Science Setu Webinars by NIPGR

Milestones in Plant Genomics

Press- Note

Date: 23-05-2021, Friday

Tpoic: "Light at the beginning of the tunnel -

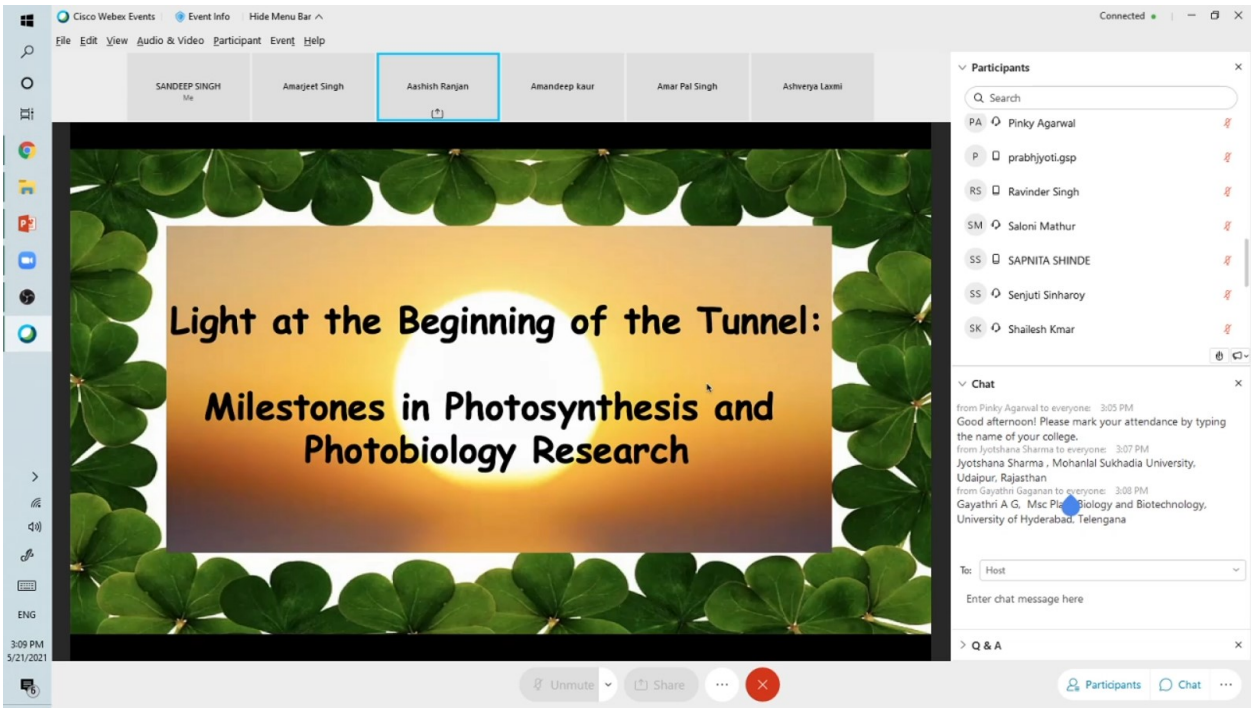
Milestones in Photosynthesis Research"

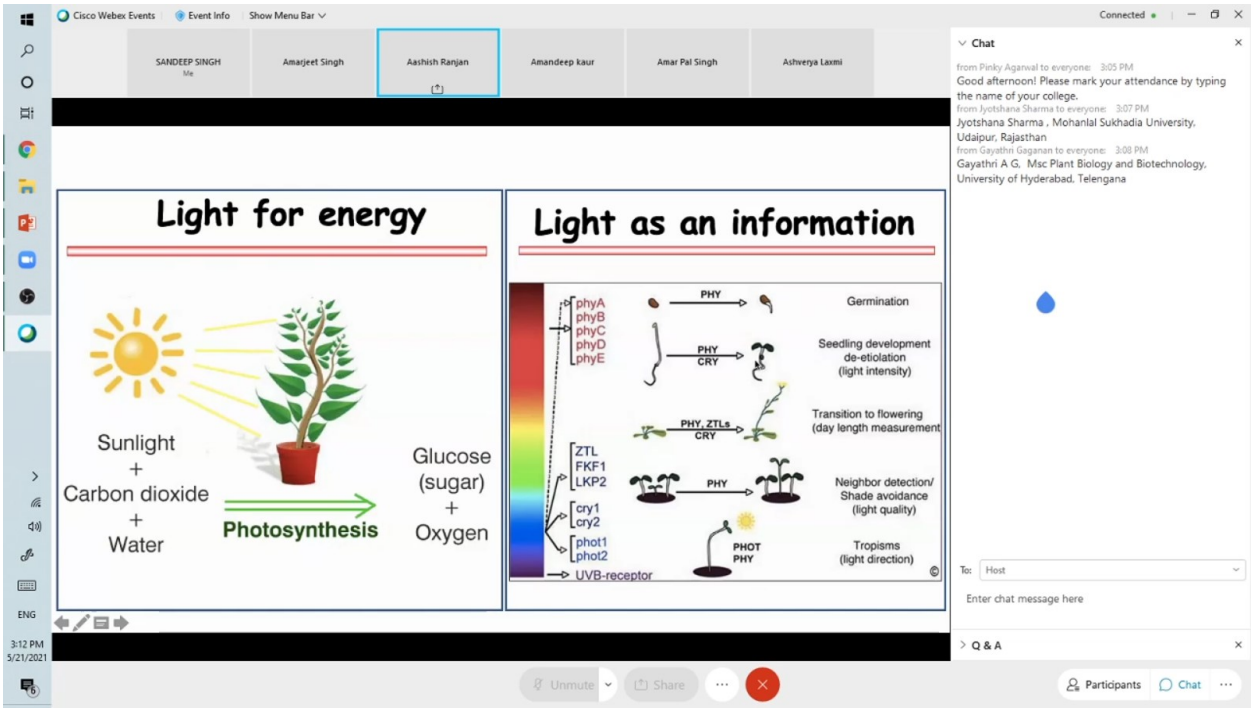
Resource person: Dr. AashishRanjan, Scientist IV, NIPGR

