## PERSONAL INFORMATION

Francesca Demichelis

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Date of birth: | Nationality: Italian

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## WORK EXPERIENCE

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|---|---|
| 2021 April - present | Vice-Rector for Research, UNITN. |
| 2021-present | Faculty member at Interdepartmental Center of Medical Sciences - CISMED, UNITN. |
| 2018 Jan–present | Professor (BIO11), Head of the Laboratory of Computational and Functional Oncology, Department of Cellular, Computational and Integrative Biology, UNITN. |
| 2017–2021 | President of Transdisciplinary Program in Computational Biology Panel, International PhD Program in Biomolecular Sciences, UNITN. |
| 2014 Oct –2017 Dec | Associate Professor (BIO11) with tenure, Head of the Laboratory of Computational Oncology, Centre for Integrative Biology, UNITN. |
| 2013-2019 | Adjunct Assistant Professor of Computational Biomedicine in the Institute for Computational Biomedicine, Weill Cornell Medicine, New York, NY. |
| 2013–present | Standing Member of the Caryl and Israel Englander Institute for Precision Medicine at Weill Cornell Medicine and NewYork-Presbyterian Hospital, NY. |
| 2011 Feb–present | Group Leader, Computational and Functional Oncology, UNITN. |
| 2011 Feb–2014 Sept | Assistant Professor in Computational Biology, Head of the Laboratory of Computational and Functional Oncology, Centre for Integrative Biology, UNITN. |
| 2011–present | Faculty member of the International PhD Program in Biomolecular Sciences, UNITN. |
| 2011-2021 | Member of the Executive Committee of International PhD Program in Biomolecular Sciences. |
| 2010–2011 | Faculty Member of Weill Cornell Graduate School of Medical Sciences, Program in Physiology, Biophysics, & Systems Biology, New York, NY. |
| 2008–2010 | Member of Translational Research Committee, Weill Cornell Medicine, New York, NY. |
| 2008 July–2011 Jan | Assistant Professor in Pathology and Laboratory Medicine, and in Computational Biomedicine, Weill Cornell Medical College, New York, NY. |
| 2007 Oct–2008 June | Instructor in Pathology and Laboratory Medicine, and Institute Fellow at Institute for Computational Biomedicine, Weill Cornell Medical College, New York, NY. |
| 2005 Feb–2007 Sep | Post-doctoral Fellow at the Department of Pathology, Brigham and Women's Hospital, Harvard Medical School, Boston, MA. |
| 1997 Sep–2005 Jan | Research Associate at ITC-IRST (Fondazione Bruno Kessler) in Medical Informatics, Intelligent Data Analysis in Biomedicine, Automated Reasoning System Unit, Trento, Italy. |
| 1996 Dec- 1997 Aug | Scholarship at UNITN from the Istituto Nazionale Fisica della Materia (INFM). Title: Parallel computing for molecular dynamics simulations of monatomic glasses. |

## EDUCATION AND TRAINING

2005 PhD, University of Trento, Italy (UNITN), International Doctoral School in Information and Telecommunication.
1996 MSc, Physics Department, UNITN.

## EDUCATION ACTIVITIES

*Courses**:

2016–2022 Course director, Genomics, Master Program in Quantitative and Computational Biology UNITN (0521H);
2013–2015 Course director, Computational Biology, Undergraduate Program in Biomolecular Sciences and Technologies, UNITN (0516G);
2011–2013 Co-director, Systems Biology, Fundaments of Computational Biology, UNITN (0516G);

*Ad hoc classes:*

2013 European School of Oncology e-oncoreview session on 'Gene profiling and prostate cancer'; 2012 European School of Oncology Viareggio (Italy), Gene profiling in clinical oncology, Genomic tools in Prostate Cancer; 2012 Mini-Course in Next Generation Sequencing Data Management and Analysis in Clinical Research Setting (4 hours), University of Pavia, Pavia, Italy; 2009 Graduate Program, Weill Cornell Medical College New York, NY, Quantitative Understanding in Biology; 2000–2004 Graduate Program, University of Udine, Italy, Medical Informatics.

## SUPERVISION OF STUDENTS AND POST-DOCTORAL FELLOWS

2011–2021 UNITN: Postdoctoral fellows, 9; PhD students from International PhD Program in Biomolecular Sciences, 5; Master students: 2 in Science in Cellular and Molecular Biotechnology, 6 in Quantitative and Computational Biology, 1 in Bioinformatics; Bachelor students, 7 in Biomolecular Sciences and Technologies.
2008–2010 Weill Cornell Medical University: Postdoctoral fellows, 2; MD/PhD, Post-graduate training in Systems Biology in Prostate Cancer, 1 (co-mentor); PhD student from Physiology, Biophysics, and Systems Biology graduate program, 1; Master student in Science (now MD/PhD student at the University of Pennsylvania), 1.

