Federica VITI, Ph.D.
Researcher at Institute of Biophysics, National Research Council of Italy, Genova, Italy.
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MAIN RESEARCH AREA

Federica Viti is an Italian bioengineer. She started working in 2004 in the field of Bioinformatics, exploring approaches for analysis of high-throughput techniques data in molecular biology, with particular interest for transcriptomics. In 2013 she obtained a grant for working on the mechanotranduction signalling pathway, and since then she expanded her research interest also to Mechanobiology, consisting in the evaluation of interactions between living cells and forces. Currently, Federica Viti works on granted projects on both research fields, performing analysis on Next Generation Sequencing (NGS) data and characterizing morpho-mechanical features of living cells. In particular, with her group she is now focusing on visceral myopathy, a rare genetic 'mechanical' disease, orphan of therapy, difficult to be diagnosed, and with unknown onset molecular mechanism.

EDUCATION AND EXPERIENCE

- 2014-today: Member of research staff at Institute of Biophysics, CNR, Genoa, Italy
- 2018: Collaborator at Italian Institute of Technology, Genoa, Italy
- 2005-2013: Research fellow at Institute of Biomedical Technologies, CNR, Milan, Italy
- 2009: Ph.D. degree in Bioengineering, University of Genoa, Italy
- Jan-Jul 2008: Visiting research fellow at Erasmus Medical Center, Rotterdam, NL
- 2004: Degree in Biomedical Engineering, University of Genoa, Italy

FUNDED PROJECTS and AGREEMENTS

Type: National project. Title: **The calcium-triggered molecular scenario underlying mutant ACTG2-caused defective contraction.** Funder: Telethon Foundation. Call: 'Telethon Spring Seed Grant 2021'. Role: Project's PI. Ref: GSA21B001. Starting year: 2021.

Type: International project. Title: **European Forum on Visceral Myopathy (EFVM2022)**. Funder: European Joint Programme on Rare Diseases. Call: 'Networking Support Scheme'. Role: Project's principal applicant. Ref: 463001010. Starting year: 2021.

Type: National project. Title: **Approccio combinato di genetica molecolare e morfo-meccanica cellulare: uno studio pilota volto allo sviluppo di un possibile trattamento della miopatia viscerale (CIPO)**. Funder: Alessandra Bono Foundation (https://fondazionealessandrabono.it/). Role: Unit responsible. Ref: 003.001.319. Starting year: 2019.

Type: National project. Title: **Sensori wireless miniaturizzati a basso consumo per l'integrazione in dispositivi indossabili di monitoraggio bio-funzionale.** Funder: Regione Liguria. Call: POR-FSE Liguria 2014-2020 – asse 3. Role: Scientific responsible. Ref: RLFO18ASSRIC/72/1. Starting year: 2020.

Type: National project. Title: **Whole Genome Sequencing into the diagnostic workflow of rare diseases: a cost-effectiveness evaluation in a heterogeneous population of patients with inconclusive Whole Exome Sequencing.** Funder: Ministero Italiano della Salute. Call: Ricerca Finalizzata 2018. Role: Scientific responsible. Ref: RF-2018-12366314. Starting year: 2020.

Type: National project. Title: **Utilizzo di High Resolution Melting su piattaforma embedded per l'analisi di microsatelliti finalizzata all'identificazione univoca dell'individuo**. Funder: Regione Liguria. Call: POR-FSE Liguria 2014-2020 – asse 3. Role: Scientific responsible. Ref: RLFO18ASSRIC/73/1. Starting year: 2019.

Type: National scientific agreement. Funder: Flairbit srl. Role: Agreement responsible. Starting year: 2019.

Type: National scientific agreement. Funder: Gruppo Sigla srl. Role: Agreement responsible. Starting year: 2019.

Type: National scientific agreement. Funder: Sitem srl. Role: Agreement responsible. Starting year: 2019.

Type: National project. Title: **Sviluppo di una piattaforma per lo studio della meccanotrasduzione: dalla singola molecola alla cellula vivente.** Funder: Ministero dell'Università e della Ricerca. Call: Futuro in Ricerca 2013. Role: Unit responsible. Ref: RBFR13V4M2. Starting year: 2014.

