



# PROGRAM AND ABSTRACT BOOK

Indonesian Physiological Society  
3rd International Symposium on Global Physiology 2022 (ISGP 2022)

**“Challenges for physiologists post covid-19 pandemic with (through) the  
development innovative science and technology”**

January 19<sup>th</sup>-20<sup>th</sup>, 2022

organized by :



UNIVERSITAS  
GADJAH MADA



Secretariat/office :

Department of Physiology Faculty of Veterinary Medicine UGM,  
Bld. V2. 4th Floor, East Wing, Jl. Fauna No.2, Karang Malang, Yogyakarta,  
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## 3rd International Symposium on Global Physiology 2022 (ISGP 2022)

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January 19<sup>th</sup>-20<sup>th</sup>, 2022

### ABOUT THE CONFERENCE

Universitas Gadjah Mada (internationally known as Gadjah Mada University ; Abbreviation : UGM) is an Indonesian public research university located in Yogyakarta, Indonesia, founded on December 19, 1949. UGM is the oldest and largest institution of higher learning in Indonesia. Located in Yogyakarta, Indonesia, the 360 acre university comprises of 18 faculties. Universitas Gadjah Mada has been considered to be one of the most prestigious universities in Indonesia.

UGM is implementing an educopolis area, a step taken by universities in creating conducive environment. These efforts are pursued in the context of developing multidisciplinary collaborations to increase the quality of life through one health concept which involve health care for human, animals, plants, and environment.

The 3rd International Symposium of Global Physiology is a biennial symposium organized by the Faculty of Biology, Faculty of Veterinary Medicine, and Faculty of Medicine, Public Health & Nursing UGM; collaborating with Indonesian Physiological Society (IAIFI) as the member of International Union of Physiological Sciences (IUPS). It will be also co-organized by three branch of The Indonesian Physiological Society (Yogyakarta, Aceh, and Bogor).

Focusing on the theme of Challenges for physiologists in the development of science and technology in the post-COVID19 pandemic era. This symposium is held to strengthen the collaboration between researcher, government, industries, and NGO.





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### ORGANIZING COMMITTEE

#### Advisory Board :

- 1 Dr. dr. Ermita Isfandiary Ibrahim Ilyas, MS, AIFO  
(*General Chair of The Indonesia Physiological Society*)
- 2 Prof. drh. Teguh Budipitojo, M.P., Ph.D.  
(*Dean Faculty of Veterinary Medicine UGM*)
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- 6 Dr. Slamet Widiyanto, S.Si., M.Sc.  
(*Animal Physiology Laboratory, Faculty of Biology, UGM*)
- 7 Dr. dr. Denny Agustiningsih, M.Kes, AIFM  
(*Department of Physiology, Faculty of Medicine, Public Health and Nursing, UGM*)
- 8 Dr. dr. Dicky Moch. Rizal, M.Kes, AIFM  
(*Department of Physiology, Faculty of Medicine, Public Health and Nursing, UGM*)





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### Executive Committee :

| Position    | Name                                              |
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| Co-chair    | Dr. drh. Hera Maheshwari, MSc. (IAIFI Bogor)      |
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|             | Almaas Dhistia Nuhaaziizah                        |
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|             | Reski Amalia, S.Pt                                |
| Finance     | drh. Risa Umami, M.Sc.                            |
|             | dr. Meyda Sofyana, M.Biomed (FK-KMK)              |
| Publication | dr. Naufal Muharam Nurdin, M.Sc                   |





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dr. R. Jajar Setiawan, M.Sc., Ph.D

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dr. Rakhmat Ari Wibowo, M.Sc

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Rahadian Yudo Hartantyo, S.Si, M.Sc





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### Scientific Board :

- 1 Prof. drh. Widya Asmara, SU., Ph.D  
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*(Department of Health Behavior Environment and Social Medicine, Faculty of Medicine, Public Health, and Nursing, Gadjah Mada University, Indonesia)*
- 10 dr. Ajib Diptyanusa, DTM&H., MCTM, Sp.Par.K  
*(Medical and Health Sciences of Faculty of Medicine, Public Health, and Nursing Gadjah Mada University, Indonesia)*
- 11 drg. Iwan Dewanto, MMR., Ph.D  
*(Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta)*





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### PREFACE

The International Symposium of Global Physiology (ISGP) is a biennial symposium for academia and researchers to share their knowledge and ideas in physiology and related fields. It also to build a professional networking between physiologists worldwide

Due to pandemic situation, the 3rd International Symposium of Global Physiology (ISGP) was held using virtual platform on 19-20 January 2022. This international symposium is organized by the Faculty of Biology, Faculty of Veterinary Medicine, and Faculty of Medicine, Public Health & Nursing Universitas Gadjah Mada (UGM); collaborating with Indonesian Physiological Society (IAIFI) as the member of International Union of Physiological Sciences (IUPS). It was also co-organized by three branches of The Indonesian Physiological Society (Yogyakarta, Aceh, and Bogor).

