



SUSTAIN

ENDOPHYTES FOR A GROWING WORLD

Programme and abstract book
28th -29th August 2017



Trinity
College
Dublin

The University of Dublin



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Welcome Note

Dear Delegate

The School of Natural Sciences, Trinity College Dublin is delighted to host the international conference 'Sustain:Endophyte for a Growing World' in the historic setting of Ireland's oldest and most prestigious university, established in 1592.



The two-day conference is centred on the core themes of manipulating the plant microbiome for sustainable plant production in a changing world. Meeting the world's demand for food and natural resources in a changing climate presents formidable problems for many areas of plant production, from agriculture to forestry and horticulture. Understanding the potential beneficial role of endophytes in helping plants to cope with the associated stresses will be a crucial factor in future sustainable plant production practices. The conference will highlight cutting-edge research using endophytes and will synthesise the most promising approaches to endophyte supported plant production.

We warmly welcome you to Trinity College Dublin and look forward to a productive dialogue between disciplines, between new and established researchers and between the experimental and applied aspects of endophyte and microbiome research.

On behalf of the organizing committee we thank you for your support and look forward to meeting you in Dublin. We also thank Science Foundation Ireland for their financial support of the conference under a SFI Catalyst Award.

The Botany Department of Trinity College Dublin (emblem *Gentiana verna* L.) was founded in 1711 and we carry on that tradition of excellence in teaching and research in plant science. Plants are critical to the health of our planet being the source of all our food, the oxygen we breathe and most of the medicines we use. We now know that plants are central to the processes of global climate change and for the future provision of food and energy for an expanding human population. <https://www.tcd.ie/Botany/>

Trevor Hodkinson
Professor in Botany
Head of Department

Organising committee: Trevor Hodkinson, Matt Saunders, Fiona Doohan, Brian Murphy, Alwynne McGeever, Ana Kaja Hoyera, Aisling O'Mahony, Anindita Lahiri



Trinity College Dublin, 28 – 29th August 2017

Programme for Sustain Conference

Registration from 8:30 – 9:30 am

All presentations take place in Lecture Theatre M4, Museum Building, Trinity College Dublin (TCD). Please see the map below for any assistance.

Monday, 28th August, 2017	
Venue M4 Lecture Theatre, Museum building TCD	
9:30 – 9:40	Welcome and introduction, Trevor Hodkinson, Brian Murphy
Thematic Session 1: Phenotyping the endophyte symbiosis: chair Trevor Hodkinson	
9:40 – 10:20	Keynote presentation: David Collinge
10:20 - 10:35	Lilia Costa Carvalhais Bioprospection of endophytic fungi in wild relatives of sugarcane
10: 35 - 10:50	Philipp Franken Tit for tat: Nutrient exchange in root-endophyte interactions
10:50 - 11:05	Abhishek Shrestha /Adam Schikora The use of beneficial bacteria as priming agent in barley
11:05 - 11:30	Coffee break
11:30 - 11:45	Sandor Gonda Endophyte fungi from the roots of horseradish and their interaction with the defensive metabolites of the glucosinolate – myrosinase- isothiocyanate system
11:45 - 12:00	Ahmed Elhandy Soybean between mutualism and parasitism
12:00 - 12:15	Gabor Kovacs Functional diversity of root endophytic fungi screened by enzyme assays and host/organ preference tests
12:15 – 12:30	Charles Yao Nyarko How we used <i>Jatropha curcas</i> to improve soil and microbial quality for sustainable agriculture
12:30 – 12:45	Vittorio Venturi A beneficial rice bacterial endophyte consortium
12:45 – 13:45	Lunch break will be held in Museum building

Thematic Session 2: The Plant holobiont as a single target system: chair Brian Murphy

Venue: M4 Lecture Theatre, Museum building TCD	
13:45 – 14:25	Keynote presentation: Kornelia Smalla
14:25 – 14:40	Jose G. Macia-Vicente Competition among facultative endophytes shape the root mycobiome of non-mycorrhizal plants
14:40 – 14:55	Katarzyna Turnau Does <i>Botanophila</i> use night vision to protect the larvae from heat?

