



Children's Education Society (Regd.)

# The Oxford College of Pharmacy

(Recognized by the Govt. of Karnataka, Affiliated to Rajiv Gandhi University of Health Science, Karnataka;

Approved by Pharmacy Council of India, New Delhi)

Accredited by NAAC and International Accreditation Organization (IAO)

Date: 11/3/2022

## CIRCULAR

This is to inform all the students and the teaching staff of The Oxford College of Pharmacy that a online webinar titled “**Alternative models in drug research: improving drug research and 3R of animal testing**” for the academic year 2021-22 will be conducted on 15/03/2022. We request active participation for the same.

*P. Padma*  
PRINCIPAL

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No 6/9, 1st Cross, Begur Road, Hongasandra,  
Bangalore - 560 068



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Dr. Padmaa M Paarakh  
Principal & Professor, TOCP

Co-ordinator

Dr. Noopur Srivastava  
Department of  
Pharmacology

Resource Person

Dr. Virupanagouda Patil  
Associate Professor

Department of

Pharmacology

BLDEA'S SSM College of  
Pharmacy & Research

Center, Vijayapur,  
Karnataka

## ABOUT US

The Oxford College of  
Pharmacy (TOCP) was  
established in 1992. TOCP  
under the aegis of Children's  
Education Society (R) offers  
D Pharm, B Pharm, M Pharm,  
Pharm D, Pharm D Post  
Baccalaureate and PhD  
Programs.

TOCP is recognized by the  
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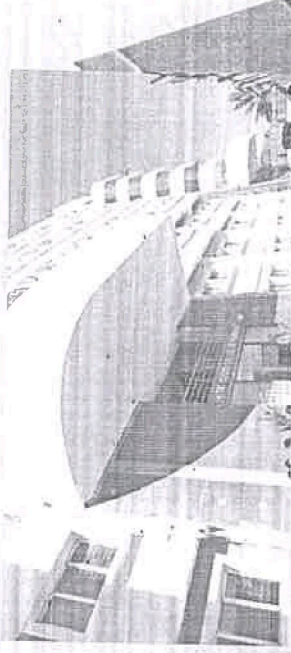
## Webinar on

**“Alternative models in drug  
research: improving drug  
research and 3R of animal  
testing”**

On

15th March 2022

Time: 2.15 PM-3.15 PM



Organized by

Department of Pharmacology

THE OXFORD COLLEGE OF

PHARMACY

No 6/9, 1st Cross, Begur Road,

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PIN 560 068

Karnataka, India.





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## DEPARTMENT OF PHARMACOLOGY

### ORGANISED

### ONLINE WEBINAR ON

**“ALTERNATIVE MODELS IN DRUG RESEARCH: IMPROVING DRUG RESEARCH AND 3R OF ANIMAL TESTING”**

### CHIEF PATRON

SHRI S. N. V. L NARASIMHA RAJU

CHAIRMAN

THE OXFORD EDUCATIONAL INSTITUTIONS

### CONVENER

Dr. PADMAA M PAARAKH

PRINCIPAL

THE OXFORD COLLEGE OF PHARMACY

### WEBINAR CO-ORDINATOR

Dr. NOOPUR SRIVASTAVA

ASSOCIATE PROFESSOR

DEPARTMENT OF PHARMACOLOGY

### RESOURCE PERSON

Dr. VIRUPANAGOUDA PATIL

ASSOCIATE PROFESSOR

DEPARTMENT OF PHARMACOLOGY

BLDEA'S SSM COLLEGE OF PHARMACY & RESEARCH CENTER

VIJAYAPUR, KARNATAKA-586103

**DATE: 15<sup>th</sup> MARCH 2022**

**TIME: 2.15 PM – 3.15 PM**



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## PREAMBLE

The Department of Pharmacology conducted the webinar on “Alternative models in drug research: improving drug research and 3R of animal testing” which is the step to learn about new methods of animal testing and their significance for the students, scholars and teaching faculties. The webinar was conducted on Microsoft (MS) team’s platform. There were totally around 113 participants, whereas the students and faculty have assembled in seminar hall no. 505 and the resource person has joined through MS teams platform through online mode. Later, principal **Dr. Padmaa M Paarakh** shared few words about the guest speaker. **Dr. Virupanagouda Patil**, Associate Professor, Dept of Pharmacology, BLDEA’s SSM college of Pharmacy & research center delivered the lecture.