Focusing on the theme of Challenges for physiologists in the development of science and technology in the post-COVID19 pandemic era, this symposium is held to strengthen the collaboration between researcher, government, industries, and NGO. At least 48 presenters and about 365 participants from several countries attended this conference. About 48 abstracts were submitted to this conference, 26 articles were further selected to be published.

Our gratitude to Prof. Teguh Budipitojo, DVM., M.P., Ph.D., (Dean of Faculty of Veterinary Medicine, UGM), Dr. dr. Ermita Isfandiary Ibrahim Ilyas, MS, AIFO (President of Indonesian Physiology Society (IAIFI), Prof. Mei-Ling Tsai, MD., Ph.D (Department of Physiology, National Cheng Kung University, Taiwan), Dr. dr. Dicky Moch Rizal, Sp. And, AIFM, M. Kes. (Faculty of Medicine, Public Health and Nursing, UGM), Professor Toshiya Muranaka (Department of Biotechnology, Graduate School of Engineering, Osaka University), Vijay Pal Singh, Ph. D (CSIR-Institute of Genomics and Integrative Biology, New Delhi), Dr. Rachel Sabine Kelly (Brigham and Women's Hospital, Harvard Medical School), presenters, and all participants for their outstanding involvement and participations during these two days of virtual conference. Appreciate to Publishers and Publications Board of Universitas Gadjah Mada (BPP UGM), Yogyakarta, Indonesia for the support and advise to this conference, and for all reviewers for their suggestions to improve the articles quality.

Finally, we hope that the publications yielded from our event will spark some inspiration and innovative information to answer the challenges for the physiologists post covid-19 pandemic through the development of innovative science and technology.

Best Regards,

Chairman of 3 rd ISGP 2022

Dr. drh. Claude Mona Airin, M.P.





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### WELCOME ADDRESS DEAN OF THE FACULTY OF VETERINARY MEDICINE UNIVERSITAS GADJAH MADA



**Prof. Teguh Budipitojo, DVM., M.P., Ph.D.**

Assalamualaikum wr. Wb.

In the name of Allah, the Most Beneficent and the Most Merciful. May peace, mercy, and blessings of Allah be upon you.

Dear colleagues, professors, lecturers, researchers, ladies and gentlemen.

On behalf of the Veterinary Medicine Faculty, Universitas Gadjah Mada, Yogyakarta, I would like to express my sincere gratitude and welcome you to **the 3rd International Symposium on Global Physiology (ISGP) 2022**. Moreover, I honorably welcome to all of our invited speakers:

- Prof. Mei Ling Tsai, National Cheng Kung University, Taiwan
- Prof. Toshiya Muranaka, Osaka University, Japan
- Prof. Ishwar S. Parhar, Monash University, Selangor, Malaysia
- Dr. Rachel Sabine Kelly, Brigham and Woman's Hospital, Boston, USA
- Vijay Pal Singh, Ph.D., CSIR Institute of Genomic and Integrative Biology, New Delhi, India.
- Dr. dr. Dicky M. Rizal, Department of Physiology, Medicine Faculty, UGM Yogyakarta.

It is my hope that **the 3rd International Symposium on Global Physiology (ISGP) 2021 with the theme of “Challenges for physiologists post Covid-19 pandemic with (through) the development innovative science and technology”** would be able to achieve its objective: to provide a platform for academia and researchers to share their knowledge and idea in physiology and related fields, to build a professional networking between physiologists worldwide, as well as to strengthen the collaboration between researchers, government, industry and non-government organization (NGO). The committee has organized a vibrant scientific symposium and is working hard to present highly respected and internationally notorious speakers.





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Although we try our finest to be professional, on behalf of Veterinary Medicine Faculty, UGM, Yogyakarta, please accept our sincere apologies should there be inconveniences that occur before, during and after the symposium. I wish you a very productive symposium with exciting and encouraging discussions and exchange of knowledge so that together we can anticipate challenges for physiologists post pandemic of Covid-19 by the innovative science and technology. May God bless us all with good health to make this International Symposium a successful and enjoyable one!

The last but not least, my deepest gratitude goes to the Advisory Board, Organizing Committee, Symposium Committee, institutions, companies, and persons who have directly and indirectly supported the success of this International Symposium on Global Physiology in UGM, Yogyakarta.

Wassalamualaikum wr. Wb.

Best Regards,

Prof. drh. Teguh Budipitojo, MP., Ph.D.  
Dean of Veterinary Medicine Faculty, UGM Yogyakarta.





