

EDITORIAL

An idea, an aim, an institute devoted to medical education on paediatric virology

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'To hold my teachers in this art equal to my own parents'
[*Ἠγήσασθαι μὲν τὸν διδάξαντά με τὴν τέχνην ταύτην ἴσα γενέτησιν ἐμοῖσι*]

Hippocrates

On behalf of the Paediatric Virology Study Group (PVSG), we would like to announce to all of you the official beginning of the Institute of Paediatric Virology (IPV) on the island of Euboea, Greece (1). The IPV is a paediatric initiative specialised in medical education on the bold, new, educational field of paediatric virology and we are all very proud that the creation of this scientific institution, following an international debate with top experts in our field, takes place in Greece and on the island of one of the greatest scientists in the modern history of medicine, the great doctor, researcher and humanitarian Dr George N. Papanicolaou.

The IPV, as read on its Memorandum of association (Fig. 1), is dedicated to the continuing medical education of medical students, specialty trainees in paediatrics and neonatology, postgraduate students, clinical virologists and paediatricians, who are interested in the new scientific field of paediatric virology. Its aim is the promotion and transmission of knowledge on topics related to the prevention, diagnosis, therapy and management of viral infections occurring in neonates and children.

A long journey that lasted a total of 12 years, today, is at its end. Nevertheless, the end of this journey signals and dynamically initiates a new start. Twelve years ago, in 2007, the management of two premature twins of very low birth-weight with congenital cytomegalovirus (CMV) infection, who

were treated at the Neonatal Intensive Care Unit (NICU) at the Wirral University Teaching Hospital in Merseyside in the United Kingdom (UK), required the collaboration of an extensive network of specialised health professionals, including neonatologists, microbiologists, clinical virologists and general paediatricians in Liverpool, Manchester and London (2). The management of these twins demonstrated in a very educational way the clinical significance of the subspecialization in the new, bold, educational field of the neonatal and paediatric viral infections.

These twins, in Liverpool, were the source of inspiration, at that time, for the establishment of the PVSG consisting of specialty trainees (STs) in paediatrics and neonatology and junior researchers (3). The topics examined by this team were viral infections in neonates and children, their pathophysiology, their molecular virology characteristics, their prevention and their therapeutic management. This group was the basis of our scientific efforts over the subsequent years. As the time passed, two academic teachers, a professor of clinical virology and a professor of paediatrics, positively evaluated this union, the union between paediatrics and virology. The first one was Professor Demetrios A. Spandidos, Professor of Clinical Virology in one of the most recognised medical schools in Europe, the University of Crete School of Medicine, whose scientific contribution has been recognised worldwide (4). The second one was Professor Maria Theodoridou, Professor of Paediatrics at the First Department of Paediatrics at the oldest and largest university in Greece, University of Athens; Professor Theodoridou is one of the most significant paediatricians in Greece in the field of paediatric infectious diseases (PID) over the past 50 years (5). Both of them were very supportive and due to their help and encouragement, our efforts that started in the UK were not abandoned, but continued with growing interest and enthusiasm.

Since 2015, we managed to organize the 'workshops on paediatric virology' as an official session of the annual 'World Congress on Advances in Oncology' and the 'International

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Symposium on Molecular Medicine'. So far, 5 workshops have already taken place, 4 in Athens, Greece, on October 2015, October 2016, October 2017 and September 2018 (6-10), while the last one took place in Mystras, Sparta, Greece (11). These workshops were supported by leading scientists in the field of neonatal and paediatric viral infection, from Greece and internationally, both paediatricians/neonatologists and virologists/basic scientists as well as doctors of other specialties and subspecialties, of all levels of the academic stages, from medical students to a Nobel Laureate Professor. All of them highlighted the value of this new educational field of medicine and the rapid developments that this field has undergone during recent years and that are expected in the near future.

