2022 Edition

ANNUAL REPORT

Department of Biomedical Sciences UNIPD

DIPARTIMENTO DI SCIENZE BIOMEDICHE

UNIVERSITÀ DEGLI STUDI DI PADOVA

Table of contents

DSB IN NUMBERS

All data presented in this chapter refer to the Department's picture as of December 31st, 2022.

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);
- Centro Studi per la Neurodegenerazioni (CESNE).

Data on publications were retrieved from the repository IRIS using the list of permanent staff members ("personale strutturato") of the Department. The process is automatized, and data was retrieved on July, 1st, 2023 searching simultaneously for the following criteria: field "year" is "2022"; field "authors" includes DSB permanent staff members; and field "type" is "01.01 - Articolo in rivista".

Staff

In 2022 the departmental staff was structured as follows:

Staff categories	Nr.
PhD students	63
Research Fellows (Borsisti)	41
Postdoc (Assegnisti)	44
Research Assistants (Tecnici)	17
Administrative Assistants (PTA)	25
Other Support staff (Co.co.co)	3
Researchers	30
Associate Professors	33
Full Professors	13
TOT.	**269**

104

EARLY STAGE RESEARCHERS[1]

137

EXPERIENCED RESEARCHERS[2]

Funding

In 2022 the overall funding value of the DSB was **€ 21.091.888,78**, including active research projects[53] granted through competitive calls and University-Business collaborations.

Of this amount **90,91%** (**€ 19.173.944,04**) comes from funded research projects awarded to the Department's permanent personnel and **9,09%** (**€ 1.917.944,74**) comes from funded research projects awarded to the Department's new hires.

Only **3,21%** of the overall funding available in the Department (equal to **€ 678.221,88**) derives from University-Business collaborations.

[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).

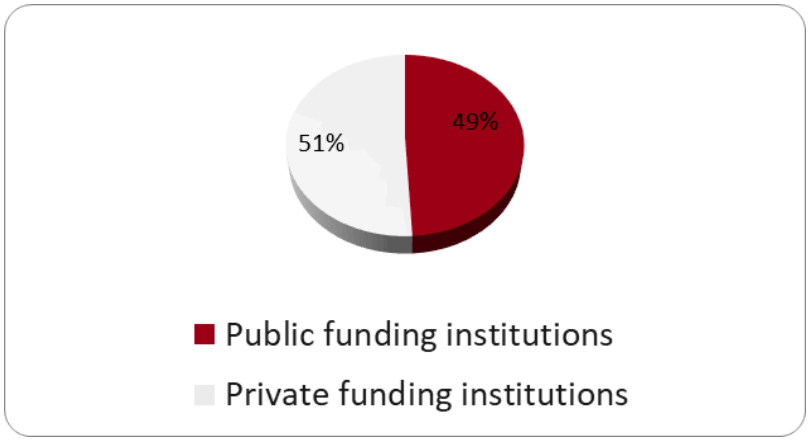
[3] This value is the sum of the overall funding assigned to all the projects active in 2022, disregarding the fact that the project duration might be longer than that specific year.

[4]

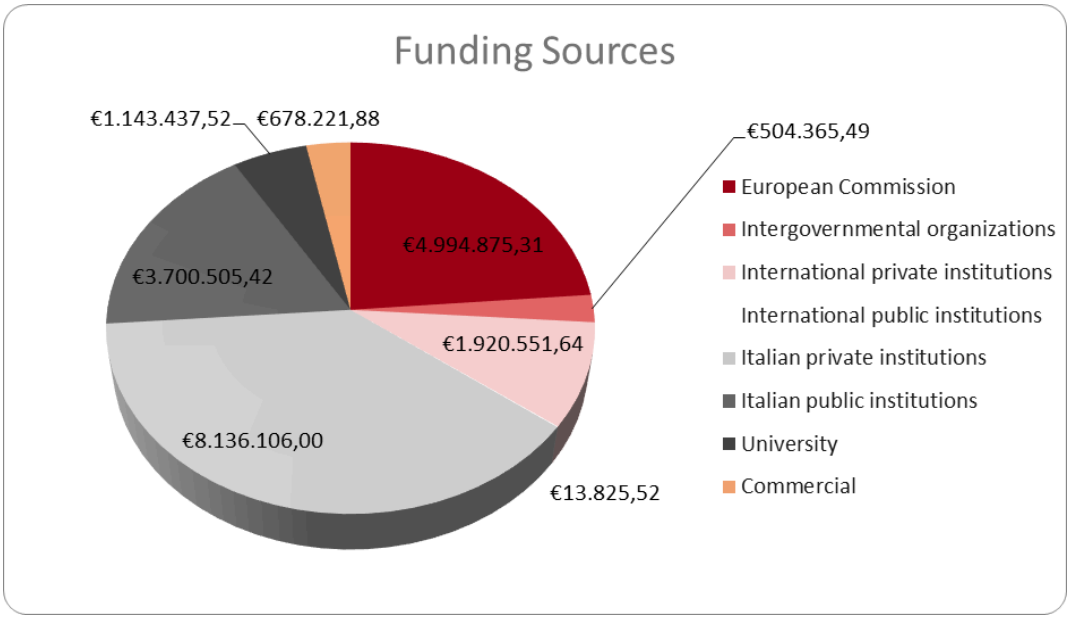
[5]