14:55 – 15:10	Ridhdi Rathore Unlocking the oilseed rape microbiota assemblages through tillage practices
15:10 – 15:25	Alba Mininni Endophytes: the effect of sustainable management in an olive grove under semi-arid conditions
15:25 – 15:50	Coffee break
15:50 – 16:05	Luhua Yang Seed-borne endophytes in barley root microbiome
16:05 – 16:20	Maria Jose Pozo COST ACTION FA1405: Using three-way interactions between plants, microbes and arthropods to enhance crop protection and production
16:20 – 16:35	Jean-Baptiste Floch Microbiome of the canola, structure and variations
16:35 – 16:50	John Caradus The science required to deliver Epichloë endophytes to commerce
16:50 – 17:05	Soleiman Helaly Preussilides A - F, bicyclic polyketides from the endophytic fungus <i>Preussia similis</i> with antiproliferative activity
17:05 – 17:20	Durlave Roy Efficacies of Seventeen organically made Northern fertilizers on sustainable crops production in acidic soil of food security under climate change Bangladesh context.
17:20 – 18:00	Poster set up in Museum building
18:00 – 20:00	Wine and food reception in Museum building

Map for the locations: Trinity College Dublin, College Green, Dublin 02



Tuesday, 29 th August, 2017	
Venue M4 Lecture Theatre, Museum building TCD	
Thematic session 3: Molecular tools to determine endophytes mode of action: chair Fiona Doohan	
9:30 – 10:10	Keynote speaker: Angela Sessitsch
10:10 – 10:25	Chris Franco Monitoring the effect of biocontrol inocula on the microbial diversity within the endo- and ectorhizosphere of wheat plants in diseased soils
10:25 – 10:40	Linda Johnson The role of SreA-mediated iron regulation in maintaining endophyte-grass symbioses
10:40 – 10:55	Victor Carrion Mining of the endophytic microbiome for novel biosynthetic genes and antifungal metabolites
10:55 – 11:10	Riina Muilu-Mäkelä Microbial composition of three peat bog mosses
11:10 -11:35	Coffee break
11:35 – 11:50	Chunxu Song Seeds endophytes and their potential as novel antimicrobials reservoir
11:50 – 12:05	Damien Blaudez Agro-transformation of dark septate endophytes and generation/screening of a K ⁰ -mutant library
12:05 – 12:20	Eugenio Llorens Wild wheat endophytes improve the physiological performance and delay stress responses under drought conditions
12:20 – 12:35	Dániel G. Knapp Comparative genomics reveals functional diversity in two dark septate endophytic (DSE) fungi
12:35 – 13:35	Lunch break & poster sessions will be held in Museum building

Thematic Session 4: Tailoring endophyte inoculants for successful applications: chair Matt Saunders

13:35 – 14:15	Keynote speaker: Kari Saikkonen
14:15 – 14:30	Brian Murphy Endophyte and Fungicide: The Perfect Marriage?
14:30 – 14:45	Kalynaraman Rajagopal Diversity of endophytic fungi in few food crops and their phytopathogenic activity
14:45 – 15:00	Arulmathi R Development, validation and utilization of bio-pesticides and bio-inoculants from endophytic fungi of <i>Annona reticulata</i> leaves
15:00 – 15:15	Vivien Krell Plant cell-wall degrading enzymes improve endophytic establishment of <i>Metarhizium brunneum</i> in potato plants
15:15 – 15:40	Coffee break
15:40 – 15:55	Daniela Costa Screening of antagonistic fungal agents for biological control of <i>Quercus suber</i> diseases
15:55 – 16:10	Shubhpriya Gupta Augmentation of asiaticoside by using endophytic fungal inoculant in in vitro plants of <i>Centella asiatica</i>
16:10 – 16:25	Charlotte Berthelot Isolation and characterization of Dark-Septate- Endophyte fungi toward their use in the phytomanagement of metal contaminated sites
16:25 – 16:40	Brian Murphy Prospecting crop wild relatives for beneficial endophytes
**16:40 **	Close and farewell

Endophytes: the effect of sustainable management in an olive grove under semi-arid conditions

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Higher biodiversity in ecosystems leads to greater stability and multifunctionality. In bacteria-plant interactions, both the bacteria and the plant profit from each other. These interactions play an important role in agriculture, positively affecting plant status and improving product quality. Bacterial endophytes colonizing plants do not cause apparent damage and contribute to host plant's protection and survival. This study was aimed at identifying bacterial endophytes in xylem sap and leaves of olive trees managed under sustainable practices for 17 years (i.e., no-tillage, drip irrigation with urban wastewater and recycling of polygenic carbon sources like cover crops and pruning material) compared to conventional one (i.e., soil tillage, burning of pruning residues, mineral fertilization, empirical irrigation) in a mature olive grove located in Southern Italy. During two different periods of the year, samples of soil, xylem sap and leaves were collected in both treatments for DNA extraction and metagenomic analysis of the endophytic bacterial communities. Results revealed that endophytes responded positively to sustainable orchard management, showing a higher complexity and abundance, compared to the conventional one. The abundance of nitrogen-fixing bacteria in the samples of the sustainable treatment was also discussed. A deeper understanding of endophytic microbiota of olive trees grown in different agronomic systems could be useful to promote plant growth and crop quality, also improving plant protection against pathogens.