In parallel to these workshops, we tried to obtain experience travelling abroad and meeting top experts in the field of virology, paediatrics and neonatology. We started a scientific dialogue on the necessity of our efforts at the academic and research level, and on the necessity of our approach in medical education. Among these meetings, I would like to refer to two of them. The first one occurred in 2014 with Nobel Laureate Professor of Virology Harald zur Hausen in Heidelberg in Germany; our meeting took place at the Deutsches Krebsforschungszentrum. Professor zur Hausen, a real model of a charismatic scientist and researcher, during my PhD on human papillomaviruses (HPVs) in childhood, was very supportive. During that sunny morning in his office, where a statue of Dr George N. Papanicolaou was standing just in front of us, Professor Harald zur Hausen spoke with great enthusiasm about his Greek colleagues in Germany, his high school studies on the ancient Greek language, the most beautiful Greek word, the word 'eleftheria', meaning freedom, and the relationship that Greeks have with it. He noted that 'Dr George N. Papanicolaou, without any doubt, should have received the Nobel Prize Award' and he warned us of the scepticism with which our proposal on paediatric virology would be faced, as is every new proposal in medicine (12).

The second meeting was in London, one year later, in June 2015, with Professor Anne Greenough, Professor of Neonatology and Clinical Respiratory Physiology at the King's College London in London (UK) and vice President of Science and Research at the Royal College of Paediatrics and Child Health (RCPCH). Our 'Queen in neonatology' with her warm welcome hosted us at King's College London; her support and advice over the years that followed were a proof of her quality as a leading neonatologist at the international level as well as her highest quality as a scientist and human; as paediatricians we are really proud of her (13).

Both scientists trusted our group with dignity and consistency. We owe great gratitude to both of them. All this time, our responsibility to fulfill their highest-level scientific standards was deeply felt. We tried to do our best and the announcement of the birth of the Institute of Paediatric Virology, today, is a proof indeed that these standards were fulfilled.

A critical point during this journey was the idea of paediatric virology as a separate paediatric subspecialty, which led to the writing, presentation and publishing of the '2015 paediatric virology proposal' (14). This proposal was the first documented in the international medical literature on the value of paediatric virology to stand alone. This proposal included a



Figure 1. Memorandum of association (Statute) of the Institute of Paediatric Virology published in October 2019.

detailed schedule related to the duration and knowledge-base of the required studies. It was a Greek proposal with international support, as among its co-authors was Professor Anne Greenough. This proposal was something new, an innovative approach, as there is no medical school in the world with a related schedule of specialization or sub-specialization of paediatric virology. During the following period, a very interesting debate was initiated. Top experts in our field were asked to evaluate this proposal and their different opinions were collected by the PVSG (15). As we have already mentioned during the celebration of the 10 years of the PVSG (3), our aim is not to cause a revolution in the existing educational programmes, but to add a tiny mosaic tile in the colourful and endless mosaic of future paediatrics.

At the end of the '4th workshop on paediatric virology', which was held in Athens, Greece, in 2018, the PVSG evaluated positively the possibility of the foundation of a specialised and recognised scientific institution in the field of paediatric virology (1). So, at the beginning of 2019, the PVSG designed the Memorandum of association of the IPV and the IPV was initiated. Among the first steps of the IPV will be the creation of the <https://paediatricvirology.org>, a collaborative, educational e-platform aiming to facilitate the education of both health professionals and parents (Fig. 2). Moreover, the IPV will try to establish collaborations with leading academic centres and scientists of the world in the field of paediatric viral infections creating a specialised international consultation network on paediatric virology and it will continue the scientific and financial analysis of our proposed subspecialty programme in paediatric virology.

During the last part of our journey, the PVSG tried to fulfill 4 principal objectives. First of all, to explore and establish the need for a specialised scientific institution in the field of paediatric virology; this would be the first specialised institution not only in Greece, but also at the international level. Secondly,



Figure 2. The logo of the official website of the Institute of Paediatric Virology (IPV; <https://paediatricvirology.org>).

to determine our competencies and our capability as junior paediatricians and young scientists to establish this institution in Greece. Thirdly, to guarantee the quality of our scientific contribution. We are interested in creating an institution, which is good, and functions in a state-of-the-art way. Last but not least, to create an institution, which will be functional and viable in the future. Thus, necessity, capability, quality and viability are our main goals.