Funding sources 2022

The main source of funding of 2022 was, by a small difference of 1%, the **private sector** with **€ 10.734.879,52** (**50,90%**), against the **€ 10.357.009,26** (**49,10%**) allocated by **public institutions**.



Our main funders are **Italian private institutions** (e.g., AIRC, Telethon, CARIPARO) providing **38,57%** of our budget, followed by the **European Commission** (**23,68%**). From **Italian public institutions** (mainly the Ministry of University and Research) we receive **17,54%** of funding, from **International private institutions 9,11%**. Noticeably, the **University of Padova** funds several projects in our Department, reaching **5,42%** of our overall budget. Minor funders are also other **Intergovernmental organizations** (2,39%).



Projects started in 2022

In 2022 our Department was awarded **thirteen competitive research projects** and **ten commercial projects** for a total of **23 projects** and an overall value of **€ 3.664.841,46**. The largest funding (**€ 1.071.000,00**) was received from **CARIPARO** with **3 winning proposals**. Concerning specifically commercial projects, the DSB has established more collaborations with **National entities** (**7 projects**) than with **international entities** (**3 projects**), although, in terms of funding, the Department has received considerable sums from both, i.e., **€ 130.243,78** from **International entities**, **€ 190.786,88** from **National entities**.

Funding institution	Project type	N. projects	Funding amounts
European international private research institutions	CARIPLO Telethon	1	250.000,00 €
National private entities	CARIPARO	3	1.071.000,00 €
University	STARS-CoG	2	320.002,85 €
University	STARS-StG	1	123.434,67 €
University	MSCA Seal of Excellence@UNIPD 2021	2	200.000,00 €
European Commission	HORIZON EUROPE	1	133.400,00 €
European Commission	H2020-MSCA-IF	1	183.473,28 €
European International private research	AIRC	1	746.000,00 €
European International private research	AFM Telethon	1	296.500,00 €
International entities	Commercial projects	3	130.243,78 €
National entities	Commercial projects	7	190.786,88 €
total		**23**	**3.664.841,46 €**

In 2022 the overall funding awarded to newly hired staff was **€ 960.310,80** including research projects granted through competitive calls and University-Business collaborations, making the contribution of new members of the Department to **26,20%** of the overall new budget.

Active projects in 2022

In 2022 our department hosted 84 ongoing research projects that started between 2017 and 2022 for a total value of **€ 20.413.666.90** and 17 commercial projects that started between 2020 and 2022 for an overall value of **€ 678.221,88**. The total figure of all the fundings managed during 2022 corresponds to **€ 21.091.888,78**. PRIN projects were the most numerous (20), followed by AIRC (9) and CARIPARO (6). This clearly shows a predominance of National fundings over European or International projects. Concerning specifically commercial projects, there is clear evidence of a predominance of contracts stipulated with national institutions (11) rather than international bodies (6).