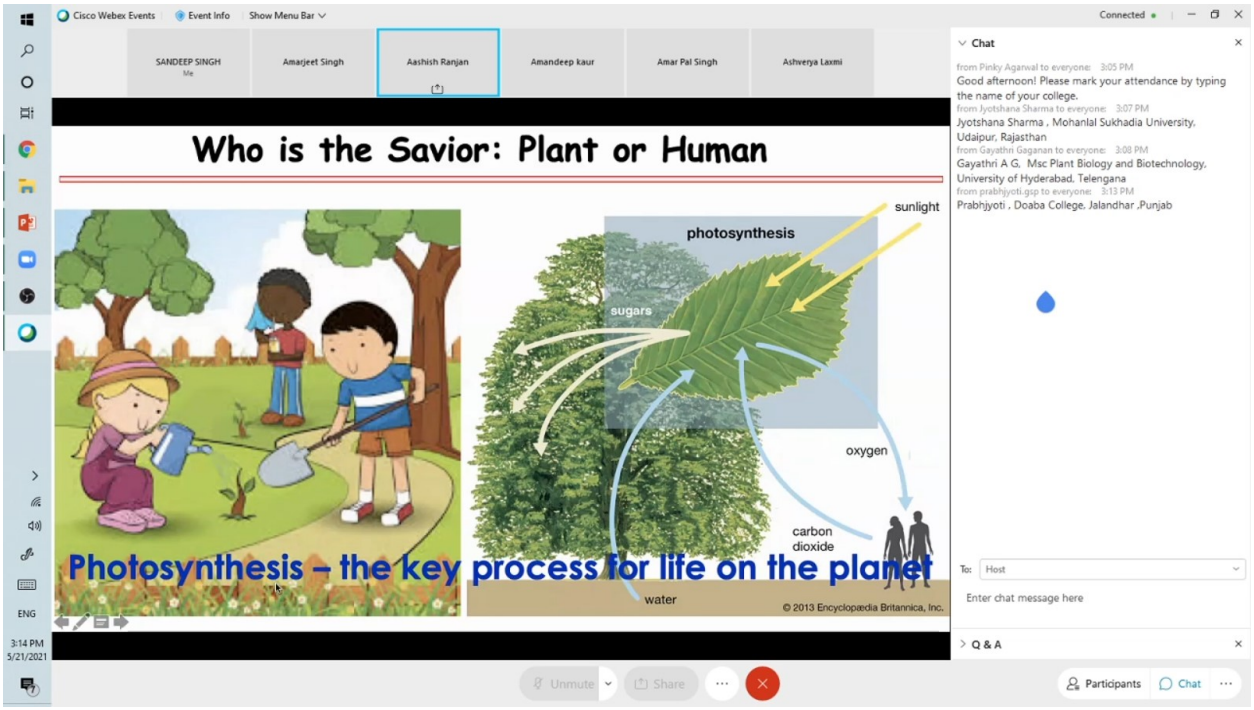
The Department of Biotechnology, Government of India, has planned "Science Setu" as a virtual platform to connect research Institutes with undergraduate students. Under this, our college has been assigned to National Institute of Plant Genome Research (NIPGR), New Delhi. NIPGR is an autonomous institution aided by the Department of Biotechnology. Research at NIPGR focuses on functional, structural, evolutionary and applied genomics of plants, including crop plants. Through the Science Setu program, our students and faculty virtually connect with NIPGR, New Delhi and got to know about the multifarious kinds of plant based research. It is a unique opportunity for science students at undergraduate and postgraduate level to get an exposure to high-level research.