## PUBBLICATIONS

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|---|---|---|---|
| H-index (Scopus 082020): | **62** | Total number of citations: | **23,281** |
| Last/Co-last/co-corresponding author: | **35** | First/co-first author: | **15** |
| Subject areas: | Medicine, Genetics and Molecular Biology, Computer Science | | |

Co-author of more than 120 manuscripts including in: *Cancer Biology, Cancer Research, Cell, Cancer Cell, JCI, Nature, Nature Biotechnology, Nature Cancer, Nature Communications, Nature Genetics, Nature Medicine, Oncogene, PNAS, Science, Science Translational Medicine.* Reviews in: *Nature Reviews Genetics, Nature Medicine, Urologic Oncology*. Commentary, news and view in: *Nature Medicine, Cancer Cell, Nature Reviews Urology.*

## CONFERENCES and SEMINARS

**INVITED SPEAKER (TALKS and SEMINARS, selected since 2015)**

2021 Institute of Oncology Research, PhD Program in Cancer Biology and Oncology, Università della Svizzera Italiana (CH). Bellinzona, Sept 2021.
2021 European Prostate Cancer Alliance meeting. Online event, Sept 2021.2021 CRUK City of London Centre - Symposium on Cancer Evolution. London (Online), Sept 2021

2021 European Society for Medical Oncology (ESMO), Methylation studies in liquid biopsies – potential clinical utility. Online event, June 16th 2021.
2021 AACR Annual Meeting, Cell free DNA features to track tumor evolution. May 18th 2021 (Online event).
2020 Dublin Steroid Cancer Meeting, The Royal College of Surgeons in Ireland, 16th and 17th November 2020. POSTPONED
2019 EMBL Conference, Cancer Genomics, Heidelberg, 4-6 November 2019. Synthetic Lethal candidates search using genomic and methylation features.
2019 PCF 26th Annual Scientific Retreat, 24-26 October, Carlsbad, CA. Genomics of Neuroendocrine prostate cancer (tent).
2019 Associazione di Biologia Cellulare e del Differenziamento (ABCD) National Congress, 19-21 September, Bologna, IT. Cancer evolution studies, one allele at the time.
2019 Gordon Research Conference (GRC) on Hormone-Dependent Cancers, August 4-9, Newry, ME. Hormone-Dependent Cancers Evolution from Unbiased Allele Specific Analyses.
2019 Twelfth Annual Prostate Cancer Program Retreat March 3–5, 2019, W Hotel, Fort Lauderdale, Florida. Insights into prostate cancer progression from allele-specific genomics.
2018 25th Meeting of the EAU Section of Urological Research (ESUR), Athens. Epigenetic regulation and reprogramming: Neuroendocrine differentiation via epigenetic reprogramming.
2018 Nanoinnovation, Microfluidics and Biosystems for personalized medicine symposium, Rome. Emerging opportunities of liquid biopsies in precision oncology
2017 AACR Special Conference on Prostate Cancer: Advances in Basic, Translational, and Clinical Research, Orlando.
2017 Second Global Summint on Precision Diagnostic, AdMeTech Foundation, Boston, MA Emerging Fluid-Based Molecular Diagnostics.
2017 38th World Congress of The International Union of Physiological Sciences, Rio de Janeiro, Cell differentiation and drug pressure. Keynote Lecture.
2017 Cancer Research UK Manchester Institute. Prostate cancer evolution.
2017 RNGS2 - Revolutionizing Next-Generation Sequencing (2nd edition), VIB Conference, Antwerp. Assessment of metastatic disease burden through the analysis of cfDNA in patients' circulation.
2016 TEDx Trento, Combatto il cancro con i numeri.
2016 European Meeting on Urological Cancers (EMUC). The genomic evolution of metastatic prostate cancer.
2016 Androgens 2016, Innsbruck. The genetics of prostate cancer specific events.
2016 Pezcoller Foundation Symposium, Trento. Tumor evolution and cell differentiation.
2016 Armenise-Harvard Foundation 16th Symposium, Gubbio. Cell plasticity and divergent evolution in castration resistant prostate cancer.
2015 19th International Fritz Bender Foundation Symposium, Cancer Biology for Cancer Therapeutics, Pisa. Driver clones during prostate cancer evolution.
2015 Joint session at 2015 AUA Annual Meeting of Society for Basic Urologic Research (SBUR) and the Society of Urologic Oncology (SUO), New Orleans, Louisiana (USA). The Clonality of Prostate Cancer Metastases - Single or Multiple Origins?
2015 Heinrich-Warner-Symposium. Genomic and Epigenetic Variations in Prostate Cancer, Hamburg. Clonal Heterogenity of Advanced Tumors through Allele Specific Quantification

