2020 EDITION

ANNUAL REPORT

Department of Biomedical Sciences UNIPD

DIPARTIMENTO DI SCIENZE BIOMEDICHE

1222 · 2022 800 ANNI

UNIVERSITÀ DEGLI STUDI DI PADOVA

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DSB IN NUMBERS

All data presented in this chapter refer to the Department's picture as of December 31st 2020.
Data related to staff members and funding were provided by the Department's administration. Data on funding include **research projects of competitive funding calls** and **University-Business collaborations.**

The following statistics purposely exclude activities and personnel traceable to our Department's research groups/members that are managed by third parties so as to streamline the data collection process. These third parties are namely:

- The Veneto Institute of Molecular Medicine (VIMM)
- CRIBI Biotechnology Center
- The National Research Council of Italy (CNR)
- Human Inspired Technology Research Centre (HIT)
- Padova Neuroscience Center (PNC)
- Myology Center (CIR-Myo)
- Istituto di Ricerca Pediatrica Città della Speranza (IRP)

Data on publications were retrieved from the **repository IRIS** using the list of permanent staff members (*personale strutturato*) of the Department.

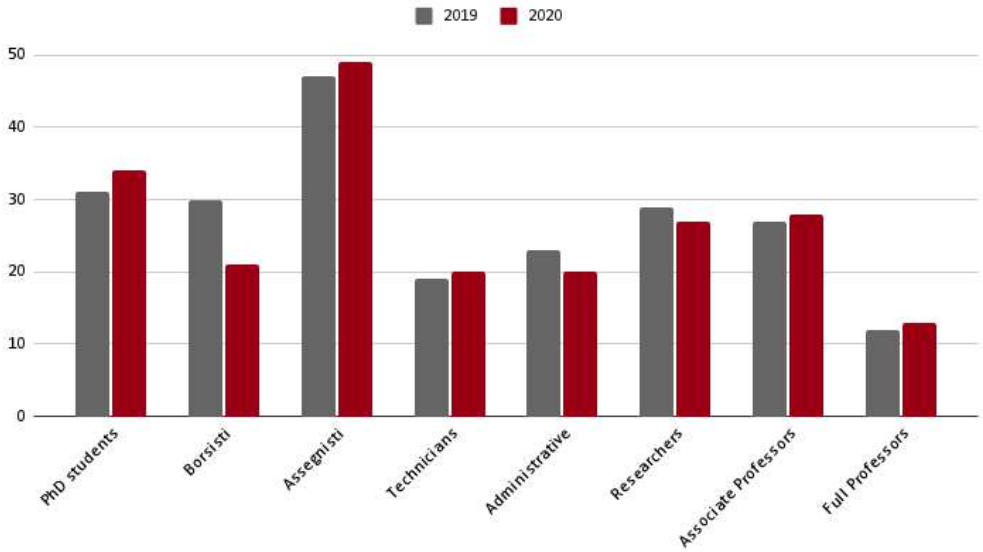
Staff

Staff categories	Nr.
PhD students	34
Research Fellows (*Borsisti)*	21
Postdoc *(Assegnisti)*	49
Research Assistants (*tecnici*)	20
Administrative Assistants	20
Researchers	27
Associate Professors	28
Full Professors	13
TOT.	**212**

34
EARLY STAGE RESEARCHERS[1]

138
EXPERIENCED RESEARCHERS[2]

In 2020 the overall number of staff members of the department decreased by 6 units.

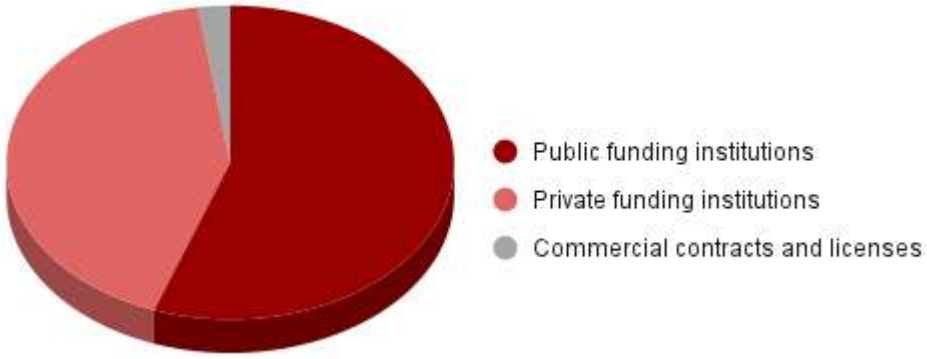


[1] *Early Stage Researchers* are defined as those who are in the first four years (or full time equivalent) of their research careers, starting from when they obtained a degree entitling them to embark on a PhD program.
[2] *Experienced Researchers* are either in possession of a doctoral degree or have at least four years of research experience (full-time equivalent).

Funding

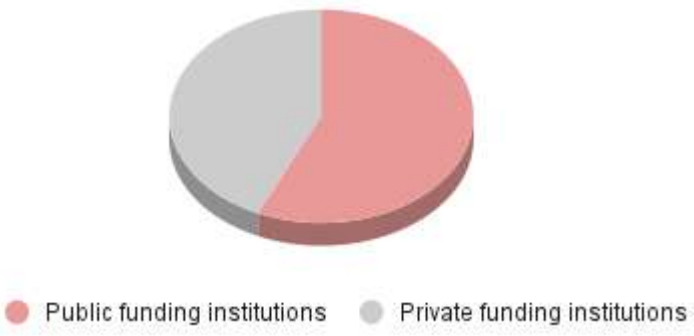
In 2020 the overall funding value of the DSB was **€ 17,970,244.65**, including active research projects[3] granted through competitive calls and University-Business collaborations.

The great majority of this amount (€ 17,556,148.06, 97.7%) comes from funded research projects awarded to the Department's permanent personnel. Only 2.3% of the overall funding available in the Department (equal to €414,096.89) derives from University-Business collaborations.



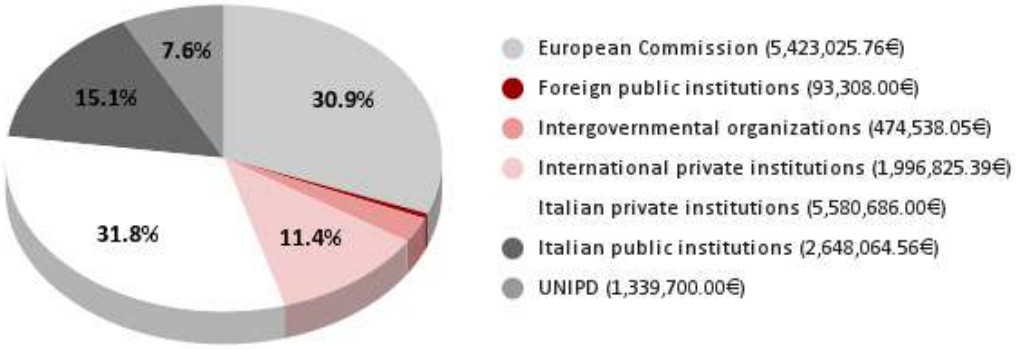
Research Projects

Up from the 53,1% of 2019, the main source of funding of 2020 was again the **public sector** with **€9,978,636.37** (56.8%), against the €7,577,511.69 (43.2%) allocated by private institutions.



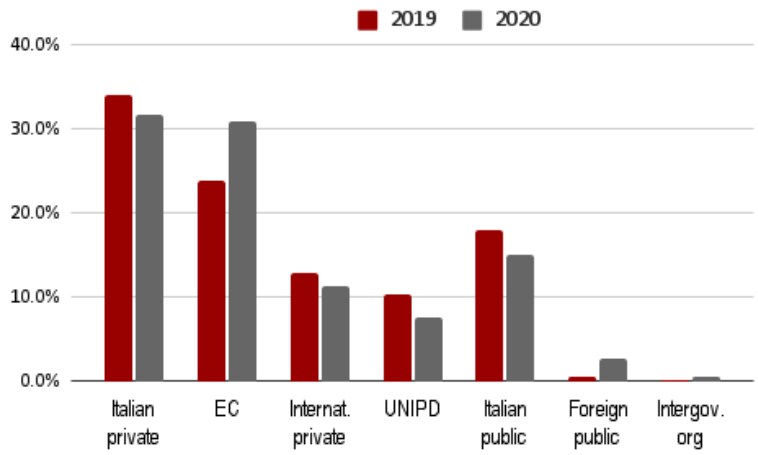
[3] This value is the sum of the overall funding assigned to all the projects active in 2020, disregarding the fact that the project duration might be longer than that specific year.

Our main funders are **Italian private institutions** (e.g. AIRC, Telethon) providing **31.4%** of our budget, followed closely by the European Commission (30.9%). From Italian public institutions (mainly the Ministry of University and Research) we receive 15.1% of funding, from International private institutions 11.4%. Noticeably, the University of Padova funds several projects in our Department, reaching 7.6% of our overall budget. Minor funders are also foreign public institutions (0.5%) and Intergovernmental organizations (2.7%).



Comparing funding sources: 2019 vs. 2020.

When comparing the type of funding institutions of the DSB's research groups, no significant changes are to be pointed out between 2019 and 2020, with the exception of funding from the European Commission, remarkably rising from 23.8% (2019) to 30.9% (2020).



Active projects in 2020

In 2020 our department hosted seventy-eight ongoing research projects that started between 2016 and 2020 for an overall value of **17,556,147.76€**. PRIN projects were the most numerous (twelve), followed by AIRC and AFM Telethon funded projects (seven respectively).

Funding institution	Project type	N. projects	Amount	%
Italian private institutions	AIRC	7	5,580,686.00€	31.79%
	CARIPARO	6		
	TELETHON	5		
	CARIPLO	1		
European Commission	MSCA Individual Fellowship	4	5,423,025.76€	30.89%
	Future and Emerging Technologies	2		
	MSCA R&I Staff Exchange	2		
	MSCA Innovative Training Networks	1		
	Research and Innovations Actions	1		
	Coordination and support actions	1		
	ERC	1		
Italian public institutions	PRIN	12	2,648,064.56€	15.08%
	ASI	3		
	FESR 2014-2020	2		
	Ricerca sanitaria finalizzata	2		
	FSE	1		
International private institutions	AFM Telethon	7	1,996,825.39€	11.37%
	Fondazione Leducq	2		
	MDA	1		
	Kennedy's Disease Association	1		
	DAN Europe Foundation	1		
UNIPD	STARS	6	1,339,700.00€	7.63%
	MSCA SoE	2		
Intergovernmental organizations	EMBL-EBI	2	474,538.05€	2.70%
	Children's Tumor Foundation (CTF)	2		
	Office of Naval Research (ONR)	1		
	ESA	1		
Foreign public institutions	NIH	1	93,308.00€	0.53%
Total		**78**	**17,556,147.76€**	**100.00%**

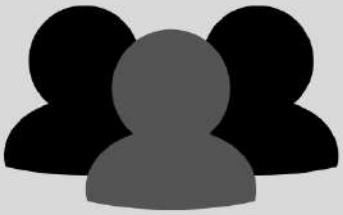
Projects started in 2020

In 2020 our Department was awarded twenty-three projects, for an overall value of **€3,399,947.68**, including four Cariparo and three AFM Telethon funded projects.

+3,399,947.68 €

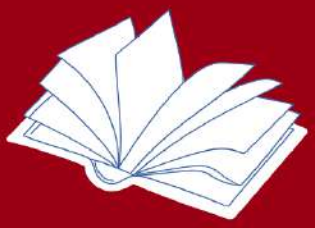
Funding institution	Project type	N. projects
European Commission	ERC	1
	Research and Innovations Actions	1
	Coordination and support actions	1
	MSCA Innovative Training Networks	1
	MSCA Individual Fellowship	2
Intergovernmental organizations	Children's Tumor Foundation	2
	EMBL-EBI	2
	Office of Naval Research	1
International private institutions	AFM Telethon	3
	DAN Europe Foundation	1
Italian public institutions	AIRC	1
	CARIPARO	4
	Telethon	1
Italian public institutions	FSE	1
UNIPD	MSCA Seal of Excellence	1
Total		23

Publications



67 permanent staff members

277 publications in journals with Impact Factor



Q1

178 publications on Q1 journals

36 publications with Impact Factor > 10

ΣIF

1422.9 sum of the Impact Factor of all the DSB publications

RESEARCH

Research areas

Research at the Department of Biomedical Science spans a wide array of areas including:

- ✧ Cell Signaling
- ✧ Computational and Structural Biology
- ✧ Inflammation and Immunity
- ✧ Medical Biotechnology
- ✧ Mitochondrial Pathophysiology
- ✧ Muscle Physiology in Health and Disease
- ✧ Neuroscience
- ✧ Physical Activity and Health

Below are the tables of all the laboratories associated with each research area and the related Principal Investigator/s (PI).

Cell Signaling

Laboratories	***PI***
Ca2+ and cAMP signaling in physiology and pathology	Prof. P. Pizzo
Pharmacobiology of Natural Compounds	Dr. L. Biasutto
Phosphorylation Signaling in Health and Disease	Prof. M. Ruzzene
Post-transcriptional gene regulation in cancer cells	Dr. D.M. D'Agostino
Redox Signaling in Pathophysiological Conditions	Prof. M.P. Rigobello

Computational and Structural Biology

Laboratories	***PI***
BioComputing UP	Prof. S.C.E. Tosatto
Protein crystallography and cryoEM	Prof. G. Zanotti
Protein interactions and dynamics	Prof. M. Fuxreiter

Inflammation and Immunity

Laboratories	***PI***
Inflammation and Immunity	Prof. A. Viola

Medical Biotechnology

Laboratories	***PI***
Extracellular Matrix (Ecm) Pathobiology	Prof. M. Onisto
Immune nano-technology	Dr. L.G. Delogu
Mass Spectrometry and Proteomics	Prof. G. Arrigoni
Nano-biotechnology and nano-biomedicine	Prof. E. Papini
Peptides and Antibodies	Prof. O. Marin

Protein engineering	Prof. A. Negro

Mitochondrial Pathophysiology

Laboratories	***PI***
Mitochondria in Cell Death and Cancer	Prof. P. Bernardi/ Prof. A. Rasola
Mitochondrial Calcium Signaling	Prof. R. Rizzuto
Mitochondrial medicine	Prof. C.F. Viscomi
Molecular mechanisms of aging	Prof. M. Giorgio
Oxidative metabolism in cardiac disease	Prof. F. Di Lisa
Regulation of the Mitochondrial Proteome	Prof. G. Szabadkai

Muscle Physiology in Health and Disease

Laboratories	***PI***
Autonomic Control of Cardiac Function	Prof. M. Mongillo
Chaperones in Muscle Differentiation and Disease	Prof. L. Gorza
Muscle Contractility And Plasticity	Prof. M. Narici
Pathophysiology of Striated Muscles	Prof. P. Volpe
Signaling pathways that control protein homeostasis in muscles	Prof. M. Sandri

Neuroscience

Laboratories	***PI***
Circuit formation and function in the brain	Dr. C. Lodovichi

Enlightening Brain Mechanisms	Dr. M. Dal Maschio
Genetics of focal epilepsies	Dr. C. Nobile
Migraine Pathophysiology	Prof. Pietrobon
Molecular and cellular mechanisms of neurodegenerative and neuromuscular diseases	Prof. A. Bertoli
Neuronal Network on Microchips	Prof. S. Vassanelli
Neuron-glia signaling in brain function and dysfunction	Dr. P. Carmignoto
Neuroparalysis and Neuroregeneration Lab	Prof. O. Rossetto
Pathogenesis of neurological and neuromuscular diseases	Prof. M. Pennuto
Plasticity In Pathology	Prof. M. Caleo

Physical Activity and Health

Laboratories	***PI***
Nutrition and Exercise Lab (NUTEXlab)	Prof. A. Paoli

Research groups

The tables below illustrate the activities of the DSB research groups, taking into consideration parameters such as staff members, publications, funded projects and University-Business collaborations as of December 31st 2020. As mentioned in Chapter 3 - *DSB in Numbers*, we **purposely excluded activities** traceable to our Department's research groups/members **managed by third parties,** with the underlying intention of streamlining the data collection process and the statistics. Among these third parties are:

- The Veneto Institute of Molecular Medicine (VIMM)
- CRIBI Biotechnology Center
- The National Research Council of Italy (CNR)
- Human Inspired Technology Research Centre (HIT)
- Padova Neuroscience Center (PNC)
- Myology Center (CIR-Myo)
- Istituto di Ricerca Pediatrica Città della Speranza (IRP)
- Other foundations

As for staff **members**, only permanent staff ("*personale strutturato*") is reported based on data provided by the Director's Office.
Keywords on each group's research field were taken from the Principal Investigator's ORCID profile, whenever available, or suggested by the PI.
Research projects and University-Business collaborations are listed based on data provided by the Department's Research Office.
The list of publications was compiled by searching the **repository IRIS** for the publications of the Department's permanent staff members (*personale strutturato*).

For information and data on CNR affiliates please refer to the CNR affiliate's website, linked in their related tables.