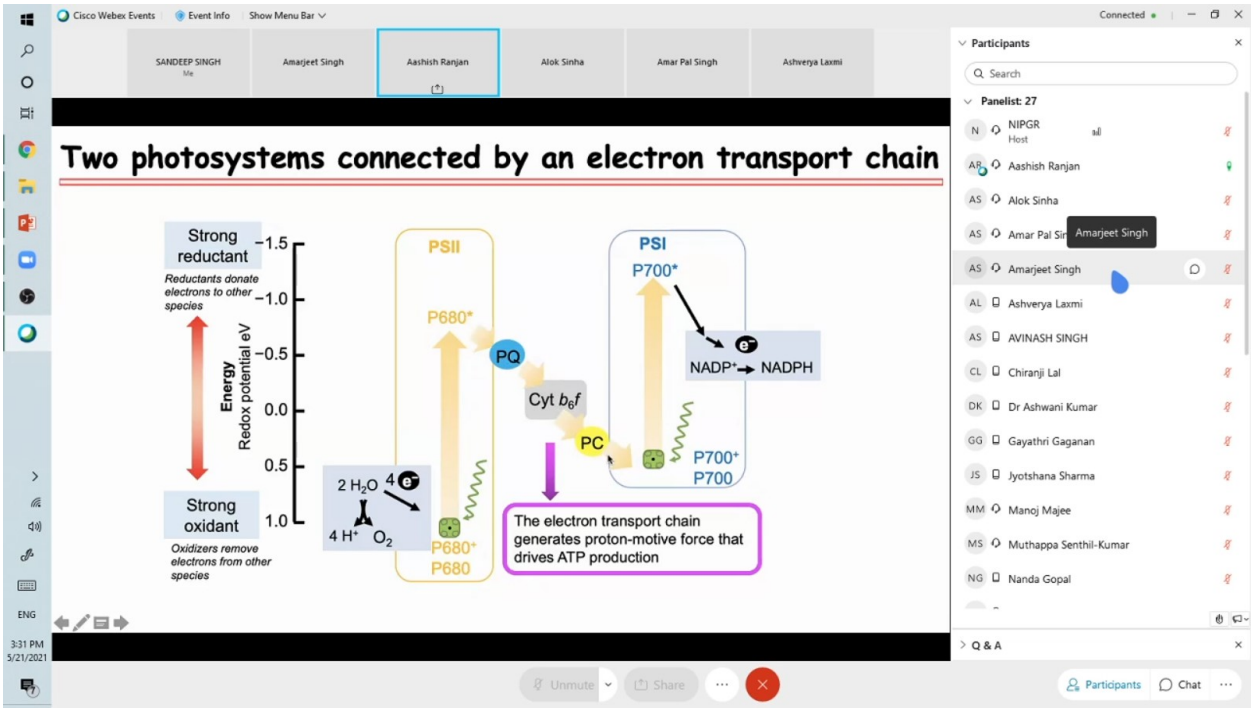
Dr. Pinky Aggarwal, Scientist, NIPGR gave welcome note on this event. **Resource person: Dr. AashishRanjan, Scientist IV, NIPGR** started his lecture by stating the importance of light in our daily life cycle, on human physiology. He discussed about the regulation of light in plant life cycle as energy as well as information.He told about the key processes involved in plants during photosynthesis. He focused on the photosynthesis as an energy entry point in the biosphere from where all the required energy is distributed throughout biosphere. He discussed about the 10 nobel prizes in the field of photosynthesis during 20^{th} century. He also discussed about the history aspects of photosynthesis like its discovery, identification of photosynthetic structures, their working and their connections with other plant structures. He also talked about the process of carbon fixation through photosystems, their detailed explanation and generation of carbohydrates and atmospheric oxygen. He further discussed the dark side of photosynthesis like photorespiration and dual activity of enzyme RUBISCO. He concluded his lecture by discussing about the genetic engineering of C3 plants for enhancing their photosynthetic yield like that of