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### WELCOME ADDRESS PRESIDENT OF INDOONESIAN PHYSIOLOGY SOCIETY (IPS) / IKATAN AHLI ILMU FAAL (IAIFI)



**Dr. dr. Ermita Isfandiary Ibrahim Ilyas, MS, AIFO**

*Bismillahirrahmanirrahim*

*Assalamu'alaikum Warahmatulahi Wabarakatu*

Good Morning

Peace for all of us

First of all, let us praise Allah that we can gather here together in the Virtual Symposium organised by IPS Branch Yogyakarta, to attend the opening of “**The 3<sup>rd</sup> International Symposium of Global Physiology**”, January 19<sup>th</sup> and 20<sup>th</sup>, 2022 with the theme: Challenges for Physiologist in The Post Covid-19 Pandemic Era through The Development of Innovative Science and Technology”.

I would like to thank and give a big appreciation to our dear distinguished guest speakers:

1. Rachel Sabines Kelly, PhD from Department of Medicine, Brigham and Women's Hospital
2. Vijay Pal Singh, PhD, from CSIR-Institute of Genomics and Integrative Biology, New Delhi
3. Prof. Mei-Ling Tsai, MD., PhD from Department of Physiology, Medical College National Cheng Kung University, Taiwan
4. Dr. dr. Dicky Moch Rizal, Sp And, M.Kes from Department of Physiology, Faculty of Medicine, Public Health and Nursing, Universitas Gajah Mada
5. Prof. Toshiya Muranaka from Department of Biotechnology, Graduate School of Engineering, Osaka University
6. Prof Ishwar S Parhar from Brain Research and Neuroscience Jeffrey Cheah School of Medicine & Health Sciences Monash University





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And all participants

We know that we have gone through the Covid-19 pandemic for two years already, so this condition influences the performance of the Physiologists around the world especially in the research area. We know that, there are still many challenges in the research area in Physiology, and we really hope this pandemic will end soon. So, I hope the speakers in this virtual symposium will show us the many spectrums of research in the future after the covid-19 decreases or ends to encourage our participants this morning to prepare the proposal after this symposium.

Ladies and Gentlemen,

I would like to thank and also give a big appreciation to the organizing committee for their hard work in preparing this symposium, especially in this condition. Working hard to prepare a virtual symposium for us to maintain the scientific environment, to remind all physiologists in this country to have a big hope for the future of research in Physiology Area. Thank you to all dear colleagues.

For all participants, I hope this symposium can give you useful and valuable information and knowledge to bring home. Keep healthy.

*Wabillahi taufiq wal hidayah*

*Wassalamu'alaikum Warahmatullahi Wabarakatuh*

Jakarta, 19th January 2022

Ketua Umum IAIFI,

Dr. dr. Ermita I.Ibrahim Ilyas, MS





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### WELCOME ADDRESS

**PRESIDENT OF INDOONESIAN PHYSIOLOGY SOCIETY (IPS) /  
IKATAN AHLI ILMU FAAL (IAIFI) - YOGYAKARTA**



**Dr. Slamet Widiyanto, S.Si., M.Si.**

*Assalamu`alaikum wa Rahmatullahi wa Barakatuh,*

Honourable, professors, lecturers, researchers, ladies, and gentlemen.

On Behalf of **Indonesian Physiology Association Chapter Yogyakarta**, I would like to express my sincere gratitude and welcome you to the 3rd International Symposium of Global Physiology. The theme of this symposium is “**Challenges for the Physiologists Post Covid-19 Pandemic through the Development of Innovative Science and Technology**”.

Due to Covid-19 pandemic issues, people give a huge concern on how to increase their health quality. They consume health-enhancing agents such as supplements, natural products, or traditional medicine that sources from the biodiversity and its derived. Traditional medicines play an essential role in health care, especially in primary health care. According to WHO, they are estimated to be used by about 60% of the human world's population. In this symposium, we hope to be able to provide a lot of knowledge and experience about the Post-Covid-19 pandemic from the results of research from researchers who participated in this event.

In the 3rd ISGP, we continue the tradition of uniting the spirit of the scientist. Providing avenues of communication between scientists, is the best means of strengthening physiology knowledge and promoting the ideal innovation development.

Thank you for your presence and participation. I also thank the Advisory Board, Organizing Committee, International Scientific Committee, institutions, companies, and volunteer for working hard to make the 3rd ISGP a success and come to reality. It is a privilege for all of us to host you in our country.

I wish you a very productive symposium and have a fruitful exchange idea of Physiology and provide valuable results to support the development of knowledge and innovation to overcome the covid-19 pandemic.