Year	International / National institution	Lab	Prof.	Budget
2020	National	Paoli	Marcolin	€18.000,00
2020	National	Tosatto	Tosatto	€73.842,39
2020	National	Paoli	Moro	€48.000,00
2021	International	Rossetto	Rossetto	€62.488,53
2021	National	Rigobello	Rigobello	€20.000,00
2021	International	Pennuto	Pennuto	€112.000,00
2021	International	Tosatto	Tosatto	€22.860,30
2022	National	Pennuto	Pennuto	€32.786,88
2022	National	Paoli	Paoli	€18.000,00
2022	National	Bertoli	Lopreiato	€55.000,00
2022	National	Marin	Marin	€48.000,00
2022	National	Paoli	Paoli	€10.000,00
2022	National	Tosatto	Tosatto	€96.243,78
2022	International	Paoli	Paoli	€15.000,00
2022	National	Arrigoni	Arrigoni	€12.000,00
2022	National	Sandri	Sandri	€10.000,00
2022	International	Tosatto	Tosatto	€24.000,00
TOTAL				€678.221,88

Funding institution	Project type	N. projects	Total/Funding institution	%
European Commission	MSCA RISE	1	€4.994.875,31	24,47%
	FET	2		
	MSCA IF	6		
	MSCA ITN	1		
	INFRADEV (RIA)	1		
	CSA	1		
	ERC	1		
	HORIZON EUROPE	1		
Intergovernmental organizations	ESA	1	€504.365,49	2,47%
	Office of Naval Research (ONR)	1		
	Children's Tumor Foundation (CTF)	1		
	EMBL-EBI	4		
International private institutions	Fondazione Leducq	2	€1.920.551,64	9,41%
	AFM Telethon	4		
	Kennedy's Disease Association	1		
	Cure Alzheimer's Fund	1		
International public institutions	McGill University Health Centre	1	€13.825,52	0,07%
Italian private institutions	CARIPLO	1	€8.136.106,00	39,86%
	CARIPLO Telethon	1		
	CARIPARO	6		
	AIRC	9		
	Telethon	4		
	Fondazione Human Technopole	1		
Italian public institutions	ASI	1	€3.700.505,42	18,13%
	PRIN	20		
	Ricerca sanitaria finalizzata	2		
	FESR	1		
UNIPD	STARS	2	€1.143.437,52	5,60%
	STARS-StG	1		
	STARS-CoG	2		
	MSCA SoE	3		
TOTAL		**84**	**€20.413.666,90**	**100%**

Of the total amount of the ongoing research projects a share corresponding to **€ 3.513.429,16** has newly hired staff as a P.I., making the contribution of new members of the Department to **17,21%** of the overall budget.

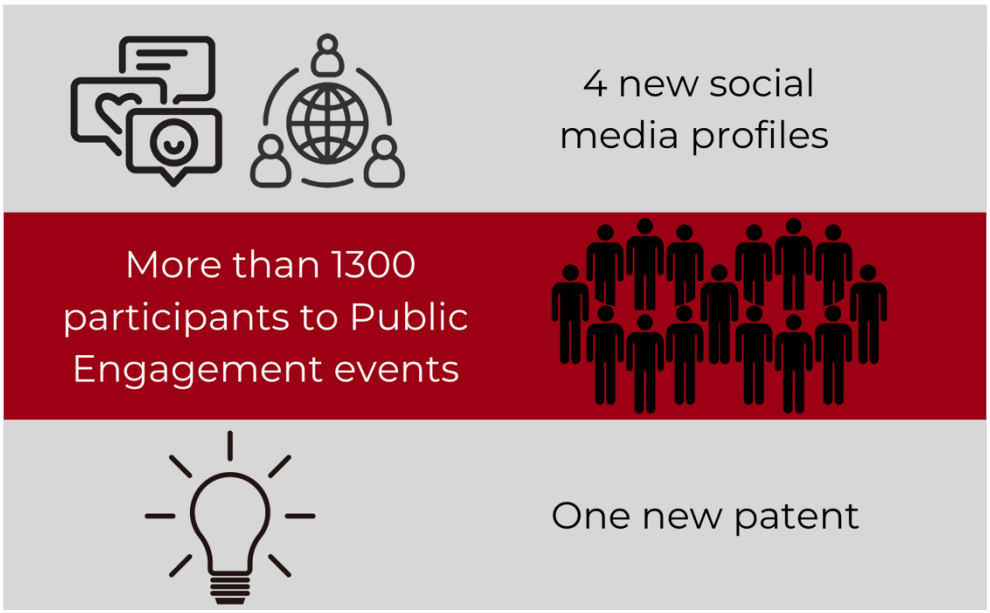
Publications

By comparing these results with those of the previous year, although fewer publications were produced overall (259 in 2021 vs 215 in 2022), the general Impact Factor (I.F.) increased. In 2022, 34 more papers were published in Q1 journals in comparison to 2021 (123 in 2021 vs 157 in 2022) and the sum of the I.F. has increased by more than 100 points (1709,1 in 2021 vs 1877,05 in 2022). The number of publications with I.F. higher than 10 slightly decreased, but this is in line with the general decrease in the total number of publications.