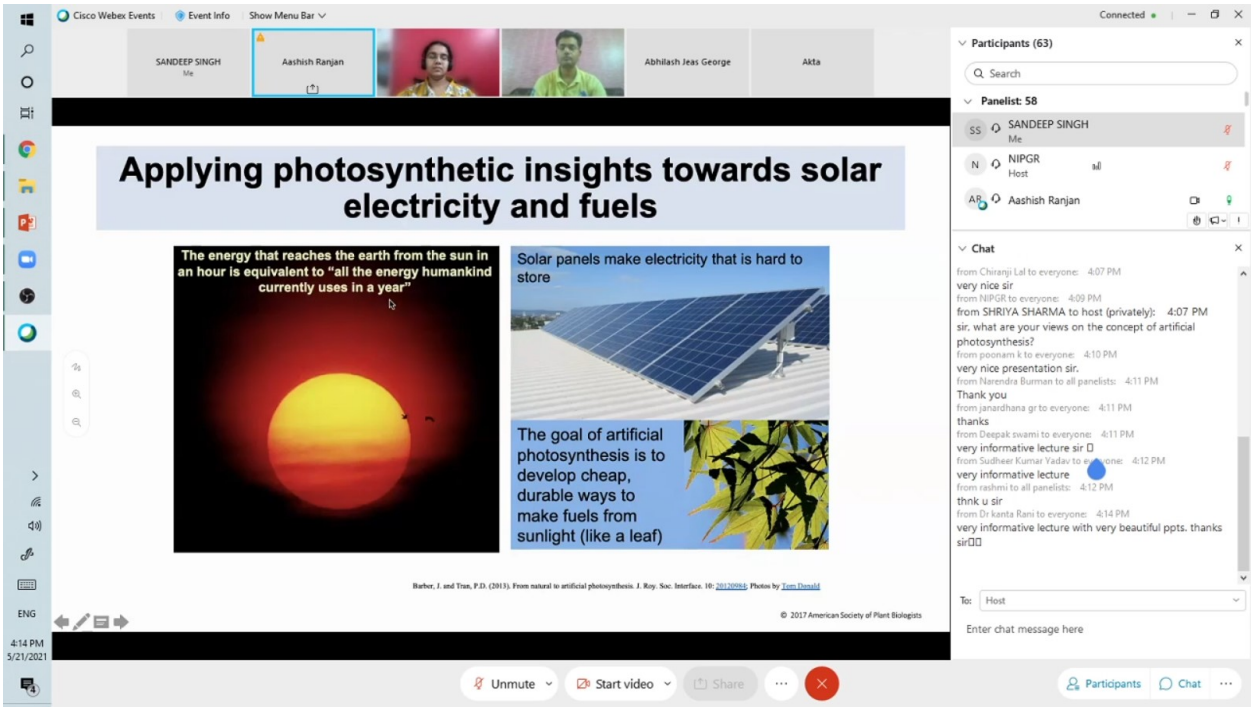
C4 plants. He also gave example of C4 rice project regarding the same. Faculty of Science and total 63 science students attended the event. Dr. Pinky Agarwal, Scientist, NIPGR attended the questions of the participants and gave vote of thanks. It was aknowledgeable and exhilarating experience for all the participants.

