Eliseo Papa

Biomedical Engineer, Computational Biologist, Data Scientist

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Currently

MBBS Candidate, Graduate Entry Medicine, Imperial College London
Researcher, Alm lab, MIT

Specialized in

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

Research interests

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

Languages

Italian: Mother tongue
English: Perfect oral & written fluency
French: Working knowledge

Education

2009–now **Imperial College London**
MBBS Graduate Entry Medicine Programme

2006–2012 **Harvard Medical School & Massachusets Institute of Technology**
PhD, Biomedical Engineering, Harvard/MIT Health Science & Technology Institute
Thesis: High-throughput experimental and computational tools for exploring immunity and the microbiome
Representative courses:
- *Harvard Medical School* - pathology, renal pathophysiology, respiratory pathophysiology, cardiac pathophysiology.
- *MIT* - biomechanics, statistical learning, systems microbiology, forces fields and flows in biological systems, fluid mechanics, heat transfer, numerical modeling.

2006–2008 **Massachusets Institute of Technology**
SM in Mechanical Engineering

2001–2005 **University of Toronto**
BASc (Honors)
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

2009–now **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

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

Extracurricular

2006–2008 **Collegiate Cycling. MIT Cycling Team**
National Collegiate Road Champions
Eastern Collegiate Cycling Conference Road Champions
Captain, Cyclocross, 2nd US National Championship
Eastern Collegiate Cycling Conference Road Champions
Cyclocross, US National Champions

2006 **Competitive Triathlon. Team Atletica Desenzano**
9th cat. at ITU Bardolino's International Triathlon

2003–2004 **Competitive Sailing. Italian sailing federation (FIV).**
12th at European IMS Sailing Championship
6th at Canadian J105 Championship

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

2002 **University of Toronto Varsity Waterpolo.**
OUA Conference Champions

1998–2001 **Nuoto Club Brescia Swimming Club**
Regional level competitions

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

Interests

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.