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EDUCATION

University of Milan-Bicocca 2020-2021

- First Level Specialising Master in Business Intelligence and Big Data Analytics

University of Milan, Italy 2014-2017

- PhD Molecular and translational medicine, Thesis: "Development of a webtool for interactome-sequencing data analysis and identification of *H. pylori* epitopes responsible for host immuno-response modulation."

University of Tor Vergata, Rome, Italy 2010-2013

- Master of Bioinformatics Degree, Vote 110/110 cum laude. Faculty of Mathematical, Physical and Natural Sciences.

EXPERIENCE

1. **National Council of Research (CNR) - Institute for Genetic and Biomedical Research (IRGB), Milan IT** 2022-Present

2. **Humanitas Research Hospital – Laboratory of translational immunology - Milan IT** 2018-2021
Grant Fellow

- Currently involved on Airc project " Defining the core gene expression of stem-like T cell differentiation to ameliorate the anti-tumor activity of CAR T cells." (2018-2021).

3. **National Council of Research (CNR) - Institute of Biomedical Technologies (ITB) Milan IT.** 2013-2017
Grant Fellow

- Previously involved on Interomics project "Analisi dati NGS, nell'ambito di studi genomici, trascrittomici e proteomici" (2017-2018).
- Previously involved on PRIN project "Unraveling structural and functional determinants behind *Helicobacter pylori* pathogenesis and persistence " (2013-2016).

4. **Temple University - Fels Institute molecular biology cancer research Philadelphia PA** Autumn 2012
Student Trainee (Laboratory of Professor Merali)

- The focus of research activity was on physiological basis of Chronic obstructive pulmonary disease (COPD) disease. Proteomic approaches was applied in order to identify new biological marker.

5. **Temple University – Department of Pharmacology - School of Medicine Philadelphia PA** 2008-2009
Visiting Research Scholar (Laboratory of Dottor Pratico)

- The focus of research activity was on physiological basis of Alzheimer's disease and neuronal toxicity using quantitative imaging techniques, confocal microscopy, genetic approaches in model organisms, and molecular approaches in cultured cell lines, cultured primary fibroblast and in intact animals.

SKILLS

Bioinformatician

- Extensive experience in data analysis, management, and visualization across core areas, including RNA/DNA-based NGS, multivariate omics integration, single-cell transcriptomics, epigenomics, and metagenomics.
- Proficient in next-generation sequencing (NGS) methodologies such as (sc)RNA-seq, ChIP-seq, and (sc)ATAC-seq, with a solid understanding of bioinformatics workflows in cancer genomics.
- Developed and refined algorithms, ensuring computational scalability, robust QC measures, and optimization of complex datasets.
- Expertise in scientific programming using Python, R, and Bioconductor, with strong UNIX command-line (bash scripting) experience.
- Designed cloud-based workflows and pipelines utilizing Nextflow, Snakemake, Docker, and Galaxy for production-ready software development.
- Applied bioinformatics algorithms to integrate multi-layered biological data, supporting hypothesis generation, target identification, and prioritization in clinical and pharmaceutical contexts.
- Demonstrated leadership in managing analysis projects and collaborating across multidisciplinary teams, including wet lab scientists, to drive experimental validation and software optimization.
- Self-motivated professional with strong time management and project planning capabilities, thriving in fast-paced and dynamic environments.