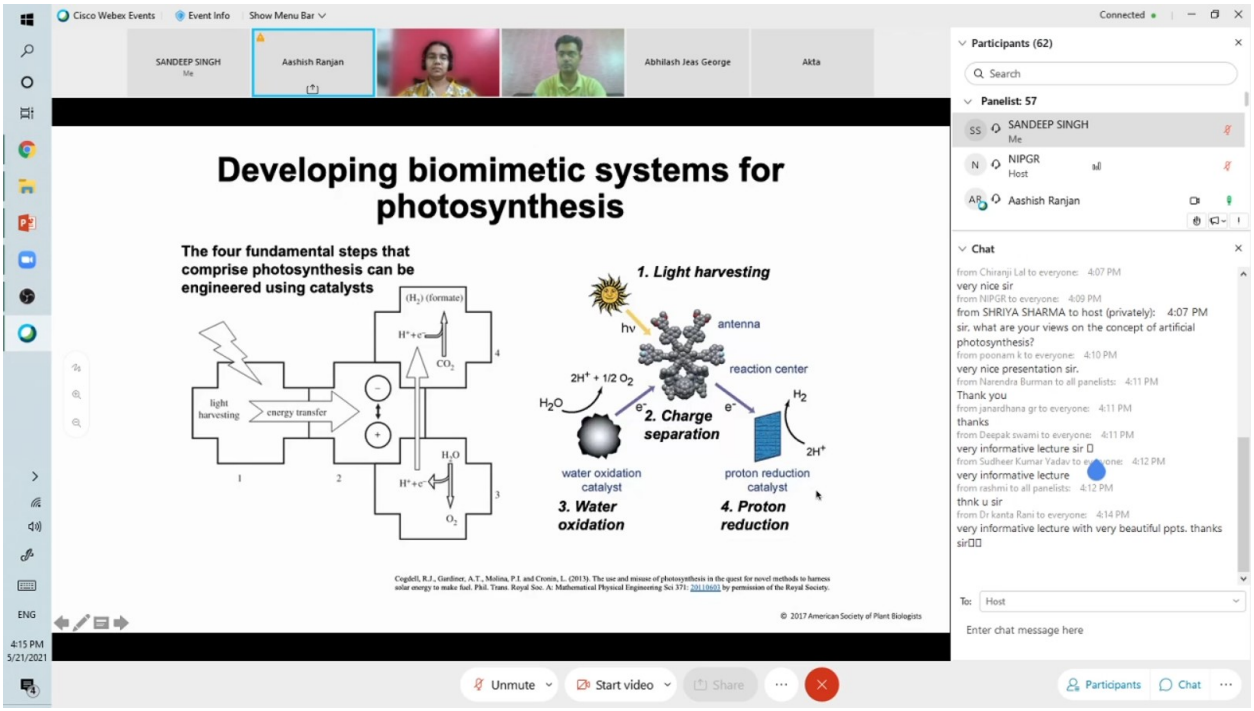


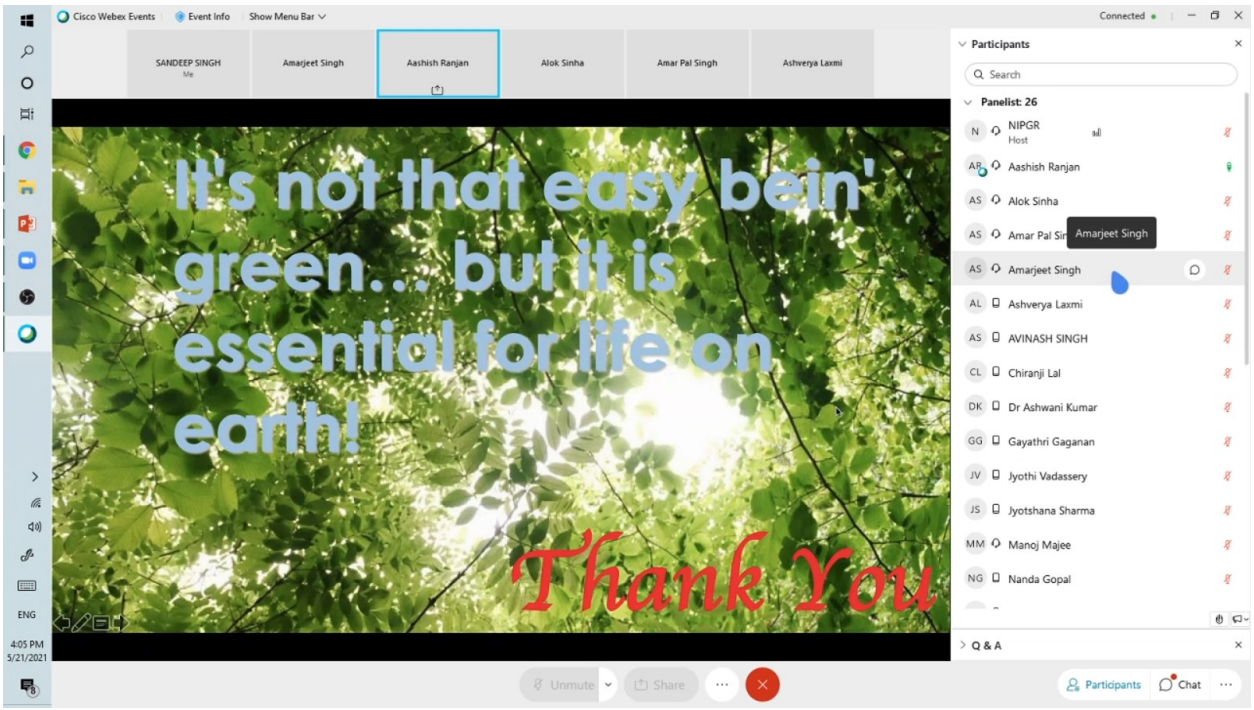

Cisco Webex Events
Event Info
Show Menu Bar
Connected
SANDEEP SINGH
Me
Amarjeet Singh
Aashish Ranjan
Amandeep kaur
Amar Pal Singh
Ashverya Laxmi
Chat
from Pinky Agarwal to everyone: 3:05 PM
Good afternoon! Please mark your attendance by typing the name of your college.
from Jyotshana Sharma to everyone: 3:07 PM
Jyotshana Sharma , Mohanlal Sukhadia University, Udaipur, Rajasthan
from Gayathri Gaganan to everyone: 3:08 PM
Gayathri A G, Msc Plant Biology and Biotechnology, University of Hyderabad, Telengana
Light for energy
Sunlight
+
Carbon dioxide
+
Water
Photosynthesis
Glucose
(sugar)
+
Oxygen
Light as an information
phyA
phyB
phyC
phyD
phyE
PHY
Germination
PHY
CRY
Seedling development
de-etiolation
(light intensity)
PHY, ZTLs
CRY
Transition to flowering
(day length measurement
ZTL
FKF1
LKP2
PHY
Neighbor detection/
Shade avoidance
(light quality)
cry1
cry2
phot1
phot2
PHOT
PHY
Tropisms
(light direction)
UVB-receptor
To: Host
Enter chat message here
Q & A
ENG
3:12 PM
5/21/2021
Unmute
Share
Participants
Chat

