

GIAN Course on The function of reactive oxygen species and antioxidants in plants

18-22nd November, 2019



Like all organisms, plants produce reactive oxygen species (ROS) as a result of the interaction between various metabolic processes and oxygen. ROS are removed by a wide range of interacting antioxidant compounds (e.g. glutathione and ascorbate) and enzymes (e.g. superoxide dismutases, catalase and peroxidases) which prevent oxidative damage to cellular components. In many cases ROS production is increased when plants are exposed to environmental stresses such as drought and temperature extremes. Therefore, understanding this system is potentially important in improving crop productivity. ROS are also involved in signalling processes related to plant growth and have a role in defence against pathogens. This series of lectures will introduce ROS metabolism, signalling and the antioxidant systems that control ROS concentrations, critically consider the rationale for engineering the plant antioxidant system for improved stress resistance and cover the role of ROS in plant development and pathogen responses.

Teaching Faculty

Prof. Nicholas Smirnoff is a Professor of Plant Biochemistry at College of Life and Environmental Sciences, University of Exeter, UK. He has worked for more than 20 years on the role of reactive oxygen species and antioxidants in plants. **He was involved in the discovery of biosynthetic pathway of ascorbate (Vitamin C)**, a key antioxidant and is uncovering its functions and evolution. He has demonstrated roles for ROS in pollen tube growth and in various aspects of plant pathogen-interactions. Currently his research in this area is focussed on suppression of chloroplast ROS production by bacterial pathogens, the use of genetically-encoded hydrogen peroxide sensors to investigate its role in high light signalling and stomatal closure. He is currently also the Bioscience Director Research, University of Exeter, UK. Besides he is Fellow of Royal Society of Biology. He is Editor of very prestigious journals like Journal of Experimental Botany, Annals of Botany, Plant Cell Environment etc. and member of the BBSRC Grant Committee, UK Arabidopsis Genomics Steering Committee etc. of United Kingdom.



Host Faculty and Course Co-ordinator

Prof. (Dr.) Sanjib Kumar Panda is a faculty in the Department of Biochemistry, Central University of Rajasthan, India. He works in the area of Plant Molecular Biology & Functional genomics to understand the mechanisms of stress signal transduction and to develop stress resilient crop plants. He uses structural and functional genomics approaches along with transgenic technology to decipher stress responses in crop and model plant systems. Prof. Panda's group is supported by various National and International funding agencies like DBT, DST, JSPS, Tea Board, CSIR, UGC etc. He has published numerous papers in reputed International journals. He is also editorial board members of various International Plant biology Journals.



Venue

Department of Biochemistry, Central University of Rajasthan, NH-8, Bandar Sindri, Ajmer, Rajasthan, INDIA-305817

Course details

November 18 ,2019

Lecture-1 (10:30 a.m-11:30 a.m) **The chemistry and biochemistry of ROS production 1**

Lecture-2 (11:45 a.m-12:45 p.m) **The chemistry and biochemistry of ROS production 2**

November 19 ,2019

Lecture-3 (10:30 a.m-11:30 a.m) **Antioxidants 1**

Lecture-4 (11:45 a.m-12:45 p.m) **Antioxidants 2**

Tutorial-1 (2:00 p.m-3:00 p.m)

November 20, 2019

Lecture-5 (10:30 a.m-11:30 a.m) **Photosynthetic ROS production 1**

Lecture-6 (11:45 a.m-12:45 p.m) **Photosynthetic ROS production 2**

Tutorial-2 (2:00 p.m-3:00 p.m)

November 21, 2019

Lecture-7 (10:30 a.m-11:30 a.m) **ROS and pathogens**

Lecture-8 (11:45 a.m-12:45 p.m) **ROS signalling 1**

Tutorial-3 (2:00 p.m-3:00 p.m)

November 22, 2019

Lecture-9 (10:30 a.m-11:30 a.m) **ROS signalling 2**

Lecture-10 (11:45 a.m -12:45 p.m) **ROS, antioxidants and improving crop stress resistance**

Tutorial- 4 (1:30 p.m-2:30 p.m)

Examination for participants

Registration Fees

Participants from abroad: \$500

Participants from India: ₹2000

The above fee includes all instructional materials, computer use for tutorials, internet facility. The participants will be provided with single bedded accommodation on payment basis.

Who can attend?

- Students of U.G, P.G and Ph.D levels and postdoctoral fellows from reputed academic and technical institutions
- Faculty members working in the area of Plant biology, Plant Biotechnology, Plant Molecular Biology

How to apply?

Registration form duly filled-in and forwarded by the Head of the Department/Supervisor should be sent to **course coordinator** before 31st Oct, 2019.

Contact Details

Prof. Sanjib Kumar Panda

Course Coordinator

Department of Biochemistry,

Central University of Rajasthan, India-305817, Email: sanjib.panda@curaj.ac.in / hod.biochem@curaj.ac.in

Cell: 9435370608

GIAN Course
on
The Function of Reactive Oxygen Species and Antioxidants in Plants
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Registration Form

I am willing to participate in GIAN course organized in the Department of Biochemistry, Central University of Rajasthan. Please consider my details for the registration in the course.

Name:

Designation

Department.

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Head of the Department/ Supervisor

Participant Signature

Note: Registration form should be forwarded by the Head of the Department or Supervisor.