Cell Signaling

1 - Ca2+ and cAMP signaling in physiology and pathology

Principal Investigator	Prof. Paola Pizzo ORCID https://orcid.org/0000-0001-6077-3265 Scopus 35597536700 WoS ID T-4874-2018 Google Scholar Paola Pizzo
Contact	paola.pizzo@unipd.it 049 827 6067 website
Keywords	Neurodegeneration; Aging; Calcium Homeostasis; Mitochondrial function; Neuroscience; Neurobiology and Brain Physiology; Alzheimer's Disease; Genetically Encoded Ca2+ Probes; Signal transduction; cAMP signaling
Members	Pizzo Paola — Associate Professor Tullio Pozzan — Professor Emeritus Basso Emy — CNR researcher Di Benedetto Giulietta — CNR researcher Greotti Elisa — CNR researcher Pendin Diana — CNR researcher Filadi Riccardo — CNR researcher Fasolato Cristina — Researcher Fornetto Chiara — Postdoc Galla Luisa — Postdoc García Casas Paloma — Postdoc Redolfi Nelly — Postdoc Scremin Elena — Postdoc Vajente Nicola — Postdoc Barazzuol Lucia — PhD Student Rossini Michela — PhD Student Mendes Pereira Magalhães P.Jorge — Research Assistant
Research projects	- *A shape to fit the needs: how cells rearrange their organelle composition and architecture during development and stress* (PRIN) - *Early dysfunctions of intercellular signalling in brain disorders* (PRIN - Pozzan/Fasolato)
Publications	Ciscato, F., Filadi, R., Masgras, I., Pizzi, M., Marin, O., Damiano, N., Pizzo, P., Gori, A., Frezzato, F., Chiara, F., Trentin, L., Bernardi, P., Rasola, A., 2020. Hexokinase 2 displacement from mitochondria‐associated membranes prompts Ca 2+ ‐dependent death of cancer cells. EMBO Rep 21. https://doi.org/10.15252/embr.201949117

Filadi, R., Pizzo, P., 2020. Mitochondrial calcium handling and neurodegeneration: when a good signal goes wrong. Current Opinion in Physiology 17, 224–233. https://doi.org/10.1016/j.cophys.2020.08.009

Galla, L., Redolfi, N., Pozzan, T., Pizzo, P., Greotti, E., 2020. Intracellular Calcium Dysregulation by the Alzheimer's Disease-Linked Protein Presenilin 2. IJMS 21, 770. https://doi.org/10.3390/ijms21030770

Leparulo, A., Mahmud, M., Scremin, E., Pozzan, T., Vassanelli, S., Fasolato, C., 2019. Dampened Slow Oscillation Connectivity Anticipates Amyloid Deposition in the PS2APP Mouse Model of Alzheimer's Disease. Cells 9, 54. https://doi.org/10.3390/cells9010054

Pizzo, P., Basso, E., Filadi, R., Greotti, E., Leparulo, A., Pendin, D., Redolfi, N., Rossini, M., Vajente, N., Pozzan, T., Fasolato, C., 2020. Presenilin-2 and Calcium Handling: Molecules, Organelles, Cells and Brain Networks. Cells 9, 2166. https://doi.org/10.3390/cells9102166

Rossi, A., Pizzo, P., 2021. Mitochondrial bioenergetics and neurodegeneration: a paso doble. Neural Regen Res 16, 686–687. https://doi.org/10.4103/1673-5374.295331

Rossi, A., Rigotto, G., Valente, G., Giorgio, V., Basso, E., Filadi, R., Pizzo, P., 2020. Defective Mitochondrial Pyruvate Flux Affects Cell Bioenergetics in Alzheimer's Disease-Related Models. Cell Reports 30, 2332-2348.e10. https://doi.org/10.1016/j.celrep.2020.01.060

Scremin, E., Agostini, M., Leparulo, A., Pozzan, T., Greotti, E., Fasolato, C., 2020. ORAI2 Down-Regulation Potentiates SOCE and Decreases Aβ42 Accumulation in Human Neuroglioma Cells. IJMS 21, 5288. https://doi.org/10.3390/ijms21155288

2 - Pharmacobiology of Natural Compounds

Principal Investigator	Dr. Lucia Biasutto ORCID https://orcid.org/0000-0002-7638-6865 Scopus 15829089100
Contact	lucia.biasutto@cnr.it 049 827 6055 website
Keywords	Flavonoids; Medicinal and Pharmaceutical Chemistry; Chromatography; Nutraceuticals; Polyphenols; High-Performance Liquid Chromatography; Metabolite Identification; Sample Preparation; Mass Spectrometry; LC-MS
Members	Biasutto Lucia CNR researcher
Research projects	Information on Biasutto's research activities and publications are available at: http://www.in.cnr.it/index.php/it/9-people/48-lucia-basutto
Publications	

3 - Phosphorylation Signaling in Health and Disease

Principal Investigator	Prof. Maria Ruzzene ORCID https://orcid.org/0000-0001-8712-8151 Scopus 7006366475 Google Scholar Maria Ruzzene
Contact	maria.ruzzene@unipd.it 049 827 6112 website
Keywords	Cancer Cells; Cancer Biology; Phosphorylation; Apoptosis; Signaling Pathways; Signal Transduction; Cancer Research; Cell Biology; Proteins; Cell Signaling
Members	Ruzzene Maria — Associate Professor Salvi Mauro — Associate Professor Sarno Stefania — Researcher Borgo Christian — Research Associate (RTDa) Pinna Lorenzo — Professor Emeritus Quezada Meza Camila Paz — PhD Student Claudio D'Amore — Research Fellow Cesaro Luca — Research Assistant
Research projects	- *Evaluation of protein kinase CK2 as a novel target for the treatment of Friedreich Ataxia* (AFM Telethon)
Publications	Alcaraz, E., Vilardell, J., Borgo, C., Sarró, E., Plana, M., Marin, O., Pinna, L.A., Bayascas, J.R., Meseguer, A., Salvi, M., Itarte, E., Ruzzene, M., 2020. Effects of CK2β subunit down-regulation on Akt signalling in HK-2 renal cells. PLoS ONE 15, e0227340. https://doi.org/10.1371/journal.pone.0227340 Borgo, C., D'Amore, C., Cesaro, L., Itami, K., Hirota, T., Salvi, M., Pinna, L.A., 2020. A N-terminally deleted form of the CK2α' catalytic subunit is sufficient to support cell viability. Biochemical and Biophysical Research Communications 531, 409–415. https://doi.org/10.1016/j.bbrc.2020.07.112 Cozza, G., Zonta, F., Dalle Vedove, A., Venerando, A., Dall'Acqua, S., Battistutta, R., Ruzzene, M., Lolli, G., 2020. Biochemical and cellular mechanism of protein kinase CK2 inhibition by deceptive curcumin. FEBS J 287, 1850–1864. https://doi.org/10.1111/febs.15111 Dalle Vedove, A., Zonta, F., Zanforlin, E., Demitri, N., Ribaudo, G., Cazzanelli, G., Ongaro, A., Sarno, S., Zagotto, G., Battistutta, R., Ruzzene, M., Lolli, G., 2020. A novel class of selective CK2 inhibitors targeting its open hinge conformation. European Journal of Medicinal Chemistry 195, 112267. https://doi.org/10.1016/j.ejmech.2020.112267 D'Amore, C., Borgo, C., Bosello-Travain, V., Vilardell, J., Salizzato, V., Pinna, L.A., Venerando, A., Salvi, M., 2020a. Deciphering the role of protein kinase CK2 in the maturation/stability of F508del-CFTR. Biochimica et Biophysica Acta (BBA) -

Molecular Basis of Disease 1866, 165611. https://doi.org/10.1016/j.bbadis.2019.165611

D'Amore, C., Borgo, C., Sarno, S., Salvi, M., 2020b. Role of CK2 inhibitor CX-4945 in anti-cancer combination therapy – potential clinical relevance. Cell Oncol. 43, 1003–1016. https://doi.org/10.1007/s13402-020-00566-w

D'Amore, C., Moro, E., Borgo, C., Itami, K., Hirota, T., Pinna, L.A., Salvi, M., 2020c. "Janus" efficacy of CX-5011: CK2 inhibition and methuosis induction by independent mechanisms. Biochimica et Biophysica Acta (BBA) - Molecular Cell Research 1867, 118807. https://doi.org/10.1016/j.bbamcr.2020.118807

Salvi, M., 2020. Non-Histone Protein Methylation: Molecular Mechanisms and Physiopathological Relevance. CPPS 21, 640–641. https://doi.org/10.2174/1389203721107200620152550

Sanna, M., Borgo, C., Compagnin, C., Favaretto, F., Vindigni, V., Trento, M., Bettini, S., Comin, A., Belligoli, A., Rugge, M., Bassetto, F., Donella-Deana, A., Vettor, R., Busetto, L., Milan, G., 2020. White Adipose Tissue Expansion in Multiple Symmetric Lipomatosis Is Associated with Upregulation of CK2, AKT and ERK1/2. IJMS 21, 7933. https://doi.org/10.3390/ijms21217933

4 - Post-transcriptional gene regulation in cancer cells

Principal Investigator	Dr. Donna Mia D'Agostino ORCID https://orcid.org/0000-0002-3451-5622 Scopus 7005814670 WoS ID AAW-1765-2021
Contact	dm.dagostino@unipd.it 049 821 5886
Keywords	T-cell leukemia, complex retrovirus, noncoding RNA, alternative splicing, circulating biomarkers
Members	D'Agostino Donna Mia Researcher
Research projects	-
Publications	Cavallari, I., Grassi, A., Del Bianco, P., Aceti, A., Zaborra, C., Sharova, E., Bertazzolo, I., D'Agostino, D.M., Iafrate, M., Ciminale, V., 2020. Prognostic Stratification of Bladder Cancer Patients with a MicroRNA-Based Approach. Cancers 12, 3133. https://doi.org/10.3390/cancers12113133

5 - Redox Signaling in Pathophysiological Conditions

Principal Investigator	Prof. Maria Pia Rigobello ORCID https://orcid.org/0000-0003-2586-3251 Scopus 7003633359 Google Scholar Maria Pia Rigobello
Contact	mariapia.rigobello@unipd.it 049 827 6138 website
Keywords	Glutathione; Antioxidants; Oxidative Stress; Reactive Oxygen Species; Redox Regulation; Free Radicals; Antioxidant Activity; Free Radical Biology; MDA; Apoptosis;
Members	Rigobello Maria Pia — Associate Professor Scalcon Valeria — Postdoc Tonolo Federica — Postdoc Moretto Laura — Research fellow Parassia Sofia — PhD Student Folda Alessandra — Research Assistant
Research projects	- *Innovazione nel campo dei functional foods e della nutraceutica per migliorare la salute ed il benessere del consumatore con sinergia tra ricerca e azienda* (FSE) - *Cibo intelligente per un futuro sostenibile* (FESR) - *Innovazione e ricerca per un Veneto più competitivo* (FSE)
IP Exploitation & services	- *PRIX QUALITY SPA Rep. 39/2020 per "Informazioni nutrizionali ad uso del consumatore per l'Azienda Supermercato Prix"*
Publications	Antonucci, S., Di Sante, M., Tonolo, F., Pontarollo, L., Scalcon, V., Alanova, P., Menabò, R., Carpi, A., Bindoli, A., Rigobello, M.P., Giorgio, M., Kaludercic, N., Di Lisa, F., 2021. The Determining Role of Mitochondrial Reactive Oxygen Species Generation and Monoamine Oxidase Activity in Doxorubicin-Induced Cardiotoxicity. Antioxidants & Redox Signaling 34, 531–550. https://doi.org/10.1089/ars.2019.7929 Hyeraci, M., Colalillo, M., Labella, L., Marchetti, F., Samaritani, S., Scalcon, V., Rigobello, M.P., Dalla Via, L., 2020. Platinum(II) Complexes Bearing Triphenylphosphine and Chelating Oximes: Antiproliferative Effect and Biological Profile in Resistant Cells. ChemMedChem 15, 1464–1472. https://doi.org/10.1002/cmdc.202000165 Tonolo, F., Fiorese, F., Moretto, L., Folda, A., Scalcon, V., Grinzato, A., Ferro, S., Arrigoni, G., Bindoli, A., Feller, E., Bellamio, M., Marin, O., Rigobello, M.P., 2020a. Identification of New Peptides from Fermented Milk Showing Antioxidant Properties: Mechanism of Action. Antioxidants 9, 117. https://doi.org/10.3390/antiox9020117 Tonolo, F., Moretto, L., Grinzato, A., Fiorese, F., Folda, A., Scalcon, V., Ferro, S., Arrigoni, G., Bellamio, M., Feller, E., Bindoli, A., Marin, O., Rigobello, M.P., 2020b. Fermented Soy-Derived Bioactive Peptides Selected by a Molecular Docking

	Approach Show Antioxidant Properties Involving the Keap1/Nrf2 Pathway. Antioxidants 9, 1306. https://doi.org/10.3390/antiox9121306

Computational and Structural Biology

6 - BioComputing UP

Principal Investigator	Prof. Silvio Tosatto ORCID https://orcid.org/0000-0003-4525-7793 Scopus 9242408800 WoS ID B-2840-2009 Google Scholar Silvio Tosatto
Contact	silvio.tosatto@unipd.it 049 827 6269 website
Keywords	Bioinformatics and Computational Biology; Modeling; Simulation; RNA; Bioinformatics; Statistics; Proteins; Protein Structure; Molecular Dynamics Simulation; Protein-Protein Interaction
Members	Tosatto Silvio — Full Professor Piovesan Damiano — Assistant Professor (RTDb) Minervini Giovanni — Research Associate (RTDa) Battistella Diana — Lab manager Falconieri Antonella — Postdoc Monzon Alex — Postdoc Necci Marco — Postdoc Paladin Lisanna — Postdoc Errigo Sara — Research fellow Hatos Andras — Research fellow Quaglia Federica — Research fellow Bevilacqua Martina — PhD Student Ivan Micetic — Research Assistant Carraro Marco — Research Assistant
Research projects	- *IDPfun - Driving the functional characterization of intrinsically disordered proteins* (MSCA RISE) - *REFRACT - Repeat protein Function Refinement, Annotation and Classification of Topologies* (MSCA RISE) - *Towards a mechanistic understanding of von Hippel-Lindau syndrome in different tissue*s (AIRC) - *Protein bioinformatics for human health* (PRIN) - *CONVERGE - Connect and align ELIXIR Nodes to deliver sustainable FAIR life-science data management services* (RIA INFRADEV) - *PhasAGE - Excellence Hub on Phase Transitions in Aging and Age-Related Disorders* (CSA WIDESPREAD) - *Bioschemas* (EMBL-EBI) - *Platforms* (EMBL-EBI) - TRELIS - *Tandem REpeats in Large proteIn platformS* (MSCA SoE - Paladin)

IP Exploitation	- ELIXIR commissioned services contract for projects under the platform funding document nr. 15 IT-2019 - Commercial Licence Agreement Sanofi-aventis recherche & développement
Publications	De Bortoli, M., Vio, R., Basso, C., Calore, M., Minervini, G., Angelini, A., Melacini, P., Vitiello, L., Vazza, G., Thiene, G., Tosatto, S., Corrado, D., Iliceto, S., Rampazzo, A., Calore, C., 2020. Novel Missense Variant in MYL2 Gene Associated With Hypertrophic Cardiomyopathy Showing High Incidence of Restrictive Physiology. Circ: Genomic and Precision Medicine 13. https://doi.org/10.1161/CIRCGEN.119.002824 Falconieri, A., Minervini, G., Bortolotto, R., Piovesan, D., Lopreiato, R., Sartori, G., Pennuto, M., Tosatto, S.C.E., 2020. The E3 ubiquitin-protein ligase MDM2 is a novel interactor of the von Hippel–Lindau tumor suppressor. Sci Rep 10, 15850. https://doi.org/10.1038/s41598-020-72683-3 Galber, C., Acosta, M.J., Minervini, G., Giorgio, V., 2020. The role of mitochondrial ATP synthase in cancer. Biological Chemistry 401, 1199–1214. https://doi.org/10.1515/hsz-2020-0157 Iserte, J.A., Lazar, T., Tosatto, S.C.E., Tompa, P., Marino-Buslje, C., 2020. Chasing coevolutionary signals in intrinsically disordered protein complexes. Sci Rep 10, 17962. https://doi.org/10.1038/s41598-020-74791-6 Jarnot, P., Ziemska-Legiecka, J., Dobson, L., Merski, M., Mier, P., Andrade-Navarro, M.A., Hancock, J.M., Dosztányi, Z., Paladin, L., Necci, M., Piovesan, D., Tosatto, S.C.E., Promponas, V.J., Grynberg, M., Gruca, A., 2020. PlaToLoCo: the first web meta-server for visualization and annotation of low complexity regions in proteins. Nucleic Acids Research 48, W77–W84. https://doi.org/10.1093/nar/gkaa339 Minervini, G., Pennuto, M., Tosatto, S.C.E., 2020. The pVHL neglected functions, a tale of hypoxia-dependent and -independent regulations in cancer. Open Biol. 10, 200109. https://doi.org/10.1098/rsob.200109 Monzon, A.M., Necci, M., Quaglia, F., Walsh, I., Zanotti, G., Piovesan, D., Tosatto, S.C.E., 2020. Experimentally Determined Long Intrinsically Disordered Protein Regions Are Now Abundant in the Protein Data Bank. IJMS 21, 4496. https://doi.org/10.3390/ijms21124496 Paladin, L., Necci, M., Piovesan, D., Mier, P., Andrade-Navarro, M.A., Tosatto, S.C.E., 2020a. A novel approach to investigate the evolution of structured tandem repeat protein families by exon duplication. Journal of Structural Biology 212, 107608. https://doi.org/10.1016/j.jsb.2020.107608 Paladin, L., Schaeffer, M., Gaudet, P., Zahn-Zabal, M., Michel, P.-A., Piovesan, D., Tosatto, S.C.E., Bairoch, A., 2020b. The Feature-Viewer: a visualization tool for positional annotations on a sequence. Bioinformatics 36, 3244–3245. https://doi.org/10.1093/bioinformatics/btaa055 Piovesan, D., Hatos, A., Minervini, G., Quaglia, F., Monzon, A.M., Tosatto, S.C.E., 2020. Assessing predictors for new post translational modification sites: A case study on hydroxylation. PLoS Comput Biol 16, e1007967. https://doi.org/10.1371/journal.pcbi.1007967

	Quaglia, F., Hatos, A., Piovesan, D., Tosatto, S.C.E., 2020. Exploring Manually Curated Annotations of Intrinsically Disordered Proteins with DisProt. Current Protocols in Bioinformatics 72. https://doi.org/10.1002/cpbi.107 Reggiani, F., Carraro, M., Belligoli, A., Sanna, M., dal Prà, C., Favaretto, F., Ferrari, C., Vettor, R., Tosatto, S.C.E., 2020. In silico prediction of blood cholesterol levels from genotype data. PLoS ONE 15, e0227191. https://doi.org/10.1371/journal.pone.0227191 Saldaño, T.E., Freixas, V.M., Tosatto, S.C.E., Parisi, G., Fernandez-Alberti, S., 2020. Exploring Conformational Space with Thermal Fluctuations Obtained by Normal-Mode Analysis. J. Chem. Inf. Model. 60, 3068–3080. https://doi.org/10.1021/acs.jcim.9b01136

