

Pietro Crivello, PhD



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Date of Birth: 14.06.1984

Place of Birth: Palermo - Italy

PROFESSIONAL EXPERIENCE

- 2014 - present Post-doctoral Fellow at the Institute for Experimental Cellular Therapy, University Hospital Essen, Essen – Germany (Head: Prof. K. Fleischhauer)
- 2012 - 2014 Post-doctoral Fellow at the Unit of Molecular and Functional Immunogenetics, San Raffaele Scientific Institute, Milan – Italy (Head: Dr. K. Fleischhauer)

EDUCATION AND TRAINING

- 2012 PhD University Milano Bicocca - Thesis: "New molecular insights into HLA immunogenicity"
- 2009 – 2012 PhD Student at the Unit of Molecular and Functional Immunogenetics, San Raffaele Scientific Institute, Milan – Italy (Head: Dr. K. Fleischhauer)
- 2008 Master Degree University of Milano Bicocca (vote:110/110, cum laude) - Thesis: "A novel non-mitochondrial isoform of paraplegin"
- 2007 – 2008 Master Degree Internship at the Laboratory of Molecular Pathology, Italian National Neurologic Institute C. Besta, Milan – Italy (Head: Dr. E. Rugarli)
- 2006 Bachelor Degree University of Palermo (vote:110/110, cum laude) - Thesis: "A Ras-oncogene model of epithelial-mesenchymal transition"
- 2006 Bachelor Degree Internship at the Department of Molecular and Cellular Biology, University of Palermo, Palermo – Italy (Head: Prof. I. Albanese)

MEMBERSHIP IN SCIENTIFIC SOCIETIES

- Since 2018 Member of the Deutsche Gesellschaft für Immunogenetik (DGI)
- Since 2018 Member of the European Bone Marrow Transplantation (EBMT)
- Since 2018 Member of the Human Immuno-Peptidome Project of the Human Proteom Organization (HUPO-HIPP)
- Since 2010 Member of the European Federation for Immunogenetics (EFI)

SCIENTIFIC INTERESTS

Polymorphism, expression and function of Human Leukocyte Antigens and their implication in graft versus leukemia and graft versus host disease after allogeneic hematopoietic stem cell transplantation. Particular interests concern the biological and molecular mechanisms regulating processing, selection and presentation of antigenic peptides; HLA/T cell receptor interaction; mechanisms of transcriptional regulation of HLA genes; modulation of antigen presentation in Leukemia; use of alloreactive T cells as therapeutic approach against Leukemia; genetic engineering by CRISPR/Cas9 technology.

AWARDS AND HONORS

- 2018 Next Generation Award, Deutsche Gesellschaft für Immunogenetik, (DGI)
- 2018 Top Young Science Best Paper Award, Medizinische Fakultät der Universität Duisburg-Essen
- 2016 EFI conference travel bursary, European Federation of Immunogenetics
- 2015 Best Abstract Award, Deutsche Gesellschaft für Immunogenetik, (DGI)
Title: The functional distance between mismatched HLA-DPB1 increases risks of relapse and mortality after unrelated donor hematopoietic cell transplantation
- 2012 EFI conference travel bursary, European Federation of Immunogenetics

INVITED TALKS IN SCIENTIFIC CONFERENCE

- 2018 National meeting of the Sociedade Brasileira de Transplante de Medula Óssea (SBTMO)
Talk 1: Definition of HLA-DP permissiveness in HSCT: from amino acid polymorphism to Functional Distance among HLA-DPB1 alleles.
Talk 2: Dissecting genetic control of HLA-DPB1 expression and its relation to structural mismatch models in HSCT.

FUNDING

- 2018 Mechtild Harf Research Grant of the Deutsche Knochenmarkspenderdatei (DKMS) (240.000 Euro in 3 years)

