

Curriculum vitae

PERSONAL INFORMATION Zein Mersini Besharat

EDUCATION AND TRAINING

- 10/2013–12/2016 PhD in Molecular Medicine with Honours
 "Sapienza" University of Rome, Department of Molecular Medicine, Rome (Italy)
- 2005–10/06/2013 Diploma of Electrical and Computer Engineering, Master of Engineering Communications Degree: 7.12/10
"Very Good"
 School of Electrical and Computer Engineering, National Technical University of Athens, Athens (Greece)

 Direction of specialization: Communications
 Flows of specialization:
 Flow I: Biomedical
 Flow Y: Computer Systems
 Flow D: Communications and Computer Networks
 Flow T: Waves and Telecommunications

 Diploma thesis title: "Implementation of neural network with feedback for predicting glucose in patients with type 1 diabetes mellitus"

WORK EXPERIENCE

- 25/09/2017–24/01/2018 Post-doc bioinformatics fellowship
 Rome (Italy)

 Identification of circulating RNA through next generation sequencing, in detail next generation sequencing data analysis of Type 2 Diabetes Mellitus (T2DM) patients before and after treatment.

PERSONAL SKILLS

Mother tongue(s) Greek

Foreign language(s)

| | UNDERSTANDING | | SPEAKING | | WRITING |
|---------|---------------|---------|--------------------|-------------------|---------|
| | Listening | Reading | Spoken interaction | Spoken production | |
| English | C2 | C2 | C2 | C2 | C2 |
| Arabic | C2 | C2 | C2 | C2 | C2 |
| Italian | C1 | C1 | C1 | C1 | C1 |
| German | B2 | B2 | B2 | B2 | B2 |
| French | A1 | A1 | A1 | A1 | A1 |

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user
 Common European Framework of Reference for Languages

Digital skills

| SELF-ASSESSMENT | | | | |
|------------------------|-----------------|------------------|-----------------|-----------------|
| Information processing | Communication | Content creation | Safety | Problem-solving |
| Proficient user | Proficient user | Proficient user | Proficient user | Proficient user |

Digital skills - Self-assessment grid

Applications: Adobe Acrobat Pro, Adobe Dreamweaver, Adobe Fireworks, Adobe Flash Professional, Adobe Illustrator, Adobe Media Encoder, Adobe Photoshop, Filemaker Pro, Final Cut Pro, Google Chrome, Internet Explorer, Matlab, Excel, Word, Outlook, Powerpoint, Mozilla Firefox

Programming Languages: Assembly, Pascal, C#, Java, Haskell, HTML, Prolog

Operating Systems: Unix, Windows 7, Windows Vista, Windows XP, MS-DOS

NGS DATA ANALYSIS

mRNA and miRNA analysis

RNA-seq data analysis using Chipster, FastQC quality control, Mapping, Differential Expression (DESeq, edgeR) and Pathway analysis with Genomatix, sRNAbench for miRNA analysis, Differential Expression of mRNA using R (DESeq), use of Genome Browsers (UCSC), Annotation and Pathways (DAVID, KEGG), Design of Primers

ADDITIONAL INFORMATION

Honours and awards

2017 – 2018 Fellowship awarded for the Fondazione Roma Project “ Non communicable diseases in the elderly: Circulating microRNAs and long non coding RNA as novel biomarkers of response to therapy in metabolic diseases”

2013 - 2016 Three year scholarship for the completion of PhD in Molecular Medicine

1999 - 2005 Excellence Award in all classes of secondary education Gymnasium and Lyceum

Conferences attended

29 January 2018

"Medical writing" workshop, Sapienza University of Rome, Italy

27-29 September 2017

"Training Course on Best practices for RNA-Seq data analysis", ELIXIR-IIB Training, University of Salerno, Italy

18 September 2017

"Strengthening the Mediterranean partnership in the field of public health", Colorectal Cancer Mediterranean Network, Istituto Superiore di Sanità, Rome, Italy

6-9 September 2017

"Bioinformatics and its Applications in Health, Biodiversity and the Environment", Foundation for Research and Technology Hellas (FORTH), Heraklion, Greece

19 June 2017

"Role of nitric oxide and cyclic GMP in cell signaling", Nobel Laureate in Medicine 1998 Prof. Ferid Murad, Rome, Italy

19-20 January 2017

"Opening Symposium for the new Treatment and Research Center

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for Pediatric Oncology and Hematology", Heidelberg, Germany