### The content delivered in the webinar is as follows:

The Speaker Dr. Virupanagouda Patil presented the address on “Alternative models in drug research: improving drug research and 3R of animal testing”. Typically, animal studies are essential for research that seeks to understand complex questions of diseases, lifetime risk and other biological mechanisms of whole living system, that would be unethical or too difficult to perform in human subjects.

He discussed about xenotransplantation and how to overcome the shortage of human organs with the aid of xenotransplantation. He also added a note on future alternatives on animal testing by discussing about OOC and some other microfibration techniques.





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CHILDREN'S EDUCATION SOCIETY®

## THE OXFORD COLLEGE OF PHARMACY



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#1st Main Road, Hongasandra, Bengaluru, Karnataka 560 068

CORDIALLY INVITE YOU FOR WEBINAR ON

“ALTERNATIVE MODELS IN DRUG RESEARCH: IMPROVING

RESEARCH AND 3R OF ANIMAL TESTING ”

ON 16<sup>TH</sup> MARCH 2022 AT 2:15 P.M.



RESOURCE PERSON

Dr. Virupanagouda P Patil

[Click Here to register](#)

[Please join us at with this Link](#)



**3R**  
Reduction  
Refinement  
Replacement

PATRON

SRI. S.N.VI. NARASIMHARAJU  
CHAIRMAN

THE OXFORD EDUCATIONAL INSTITUTIONS

CONVENER

DR. PADMAA.M. PAARAKH,  
PRINCIPAL,

THE OXFORD COLLEGE OF PHARMACY

ORGANIZING SECRETARY

DR. NOOPUR SRIVASTAVA  
ASSOCIATE PROFESSOR

DEPT. OF PHARMACOLOGY  
THE OXFORD COLLEGE OF PHARMACY

### Flyer

#### Pyrogenicity test

##### ✓ INVITRO PYROGEN TEST (IPT):

□ Litmus amoebocyte lysate (LAL) test and Monocyte activation test (MAT)

✓ Quickly and accurately tested *in vitro*.

✓ Replaced rabbit pyrogen tests (one million rabbits annually).

Blood of healthy volunteers

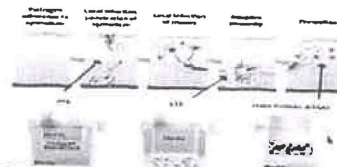


#### Modular immune *in vitro* construct (MIMIC)

✓ Efficacy of new vaccines

✓ Uses human cells to create a model of the human immune system

✓ Replacing some steps of the vaccine development process: animals saved.



+101

JS



SS

PK

VC

PR

SJ

PP

AR

(Dr. Virupanagouda Patil interacting with students)



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**Future alternatives**

**Organs on a chip (OOC)**

- ✓ The Wyss Institute for Biologically Inspired Engineering (US)
  - intends to develop **in-vitro organs**
  - ✓ **drug screening**
  - ✓ Eg. lung-on-a-chip.
- ✓ This combines **microfabrication techniques** with modern **tissue engineering** and **mimics the complicated mechanical and biochemical behaviours** of a **human organ**.

**Lung-on-a-chip**

- ✓ The Wake Forest Institute for Regenerative Medicine (WFIRM): Winston-Salem (US)
- ✓ **\$24 million in federal funding**: effects of chlorine gas on human **lungs** and to develop treatments for **chemical injury**.
- ✓ **Toxicology research**

**Adv:** Quicker responses and more accurate than a Transwell culture system  
**Disadv:** responses of a lung-on-a-chip don't yet fully reproduce the responses of native alveolar epithelial cells.

