

CPHMS Newsletter

The latest bulletin on Human-relevant research

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"Humans are not 70 kg rats"

In 2009, Thomas Hartung (Director, John Hopkins Centre for Alternatives to Animals) made this deceptively simple statement that also captures the limitations and challenges of animal models. In the last few decades, science has made huge strides. We have sequenced the entire human genome, we can extract multi-dimensional omics data, create stem cells from mature skin cells, grow tissues in the lab, and many more such breakthrough discoveries. Yet, we continue to predominantly rely on animal models to provide insights into complex and heterogeneous human biology.

This realization has led to a global reckoning to promote the development of human biology-based technologies, such as 3D organoids, organ-on-chips, etc.. These methods along with powerful computational tools which can integrate vast amounts of existing information are being used to predict human biological responses. For example, the US Environmental Protection Agency passed a resolution in 2019 to phase out funding for mammalian models by 2035.

The Centre for Predictive Human Model Systems, a science and policy centre, was established at Atal Incubation Centre in 2019 in collaboration with Humane Society India to propel the education, awareness, research, infrastructure, and regulation in these human-relevant emerging technologies in India and develop it as a key global player.

This newsletter aims to provide a snippet of the latest research, educational resources, opinion pieces on the current research and regulatory landscape of this field. We hope you enjoy reading it, and we look forward to your feedback!

Surat Parvatam

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CPHMS activities to enable human-relevant research in India



Increasing awareness

Popular articles

Reviews

Monthly-webinars series



Policy initiatives

Multi-stakeholder meetings to provide recommendations to government bodies

White papers

Global collaborations



Funding

Grant provided to two Indian scientists to develop an AOP in the field of cancer

Enable increase in government and private funding

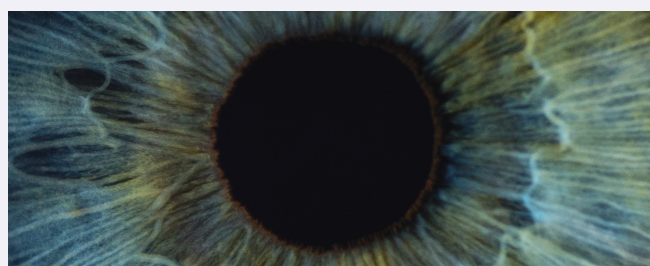


Education/ Training

Workshops

Lecture Series

Develop educational material



Understanding ocular route of COVID-19 infection via human-relevant models

Understanding the various routes of entry is one of the critical points to control the transmission of SARS-CoV-2. While the eye has been suggested as a vulnerable point of entry, concrete evidence for it is currently lacking. In a recent study, researchers examined ocular cells from control and COVID-19 infected human cadavers (*ex vivo*) and found the presence of SARS-CoV-2 antigens. In addition, they also used a whole-eye organoid model to show that eye, and in particular the limbus tissue, can be infected directly by SARS-CoV-2, support viral replication, and trigger an antiviral response similar to a SARS-CoV-2-infected lung or airway epithelia.

[Read more>>>](#)

OECD publishes new guidelines on Defined Approaches on Skin Sensitization without the use of animals

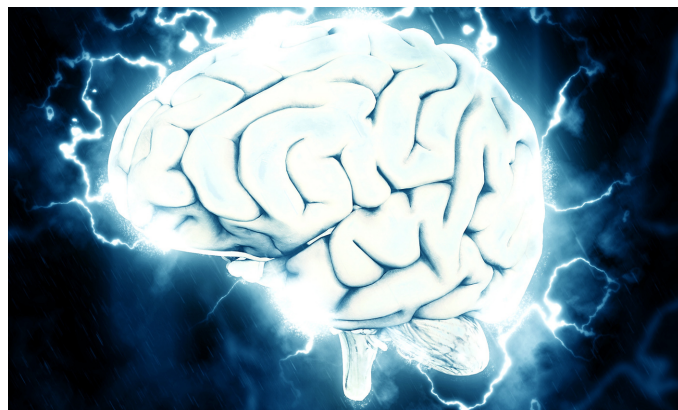
Individual stand-alone tests may often be insufficient to predict an adverse outcome. “Defines approach” (DA) refers to a specific combination of non-animal methodologies, such as in silico predictions, in chemico and in vitro data which is then interpreted using “fixed data interpretation procedure” (DIP), such as mathematical tools. OECD recently published the guidelines for “Defined Approaches for Skin Sensitization (DASS)”. This method uses a combination of OECD validated in chemico, in vitro, and in silico information, to reach a rules-based conclusion on the potential dermal sensitization hazard. The DAs in the guidelines provided the same level of information or more than the conventionally used murine Local Lymph Node Assay (LLNA; OECD TG 429) to identify hazards.