DISSEMINATION ACTIVITIES

Since 2011, she participated to outreach and science dissemination activities for public

audience in collaboration with multiple Foundations and Institutions, including Fondazione Associazione Italiana per la Ricerca sul Cancro (AIRC), Fondazione Trentina per la Ricerca sui Tumori (FTRT), Lega Italiana per la Lotta contro I Tumori (LILT), Movember Foundation, the University of Trento, and Hub Innovation Trentino (HIT). Events include Trieste Next 2018, Galileo Festival dell'Innovazione Padova 2019, CICAP Fest 2021 (Padova), ResearcHERs Power (2021).

## HONOURS and AWARDS

2021 Knight of the Order of Merit of the Italian Republic ("Cavaliere dell'Ordine 'Al merito della Repubblica Italiana") appointed by the President of the Italian Republic (n 16474 sVI, decr. 15/03/2021).

2019/20/21 Listed as "Highly Cited Researcher" in 2019, 2020, 2021 by Clarivate Analytics and Web of Science.

2020 Premio Maria Teresa Messori Roncaglia ed Eugenio Mari ('ad uno Scienziato' 2020), Accademia Nazionale dei Lincei.

2018 Accelerator Award 2018 by CRUK-AIRC (with Attard, Basso, Caffo, De Giorgi, Tucci). PRIME for the use of liquid biopsy to accelerate clinical research.

2016 Prostate Cancer Foundation Challenge Award (with Beltran H, Attard G, Van Allen E. Chi K., Wyatt A., Rubin, M.A., Maher C.). Development and Qualification of the PCF SELECT (Specific Evaluation in Liquid biopsies of Established prostate Cancer Targets) Plasma DNA Assay.

2014 Prostate Cancer Foundation Challenge Award (with Beltran H, Attard G). Early Detection of Neuroendocrine Prostate Cancer Transformation Using Circulating Genomic Signatures.

2011 Prostate Cancer Foundation Challenge Award. Proposal title: "Recurrent SPOP Mutations in Prostate Cancer: Characterization of a Potentially Targetable Sub-class of Prostate Cancer."

2010 Department of Defense, USA, New Investigator Award. "Towards Understanding the Genetic Predisposition for Signalling Pathway Activation in Aggressive Prostate Cancer."

2009 Dana-Farber Harvard Cancer Center SPORE Developmental Project Award. "Copy Number Variants Predisposing to ETS Rearrangements and Oncogenic Lesions."

2008 Pilot Research Award for Translational and Cross-disciplinary Studies, Clinical and Translational Science Center at Weill Cornell Medical College, New York. "Towards the Identification of Germline Risk factors for Lethal Prostate Cancer."

2007 American Association for Cancer Research (AACR) Team Science Award, University of Michigan-Brigham and Women's Hospital Team.

2005 Prostate Cancer Foundation Competitive Awards, "Fusion of TMPRSS2 and ETS Family of Transcription Factors in Prostate Cancer."

## COMMISSIONS OF TRUST and MEMBERSHIPS

*Grant Reviewer:*

- ERC Deputy panel chair;

2021 Federal Ministry of Education and Research, Germany, Review Panel Member "Collaborative research on tumor heterogeneity, clonal tumor evolution and therapy resistance";

2021 German Cancer Aid (Deutsche Krebshilfe), Reviewer Committee Member for the Translational Oncology Priority Program;

2021 Swiss Cancer League, Review Board Member;

2020 European Research Council Executive Agency (ERCEA), Remote Referee for "Excellent science" of H2020 Framework Programme;

2015–2020 Italian Association for Cancer Research Foundation (AIRC), Scientific Fellowship

Committee Member;
2019 AXA Research Fund;
2010/-14/-19 Austrian Science Fund (FWF), Austria;
2018 CR-UK, UK;
2017 Interfaculty Research Cooperation Grant, University of Bern, Switzerland;
2015–2016 Institut National du Cancer – INCa, France;
2011/2013/201 Prostate Cancer UK, UK;
2010 Italian Ministry of Health, Italy;
2010 National Medical Research Council, Ministry of Health, Singapore;
2009 National Cancer Institute (NCI, US);

*Manuscript Reviewer for international journals including:*
Annals of Oncology, Cancer Cell, Cancer Research, Clinical Cancer Research, Communications Biology, Genome Biology, Genome Research, Human Genetics, JCI, JCO Precision Oncology, Nature, Nature Genetics, Nature Medicine, Nature Methods, Nature Reviews Cancer, Oncogene, PLoS Computational Biology, PNAS, Science, Scientific Reports.