Public engagement activities

The departmental research covers a wide range of topics, ranging from studies at the molecular level, to preclinical models of disease, up to the clinical field with final tests on patients.
The topics addressed by our Department are of great public interest, especially for the youngest target demographic. The events held in 2022, are the following:

- **“Rare disease day”**: “Hands4rare” project and “Diamoci una mano” roundtable: events for pupils in elementary and middle schools from 9 to 14 years (Feb. 2022);
- **“Vivipadova 2022”** project: “Un’aula grande come la tua città, bando del Comune di Padova” - “Un castello ben difeso? Basta… un fantastico sistema immunitario!” - Two laboratory events for 5 classes of elementary school students (Feb. - May 2022);
- **“Brain Awareness Week (BAW 2022)”**: neuroscience meeting targeted at young researchers - “Giovani ricercatori discutono di Neuroscienze” (March 2022);
- **“Pint of Science”**: dissemination event for the general public (May 2022);
- **“Dietro le quinte della ricerca scientifica”**: orientation course for middle school’s student and college students - PCTO (June - July 2022);
- “**Science 4 all”**: dissemination events for 8 classes of students (Sept. 2022);
- “**Science 4 all”**: dissemination events - Cittadinanza (Sept. 2022);
- **“FNIP DAY - Neuroscience And Microscopy”**: international symposium (Sept. 2022);
- **“Giornata mondiale dell’alimentazione”**: dissemination event on food and nutrition (Oct. 2022);
- **“Festival della scienza”**: meeting on “Rare diseases” (6 middle school classes) in Festival della Scienza dell'alto Vicentino (FESAV) in Schio (VI) and class on “Ricerca Biomedica: le patologie muscolari” in Cagliari (Nov. 2022);
- “**Retreat di Dipartimento”**: departmental yearly retreat (Oct. 2022);
- **“Ecm courses”**: “Fisiotech: progressi tecnologici e scientifici in medicina subacquea con focus sul sistema neuro-cardio-circolatorio e respiratorio” (Mar. - Dec. 2022);
- **University Corporate Wellness** activities for university personnel;
- **“Other online courses and webinars”**.



Prizes and Recognitions

- **Dr. Valeria Scalcon**: “Premio medaglia SIB 2022” from the Società Italiana di Biochimica e Biologia Molecolare (SIB) and “Young Investigator Award” from the Society of Free Radicals Resarch Europe (SFRR-E).

- **Lab. Prof. Ornella Rossetto:** the paper Fambri et. Al. 2022 IJMS was selected among the top downloaded papers of IJMS in 2022.

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, Nutrition, and Health
- ✧ Adaptive immunity

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

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, 2022.

The list of **keywords** on each group's research field were taken from the Principal Investigator's ORCID profile, whenever available, or suggested by the PI.

The **members** of each group include:

a) permanent staff ("*personale strutturato"*), reported based on data provided by the Director's Office;
b) non-permanent staff (*"personale non strutturato"*) active as of December 31st, 2022 or under contract for at least 3 months during the reference period;
c) collaborators working at the premises of the Department for at least 75% of their work effort and suggested by the PI;
d) PhD Student students from all PhD Student programs, as suggested by the PI.

The list of **research projects** was provided by the Department's Research Office and refers to competitive projects granted to a member of the research group and directly managed by the Department in 2022. Activities managed by third parties were purposely excluded, 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):
- Centro Studi per la Neurodegenerazione (CESNE);
- Other foundations.

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*). The process is automatized and data was retrieved on July 1st, 2023 searching simultaneously for the following criteria:

- field "year" is "2022";
- field "authors" includes DSB permanent staff members;
- field "type" is "01.01 - Articolo in rivista".