LIST OF PUBLICATIONS

- Martini E, Cremonesi M, Felicetta A, Serio S, Puccio S, Pelamatti E, van Beek JJP, Papadopoulou V, Catalano C, Fanuele F, Giuliano D, Basso G, Bonfiglio CA, Panico C, Vacchiano M, Carullo P, Papa L, D'Andrea C, Tuzger N, Marchini S, Magistrini P, Deaglio S, Amoroso A, Lugli E, Condorelli G, Kallikourdis M. Autoimmune-Like Mechanism in Heart Failure Enables Preventive Vaccine Therapy. *Circ Res*. 2025 Jan 3;136(1):4-25. doi: 10.1161/CIRCRESAHA.124.324999. Epub 2024 Dec 4. PMID: 39629560; PMCID: PMC11692788.
- Kröger C, Müller S, Leidner J, Kröber T, Warnat-Herresthal S, Spintge JB, Zajac T, Neubauer A, Frolov A, Carraro C; DELCODE Study Group; Jessen F, Puccio S, Aschenbrenner AC, Schultze JL, Pecht T, Beyer MD, Bonaguro L. Unveiling the power of high-dimensional cytometry data with cyCONDOR. *Nat Commun*. 2024 Dec 19;15(1):10702. doi: 10.1038/s41467-024-55179-w. PMID: 39702306; PMCID: PMC11659560.
- Scirgolea C, Sottile R, De Luca M, Susana A, Carnevale S, Puccio S, Ferrari V, Lise V, Contarini G, Scarpa A, Scamardella E, Feno S, Camisaschi C, De Simone G, Basso G, Giuliano D, Mazza EMC, Gattinoni L, Roychoudhuri R, Voulaz E, Di Mitri D, Simonelli M, Losurdo A, Pozzi D, Tsui C, Kallies A, Timo S, Martano G, Barberis E, Manfredi M, Rescigno M, Jaillon S, Lugli E. NaCl enhances CD8⁺ T cell effector functions in cancer immunotherapy. *Nat Immunol*. 2024 Oct;25(10):1845-1857. doi: 10.1038/s41590-024-01923-9. Epub 2024 Aug 28. PMID: 39198631.
- Vannini A, Pinatel E, Costantini PE, Pellicciari S, Roncarati D, Puccio S, De Bellis G, Scarlato V, Peano C, Danielli A. (Re)-definition of the holo- and apo-Fur direct regulons of *Helicobacter pylori*. *J Mol Biol*. 2024 May 15;436(10):168573. doi: 10.1016/j.jmb.2024.168573. Epub 2024 Apr 16. PMID: 38626867.
- Carnevale S, Ponzetta A, Rigatelli A, Carriero R, Puccio S, Supino D, Grieco G, Molisso P, Di Ceglie I, Scavello F, Perucchini C, Pasqualini F, Recordati C, Tripodo C, Belmonte B, Mariancini A, Kunderfranco P, Sciumè G, Lugli E, Bonavita E, Magrini E, Garlanda C, Mantovani A, Jaillon S. Neutrophils Mediate Protection Against Colitis and Carcinogenesis by Controlling Bacterial Invasion and IL22 Production by $\gamma\delta$ T Cells. *Cancer Immunol Res*. 2024 Apr 2;12(4):413-426. doi: 10.1158/2326-6066.CIR-23-0295. PMID: 38349973; PMCID: PMC10985471.
- Di Vito C, Coianiz N, Calvi M, Terzoli S, Zaghi E, Puccio S, Frigo A, Mariotti J, De Philippis C, Mannina D, Sarina B, Mineri R, Le-Trilling VTK, Trilling M, Castagna L, Bramanti S, Santoro A, Mavilio D. Persistence of KIRneg NK cells after haploidentical hematopoietic stem cell transplantation protects from human cytomegalovirus infection/reactivation. *Front Immunol*. 2024 Jan 10;14:1266051. doi: 10.3389/fimmu.2023.1266051. PMID: 38268918; PMCID: PMC10806243.