7 - Protein crystallography and cryoEM

Principal Investigator	Prof. Giuseppe Zanotti ORCID https://orcid.org/0000-0002-0945-6501 Scopus 7005121806 Google Scholar Giuseppe Zanotti
Contact information	giuseppe.zanotti@unipd.it 049 827 6409 website
Keywords	Crystallography; Protein Structure; Proteins; Crystal Structure; Crystal; Protein Purification; X-ray Diffraction; Crystallization; X-ray Crystallography; Protein Expression
Members	Zanotti Giuseppe — Full Professor Calì Tito — Associate Professor De Almeida Roger Jessica — Postdoc Poggio Elena — Postdoc Giamogante Flavia — Postdoc Covallero Alberto — PhD Student
Research projects	- *Discovering how signalling pathways coordinate intracellular organelle communication* (PRIN - Calì) - *Peeping at sympathetic innervation of normal and diseased skeletal muscles through optogenetics - SKoOP* (STARS-CoG - Zanotti/Zaglia) - *MOVESIN - Dynamic synaptic junctions at the interface between organelles orchestrate intracellular communication in physiopathology* (STARS-CoG - Calì) - *A Split-GFP based assay to monitor SARS COV2 Spike protein-ACE2 interaction and quantify the action of Spike-mediated membrane fusion inhibitors (SPLITCov-2)* (CARIPARO - Calì)
Publications	Ali, M., Bozdag, M., Farooq, U., Angeli, A., Carta, F., Berto, P., Zanotti, G., Supuran, C.T., 2020. Benzylaminoethyureido-Tailed Benzenesulfonamides: Design, Synthesis, Kinetic and X-ray Investigations on Human Carbonic Anhydrases. IJMS 21, 2560. https://doi.org/10.3390/ijms21072560 Barazzuol, L., Giamogante, F., Brini, M., Calì, T., 2020. PINK1/Parkin Mediated Mitophagy, Ca2+ Signalling, and ER–Mitochondria Contacts in Parkinson's Disease. IJMS 21, 1772. https://doi.org/10.3390/ijms21051772 Calí, T., Brini, M., 2020. Play Around with mtDNA. DNA and Cell Biology 39, 1369–1369. https://doi.org/10.1089/dna.2020.29016.tjt Genovese, I., Giamogante, F., Barazzuol, L., Battista, T., Fiorillo, A., Vicario, M., D'Alessandro, G., Cipriani, R., Limatola, C., Rossi, D., Sorrentino, V., Poser, E., Mosca, L., Squitieri, F., Perluigi, M., Arena, A., van Petegem, F., Tito, C., Fazi, F., Giorgi, C., Calì, T., Ilari, A., Colotti, G., 2020. Sorcin is an early marker of neurodegeneration, Ca2+ dysregulation and endoplasmic reticulum stress associated

to neurodegenerative diseases. Cell Death Dis 11, 861. https://doi.org/10.1038/s41419-020-03063-y

Giamogante, F., Barazzuol, L., Brini, M., Calì, T., 2020. ER–Mitochondria Contact Sites Reporters: Strengths and Weaknesses of the Available Approaches. IJMS 21, 8157. https://doi.org/10.3390/ijms21218157

Grinzato, A., Kandiah, E., Lico, C., Betti, C., Baschieri, S., Zanotti, G., 2020. Atomic structure of potato virus X, the prototype of the Alphaflexiviridae family. Nat Chem Biol 16, 564–569. https://doi.org/10.1038/s41589-020-0502-4

Monzon, A.M., Necci, M., Quaglia, F., Walsh, I., Zanotti, G., Piovesan, D., Tosatto, S.C.E., 2020. Experimentally Determined Long Intrinsically Disordered Protein Regions Are Now Abundant in the Protein Data Bank. IJMS 21, 4496. https://doi.org/10.3390/ijms21124496

Vallese, F., Catoni, C., Cieri, D., Barazzuol, L., Ramirez, O., Calore, V., Bonora, M., Giamogante, F., Pinton, P., Brini, M., Calì, T., 2020. An expanded palette of improved SPLICS reporters detects multiple organelle contacts in vitro and in vivo. Nat Commun 11, 6069. https://doi.org/10.1038/s41467-020-19892-6

Zarzecka, U., Grinzato, A., Kandiah, E., Cysewski, D., Berto, P., Skorko-Glonek, J., Zanotti, G., Backert, S., 2020. Functional analysis and cryo-electron microscopy of Campylobacter jejuni serine protease HtrA. Gut Microbes 12, 1810532. https://doi.org/10.1080/19490976.2020.1810532

8 - Protein interactions and dynamics

Principal Investigator	Prof. Monika Fuxreiter Scopus 6601999581 Google Scholar Monika Fuxreiter
Contact information	monika.fuxreiter@unipd.it website
Keywords	Protein interactions; Fuzziness; Phase Separation
Members	Monika Fuxretier Full Professor
Publications	Hardenberg, M., Horvath, A., Ambrus, V., Fuxreiter, M., Vendruscolo, M., 2020. Widespread occurrence of the droplet state of proteins in the human proteome. Proc Natl Acad Sci USA 117, 33254–33262. https://doi.org/10.1073/pnas.2007670117 Horvath, A., Miskei, M., Ambrus, V., Vendruscolo, M., Fuxreiter, M., 2020. Sequence-based prediction of protein binding mode landscapes. PLoS Comput Biol 16, e1007864. https://doi.org/10.1371/journal.pcbi.1007864 Kubatova, N., Pyper, D.J., Jonker, H.R.A., Saxena, K., Remmel, L., Richter, C., Brantl, S., Evguenieva-Hackenberg, E., Hess, W.R., Klug, G., Marchfelder, A., Soppa, J., Streit, W., Mayzel, M., Orekhov, V.Y., Fuxreiter, M., Schmitz, R.A., Schwalbe, H., 2020. Rapid Biophysical Characterization and NMR Spectroscopy Structural Analysis of Small Proteins from Bacteria and Archaea. ChemBioChem 21, 1178–1187. https://doi.org/10.1002/cbic.201900677 Miskei, M., Horvath, A., Vendruscolo, M., Fuxreiter, M., 2020. Sequence-Based Prediction of Fuzzy Protein Interactions. Journal of Molecular Biology 432, 2289–2303. https://doi.org/10.1016/j.jmb.2020.02.017 Zsolyomi, F., Ambrus, V., Fuxreiter, M., 2020. Patterns of Dynamics Comprise a Conserved Evolutionary Trait. Journal of Molecular Biology 432, 497–507. https://doi.org/10.1016/j.jmb.2019.11.007

Inflammation and Immunity

9 - Inflammation and immunity

Principal Investigator	Prof. Antonella Viola ORCID https://orcid.org/0000-0002-0125-9271 WoS ID A-4321-2015 Google Scholar Antonella Viola	
Contact information	antonella.viola@unipd.it 049 827 6072 website	
Keywords	-	
Members	Viola Antonella Canton Marcella Martinvalet Denis Molon Barbara Angioni Roberta Sanchez Rodríguez Ricardo Cioccarelli Chiara Carraro Eugenia Lionello Stefania Venegas Celedon Francisca Carolina Bertoldi Nicole Munari Fabio	Full Professor Researcher Assistant Professor (RTDb) Assistant Professor (RTDb) Postdoc Postdoc PhD Student PhD Student PhD Student PhD Student Research assistant Research assistant
Research projects	- *Sistemi avanzati per il recupero dei rifiuti (*SARR) (FESR - Viola) - *MOBILISE - Monoamine oxidase B inhibitors as novel drugs targeting NLRP3 inflammasome* (ERC PoC) - *Characterization of the mechanism of hyper production of proinflammatory* (CARIPARO - Martinvalet)	
Publications	Angioni, R., Calì, B., Vigneswara, V., Crescenzi, M., Merino, A., Sánchez-Rodríguez, R., Liboni, C., Hoogduijn, M.J., Newsome, P.N., Muraca, M., Russo, F.P., Viola, A., 2020a. Administration of Human MSC-Derived Extracellular Vesicles for the Treatment of Primary Sclerosing Cholangitis: Preclinical Data in MDR2 Knockout Mice. IJMS 21, 8874. https://doi.org/10.3390/ijms21228874 Angioni, R., Liboni, C., Herkenne, S., Sánchez-Rodríguez, R., Borile, G., Marcuzzi, E., Calì, B., Muraca, M., Viola, A., 2020b. CD73 + extracellular vesicles inhibit angiogenesis through adenosine A 2B receptor signalling. Journal of Extracellular Vesicles 9, 1757900. https://doi.org/10.1080/20013078.2020.1757900 Angioni, R., Sánchez-Rodríguez, R., Munari, F., Bertoldi, N., Arcidiacono, D., Cavinato, S., Marturano, D., Zaramella, A., Realdon, S., Cattelan, A., Viola, A., Molon, B., 2020c. Age-severity matched cytokine profiling reveals specific signatures in Covid-19 patients. Cell Death Dis 11, 957. https://doi.org/10.1038/s41419-020-03151-z	

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Herkenne, S., Ek, O., Zamberlan, M., Pellattiero, A., Chergova, M., Chivite, I., Novotná, E., Rigoni, G., Fonseca, T.B., Samardzic, D., Agnellini, A., Bean, C., Di Benedetto, G., Tiso, N., Argenton, F., Viola, A., Soriano, M.E., Giacomello, M., Ziviani, E., Sales, G., Claret, M., Graupera, M., Scorrano, L., 2020. Developmental and Tumor Angiogenesis Requires the Mitochondria-Shaping Protein Opa1. Cell Metabolism 31, 987-1003.e8. https://doi.org/10.1016/j.cmet.2020.04.007

León, D.L., Matthey, P., Fellay, I., Blanchard, M., Martinvalet, D., Mantel, P.-Y., Filgueira, L., Walch, M., 2020. Granzyme B Attenuates Bacterial Virulence by Targeting Secreted Factors. iScience 23, 100932. https://doi.org/10.1016/j.isci.2020.100932

Lindoso, R.S., Lopes, J.A., Binato, R., Abdelhay, E., Takiya, C.M., Miranda, K.R. de, Lara, L.S., Viola, A., Bussolati, B., Vieyra, A., Collino, F., 2020. Adipose Mesenchymal Cells-Derived EVs Alleviate DOCA-Salt-Induced Hypertension by Promoting Cardio-Renal Protection. Molecular Therapy - Methods & Clinical Development 16, 63–77. https://doi.org/10.1016/j.omtm.2019.11.002

Lionello, S., Marzaro, G., Martinvalet, D., 2020. SAM50, a side door to the mitochondria: The case of cytotoxic proteases. Pharmacological Research 160, 105196. https://doi.org/10.1016/j.phrs.2020.105196

Nkengasong, J., Iwasaki, A., Victora, C., Oh, J., Gao, G.F., Agrawal, A., Drosten, C., Söderberg-Naucler, C., López-Collazo, E., Pollock, A.M., Viola, A., Baker, M., 2020. The Global Response to the COVID-19 Pandemic. Med 1, 3–8. https://doi.org/10.1016/j.medj.2020.12.003

Sánchez-Rodríguez, R., Munari, F., Angioni, R., Venegas, F., Agnellini, A., Castro-Gil, M.P., Castegna, A., Luisetto, R., Viola, A., Canton, M., 2021. Targeting monoamine oxidase to dampen NLRP3 inflammasome activation in inflammation. Cell Mol Immunol 18, 1311–1313. https://doi.org/10.1038/s41423-020-0441-8

Medical Biotechnology

10 - Extracellular Matrix (Ecm) Pathobiology

Principal Investigator	Prof. Maurizio Onisto ORCID https://orcid.org/0000-0002-1191-7418 Scopus 6701645133 WoS ID K-5281-2014 Google Scholar Maurizio Onisto
Contact information	maurizio.onisto@unipd.it 049 827 6093 website
Keywords	PCR; Cell Biology; mRNA; DNA; Metastasis; Cancer Research; Matrix Metalloproteinase; Gelatinases; Zymography; ECM remodeling; Heparanase; inflammation; fibrosis; Tumor Invasion
Members	Onisto Maurizio — Associate Professor Valentina Masola — Postdoc Greco Nicola — PhD Student
Publications	Karamanou, K., Franchi, M., Onisto, M., Passi, A., Vynios, D.H., Brézillon, S., 2020. Evaluation of lumican effects on morphology of invading breast cancer cells, expression of integrins and downstream signaling. FEBS J. 287, 4862–4880. https://doi.org/10.1111/febs.15289

11 - Immune nano-technology

Principal Investigator	Dr. Lucia Gemma Delogu ORCID https://orcid.org/0000-0002-2329-7260 Scopus 26428706900 WoS ID AAM-9078-2020 Google Scholar Lucia Gemma Delogu
Contact	luciagemma.delogu@unipd.it 049 827-6134 website
Keywords	-
Members	Lucia Gemma Delogu — Assistant Professor (RTDb) Laura Fusco — Postdoc Gazzi Arianna — PhD Student
Research projects	- *Wound Healing In Space: Key challenges towards Intelligent and Enabling Sensing platforms (WHISKIES)* (ESA)
Publications	Avitabile, E., Fusco, L., Minardi, S., Orecchioni, M., Zavan, B., Yilmazer, A., Rauner, M., Pippia, P., Tasciotti, E., Delogu, L.G., 2020. Bioinspired Scaffold Action Under the Extreme Physiological Conditions of Simulated Space Flights: Osteogenesis Enhancing Under Microgravity. Front. Bioeng. Biotechnol. 8, 722. https://doi.org/10.3389/fbioe.2020.00722 Daiber, A., Kuntic, M., Hahad, O., Delogu, L.G., Rohrbach, S., Di Lisa, F., Schulz, R., Münzel, T., 2020. Effects of air pollution particles (ultrafine and fine particulate matter) on mitochondrial function and oxidative stress – Implications for cardiovascular and neurodegenerative diseases. Archives of Biochemistry and Biophysics 696, 108662. https://doi.org/10.1016/j.abb.2020.108662 Fusco, L., Avitabile, E., Armuzza, V., Orecchioni, M., Istif, A., Bedognetti, D., Da Ros, T., Delogu, L.G., 2020a. Impact of the surface functionalization on nanodiamond biocompatibility: a comprehensive view on human blood immune cells. Carbon 160, 390–404. https://doi.org/10.1016/j.carbon.2020.01.003 Fusco, L., Gazzi, A., Peng, G., Shin, Y., Vranic, S., Bedognetti, D., Vitale, F., Yilmazer, A., Feng, X., Fadeel, B., Casiraghi, C., Delogu, L.G., 2020b. Graphene and other 2D materials: a multidisciplinary analysis to uncover the hidden potential as cancer theranostics. Theranostics 10, 5435–5488. https://doi.org/10.7150/thno.40068 Gazzi, A., Fusco, L., Orecchioni, M., Ferrari, S., Franzoni, G., Yan, J.S., Rieckher, M., Peng, G., Lucherelli, M.A., Vacchi, I.A., Chau, N.D.Q., Criado, A., Istif, A., Mancino, D., Dominguez, A., Eckert, H., Vázquez, E., Ros, T.D., Nicolussi, P., Palermo, V., Schumacher, B., Cuniberti, G., Mai, Y., Clementi, C., Pasquali, M., Feng, X., Kostarelos, K., Yilmazer, A., Bedognetti, D., Fadeel, B., Prato, M., Bianco, A., Delogu, L.G., 2020. Graphene, other carbon nanomaterials and the immune system: toward nanoimmunity-by-design. J. Phys. Mater. 3, 034009. https://doi.org/10.1088/2515-7639/ab9317

Heller, D.A., Jena, P.V., Pasquali, M., Kostarelos, K., Delogu, L.G., Meidl, R.E., Rotkin, S.V., Scheinberg, D.A., Schwartz, R.E., Terrones, M., Wang, Y., Bianco, A., Boghossian, A.A., Cambré, S., Cognet, L., Corrie, S.R., Demokritou, P., Giordani, S., Hertel, T., Ignatova, T., Islam, M.F., Iverson, N.M., Jagota, A., Janas, D., Kono, J., Kruss, S., Landry, M.P., Li, Y., Martel, R., Maruyama, S., Naumov, A.V., Prato, M., Quinn, S.J., Roxbury, D., Strano, M.S., Tour, J.M., Weisman, R.B., Wenseleers, W., Yudasaka, M., 2020. Banning carbon nanotubes would be scientifically unjustified and damaging to innovation. Nat. Nanotechnol. 15, 164–166. https://doi.org/10.1038/s41565-020-0656-y

Luan, X., Martín, C., Zhang, P., Li, Q., Vacchi, I.A., Delogu, L.G., Mai, Y., Bianco, A., 2020. Degradation of Structurally Defined Graphene Nanoribbons by Myeloperoxidase and the Photo‐Fenton Reaction. Angew. Chem. Int. Ed. 59, 18515–18521. https://doi.org/10.1002/anie.202008925

Orecchioni, M., Bordoni, V., Fuoco, C., Reina, G., Lin, H., Zoccheddu, M., Yilmazer, A., Zavan, B., Cesareni, G., Bedognetti, D., Bianco, A., Delogu, L.G., 2020. Toward High‐Dimensional Single‐Cell Analysis of Graphene Oxide Biological Impact: Tracking on Immune Cells by Single‐Cell Mass Cytometry. Small 16, 2000123. https://doi.org/10.1002/smll.202000123

Roelands, J., Hendrickx, W., Zoppoli, G., Mall, R., Saad, M., Halliwill, K., Curigliano, G., Rinchai, D., Decock, J., Delogu, L.G., Turan, T., Samayoa, J., Chouchane, L., Ballestrero, A., Wang, E., Finetti, P., Bertucci, F., Miller, L.D., Galon, J., Marincola, F.M., Kuppen, P.J.K., Ceccarelli, M., Bedognetti, D., 2020. Oncogenic states dictate the prognostic and predictive connotations of intratumoral immune response. J Immunother Cancer 8, e000617. https://doi.org/10.1136/jitc-2020-000617

Schütt, J., Sandoval Bojorquez, D.I., Avitabile, E., Oliveros Mata, E.S., Milyukov, G., Colditz, J., Delogu, L.G., Rauner, M., Feldmann, A., Koristka, S., Middeke, J.M., Sockel, K., Fassbender, J., Bachmann, M., Bornhäuser, M., Cuniberti, G., Baraban, L., 2020. Nanocytometer for smart analysis of peripheral blood and acute myeloid leukemia: a pilot study. Nano Lett. 20, 6572–6581. https://doi.org/10.1021/acs.nanolett.0c02300

Taheri, H., Unal, M.A., Sevim, M., Gurcan, C., Ekim, O., Ceylan, A., Syrgiannis, Z., Christoforidis, K.C., Bosi, S., Ozgenç, O., Gómez, M.J., Turktas Erken, M., Soydal, Ç., Eroğlu, Z., Bitirim, C.V., Cagin, U., Arı, F., Ozen, A., Kuçuk, O., Delogu, L.G., Prato, M., Metin, Ö., Yilmazer, A., 2020. Photocatalytically Active Graphitic Carbon Nitride as an Effective and Safe 2D Material for In Vitro and In Vivo Photodynamic Therapy. Small 16, 1904619. https://doi.org/10.1002/smll.201904619

Weiss, C., Carriere, M., Fusco, L., Capua, I., Regla-Nava, J.A., Pasquali, M., Scott, J.A., Vitale, F., Unal, M.A., Mattevi, C., Bedognetti, D., Merkoçi, A., Tasciotti, E., Yilmazer, A., Gogotsi, Y., Stellacci, F., Delogu, L.G., 2020. Toward Nanotechnology-Enabled Approaches against the COVID-19 Pandemic. ACS Nano 14, 6383–6406. https://doi.org/10.1021/acsnano.0c03697