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

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. R. Steiner
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
Aging signaling pathways	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 Neuromuscular Plasticity	Prof. M. Narici
Pathophysiology of Striated Muscles	Prof. P. Volpe
Signaling pathways that control protein homeostasis in muscles	Prof. M. Sandri

Paolocci's lab	Prof. Paolocci

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 networks physiology and neurotechnologies (NeuroChip lab)	Prof. S. Vassanelli
Neuron-glia signaling in brain function and dysfunction	Dr. G. Deidda
Neuroparalysis and Neuroregeneration Lab	Prof. O. Rossetto
Pathogenesis of neurological and neuromuscular diseases	Prof. M. Pennuto

Physical Activity, Nutrition, and Health

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

Adaptive Immunity

Laboratories	***PI***
Reactive Oxygen Species and Cytotoxic Immunity	Prof. D. D. Martinvalet

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 Ciocci Pardo Alejandro — RTD/A Di Spiezio Alessandro — Post-Doc Garcias Casas Paloma — Post-Doc Redolfi Nelly — Technician Santalla Manuela — CNR Post-Doc Arnst Nikita — PhD Student Bertocco Ambra — PhD Student Rossini Michela — PhD Student Sbrissa Miriana — Research Fellow Bedetta Martina — PhD Student Sonda Sonia — PhD Student Basso Emy — CNR researcher Di Benedetto Giulietta — CNR researcher Filadi Riccardo — CNR researcher Greotti Elisa — CNR researcher Pendin Diana — CNR researcher De Nadai Andrea — CNR Post-Doc Surdo Nicoletta — CNR researcher Manca Paulo Magalhães — Technician
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) - *Extracellular ATP Is a Key Factor in Promoting Alzheimer's Disease Neuroinflammation* (Cure Alzheimer's Fund) - *HEARTzheimer* (MSCA SoE - Ciocci Pardo)

	- *PNRR CN3* (P.I. Paola Pizzo)
Publications	Pizzo, P.; Pozzan, T.. (2022) Mitochondrialand: what will be next? https://doi.org/10.1093/function/zqab073 Filadi, R.; Pizzo, P.. (2022) Key Signalling Molecules in Aging and Neurodegeneration https://doi.org/10.3390/cells11050834 Arnst, Nikita; Redolfi, Nelly; Lia, Annamaria; Bedetta, Martina; Greotti, Elisa; Pizzo, Paola. (2022) Mitochondrial Ca2+ Signaling and Bioenergetics in Alzheimer's Disease https://doi.org/10.3390/biomedicines10123025 Volpe P, Bosutti A, Nori A, Filadi R, Gherardi G, Trautmann G, Furlan S, Massaria G, Sciancalepore M, Megighian A, Caccin P, Bernareggi A, Salanova M, Sacchetto R, Sandonà D, Pizzo P, Lorenzon P. (2022). Nerve-dependent distribution of subsynaptic type 1 inositol 1,4,5-trisphosphate receptor at the neuromuscular junction. J Gen Physiol. 2022 Nov 7;154(11):e202213128. doi: 10.1085/jgp.202213128. Epub Sep 23. PMID: 36149386; PMCID: PMC9513380. Fornasiero F, Scapin C, Vitadello M, Pizzo P, Gorza L. (2022) Active nNOS Is Required for Grp94-Induced Antioxidant Cytoprotection: A Lesson from Myogenic to Cancer Cells. Int J Mol Sci. Mar 8;23(6):2915. doi: 10.3390/ijms23062915. PMID: 35328344; PMCID: PMC8954037. Leparulo A, Bisio M, Redolfi N, Pozzan T, Vassanelli S, Fasolato C. Accelerated (2022) Aging Characterizes the Early Stage of Alzheimer's Disease. Cells. Jan 11;11(2):238. doi: 10.3390/cells11020238. PMID: 35053352; PMCID: PMC8774248.