During this journey, we realised, even at its beginning in 2007 in Liverpool, that paediatric virology is an increasing, rapidly developing, separate branch of medicine, which is essential in medical education and our everyday's clinical practice; nobody would refute its necessity. Paediatric virology as a separate entity has been rejected, though, almost 50 years ago. However, over the past few decades, new viral infections have appeared, while old viruses have re-emerged. New molecular virology techniques have been developed for the diagnosis and evaluation of viral infections, new vaccines, prevention's strategies and therapeutic agents are developed and other are still required, while there are specific groups of patients, such as children treated in Paediatric Intensive Care Unit (PICU) or transplant patients, in whom highly-level medical technology and care options are in use. Moreover, there are new social threats, such as the anti-vaccination movement, the financial crisis and the immigration crisis, the largest in the human history after the Second World War. All these new diagnostic, therapeutic and social challenges require specialised medical health professionals in paediatric virology.

As regards our second objective, the question about our capability to perform this scientific task in Greece, a country under continuous financial crisis, was really difficult. Our answer should take into account the possibility that this institution could be based in top academic centres abroad. Supporting Greece as the base of this effort should guarantee the scientific and financial capability of this task. The PVSG, as well as the participants in our workshops, offered us all the required scientific capability. It is important to highlight that all this support was exclusively based on their voluntary efforts without any fees or financial demands by them.

Regarding quality, I would like to focus on the methods through which we have tried to ensure it. We are interested in keeping this scientific attempt, which is performed for the first time in my country, away from the past defects of the Greek society and the local scientific community. We are interested in founding a scientific institution based on values that guarantee the quality of our effort. These values include dedication in science and humanity, the value of transparency, the value of excellence and the value of freedom in knowledge. The scientific and humanitarian quality of our teachers is a proof of the quality of our institution.

Finally, we discussed the viability of the IPV. We do not want this institution to be a star that falls in the summer sky and disappears quickly after running only for some msec on the Earth's atmosphere. We want the light of the IPV to be like the light of a bright, stable, self-luminous star that leads and illuminates the scientific knowledge in our field. We want the IPV to have a perspective, to be developed and to be established in the scientific community as an independent, dynamic and innovative, highest-level scientific institution with international recognition and acceptance.

For these reasons, the necessary structures were designed and defined accordingly in its Memorandum of association (1). The Paediatric Virology Council (PVC) was set up, with the main task of directing, organizing and supervising the IPV and fulfilling its intended goals. Its immediate cooperation with the scientific body of the IPV, which will be the PVSG, was secured. The Advisory Academic Board (AAB) will consist of top experts in paediatric virology with strong international recognition and substantial contribution to the field. The targeted Scientific Committees and Groups were also designated.

At this point, I would like to thank all of the contributors to this effort, all the scientists who have stood beside us and who have joined us all these 12 years with enthusiasm and selflessness (4-29). Today, is the moment that our aim and our efforts are effectively fulfilled, indeed. The vision of the foundation of the IPV did not remain a dream or an idea, but with the help and support of all of you it became a reality. This project is an example of what new scientists, who are dedicated to their science and are in love with their homeland, are able to create in Greece. This is a moment of inspiration; of creation; of birth. We hope that from now on, the IPV will contribute to the upgrading of the bold, new, scientific field of paediatric virology. The IPV will try to produce new scientific work and new ideas in the field focusing on medical education, both undergraduate and postgraduate, but also continuing. It will highlight our real needs into clinical practice. This is an exemplary aim, indeed, a project worthy of all of you. This is ensured and safeguarded by the PVSG in the best possible way. From today, the IPV is called to function as an official institution and to be expanded. This is something that will be our next priority in the near future. We will do our best so that the IPV will introduce to our scientific community a high-level scientific discourse. We will do our best so that the IPV will help all scientists and encourage them to work together aiming to advance modern paediatrics.

There is a co-incidence, which I would like to refer: one hundred years have passed since the Spanish flu pandemic, which has wiped out one third of the population of the island of Skyros and many families in the nearby islands (9). Several family cases, who died due to the Spanish flu outbreak, have also been reported on the island of Euboea, including the

families of three children; the family of a three-year-old boy, who in October 1918 lost his both parents and his two older sisters due to the Spanish flu and the family of his two cousins, who also lost their both parents (30). Almost after one century, the foundation of the IPV is dedicated to the memory of these three children, who managed to survive of the 1918 Spanish flu outbreak.