12 - Mass Spectrometry and Proteomics

Principal Investigator	Prof. Giorgio Arrigoni ORCID https://orcid.org/0000-0002-4103-2733 Scopus 7006116502 WoS ID A-3535-2014 Google Scholar Giorgio Arrigoni
Contact	giorgio.arrigoni@unipd.it 049 821 7449 website
Keywords	Proteomics; Mass Spectrometry; Liquid Chromatography; Proteins; Method Development; Electrophoresis; Protein Purification; Chromatography; Analytical Method Development; High-Performance Liquid Chromatography
Members	Arrigoni Giorgio — Associate Professor Franchin Cinzia — Research Assistant Battisti Ilaria — Research fellow
Research projects	-
Publications	Basso, D., Padoan, A., D'Incà, R., Arrigoni, G., Scapellato, M.L., Contran, N., Franchin, C., Lorenzon, G., Mescoli, C., Moz, S., Bozzato, D., Rugge, M., Plebani, M., 2020. Peptidomic and proteomic analysis of stool for diagnosing IBD and deciphering disease pathogenesis. Clinical Chemistry and Laboratory Medicine (CCLM) 58, 968–979. https://doi.org/10.1515/cclm-2019-1125 Carraro, M., Jones, K., Sartori, G., Schiavone, M., Antonucci, S., Kucharczyk, R., di Rago, J.-P., Franchin, C., Arrigoni, G., Forte, M., Bernardi, P., 2020. The Unique Cysteine of F-ATP Synthase OSCP Subunit Participates in Modulation of the Permeability Transition Pore. Cell Reports 32, 108095. https://doi.org/10.1016/j.celrep.2020.108095 Dal Sasso, E., Menabò, R., Agrillo, D., Arrigoni, G., Franchin, C., Giraudo, C., Filippi, A., Borile, G., Ascione, G., Zanella, F., Fabozzo, A., Motta, R., Romanato, F., Di Lisa, F., Iop, L., Gerosa, G., 2020. RegenHeart: A Time-Effective, Low-Concentration, Detergent-Based Method Aiming for Conservative Decellularization of the Whole Heart Organ. ACS Biomater. Sci. Eng. 6, 5493–5506. https://doi.org/10.1021/acsbiomaterials.0c00540 Ebinezer, L.B., Franchin, C., Trentin, A.R., Carletti, P., Trevisan, S., Agrawal, G.K., Rakwal, R., Quaggiotti, S., Arrigoni, G., Masi, A., 2020. Quantitative Proteomics of Maize Roots Treated with a Protein Hydrolysate: A Comparative Study with Transcriptomics Highlights the Molecular Mechanisms Responsive to Biostimulants. J. Agric. Food Chem. 68, 7541–7553. https://doi.org/10.1021/acs.jafc.0c01593 Honisch, C., Donadello, V., Hussain, R., Peterle, D., De Filippis, V., Arrigoni, G., Gatto, C., Giurgola, L., Siligardi, G., Ruzza, P., 2020. Application of Circular Dichroism and Fluorescence Spectroscopies To Assess Photostability of Water-Soluble Porcine Lens

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Vidović, M., Franchin, C., Morina, F., Veljović-Jovanović, S., Masi, A., Arrigoni, G., 2020. Efficient protein extraction for shotgun proteomics from hydrated and desiccated leaves of resurrection Ramonda serbica plants. Anal Bioanal Chem 412, 8299–8312. https://doi.org/10.1007/s00216-020-02965-2

13 - Nano-biotechnology and nano-biomedicine

Principal Investigator	Prof. Emanuele Papini ORCID https://orcid.org/0000-0001-6033-4473 Scopus 7005536300
Contact	emanuele.papini@unipd.it 049 827 6301 website
Keywords	Nanoparticle Preparation; Cell Culture; Nanobiotechnology; Macrophage; Membranes; Helicobacter; Cytokines; Monocyte-Macrophage
Members	Emanuele Papini — Associate Professor Tavano Regina — Researcher Bellini Chiara — Postdoc Sadasivam Mohanraj — PhD Student
Research projects	- *DIRNANO - Directing the immune response through designed nanomaterials* (MSCA ITN)
Publications	Moghimi, S.M., Simberg, D., Papini, E., Farhangrazi, Z.S., 2020. Complement activation by drug carriers and particulate pharmaceuticals: Principles, challenges and opportunities. Advanced Drug Delivery Reviews 157, 83–95. https://doi.org/10.1016/j.addr.2020.04.012 Papini, E., Tavano, R., Mancin, F., 2020. Opsonins and Dysopsonins of Nanoparticles: Facts, Concepts, and Methodological Guidelines. Front. Immunol. 11, 567365. https://doi.org/10.3389/fimmu.2020.567365 Trzciński, J.W., Morillas-Becerril, L., Scarpa, S., Tannorella, M., Muraca, F., Rastrelli, F., Castellani, C., Fedrigo, M., Angelini, A., Tavano, R., Papini, E., Mancin, F., 2021. Poly(lipoic acid)-Based Nanoparticles as Self-Organized, Biocompatible, and Corona-Free Nanovectors. Biomacromolecules 22, 467–480. https://doi.org/10.1021/acs.biomac.0c01321

14 - Peptides and Antibodies

Principal Investigator	Prof. Oriano Marin ORCID https://orcid.org/0000-0002-6175-4039 Scopus 7005583157
Contact	oriano.marin@unipd.it 049 827 6151 website
Keywords	
Members	Marin Oriano — Associate Professor Ferro Stefania — Research Assistant
University - Business collaborations	*- EPS S.p.A. Rep. 114/2019 "Estrazione di peptidi dalla proteina dell'uovo lisozima e valutazione dell'attività sulla conservazione di ovoprodotti"*
Publications	Alcaraz, E., Vilardell, J., Borgo, C., Sarró, E., Plana, M., Marin, O., Pinna, L.A., Bayascas, J.R., Meseguer, A., Salvi, M., Itarte, E., Ruzzene, M., 2020. Effects of CK2β subunit down-regulation on Akt signalling in HK-2 renal cells. PLoS ONE 15, e0227340. https://doi.org/10.1371/journal.pone.0227340 Ciscato, F., Filadi, R., Masgras, I., Pizzi, M., Marin, O., Damiano, N., Pizzo, P., Gori, A., Frezzato, F., Chiara, F., Trentin, L., Bernardi, P., Rasola, A., 2020. Hexokinase 2 displacement from mitochondria‐associated membranes prompts Ca 2+ ‐dependent death of cancer cells. EMBO Rep 21. https://doi.org/10.15252/embr.201949117 Tibaldi, E., Brocca, A., Sticca, A., Gola, E., Pizzi, M., Bordin, L., Pagano, M.A., Mazzorana, M., Donà, G., Violi, P., Marin, O., Romano, A., Angeli, P., Carraro, A., Brunati, A.M., 2020. Fam20C‐mediated phosphorylation of osteopontin is critical for its secretion but dispensable for its action as a cytokine in the activation of hepatic stellate cells in liver fibrogenesis. FASEB j. 34, 1122–1135. https://doi.org/10.1096/fj.201900880R Tonolo, F., Fiorese, F., Moretto, L., Folda, A., Scalcon, V., Grinzato, A., Ferro, S., Arrigoni, G., Bindoli, A., Feller, E., Bellamio, M., Marin, O., Rigobello, M.P., 2020a. Identification of New Peptides from Fermented Milk Showing Antioxidant Properties: Mechanism of Action. Antioxidants 9, 117. https://doi.org/10.3390/antiox9020117 Tonolo, F., Moretto, L., Grinzato, A., Fiorese, F., Folda, A., Scalcon, V., Ferro, S., Arrigoni, G., Bellamio, M., Feller, E., Bindoli, A., Marin, O., Rigobello, M.P., 2020b. Fermented Soy-Derived Bioactive Peptides Selected by a Molecular Docking Approach Show Antioxidant Properties Involving the Keap1/Nrf2 Pathway. Antioxidants 9, 1306. https://doi.org/10.3390/antiox9121306

15 - Protein engineering

Principal Investigator	Prof. Alessandro Negro ORCID https://orcid.org/0000-0003-3142-7632 Google Scholar Alessandro Negro
Contact	alessandro.negro@unipd.it 049 827 6166 website
Keywords	Gel Electrophoresis; Cell Culture; Cloning; PCR; Bacterial Cell Culture; Protein Expression; Protein Purification; Transfection; Gene Expression; Western Blot Analysis
Members	Negro Alessandro — Associate Professor Fontecha Cuenca Cristina — PhD Student
Research projects	-
Publications	Boeri, L., Jacchetti, E., Soncini, M., Negro, A., Albani, D., Raimondi, M.T., 2020. Advantages and limitations of a supernegative GFP in facilitating MyoD intracellular tracking. Methods Appl. Fluoresc. 8, 025007. https://doi.org/10.1088/2050-6120/ab797c Sanchez-Martin, C., Moroni, E., Ferraro, M., Laquatra, C., Cannino, G., Masgras, I., Negro, A., Quadrelli, P., Rasola, A., Colombo, G., 2020. Rational Design of Allosteric and Selective Inhibitors of the Molecular Chaperone TRAP1. Cell Reports 31, 107531. https://doi.org/10.1016/j.celrep.2020.107531

Mitochondrial Pathophysiology

16 - Mitochondria in Cell Death and Cancer

Principal Investigator	Prof. Paolo Bernardi ORCID https://orcid.org/0000-0001-9187-3736 Scopus 7102271571 WoS ID C-3656-2008 Google Scholar Paolo Bernardi	Prof. Andrea Rasola ORCID https://orcid.org/0000-0003-4522-3008 Scopus 6602080491 Google Scholar Andrea Rasola
Contact	paolo.bernardi@unipd.it 049 827 6365 website	andrea.rasola@unipd.it 049 827 6064 website
Keywords	Apoptosis; Cell Culture; Oxidative Stress; Cancer Research; Cancer Cells; Pharmacology; Cell Biology; Developmental Biology; Tumor Metabolism; Cancer Biology; Chaperone; Mitochondria; Signal Transduction	
Members	Bernardi Paolo — Full Professor Rasola Andrea — Associate Professor Giorgio Valentina — CNR researcher Masgras Ionica — CNR researcher Petronilli Valeria — CNR researcher Cannino Giuseppe — Postdoc Carraro Michela — Postdoc Carrer Andrea — Postdoc Dalzini Annalisa — Postdoc Favia Maria — Postdoc Ferrone Lavinia — Postdoc Laquatra Claudio — Postdoc Sanchez Martin Carlos — Postdoc Smolina Natalia — Postdoc Ciscato Francesco — Research fellow Tommasin Ludovica — Research fellow Urbani Andrea — Research fellow Scantamburlo Francesca — PhD Student Trevisan Elena — Research Assistant	
Research projects	- *The dual function of F-ATP synthase in tumor cell metabolism and survival* (AIRC - Bernardi) - *A TRAP on the road to tumor growth: targeting the pro-neoplastic functions of the mitochondrial chaperone TRAP1* (AIRC - Rasola) - *Targeting the interaction between SARS-CoV-2 and host cells as a potential anti-viral strategy* (CARIPARO - Rasola) - *Targeting the mitochondrial chaperone TRAP1 to inhibit plexiform*	

	neurofibroma growth (Children Tumor Foundation - Rasola/Masgras) - *Hexokinase 2 displacement from mitochondria-associated membranes* (Children Tumor Foundation - Rasola/Ciscato) - *Targeting Mitochondria to Treat Heart Disease* (Fondazione Leducq - Bernardi) - *Channel formation by mitochondrial ATP synthase: Mechanisms and regulation* (PRIN - Bernardi) - *A mitochondrial therapy for muscular dystrophies* (Telethon - Bernardi)
Publications	Ambrosini, G., Dalla Pozza, E., Fanelli, G., Di Carlo, C., Vettori, A., Cannino, G., Cavallini, C., Carmona-Carmona, C.A., Brandi, J., Rinalducci, S., Scupoli, M.T., Rasola, A., Cecconi, D., Palmieri, M., Dando, I., 2020. Progressively De-Differentiated Pancreatic Cancer Cells Shift from Glycolysis to Oxidative Metabolism and Gain a Quiescent Stem State. Cells 9, 1572. https://doi.org/10.3390/cells9071572 Antonucci, S., Di Sante, M., Sileikyte, J., Deveraux, J., Bauer, T., Bround, M.J., Menabò, R., Paillard, M., Alanova, P., Carraro, M., Ovize, M., Molkentin, J.D., Cohen, M., Forte, M.A., Bernardi, P., Di Lisa, F., Murphy, E., 2020. A novel class of cardioprotective small-molecule PTP inhibitors. Pharmacological Research 151, 104548. https://doi.org/10.1016/j.phrs.2019.104548 Bernardi, P., 2020. Mechanisms for Ca 2+ -dependent permeability transition in mitochondria. Proc Natl Acad Sci USA 117, 2743–2744. https://doi.org/10.1073/pnas.1921035117 Carraro, M., Bernardi, P., 2020. Measurement of membrane permeability and the mitochondrial permeability transition, in: Methods in Cell Biology. Elsevier, pp. 369–379. https://doi.org/10.1016/bs.mcb.2019.10.004 Carraro, M., Carrer, A., Urbani, A., Bernardi, P., 2020a. Molecular nature and regulation of the mitochondrial permeability transition pore(s), drug target(s) in cardioprotection. Journal of Molecular and Cellular Cardiology 144, 76–86. https://doi.org/10.1016/j.yjmcc.2020.05.014 Carraro, M., Jones, K., Sartori, G., Schiavone, M., Antonucci, S., Kucharczyk, R., di Rago, J.-P., Franchin, C., Arrigoni, G., Forte, M., Bernardi, P., 2020b. The Unique Cysteine of F-ATP Synthase OSCP Subunit Participates in Modulation of the Permeability Transition Pore. Cell Reports 32, 108095. https://doi.org/10.1016/j.celrep.2020.108095 Ciscato, F., Filadi, R., Masgras, I., Pizzi, M., Marin, O., Damiano, N., Pizzo, P., Gori, A., Frezzato, F., Chiara, F., Trentin, L., Bernardi, P., Rasola, A., 2020. Hexokinase 2 displacement from mitochondria‐associated membranes prompts Ca 2+ ‐dependent death of cancer cells. EMBO Rep 21. https://doi.org/10.15252/embr.201949117 Faienza, F., Lambrughi, M., Rizza, S., Pecorari, C., Giglio, P., Salamanca Viloria, J., Allega, M.F., Chiappetta, G., Vinh, J., Pacello, F., Battistoni, A., Rasola, A., Papaleo, E., Filomeni, G., 2020. S-nitrosylation affects TRAP1 structure and ATPase activity and modulates cell response to apoptotic stimuli. Biochemical Pharmacology 176, 113869. https://doi.org/10.1016/j.bcp.2020.113869

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Kowalik, M.A., Puliga, E., Cabras, L., Sulas, P., Petrelli, A., Perra, A., Ledda-Columbano, G.M., Morandi, A., Merlin, S., Orrù, C., Sanchez-Martin, C., Fornari, F., Gramantieri, L., Parri, M., Rasola, A., Bellomo, S.E., Sebastian, C., Follenzi, A., Giordano, S., Columbano, A., 2020. Thyroid hormone inhibits hepatocellular carcinoma progression via induction of differentiation and metabolic reprogramming. Journal of Hepatology 72, 1159–1169. https://doi.org/10.1016/j.jhep.2019.12.018

Sambri, I., Massa, F., Gullo, F., Meneghini, S., Cassina, L., Carraro, M., Dina, G., Quattrini, A., Patanella, L., Carissimo, A., Iuliano, A., Santorelli, F., Codazzi, F., Grohovaz, F., Bernardi, P., Becchetti, A., Casari, G., 2020. Impaired flickering of the permeability transition pore causes SPG7 spastic paraplegia. EBioMedicine 61, 103050. https://doi.org/10.1016/j.ebiom.2020.103050

Sanchez-Martin, C., Menon, D., Moroni, E., Ferraro, M., Masgras, I., Elsey, J., Arbiser, J.L., Colombo, G., Rasola, A., 2021. Honokiol Bis-Dichloroacetate Is a Selective Allosteric Inhibitor of the Mitochondrial Chaperone TRAP1. Antioxidants & Redox Signaling 34, 505–516. https://doi.org/10.1089/ars.2019.7972

Sanchez-Martin, C., Moroni, E., Ferraro, M., Laquatra, C., Cannino, G., Masgras, I., Negro, A., Quadrelli, P., Rasola, A., Colombo, G., 2020a. Rational Design of Allosteric and Selective Inhibitors of the Molecular Chaperone TRAP1. Cell Reports 31, 107531. https://doi.org/10.1016/j.celrep.2020.107531

Sanchez-Martin, C., Serapian, S.A., Colombo, G., Rasola, A., 2020b. Dynamically Shaping Chaperones. Allosteric Modulators of HSP90 Family as Regulatory Tools of Cell Metabolism in Neoplastic Progression. Front. Oncol. 10, 1177. https://doi.org/10.3389/fonc.2020.01177

Serapian, S.A., Marchetti, F., Triveri, A., Morra, G., Meli, M., Moroni, E., Sautto, G.A., Rasola, A., Colombo, G., 2020. The Answer Lies in the Energy: How Simple Atomistic Molecular Dynamics Simulations May Hold the Key to Epitope Prediction on the Fully Glycosylated SARS-CoV-2 Spike Protein. J. Phys. Chem. Lett. 11, 8084–8093. https://doi.org/10.1021/acs.jpclett.0c02341

17 - Mitochondrial Calcium Signaling

Principal Investigator	Prof. Rosario Rizzuto ORCID https://orcid.org/0000-0001-7044-5097 Scopus 7005289262 Google Scholar Rosario Rizzuto	
Contact	rosario.rizzuto@unipd.it 049 827 3001 website	
Keywords		
Members	Rizzuto Rosario Pallafacchina Giorgia Ausoni Simonetta De Stefani Diego Mammucari Cristina Raffaello Anna De Mario Agnese Feno Simona Santina Gherardi Gaia Vecellio Reane Denis Vetralla Massimo Cadenelli Vanessa Monticelli Halenya D'Angelo Donato Mazzola Chiara Placa Federica Menegazzi Valentina	Full Professor CNR researcher Researcher Associate Professor Associate Professor Associate Professor Postdoc Postdoc Postdoc Postdoc Postdoc Research Fellow Research Fellow PhD Student PhD Student PhD Student Research Assistant
Research projects	- *Targeting the Mitochondrial Calcium Uniporter to counteract Duchenne Muscular Dystrophy* (AFM Telethon - Mammucari) - *Metastatic disease: the key unmet need in oncology* (AIRC) - *Sensing Cell Mechanics* (CARIPARO) - *The importance of megakaryocyte endoplasmic reticulum/mitochondria calcium toolkit in the path…* (CARIPLO - De Stefani) - *4D molecular analysis on dynamic subcellular nanostructures by feedback-based imaging and tracking: the biochemistry of nutrient and energy sensing* (PRIN - De Stefani) - *Nutrition, obesity and cancer: pathophysiological aspects* (Ricerca sanitaria finalizzata) - *mitoPOC- Mitochondrial ATP-sensitive potassium channel (mitoKATP): structure, function and pharmacological targeting* (STARS-CoG - De Stefani) - *Targeting mitochondria in myopathies with RyR1 and MICU1 mutations (*Telethon - Raffaello)	