15-16 September 2016

SIOP-LGG preclinical working group, Paris, France

12-14 April 2016

"An introductory course to RNA-seq", MBC, Via Nizza 52, Torino, Italy

5-7 October 2015

"High Throughput Sequencing data analysis - HTS BeMM 2015", Sapienza University of Rome, Italy

17-18 September 2015

SIOP-LGG preclinical working group, Rome, Italy

20-24 October 2014

"2nd Bioinformatics introductory Course", Perugia, Italy

13-14 October 2014

"Practical introduction in RNA-seq Bioinformatics", Leipzig, Germany

16-17 October 2014

"miRNA detection", Leipzig, Germany

8-11 April 2014

"Promoter analysis and NGS data analysis training using Genomatix", Munich, Germany

7-10 January 2014

"RNA-seq data analysis workshop" (CSC - IT Center for Science LTD, Espoo, Finland)

18-19 November 2013

"5th Annual Next Generation Sequencing Congress and Single Cell Analysis Congress 2013" (ExCel Exhibition Center London, UK)

26-28 April 2013

6th Panhellenic Conference of Electrical and Computer Engineering Students on "Innovation: The response of the new engineer in modern dilemmas" (Convention Center Novotel Athens, Athens, Greece)

12 November 2011

Scientific conference on "Technological Developments in the Treatment of Diabetes" (Private clinic MITERA, Athens, Greece)

21-23 May 2009

9th Panhellenic Conference of Laparoscopic Surgery and International Symposium on "Cooperation in the Evolution of Surgery" (Megaron Athens International Conference Centre, Athens, Greece) - Demonstration of robotic surgical system da vinci

Further education 3 March 2014 - June 2014

Bioinformatic Methods II

Prof. Nicholas James Provard

(Coursera - University of Toronto)

13 January 2014 - 3 March 2014

Bioinformatic Methods I

Prof. Nicholas James Provard

(Coursera - University of Toronto)

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4 November 2013 - 14 January 2014

Bioinformatics Algorithms (Part 1)

Prof. Phillip E. C. Compeau, Prof. Nikolay Vyahhi, Prof Pavel Pevzner
(Coursera - University of California, San Diego)

22 April 2013 - 1 July 2013

Machine Learning

Prof. Andrew Ng

(Coursera - Stanford University)

19 April 2013 - 14 June 2013

Computational Neuroscience

Prof. Adrienne Fairhall, Prof. Rajesh P. N. Rao

(Coursera - University of Washington)

Research projects

Ongoing:

2014 - High-throughput sequencing : RNA-seq, miR-seq data analysis

Completed:

2013 - "Implementation of neural network with feedback for predicting glucose in patients with type 1 diabetes mellitus"

2010 - "Analysis of gray-scale medical images"

2009 - "Delirium in I.C.U patients and the mental status changes in patients hospitalized in I.C.U"

Publications

Researcher identifiers

ORCID: 0000-0003-0317-9854

ResearcherID: A-3898-2015

Scopus Author ID: 56595254100

Google Scholar: Besharat ZM

Scientific production

Publications: 23

H-index: 8 (Scopus), 8 (Google Scholar)

Book chapters: 1

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Publications

Zwergel C., Romanelli A., Stazi G., Besharat Z.M., Catanzaro G., Tafani M. and Valente S. and Mai A. 2018. Application of Small Epigenetic Modulators in Pediatric Medulloblastoma. *Frontiers in Pediatrics*. 6, p.370. doi: 10.3389/fped.2018.00370.

Besharat Z.M., Sabato C., Po A., Gianni F., Abballe L., Napolitano M., Miele E., Giangaspero F., Vacca A., Catanzaro G. and Ferretti E., 2018. Low Expression of miR-466f-3p Sustains Epithelial to Mesenchymal Transition in Sonic Hedgehog Medulloblastoma Stem Cells Through Vegfa-Nrp2 Signaling Pathway. *Frontiers in Pharmacology*. 9. doi: 10.3389/fphar.2018.01281.

Abballe L., Mastronuzzi A., Miele E., Carai A., Besharat Z.M., Moretti M., De Smaele E., Giangaspero F., Locatelli F., Ferretti E. and Po A., 2018. Numb Isoforms Deregulation in Medulloblastoma and Role of p66 Isoform in Cancer and Neural Stem Cells. *Frontiers in Pediatrics*. 6, p.315. doi: 10.3389/fped.2018.00315.

Gasparri, M.L., Besharat, Z.M., Farooqi, A.A., Khalid, S., Taghavi, K., Besharat, R.A., Sabato, C., Papadia, A., Panici, P.B., Mueller, M.D. and Ferretti, E., 2018. MiRNAs and their interplay with PI3K/AKT/mTOR pathway in ovarian cancer cells: a potential role in platinum resistance. *Journal of Cancer Research and Clinical Oncology*, pp.1-6. doi: 10.1007/s00432-018-2737-y.