Reference: OECD (2021), Guideline No. 497: Defined Approaches on Skin Sensitisation, OECD Guidelines for the Testing of Chemicals, Section 4, OECD Publishing, Paris, <https://doi.org/10.1787/b92879a4-en>.

DeepThink: Adoption of MPS models by industry

Organs-on-chip is a revolutionary and disruptive system that combines microfluidics, cell culture techniques, 2D and 3D cell culture protocols into in vitro models. Since the inception of the concept almost 10 years back, several organs-on-a-chip have been successfully developed, such as intestine-on-a-chip, kidney-on-a-chip, lungs-on-a-chip, etc. However, several challenges need to be mounted before this technology can be broadly adopted by the industry for drug screening and other purposes. In a recent survey conducted on organ-on-chip, developers and end-users identified prevalent challenges faced by the community, such as lack of standardization guidelines and ease-of-use in terms of design, material, cell sources, perfusion, etc are proving to be barriers to making these systems reproducible and widely used by end-users.

[Read more>>>](#)



Lookback at the CPHMS monthly webinar: Delving into brain organoids

CPHMS has been conducting a monthly webinar series for the past year to increase awareness of human-relevant research in India. Animal models are poorly reflective of the structural, functional, and cognitive functions of the human brain. Last month, we had Dr Pavithra Chavali (Senior Scientist at CSIR-CCMB) who shed a light on how brain organoids are proving to be a powerful system to understand neurodevelopmental disorders, neural cancers, and neural infections.

[Read more>>>](#)



ConceptWatch

Explainer video on the use of lung-on-chip devices for COVID-19 therapeutics

[Watch video>>>](#)

JRC Virtual Summer School on Non-animal Approaches in Science

Radhika Dhekane from the Human-Relevant Infection Biology Group at Savitribai Phule Pune University attended the JRC Virtual Summer School from 17th May – 21st May 2021. In this article with Dr. Karishma S Kaushik, she shares excerpts from the meeting, and possible ways it could inform human-relevant science in India.



CPHMS Publications

- CPHMS had conducted a Research Round table meeting in December 2020, titled 'Enabling a shift towards human-relevant and predictive paradigm for biomedical research and drug discovery in India'. The meeting was held with various stakeholders; Academic, Industry and funding agencies to discuss the advancement of human-relevant model systems and related frameworks to integrate such data in India. The meeting report with recommendations was recently published in the journal ALTEX.

[Read more>>>](#)

- Dr. Surat Parvatam, Senior Research Associate was involved in a global collaboration to understand the human-relevant cell, tissue & mathematics-based methods for deciphering COVID-19' infection. This was recently published as a book chapter by Royal Society Books.

[Read more>>>](#)

Conferences

- 1.13th annual Advances in Cell and Tissue Culture conference (ACTC) 2021 |Date and time: Wed, 30 Jun 2021 | 13:30 & Wed, 3 Nov 2021, 23:30 IST | Location: Online event. [Register here](#)
2. OpenTox 2021 Virtual Conference. [Register here](#)
- 3.10th Annual Meeting of the American Society of Cellular and Computational Toxicology | Overarching theme: “Practical applications of new tools in toxicology” | Dates of Meeting: October 12-14, 2021 (virtual) [Register here](#)

4. **Survey to Assess Publication Bias in Animal Studies:** Physicians Committee for Responsible Medicine (PCRM) and Humane Society International (HSI) are conducting a survey to understand and collect insights on when and why researchers are being asked to add animals to their studies. You can contribute to this global survey [here](#)

5. **11 TH World Congress on Alternatives and Animal Use in the Life Sciences.** 23 August - 2nd September 2021. Virtual Congress. [Register here](#)

Opportunities

1. [Call for proposal under India-Israel Industrial R&D and Technological Innovation Fund \(I4F\)](#)

2. [Early Career Fellowships in Biomedical Research DBT/Wellcome Trust India Alliance](#)

3. [Ignite Fast Grant Awards - Open call for proposals](#) (Deadline 6 August 2021)

4. [CIFAR's third Global Call for Ideas](#) - (Deadline August 17th)

5. [BIRAC BIG Grant: Biotechnology Ignition Grant.](#)

6. [Part-time, remote, project management consultant for the AFSA \(Animal Free Safety Assessment\).](#)



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