Publications	Ausoni, S., Azzarello, G., 2020. Development of Cancer in Patients With Heart Failure: How Systemic Inflammation Can Lay the Groundwork. Front. Cardiovasc. Med. 7, 598384. https://doi.org/10.3389/fcvm.2020.598384 Ausoni, S., Calamelli, S., Saccà, S., Azzarello, G., 2020. How progressive cancer endangers the heart: an intriguing and underestimated problem. Cancer Metastasis Rev 39, 535–552. https://doi.org/10.1007/s10555-020-09869-8 Cerqueira, F.M., von Stockum, S., Giacomello, M., Goliand, I., Kakimoto, P., Marchesan, E., De Stefani, D., Kowaltowski, A.J., Ziviani, E., Shirihai, O.S., 2020. A new target for an old DUB: UCH-L1 regulates mitofusin-2 levels, altering mitochondrial morphology, function and calcium uptake. Redox Biology 37, 101676. https://doi.org/10.1016/j.redox.2020.101676 Di Marco, G., Vallese, F., Jourde, B., Bergsdorf, C., Sturlese, M., De Mario, A., Techer-Etienne, V., Haasen, D., Oberhauser, B., Schleeger, S., Minetti, G., Moro, S., Rizzuto, R., De Stefani, D., Fornaro, M., Mammucari, C., 2020. A High-Throughput Screening Identifies MICU1 Targeting Compounds. Cell Reports 30, 2321-2331.e6. https://doi.org/10.1016/j.celrep.2020.01.081 Georgiadou, E., Haythorne, E., Dickerson, M.T., Lopez-Noriega, L., Pullen, T.J., da Silva Xavier, G., Davis, S.P.X., Martinez-Sanchez, A., Semplici, F., Rizzuto, R., McGinty, J.A., French, P.M., Cane, M.C., Jacobson, D.A., Leclerc, I., Rutter, G.A., 2020. The pore-forming subunit MCU of the mitochondrial Ca2+ uniporter is required for normal glucose-stimulated insulin secretion in vitro and in vivo in mice. Diabetologia 63, 1368–1381. https://doi.org/10.1007/s00125-020-05148-x Gherardi, G., Monticelli, H., Rizzuto, R., Mammucari, C., 2020. The Mitochondrial Ca2+ Uptake and the Fine-Tuning of Aerobic Metabolism. Front. Physiol. 11, 554904. https://doi.org/10.3389/fphys.2020.554904 Hausenloy, D.J., Schulz, R., Girao, H., Kwak, B.R., De Stefani, D., Rizzuto, R., Bernardi, P., Di Lisa, F., 2020. Mitochondrial ion channels as targets for cardioprotection. J Cell Mol Med 24, 7102–7114. https://doi.org/10.1111/jcmm.15341 Li, S., Wu, Z., Li, Y., Tantray, I., De Stefani, D., Mattarei, A., Krishnan, G., Gao, F.-B., Vogel, H., Lu, B., 2020. Altered MICOS Morphology and Mitochondrial Ion Homeostasis Contribute to Poly(GR) Toxicity Associated with C9-ALS/FTD. Cell Reports 32, 107989. https://doi.org/10.1016/j.celrep.2020.107989 Liviero, F., Scarpa, M.C., De Stefani, D., Folino, F., Campisi, M., Mason, P., Iliceto, S., Pavanello, S., Maestrelli, P., 2020. Modulation of TRPV-1 by prostaglandin-E2 and bradykinin changes cough sensitivity and autonomic regulation of cardiac rhythm in healthy subjects. Sci Rep 10, 15163. https://doi.org/10.1038/s41598-020-72062-y Meneghesso, G., Garzotto, F., Rizzuto, R., Vettor, R., 2020. COVID-19: Effectiveness of Widespread Diagnostic Tests to Prevent Health Care Collapse in the Veneto Region, Italy. SSRN Journal. https://doi.org/10.2139/ssrn.3576942 Piroddi, N., Pesce, P., Scellini, B., Manzini, S., Ganzetti, G.S., Badi, I., Menegollo, M., Cora, V., Tiso, S., Cinquetti, R., Monti, L., Chiesa, G., Bleyl, S.B., Busnelli, M., Dellera, F., Bruno, D., Caicci, F., Grimaldi, A., Taramelli, R., Manni, L., Sacerdoti, D., Tesi, C., Poggesi, C., Ausoni, S., Acquati, F., Campione, M., 2020. Myocardial overexpression of ANKRD1 causes sinus venosus defects and progressive diastolic

dysfunction. Cardiovascular Research 116, 1458–1472. https://doi.org/10.1093/cvr/cvz291

Trevellin, E., Granzotto, M., Host, C., Grisan, F., De Stefani, D., Grinzato, A., Lefkimmiatis, K., Pagano, C., Rizzuto, R., Vettor, R., 2021. A Novel Loss of Function Melanocortin-4-Receptor Mutation (MC4R-F313Sfs*29) in Morbid Obesity. The Journal of Clinical Endocrinology & Metabolism 106, 736–749. https://doi.org/10.1210/clinem/dgaa885

18 - Mitochondrial medicine

Principal Investigator	Prof. Carlo Fiore Viscomi ORCID https://orcid.org/0000-0001-6050-0566 Scopus 57192336046 WoS ID R-1940-2016
Contact	carlo.viscomi@unipd.it website
Keywords	mitochondrial disease, gene therapy, mitochondria, animal models
Members	Viscomi Carlo Fiore — Associate Professor Balmaceda Valdez Valeria — Postdoc
Publications	Filipe, Anne, Alexander Chernorudskiy, Sandrine Arbogast, Ersilia Varone, Rocío-Nur Villar-Quiles, Diego Pozzer, Maryline Moulin, et al. 2021. 'Defective Endoplasmic Reticulum-Mitochondria Contacts and Bioenergetics in SEPN1-Related Myopathy'. Cell Death & Differentiation 28 (1): 123–38. https://doi.org/10.1038/s41418-020-0587-z Filipe, A., Chernorudskiy, A., Arbogast, S., Varone, E., Villar-Quiles, R.-N., Pozzer, D., Moulin, M., Fumagalli, S., Cabet, E., Dudhal, S., De Simoni, M.-G., Denis, R., Vadrot, N., Dill, C., Giovarelli, M., Szweda, L., De Palma, C., Pinton, P., Giorgi, C., Viscomi, C., Clementi, E., Missiroli, S., Boncompagni, S., Zito, E., Ferreiro, A., 2021. Defective endoplasmic reticulum-mitochondria contacts and bioenergetics in SEPN1-related myopathy. Cell Death Differ 28, 123–138. https://doi.org/10.1038/s41418-020-0587-z Luna-Sanchez, M., Benincá, C., Cerutti, R., Brea-Calvo, G., Yeates, A., Scorrano, L., Zeviani, M., Viscomi, C., 2020. Opa1 Overexpression Protects from Early-Onset Mpv17−/−-Related Mouse Kidney Disease. Molecular Therapy 28, 1918–1930. https://doi.org/10.1016/j.ymthe.2020.06.010 Pérez, M.J., Ivanyuk, D., Panagiotakopoulou, V., Di Napoli, G., Kalb, S., Brunetti, D., Al-Shaana, R., Kaeser, S.A., Fraschka, S.A.-K., Jucker, M., Zeviani, M., Viscomi, C., Deleidi, M., 2020. Loss of function of the mitochondrial peptidase PITRM1 induces proteotoxic stress and Alzheimer's disease-like pathology in human cerebral organoids. Mol Psychiatry. https://doi.org/10.1038/s41380-020-0807-4 Silva-Pinheiro, P., Cerutti, R., Luna-Sanchez, M., Zeviani, M., Viscomi, C., 2020. A Single Intravenous Injection of AAV-PHP.B-hNDUFS4 Ameliorates the Phenotype of Ndufs4 Mice. Molecular Therapy - Methods & Clinical Development 17, 1071–1078. https://doi.org/10.1016/j.omtm.2020.04.026 Steele, H., Gomez-Duran, A., Pyle, A., Hopton, S., Newman, J., Stefanetti, R.J., Charman, S.J., Parikh, J.D., He, L., Viscomi, C., Jakovljevic, D.G., Hollingsworth, K.G., Robinson, A.J., Taylor, R.W., Bottolo, L., Horvath, R., Chinnery, P.F., 2020. Metabolic effects of bezafibrate in mitochondrial disease. EMBO Mol Med 12, e11589. https://doi.org/10.15252/emmm.201911589 Szibor, M., Gainutdinov, T., Fernandez-Vizarra, E., Dufour, E., Gizatullina, Z., Debska-Vielhaber, G., Heidler, J., Wittig, I., Viscomi, C., Gellerich, F., Moore, A.L.,

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Viscomi, C., Zeviani, M., 2020. Strategies for fighting mitochondrial diseases. J Intern Med 287, 665–684. https://doi.org/10.1111/joim.13046

19 - Molecular mechanisms of aging

Principal Investigator	Prof. Marco Giorgio ORCID https://orcid.org/0000-0002-5842-6042 Scopus 6603620783 WoS ID I-9425-2012 Google Scholar Giorgio Marco
Contact	marco.giorgio@unipd.it 049 827 6060 website
Keywords	Aging; Redox Biology; Bioenergetics; Cancer
Members	Giorgio Marco — Associate Professor Casciaro Francesca — Postdoc
Publications	Antonucci, S., Di Sante, M., Tonolo, F., Pontarollo, L., Scalcon, V., Alanova, P., Menabò, R., Carpi, A., Bindoli, A., Rigobello, M.P., Giorgio, M., Kaludercic, N., Di Lisa, F., 2021. The Determining Role of Mitochondrial Reactive Oxygen Species Generation and Monoamine Oxidase Activity in Doxorubicin-Induced Cardiotoxicity. Antioxidants & Redox Signaling 34, 531–550. https://doi.org/10.1089/ars.2019.7929 Baroni, M.D., Colombo, S., Libens, O., Pallavi, R., Giorgio, M., Martegani, E., 2020. In S. cerevisiae hydroxycitric acid antagonizes chronological aging and apoptosis regardless of citrate lyase. Apoptosis 25, 686–696. https://doi.org/10.1007/s10495-020-01625-1

20 - Oxidative metabolism in cardiac disease

Principal Investigator	Prof. Fabio Di Lisa ORCID https://orcid.org/0000-0001-9757-8818 Scopus 26640371000
Contact	fabio.dilisa@unipd.it 049 827 6132 website
Keywords	
Members	Di Lisa Fabio — Full Professor Kaludercic Nina — CNR researcher Menabo` Roberta — CNR Research Assistant Antonucci Salvatore — Postdoc
Research projects	- *Targeting Mitochondria to Treat Heart Disease* (Fondazione Leducq)
Publications	Andreadou, I., Schulz, R., Papapetropoulos, A., Turan, B., Ytrehus, K., Ferdinandy, P., Daiber, A., Di Lisa, F., 2020. The role of mitochondrial reactive oxygen species, NO and H 2 S in ischaemia/reperfusion injury and cardioprotection. J Cell Mol Med 24, 6510–6522. https://doi.org/10.1111/jcmm.15279 Antonucci, S., Di Sante, M., Sileikyte, J., Deveraux, J., Bauer, T., Bround, M.J., Menabò, R., Paillard, M., Alanova, P., Carraro, M., Ovize, M., Molkentin, J.D., Cohen, M., Forte, M.A., Bernardi, P., Di Lisa, F., Murphy, E., 2020. A novel class of cardioprotective small-molecule PTP inhibitors. Pharmacological Research 151, 104548. https://doi.org/10.1016/j.phrs.2019.104548 Antonucci, S., Di Sante, M., Tonolo, F., Pontarollo, L., Scalcon, V., Alanova, P., Menabò, R., Carpi, A., Bindoli, A., Rigobello, M.P., Giorgio, M., Kaludercic, N., Di Lisa, F., 2021. The Determining Role of Mitochondrial Reactive Oxygen Species Generation and Monoamine Oxidase Activity in Doxorubicin-Induced Cardiotoxicity. Antioxidants & Redox Signaling 34, 531–550. https://doi.org/10.1089/ars.2019.7929 Casas, A.I., Nogales, C., Mucke, H.A.M., Petraina, A., Cuadrado, A., Rojo, A.I., Ghezzi, P., Jaquet, V., Augsburger, F., Dufrasne, F., Soubhye, J., Deshwal, S., Di Sante, M., Kaludercic, N., Di Lisa, F., Schmidt, H.H.H.W., 2020. On the Clinical Pharmacology of Reactive Oxygen Species. Pharmacol Rev 72, 801–828. https://doi.org/10.1124/pr.120.019422 Daiber, A., Kuntic, M., Hahad, O., Delogu, L.G., Rohrbach, S., Di Lisa, F., Schulz, R., Münzel, T., 2020a. Effects of air pollution particles (ultrafine and fine particulate matter) on mitochondrial function and oxidative stress – Implications for cardiovascular and neurodegenerative diseases. Archives of Biochemistry and Biophysics 696, 108662. https://doi.org/10.1016/j.abb.2020.108662 Daiber, A., Steven, S., Vujacic-Mirski, K., Kalinovic, S., Oelze, M., Di Lisa, F., Münzel, T., 2020b. Regulation of Vascular Function and Inflammation via Cross Talk of Reactive Oxygen and Nitrogen Species from Mitochondria or NADPH

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Dal Sasso, E., Menabò, R., Agrillo, D., Arrigoni, G., Franchin, C., Giraudo, C., Filippi, A., Borile, G., Ascione, G., Zanella, F., Fabozzo, A., Motta, R., Romanato, F., Di Lisa, F., Iop, L., Gerosa, G., 2020. RegenHeart: A Time-Effective, Low-Concentration, Detergent-Based Method Aiming for Conservative Decellularization of the Whole Heart Organ. ACS Biomater. Sci. Eng. 6, 5493–5506. https://doi.org/10.1021/acsbiomaterials.0c00540

Hausenloy, D.J., Schulz, R., Girao, H., Kwak, B.R., De Stefani, D., Rizzuto, R., Bernardi, P., Di Lisa, F., 2020. Mitochondrial ion channels as targets for cardioprotection. J Cell Mol Med 24, 7102–7114. https://doi.org/10.1111/jcmm.15341

Kaludercic, N., Di Lisa, F., 2020a. Mitochondrial ROS Formation in the Pathogenesis of Diabetic Cardiomyopathy. Front. Cardiovasc. Med. 7, 12. https://doi.org/10.3389/fcvm.2020.00012

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Park, M., Nishimura, T., Baeza-Garza, C.D., Caldwell, S.T., Pun, P.B.L., Prag, H.A., Young, T., Sauchanka, O., Logan, A., Forkink, M., Gruszczyk, A.V., Prime, T.A., Arndt, S., Naudi, A., Pamplona, R., Coughlan, M.T., Tate, M., Ritchie, R.H., Caicci, F., Kaludercic, N., Di Lisa, F., Smith, R.A.J., Hartley, R.C., Murphy, M.P., Krieg, T., 2020. Confirmation of the Cardioprotective Effect of MitoGamide in the Diabetic Heart. Cardiovasc Drugs Ther 34, 823–834. https://doi.org/10.1007/s10557-020-07086-7

21 - Regulation of the Mitochondrial Proteome

Principal Investigator	Prof. Gyorgy Szabadkai ORCID https://orcid.org/0000-0002-3006-3577 Scopus 6602576918 Google Scholar Gyorgy Szabadkai
Contact	gyorgy.szabadkai@unipd.it 049 827 6359 website
Keywords	
Members	Gyorgy Szabadkai — Associate Professor Ferreira Henriques Tiago Andre — Postdoc Menegollo Michela — Postdoc Suman Matteo — Research fellow
Research projects	- *Targeting mitochondria in myopathies with RyR1 and MICU1 mutations* (TELETHON) - *Exploiting mitochondrial biogenesis pathways to stratify and target different breast cancer subtypes* (AIRC)
Publications	Plotegher, N., Perocheau, D., Ferrazza, R., Massaro, G., Bhosale, G., Zambon, F., Rahim, A.A., Guella, G., Waddington, S.N., Szabadkai, G., Duchen, M.R., 2020. Impaired cellular bioenergetics caused by GBA1 depletion sensitizes neurons to calcium overload. Cell Death Differ 27, 1588–1603. https://doi.org/10.1038/s41418-019-0442-2 Wilcz-Villega, E., Carter, E., Ironside, A., Xu, R., Mataloni, I., Holdsworth, J., Jones, W., Moreno Béjar, R., Uhlik, L., Bentham, R.B., Godinho, S.A., Dalli, J., Grose, R., Szabadkai, G., Jones, L., Hodivala-Dilke, K., Bianchi, K., 2020. Macrophages induce malignant traits in mammary epithelium via IKKε/TBK1 kinases and the serine biosynthesis pathway. EMBO Mol Med 12. https://doi.org/10.15252/emmm.201910491 Xu, R., Jones, W., Wilcz-Villega, E., Costa, A.S., Rajeeve, V., Bentham, R.B., Bryson, K., Nagano, A., Yaman, B., Olendo Barasa, S., Wang, Y., Chelala, C., Cutillas, P., Szabadkai, G., Frezza, C., Bianchi, K., 2020. The breast cancer oncogene IKKε coordinates mitochondrial function and serine metabolism. EMBO Rep 21. https://doi.org/10.15252/embr.201948260 Yu, Y., Niccoli, T., Ren, Z., Woodling, N.S., Aleyakpo, B., Szabadkai, G., Partridge, L., 2020. PICALM rescues glutamatergic neurotransmission, behavioural function and survival in a Drosophila model of Aβ42 toxicity. Human Molecular Genetics 29, 2420–2434. https://doi.org/10.1093/hmg/ddaa125

Muscle Physiology in Health and Disease

22 - Autonomic Control of Cardiac Function

Principal Investigator	Prof. Marco Mongillo ORCID https://orcid.org/0000-0002-1102-8709 Scopus 6602893697
Contact	marco.mongillo@unipd.it 049 729 3229 website
Keywords	Cell Physiology; Signal Transduction; Calcium Signaling; Calcium Imaging; GPCR Signaling; Protein Kinases; Molecular Pharmacology; Optogenetics; Cardiomyocytes; Cardiovascular Physiology
Members	Mongillo Marco — Associate Professor Zaglia Tania — Research Associate (RTDb) Prando Valentina — Research Assistant Ronfini Marco — PhD Student
Publications	Agrimi, J., Scalco, A., Agafonova, J., Williams III, L., Pansari, N., Keceli, G., Jun, S., Wang, N., Mastorci, F., Tichnell, C., Murray, B., James, C.A., Calkins, H., Zaglia, T., Paolocci, N., Chelko, S.P., 2020. Psychosocial Stress Hastens Disease Progression and Sudden Death in Mice with Arrhythmogenic Cardiomyopathy. JCM 9, 3804. https://doi.org/10.3390/jcm9123804