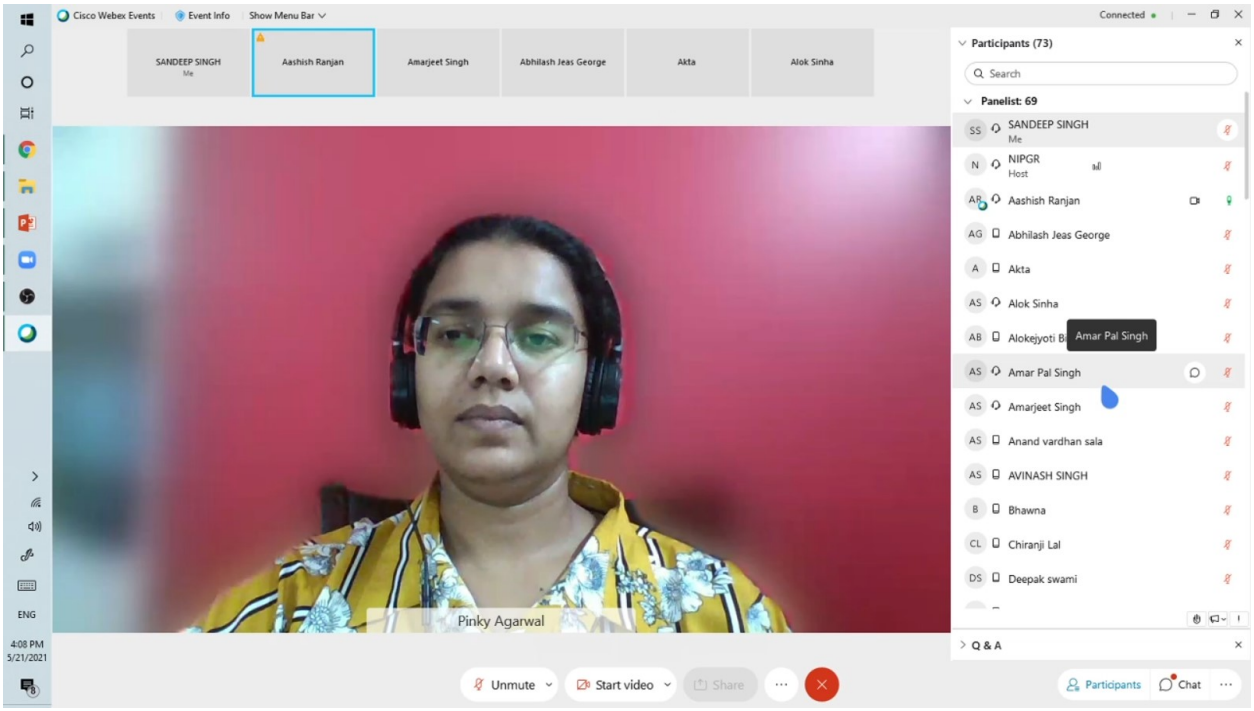

Cisco Webex Events
Event Info
Show Menu Bar
Connected
SANDEEP SINGH
Me
Amarjeet Singh
Aashish Ranjan
Amandeep kaur
Amar Pal Singh
Ashverya Laxmi
Chat
from Pinky Agarwal to everyone: 3:05 PM
Good afternoon! Please mark your attendance by typing the name of your college.
from Jyotshana Sharma to everyone: 3:07 PM
Jyotshana Sharma , Mohanlal Sukhadia University, Udaipur, Rajasthan
from Gayathri Gaganan to everyone: 3:08 PM
Gayathri A G, Msc Plant Biology and Biotechnology, University of Hyderabad, Telengana
from prabhjyoti.gsp to everyone: 3:13 PM
Prabhjyoti , Doaba College, Jalandhar ,Punjab
Who is the Savior: Plant or Human
sunlight
photosynthesis
sugars
oxygen
carbon
dioxide
water
© 2013 Encyclopædia Britannica, Inc.
Photosynthesis – the key process for life on the planet
To: Host
Enter chat message here
Q & A
ENG
3:14 PM
5/21/2021
Unmute
Share
Participants
Chat

