Eliseo Papa

Biomedical Engineer, Computational Biologist, Clinician

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Specialized in

Medical Engineering, Analysis of large data sets, Microbiome, Machine learning, Immunology, Confocal microscopy, Nano/microfabrication, Phylogenetics.

Research interests

Host-pathogen interactions at the level of microbiome and single cells. Human Microbiome Project. Machine learning. High-throughput diagnostics. Electronic health records. Emerging properties of networks in a biological context.

Education

2013 **MBBS, Imperial College London**

2006–2012 **Ph.D, Harvard Medical School/Massachusets Institute of Technology**
Medical Engineering & Medical Physics, Harvard/MIT HST Institute
Thesis: High-throughput experimental and computational tools for exploring immunity and the microbiome

2008 **Sc.M., Massachusets Institute of Technology**
Mechanical Engineering

2005 **BASc (Honors), University of Toronto**
Engineering Science, Biomedical Option

Fellowships

2010–2011 NSERC Postgraduate D Scholarship, National Science Engineering Research Council, Canada

2008–2009 Poitras pre-doctoral fellowship

2007 Martino Scholar, Harvard/MIT Health Science Tech. Inst.

2005–2008 NSERC Postgraduate M Scholarship, National Science Engineering Research Council, Canada

2005 OGS Postgraduate Scholarship (declined), Ontario Government, Canada

2004 NSERC Summer Research Award, National Science Engineering Research Council, Canada

2003 #2 Canadian Army University Course Undergrad Scholarship,University of Toronto

Awards

2012 Bursary recipient, Exploring Human Host-Microbiome Interactions in Health and Disease, Wellcome Trust Scientific Conferences

2008 Martha Gray Prizes for Excellence in Research, Annual Forum, Harvard/MIT Health Science Tech. Inst.

2008 Competition Semifinalist, MIT 100k Business Plan

2004 University of Toronto Life Sciences Award, University of Toronto

2002–04 Silver T – academic athletic excellence, University of Toronto

2003 OUA Academic Achievement Award, Ontario, Canada

2001 Ontario Scholar, Government of Ontario, Canada

Publications

Journals

2012 ***Eliseo Papa***, Michael Docktor, Christopher Smillie, Sarah Weber, Sarah Pacocha Preheim,Dirk Gevers,Georgia Giannoukos, Dawn Ciulla, Diana Tabbaa, Jay Ingram, David B Schauer, Doyle V Ward, Joshua R Korzenik, Ramnik J Xavier, Athos Bousvaros, Eric J Alm.
Non-invasive mapping of the gastrointestinal microbiota identifies children with inflammatory bowel disease.
PLoS ONE 2012;7(6):e39242.

2011 Rhiannon White, Sachiko Miyata, ***Eliseo Papa***, Eric Spooner, Kleoniki Gounaris, Murray Selkirk, Katerina Artavanis-Tsakonas.
Characterisation of the Trichinella spiralis deubiquitinating enzyme, TsUCH37, an

evolutionarily conserved proteasome interaction partner.
PLoS Negl Trop Dis. 2011 Oct;5(10):e1340.

2011 Katerina Artavanis-Tsakonas, Pia V Kasperkovitz, ***Eliseo Papa***, Michael L Cardenas, Nida S Khan, Annemarthe G Van der Veen, Hidde L Ploegh and Jatin M Vyas.
The Tetraspanin CD82 is Specifically Recruited to Fungal and Bacterial Phagosomes Prior to Acidification.
Infection and Immunity 2011 79(3):1098-106\

2009 Adebola Ogunniyi, Craig Story, ***Eliseo Papa***, Eduardo Guillen, J. Christopher Love.
Screening Individual Hybridomas by Microengraving to Discover Monoclonal Antibodies.
Nature Protocols 2009 4(5):767-82

2009 Jehnna L. Ronan, Craig Story, ***Eliseo Papa***, J. Christopher Love.
Optimization of the surfaces used to capture antibodies from single hybridomas reduces the time required for microengraving.
Journal of Immunological Methods 2009, 340(2):164-9\

2008 Craig Story*, ***Eliseo Papa* (co-author)***, Chih-Chi Andrew Hu, Jehnna L Ronan, Hidde L Ploegh, J.Christopher Love.
Profiling Antibody Responses by Multiparametric Analysis of Single B Cells.
PNAS 2008 105(46):17902-7

2005 Hans Fischer, ***Eli Papa***, Lichuan Liu, K. Sandy Pang, Warren C. W. Chan.
Preliminary Results: Exploring the Interactions of Quantum Dots with Whole Blood Components.
SPIE Proceedings 2005 5969,54

2004 Wen Jiang, ***Eli Papa***, Hans Fischer, Sawitri Mardyani, Warren C.W. Chan.
Semiconductor quantum dots as contrast agents for whole animal imaging.
Trends in Biotechnology 2004 22:12