- Puccio S, Grillo G, Alvisi G, Scirgolea C, Galletti G, Mazza EMC, Consiglio A, De Simone G, Licciulli F, Lugli E. CRUSTY: a versatile web platform for the rapid analysis and visualization of high-dimensional flow cytometry data. *Nat Commun.* (2023)
- van Beek JJP, Puccio S, Di Vito C, De Paoli F, Zaghi E, Calvi M, Scarpa A, Peano C, Basso G, Cibella J, De Philippis C, Sarina B, Timofeeva I, Capizzuto R, Mannina D, Mineri R, Mariotti J, Crocchiolo R, Santoro A, Castagna L, Bramanti S, Mavilio D, Lugli E. Selected memory T cells infused post-haploidentical hematopoietic stem cell transplantation persist and hyperexpand. *Blood Adv.* (2023)
- Alvisi G, Termanini A, Soldani C, Portale F, Carriero R, Pilipow K, Costa G, Polidoro M, Franceschini B, Malenica I, Puccio S, Lise V, Galletti G, Zanon V, Colombo FS, De Simone G, Tufano M, Aghemo A, Di Tommaso L, Peano C, Cibella J, Iannacone M, Roychoudhuri R, Manzo T, Donadon M, Torzilli G, Kunderfranco P, Di Mitri D, Lugli E, Lleo A. Multimodal single-cell profiling of intrahepatic cholangiocarcinoma defines hyperactivated Tregs as a potential therapeutic target. *J Hepatol.* (2022)
- Alvisi G, Puccio S, Roychoudhuri R, Scirgolea C, Lugli E. High-Dimensional Single-Cell Profiling of Tumor-Infiltrating CD4⁺ Regulatory T Cells. *Methods Mol Biol.* (2023)
- Van Beek J, Roberto A, Puccio S, De Paoli F, Graziano G, Salviato E, Alvisi G, Zanon V, Scarpa A, Zaghi E, Calvi M, Di Vito C, Mineri R, Sarina B, De Philippis C, Santoro A, Mariotti J, Bramanti S, Ferrari F, Castagna L, Mavilio D, Lugli E. Single-cell profiling reveals the dynamics of cytomegalovirus-specific T cells in haploidentical hematopoietic stem cell transplantation. *Haematologica* (2021)
- Zaghi E, Calvi M, Puccio S, Spata G, Terzoli S, Peano C, Roberto A, De Paoli F, van Beek JJ, Mariotti J, De Philippis C, Sarina B, Mineri R, Bramanti S, Santoro A, Le-Trilling VTK, Trilling M, Marcenaro E, Castagna L, Di Vito C, Lugli E, Mavilio D. Single-cell profiling identifies impaired adaptive NK cells expanded after HCMV reactivation in haploidentical HSCT. *JCI Insight.* (2021).
- De Biasi S, Gibellini L, Lo Tartaro D, Puccio S, Rabacchi C, Mazza EMC, Brummelman J, Williams B, Kaihara K, Forcato M, Bicciato S, Pinti M, Depenni R, Sabbatini R, Longo C, Dominici M, Pellacani G, Lugli E, Cossarizza A. Circulating mucosal-associated invariant T cells identify patients responding to anti-PD-1 therapy. *Nat Commun.* (2021).
- Galletti S, De Simone G, Mazza EMC, Puccio S, Mezzanotte C, Bi T_M, Davydov AM, Metsger M, Scamardella E, Alvisi G, De Paoli F, Zanon V, Scarpa A, Camisa B, Colombo F, Anselmo A, Peano C, Polletti S, Mavilio D, Gattinoni L, K Boi S, Youngblood BA, Jones RE, Baird DM, Gostick E, Llewellyn-Lacey S, Ladell K, Price D, Chudakov DM, Newell EW, Casucci M, Lugli E. Two subsets of stem-like CD8⁺ memory T cell progenitors with distinct fate commitments in humans. *Nature Immunology* (2020).
- Soluri MF*, Puccio S*, Caredda G, Edomi P, D'Elia MM, Cianchi F, Troilo A, Santoro A, Sblattero D, Peano C. Defining the *Helicobacter pylori* Disease-Specific Antigenic Repertoire. *Frontiers in Microbiology* (2020)
- Alvisi G*, Brummelman J*, Puccio S*, Mazza EMC, Paoluzzi Tomada E, Losurdo A, Zanon V, Peano C, Colombo F, Scarpa A, Alloisio M, Vasanthakumar A, Roychoudhuri R, Pagani M, Lopci E, Novellis P, Blume J, Kallies A, Veronesi G and Lugli E. IRF4 instructs a molecular program of effector Treg differentiation and immune suppression in human cancer. *Journal of Clinical Investigation (JCI)* (2020)
- Di Salvo M, Puccio S, Peano C, Lacour S, Alifano P. RhoTermPredict: an algorithm for predicting Rho-dependent transcription terminators based on *Escherichia coli*, *Bacillus subtilis* and *Salmonella enterica* databases. *BMC bioinformatics* (2019).
- Pilipow, K. and Scamardella, E.; Puccio S., Gautam, S.; De Paoli, F.; Mazza, E.M.C.; De Simone, G.; Polletti, S.; Buccilli, M.; Zanon, V.; Di Lucia, P.; Iannacone, P.; Gattinoni, L. and Lugli, E. Antioxidant metabolism regulates CD8⁺ T memory stem cell formation and anti-tumor immunity. *JCI Insight* (2018).
- Soluri, M.F.; Puccio S.; Caredda, G.; Grillo, G.; Licciulli, F.; Consiglio, A.; Santoro, C.; Edomi, P.; Sblattero, D.; Peano, C. Interactome-Seq: A Protocol for Domainome Library Construction, Validation and Selection by Phage Display and Next Generation Sequencing. *Journal of Visualized Experiments* (2018)
- Pepe S, Pinatell E M, Fiore E, Puccio S, Peano C, Brignoli T, Vannini A, Danielli A, Scarlato V, Roncarati D. The *H. pylori* Heat-Shock Repressor HspR Controls Expression of Several Cellular Functions Via a Cooperative DNA-Binding Mechanism on a Limited Number of Promoters. In press on *Frontiers in Microbiology* (2018)