Po A., Abballe L., Sabato C., Gianni F., Chiacchiarini M., Catanzaro G., De Smaele E., Giangaspero F., Ferretti E., Miele E., Besharat Z.M. Sonic Hedgehog Medulloblastoma Cancer Stem Cells Mirnome and Transcriptome Highlight Novel Functional Networks. *Int. J. Mol. Sci.* 2018, 19, 2326. doi: 10.3390/ijms19082326.

Ferrandino F., Bernardini G., Tsaouli G., Grazioli P., Campese A.F., Noce C., Ciuffetta A., Vacca A., Besharat Z.M., Bellavia D., Screpanti I., Felli M.P. Intrathymic Notch3 and CXCR4 combinatorial interplay facilitates T-cell leukemia propagation. *Oncogene*. 2018. doi: 10.1038/s41388-018-0401-2.

Diluvio G., Del Gaudio F., Giuli M.V., Franciosa G., Giuliani E., Palermo R., Besharat Z.M., Pignataro M.G., Vacca A., d'Amati G., Maroder, M., Talora C., Capalbo C., Bellavia D. and Checquolo S. 2018. NOTCH3 inactivation increases triple negative breast cancer sensitivity to gefitinib by promoting EGFR tyrosine dephosphorylation and its intracellular arrest. *Oncogenesis*, 7(5), p.42. doi: 10.1038/s41389-018-0051-9.

Catanzaro G., Besharat Z.M., Chiacchiarini M., Abballe L., Sabato C., Vacca A., Borgiani P., Dotta F., Tesaro M., Po A., Ferretti E. Circulating MicroRNAs in Elderly Type 2 Diabetic Patients. *International Journal of Endocrinology*. vol. 2018, Article ID 6872635, 11 pages, 2018. doi:10.1155/2018/6872635.

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Catanzaro G., Besharat Z.M., Miele E., Chiacchiarini M., Po A., Carai A., Marras C.E., Antonelli M., Badiali M., Raso A., Mascelli S., Schimpf D., Stichel D., Tartaglia M., Capper D., von Deimling A., Giangaspero F., Mastronuzzi A., Locatelli F., Ferretti E. The miR-139-5p regulates proliferation of supratentorial paediatric low-grade gliomas by targeting the PI3K/AKT/mTORC1 signalling. *Neuropathology and Applied Neurobiology* 2018. doi: 10.1111/nan.12479.

Besharat Z.M., Abballe L., Cicconardi F., Bhutkar A., Grassi L., Le Pera L., Moretti M., Chinappi M., D'Andrea D., Mastronuzzi A., Ianari A., Vacca A., De Smaele E., Locatelli F., Po A., Miele E., Ferretti E. Foxm1 controls a pro-stemness microRNA network in neural stem cells. *Scientific Reports* 2018;8:3523. doi: 10.1038/s41598-018-21876-y.

Bisicchia E., Sasso V., Catanzaro G., Leuti A., Besharat Z.M., Chiacchiarini M., Molinari M., Ferretti E., Viscomi M.T., Chiurchiù V. Resolvin D1 Halts Remote Neuroinflammation and Improves Functional Recovery after Focal Brain Damage Via ALX/FPR2 Receptor-Regulated MicroRNAs. *Molecular Neurobiology*. 2018:1-2. doi: <https://doi.org/10.1007/s12035-018-0889-z>.

Catanzaro G., Sabato C., Russo M., Rosa A., Abballe L., Besharat Z.M., Po A., Miele E., Bellavia D., Chiacchiarini M., Gessi M., Peruzzi G., Napolitano M., Antonelli M., Mastronuzzi A., Giangaspero F., Locatelli F., Screpanti I., Vacca A., Ferretti E. Loss of miR-107, miR-181c and miR-29a-3p Promote Activation of Notch2 Signaling in Pediatric High-Grade Gliomas (pHGGs). *International Journal of Molecular Sciences*. 2017; 18(12):2742; doi:10.3390/ijms18122742.

Miele E., Valente S., Alfano V., Silvano M., Mellini P., Borovika D., Marrocco B., Po A., Besharat Z.M., Catanzaro G., Battaglia G., Abballe L., Zwergel C., Stazi G., Milite C., Castellano S., Tafani M., Trapencieris P., Mai A., Ferretti E. The histone methyltransferase EZH2 as a druggable target in SHH medulloblastoma cancer stem cells. *Oncotarget*, 2 August 2017; doi: <https://doi.org/10.18632/oncotarget.19782>.