PUBLICATIONS

1. **Crivello P**, Ahci M, Maaßen F, Wossidlo N, Arrieta-Bolaños E, Heinold A, Lange V, Falkenburg JHF, Horn PA, Fleischhauer K, Heinrichs S. Multiple Knockout of Classical HLA Class II β -Chains by CRISPR/Cas9 Genome Editing Driven by a Single Guide RNA. *J Immunol*. 2019 Mar 15;202(6):1895-1903.
2. Meurer T, Arrieta-Bolaños E, Metzging M, Langer MM, van Balen P, Falkenburg JHF, Beelen DW, Horn PA, Fleischhauer K, **Crivello P**. Dissecting Genetic Control of HLA-DPB1 Expression and Its Relation to Structural Mismatch Models in Hematopoietic Stem Cell Transplantation. *Front Immunol*. 2018; doi: 10.3389/fimmu.2018.02236.
3. Arrieta-Bolaños E*, **Crivello P***, Shaw BE, Ahn KW, Wang HL, Verneris MR, Hsu KC, Pidala J, Lee SJ, Fleischhauer K, Spellman SR. In silico prediction of nonpermissive HLA-DPB1 mismatches in unrelated HCT by functional distance. (*Equal contribution). *Blood Adv*. 2018; 2(14):1773-1783. doi: 10.1182/bloodadvances.2018019620.
4. Arrieta-Bolaños E, **Crivello P**, Metzging M, Meurer T, Ahci M, Rytlewski J, Vignali M, Yusko E, van Balen P, Horn PA, Falkenburg JHF, Fleischhauer K. Alloreactive T Cell Receptor Diversity against Structurally Similar or Dissimilar HLA-DP Antigens Assessed by Deep Sequencing. *Front Immunol*. 2018; doi: 10.3389/fimmu.2018.00280.
5. Ahci M, Stempelmann K, Buttkerreit U, **Crivello P**, Trilling M, Heinold A, Steckel NK, Koldehoff M, Horn PA, Beelen DW, Fleischhauer K. Clinical Utility of Quantitative PCR for Chimerism and Engraftment Monitoring after Allogeneic Stem Cell Transplantation for Hematologic Malignancies. *Biol Blood Marrow Transplant* 2017 Oct;23(10):1658-1668.
6. Ahci M*, Toffalori C*, Bouwmans E, **Crivello P**, Brambati C, Pultrone C, Stempelmann K, Bost D, Mazzi B, Beelen DW, Ciceri F, Mulder W, Fleischhauer K*, Vago L*. A new tool for rapid and reliable diagnosis of HLA loss relapses after HSCT. *Blood* 2017 Sep 7;130(10):1270-1273. *equal contribution
7. Fleischhauer K, Ahn KW, Wang HL, Zito L, **Crivello P**, Müller C, Verneris M, Shaw BE, Pidala J, Oudshorn M, Lee SJ, Spellman SR. Directionality of non-permissive HLA-DPB1 T-cell epitope group mismatches does not improve clinical risk stratification in 8/8 matched unrelated donor hematopoietic cell transplantation. *Bone Marrow Transplant* 2017 Sep;52(9):1280-1287.
8. **Crivello P**, Heinold A, Rebmann V, Ottinger HD, Horn PA, Beelen DW, Fleischhauer K. Functional distance between recipient and donor HLA-DPB1 determines non-permissive mismatches in unrelated HCT. *Blood* 2016 Jul 7;128(1):120-9.
9. Gassa A, Kalkavan H, Jian F, Duhan V, Khairnar V, Shaabani N, Honke N, Carpinteiro A, Botezatu L, **Crivello P**, Dolff S, Ferencik S, Häussinger D, Khandanpour C, Fleischhauer K, Witzke O, Wahlers T, Hardt C, Lang P, Lang K. High frequencies of anti-host reactive CD8+ T cells ignore non-hematopoietic antigen after bone marrow transplantation in a murine model. *Cell Physiol Biochem* 2016;38(4):1343-53.
10. **Crivello P**, Zito L, Sizzano F, Maiers M, Mulder A, Toffalori C, Vago L, Zino E, Fleischhauer K. The impact of amino acid variability on alloreactivity defines a functional distance predictive of permissive HLA-DPB1 mismatches in hematopoietic stem cell transplantation. *Biol Blood Marrow Transplant* 2015; 21(2):233-41.
11. Lauterbach N*, **Crivello P***, Wieten L, Zito L, Groeneweg M, Voorter C, Fleischhauer K, Tilanus M. Allorecognition of HLA-DP by CD4+ T cells is affected by polymorphism in its alpha chain. (*Equal contribution). *Mol Immunol* 2014; 59(1):19-29.
12. Longhi E, **Crivello P**, Mantovani M, Frison S, Fleischhauer K, Crespiatico L, Piccolo G, Poli F. Molecular modelling of HLA-B*35:132. *Int J Immunogenet* 2014; 41(3):195-7.

13. **Crivello P***, Lauterbach N*, Zito L, Sizzano F, Toffalori C, Marcon J, Curci L, Mulder A, Wieten L, Zino E, Voorter C, Tilanus M, Fleischhauer K. Effects of transmembrane region variability on cell surface expression and allorecognition of HLA-DP3. (*Equal contribution). *Hum Immunol* 2013; 74(8):970-7.
14. Mancuso G, Barth E, **Crivello P**, Rugarli EI. Alternative splicing of Spg7, a gene involved in Hereditary Spastic Paraplegia, encodes a variant of Paraplegin targeted to the Endoplasmic Reticulum. *PLoS One* 2012; 7(5):e36337.
15. Mantovani M, **Crivello P**, Frison S, Longhi E, Fleischhauer K, Scalamogna M, Poli F. Description and molecular modeling of a novel human leukocyte antigen allele: A*32:22. *Hum Immunol* 2012; 73(5):526-8.
16. Sizzano F, Zito L, **Crivello P**, Crocchiolo R, Vago L, Zino E, Fleischhauer K. Significantly higher frequencies of alloreactive CD4+ T cells responding to non-permissive than to permissive HLA-DPB1 T cell epitope disparities. *Blood* 2010; 116(11):1991-2.
17. Frison S, **Crivello P**, Longhi E, Andreini E, Tivelli M, Serafini M, Tagliaferri C, Scalamogna M, Poli F. Description and molecular modeling of two novel HLA alleles: HLA-A*0343 and A*0345. *Hum Immunol* 2010; 71(6):582-5.