- Falchi A, Maccagni E, Puccio S, Peano C, De Castro C, Palmigiano A, Garozzo D, Martorana A, Polissi A, Dehò G, Sperandio P. Mutation and suppressor analysis of essential LPS-transport protein LptA reveals strategies to overcome severe outer membrane defects in *Escherichia coli* - *Journal of Bacteriology* (2017).^[1]^[2]^[3]^[4]^[5]^[6]^[7]^[8]^[9]^[10]^[11]^[12]^[13]^[14]^[15]^[16]^[17]^[18]^[19]^[20]^[21]^[22]^[23]^[24]^[25]^[26]^[27]^[28]^[29]^[30]^[31]^[32]^[33]^[34]^[35]^[36]^[37]^[38]^[39]^[40]^[41]^[42]^[43]^[44]^[45]^[46]^[47]^[48]^[49]^[50]^[51]^[52]^[53]^[54]^[55]^[56]^[57]^[58]^[59]^[60]^[61]^[62]^[63]^[64]^[65]^[66]^[67]^[68]^[69]^[70]^[71]^[72]^[73]^[74]^[75]^[76]^[77]^[78]^[79]^[80]^[81]^[82]^[83]^[84]^[85]^[86]^[87]^[88]^[89]^[90]^[91]^[92]^[93]^[94]^[95]^[96]^[97]^[98]^[99]^[100]^[101]^[102]^[103]^[104]^[105]^[106]^[107]^[108]^[109]^[110]^[111]^[112]^[113]^[114]^[115]^[116]^[117]^[118]^[119]^[120]^[121]^[122]^[123]^[124]^[125]^[126]^[127]^[128]^[129]^[130]^[131]^[132]^[133]^[134]^[135]^[136]^[137]^[138]^[139]^[140]^[141]^[142]^[143]^[144]^[145]^[146]^[147]^[148]^[149]^[150]^[151]^[152]^[153]^[154]^[155]^[156]^[157]^[158]^[159]^[160]^[161]^[162]^[163]^[164]^[165]^[166]^[167]^[168]^[169]^[170]^[171]^[172]^[173]^[174]^[175]^[176]^[177]^[178]^[179]^[180]^[181]^[182]^[183]^[184]^[185]^[186]^[187]^[188]^[189]^[190]^[191]^[192]^[193]^[194]^[195]^[196]^[197]^[198]^[199]^[200]^[201]^[202]^[203]^[204]^[205]^[206]^[207]^[208]^[209]^[210]^[211]^[212]^[213]^[214]^[215]^[216]^[217]^[218]^[219]^[220]^[221]^[222]^[223]^[224]^[225]^[226]^[227]^[228]^[229]^[230]^[231]^[232]^[233]^[234]^[235]^[236]^[237]^[238]^[239]^[240]^[241]^[242]^[243]^[244]^[245]^[246]^[247]^[248]^[249]^[250]^[251]^[252]^[253]^[254]^[255]^[256]^[257]^[258]^[259]^[260]^[261]^[262]^[263]^[264]^[265]^[266]^[267]^[268]^[269]^[270]^[271]^[272]^[273]^[274]^[275]^[276]^[277]^[278]^[279]^[280]^[281]^[282]^[283]^[284]^[285]^[286]^[287]^[288]^[289]^[290]^[291]^[292]^[293]^[294]^[295]^[296]^[297]^[298]^[299]^[300]^[301]^[302]^[303]^[304]^[305]^[306]^[307]^[308]^[309]^[310]^[311]^[312]^[313]^[314]^[315]^[316]^[317]^[318]^[319]^[320]^[321]^[322]^[323]^[324]^[325]^[326]^[327]^[328]^[329]^[330]^[331]^[332]^[333]^[334]^[335]^[336]^[337]^[338]^[339]^[340]^[341]^[342]^[343]^[344]^[345]^[346]^[347]^[348]^[349]^[350]^[351]^[352]^[353]^[354]^[355]^[356]^[357]^[358]^[359]^[360]^[361]^[362]^[363]^[364]^[365]^[366]^[367]^[368]^[369]^[370]^[371]^[372]^[373]^[374]^[375]^[376]^[377]^[378]^[379]^[380]^[381]^[382]^[383]^[384]^[385]^[386]^[387]^[388]^[389]^[390]^[391]^[392]^[393]^[394]^[395]^[396]^[397]^[398]^[399]^[400]^[401]^[402]^[403]^[404]^[405]^[406]^[407]^[408]^[409]^[410]^[411]^[412]^[413]^[414]^[415]^[416]^[417]^[418]^[419]^[420]^[421]^[422]^[423]^[424]^[425]^[426]^[427]^[428]^[429]^[430]^[431]^[432]^[433]^[434]^[435]^[436]^[437]^[438]^[439]^[440]^[441]^[442]^[443]^[444]^[445]^[446]^[447]^[448]^[449]^[450]^[451]^[452]^[453]^[454]^[455]^[456]^[457]^[458]^[459]^[460]^[461]^[462]^[463]^[464]^[465]^[466]^[467]^[468]^[469]^[470]^[471]^[472]^[473]^[474]^[475]^[476]^[477]^[478]^[479]^[480]^[481]^[482]^[483]^[484]^[485]^[486]^[487]^[488]^[489]^[490]^[491]^[492]^[493]^[494]^[495]^[496]^[497]^[498]^[499]^[500]^[501]^[502]^[503]^[504]^[505]^[506]^[507]^[508]^[509]^[510]^[511]^[512]^[513]^[514]^[515]^[516]^[517]^[518]^[519]^[520]^[521]^[522]^[523]^[524]^[525]^[526]^[527]^[528]^[529]^[530]^[531]^[532]^[533]^[534]^[535]^[536]^[537]^[538]^[539]^[540]^[541]^[542]^[543]^[544]^[545]^[546]^[547]^[548]^[549]^[550]^[551]^[552]^[553]^[554]^[555]^[556]^[557]^[558]^[559]^[560]^[561]^[562]^[563]^[564]^[565]^[566]^[567]^[568]^[569]^[570]^[571]^[572]^[573]^[574]^[575]^[576]^[577]^[578]^[579]^[580]^[581]^[582]^[583]^[584]^[585]^[586]^[587]^[588]^[589]^[590]^[591]^[592]^[593]^[594]^[595]^[596]^[597]^[598]^[599]^[600]^[601]^[602]^[603]^[604]^[605]^[606]^[607]^[608]^[609]^[610]^[611]^[612]^[613]^[614]^[615]^[616]^[617]^[618]^[619]^[620]^[621]^[622]^[623]^[624]^[625]^[626]^[627]^[628]^[629]^[630]^[631]^[632]^[633]^[634]^[635]^[636]^[637]^[638]^[639]^[640]^[641]^[642]^[643]^[644]^[645]^[646]^[647]^[648]^[649]^[650]^[651]^[652]^[653]^[654]^[655]^[656]^[657]^[658]^[659]^[660]^[661]^[662]^[663]^[664]^[665]^[666]^[667]^[668]^[669]^[670]^[671]^[672]^[673]^[674]^[675]^[676]^[677]^[678]^[679]^[680]^[681]^[682]^[683]^[684]^[685]^[686]^[687]^[688]^[689]^[690]^[691]^[692]^[693]^[694]^[695]^[696]^[697]^[698]^[699]^[700]^[701]^[702]^[703]^[704]^[705]^[706]^[707]^[708]^[709]^[710]^[711]^[712]^[713]^[714]^[715]^[716]^[717]^[718]^[719]^[720]^[721]^[722]^[723]^[724]^[725]^[726]^[727]^[728]^[729]^[730]^[731]^[732]^[733]^[734]^[735]^[736]^[737]^[738]^[739]^[740]^[741]^[742]^[743]^[744]^[745]^[746]^[747]^[748]^[749]^[750]^[751]^[752]^[753]^[754]^[755]^[756]^[757]^[758]^[759]^[760]^[761]^[762]^[763]^[764]^[765]^[766]^[767]^[768]^[769]^[770]^[771]^[772]^[773]^[774]^[775]^[776]^[777]^[778]^[779]^[780]^[781]^[782]^[783]^[784]^[785]^[786]^[787]^[788]^[789]^[790]^[791]^[792]^[793]^[794]^[795]^[796]^[797]^[798]^[799]^[800]^[801]^[802]^[803]^[804]^[805]^[806]^[807]^[808]^[809]^[810]^[811]^[812]^[813]^[814]^[815]^[816]^[817]^[818]^[819]^[820]^[821]^[822]^[823]^[824]^[825]^[826]^[827]^[828]^[829]^[830]^[831]^[832]^[833]^[834]^[835]^[836]^[837]^[838]^[839]^[840]^[841]^[842]^[843]^[844]^[845]^[846]^[847]^[848]^[849]^[850]^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CONFERENCE AND SEMINAR