23 - Chaperones in Muscle Differentiation and Disease

Principal Investigator	Prof. Luisa Gorza ORCID https://orcid.org/0000-0003-4897-400X Scopus 7003397959
Contact	luisa.gorza@unipd.it 049 827 6033 website
Keywords	Muscle Proteins; Molecular Chaperones; Muscle Damage
Members	Gorza Luisa Associate Professor
Publications	Namuduri, A.V., Heras, G., Lauschke, V.M., Vitadello, M., Traini, L., Cacciani, N., Gorza, L., Gastaldello, S., 2020. Expression of SUMO enzymes is fiber type dependent in skeletal muscles and is dysregulated in muscle disuse. FASEB j. 34, 2269–2286. https://doi.org/10.1096/fj.201901913R Vitadello, M., Sorge, M., Percivalle, E., Germinario, E., Danieli‐Betto, D., Turco, E., Tarone, G., Brancaccio, M., Gorza, L., 2020. Loss of melusin is a novel, neuronal NO synthase/FoxO3‐independent master switch of unloading‐induced muscle atrophy. Journal of Cachexia, Sarcopenia and Muscle 11, 802–819. https://doi.org/10.1002/jcsm.12546

24 - Muscle Contractility And Plasticity

Principal Investigator	Prof. Marco Narici ORCID https://orcid.org/0000-0003-0167-1845 Scopus 7003787873
Contact	marco.narici@unipd.it 049 827 5315 website
Keywords	Exercise Physiology; Exercise Science; Exercise Performance; Biomechanics; Physiology; Resistance Training; Strength & Conditioning; Muscle Physiology; Human Physiology; Physical Fitness
Members	Marco Narici — Full Professor Giuseppe De Vito — Full Professor Blaauw Bert — Associate Professor Murgia Marta — Researcher (ric. universitario) Toniolo Luana — Researcher (ric. universitario) Franchi Martino — Research Associate (RTDa) Baraldo Martina — Postdoc Marcucci Lorenzo — Postdoc Nogara Leonardo — Postdoc Paganini Matteo — Postdoc Rizzi Benedetta — Postdoc Dyne Katharine Mary — Research fellow Sirago Giuseppe — Research fellow Tchampda Dondjang Achille Homere — Research fellow Tibaudo Lucia — Research fellow Dumitras Georgia Ana — PhD Student Geremia Alessia — PhD Student Sarto Fabio — PhD Student Valli Giacomo — PhD Student Canato Marta — Research Assistant Germinario Elena — Research Assistant
Research projects	- *MARS-PRE: MARcartori biologici e funzionali per la biomedicina aStronautica di PREcisione* (ASI) - *The MDS on LDC: Tissue Sharing Programme* (ASI) - *Heart FI-RE - HEART Fine REgulation through mechanosensing in myosin filaments: merging theory and experiments into a multi-scale heart simulator* (MSCA SoE - Reggiani) - *Neuromuscular ageing: mechanisms and functional implications (NeuAge)* (PRIN) - *Ablation of the maladaptive ER stress response restores diaphragm function and insulin resistance in SEPN1-related myopathies* (Ricerca sanitaria finalizzata - Blaauw)

	- *Heart Fi-Re - HEART Fine REgulation through mechanosensing in myosin filaments: merging theory and experiments into a multi-scale heart simulator* (MSCA IF - Paolocci/Marcucci)
University - Business collaborations	- Societé des Produits Nestlé SA Rep. 89/2020 "*The effect of a natural extract from olive leaf on muscle physiology in vivo"* (Blaauw)
Publications	Aas, S.N., Breit, M., Karsrud, S., Aase, O.J., Rognlien, S.H., Cumming, K.T., Reggiani, C., Seynnes, O., Rossi, A.P., Toniolo, L., Raastad, T., 2020. Musculoskeletal adaptations to strength training in frail elderly: a matter of quantity or quality? Journal of Cachexia, Sarcopenia and Muscle 11, 663–677. https://doi.org/10.1002/jcsm.12543 Ainscough, K.M., O'Brien, E.C., Lindsay, K.L., Kennelly, M.A., O'Sullivan, E.J., O'Brien, O.A., McCarthy, M., De Vito, G., McAuliffe, F.M., 2020. Nutrition, Behavior Change and Physical Activity Outcomes From the PEARS RCT—An mHealth-Supported, Lifestyle Intervention Among Pregnant Women With Overweight and Obesity. Front. Endocrinol. 10, 938. https://doi.org/10.3389/fendo.2019.00938 Blaauw, B., 2020. Activity-dependent increases of protein synthesis in skeletal muscle: Sensing the energy levels? J Physiol 598, 2537–2538. https://doi.org/10.1113/JP280081 Cohen, D.D., Restrepo, A., Richter, C., Harry, J.R., Franchi, M.V., Restrepo, C., Poletto, R., Taberner, M., 2020. Detraining of specific neuromuscular qualities in elite footballers during COVID-19 quarantine. Science and Medicine in Football 1–6. https://doi.org/10.1080/24733938.2020.1834123 de Winter, J.M., Molenaar, J.P., Yuen, M., van der Pijl, R., Shen, S., Conijn, S., van de Locht, M., Willigenburg, M., Bogaards, S.J.P., van Kleef, E.S.B., Lassche, S., Persson, M., Rassier, D.E., Sztal, T.E., Ruparelia, A.A., Oorschot, V., Ramm, G., Hall, T.E., Xiong, Z., Johnson, C.N., Li, F., Kiss, B., Lozano-Vidal, N., Boon, R.A., Marabita, M., Nogara, L., Blaauw, B., Rodenburg, R.J., Küsters, B., Doorduin, J., Beggs, A.H., Granzier, H., Campbell, K., Ma, W., Irving, T., Malfatti, E., Romero, N.B., Bryson-Richardson, R.J., van Engelen, B.G.M., Voermans, N.C., Ottenheijm, C.A.C., 2020. KBTBD13 is an actin-binding protein that modulates muscle kinetics. Journal of Clinical Investigation 130, 754–767. https://doi.org/10.1172/JCI124000 D'Hulst, G., Soro-Arnaiz, I., Masschelein, E., Veys, K., Fitzgerald, G., Smeuninx, B., Kim, S., Deldicque, L., Blaauw, B., Carmeliet, P., Breen, L., Koivunen, P., Zhao, S.-M., De Bock, K., 2020. PHD1 controls muscle mTORC1 in a hydroxylation-independent manner by stabilizing leucyl tRNA synthetase. Nat Commun 11, 174. https://doi.org/10.1038/s41467-019-13889-6 Fiber type diversity in skeletal muscle explored by mass spectrometry-based single fiber proteomics, 2020. . Histol Histopathol 35, 239–246. https://doi.org/10.14670/HH-18-170 Forte, R., De Vito, G., Boreham, C.A.G., 2021. Reliability of walking speed in basic and complex conditions in healthy, older community-dwelling individuals. Aging Clin Exp Res 33, 311–317. https://doi.org/10.1007/s40520-020-01543-x Franchi, M.V., Fitze, D.P., Hanimann, J., Sarto, F., Spörri, J., 2020a. Panoramic

ultrasound vs. MRI for the assessment of hamstrings cross-sectional area and volume in a large athletic cohort. Sci Rep 10, 14144. https://doi.org/10.1038/s41598-020-71123-6

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Furlan, S., Campione, M., Murgia, M., Mosole, S., Argenton, F., Volpe, P., Nori, A., 2020. Calsequestrins New Calcium Store Markers of Adult Zebrafish Cerebellum and Optic Tectum. Front. Neuroanat. 14, 15. https://doi.org/10.3389/fnana.2020.00015

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Giacomello, E., Crea, E., Torelli, L., Bergamo, A., Reggiani, C., Sava, G., Toniolo, L., 2020. Age Dependent Modification of the Metabolic Profile of the Tibialis Anterior Muscle Fibers in C57BL/6J Mice. IJMS 21, 3923. https://doi.org/10.3390/ijms21113923

Heffernan, S.M., McCarthy, C., Eustace, S., FitzPatrick, R.E., Delahunt, E., De Vito, G., 2020. Mineral rich algae with pine bark improved pain, physical function and analgesic use in mild-knee joint osteoarthritis, compared to Glucosamine: A randomized controlled pilot trial. Complementary Therapies in Medicine 50, 102349. https://doi.org/10.1016/j.ctim.2020.102349

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Sarto, F., Impellizzeri, F.M., Spörri, J., Porcelli, S., Olmo, J., Requena, B., Suarez-Arrones, L., Arundale, A., Bilsborough, J., Buchheit, M., Clubb, J., Coutts, A., Nabhan, D., Torres-Ronda, L., Mendez-Villanueva, A., Mujika, I., Maffiuletti, N.A., Franchi, M.V., 2020b. Impact of Potential Physiological Changes due to COVID-19 Home Confinement on Athlete Health Protection in Elite Sports: a Call for Awareness in Sports Programming. Sports Med 50, 1417–1419. https://doi.org/10.1007/s40279-020-01297-6

Sinha, U., Malis, V., Chen, J.-S., Csapo, R., Kinugasa, R., Narici, M.V., Sinha, S., 2020a.

Role of the Extracellular Matrix in Loss of Muscle Force With Age and Unloading Using Magnetic Resonance Imaging, Biochemical Analysis, and Computational Models. Front. Physiol. 11, 626. https://doi.org/10.3389/fphys.2020.00626

Sinha, U., Malis, V., Csapo, R., Narici, M., Sinha, S., 2020b. Magnetic resonance imaging based muscle strain rate mapping during eccentric contraction to study effects of unloading induced by unilateral limb suspension. Eur J Transl Myol 30, 139–143. https://doi.org/10.4081/ejtm.2019.8935

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Zulkifli, M., Neff, J.K., Timbalia, S.A., Garza, N.M., Chen, Y., Watrous, J.D., Murgia, M., Trivedi, P.P., Anderson, S.K., Tomar, D., Nilsson, R., Madesh, M., Jain, M., Gohil, V.M., 2020. Yeast homologs of human MCUR1 regulate mitochondrial proline metabolism. Nat Commun 11, 4866. https://doi.org/10.1038/s41467-020-18704-1

25 - Pathophysiology of Striated Muscles

Principal Investigator	Prof. Pompeo Volpe ORCID https://orcid.org/0000-0003-0151-1585 Scopus 7102913853 Google Scholar Pompeo Volpe
Contact	pompeo.volpe@unipd.it 049 827 6044 website
Keywords	Cell Biology; Muscle Contraction; Skeletal Muscle; Muscle; Skeletal Muscle Fibers; Muscular Dystrophy; Rare Diseases; Folding Defective Protein; Small Molecule Therapy; Animal Models; Heart Development;
Members	Volpe Pompeo — Associate Professor Sandonà Dorianna — Associate Professor Campione Marina — CNR researcher Nori Alessandra — Researcher Soardi Michela — Postdoc Valle Giorgia — Research fellow Scano Martina — PhD Student Caccin Paola — Research Assistant Carotti Marcello — Research Assistant Furlan Sandra — CNR Research Assistant
Research projects	- *Microgravity-induced gene expression in a nerve-muscle coculture model - NEMUCO* (ASI) - *Novel zebrafish models of sarcoglycanopathy. Swimming toward a cure* (MDA - Sandonà) - *CFTR correctors to treat sarcoglycanopathy, a repurposing story* (AFM Telethon Sandonà) - *Repurposing CFTR correctors in Allan Herndon Dudley syndrome* (Telethon Sandonà)
Publications	Boscaro, C., Carotti, M., Albiero, M., Trenti, A., Fadini, G.P., Trevisi, L., Sandonà, D., Cignarella, A., Bolego, C., 2020. Non-genomic mechanisms in the estrogen regulation of glycolytic protein levels in endothelial cells. FASEB j. 34, 12768–12784. https://doi.org/10.1096/fj.202001130R Carotti, M., Scano, M., Fancello, I., Richard, I., Risato, G., Bensalah, M., Soardi, M., Sandonà, D., 2020. Combined Use of CFTR Correctors in LGMD2D Myotubes Improves Sarcoglycan Complex Recovery. IJMS 21, 1813. https://doi.org/10.3390/ijms21051813 Furlan, S., Campione, M., Murgia, M., Mosole, S., Argenton, F., Volpe, P., Nori, A., 2020. Calsequestrins New Calcium Store Markers of Adult Zebrafish Cerebellum and Optic Tectum. Front. Neuroanat. 14, 15. https://doi.org/10.3389/fnana.2020.00015 Munger, M.A., Olğar, Y., Koleske, M.L., Struckman, H.L., Mandrioli, J., Lou, Q., Bonila,

	I., Kim, K., Ramos Mondragon, R., Priori, S.G., Volpe, P., Valdivia, H.H., Biskupiak, J., Carnes, C.A., Veeraraghavan, R., Györke, S., Radwański, P.B., 2020. Tetrodotoxin‐Sensitive Neuronal‐Type Na + Channels: A Novel and Druggable Target for Prevention of Atrial Fibrillation. JAHA 9. https://doi.org/10.1161/JAHA.119.015119 Valle, G., Arad, M., Volpe, P., 2020. Molecular adaptation to calsequestrin 2 (CASQ2) point mutations leading to catecholaminergic polymorphic ventricular tachycardia (CPVT): comparative analysis of R33Q and D307H mutants. J Muscle Res Cell Motil 41, 251–258. https://doi.org/10.1007/s10974-020-09587-2

26 - Signaling pathways that control protein homeostasis in muscles

Principal Investigator	Prof. Marco Sandri Scopus 7006653510 Google Scholar Marco Sandri
Contact	marco.sandri@unipd.it 049 792 3264 website
Keywords	Cognitive Neuroscience; Neuroimaging; Brain Imaging; Psychophysiology; Memory; Learning and Memory
Members	Sandri Marco — Full Professor Franco Romero Anais — Postdoc Marchioretti Caterina — Postdoc Romanello Vanina — Postdoc Trani Giulia — Postdoc Amendolagine Francesco Ivan — Research fellow Tezze Caterina — Research fellow Pezzini Camilla — PhD Student Scalabrin Marco — PhD Student Steffan Davide — PhD Student
Research projects	- *Deciphering a novel link between the ubiquitin proteasome system and mitochondrial function to control muscle mass* (AFM Telethon - Romanello) - *Dissecting the role of an uncharacterized FoxO-dependent gene that controls autophagy and ageing* (AFM Telethon) - *Understanding bmp signalling in cancer cachexia* (AIRC) - *Novel player in the control of Metabolism. Focus on Proteostasis, Mitochondria and Peroxisomes - ProMeMix* (STARS-CoG - Sandri/Romanello)
Publications	Aas, S.N., Tømmerbakke, D., Godager, S., Nordseth, M., Armani, A., Sandri, M., Benestad, H.B., Raastad, T., 2020. Effects of acute and chronic strength training on skeletal muscle autophagy in frail elderly men and women. Experimental Gerontology 142, 111122. https://doi.org/10.1016/j.exger.2020.111122 Chivet, M., Marchioretti, C., Pirazzini, M., Piol, D., Scaramuzzino, C., Polanco, M.J., Romanello, V., Zuccaro, E., Parodi, S., D'Antonio, M., Rinaldi, C., Sambataro, F., Pegoraro, E., Soraru, G., Pandey, U.B., Sandri, M., Basso, M., Pennuto, M., 2020. Polyglutamine-Expanded Androgen Receptor Alteration of Skeletal Muscle Homeostasis and Myonuclear Aggregation Are Affected by Sex, Age and Muscle Metabolism. Cells 9, 325. https://doi.org/10.3390/cells9020325 García-Prat, L., Perdiguero, E., Alonso-Martín, S., Dell'Orso, S., Ravichandran, S., Brooks, S.R., Juan, A.H., Campanario, S., Jiang, K., Hong, X., Ortet, L., Ruiz-Bonilla, V., Flández, M., Moiseeva, V., Rebollo, E., Jardí, M., Sun, H.-W., Musarò, A., Sandri, M., del Sol, A., Sartorelli, V., Muñoz-Cánoves, P., 2020. FoxO maintains a genuine muscle stem-cell quiescent state until geriatric age. Nat Cell Biol 22, 1307–1318.