*Editorial Boards activities:*
2019-present Senior Editor, Molecular Cancer Research (MCR, AACR);
2020-2021 Editorial Board member, Journal of Cancer Metastasis and Treatment (JCMT);
2018-present Editorial Board member, *European Urology Oncology;*
2010-2018 Associate Editor, *BMC Medical Genomics*;
2005-2010 Editorial Board member, *Diagnostic Pathology*;

*Scientific Committee activities:*
2022 Scientific Committee, European Society for Medical Oncology (ESMO) 2022;
2020/21 Selection Committee, Marina Larcher Fogazzaro Women in Cancer Research Award, Fondazione Pezcoller - European Association for Cancer Research (EACR);
2020 Selection Committee, “PREMIO BIENNALE PER LA RICERCA SUL CANCRO VOLTA ALLO SVILUPPO DI NUOVI APPROCCI TERAPEUTICI ALLE NEOPLASIE”, INTITOLATO A GUIDO VENOSTA – ANNO 2020, AIRC Foundation.
2020,2021 Program Committee Member, ISMCO'20 and ISMCO'21 2nd/3rd International Symposium on Mathematical and Computational Oncology, San Diego;
2019 Workshop Member, CR-UK/AIRC, Grand Challenge International Consultation Workshop;
2015–2016 Scientific Program Committee, 2016 AACR Annual Meeting;
2015–2017 Scientific Committee, Società Italiana di Urologia Oncologica (SIUrO);

*Scientific Consortia activities*:
2022- ECIU Alliance, Vice-President for Research Committee
2016-2019 Member of the prostate cancer SU2C and SU2C-PCF consortia
2013–2015 TCGA Prostate Cancer Working Group, Prostate (National Cancer Institute, USA);
2008–2009 Co-chair of MAQC-II Copy Number Variants Analysis Team (FDA, USA);

*Memberships, Scientific Societies:*
2021-present ERC in Italy;
2021-present European Association for Cancer Research (EACR);
2020-present ‘Gruppo 2003’ (Italian *Highly Cited* Researchers as per the Institute for Scientific

Information (ISI))
2018-2021 Top Italian Women Scientists (TIWS);
2013–present Società Italiana di Biofisica e Biologia Molecolare (SIBBM);
2012–present American Association for Cancer Research (AACR);
2012–2014 Società Italiana di Biochimica Clinica e Biologia Molecolare Clinica (SIBIOC);
2008–2010 American Society of Human Genetics.

GRANTED PATENTS

US Patent (7,718,369; 8211645), Recurrent gene fusions in prostate cancer, *licensed to Gen-Probe and Ventana/Roche for diagnostic use world-wide;*
US Patent (7,803,552), Biomarkers for predicting prostate cancer progression;
US Patent (7,981,609), Methods for identifying and using SNP panels;
US Patent (9,678,077), ERG/TFF3/HMWCK Triple Immunostain for Detection of Prostate Cancer;
US Patent (9,951,388), Spectral imaging for measurement of nuclear pathology features in cancer cells prepared for in situ analysis.

ACTIVE RESEARCH SUPPORT

| **Role** | **Funding Agency, .ID** | **Project Title** | **Duration** |
|---|---|---|---|
| Principal Investigator Leading Institution | Accelerator Award 2018, Cancer Research UK (CRUK), C65130/A26321 | *Multi-modal clinical testing of prostate cancer patient plasma (PRIME)* | 11/01/18-10/31/23 |
| Principal Investigator | Italian Ministry of University and Research (MIUR), Call FARE, R16Z7PSLHN | *DNA repair genes vulnerability in prostate cancer (DiVERrSE)* | 01/01/18-12/31/21 |
| Principal Investigator | Fondazione Trentina per la Ricerca sui Tumori (FTRT) | *The role of DNA repair genes in primary prostate cancer* | 01/01/18-12/31/21 |
| Co- Principal Investigator (with Dr. Beltran, Tagawa) | Project 1, Prostate Cancer SPORE (NCI) P50 CA211024-01A1 | *Non-Invasive Clinical Assay for Early Detection of Treatment Resistance in Patients with Metastatic Prostate Cancer* | 01/01/18-12/31/22 |
| Co- Principal Investigator (with Dr.s Attard, Beltran, Chi, Wyatt, Van Allen, Maher, Rubin, Amstrong) | Prostate Cancer Foundation, Movember Challenge Award | *Development and qualification of the PCF SELECT (Specific Evaluation in Liquid biopsies of Established prostate Cancer Targets) plasma DNA assay* | 09/01/16-08/31/21 |