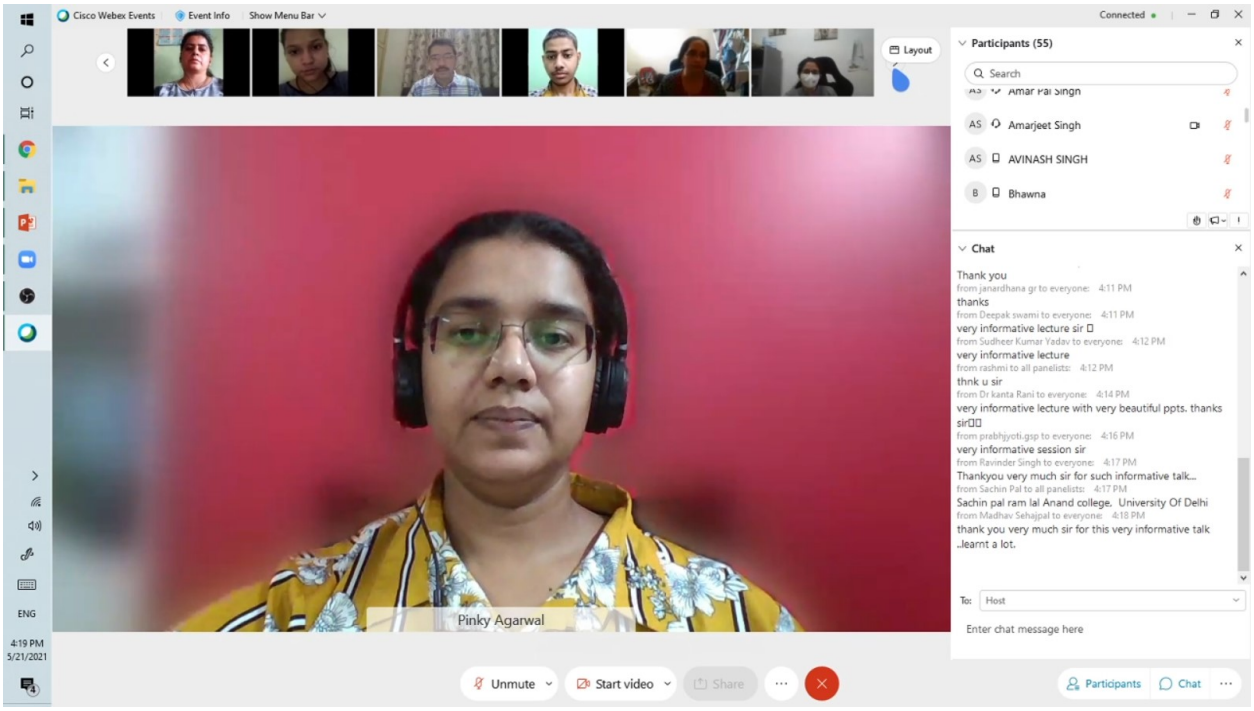

Cisco Webex Events
Event Info
Show Menu Bar
Connected
SANDEEP SINGH
Me
Amarjeet Singh
Aashish Ranjan
Alok Sinha
Amar Pal Singh
Ashverya Laxmi
Two photosystems connected by an electron transport chain
Strong reductant
Reductants donate electrons to other species
Energy
Redox potential eV
−1.5
−1.0
−0.5
0.0
0.5
1.0
Strong oxidant
Oxidizers remove electrons from other species
PSII
P680*
PQ
Cyt b_6f
PC
PSI
P700*
NADP⁺ → NADPH
P700⁺
P700
2 H_2O
4 e⁻
4 H^+
O_2
P680⁺
P680
The electron transport chain generates proton-motive force that drives ATP production
Participants
Search
Panelist: 27
NIPGR
Host
Aashish Ranjan
Alok Sinha
Amar Pal Singh
Amarjeet Singh
Ashverya Laxmi
AVINASH SINGH
Chiranji Lal
Dr Ashwani Kumar
Gayathri Gaganan
Jyotshana Sharma
Manoj Majee
Muthappa Senthil-Kumar
Nanda Gopal
Q & A
ENG
3:31 PM
5/21/2021
Unmute
Share
Participants
Chat

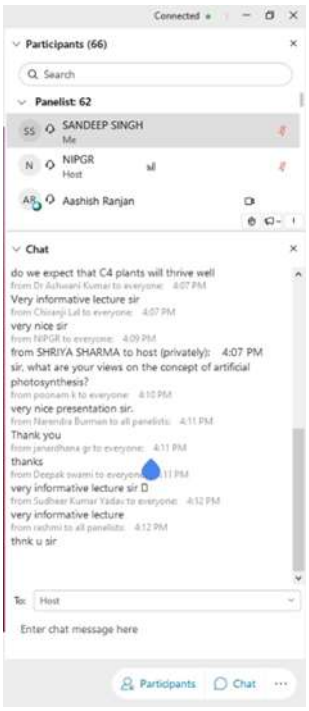

Cisco Webex Events
Event Info
Show Menu Bar
Connected
SANDEEP SINGH
Me
Aashish Ranjan
Abhilash Jeas George
Akta
Applying photosynthetic insights towards solar electricity and fuels
The energy that reaches the earth from the sun in an hour is equivalent to "all the energy humankind currently uses in a year"
Solar panels make electricity that is hard to store
The goal of artificial photosynthesis is to develop cheap, durable ways to make fuels from sunlight (like a leaf)
Barber, J. and Tran, P.D. (2013). From natural to artificial photosynthesis. J. Roy. Soc. Interface. 10: 20120984; Photos by Tom Donald
© 2017 American Society of Plant Biologists
Participants (63)
Search
Panelist: 58
SANDEEP SINGH
Me
NIPGR
Host
Aashish Ranjan
Chat
from Chiranji Lal to everyone: 4:07 PM
very nice sir
from NIPGR to everyone: 4:09 PM
from SHRIYA SHARMA to host (privately): 4:07 PM
sir, what are your views on the concept of artificial photosynthesis?
from poonam k to everyone: 4:10 PM
very nice presentation sir.
from Narendra Burman to all panelists: 4:11 PM
Thank you
from janardhana gr to everyone: 4:11 PM
thanks
from Deepak swami to everyone: 4:11 PM
very informative lecture sir
very informative lecture
from rashmi to all panelists: 4:12 PM
thnk u sir
from Dr kanta Rani to everyone: 4:14 PM
very informative lecture with very beautiful ppts. thanks sir
To: Host
Enter chat message here
ENG
4:14 PM
5/21/2021
Unmute
Start video
Share
Participants
Chat