OTHER ACTIVITIES

- scientific research tutor for research fellows, master thesis and PhD students
- part of scientific and program committee of national and international workshops in the Bioinformatics field
- reviewer for International journals in Bioinformatics and Mechanobiology fields
- member of the Advisory Board of the Institute of Biophysics (CNR)
- member of scientific committee of 'POIC e dintorni' and 'Uniti per la PIPO' Italian PAOs, active in the field of visceral myopathy

PUBLICATIONS:

Journals

C. Mennella*, S. Alloisio, A. Novellino, **F. Viti**. "Characteristics and Applications of Technology-aided Hand Functional Assessment: a Systematic Review". Sensors 2022, 22(1), 199; https://doi.org/10.3390/s22010199

Pensieri, S.*; **Viti, F**.; Moser, G.; Serpico, S.B.; Maggiolo, L.; Pastorino, M.; Solarna, D.; Cambiaso, A.; Carraro, C.; Degano, C.; et al. Evaluating LoRaWAN Connectivity in a Marine Scenario. J. Mar. Sci. Eng. 2021, 9, 1218. https://doi.org/10.3390/jmse9111218

D. Obino, M. Vassalli, A. Franceschi, A. Alessandrini, P. Facci, **F. Viti**. "An Overview on Microfluidic Systems for Nucleic Acids Extraction from Human Raw Samples". Sensors 2021, 21(9), 3058; https://doi.org/10.3390/s21093058 - 27 Apr 2021

P. Gavazzo, **F. Viti***, H. Donnelly, M. Azevedo Gonzalez Oliva, M. Salmeron-Sanchez, M. J. Dalby, M. Vassalli. "Biophysical Phenotyping of Mesenchymal Stem Cells along the Osteogenic Differentiation Pathway". Cell Biology and Toxicology. 2021 Jan 9. doi: 10.1007/s10565-020-09569-7.

A. Bartolozzi, **F. Viti***, S. De Stefano, F. Sbrana, L. Petecchia, P. Gavazzo, M. Vassalli. "Development of label-free biophysical markers in osteogenic maturation". Journal of Mechanical Behaviour of Biomedical Materials. Volume 103, March 2020, 103581.

G. La Sala, N. Olieric, A. Sharma, **F. Viti**, F. de Asis Balaguer Perez, L. Huang, J.R.Tonra, G.K. Lloyd, S. Decherchi, J. Fernando Díaz, M.O. Steinmetz, A. Cavalli. "Structure, Thermodynamics, and Kinetics of Plinabulin Binding to Two Tubulin Isotypes". Chem 2019. https://doi.org/10.1016/j.chempr.2019.08.022

R. Alfieri, M. Vassalli, **F. Viti**. "Flow-induced mechanotransduction in skeletal cells". Biophys Rev. 2019 Oct; 11(5): 729–743.

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L. Petecchia, **F. Viti**, F. Sbrana, M. Vassalli, P. Gavazzo. A biophysical approach to quantify skeletal stem cells trans-differentiation as a model for the study of osteoporosis. Biophys Chem. 2017, pii: S0301-4622(17)30123-0.

F. Sbrana, E. Landini, N. Gjeci, **F. Viti**, E. Ottaviani, M. Vassalli. OvMeter: an automated 3D-integrated opto-electronic system for Ostreopsis cf. ovata bloom monitoring. J. Appl. Phycology (2017) Volume 29, Issue 3, pp 1363–1375

S. Alloisio, P. Garbati, **F. Viti**, S. Dante, R. Barbieri, G. Arnaldi, A. Petrelli, A. Gigoni, P. Giannoni, R. Quarto, M. Nobile, M. Vassalli, A. Pagano. Generation of a Functional Human Neural Network by NDM29 Overexpression in Neuroblastoma Cancer Cells, Molecular Neurobiology, 1–10 (2016). doi:10.1007/s12035-016-0161-3

F. Viti, M. Landini, A. Mezzelani, L. Petecchia, L. Milanesi, S. Scaglione. Osteogenic Differentiation of MSC through Calcium Signaling Activation: Transcriptomics and Functional Analysis. PLoS ONE 2016. 11(2): e0148173.. [doi: http://dx.doi.org/10.1371/journal.pone.0148173]

L. Soattin, M. Fiore, P. Gavazzo, **F. Viti**, P. Facci, R. Raiteri, F. Difato, M. Pusch, M.Vassalli. The biophysics of piezo1 and piezo2 mechanosensitive channels. Biophysical Chemistry 2016, Vol 208, 26–33 [doi:10.1016/j.bpc.2015.06.013]