Miele E., Po A., Begalli F., Antonucci L., Mastronuzzi A., Marras C.E., Carai A., Cucchi D., Abballe L., Besharat Z.M., Catanzaro G., Infante P., Di Marcotullio L., Canettieri G., De Smaele E., Screpanti I., Locatelli F., Ferretti E. β -arrestin1-mediated acetylation of Gli1 regulates Hedgehog/Gli signaling and modulates self-renewal of SHH medulloblastoma Cancer Stem Cells. *BMC Cancer*. 2017. 17:488. doi: 10.1186/s12885-017-3477-0.

Po A., Silvano M., Miele E., Capalbo C., Eramo A., Salvati V., Todaro M., Besharat Z.M., Catanzaro G., Cucchi D., Coni S., Di Marcotullio L., Canettieri G., Vacca A., Stassi G., De Smaele E., Tartaglia M., Screpanti I., De Maria R. and Ferretti E. Noncanonical GLI1 signalling promotes stemness features and in-vivo growth in lung adenocarcinoma. *Oncogene advance online publication*, 3 April 2017; doi:10.1038/onc.2017.91.

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Po A., Begalli F., Abballe L., Alfano V., Besharat Z.M., Catanzaro G., Vacca A., Napolitano M., Tafani M., Giangaspero F., Locatelli F., Ferretti E., Miele E. β -Arrestin1/miR-326 Transcription Unit Is Epigenetically Regulated in Neural Stem Cells Where It Controls Stemness and Growth Arrest. *Stem Cells International*, vol. 2017, Article ID 5274171, 2017. doi:10.1155/2017/5274171

Catanzaro G., Curcio M., Cirillo G., Spizzirri U.G., Besharat Z.M., Abballe L., Vacca A., Iemma F., Picci N. and Ferretti E., 2017. Albumin nanoparticles for glutathione-responsive release of cisplatin: new opportunities for medulloblastoma treatment. *International Journal of Pharmaceutics*.

Catanzaro G.*, Besharat Z. M.*, Garg N., Ronci M., Pieroni L., Miele E., Mastronuzzi A., Carai A., Alfano V., Po A., Screpanti I., Locatelli F., Urbani A. & Ferretti E. 2016. Micromas-Proteomic Networks Characterizing Human Medulloblastoma-Cells. *Stem Cells International*, 2016, E2683042. *(co-senior authorsip)

Dolci M., Migliau G., Besharat Z. M., Besharat L. K. & Gallottini L. 2016. Prevalence And Distribution Of Endodontic Treatments And Apical Periodontitis In An Italian Population Sample. *European Journal Of Inflammation*, 14, 48-53.

Franciosa G., Diluvio G., Gaudio F. D., Giuli M. V., Palermo R., Grazioli P., Campese A. F., Talora C., Bellavia D., D'amati G., Besharat Z. M., Nicoletti C., Siebel C. W., Choy L., Rustighi A., Sal G. D., Screpanti I. & Checquolo S. 2016. Prolyl-Isomerase Pin1 Controls Notch3 Protein Expression And Regulates T-ALL Progression. *Oncogene*.

Ronci M., Catanzaro G., Pieroni L., Po A., Besharat Z. M., Greco V., Levi Mortera S., Screpanti I., Ferretti E. & Urbani A. 2015. Proteomic Analysis Of Human Sonic Hedgehog (Shh) Medulloblastoma Stem-Like Cells. *Mol Biosyst*.

Silvano M., Miele E., Valerio M., Casadei L., Begalli F., Campese A., Besharat Z.M., Alfano V., Abballe L., Catanzaro G., Napolitano M., Vacca A., Screpanti I., Manetti C., Ferretti E. & Po A. 2015. Consequences Of Simulated Microgravity In Neural Stem Cells: Biological Effects And Metabolic Response. *Journal Of Stem Cell Research & Therapy*, 5.

Pelullo M., Quaranta R., Talora C., Checquolo S., Cialfi S., Felli M., Te Kronnie G., Borgia C., Besharat Z. M., Palermo R., Di Marcotullio L., Capobianco A., Gulino A., Screpanti I. & Bellavia D. 2014. Notch3/Jagged1 Circuitry Reinforces Notch Signaling And Sustains T-ALL. *Neoplasia*, 16, 1007-17.