We wish to express all our gratitude to all of you, who supported this idea; we want to thank, particularly, our little patients from the island of Euboea and their parents for their trust over the years, without which none of these would have been possible today (31). We will continue our efforts. And you have our promise that, all of you, you will be proud of the IPV. This is what we can; this is what we wish.

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INM is co-founder of the Institute of Paediatric Virology (IPV).

References

1. Mammas IN, Greenough A, Theodoridou M and Spandidos DA: The foundation of the Institute of Paediatric Virology on the island of Euboea, Greece (Review). *Exp Ther Med* (In Press).
2. Mammas I, Breen L, Rackham O and Hughes A: Congenital cytomegalovirus (CMV) infection in twins born by a CMV-negative mother. *Acta Paediatr* 97: 317, 2008.
3. Mammas IN, Theodoridou M and Spandidos DA: The development of the Paediatric Virology Study Group: Ten years in the making. *Exp Ther Med* 13: 363, 2017.
4. Mammas IN: Clinical Virology research and medical education in Greece: An interview with Demetrios A. Spandidos, Professor of Clinical Virology at the University of Crete in Greece. *Exp Ther Med* 18: 3221-3225, 2019.
5. Spandidos DA: The proposal of Paediatric Virology and its perspectives: An interview with Professor of Paediatrics Maria Theodoridou. *Exp Ther Med* 14: 3338-3340, 2017.
6. Mammas IN, Greenough A, Theodoridou M, Kramvis A, Christaki I, Koutsaftiki C, Koutsaki M, Portaliou DM, Kostagianni G, Panagopoulou P, *et al*: Current views and advances on Paediatric Virology: An update for paediatric trainees. *Exp Ther Med* 11: 6-14, 2016.
7. Mammas IN, Theodoridou M, Kramvis A, Thiagarajan P, Gardner S, Papaioannou G, Melidou A, Koutsaki M, Kostagianni G, Achtsidis V, *et al*: Paediatric Virology: A rapidly increasing educational challenge. *Exp Ther Med* 13: 364-377, 2017.
8. Mammas IN, Greenough A, Theodoridou M, Kramvis A, Rusan M, Melidou A, Korovessi P, Papaioannou G, Papatheodoropoulou A, Koutsaftiki C, *et al*: Paediatric Virology and its interaction between basic science and clinical practice (Review). *Int J Mol Med* 41: 1165-1176, 2018.
9. Mammas IN, Theodoridou M, Thiagarajan P, Melidou A, Papaioannou G, Korovessi P, Koutsaftiki C, Papatheodoropoulou A, Calachanis M, Dalianis T, *et al*: A paediatric influenza update 100 years after the Skyras island Spanish flu outbreak. *Exp Ther Med* 17: 4327-4336, 2019.
10. Mammas IN, Dalianis T, Doukas SG, Zaravinos A, Achtsidis V, Thiagarajan P, Theodoridou M and Spandidos DA: Paediatric virology and human papillomaviruses: An update. *Exp Ther Med* 17: 4337-4343, 2019.
11. Mammas IN, Drysdale SB, Rath B, Theodoridou M, Papaioannou G, Papatheodoropoulou A, Koutsounaki E, Koutsaftiki C, Kozanidou E, Achtsidis V, *et al*: Update on current views and advances on RSV infection (Review). *Int J Mol Med* 46: 509-520, 2020.
12. Mammas IN and Spandidos DA: Paediatric Virology as a new educational initiative: An interview with Nobelist Professor of Virology Harald zur Hausen. *Exp Ther Med* 14: 3329-3331, 2017.
13. Mammas IN and Spandidos DA: The educational challenge of Paediatric Virology: An interview with Professor of Neonatology Anne Greenough. *Exp Ther Med* 14: 3332-3334, 2017.
14. Mammas IN, Greenough A, Theodoridou M and Spandidos DA: Paediatric Virology: A new paediatric subspecialty? A proposal at the Workshop on Paediatric Virology, Athens, October 10, 2015. *Exp Ther Med* 11: 3-5, 2016.
15. Mammas IN and Spandidos DA: The subspecialty of Paediatric Virology: A 'mosaic tile' in future Paediatrics. *Exp Ther Med* 12: 539-540, 2016.
16. Mammas IN and Spandidos DA: Evaluating the proposal of paediatric virology: An interview with Professor Tina Dalianis, Professor of Tumour Virology at Karolinska Institutet. *Exp Ther Med* 16: 2785-2789, 2018.
17. Mammas IN and Spandidos DA: The innovation of the subspecialty of Paediatric Virology: An interview with Research Professor of Molecular Virology Anna Kramvis. *Exp Ther Med* 14: 3335-3337, 2017.
18. Mammas IN and Spandidos DA: Paediatric virology as a candidate of paediatric subspecialisation: An interview with Assistant Professor of Molecular Microbiology-Virology Angeliki Melidou. *Exp Ther Med* 16: 2795-2798, 2018.
19. Mammas IN and Spandidos DA: Viral infections, neonatal mortality and the mystery of the Athenian Agora: An interview with Professor of Anthropology Maria Liston. *Exp Ther Med* 14: 3341-3345, 2017.
20. Mammas IN and Spandidos DA: The perspectives and the challenges of Paediatric Radiology: An interview with Dr Georgia Papaioannou, Head of the Paediatric Radiology Department at the 'Mitera' Children's Hospital in Athens, Greece. *Exp Ther Med* 18: 3238-3242, 2019.
21. Mammas IN and Spandidos DA: The future of medical education in neonatology, paediatrics and paediatric virology: An interview with Professor Alan Michael Weindling, Professor of Perinatal Medicine at the University of Liverpool. *Exp Ther Med* 16: 2805-2808, 2018.
22. Mammas IN and Spandidos DA: Neonatology, paediatrics and paediatric virology on a British island: An interview with neonatologist Dr Prakash Thiagarajan (Isle of Man). *Exp Ther Med* 16: 2790-2794, 2018.