F. Viti, S. Scaglione, A. Orro, L. Milanesi. Guidelines for managing data and processes in bone and cartilage tissue engineering. BMC Bioinformatics. 2014; 15 Suppl 1:S14. [http://www.ncbi.nlm.nih.gov/pubmed/24564199]

I. Merelli, A. Calabria, P. Cozzi, **F. Viti**, E. Mosca, L. Milanesi. SNPranker 2.0: a gene-centric data mining tool for diseases associated SNP prioritization in GWAS. BMC-Bioinformatics, 2013, 14(Suppl 1):S9 [http://www.biomedcentral.com/1471-2105/14/S1/S9]

I.Merelli, **F.Viti**, L.Milanesi. IBDsite: a Galaxy-interacting, integrative database for supporting Inflammatory Bowel Disease high throughput data analysis. BMC Bioinformatics 2012, 13(Suppl 14):S5 [http://www.biomedcentral.com/1471-2105/13/S14/S5].

D. Corrada, **F. Viti**, I. Merelli, C. Battaglia, L. Milanesi. myMIR: a genome-wide microRNA targets identification and annotation tool. Briefings in Bioinformatics, 2011. Vol 12(6):588-600. [http://www.ncbi.nlm.nih.gov/pubmed/22021901]

F.Viti, I.Merelli, A.Calabria, P.Cozzi, E.Mosca, R.Alfieri, L.Milanesi. Ontology-based resources for bioinformatics analysis. Int. J. Metadata, Semantics and Ontologies, Vol. 6(1), 2011. [http://inderscience.metapress.com/content/y22277v81305881m/]

A. Calabria, E. Mosca, **F. Viti**, I. Merelli, L. Milanesi. SNPRanker: a tool for identification and scoring of SNPs associated to target genes. J Integr Bioinform. 2010. Vol 25;7(3). [http://biecoll.ub.uni-bielefeld.de/volltexte/2010/5038/pdf/jib_138.pdf]

E. Mosca, R. Alfieri, I. Merelli, **F. Viti**, A. Calabria, L. Milanesi. A multilevel data integration resource for breast cancer study. BMC Syst Biol. 2010. Vol3;4:76.[http://www.ncbi.nlm.nih.gov/pubmed/20525248]

F. Viti, I. Merelli, M. Timmermans, M. den Bakker, F. Beltrame, P. Riegman, L. Milanesi. Semi-automatic identification of punching areas for tissue microarray building: the tubular breast cancer pilot study. BMC Bioinformatics 2010, 11:566. [http://www.ncbi.nlm.nih.gov/pubmed/21087464]

F. Viti, I. Merelli, A. Caprera, B. Lazzari, A. Stella, L. Milanesi. Ontology-based, Tissue MicroArray oriented, image centered tissue bank. BMC Bioinformatics, 9(4):S4, 2008. [http://www.ncbi.nlm.nih.gov/pubmed/18460177]

I. Porro, L. Torterolo, L. Corradi, M. Fato, A. Papadimitropoulos, S. Scaglione, A. Schenone, **F. Viti**. A Grid-based solution for management and analysis of microarrays in distributed experiments. BMC Bioinformatics 2007, 8(Suppl 1):S7. [http://www.ncbi.nlm.nih.gov/pubmed/17430574]

F. Beltrame, A. Papadimitropoulos, I. Porro, S. Scaglione, A. Schenone, L. Torterolo, **F. Viti**. GEMMA - A Grid Environment for Microarray Management and Analysis in Bone Marrow Stem Cells experiments. Future Generation Computer System, 2007, Vol 23(3), 382-390. [http://www.sciencedirect.com/science/article/pii/S0167739X06001427]

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F. Beltrame, R. Cancedda, B. Canesi, A. Crovace, M. Mastrogiacomo, R. Quarto, S. Scaglione, C. Valastro, **F. Viti**. A simple non invasive computerized method for the assessment of bone repair within osteoconductive porous bioceramic grafts. Biotechnology and Bioengineering 2005, 92(2):189-98. [http://www.ncbi.nlm.nih.gov/pubmed/16007593]

Conferences and proceedings

Bianconi L., Lechiara Y., Bixio L., Palermo R., Pensieri S., Viti F., Bozzano R. Edge and fog computing for IoT: a case study for citizen well-being, Proc. of EAI Edge-IoT 2021 - 2nd EAI International Conference on Intelligent Edge Processing in the IoT Era, November 24 – 26, 2021, Portugal.

