Killer to healer: Tobacco plant-derived immune checkpoint inhibitors for use in cancer immunotherapy; <i>Zack Croxford, St George's University of London, UK</i>	*
15:00 - 15:15	Characterization of Brassica rapa hairy root cultures used as heterologous therapeutic protein factory within a global industrialization approach; <i>Camille Lemmason, Samabriva, France</i>	
15:15 - 15:30	Utilizing metabolic channeling for the optimization of biosynthetic pathways in planta; <i>Christian Sator, Technical University of Darmstadt, Germany</i>	*
15:30 - 15:45	Expression of an anti-SARS-CoV-2 VHH-Fc antibody fusion in non-flowering, ΔXT/ΔFT <i>Nicotiana tabacum</i> plants; <i>Marta Vazquez-Vilar, Polytechnic University of Valencia, Spain</i>	
15:45 - 16:15	<i>Coffee Break</i>	
16:15 - 16:45	<b>Session chaired by Andreas Schaaf, Eleva GmbH, Germany</b>	
16:15 - 16:30	Expression of other than IgG1 SARS-CoV2 antibodies in <i>N. benthamiana</i> ; <i>Roman Palt, University of Natural Resources and Life Sciences, Austria</i>	*
16:30 - 16:45	Evaluation of quail antibody production against plant-produced African horse sickness virus-like particles; <i>Goodman Mulondo, University of Cape Town, South Africa</i>	*
16:45 - 17:00	<i>Day 2 Closing and Return of badges</i>	
20:30 onwards	<b>Conference Dinner sponsored by KBio, USA</b>	
<b>DAY 3 (Wednesday, September 28, 2022)</b>		
09:00 - 09:30	<i>Registration and Collection of badges</i>	
09:30 - 11:00	<b>Session chaired by Diego Orzaez, Polytechnic University of Valencia, Spain</b>	
09:30 - 09:45	Efficacy and Safety of a Plant-based Virus-like Particle Vaccine for COVID-19; <i>Marc-André D'Aoust, Medicago, Canada</i>	
09:45 - 10:00	Reducing the water uptake of BY-2 cells by systematically optimizing cultivation conditions increases productivity and reduces variation during transient expression in plant cell packs; <i>Patrick Opdensteinen, Fraunhofer IME, Germany</i>	*
10:00 - 10:15	Characterization of a plant-produced Infectious Bursal Disease Virus antigen fused to the constant region of avian IgY immunoglobulins for veterinary applications; <i>Marcello Donini, ENEA, Italy</i>	
10:15 - 10:30	Tuning the sweet spot of SARS-CoV-2: Production of recombinant RBD and S1 domain with human blood group glycans in <i>Nicotiana benthamiana</i> ; <i>Julia König-Beihammer, University of Natural Resources and Life Sciences, Austria</i>	*

10:30 - 10:45	Next-generation protein nanoparticle vaccines to prevent Salmonella infection in poultry; <i>Carly Charron, Western University, Canada</i>	*
10:45 - 11:00	Production in plants of potyvirus derived nanoparticles decorated with fluorescent proteins; <i>Enrique Lozano-Sánchez, Polytechnic University of Valencia, Spain</i>	*
11:00 - 11:30	<i>Coffee Break</i>	
<b>11:30 - 13:00</b>	<b>Session chaired by Renier van der Hoorn, University of Oxford, UK</b>	
11:30 - 11:45	Production of SARS-CoV-2 VLPs in plants for use as virus surrogates; <i>George Lomonosoff, John Innes Centre, UK</i>	
11:45 - 12:00	Plant made diagnostic reagent for Rheumatoid arthritis, development, and validation; <i>Mattia Santoni, University of Verona, Italy</i>	*
12:00 - 12:15	Engineering recombinant secretory IgA subtype chimeras for optimal performance and expression in the gut; <i>Nicole Falci Finardi, St George's University of London, UK</i>	*
12:15 - 12:30	Retepase Fc-fusions produced in <i>N. benthamiana</i> are able to dissolve blood clots ex vivo; <i>Shiva Izadi, University of Natural Resources and Life Sciences, Austria</i>	
12:30 - 12:45	Hairy roots as a therapeutic peptide expression platform; <i>Abhishek Bajpai, The University of Queensland, Australia</i>	*
12:45 - 13:00	Development surrogate virus neutralization test (sVNT) from plant produced recombinant proteins; <i>Perawat Jirarojwattana, Chulalongkorn University, Thailand</i>	*
13:00 - 14:00	<i>Lunch</i>	
<b>14:00 - 14:45</b>	<b>Flash Talks for Posters #29-40 moderated by Ann Meyers, University of Cape Town, South Africa</b>	
<b>14:45 - 15:45</b>	<b>Session chaired by Linda Avesani, University of Verona, Italy</b>	
14:45 - 15:00	Plant molecular pharming to support human life on the moon, mars, and beyond; <i>Karen McDonald, University of California Davis, USA</i>	
15:00 - 15:15	In planta engineering of rare protein glycan formations: KDNylation; <i>Somanath Kallolimath, University of Natural Resources and Life Sciences, Austria</i>	