Posters

2012 White RR, Morrow M, Miyata S, Papa E, Spooner E, Selkirk M, Gounaris K, Das C, Artavanis-Tsakonas K
Characterisation of the Trichinella Spiralis Deubiquitinating Enzyme, TsUCH37
Molecular and Cellular Biology of Helminth Parasites VII

2012 Eliseo Papa, Michael Docktor, Christopher Smillie, Sarah Weber, Sarah P. Preheim, Dirk Gevers, Georgia Giannoukos, Dawn Ciulla, Diana Tabbaa, Jay Ingram, David B Schauer, Doyle V Ward, Joshua R Korzenik, Ramnik J Xavier, Athos Bousvaros, Eric J Alm.
Diagnosing IBD from the fecal microbiome
Exploring Human Host-Microbiome Interactions in Health and Disease, Wellcome Trust Scientific Conferences

2008 High-Throughput and High-Content Screening of Antibody Responses from Single Cells
AIChE annual meeting, Nanoscale Science Engineering Forum

2008 Applying Ligands to B Cell Receptors by Microfluidics
AIChE annual meeting, Engineering Fundamentals in Life Sciences

2008 Microengraving for high-throughput affinity mapping of humoral responses
Harvard/MIT HST Forum

2008 Multi-variate profiling of B cell immune responses
Novartis Vaccine Symposium

Patents

2009 Composition of an Array of Microwells with an Integrated Microfluidic System, USA Serial No. 12/390279

Research

2013 **Theoretical System Biology group, Prof. M. Stumpf**, Imperial College
Integrative analysis of nitrogen stress response in e.coli
Chip-seq, RNAseq and transcriptomics analysis

2009–2013 **Alm Laboratory for Microbiology, Prof. Eric J. Alm**, MIT
Human Microbiome Project
Bioinformatic analysis of large datasets
Microbial evolution, phylogenetics

2006–2009 **Laboratory of Hidde L. Ploegh**, Whitehead Institute, MIT
Affinity and isotype mapping of antibody secretion in individual primary B cells.
Development of computational and statistical tools to monitor and predict evolution of immune responses
Murine antibody cloning and expression; fluorescence tagging

Real time fluorescence microcopy; advanced image analysis

2004–2005 **Biomedical Nanotechnology Group, Prof. W C. Chan**, University of Toronto
Nanoparticles cytotoxicity
Quantum Dots synthesis and characterization (TEM, Absorption, PL, X-IRD)
Real time fluorescence microscopy, single molecule spectroscopy and biophysics.

2003 **Biomaterials Group, Prof. M.C.Tanzi**, Politecnico di Milano, Italy
Synthesis of biocompatible polymeric scaffolds for tissue engineering applications.
Morphological, mechanical and functional characterization of polyurethane scaffolds.

Other employment

2014 **Chief Scientist, Klappo,** London,UK
tech startup focused on semantic technologies, cognitive computing, machine learning to craft context-aware food recommendations.
management team responsible for the business plan and investor relations
medical and scientific direction

2013–2014 **Doctor, Imperial College NHS Trust**, London, UK

2012 **Consultant, SERES Health,** Cambridge, MA
Computationally designed and predicted fitness of synthetic microbial communities intended for therapeutic transplantation.
Provided strategic input and scientific advice.

2009 **Founder, Enumeral diagnostics,** Cambridge, MA
MIT $100K Entrepeneurship competition semifinalist
Developed high-throughput data acquisition and analysis platforms, scaling the technology to production levels.
Contributed to the development of the microfluidic platform at the core of the company intellectual property

2006 **ESL Teacher, Inlingua Language School,** Brescia, Italy
Teaching approx. 12hrs/week on individual basis and to large groups
Provided on site focussed training for companies

2004–2005 **Residence Don, St.Michael's College Residence,** University of Toronto, Canada
Mediate conflicts and provide academic or personal consulting.
Trained in cultural competence and conflict resolution
Responsible to enforce rules and to foster an accepting community

2000–2002 **IT Consultant System Admin, Ital Engineering s.a.s.,** Brescia, Italy
Interviewed the customer and performed an organizational analysis
Regularly performed formal presentations to the management

2000 **Graphic Designer, Photo Image Studio,** Brescia, Italy
Assisted photographers in the preparation of gallery exhibitions and openings

Volunteering

2005 **Field Operative, AISPO, San Raffaele del Monte Tabor Foundation.** Milan, Italy
Streamlined diagnostic routines, Kampala's Hospital & Gulu's outpost, Uganda
Consulted regarding the infrastructure, human resources and logistics of the Kampala's hospital

2004 **Engineers Without Borders.**
University of Toronto Conference delegate

Interests

Cycling, Triathlon, Swimming, Waterpolo. Jazz music. International relations. Semiotics and its implications on mass psychology. Buddhism, Zen and oriental philosophies. Reading classics of Italian and English literature. Travelled by kayak along the major European rivers. Rock Climbing.