23. Mamas IN and Spandidos DA: Spinal muscular atrophy type I and the dual role of viruses: An interview with Professor Basil T. Darras, Professor of Neurology (Pediatrics) at Harvard Medical School. *Exp Ther Med* 15: 3673-3679, 2018.
24. Mamas IN and Spandidos DA: Paediatric Virology and respiratory syncytial virus: An interview with Honorary Senior Lecturer in Paediatric Infectious Diseases Dr Simon B. Drysdale (St. George's, University of London, UK). *Exp Ther Med* 18: 3226-3230, 2019.
25. Mamas IN and Spandidos DA: Advancing challenges in Paediatric Virology: An interview with Professor Barbara A. Rath, Co-founder and Chair of the Vienna Vaccine Safety Initiative. *Exp Ther Med* 18: 3231-3237, 2019.
26. Mamas IN, Theodoridou M and Spandidos DA: The wisdom and eudaimonia of Paediatrics: An interview with Professor George P. Chrousos, Professor of Paediatrics and Endocrinology at the University of Athens, Greece. *Exp Ther Med* 18: 3217-3220, 2019.
27. Mamas IN and Spandidos DA: George N. Papanicolaou (1883-1962), an exceptional human, scientist and academic teacher: An interview with Dr Neda Voutsas-Perdiki. *Exp Ther Med* 14: 3346-3349, 2017.
28. Mamas IN, Koutsaftiki C, Papatheodoropoulou A and Spandidos DA: Mache Papanicolaou (1890-1982), the dedicated companion of the great benefactor: An interview with Dr Julie Kokkori, one of the only living relatives of Dr George N. Papanicolaou. *Exp Ther Med* 18: 3248-3251, 2019.
29. Mamas IN and Spandidos DA: The philosophy of paediatric teaching: An interview with Dr Nikolaos Myriokefalitakis, former Clinical Director of the 'Penteli' Children's Hospital in Athens (Greece). *Exp Ther Med* 16: 2799-2802, 2018.
30. Spandidos DA: The newly founded Institute of Paediatric Virology and the 1918 flu outbreak: From mnemosyne to scientific truth. *Exp Ther Med* (In Press).
31. Spandidos DA: Paediatric Virology and innovation in medical education: An interview with Dr Ioannis N. Mamas, Consultant Paediatrician on the island of Euboea (Greece) and Coordinator of the Paediatric Virology Study Group. *Exp Ther Med* 18: 3243-3247, 2019.



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