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	Protein phosphorylation, Protein kinases, Protein phosphatases, Post-translational modifications, Normal and pathological signaling pathways, Biochemistry of cancer cells, Rare diseases
Members	Ruzzene Maria — Associate professor Salvi Mauro — Associate professor Quezada Meza Camila Paz — PhD Student Borgo Christian — RTD/A Sarno Stefania — Researcher Cesaro Luca — Technician
Publications	Christian Borgo, Claudio D'Amore, Valeria Capurro, Valeria Tomati, Elvira Sondo, Federico Cresta, Carlo Castellani, Nicoletta Pedemonte & Mauro Salvi. (2022) Targeting the E1 ubiquitin-activating enzyme (UBA1) improves elexacaftor/tezacaftor/ivacaftor efficacy towards F508del and rare misfolded CFTR mutants. https://doi.org/10.1007/s00018-022-04215-3 D'Amore, Claudio; Borgo, Christian; Bosello Travain, Valentina; Salvi, Mauro. (2022) KDM2A and KDM3B as Potential Targets for the Rescue of F508del-CFTR. https://doi.org/10.3390/ijms23179612 Maso L, Vascon F, Chinellato M, Goormaghtigh F, Bellio P, Campagnaro E, Van Melderen L, Ruzzene M, Pardon E, Angelini A, Celenza G, Steyaert J, Tondi D, Cendron L. (2022) Nanobodies targeting LexA autocleavage disclose a novel suppression strategy of SOS-response pathway, Structure, 2022, 30(11), pp. 1479–1493.e9. doi: 10.1016/j.str.2022.09.004. Epub 2022 Oct 13. PMID: 36240773 Di Lorenzo G, Iavarone F, Maddaluno M, Plata-Gómez AB, Aureli S, Quezada Meza CP, Cinque L, Palma A, Reggio A, Cirillo C, Sacco F, Stolz A, Napolitano G, Marin O, Pinna LA, Ruzzene M, Limongelli V, Efeyan A, Grumati P, Settembre C. (2022) Phosphorylation of FAM134C by CK2 controls starvation-induced ER-phagy, Sci Adv. 2022 Sep 2;8(35):eabo1215. doi: 10.1126/sciadv.abo1215. Epub 2022 Aug 31. PMID: 36044577 Fabbian S, Giachin G, Bellanda M, Borgo C, Ruzzene M, Spuri G, Campofelice A, Veneziano L, Bonchio M, Carraro M, Battistutta R. (2022). Mechanism of CK2 Inhibition by a Ruthenium-Based Polyoxometalate

	Front Mol Biosci. 2022 Jun 2;9:906390. doi: 10.3389/fmolb.2022.906390. eCollection 2022. PMID: 35720133 ATKINSON E.L., IEGRE J., D'AMORE C., BREAR P., SALVI M.*, HYVONEN M.*, SPRING D.R.* Development of small cyclic peptides targeting the CK2α/β interface ChemComm, 58(30):4791-4794 (2022). https://doi.org/10.1039/D2CC00707J

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
Publications	Silic-Benussi M, Sharova E, Ciccarese F, Cavallari I, Raimondi V, Urso L, Corradin A, Kotler H, Scattolin G, Buldini B, Francescato S, Basso G, Minuzzo SA, Indraccolo S, D'Agostino DM, Ciminale V. (2022) mTOR inhibition downregulates glucose-6-phosphate dehydrogenase and induces ROS-dependent death in T-cell acute lymphoblastic leukemia cells. Redox Biol. 51:102268. doi: 10.1016/j.redox.2022.102268. D'Agostino DM, Raimondi V, Silic-Benussi M, Ciminale V. (2022) miR-150 in HTLV-1 infection and T-cell transformation. Front Immunol. 13:974088. doi: 10.3389/fimmu.2022.974088.

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; Thioredoxin system; Glutaredoxin, Antioxidants; Oxidative Stress; Reactive Oxygen Species; Redox Regulation; Bioactive peptides
Members	Rigobello Maria Pia — Associate professor Scalcon Valeria — RTD/A Tonolo Federica — Post-Doc Scutari Guido — Contract professor Folda Alessandra — Technician
Research projects	- *L'agricoltura del futuro e gli alimenti funzionali: una sfida per la ricerca e il rilancio del territorio veneto* (FESR)
IP Exploitation & services	- *PRIX QUALITY SPA Rep. 39/2020 per "Informazioni nutrizionali ad uso del consumatore per l'Azienda Supermercato Prix"*
Publications	Scalcon, V; Folda, A; Lupo, Mg; Tonolo, F; Pei, N; Battisti, I; Ferri, N; Arrigoni, G; Bindoli, A; Holmgren, A; Coppo, L; Rigobello, Mp.. (2022) Mitochondrial depletion of glutaredoxin 2 induces metabolic dysfunction associated fatty liver disease in mice. https://doi.org/10.1016/j.redox.2022.102277 Tonolo, Federica; Folda, Alessandra; Scalcon, Valeria; Marin, Oriano; Bindoli, Alberto; Rigobello, Maria Pia. (2022) Nrf2-Activating Bioactive Peptides Exert Anti-Inflammatory Activity through Inhibition of the NF-κB Pathway. https://doi.org/10.3390/ijms23084382 Peggion, Caterina; Scalcon, Valeria; Massimino, Maria Lina; Nies, Kelly; Lopreiato, Raffaele; Rigobello, Maria Pia; Bertoli, Alessandro. (2022) SOD1 in ALS: Taking Stock in Pathogenic Mechanisms and the Role of Glial and Muscle Cells. https://doi.org/10.3390/antiox11040614 Falconieri A, Minervini G, Quaglia F, Sartori G, Tosatto SCE. (2022) Characterization of the pVHL Interactome in Human Testis Using High-Throughput Library Screening. Cancers (Basel). Feb 17;14(4):1009. doi: 10.3390/cancers14041009. PMID: 35205757 Vallese F, Maso L, Giamogante F, Poggio E, Barazzuol L, Salmaso A, Lopreiato R, Cendron L, Navazio L, Zanni G, Weber Y, Kovacevic-Preradovic T, Keren B, Torraco A, Carrozzo R, Peretto F, Peggion C, Ferro S, Marin O, Zanotti G, Calì T,