Cisco Webex Events
Event Info
Show Menu Bar
Connected
SANDEEP SINGH
Me
Aashish Ranjan
Abhilash Jeas George
Akta
Developing biomimetic systems for photosynthesis
The four fundamental steps that comprise photosynthesis can be engineered using catalysts
light harvesting
energy transfer
1. Light harvesting
hv
antenna
reaction center
2. Charge separation
water oxidation catalyst
proton reduction catalyst
3. Water oxidation
4. Proton reduction
© 2017 American Society of Plant Biologists
Participants (62)
Search
Panelist: 57
SANDEEP SINGH
Me
NIPGR
Host
Aashish Ranjan
Chat
very nice sir
very nice presentation sir.
Thank you
thanks
very informative lecture sir
very informative lecture
thnk u sir
very informative lecture with very beautiful ppts. thanks sir
To: Host
Enter chat message here
Unmute
Start video
Share
Participants
Chat
ENG
4:15 PM
5/21/2021


Cisco Webex Events
Event Info
Show Menu Bar
Connected
SANDEEP SINGH
Me
Amarjeet Singh
Aashish Ranjan
Alok Sinha
Amar Pal Singh
Ashverya Laxmi
It's not that easy bein' green... but it is essential for life on earth!
Thank You
Participants
Search
Panelist: 26
NIPGR
Host
Aashish Ranjan
Alok Sinha
Amar Pal Sir
Amarjeet Singh
Ashverya Laxmi
AVINASH SINGH
Chiranji Lal
Dr Ashwani Kumar
Gayathri Gaganan
Jyothi Vadassery
Jyotshana Sharma
Manoj Majee
Nanda Gopal
Q & A
Unmute
Share
Participants
Chat
ENG
4:05 PM
5/21/2021


Cisco Webex Events
Event Info
Show Menu Bar
Connected
SANDEEP SINGH
Me
Aashish Ranjan
Amarjeet Singh
Abhilash Jeas George
Akta
Alok Sinha
Participants (73)
Search
Panelist: 69
SANDEEP SINGH
Me
NIPGR
Host
Aashish Ranjan
Abhilash Jeas George
Akta
Alok Sinha
Amar Pal Singh
Amarjeet Singh
Anand vardhan sala
AVINASH SINGH
Bhawna
Chiranji Lal
Deepak swami
Pinky Agarwal
Q & A
Unmute
Start video
Share
Participants
Chat
ENG
4:08 PM
5/21/2021


Cisco Webex Events
Event Info
Show Menu Bar
Connected
Layout
Participants (55)
Search
Amarjeet Singh
AVINASH SINGH
Bhawna
Chat
Thank you
from janardhana gr to everyone: 4:11 PM
thanks
from Deepak swami to everyone: 4:11 PM
very informative lecture sir
from Sudheer Kumar Yadav to everyone: 4:12 PM
very informative lecture
from rashmi to all panelists: 4:12 PM
thnk u sir
from Dr kanta Rani to everyone: 4:14 PM
very informative lecture with very beautiful ppts. thanks sir
from prabhjyoti.gsp to everyone: 4:16 PM
very informative session sir
from Ravinder Singh to everyone: 4:17 PM
Thankyou very much sir for such informative talk...
from Sachin Pal to all panelists: 4:17 PM
Sachin pal ram lal Anand college. University Of Delhi
from Madhav Sehajpal to everyone: 4:18 PM
thank you very much sir for this very informative talk ..learnt a lot.
To: Host
Enter chat message here
Pinky Agarwal
Unmute
Start video
Share
Participants
Chat
ENG
4:19 PM
5/21/2021


Connected
Participants (66)
Search
Panelist: 62
SS SANDEEP SINGH
Me
N NIPGR
Host
AR Aashish Ranjan
Chat
do we expect that C4 plants will thrive well
from Dr Ashwani Kumar to everyone: 4:07 PM
Very informative lecture sir
from Chiranji Lal to everyone: 4:07 PM
very nice sir
from NIPGR to everyone: 4:09 PM
from SHRIYA SHARMA to host (privately): 4:07 PM
sir, what are your views on the concept of artificial photosynthesis?
from poonam k to everyone: 4:10 PM
very nice presentation sir.
from Narendra Burman to all panelists: 4:11 PM
Thank you
from janardhana gr to everyone: 4:11 PM
thanks
from Deepak swami to everyone: 4:11 PM
very informative lecture sir
from Sudheer Kumar Yadav to everyone: 4:12 PM
very informative lecture
from rashmi to all panelists: 4:12 PM
thnk u sir
To: Host
Enter chat message here
Participants
Chat