PAST RESEARCH SUPPORT

| Role | Funding Agency, ID | Project Title | Duration |
|---|---|---|---|
| Principal Investigator | European Research Council, ERC-Consolidator Grant 648670 | *Synthetic Lethal Phenotype Identification through Cancer Evolution Analysis (SPICE)* | 10/01/15-03/31/21 |
| Principal Investigator | Fondazione Caritro | *Verso la Biopsia Liquida di Tumori: Un programma di Medicina di Precisione* | 01/01/16-12/31/20 |
| Principal Investigator | Associazione Italiana per la Ricerca sul Cancro (AIRC), Investigator Grant 19221 | *Heritable Triggers of Prostate Cancer Molecular Subtypes* | 01/01/17-12/31/20 |
| Principal Investigator | Associazione Italiana per la Ricerca sul Cancro (AIRC), Investigator Grant | *Defining Heritable Cancer Risk Variants in the Prostate* | 01/01/13-12/31/16 |
| Principal Investigator | Fondazione Trentina per la Ricerca sui Tumori (FTRT) | *Recurrent genomic alterations as biomarkers predictive of the response to brachytherapy treatment in prostate cancer patients* | 03/01/12-12/31/14 |
| Principal Investigator | Department of Defense (DoD), Synergy Award, PC101020P2 | *Functional Validation of Prostate Cancer Driving Mutations* | 05/15/11-05/14/15 |
| Principal Investigator | Department of Defense (DoD), New Investigator, PC094516 | *Towards Understanding the Genetic Predisposition for Signaling Pathway Activation in Aggressive Prostate Cancer* | 7/1/10-12/30/12 |
| Principal Investigator | Dana-Farber Harvard Cancer Center Prostate Cancer SPORE, Developmental Project Award | *Copy Number Variants Predisposing to ETS Rearrangements and Oncogenic Lesions* | 04/01/09-03/31/10 |
| Principal Investigator | Clinical and Translation | *Towards The Identification Of* | 01/02/08-05/31/09 |

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| | Science Center, New York, UL1RR024996 | *Germline Risk Factors For Lethal Prostate Cancer* | |
| Principal Investigator | Prostate Cancer Foundation, Research Award | *Fusion of TMPRSS2 and ETS Family of Transcription Factors in Prostate Cancer: A Bioinformatics Approach to Understand the Molecular Diversity of Prostate Cancer* | 02/01/06-01/31/07 |
| Co-Investigator (PI, Dr. Attard G) | The Prostate Cancer Charity UK | *Using circulating plasma DNA to identify somatic copy number aberration profiles that differentiate men without from those with aggressive prostate cancer* | 04/01/13-03/31/16 |
| Co-Investigator (PI, Dr. Rubin MA) | National Cancer Institute (NIH), R01 CA116337 | *Molecular Signatures of Lethal and Indolent Prostate Cancer* | 07/23/12-05/31/17 |
| Co-Investigator (PI, Dr. Rubin MA) | National Cancer Institute (NIH), R01 CA152057 | *Comprehensive Prostate Cancer Characterization by Genomic and Transcriptomic Profiling* | 08/01/11-07/31/14 |
| Co- Principal Investigator (with Dr.s Beltran, Attard) | Prostate Cancer Foundation, Challenge Award | *Early Detection of Neuroendocrine Prostate Cancer Transformation Using Circulating Genomic Signatures* | 01/01/15-12/12/17 |
| Co-Investigator (PI Rubin MA) | National Cancer Institute (NIH), R01 CA125612-05A1 | *Towards Understanding Prostate Cancer Heterogeneity* | 04/01/2013-03/31/18 |
| Co-Investigator (PI Gerstein M) | National Institute of Health (NIH) R01 HG00826101-1A | *Prioritizing rare, non-coding variants associated with cancer using functional annotation* | 2/1/16 - 1/31/19 |