- "Convegno Cortona Procarioti 2014" Organized by: "Società Italiana di Microbiologia Generale e Biotecnologie Microbiche". Cortona (AR) May, 2014.
- "11th International Workshop on Pathogenesis and Host Response in *Helicobacter* Infections" Organized by: "European Study Group on Pathogenesis and Immunology in *Helicobacter* Infections - ESGPIHI" - Helsingør (Denmark) July 2-5 2014.
- "XXVIIth International Workshop on *Helicobacter* & Microbiota in Inflammation & Cancer" Organized by: "European *Helicobacter* and Microbiota Study Group - EHMSG" - Rome 11-13 September 11-13 2014.
- "6th Congress of European Microbiologists" Organized by: "Federation of Europeans Microbiological Society FEMS" - Maastricht June 7-11 2015.
- "Human gut microbiome and diseases" Organized by: ITB-CNR – June 25-26 2015 – Palazzo delle Stelline, Milan.
- "Translating the natural history of human striatal development into pluripotent stem cell differentiation" Organized by: UniStem - November 21 2014, Milan.
- "Translational strategies toward eradication of neuroAIDS" Organized by: Kamel Khalili - March 13 2015 Centro didattico Via Golgi, Milan.
- "Uomo, Ambiente e Antibiotici" Organized by: Maria Luisa Villa - May 27 2015, Sala Napoleonica, Milan.
- "14th Annual Meeting of BITS 2017" Organized by Bioinformatics Italian Society - Cagliari July 5-7
- "15th Annual Meeting of BITS 2017" Organized by Bioinformatics Italian Society - Torino