15:15 - 15:30	Genome editing-induced remodeling of allergen and glycoalkaloid composition in Tomato; <i>Gianfranco Diretto, ENEA, Italy</i>	
15:30 - 15:45	Generation of recombinant plant virus-derived nanoparticles for biotechnological applications against SARS-CoV-2; <i>Fernando Merwaiss, Polytechnic University of Valencia, Spain</i>	
15:45 - 16:15	<i>Coffee Break</i>	
<b>16:15 - 17:30</b>	<b>Session chaired by Kirsi-Marja Oksman-Caldentey, VTT Technical Research Centre of Finland</b>	
16:15 - 16:30	In vitro and In vivo Functional Analyses of Plant-Produced Atezolizumab; <i>Kaewta Rattanapisit, Baiya Phytopharm, Thailand</i>	
16:30 - 16:45	Plant-produced monoclonal secretory IgAs for mucosal prophylaxis and treatment of SARS-CoV-2; <i>Kathrin Göritzer, St. George's University of London, UK</i>	
16:45 - 17:00	Development in plants of a VP2-based Infectious Bursal Disease virus vaccine and of the associated diagnostic assay allowing to discriminate infected from vaccinated animals; <i>Selene Baschieri, ENEA, Italy</i>	
17:00 - 17:15	Co-design methods: Dialogical forms of public-engagement to explore acceptance and barriers to PMF; <i>Alison Prendiville, University of the Arts London, UK</i>	
17:15 - 17:30	NanoEngineering gone #viral: plant virus immunotherapies and vaccines; <i>Nicole Steinmetz, University of California San Diego, USA</i>	
<b>17:30 - 17:40</b>	<b>Student Awards judged by a panel led by Rima Menassa, Agriculture and Agri-Food Canada</b>	
<b>17:40 - 17:50</b>	<b>Closing Remarks by ISPMF Conference Organizers (Eugenio Benvenuto and Inga Hitzeroth)</b>	
17:50 - 18:00	<i>Return of badges</i>	

## ISPMF 2022 Posters

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| 1  | Metabolic engineering of Curcuminoids in <i>N. benthamiana</i> leaves; <i>Alessia Fiore, ENEA, Italy</i>   |   |
| 2  | Production of HPV-16 L1 VLPs in the moss <i>Physcomitrella</i> ; <i>Alexander Niederau, University of Freiburg, Germany</i>  | * |
| 3  | Valorization of bio-based antimicrobials from garden and park side-streams; <i>Anneli Ritala, VTT Technical Research Centre of Finland</i>   |   |
| 4  | Molecular farming for the sustainable production of high value ketocarotenoids in plant cell suspension cultures; <i>Bárbara Rebelo, ITQB Nova University of Lisbon, Portugal</i>  | * |
| 5  | Glycan modulation in <i>N. benthamiana</i> by gene editing; <i>Benjamin Kogelmann, University of Natural Resources and Life Sciences, Austria</i>  | * |
| 6  | Expression and characterisation of five anti-Chikungunya antibodies in tobacco; <i>Cathy Moore, St George's University of London, UK</i>   |   |
| 7  | Potato Virus X: from virology to virotechnology, 20 years of research in ENEA; <i>Chiara Lico, ENEA, Italy</i>   |   |
| 8  | <i>Camelina sativa</i> as new platform for recombinant proteins production at scale; <i>Emile Rage, Core Biogenesis, France</i>  |   |
| 9  | Transient expression of five key genes of Artemisinin biosynthetic pathway to boost its content in <i>A. annua</i> plants; <i>Fabio Pietrolucci, University of Verona, Italy</i>   | * |
| 10 | Overexpression of Oligosaccharyltransferase subunits in <i>Nicotiana benthamiana</i> to enhance N-glycosylation; <i>Gernot Beihammer, University of Natural Resources and Life Sciences, Austria</i>   |   |
| 11 | Secretory expression of recombinant human calcitonin in <i>Chlamydomonas reinhardtii</i> : is this green microalga able to perform appropriate post translational modifications; <i>Hamideh Ofoghi, Iranian Research Organization for Science and Technology (IROST), Iran</i> |   |
| 12 | Development of a Universal Influenza A vaccine using Spytag/SpyCatcher technology; <i>Jenna Bloemetje, University of Cape Town, South Africa</i>   | * |
| 13 | Transient expression of West Nile virus NS1 in <i>Nicotiana benthamiana</i> for use as a diagnostic reagent; <i>Jennifer Stander, University of Cape Town, South Africa</i>  |   |
| 14 | Production and characterization of self-assembling virus-like particles displaying PRRSV epitopes in <i>Nicotiana benthamiana</i> ; <i>Jordan VanderBurgt, Western University, Canada</i>  | * |
| 15 | Impact of auxin on biopharmaceutical production in moss bioreactors; <i>Juliana Parsons, University of Freiburg, Germany</i>   |   |