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Oost, L.J., Sandri, M., Romanello, V., 2020. The authors reply: Letter on: “Fibroblast growth factor 21 controls mitophagy and muscle mass” by Oost et al. Journal of Cachexia, Sarcopenia and Muscle 11, 338–340. https://doi.org/10.1002/jcsm.12500

Romanello, V., Sandri, M., 2021. The connection between the dynamic remodeling of the mitochondrial network and the regulation of muscle mass. Cell. Mol. Life Sci. 78, 1305–1328. https://doi.org/10.1007/s00018-020-03662-0

Saclier, M., Bonfanti, C., Antonini, S., Angelini, G., Mura, G., Zanaglio, F., Taglietti, V., Romanello, V., Sandri, M., Tonelli, C., Petroni, K., Cassano, M., Messina, G., 2020. Nutritional intervention with cyanidin hinders the progression of muscular dystrophy. Cell Death Dis 11, 127. https://doi.org/10.1038/s41419-020-2332-4

Segalés, J., Perdiguero, E., Serrano, A.L., Sousa-Victor, P., Ortet, L., Jardí, M., Budanov, A.V., Garcia-Prat, L., Sandri, M., Thomson, D.M., Karin, M., Hee Lee, J., Muñoz-Cánoves, P., 2020. Sestrin prevents atrophy of disused and aging muscles by integrating anabolic and catabolic signals. Nat Commun 11, 189. https://doi.org/10.1038/s41467-019-13832-9

Shang, M., Cappellesso, F., Amorim, R., Serneels, J., Virga, F., Eelen, G., Carobbio, S., Rincon, M.Y., Maechler, P., De Bock, K., Ho, P.-C., Sandri, M., Ghesquière, B., Carmeliet, P., Di Matteo, M., Berardi, E., Mazzone, M., 2020. Macrophage-derived glutamine boosts satellite cells and muscle regeneration. Nature 587, 626–631. https://doi.org/10.1038/s41586-020-2857-9

Silveira, W.A., Gonçalves, D.A., Machado, J., Lautherbach, N., Lustrino, D., Paula‐Gomes, S., Pereira, M.G., Miyabara, E.H., Sandri, M., Kettelhut, I.C., Navegantes, L.C., 2020. cAMP‐dependent protein kinase inhibits FoxO activity and regulates skeletal muscle plasticity in mice. FASEB j. 34, 12946–12962. https://doi.org/10.1096/fj.201902102RR

Vainshtein, A., Sandri, M., 2020. Signaling Pathways That Control Muscle Mass. IJMS 21, 4759. https://doi.org/10.3390/ijms21134759

Neuroscience

27 - Circuit formation and function in the brain

Principal Investigator	Dr. Claudia Lodovichi ORCID https://orcid.org/0000-0002-0490-4846 Scopus 6505957685
Contact	claudia.lodovichi@unipd.it 049 792 3222 website
Keywords	cAMP; Olfaction; Olfactory Perception; Signaling Pathways; Electrophysiology; Neurobiology; Calcium Imaging; In Vivo Electrophysiology; Adult Neurogenesis; Neural Plasticity
Members	Lodovichi Claudia CNR researcher
Research projects	Information on Lodovichi's research activities and publications are available at: http://www.in.cnr.it/index.php/it/9-people/70-claudia-lodovichi
Publications	

28 - Enlightening Brain Mechanisms

Principal Investigator	Dr. Marco Dal Maschio ORCID https://orcid.org/0000-0003-0150-6647 Scopus 650669295 WoS ID G-3871-2017
Contact	marco.dalmaschio@unipd.it 049 827-6483 website
Keywords	Systems Neuroscience; Sensori-motor integrations; Functional Brain Imaging; Psychophysics; Psychobiology; Light-based Technologies; Optogenetics
Members	Dal Maschio Marco — Assistant Professor (RTDb) Miletto Petrazzini Maria Elena — Postdoc
Research projects	- *FLAMMES - On-chip metasurface-based neuroimaging platform toward high-throughput drug screening in freely behaving animal* (MSCA IF - Archetti) - *How do we know what we don't know?: using zebrafish to study the evolutionary roots of metacognition - MetaZeb* (STARS StG Miletto)
Publications	Fernandes, A.M., Mearns, D.S., Donovan, J.C., Larsch, J., Helmbrecht, T.O., Kölsch, Y., Laurell, E., Kawakami, K., dal Maschio, M., Baier, H., 2021. Neural circuitry for stimulus selection in the zebrafish visual system. Neuron 109, 805-822.e6. https://doi.org/10.1016/j.neuron.2020.12.002 Wu, Y., dal Maschio, M., Kubo, F., Baier, H., 2020. An Optical Illusion Pinpoints an Essential Circuit Node for Global Motion Processing. Neuron 108, 722-734.e5. https://doi.org/10.1016/j.neuron.2020.08.027

29 - Genetics of focal epilepsies

Principal Investigator	Dr. Carlo Nobile ORCID https://orcid.org/0000-0002-0634-2218 Scopus 7006001212
Contact	carlo.nobile@unipd.it 049 827 6072 website
Keywords	-
Members	Nobile Carlo — CNR researcher Dazzo Emanuela — CNR researcher
Research projects	Information on Nobile's research activities and publications are available at: http://www.in.cnr.it/index.php/it/9-people/74-carlo-nobile
Publications	

30 - Migraine Pathophysiology

Principal Investigator	Prof. Daniela Pietrobon ORCID https://orcid.org/0000-0002-5148-8670 Scopus 7003670065 Google Scholar Daniela Pietrobon
Contact	daniela.pietrobon@unipd.it 049 827 6052 website
Keywords	Neuroscience; Neurological Diseases; Neurobiology; Neurophysiology; Electrophysiology; Cellular Neuroscience; Synaptic Transmission;
Members	Pietrobon Daniela — Full Professor Marchionni Ivan — Research Associate (RTDa) Riva Irene — Postdoc Vitale Marina — Postdoc Magrini Arianna — Research Fellow Tottene Angelita — Research Assistant
Research projects	- *Cellular and circuit mechanisms of migraine: a multiscale approach* (PRIN)
Publications	Di Stefano, V., Rispoli, M.G., Pellegrino, N., Graziosi, A., Rotondo, E., Napoli, C., Pietrobon, D., Brighina, F., Parisi, P., 2020. Diagnostic and therapeutic aspects of hemiplegic migraine. J Neurol Neurosurg Psychiatry 91, 764–771. https://doi.org/10.1136/jnnp-2020-322850 Romanos, J., Benke, D., Pietrobon, D., Zeilhofer, H.U., Santello, M., 2020. Astrocyte dysfunction increases cortical dendritic excitability and promotes cranial pain in familial migraine. Sci. Adv. 6, eaaz1584. https://doi.org/10.1126/sciadv.aaz1584

31 - Molecular and cellular mechanisms of neurodegenerative and neuromuscular diseases

Principal Investigator	Prof. Alessandro Bertoli ORCID https://orcid.org/0000-0003-1202-0191 Scopus 7005055131 WoS ID C-1903-2014 Google Scholar Alessandro Bertoli
Contact	alessandro.bertoli@unipd.it 049 827 6150 website
Keywords	Biochemistry; Prion Protein; Molecular Biology; Neuroscience; Protein Aggregation; Biotechnology; Neurodegeneration
Members	Bertoli Alessandro — Researcher (ric. universitario) Lopreiato Raffaele — Researcher (ric. universitario) Sartori Geppo — Researcher (ric. universitario) Massimino Maria Lina — CNR researcher Tonello Fiorella — CNR researcher Peggion Caterina — Postdoc Agostini Jessica — Research fellow Baldisseri Anna — Research fellow Bortolotto Raissa — Research fellow Maldi Arianna — Research fellow Calderan Cristina — PhD Student
University - Business collaborations	- *EVER SRL Rep.24/2020 "Attività di ricerca per l'ottimizzazione della produzione e il miglioramento delle proprietà enologiche di ceppi di lievito vinari, mediante tecniche di biologia molecolare"* (Lopreiato)
Publications	Carraro, M., Jones, K., Sartori, G., Schiavone, M., Antonucci, S., Kucharczyk, R., di Rago, J.-P., Franchin, C., Arrigoni, G., Forte, M., Bernardi, P., 2020. The Unique Cysteine of F-ATP Synthase OSCP Subunit Participates in Modulation of the Permeability Transition Pore. Cell Reports 32, 108095. https://doi.org/10.1016/j.celrep.2020.108095 Falconieri, A., Minervini, G., Bortolotto, R., Piovesan, D., Lopreiato, R., Sartori, G., Pennuto, M., Tosatto, S.C.E., 2020. The E3 ubiquitin-protein ligase MDM2 is a novel interactor of the von Hippel–Lindau tumor suppressor. Sci Rep 10, 15850. https://doi.org/10.1038/s41598-020-72683-3 Peggion, C., Stella, R., Lorenzon, P., Spisni, E., Bertoli, A., Massimino, M.L., 2020. Microglia in Prion Diseases: Angels or Demons? IJMS 21, 7765. https://doi.org/10.3390/ijms21207765

32 - Neuronal Network on Microchips

Principal Investigator	Prof. Stefano Vassanelli ORCID https://orcid.org/0000-0003-0389-8023 Scopus 6602922285 Google Scholar Stefano Vassanelli
Contact	stefano.vassanelli@unipd.it 049 827 5337 website
Keywords	Neuroscience; Neuron; Synapses; Neurobiology; Electrophysiology; Neurobiology and Brain Physiology; Synaptic Plasticity; Neurophysiology; Cellular Neuroscience; Neural Plasticity
Members	Vassanelli Stefano — Associate Professor Bisio Marta — Postdoc Cecchetto Claudia — Postdoc Leparulo Alessandro — Research fellow Mariani Benedetta — Research fellow Maschietto Marta — Research Assistant
Research projects	- *SYNCH-A SYnaptically connected brain-silicon Neural Closed-loop Hybrid system* (FET- Proact) - *GRACE - hiGh-Resolution imAging of the barrel CortEx through VSD and LFP recordings* (MSCA-IF) - *Neureka - A smart, hybrid neural-computo device for drug discovery* (FET-Open Neureka) - *Autonomous In-vivo Brain-Machine-Interface in 28nm-CMOS technology with Ultrasound-based Power-Harvester and Communication-Link (Brain28nm)* (PRIN)
Publications	Cecchetto, C., Maschietto, M., Boccaccio, P., Vassanelli, S., 2020. Electromagnetic field affects the voltage-dependent potassium channel Kv1.3. Electromagnetic Biology and Medicine 39, 316–322. https://doi.org/10.1080/15368378.2020.1799386 George, R., Chiappalone, M., Giugliano, M., Levi, T., Vassanelli, S., Partzsch, J., Mayr, C., 2020. Plasticity and Adaptation in Neuromorphic Biohybrid Systems. iScience 23, 101589. https://doi.org/10.1016/j.isci.2020.101589 Leparulo, A., Mahmud, M., Scremin, E., Pozzan, T., Vassanelli, S., Fasolato, C., 2019. Dampened Slow Oscillation Connectivity Anticipates Amyloid Deposition in the PS2APP Mouse Model of Alzheimer's Disease. Cells 9, 54. https://doi.org/10.3390/cells9010054 Serb, A., Corna, A., George, R., Khiat, A., Rocchi, F., Reato, M., Maschietto, M., Mayr, C., Indiveri, G., Vassanelli, S., Prodromakis, T., 2020. Memristive synapses connect brain and silicon spiking neurons. Sci Rep 10, 2590. https://doi.org/10.1038/s41598-020-58831-9

	Tambaro, M., Vallicelli, E.A., Saggese, G., Strollo, A., Baschirotto, A., Vassanelli, S., 2020. Evaluation of In Vivo Spike Detection Algorithms for Implantable MTA Brain—Silicon Interfaces. JLPEA 10, 26. https://doi.org/10.3390/jlpea10030026

33 - Neuron-glia signaling in brain function and dysfunction

Principal Investigator	Dr. Giorgio Carmingnoto ORCID https://orcid.org/0000-0003-3063-6774 Google Scholar Giorgio Carmignoto Scopus 7003762792 WoS ID A-8375-2018
Contact	gcarmi@bio.unipd.it 049 827 6057 website
Keywords	
Members	Carmignoto Piergiorgio — CNR researcher Gómez-Gonzalo Marta — CNR researcher Losi Gabriele — CNR researcher Zonta Micaela — CNR Technologist Marcon Iacopo — PhD Student Requie Linda Maria — PhD Student Chiavegato Angela — Research Assistant
Research projects	Information on Carmignoto's research activities and publications are available at: http://www.in.cnr.it/index.php/it/9-people/62-piergiorgio-carmignoto
Publications	

34 - Neuroparalysis and Neuroregeneration Lab

Principal Investigator	Prof. Ornella Rossetto ORCID https://orcid.org/0000-0002-6113-3857 Scopus 7003372229 Google Scholar Rossetto Ornella
Contact	ornella.rossetto@unipd.it 049 827 6077 website
Keywords	Botulinum neurotoxins, neuromuscular junction, peripheral nerve regeneration, peripheral neuropathies, Drosophila Neurophysiology and Behavior
Members	Rossetto Ornella — Associate Professor Megighian Aram — Associate Professor Montecucco Cesare — Professor Emeritus Rigoni Michela — Researcher Pirazzini Marco — Research Associate (RTDb) Simonato Morena — CNR Research Assistant Negro Samuele — Postdoc Zanetti Giulia — Postdoc Spada Francesca — Research Fellow Tonellato Marika — Research fellow Stazi Marco — PhD Student D'Este Giorgia — PhD Student Fabris Federico — PhD Student
Research projects	- *RES-ENDO - REgulation of Sprouting by signalling ENDOsomes in fast and slow motoneurons paralyzed by botulinum neurotoxins* (CARIPARO - Pirazzini) - *Signaling at the neuromuscular junction during aging* (AFM Telethon - Pirazzini) - *Investigating the role of the Excitation-Contraction-Coupling machinery in SBMA muscle pathology* (Kennedy's Disease Association - Pirazzini)
Publications	Bano, L., Kiel, M., Sales, G., Doxey, A.C., Mansfield, M.J., Wami, H.T., Schiavone, M., Rossetto, O., Pirazzini, M., Dobrindt, U., Montecucco, C., 2020. Genome Sequence of the Fish Brain Bacterium Clostridium tarantellae. Microbiol Resour Announc 9. https://doi.org/10.1128/MRA.01575-19 Chivet, M., Marchioretti, C., Pirazzini, M., Piol, D., Scaramuzzino, C., Polanco, M.J., Romanello, V., Zuccaro, E., Parodi, S., D'Antonio, M., Rinaldi, C., Sambataro, F., Pegoraro, E., Soraru, G., Pandey, U.B., Sandri, M., Basso, M., Pennuto, M., 2020. Polyglutamine-Expanded Androgen Receptor Alteration of Skeletal Muscle Homeostasis and Myonuclear Aggregation Are Affected by Sex, Age and Muscle Metabolism. Cells 9, 325. https://doi.org/10.3390/cells9020325 Eleopra, R., Rinaldo, S., Montecucco, C., Rossetto, O., Devigili, G., 2020. Clinical duration of action of different botulinum toxin types in humans. Toxicon 179, 84–91.

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Meda, N., Frighetto, G., Megighian, A., Zordan, M.A., 2020. Searching for relief: Drosophila melanogaster navigation in a virtual bitter maze. Behavioural Brain Research 389, 112616. https://doi.org/10.1016/j.bbr.2020.112616

Rigoni, M., Negro, S., 2020. Signals Orchestrating Peripheral Nerve Repair. Cells 9, 1768. https://doi.org/10.3390/cells9081768

Stazi, M., D'Este, G., Mattarei, A., Negro, S., Lista, F., Rigoni, M., Megighian, A., Montecucco, C., 2020. An agonist of the CXCR4 receptor accelerates the recovery from the peripheral neuroparalysis induced by Taipan snake envenomation. PLoS Negl Trop Dis 14, e0008547. https://doi.org/10.1371/journal.pntd.0008547

Strah, N., Romano, G., Introna, C., Klima, R., Marzullo, M., Ciapponi, L., Megighian, A., Nizzardo, M., Feiguin, F., 2020. TDP-43 promotes the formation of neuromuscular synapses through the regulation of Disc-large expression in Drosophila skeletal muscles. BMC Biol 18, 34. https://doi.org/10.1186/s12915-020-00767-7

Zullo, L., Bozzo, M., Daya, A., Di Clemente, A., Mancini, F.P., Megighian, A., Nesher, N., Röttinger, E., Shomrat, T., Tiozzo, S., Zullo, A., Candiani, S., 2020. The Diversity of Muscles and Their Regenerative Potential across Animals. Cells 9, 1925. https://doi.org/10.3390/cells9091925

35 - Pathogenesis of neurological and neuromuscular diseases

Principal Investigator	Prof. Maria Pennuto ORCID https://orcid.org/0000-0001-8634-0767 Scopus 55897284500 WoS ID E-3270-2019 Google Scholar Maria Pennuto
Contact	maria.pennuto@unipd.it 049 827 6069 website
Keywords	Neurodegeneration; Brain; Neurodegenerative Diseases; Neuroscience; Proteins; Neurobiology; Alzheimer's Disease; Immunohistochemistry; Cell Culture; Neurobiology and Brain Physiology
Members	Maria Pennuto — Associate Professor Zuccaro Emanuela — Postdoc Amadio Roberto — Research fellow Andreotti Roberta — Research fellow Bonadiman Angela — Research fellow Migazzi Alice — Research fellow Sireno Laura — Research fellow Aravamudhan Aishwarya — PhD Student Lia Federica — PhD Student
Research projects	- *Targeting AR CO-Regulators to attenuate spinal and bulbar muscular atrophy* (AFM Telethon) - *Targeting von Hippel Lindau protein/androgen receptor functional interaction to tackle renal cell carcinoma* (AIRC) - *MOVEMeNt-Decoding alpha motor neurons diversity and selective vulnerability to disease* (MSCA-IF) - *Targeting epigenetic modifiers of androgen receptor activity and toxicity in SBMA* (NIH) - *The interplay between the "RNA/protein quality control system" and "exosomes" as a spreading mechanism in amyotrophic lateral sclerosis* (PRIN) - *MOSAIC - Decoding diversity and eclectic vulnerability of alpha motor neuron classes in the adult spinal cord* (STARS-StG - Zuccaro) - *Alternative translation initiation as a novel strategy to block toxicity of the mutant Androgen Receptor in SBMA* (Telethon)
University - Business collaborations	- CNCCS Rep.79/2020 *esecuzione quote di ricerca Progetto B-"Centro per la Ricerca di nuovi farmaci per Malattie Rare, Trascurate e della Povertà"*
Publications	Chivet, M., Marchioretti, C., Pirazzini, M., Piol, D., Scaramuzzino, C., Polanco, M.J., Romanello, V., Zuccaro, E., Parodi, S., D'Antonio, M., Rinaldi, C., Sambataro, F., Pegoraro, E., Soraru, G., Pandey, U.B., Sandri, M., Basso, M., Pennuto, M., 2020.