	Brini M, Carafoli E. (2022) The ataxia-linked E1081Q mutation affects the sub-plasma membrane Ca2+-microdomains by tuning PMCA3 activity. Cell Death Dis. Oct 7;13(10):855. doi: 10.1038/s41419-022-05300-y. PMID: 36207321 Tonello F, Massimino ML, Peggion C. (2022) Nucleolin: a cell portal for viruses, bacteria, and toxins. Cell Mol Life Sci. 2022 May 3;79(5):271. doi: 10.1007/s00018-022-04300-7. PMID: 35503380

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
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Keywords	Bioinformatics and Computational Biology; Modeling; Simulation; RNA; Bioinformatics; Statistics; Proteins; Protein Structure; Molecular Dynamics Simulation; Protein-Protein Interaction
Members	Tosatto Silvio — Full professor Arrias Paula Nazarena — Post-Doc Aspromonte Maria Cristina — Post-Doc Battistella Diana — Post-Doc Carraro Marco — Post-Doc Falconieri Antonella — Post-Doc Monzon Alexander — Post-Doc Nugnes Maria Victoria — Research fellow Salladini Edoardo — Post-Doc Bouhraoua Kamel Eddine Adel — Research fellow Camagni Giorgia Francesca — PhD Student Chinestrad Patricio — Research fellow Clementel Damiano — PhD Student BMCS (DPG) Del Conte Alessio — PhD Student BMCS (DPG) Gonzalez-Buitron Martin — Research fellow Gregoris Francesco — Research fellow Hatos Andras — Research fellow Jiachen Lu — Research fellow Kordevani Fatemeh — Research fellow Mahmoud Saida Saad Mohamed — Research fellow Orti Fernando — Research fellow Pradelli Franco — PhD Student Quaglia Federica — Post-Doc CNR Santillan Julia Yamila — Research fellow Tenorio Ku Luiggi Gianpiere — Research fellow Balatti Galo — Research fellow - MSCA IDPFUN Bevilacqua Martina — PhD Student Fernandez Alberti Sebastian — Research fellow IDPFUN Fornasari Maria Cristina — Research fellow IDPFUN Rodriguez Sawicki Luciana — Research fellow IDPFUN

