

Family name: Magiorkinis, First name: Gkikas, Date of birth: 20/04/1978, Nationality: Greek

- **CURRENT POSITION**

-**Associate Professor of Hygiene and Epidemiology**, Department of Hygiene, Epidemiology and Medical Statistics, National and Kapodistrian University of Athens.

-**Scientific Coordinator**, National Retrovirus Reference Centre, Department of Hygiene, Epidemiology and Medical Statistics, National and Kapodistrian University of Athens.

- **PREVIOUS POSITIONS**

Research

-2013-2017 Department of Zoology, University of Oxford. **University Research Lecturer – Senior Clinical Fellow (MRC Clinician Scientist Fellow)**

-2012-2013 Department of Zoology, University of Oxford. **Marie Curie Research Fellow**

-2010-2012 Department of Zoology, University of Oxford. **Postdoctoral researcher**

-2007 Henry Wellcome Centre for Ancient Biomolecules, University of Oxford, Department of Zoology. **Academic Visitor** (3 months)

-2004-2009 NK University of Athens, School of Medicine, Department of Hygiene, Epidemiology and Medical statistics. **PhD Student** (Note: concurrent medical specialty).

-1998-2004 NK University of Athens, School of Medicine, Department of Hygiene, Epidemiology and Medical statistics. **Undergraduate Research Assistant.**

Clinical

-2013-2017 Virus Reference Department, Public Health England. **Hon Consultant in Medical Virology.**

Training

-2004-2006 “A. Syngros”, Uni. Hospital of Skin and Venereal Dis. **Resident in Polyvalent Biopathology**

-2007-2010 “Laikon”, University Hospital. **Resident in Polyvalent Biopathology**

-2010 401 General Military Hospital of Athens (GMHA). **House Officer in Internal Medicine**

- **EDUCATION**

-2009 NK University of Athens, School of Medicine. Doctor of Philosophy (**PhD**). Thesis: “Molecular evolution of Human Viruses – applications on molecular epidemiology”. Grade: Excellent

-2005 NK University of Athens, School of Medicine. Master of Science (**MSc**) in Biostatistics. Thesis: “Recombination related phylogenetic inference”. (**Honours and Valedictorian**)

Medical Qualifications

-2004 NK University of Athens - School of Medicine. Medical Doctor (**MD**)

-2011 Reg. of Attika, Certificate of Med. Spec. Med. Biopathology (Microbiology and Virology)

- **FELLOWSHIPS-SCHOLARSHIPS-HONORS-EARLY AWARDS**

Fellowships

-2013-2017 Clin. Scientist Fellowship, Medical Research Council, United Kingdom (£1,000,000)

-2012-2014 M. Curie Intra-European Fellowship, Eur. Commission (FP7-PEOPLE-2011-IEF) (€200,000)

-2011-2015 'Emanoel Lee' Junior Research Fellow, St. Cross College, University of Oxford

Scholarships

- 2007 GeneTime Marie Curie short-term (3 months) fellowship, "Henry Welcome" Ancient Biomolecules Center, Department of Zoology, University of Oxford
- 2002 XIV International AIDS Conference, Barcelona, 7-12 July (AB-0426-4-GR)

Honors/Conferences

-4 awards in National Medical Conferences in 2001, 2003, 2005 and 2007.

Undergraduate/Early Awards

- 1997 National Physics Contest, **2nd award** and **member of the Hellenic Olympics Team of Physics**. National Representative at the Annual Nuclear Physics' seminar at the European Laboratory for Particle Physics (CERN).
- 1997 National Chemistry's Contest, **5th award** and **first acting member of the Hellenic Olympics Team of Chemistry**.
- 1992 National Mathematics Contest, **3rd award**.

• SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

PhD Students:

- Ms Marianna Polychronopoulou (2023-ongoing) Project: "Transcriptomic profile of HERVs expression in patients with COVID-19 disease"
- Ms Federica Mantovani (2020-2024) Project: "The interaction of HIV-1 and Human Endogenous Retroviruses in Patients and Cell-line model"
- Mr Spyridon Sapounas MD, (2021-2024) Project: "Intervention strategies for mitigating COVID-19"
- Ms Konstantina Kitsou MD, (2019-2022) (Co-supervision) Project: Nephrotic syndrome in pediatric populations
- Ms Tetyana Vasylyeva (Funding source: Oxford Clarendon Fund, 2014-2017), Project: Integrating phylogenetics and social networks
- Ms Audrey Lin (Funding source: US Federal Loan, 2014-2017), Project: Human Endogenous Retrovirus expression with respect to human pathophysiology
- Ms Cindy Santander (Funding source: CONICYT, Chile, 2014-2017), Project: Population genetics of Human Endogenous Retroviruses and application on human disease

Postdoctoral Fellows:

- Dr Eleni Papachristou (Funding source: Permanent staff, Ministry of Education, 2022-ongoing)
- Dr Eleni Kyriakou (Funding source: HFRI, 2022-ongoing)
- Dr Magda Bletsas (Funding source: HFRI, 2020-2023)
- Dr Tara Patricia Hurst (Funding source: MRC Clinician Scientist Fellowship, 2013-2016)
- Dr Timokratis Karamitros (Funding source: MRC Clinician Scientist Fellowship, 2014-2017)

• TEACHING ACTIVITIES

- 2017-now Lectures on Epidemiology and Preventive Medicine, NK University of Athens
- 2013-2017 Lectures on Virology and Parasites, Undergraduate Course, University of Oxford

• INSTITUTIONAL RESPONSIBILITIES

- 2020-2025 Representative to the General Assembly of the Med. School, NK University of Athens
- 2018-2024 Governing body of MSc Course “Epidemiology and Methodology in Biomedical Sciences”
- 2011-2015 Graduate Student Advisor, Member of the G.Body, St.Cross College, University of Oxford
- 2013-2017 Member of the Congregation, University of Oxford

- **COMMISSIONS OF TRUST**

- 2024-2025 **Coordinator of National HIV Action Plan for Greece**, Ministry of Health
- 2020-2022 **National Spokesperson for Covid-19 Pandemic in Greece**, Central Government - Ministry of Health
- 2020-2024 **Member of the National Committee for Public Health Emergencies (Covid-19)**
- 2014 **Member of Jury for the 2014 Marie Sklodowska Curie Prize**

- **MEMBERSHIPS OF SCIENTIFIC SOCIETIES**

- 2017 Royal Society of Medicine, Fellow
- 2015 Royal College of Pathology, Fellow
- 2014 Greek Scientific Society for the Study of AIDS, Member
- 2011 General Medical Council (UK), Full membership and license to practice
- 2004 Athens Medical Association (Greece), Full memberships and license to practice

- **EDITORIAL RESPONSIBILITIES**

- Associate Editor for *Scientific Reports* and *Frontiers in Microbiology*
- Hosting the research topic “The Past and the Future of Human Immunity under Viral Evolutionary Pressure”, “Rising Stars in Virology”, “Unravelling the Role of HERVs in Cancer: Insights and New Targets for Therapy” in *Frontiers in Immunology, Microbiology, Virology, Oncology*.

- **CAREER BREAKS:** 02/2010-10/2010 Compulsory Military Service

RESEARCH ACHIEVEMENTS AND PEER RECOGNITION

I study the evolution of viruses focusing in the development of applications for human health. Thus, throughout my research career as a PhD student, postdoc and PI the most indicative research findings (having a contribution as a first, last or corresponding author) can be classified in 3 categories: A) Global epidemiology of viruses and history, B) Viral transmission and Policy in Drug Users, C) Endogenous Retroviruses.

A) Global epidemiology of viruses and their history

1. Pandemic HCV spread from the developed countries to the developing world during World War II

While the potential zoonotic origin of HCV remains one of the most important questions in understanding how HCV infected humans, the worldwide presence of the viral types (subtypes 1a and 1b) that are responsible for the majority of the global infections was also surprising. My study that was published in PLoS Medicine in 2009 (first author) showed for the first time that the most prevalent HCV types were spread within a very limited time frame around and after World War II. I performed this study while I was a PhD student and as recognition of my contribution to the global epidemiology of HCV I have received the Marie Curie Prize for the Most Promising Research Talent from the European Commission and the Prize for Medical Sciences from the Academy of Athens.

-Press release, EU Commission: http://europa.eu/rapid/press-release_IP-12-1172_en.htm

-Magiorkinis, G et al. (2009) The global spread of hepatitis C virus 1a and 1b: a phylodynamic and phylogeographic analysis. PLoS Med, 6, e1000198.

2. The global spread of HIV subtype B mirrored post World War II geopolitical balances

HIV-1 subtype B is the most prevalent type of HIV-1 in the western world. It has been known for quite a long time how this HIV type travelled from Africa to the United States; however the subsequent spread within the Western World was unclear. To answer this question I coordinated the analysis of the largest HIV-1 subtype B sequence dataset collected by 2 international cohorts. Thus with this study that was published in *Infection, Genetics and Evolution* in 2016 (first and corresponding author) we showed for the first time that the spread of this most prevalent HIV-1 subtype in the Western World mirrored the geopolitical balances of the second part of the 20th century. Our study provides strong evidence about the role of the sociopolitical effects in HIV-human ecological dynamics.

-The study has been covered by the CNN:

<http://edition.cnn.com/2016/07/07/health/global-spread-of-hiv>

- Magiorkinis G, et al. The global spread of HIV-1 subtype B epidemic. *Infect Genet Evol.* 2016 Jun 1. pii: S1567-1348(16)30223-4. doi: 10.1016/j.meegid.2016.05.041

B) Viral transmission and Policy in Persons Who Inject Drugs (PWIDs)

3. HCV transmission dynamics of PWIDs

HCV is mainly a blood-borne virus with sexual transmission having been documented in very specific risk groups (e.g. HIV co-infected men having sex with men). Due to the subclinical nature of the viral infection it has been extremely difficult to quantify how many transmissions each drug user is responsible for and most importantly when these transmissions take place throughout the long history of the infection. By studying 4 epidemics of HCV in Greece and developing a method to measure the generation time of the infection (i.e. the time between getting infected and transmitting to someone else) I have showed that before 1990s each infected drug user could transmit into 20 persons, half of which transmissions occurring within the first 3 years of the infection. This finding is important as it shows that interventions that target the first year of the infection are key in controlling the spread of HCV.