EDUCATION AND TRAINING

- October 2019, Workshop Single Cell RnaSeq. Leysin (SW).
- June 2017. Summer school in advanced computational metagenomics. Elixir-IIB Training Programme. Noicattero(BA).
- July 2016. Communication of scientific research (CRS). University of Milan.
- October 2015. Computational Genomics – A hands-on course in Data Analysis . Berlin Institute for Medical Systems Biology Max Delbruck Center.
- June 2014. RNA-Seq Workshop for the Bioinformatician. Settore didattico Via Celoria Milan.

SOFTWARE PATENT

- <https://wopper.ba.itb.cnr.it/> (WOPPER) Webserver for Position Related data analysis of gene Expression in Prokaryotes
- <http://interactomeseq.ba.itb.cnr.it/> (INTERACTOMESEQ) A web server for the identification and profiling of domains and epitopes from Phage Display and Next Generation Sequencing data.
- <https://github.com/luglilab/Cytophenograph> (CYTOPHENOGRAPH) Cytophenograph is a computational pipeline/ Conda environment that was developed to identifies subpopulations in high-dimensional single-cell data.

GRANTS

AIRC fellowship “Francesco Saccon”; project title “Defining the core gene expression of stem-like T cell differentiation to ameliorate the anti-tumor activity of CAR T cells.” (2018-2021)

I give the authorization for the treatment of my personal data according to Italian Law D. Lgs. 196/2003