Eliseo Papa

Biomedical Engineer, Physician, Computational Biologist, Data Scientist

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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 English, Italian, French

Education

2013 **MBBS, Imperial College London**

2012 **Ph.D, Harvard/MIT Health Science & Technology Institute**
Biomedical Engineering

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

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

Fellowships

2010–2011 NSERC Postgraduate D Scholarship, Canada

2008–2009 Poitras pre-doctoral fellowship, MIT

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

2005–2008 NSERC Postgraduate M Scholarship, Canada

2005 OGS Postgraduate Scholarship (declined), Canada

2004 NSERC Summer Research Award, Canada

2003 #2 Canadian Army University Course 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

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

2003 OUA Academic Achievement Award, Ontario, Canada

2001 Ontario Scholar, 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

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

2009–2012 **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

2012 **Consultant, SERES Health,** Cambridge, MA
Fitness analysis for synthetic microbial communities
Strategic input

2009 **Founder, Enumeral diagnostics,** Cambridge, MA

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**

2006 **Competitive Triathlon. Team Atletica Desenzano**

2003–2004 **Competitive Sailing. Italian sailing federation (FIV).**

2004 **Engineers Without Borders.**

2002 **University of Toronto Varsity Waterpolo.**

1998–2001 **Nuoto Club Brescia Swimming Club**

Volunteering

2005 **Field Operative, AISPO, San Raffaele del Monte Tabor Foundation.** Milan, Italy