Polyglutamine-Expanded Androgen Receptor Alteration of Skeletal Muscle Homeostasis and Myonuclear Aggregation Are Affected by Sex, Age and Muscle Metabolism. Cells 9, 325. https://doi.org/10.3390/cells9020325

Falconieri, A., Minervini, G., Bortolotto, R., Piovesan, D., Lopreiato, R., Sartori, G., Pennuto, M., Tosatto, S.C.E., 2020. The E3 ubiquitin-protein ligase MDM2 is a novel interactor of the von Hippel–Lindau tumor suppressor. Sci Rep 10, 15850. https://doi.org/10.1038/s41598-020-72683-3

Martínez-Rojas, V.A., Jiménez-Garduño, A.M., Michelatti, D., Tosatto, L., Marchioretto, M., Arosio, D., Basso, M., Pennuto, M., Musio, C., 2021. ClC-2-like Chloride Current Alterations in a Cell Model of Spinal and Bulbar Muscular Atrophy, a Polyglutamine Disease. J Mol Neurosci 71, 662–674. https://doi.org/10.1007/s12031-020-01687-5

Minervini, G., Pennuto, M., Tosatto, S.C.E., 2020. The pVHL neglected functions, a tale of hypoxia-dependent and -independent regulations in cancer. Open Biol. 10, 200109. https://doi.org/10.1098/rsob.200109

Nath, S.R., Lieberman, M.L., Yu, Z., Marchioretti, C., Jones, S.T., Danby, E.C.E., Van Pelt, K.M., Sorarù, G., Robins, D.M., Bates, G.P., Pennuto, M., Lieberman, A.P., 2020. MEF2 impairment underlies skeletal muscle atrophy in polyglutamine disease. Acta Neuropathol 140, 63–80. https://doi.org/10.1007/s00401-020-02156-4

Pennuto, M., Pandey, U.B., Polanco, M.J., 2020. Insulin-like growth factor 1 signaling in motor neuron and polyglutamine diseases: From molecular pathogenesis to therapeutic perspectives. Frontiers in Neuroendocrinology 57, 100821. https://doi.org/10.1016/j.yfrne.2020.100821

Torretta, S., Rampino, A., Basso, M., Pergola, G., Di Carlo, P., Shin, J.H., Kleinman, J.E., Hyde, T.M., Weinberger, D.R., Masellis, R., Blasi, G., Pennuto, M., Bertolino, A., 2020. NURR1 and ERR1 Modulate the Expression of Genes of a DRD2 Coexpression Network Enriched for Schizophrenia Risk. J. Neurosci. 40, 932–941. https://doi.org/10.1523/JNEUROSCI.0786-19.2019

Tripathy, D., Migazzi, A., Costa, F., Roncador, A., Gatto, P., Fusco, F., Boeri, L., Albani, D., Juárez-Hernández, J.L., Musio, C., Colombo, L., Salmona, M., Wilhelmus, M.M.M., Drukarch, B., Pennuto, M., Basso, M., 2020. Increased transcription of transglutaminase 1 mediates neuronal death in in vitro models of neuronal stress and Aβ1–42-mediated toxicity. Neurobiology of Disease 140, 104849. https://doi.org/10.1016/j.nbd.2020.104849

36 - Plasticity In Pathology

Principal Investigator	Prof. Matteo Caleo ORCID https://orcid.org/0000-0002-4333-6378 Scopus 6603589444 Google Scholar Matteo Caleo
Contact	matteo.caleo@unipd.it 049 827 6125 website
Keywords	Neuron; EEG; Neurological Diseases; Neurophysiology; Electroencephalography; Plasticity; Molecular Biology; Neurobiology; Cell Biology; Neuroscience
Members	Caleo Matteo — Full Professor Testa Alessandra Maria — PhD student Vignozzi Livia — PhD student
Research projects	- *Modulation of neuron-astrocyte signalling combined with motor training as an innovative approach to enhance recovery after stroke -aSTROke* (CARIPARO) - *Physiological neuronal activity in the control of glioma progression and tumor microenvironment* PRIN (2019)
Publications	Allegra Mascaro, A.L., Falotico, E., Petkoski, S., Pasquini, M., Vannucci, L., Tort-Colet, N., Conti, E., Resta, F., Spalletti, C., Ramalingasetty, S.T., von Arnim, A., Formento, E., Angelidis, E., Blixhavn, C.H., Leergaard, T.B., Caleo, M., Destexhe, A., Ijspeert, A., Micera, S., Laschi, C., Jirsa, V., Gewaltig, M.-O., Pavone, F.S., 2020. Experimental and Computational Study on Motor Control and Recovery After Stroke: Toward a Constructive Loop Between Experimental and Virtual Embodied Neuroscience. Front. Syst. Neurosci. 14, 31. https://doi.org/10.3389/fnsys.2020.00031 Anastasi, F., Greco, F., Dilillo, M., Vannini, E., Cappello, V., Baroncelli, L., Costa, M., Gemmi, M., Caleo, M., McDonnell, L.A., 2020. Proteomics analysis of serum small extracellular vesicles for the longitudinal study of a glioblastoma multiforme mouse model. Sci Rep 10, 20498. https://doi.org/10.1038/s41598-020-77535-8 Busti, I., Allegra, M., Spalletti, C., Panzi, C., Restani, L., Billuart, P., Caleo, M., 2020. ROCK/PKA Inhibition Rescues Hippocampal Hyperexcitability and GABAergic Neuron Alterations in a Oligophrenin-1 Knock-Out Mouse Model of X-Linked Intellectual Disability. J. Neurosci. 40, 2776–2788. https://doi.org/10.1523/JNEUROSCI.0462-19.2020 Micera, S., Caleo, M., Chisari, C., Hummel, F.C., Pedrocchi, A., 2020. Advanced Neurotechnologies for the Restoration of Motor Function. Neuron 105, 604–620. https://doi.org/10.1016/j.neuron.2020.01.039 Tantillo, E., Colistra, A., Baroncelli, L., Costa, M., Caleo, M., Vannini, E., 2020a. Voluntary Physical Exercise Reduces Motor Dysfunction and Hampers Tumor Cell Proliferation in a Mouse Model of Glioma. IJERPH 17, 5667. https://doi.org/10.3390/ijerph17165667

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Physical Activity and Health

37 - Nutrition and Exercise Lab (NUTEXlab)

Principal Investigator	Prof. Antonio Paoli ORCID https://orcid.org/0000-0003-0474-4229 Scopus 24081140700 WoS ID A-6151-2015 Google Scholar Antonio Paoli
Contact	antonio.paoli@unipd.it 049 827 5318 website
Keywords	Sports Science; Exercise Science; Exercise Performance; Nutrition; Exercise Physiology; Metabolism; Exercise Testing; Strength & Conditioning; Sport Physiology; Muscle Physiology;
Members	Paoli Antonio — Full Professor Bosco Gerardo — Associate Professor Marcolin Giuseppe — Assistant Professor (RTDb) Moro Tatiana — Assistant Professor (RTDb) Casolo Andrea — Assistant Professor (RTDa) Giacon Tommaso Antonio — Research Fellow Grigoletto Davide — Research Fellow Hoareau Melanie — Research Fellow Sabovic Iva — Research Fellow Tonin Riccardo — Research Fellow Cenci Lorenzo — PhD Student Mancin Laura — PhD Student Rizzato Alex — PhD Student Bondi' Michela — Research Assistant
Research projects	- *ACTLIFE: is active lifestyle enough for health and wellbeing?* (PRIN) - *Breath-Hold Diving: Mechanisms of Hypoxemia and Decompression Stress* (Office of Naval Research – Department of Defense - USA; Bosco/Zaglia) - *Underwater and Extreme Environment Human Performance* (DAN Europe Foundation - Bosco)
University - Business collaborations	- Forema Srl Rep 162/2019 *"Collaborazione al progetto LAVORIAMO IN SALUTE E SICUREZZA*" - CYTECH S.r.l. Rep. 60/2020 *"Studio degli effetti fisiologici e prestativi di protezioni indossabili per il ciclismo*" (Marcolin) - Consorzio del Formaggio Parmigiano Reggiano Rep 145/2020 "*Effetti del Parmigiano Reggiano nella risposta muscolare all'esercizio con sovraccarichi nell'anziano*" (Moro) - ANTONIO ZAMPERLA SpA Rep.80/2020 " *Protocolli di allenamento e respirazione a pressione ambiente in ipossia-iperossia in medicina rigenerativa,*

	medicina dello sport e in medicina aerospaziale" (Bosco)
Publications	Alcaraz, P.E., Csapo, R., Freitas, T.T., Marín-Cascales, E., Blazevich, A.J., Paoli, A., 2020. International Sport Forum of the Strength & Conditioning Society (SCS) and the European Sport Nutrition Society (ESNS). Sports 8, 128. https://doi.org/10.3390/sports8090128 Barbalho, M., Souza, D., Coswig, V., Abrahin, O., Paoli, A., Gentil, P., 2021. The Effects of Resistance Exercise Selection on Muscle Size andStrength in Trained Women. Int J Sports Med 42, 371–376. https://doi.org/10.1055/a-1121-7736 Bernardi, L., Bertuccelli, M., Formaggio, E., Rubega, M., Bosco, G., Tenconi, E., Cattelan, M., Masiero, S., Del Felice, A., 2021. Beyond physiotherapy and pharmacological treatment for fibromyalgia syndrome: tailored tACS as a new therapeutic tool. Eur Arch Psychiatry Clin Neurosci 271, 199–210. https://doi.org/10.1007/s00406-020-01214-y Bosco, G., Paganini, M., Rizzato, A., Martani, L., Garetto, G., Lion, J., Camporesi, E.M., Moon, R.E., 2020. Arterial blood gases in divers at surface after prolonged breath-hold. Eur J Appl Physiol 120, 505–512. https://doi.org/10.1007/s00421-019-04296-2 Campa, F., Silva, A.M., Matias, C.N., Monteiro, C.P., Paoli, A., Nunes, J.P., Talluri, J., Lukaski, H., Toselli, S., 2020. Body Water Content and Morphological Characteristics Modify Bioimpedance Vector Patterns in Volleyball, Soccer, and Rugby Players. IJERPH 17, 6604. https://doi.org/10.3390/ijerph17186604 Franchin, S.M., Giordani, F., Tonellato, M., Benazzato, M., Marcolin, G., Sacerdoti, P., Bettella, F., Musumeci, A., Petrone, N., Masiero, S., 2020. Kinematic bidimensional analysis of the propulsion technique in wheelchair rugby athletes. Eur J Transl Myol 30, 8902. https://doi.org/10.4081/ejtm.2019.8902 Gardin, C., Bosco, G., Ferroni, L., Quartesan, S., Rizzato, A., Tatullo, M., Zavan, B., 2020. Hyperbaric Oxygen Therapy Improves the Osteogenic and Vasculogenic Properties of Mesenchymal Stem Cells in the Presence of Inflammation In Vitro. IJMS 21, 1452. https://doi.org/10.3390/ijms21041452 Gentil, P., de Lira, C.A.B., Souza, D., Jimenez, A., Mayo, X., de Fátima Pinho Lins Gryschek, A.L., Pereira, E.G., Alcaraz, P., Bianco, A., Paoli, A., Papeschi, J., Carnevali Junior, L.C., 2020. Resistance Training Safety during and after the SARS-Cov-2 Outbreak: Practical Recommendations. BioMed Research International 2020, 1–7. https://doi.org/10.1155/2020/3292916 Grigoletto, D., Marcolin, G., Borgatti, E., Zonin, F., Steele, J., Gentil, P., Galvão, L., Paoli, A., 2020. Kettlebell Training for Female Ballet Dancers: Effects on Lower Limb Power and Body Balance. Journal of Human Kinetics 74, 15–22. https://doi.org/10.2478/hukin-2020-0010 Güler, Ö., Aras, D., Akça, F., Bianco, A., Lavanco, G., Paoli, A., Şahin, F.N., 2020. Effects of Aerobic and Anaerobic Fatigue Exercises on Postural Control and Recovery Time in Female Soccer Players. IJERPH 17, 6273. https://doi.org/10.3390/ijerph17176273 Lakicevic, N., Roklicer, R., Bianco, A., Mani, D., Paoli, A., Trivic, T., Ostojic, S.M.,

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EVENTS & HIGHLIGHTS

Brain Awareness Week

Brain Awareness Week is the global campaign to foster public enthusiasm and support for brain science. Our department is among the promoters of the event in our University, together with the Department of Neuroscience, the Department of General Psychology, and Department of Developmental Psychology and Socialization. The 2020 edition was held online on **May 18-19**. In the Organizing Committee were also Dr. Beatrice D'Orsi and Prof. Paola Pizzo.

The event featured the talks of Dr. Nicola Vajente and Dr. Marco Dal Maschio among others.


PROGRAMMA

LUNEDÌ 18 MAGGIO

17:00 Saluto degli organizzatori

17:05 Nicola Vajente (DSB): Studiare la neurodegenerazione nel moscerino: una ricerca frattuosa

17:30 Miryam Carecchio (DNS): Il cervello che si trasforma in cassi: nuove frontiere nelle malattie neurologiche

17:55 Pietro De Carli (DPSS): Davvero la mela non cade troppo lontano dall'albero? Percorsi e meccanismi cerebrali della trasmissione intergenerazionale della genitorialità

18:20 Francesco Ceccarini (DPG): La psicologia vegetale: una nuova frontiera per lo studio della cognizione

MARTEDÌ 19 MAGGIO

17:00 Saluto degli organizzatori

17:05 Aron Emmi (DNS): Neuroanatomia, tra tradizione e innovazione

17:30 Luca Battaglini (DPG): Migliorare la visione con la stimolazione elettrica del cervello

17:55 Marco Dal Maschio (DSB): Accendiamo il cervello e mettiamo il corpo in moto... usiamo un alogramma!

18:20 Arianna Schiano (DPSS): Indossa il mio volto: come la mimica facciale ci aiuta nel riconoscimento delle emozioni

Studiare la neurodegenerazione nel moscerino: una ricerca frattuosa.

Il cervello che si trasforma in cassi: nuove frontiere nelle malattie neurologiche.

Davvero la mela non cade troppo lontano dall'albero? Percorsi e meccanismi cerebrali della trasmissione intergenerazionale della genitorialità.

La psicologia vegetale: una nuova frontiera per lo studio della cognizione.

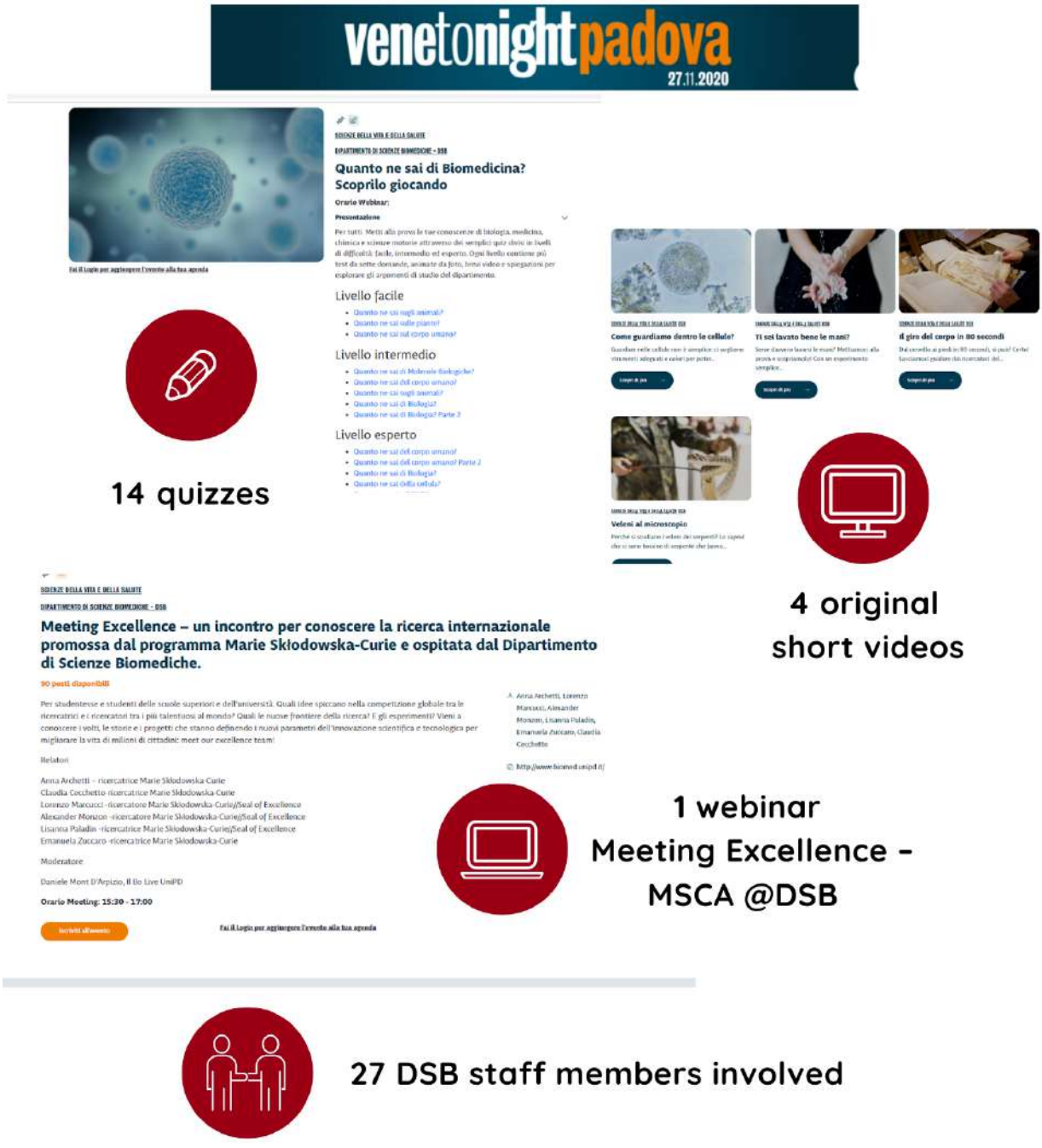
Neuroanatomia, tra tradizione ed innovazione.

Migliorare la visione con la stimolazione elettrica nel cervello.

Accendiamo il cervello e mettiamo il corpo in moto... usiamo un ologramma!

"Indossa il mio volto: come la mimica facciale ci aiuta nel riconoscimento delle emozioni"

VenetoNight



Read more about [the DSB's participation in VenetoNight](#)!

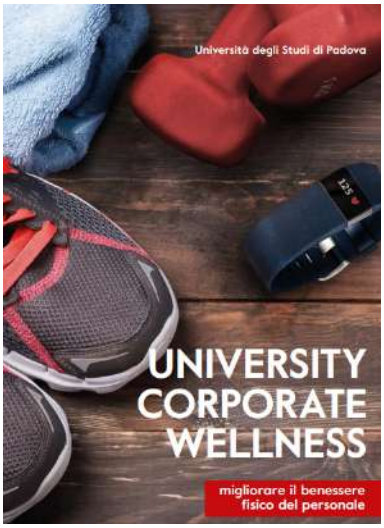
DSB Talk Series

The ***DSB Talk Series*** kicked off on **November 20th** 2020. Seminars are held once every two Fridays,last 40 minutes and are followed by a 15-minute Q&A session. Although preferred speakers are young researchers, especially at postdoc level, the initiative aims at being inclusive to all the scientists of the Department, providing a new and dynamic space for knowledge sharing and networking.

The *DSB Talk Series* is organized by Assistant Professors Gemma Lucia Delogu, Martino Franchi, Tatiana Moro, and Marco Pirazzini.

Find out when the next DSB Talk will be!

University Corporate Wellness



The ***University Corporate Wellness*** service aims at improving the physical well-being of the University's employees. Coordinated by Prof. Antonio Paoli, it includes postural assessment, baropodometric analysis, and body composition analysis. Unfortunately, in 2020 participation in the program was considerably affected by the CoVid-19 pandemic: however, in the first two months of the year about 35 employees requested an assessment.

Credits

Initiative:

Prof. Silvio Tosatto - Coordinatore Commissione Terza Missione

Prof. Marco Sandri - Direttore del Dipartimento di Scienze Biomediche

Dott.ssa Rosa Maria Campagna - Segretario di Dipartimento

Data on staff members:

Dott.ssa Isabella Salvatico - Responsabile Settore Direzione

Data on projects:

Dott.ssa Laura Colluto - Responsabile Settore Ricerca e Terza Missione

Data on publications:

Dott. Ivan Mičetić - Tecnico informatico

Dott. Alex Pescarolo - Tecnico informatico

Text

Diana Battistella

September 2021

FOR FURTHER ENQUIRIES
Dipartimento di Scienze Biomediche
University of Padova
Via Ugo Bassi, 58/B 35131 - PADOVA
Direzione: +39 049 827 6047
Amministrazione: +39 049 827 6045 / 6046 / 6042 / 5317
Email: direzione.biomed@unipd.it
Posta certificata: dipartimento.biomed@pec.unipd.it
Website: http://www.biomed.unipd.it/