F. Viti, I. Merelli, S. Scaglione, L. Milanesi. Bioinformatics approach for data management about bone cells grown on substitute materials. EMBnet.journal 18 Suppl. B, pp. 148-150 (Proceedings of NETTAB 2012, 14-16 November, Como, Italy)

F. Viti, I. Merelli, L. Milanesi. OsteoChondroDB: a database about biomolecular chondral-bone development in physiological and diseased conditions. EMBnet.journal Vol 18, Suppl A, pp. 80-81 (Proc Italian Bioinformatics Society Annual Meeting BITS 2012, May 2-4, Catania, Italy)

F. Viti, I. Merelli, D. Di Silvestre, P. Brunetti, L. Milanesi, P. Mauri. Repository for the management of tandem MS data. in "Biological Wikis", Proceedings of the Joint NETTAB-BBCC 2010 workshops, Facchiano A, Romano P (eds), November 29 - December 1, 2010, Napoli, Italy. Aracne editrice S.r.l., Roma, Italy, November 2010. ISBN 978-88-548-3658-7, pp. 1-2.

A. Galizia, F. Viti, L. Milanesi, A. Clematis. A dynamic parallel approach to recognize tubular breast cancer for TMA image building, Proceedings of "18th Euromicro Conference on Parallel, Distributed and Network-based Processing" 2010, 17-19 February 2010, Pisa, (ISSN) 1066-6192 (print ISBN): 978-1-4244-5672-7

F. Viti, E. Mosca, I. Merelli, A. Calabria, R. Alfieri, L. Milanesi. Ontological Enrichment of the Genes-to-Systems Breast Cancer Database. In Communications in Computer and Information Science, Publisher: Springer Berlin Heidelberg, Edited by Fabio Sartori, Miguel Ángel Sicilia and Nikos Manouselis; 46, Copyright 2009, ISBN 978-3-642-04589-9. [http://www.springerlink.com/content/l304p46hk6258j34/]

L. Milanesi, R. Alfieri, E. Mosca, F. Viti, P. D'Ursi, and I. Merelli. Sys-Bio Gateway: a Framework of Bioinformatics Database Resources Oriented to Systems Biology. in S. Gesing, O. Kohlbacher, J. van Hemert: Portals for Life Sciences - a Brief Introduction. Proc. of 1st Workshop IWPLS'09, Edinburgh, UK, September 14-15, 2009, CEUR Workshop Proceedings, ISSN 1613-0073 [ceur-ws.org/Vol-513/paper08.pdf]

E. Mosca, R. Alfieri, F. Viti, I. Merelli, L. Milanesi. Nervous System Database (NSD): data integration spanning molecular and system levels. Front. Neur. Conference Abstract: Neuroinformatics 2009. doi: 10.3389/conf.neuro.11.2009.08.121.

M. Martone, E. Mosca, R. Alfieri, F. Viti, I. Merelli, L. Milanesi. The Neuroscience Information Framework (NIF): a neuroscience-centered portal for searching and accessing diverse resources. Front. Neur. Conference Abstract: Neuroinformatics 2009. doi: 10.3389/conf.neuro.11.2009.08.073

A. Galizia, F. Viti, A. Orro, D. D'Agostino, I. Merelli, L. Milanesi, A. Clematis. TMAinspect, an EGEE Framework for Tissue MicroArray Image Handling. Publisher: IEEE Computer Society, Proceedings of the IEEE International Symposium on Cluster Computing and the Grid (CISIS 2008); 1:394 – 399 Copyright 2008, ISBN: 978-0-7695-3109-0.

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A. Galizia, F. Viti, D. D'Agostino, I. Merelli, L. Milanesi, A. Clematis. Experimenting Grid Protocols to Improve Privacy Preservation on Efficient Image Processing. In Parallel Computing: Architectures, Algorithms and Applications, Edited by Christian Bischof, Martin Bücker, Paul Gibbon, Gerhard R. Joubert, Thomas Lippert, Bernd Mohr, Frans Peters; 15:139-146, Copyright 2008, ISBN 978-1-58603-796-3. [http://www2.fz-juelich.de/nic-series/volume38/galizia.pdf]