-The study is cited by NIH/NIDA because it shows that HCV is a serious consequence of intravenous drug use (<http://www.drugabuse.gov/related-topics/viral-hepatitis-very-real-consequence-substance-use>)

-The study has been covered by the BBC: <http://www.bbc.co.uk/news/health-21282381>

-Magiorkinis, G et al. PLoS Comput Biol. 2013 Jan;9(1):e1002876. doi: 10.1371/journal.pcbi.1002876.

C) Endogenous Retroviruses

4. Endogenous Retroviruses transform into retrotransposons and become genomic super-spreaders

Endogenous Retroviruses (ERVs) are the result of ancient retroviral infections of the germline. The efficiency of this genomic colonization of the hosts seems to vary a lot with some germline invasions having been able to get only a few copies, while others have been able to achieve thousands. What determines the success of distinct ERV families was largely unknown. To answer this question I analysed the process of ERV colonization in mice and showed that higher abundance coincided with the loss of the *env* gene. The latter being a hallmark of a switch of the life cycle into fully intracellular

suggests that the ERVs that evolved into being retrotransposons were becoming genomic super-spreaders. The study that got published in PNAS (first author) shows how a large part of mammalian genomes has been formed.

-The study has been covered by the BBC: <http://www.bbc.co.uk/news/science-environment-17809503>

-The study was commented by an editorial from PNAS (*In this issue*: <http://www.pnas.org/content/109/19/7127.full>)

-Reference: Magiorkinis, G et al (2012) Env-less endogenous retroviruses are genomic super-spreaders. PNAS (DOI:10.1073/pnas.1200913109)

5. Polymorphic intronic HERVs can modulate transcription of genes resulting into phenotypic changes: the example of RASGRF-2 and addictive behaviour

The role of HERVs lying within an intron is not well understood. In this study we identified a polymorphic HERV from the family of HK2 lying within RASGRF-2 and showed, through CRISPR/Cas9 modification of a cell-line model, that the presence of HK2 results in modulated transcription of RASGRF2. We also showed that it is found in higher frequency in individuals with well-established addictive behaviour (intravenous drug users). Our study was the first to show that a polymorphic HERV is relevant to a disease phenotype.

-The study has been covered by CNN:

<https://www.cnn.com/2018/09/25/health/retrovirus-addiction-study-intl/index.html>

and the Economist: <https://www.economist.com/science-and-technology/2018/10/02/an-ancient-virus-may-promote-addiction-in-modern-people>

-Reference: Karamitros, T et al (2018) Human Endogenous Retrovirus-K HML-2 integration within RASGRF2 is associated with intravenous drug abuse and modulates transcription in a cell-line model (DOI: 10.1073/pnas.1811940115)

Peer recognition - Prizes

-2021 **Prix Galien Greece, “Pro Bono Humanum”**. Humanitarian prize for my role in the pandemic COVID-19 response in Greece

-2012: **European Commission. Marie Curie Prize** for “Promising Research Talent” amongst early career researchers funded by FP6 and FP7 (2002-2012) for my study that showed how Hepatitis Virus C was spread around the globe. (EU Commission Press Release: http://europa.eu/rapid/press-release_IP-12-1172_en.htm)

-2011: **Academy of Athens. “Ioannis Vlyssidis” Award** on Medical Sciences for my contribution on understanding how Hepatitis Virus C was spread around the globe.

Peer recognition of Distinction/Esteem

-2017 **Keynote Lecture for 2017 Marie Skłodowska-Curie Prizes**, Malta (Presidency of EU Council)

-2015 **Fellowship of the Royal College of Pathology**

-2014 **Member of the Jury** for the 2014 **Marie Skłodowska-Curie Prize** (European Commission)

-2013 **University Research Lecturer**, University of Oxford

-2011 **Junior Research Fellow**, St.Cross College, University of Oxford

Publications

Number of papers: 111, First, last and/or corresponding author: 50

Outreach

-Reuters: “Conflict in Ukraine escalated spread of HIV – scientists” (January 2018)

- New York Times: "Ancient Viruses Are Buried in Your DNA" (October 2017)
- UNAIDS Science Now: "Needle-syringe programmes and treatment will dramatically reduce HIV epidemic among people who inject drugs in Russia and Ukraine" (December 2016)
- National Geographic: "*Our Inner Viruses: Forty Million Years In the Making*" (02/02/2015)
- New Scientist: Neanderthal virus DNA spotted hiding in modern humans (21/11/2013)
- BBC News: Spread of Hepatitis C pinpointed (01/02/2013)