(Dr. Virupanagouda Patil interacting with students)

**Continued but modified use of animals**

- ✓ **Russel and burch in 1959**
  - "if animals were to be used in experiments, every effort should be made to replace them with **non-sentient alternatives**"
- ✓ **3R strategy**
  - ✓ **Refinement**-refine experimental methods to decrease unnecessary pain and trauma
    - Eg. Non-invasive monitoring, such as MRI
  - ✓ **Reduction**-reduce the no. of animals
    - Eg. Syrian Hamster Embryo (SHE) assay (**8 animals**): standard bioassay (>**800**)
  - ✓ **Replacement**-replace the animal experiments
    - Eg. Computer simulation models, In-vitro methods, cell culture

(Dr. Virupanagouda Patil interacting with students)





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### OUTCOME

There were totally 113 participants in the webinar. The overall session discussion benefitted the faculties and students. This webinar will aid researchers in *in vivo* studies. Though it is essential to test the efficacy of the developed compounds or molecules on lab animals, but their wellbeing too matters. The speaker discussed about 3R Principles i.e., replace, reduce and refine to be applied during *in vivo* studies. Additionally, the speaker added that future alternatives for animals include organs on a chip (OOC), lungs on a chip etc., through which mechanical and biochemical behaviors of human organs can be replicated.





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## LIST OF PARTICIPANTS

SL.NO	NAME OF PARTICIPANT	SIGNATURE
1	ABHISHEK KULKARNI	Abhishek.
2	ADITYA J	Aditya
3	ANIL KUMAR R	Anil
4	ANKITH REDDY	Ankith
5	ANUSHREE R	Anushree
6	APARNA OM	Aparna
7	ARROJU HRITHIK	Arroju
8	ARSHA MOHAN	Arsha
9	ASHWINI KURABET	Ashwini
10	ASHWINI S	Ashwini
11	AYATI KAR	Ayati
12	BADEPALLI REDDAIAH REDDY	Badepalli
13	BALAKRISHNAN S	Balakrishnan
14	BHASKAR SAHA	Bhaskar
15	BHAVYA SRI S	Bhavya
16	BINDU K	Bindu
17	CHAITHANYA R	Chaithanya
18	DARSHAN GOWDA	Darshan
19	DHANASHEKAR M K	Dhanashekar
20	DIVYATHA NAIDU	Divyatha
21	ELAIALLVAR R	Elaiallvar
22	GOKUL KANNAN S	Gokul
23	GOWDHAM T	Gowdham
24	GURUKIRAN J	Gurukiran
25	GURUSUBRAMANYA	Gurusubramanya
26	HARSHA R	Harsha R.
27	HEMANTH KUMAR P	Hemanth
28	HEMANTH KUMAR E	Hemanth



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29	KARTHIK HEGDE	Karthi.
30	KAVNA P	Kav
31	KAVIARASAN M	Kavi.M
32	KIRAN CHAND	Kiran
33	KUSHAN RAJ P	Raj
34	LAXMI SAGAR S	Lakshmi
35	MADALA INDRANI	Madala
36	MADHAN PRASAD M	Madhan
37	MADHU T	Madhu
38	MAHESH GOWDA BN	Mahesh
39	MANASA P	Manasa
40	MANOHAR S	Manohar
41	MANOJ M	Manoj
42	MD ARIF IRFANI	Irfini
43	MEENA D	Meena
44	MD ALI N	Ali N
45	MD SHAFIULLA K	Shaf
46	MONIKA B	Monika
47	MOUNIKA G S	Mounika
48	MUNIKRISHNAN M	Munro
49	NAVEEN KUMAR C	Naveen
50	NISHA S	Nisha
51	PAVITHRA S	Pavithra
52	PAVITHRAN V	Pavithra
53	POTLURI BHAVYA	Potluri
54	PRAKASH R	Prakash
55	PRASANTH S	Prasanth
56	PRATHIKSHA KOTARI	Kotari
57	PRATIK JAIN	Pratik
58	PRITI DAS	Priti Das
59	RAGAVENDIRAN S	Raga
60	RAJESH B	Rajesh