| 16 | Mouse-specific immunocontraception: Plant-made zona pellucida 3 peptide induces antibodies that bind to wild mice oocytes; <i>Khadijeh Ghasemian, University of Rostock, Germany</i>   | * |
| 17 | Improved technology for higher biomass yield in vertical farming; <i>Kristina Ljumovic, University of Verona, Italy</i>  | * |
| 18 | Fibroin production in tobacco cells for medical use; <i>Lara Bitar, Maastricht University, the Netherlands</i>   | * |
| 19 | Improving transgene expression in <i>Nicotiana tabacum</i> BY-2 cells by inactivation of RDR6 and RDR1 genes; <i>Laurent Bouhon, UCLouvain, Belgium</i>  | * |
| 20 | Unexpected Arabinosylation after Humanization of Plant Protein N-Glycosylation; <i>Lennard Bohlender, University of Freiburg, Germany</i>  |   |
| 21 | The potential of plant cell cycle regulator genes for modulation of <i>Nicotiana benthamiana</i> phenotype and enhancement of recombinant protein yield; <i>Lilya Kopertekh, Julius Kuehn Institute, Germany</i>   |   |
| 22 | Autocatalytic Production of Polysialic Acid by Transient Expression in <i>N. benthamiana</i> ; <i>Lukas Eidenberger, University of Natural Resources and Life Sciences, Austria</i>  | * |
| 23 | Towards a plant produced tolerogenic vaccine for multiple sclerosis; <i>Magnus Carlsson, Örebro University, Sweden</i>   |   |
| 24 | Design and validation of a diagnostic immunoassay for aflatoxin M1 based on a plant-produced antibody; <i>Marcello Catellani, ENEA, Italy</i>  |   |
| 25 | Production of a potent SARS-CoV-2 neutralising antibody in <i>Nicotiana benthamiana</i> ; <i>Maria Elena Villani, ENEA, Italy</i>  |   |

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| 26 | Pathways for producing next-generation antimalarial peptide drugs in plants; <i>Maxim Harding, The University of Queensland, Australia</i>   | * |
| 27 | Characterization of in vitro olive tree culture for overproduction of osmotin, a plant protein with important biological activity; <i>Michela Lupo, University of Tuscia, Italy</i>  | * |
| 28 | Plant-produced anti-IL6R (Tocilizumab) mAb reduces phospho-STAT3 expression by inhibition of IL6-IL6R interaction; <i>Namthip Kaewbandit, Chulalongkorn University, Thailand</i>   | * |
| 29 | Automation of Moss Strain Development; <i>Nicola Krieghoff, Elega GmbH, Germany</i>  | * |
| 30 | Engineering O-glycosylation pathways in <i>Nicotiana tabacum</i> BY-2 cells; <i>Nicolas Bailly, UCLouvain, Belgium</i>   | * |
| 31 | Operation DESTINY: Production of RBD protein from SARS-CoV-2 in tobacco BY-2 cells for serological diagnostics; <i>Noemi Gutierrez-Valdes, VTT Technical Research Centre of Finland</i>  | * |
| 32 | Novel anti-HIV molecules produced in transgenic BY-2 suspension cultures; <i>Noemi Gutierrez-Valdes, VTT Technical Research Centre of Finland</i>  | * |
| 33 | Expression of recombinant dengue envelope domain III (EDIII) antigens in <i>E. coli</i> and <i>N. benthamiana</i> for cost-effective, rapid and differential diagnosis of infection; <i>Parthiban Subramanian, Bharathiar University, India</i>          | * |
| 34 | Plant-Made Biologics: Staphylococcal Superantigens for Immunoprotection and Immunodiagnostics; <i>Ramalingam Sathishkumar, Bharathiar University, India</i>  | * |
| 35 | Restoring anthocyanins in tomato: mass spectrometry and transcriptome-wide investigation of tomato hairy roots expressing <i>Petunia hybrida</i> Myb AN4, as a test bed of tomato plants for space exploration; <i>Riccardo Pagliarello, ENEA, Italy</i> | * |
| 36 | Production of the SARS-CoV-2 Spike protein and its Receptor Binding Domain in Plant Cell Suspension Cultures; <i>Rita Abranches, ITQB Nova University of Lisbon, Portugal</i>  | * |
| 37 | mAb production using glyco-engineered rice cells; <i>Seong-Ryong Kim, Sogang University, South Korea</i>   | * |
| 38 | Effect of exogenous 6-BAP applications on hydroponically-grown <i>Nicotiana benthamiana</i> plants for optimising their hemagglutinin yield profile; <i>Stefano Bilotta, Laval University, Canada</i>  | * |
| 39 | A Chimaeric Secretory IgA for Simplified Purification; <i>Tim Szeto, St George's University of London, UK</i>  | * |
| 40 | Generation of a set of BY-2 cell lines for the production of pharmaceutical proteins with controlled and simplified N-glycosylation; <i>Xavier Herman, UCLouvain, Belgium</i>  | * |