Thank you,

Slamet Widiyanto





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### WELCOME ADDRESS PRESIDENT OF INDOONESIAN PHYSIOLOGY SOCIETY (IPS) / IKATAN AHLI ILMU FAAL (IAIFI) – BOGOR



**Dr. drh. Hera Maheshwari, M.Sc.**

Dear Honorable speakers, guests, sponsors, and participants

Assalamualaikum warrahmatullahi wabarakatuh

Good morning everyone

Thanks to Allah the almighty God who give us opportunity to attend this very important event, the 3<sup>rd</sup> International Symposium of Global Physiology that will be virtually held on January 19-20, 2022.

I am Hera Maheshwari, the Chair of Indonesian Physiological Society Bogor Chapter. First and foremost, it is a great pleasure for me to welcome you all, his excellency the Dean of Faculty of Veterinary Medicine Gadjahmada University, Prof Drh Teguh Budipitojo, MP, PhD, her excellency the President of Indonesian Physiological Society Dr Ermita Ibrahim Ilyas, the honorable Chair of Indonesian Physiological Society Yogyakarta Chapter Dr Slamet Widiyanto, S.Si, MSc and the Chair of Indonesian Physiological Society Aceh Chapter Dr drh Gholib.

In particular I would like to extend my gratitude to our honorable Invited speakers, a warm regards to all distiguised presenters, participants and also to all the technically team who make this event possible.

Regarding the world is still in the pandemic, due to the Corona virus disease 2019 (Covid-19) outbreak that has been spread globally until now, and has its impact to the limitation of social movement, this 3<sup>rd</sup> International Symposium of Global Physiology is carried out in the form of virtual conference.

I think everyone agree if I say that this symposium is a very beneficial for all scientists, researchers, and students in the field of physiology to show and share knowledge, information, technique as well as experiences of their latest research and also provide a good learning





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atmosphere to study and collaborate between scientific community in Indonesia and all over the world, in particular amongst the participants, guest speakers, all of us here.

The new globalization and development in the 21<sup>st</sup> century have a tremendous effect on every aspect of our life. There are rapid change and development in many aspect including science, technology, and communication that force every field of science to adapt and also give an opportunity to all field of science, including physiology to give more contribution to make a better life for every people. The improvement of information and technology system make distance not become a barrier anymore for the development of science and education. In addition, the era of big data enables every scientist analyze large amount of data such as genomic, proteomic, metabolomic, transcriptomic rapidly or so called OMIC SCIENCES. These technology help scientists to find a more accurate treatment for many diseases, and predict the spread of infectious diseases, that enable scientists to unlock some mystery of life.

The 21<sup>st</sup> century is era of collaboration, not competition. We face different challenges than the previous era, such as global warming, climate change, non-communicable diseases, COVID-19 pandemic, or maybe some other infectious disease that will emerge or re-emerge in the future. It cannot be denied that we cannot solve all the problems alone, we should unite and collaborate. Since the last few decades, there is a concept called “One Health”.

In the concept of “One Health”, all aspects in human medicine, animal medicine or veterinarians, and environmentalist work together because the human, animal, and environmental health are interconnected. As I mentioned before that the world are facing many problems, such as the emerging of several infectious diseases, climate change, food security, food safety, etc. Those problems are not a single factor, but multifactor. All of us should collaborate to find the best and comprehensive solution to solve the problem.

I believe this symposium will give us a positive impact, will increase our insight and knowledge regarding the theme of this symposium.

Last but not least, again, thank you very much for your time of being here with us, I wish you all to have a pleasant and fruitful symposium.

Wassalamualaikum warrahmatullahi wabarakatuh.





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### WELCOME ADDRESS CHAIRMAN OF 3<sup>rd</sup> ISGP 2022



**Dr. drh. Claude Mona Airin, M.P.**

Good morning, Ladies and Gentleman

Assalamualaikum warahmatullahi wabarakatuh

Welcome to 3<sup>rd</sup> International Symposium on Global Physiology 2022

International Symposium on Global Physiology is a regular biennial meeting. However, because of the ongoing Covid-19 pandemics, the 3rd ISGP is organized this year after 2 years postponed. The pandemic has been lasted for almost 2 years and now we have adapted to the situation with new habits or it is known as new normals. The symposium this year will raise the theme of challenges for physiologists in post-covid-19 through development and innovation in science and technology.

I am very excited to meet colleagues and researchers from various areas although it is in a form of virtual meeting. We have 6 great keynote speakers in this symposium coming from 6 countries (India, Malaysia, Japan, America, Taiwan, and Indonesia) and followed by participants from 4 countries. We do hope that it could provide us with a good space for sharing information, knowledge, and research findings.

Organizing Committee members have worked extremely hard last year, especially in the pandemic era to organize this symposium. For that, on behalf of the Committee, I would like to thank all of the committee members of Indonesian Physiologi Society, sponsors, and partners who have supported the activity.

Thank you very much and enjoy your symposium

Chairman of Symposium

Claude Mona Airin