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61	RAMYA A	Ramyaa
62	RANJITHA RAMESH SHETTY	Ranjitha
63	RANJITH KUMAR R	Ranjith
64	ROHINI S	Rohini
65	ROOPESH R	Roopesh
66	ROSHAN S	Roshan
67	RUTUJA S	Rutuja
68	SACHIN BALAPPA RATHOD	Sachin
69	SANDEEP KUMAR M	Sandeep
70	SHANTHINI D	Shanthini
71	SHILPA KUMARI P	Shilpa
72	SILAMBARASAN R	Silambarasan
73	SNEHA SURESH SALUNKHE	Sneha
74	SRIVIGNESH M	Srivignesh
75	SURUGESH ARAI	Surugesh
76	SUPRAJA M	Supraja
77	SURYA V	Surya
78	TANUSHREE JAIN	Tanushree
79	THANGAPANDI J	Thangapandi
80	THOMAS THOMAS	Thomas
81	UMER KHALIQ MIR	Umer
82	VARENYA S SARANGAMATH	Varenya
83	VIJAY KUMAR R	Vijay
84	VIJAY RAGHAVENDRA S G	Vijay
85	VINAY M N	Vinay
86	VINITHA M	Vinitha
87	VINODH D	Vinodh
88	YOKI R	Yoki
89	TOUQEER AHMAD BHAT	Touqeer
90	BALAJI E	Balaji
91	HARIPRIYA S	Haripriya
92	NAGASPANDANA S	Nagasandana





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93	SACHIN BKUMAR SINGH	Sachin
94	SUSHMITHA S	Sushmitha
95	GAURI VERMA	Gauri
96	SHASHIKANTH PRASAD	Shashi
97	ARJUN M N	Arjun
98	JAIHWAL ASHISH RAMJI	Jaiswal
99	SUDEEP D S	Sudeep
100	JAIHWAL SATENDRA	Jaiswal.S.
101	SUMAN N	Suman
102	SUMITRA G	Sumitra
103	SUPRIYA G	Supriya
104	TASMIYA KHANUM	Tasmia
105	VINOD KUMAR	Vinod
106	MOHD SALEEM	Saleem
107	ABIGAIL N MOZHUI	Abigail
108	ANIRBAN DEBNATH	Anirban
109	ASHISH ABHRAHAM	Ashish
110	DEBJIT BHAKAT	Debjit
111	DEEPTI CHOUDHARY	Deepti
112	DIMPLE G	Dimple
113	GANANESWAR RAO S	Gananwar



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**PARTICIPATION CERTIFICATE**

This is to certify that Mr/Ms/Dr/Mrs. ROOPESH. R has attended a Webinar on *Alternative Models in Drug Research: Improving Drug Research and 3R of Animal Testing* held at the Department of Pharmacology, The Oxford College of Pharmacy, Bangalore, Karnataka, for the academic year

2021-22.

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This is to certify that Mr/Ms/Dr/Mrs. ROSHAN. S has attended a Webinar on *Alternative Models in Drug Research: Improving Drug Research and 3R of Animal Testing* held at the Department of Pharmacology, The Oxford College of Pharmacy, Bangalore, Karnataka, for the academic year 2021-22.

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This is to certify that Mr/Ms/Dr/Mrs. RUTUJA. S has attended a Webinar on *Alternative Models in Drug Research: Improving Drug Research and 3R of Animal Testing* held at the Department of Pharmacology, The Oxford College of Pharmacy, Bangalore, Karnataka, for the academic year 2021-22.

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This is to certify that Mr/Ms/Dr/Mrs. PAVITHRA. S has attended a Webinar on *Alternative Models in Drug Research: Improving Drug Research and 3R of Animal Testing* held at the Department of Pharmacology, The Oxford College of Pharmacy, Bangalore, Karnataka, for the academic year 2021-22.

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**PARTICIPATION CERTIFICATE**

This is to certify that Mr/Ms/Dr/Mrs. KIRAN CHAND has attended a Webinar on *Alternative Models in Drug Research: Improving Drug Research and 3R of Animal Testing* held at the Department of Pharmacology, The Oxford College of Pharmacy, Bangalore, Karnataka, for the academic year 2021-22.

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