F. Viti, I. Merelli, D. D'Agostino, A. Galizia, A. Clematis, L. Milanesi. Tissue MicroArray: a distributed Grid approach for image analysis. Stud. Health Technol. Inform., Publisher: IOS – Press, Edited by Nicolas Jacq, Henning Müller, Ignacio Blanquer, Yannick Legré, Vincent Breton, Dominique Hausser, Vicente Hernández, Tony Solomonides, Martin Hofmann-Apitius; 126:291-298, Copyright 2007, ISBN 978-1-58603-738-3. [http://geneva2007.healthgrid.org/proceedings/proceedings/pdf/30.pdf]

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A.Bartolozzi, F.Viti, F. Sbrana, P. Gavazzo, M. Vassalli. "Development of label-free biophysical markers in osteogenic maturation". N4M Conference. 24-27 March 2019, Camogli (Ge, I).

S. Decherchi, F. Viti, M. Mordenti, D. Vozzi, L. Sangiorgi, R. Cossu, R. Sanges, S. Gustincich, A. Cavalli. Intelligenza artificiale per la medicina di precisione: il caso degli osteocondromi multipli. Conferenza 'Ital-IA', 18 Marzo 2019, Roma (I)

F.Viti, A.Orro, P.D'Ursi, L.Milanesi. NanoPartDB: collecting nanoparticles information to support toxicology studies and risk assessment, Proc Italian Bioinformatics Society Annual Meeting BITS 2013, May, 21-23, Udine, Italy

I. Merelli, F. Viti, L. Milanesi. IBDsite: an integrative database for supporting Inflammatory Bowel Disease clinical data analysis using high throughput techniques. Proceedings of NETTAB2011, 12-14 October 2011, Pavia, Italy.

I. Merelli, F. Viti, L. Milanesi. An integrative approach for inflammatory bowel diseases. SysBioHealth Symposium 2011, 14-15 December, Bologna, Italy.

F. Viti, A. Calabria, E. Mosca, I. Merelli, L. Milanesi. SNPs Identification and Ranking Tool, Proc Italian Bioinformatics Society Annual Meeting BITS 2011, Giugno 20-23, Pisa, Italy

P. Cozzi, F. Viti, I. Merelli, L. Milanesi. Exploitation of a 3D-oriented ontology for choosing the representative proteins in protein surfaces comparison. Focus3d, 11-12 Febbraio 2010, INRIA, Sophie-Antipolis (Nizza), Francia.

L. Milanesi, R. Alfieri, E. Mosca, F. Viti, P. D'Ursi, I. Merelli. Sys-Bio Gateway: a Framework of Bioinformatics Database Resources Oriented to Systems Biology. International Workshop on Portals for Life Sciences (IWPLS) 2009, 14-15 September 2009, Edinburgh, UK.

F. Viti, S. Scaglione, I. Merelli, F. Beltrame, L. Milanesi. TMA-oriented tool for automatic identification of pathological areas in human colon tissues, Proc Italian Bioinformatics Society Annual Meeting BITS 2009, March 18-20, Genoa, Italy.

E. Mosca, R. Alfieri, F. Viti, I. Merelli, L. Milanesi. Nervous System Database (NSD): data integration spanning molecular and system levels, 2nd INCF Congress of Neuroinformatics, 6 - 8 September 2009, Pilsen, Czech Republic.

F. Viti, E. Mosca, I. Merelli, A. Calabria, R. Alfieri, L. Milanesi. Ontological enrichment of the G2SBC database. 3rd International Conference on Metadata and Semantics Research, 1 – 2 September 2009, Milan, Italy.

A. Galizia, F. Viti, A. Orro, D. D'Agostino, I. Merelli, L. Milanesi, A. Clematis. TMAinspect, an EGEE Framework for Tissue MicroArray Image Handling. 8th IEEE International Symposium on Cluster Computing and the Grid, 19 – 22 May 2008, Lyon, France.

A. Galizia, F. Viti, A. Orro, D. D'Agostino, I. Merelli, L. Milanesi, A. Clematis. Enabling parallel TMA image analysis in a Grid environment, 2nd International Workshop on P2P, Parallel, Grid and Internet Computing (3PGIC), 4-7 March 2008, Barcelona, Spain.

F. Viti, P. Riegman, L. Milanesi, S.Scaglione, F. Beltrame. Tissue-specific approach for authomatic pathological areas identification in tissue microarray images. Primo Congresso Nazionale di Bioingegneria, 3-5 Luglio 2008 Pisa, Italy.

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