Book chapters

Gasparri M.L., Besharat Z.M., Besharat R.A., Ruscito I., Nirgianakis K., Farooqi A.A., Papadia A., Ferretti E., Benedetti Panici P., Mueller D.M. Current knowledge of mirnas as biomarkers in breast cancer; in Fayyaz S, Farooqi AA (eds): *Recent trends in cancer biology: Spotlight on signaling cascades and micromas: Cell signaling pathways and micromas in cancer biology*, Springer, 2018. doi: 10.1007/978-3-319-71553-7_12.

Presentations

EACR-ESMO Joint Conference on Liquid Biopsies

15-17 May 2019, Centro Congressi Giovanni XXIII, Bergamo, Italy

Poster 18: "MicroRNAs profiles in liquid biopsies from patients with Medullary Thyroid Carcinoma"

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Zein Mersini Besharat, Giuseppina Catanzaro, Martina Chiacchiarini, Silvia Cantara, Cristina Romei, Vittoria Barchiesi, Antonella Verrienti, Claudia Sabato, Maria Luisa Sponziello, Anna Citarella, Luana Abballe, Sofia Trocchianesi, Sandro Cardinale, Margherita Cerrone, Raffaele Ciampi, Valeria Ramundo, Agnese Po, Sebastiano Filetti, Francesco Dotta, Cosimo Durante, Luciano Pezzullo, Maria Grazia Castagna, Rossella Elisei, Elisabetta Ferretti

34th SIPMeT National Congress, 4th Joint Meeting of Pathology and Laboratory Medicine, Second Joint Meeting in collaboration with ASIP-AMP-UEMS-WASPALM

23-25 October 2018, Centro Congressi Hotel Baia Verde, Catania, Italy

Poster P053: "microRNA networks involved in neural stem cells maintenance"

Besharat Zein Mersini, Abballe Luana, Moretti Marta, Vacca Alessandra, De Smaele Enrico, Po Agnese, Maroder Marella, Ferretti Elisabetta

17th International Symposium on Pediatric Neuro-Oncology, ISPNO

12-15 June 2016, Liverpool, UK, Poster LG-38: "MicroRNA Profiling Of Pediatric Low-Grade Gliomas (pLGGs)"

Giuseppina Catanzaro, Zein Mersini Besharat, Angela Mastronuzzi, Andrea Carai, Evelina Miele, Agnese Po, Vincenzo Alfano, Marianna Silvano, Manila Antonelli, Felice Giangaspero, Franco Locatelli, Elisabetta Ferretti.

17th International Symposium on Pediatric Neuro-Oncology, ISPNO

12-15 June 2016, Liverpool, UK, Poster MB-34: "Circulating MicroRNAs In Group 4 Medulloblastoma Patients"

Evelina Miele, Vincenzo Alfano, Zein Mersini Besharat, Giuseppina Catanzaro, Angela Mastronuzzi, Andrea Carai, Agnese Po, Antonella Cacchione, Luana Abballe, Felice Giangaspero, Franco Locatelli, Elisabetta Ferretti.

American Association for Cancer Research. "AACR 2016: Abstracts 1-2696."

16-20 April 2016, New Orleans, Louisiana, USA, Poster: "Circulating microRNA signature in group 4 medulloblastoma patients."

Evelina Miele, Vincenzo Alfano, Zein Mersini Besharat, Giuseppina Catanzaro, Angela Mastronuzzi, Andrea Carai, Agnese Po, Luana Abballe, Antonella Cacchione, Franco Locatelli, Elisabetta Ferretti.

American Association for Cancer Research. "AACR 2016: Abstracts 1-2696."

16-20 April 2016, New Orleans, Louisiana, USA, Poster: "

"Non-canonical Hedgehog/Gli1 signaling drives lung adenocarcinoma stem cells survival and its targeting inhibits CSC-derived tumors."

Agnese Po, Marianna Silvano, Evelina Miele, Adriana Eramo, Matilde Todaro, Carlo Capalbo, Valentina Salvati, Giovanni Sette, Danilo Cucchi, Zein M. Besharat, Gianluca Canettieri, Lucia Di Marcotullio, Isabella Screpanti, Giorgio Stassi, Ruggero De Maria, Ann Zeuner, Enrico De Smaele, Elisabetta Ferretti

"Anticancer Drug Action and Drug Resistance: from Cancer Biology to the Clinic", 20-23 June 2015, Firenze, Poster presentation: "Proteomic analysis of human sonic hedgehog(SHH) Medulloblastoma stem-like cells",

Z.M. Besharat, G. Catanzaro, M. Ronci, V. Alfano, L. Abballe, L. Pieroni, I. Screpanti, A. Urbani and E. Ferretti.