	Parisi Gustavo Daniel Leonardi Emanuela Minervini Giovanni Piovesan Damiano Micetic Ivan	Research fellow IDPFUN RTD/B RTD/B RTD/B Technician
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* (ELIXIR Europe) - *Platforms* (ELIXIR Europe) - *Targeting the interaction of poly-Q expanded AR receptor with pVHL to ameliorate SBMA* (Kennedy's Foundation - Falconeri) - *Implementation Study: Standardizing Intrinsically Disordered Proteins (IDPs) data* (ELIXIR Europe) - *Improving IDP tools interoperability and integration into ELIXIR* (ELIXIR Europe)	
University and Business collaborations	- *ELIXIR commissioned services contract for projects under the platform funding document nr. 15 IT-2019* - *Commercial Licence Agreement Sanofi-aventis recherche & développement*	
Publications	Federica Quaglia, Bálint Mészáros, Edoardo Salladini, András Hatos, Rita Pancsa, Lucía B Chemes, Mátyás Pajkos, Tamas Lazar, Samuel Peña-Díaz, Jaime Santos, Veronika Ács, Nazanin Farahi, Erzsébet Fichó, Maria Cristina Aspromonte, Claudio Bassot, Anastasia Chasapi, Norman E Davey, Radoslav Davidović, Laszlo Dobson, Arne Elofsson, Gábor Erdős, Pascale Gaudet, Michelle Giglio, Juliana Glavina, Javier Iserte, Valentín Iglesias, Zsófia Kálmán, Matteo Lambrughi, Emanuela Leonardi, Sonia Longhi, Sandra Macedo-Ribeiro, Emiliano Maiani, Julia Marchetti, Cristina Marino-Buslje, Attila Mészáros, Alexander Miguel Monzon, Giovanni Minervini, Suvarna Nadendla, Juliet F Nilsson, Marian Novotný, Christos A Ouzounis, Nicolás Palopoli, Elena Papaleo, Pedro José Barbosa Pereira, Gabriele Pozzati, Vasilis J Promponas, Jordi Pujols, Alma Carolina Sanchez Rocha, Martin Salas, Luciana Rodriguez Sawicki, Eva Schad, Aditi Shenoy, Tamás Szaniszló, Konstantinos D Tsirigos, Nevena Veljkovic, Gustavo Parisi, Salvador Ventura, Zsuzsanna Dosztányi, Peter Tompa, Silvio C E Tosatto, Damiano Piovesan. (2022) DisProt in 2022: improved quality and accessibility of protein intrinsic disorder annotation. https://doi.org/10.1093/nar/gkab1082 Piovesan, Damiano; Monzon, Alexander Miguel; Quaglia, Federica; Tosatto,	

	Silvio C. E.. (2022) Databases for intrinsically disordered proteins. https://doi.org/10.1107/S2059798321012109 Falconieri, A.; Minervini, G.; Quaglia, F.; Sartori, G.; Tosatto, S. C. E.. (2022) Characterization of the pVHL Interactome in Human Testis Using High-Throughput Library Screening. https://doi.org/10.3390/cancers14041009 Quaglia, F.; Salladini, E.; Carraro, M.; Minervini, G.; Tosatto, S. C. E.; Le Mercier, P.. (2022) SARS-CoV-2 variants preferentially emerge at intrinsically disordered protein sites helping immune evasion. https://doi.org/10.1111/febs.16379 Clementel, D.; Del Conte, A.; Monzon, A. M.; Camagni, G. F.; Minervini, G.; Piovesan, D.; Tosatto, S. C. E.. (2022) RING 3.0: fast generation of probabilistic residue interaction networks from structural ensembles. https://doi.org/10.1093/nar/gkac365 Pradelli, Franco; Minervini, Giovanni; Tosatto, Silvio C E. (2022) Mocafe: a comprehensive Python library for simulating cancer development with Phase Field Models. https://doi.org/10.1093/bioinformatics/btac521 Piovesan, Damiano; Monzon, Alexander Miguel; Tosatto, Silvio C E. (2022) Intrinsic protein disorder and conditional folding in AlphaFoldDB. https://doi.org/10.1002/pro.4466 Quaglia, Federica; Hatos, András; Salladini, Edoardo; Piovesan, Damiano; Tosatto, Silvio C E. (2022) Exploring Manually Curated Annotations of Intrinsically Disordered Proteins with DisProt. https://doi.org/10.1002/cpz1.484 Leonardi, Emanuela; Savojardo, Castrense; Minervini, Giovanni. (2022) Molecular Effects of Mutations in Human Genetic Diseases. https://doi.org/10.3390/ijms23126408

7 - Protein crystallography and cryoEM

Principal Investigator	Prof. Steiner Roberto ORCID https://orcid.org/0000-0001-7084-9745 Scopus 7402618778
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Keywords	
Members	Steiner Roberto — Full professor Calì Tito — Associate professor Tykhonenko Tetiana — Research fellow 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)
Publications	Giamogante, Flavia; Barazzuol, Lucia; Poggio, Elena; Tromboni, Marta; Brini, Marisa; Cali, Tito. (2022) Stable Integration of Inducible SPLICS Reporters Enables Spatio-Temporal Analysis of Multiple Organelle Contact Sites upon Modulation of Cholesterol Traffic. https://doi.org/10.3390/cells11101643 Poggio, Elena; Brini, Marisa; Cali', Tito. (2022) Get Closer to the World of Contact Sites: A Beginner's Guide to Proximity-Driven Fluorescent Probes. https://doi.org/10.1177/25152564221135748

8 - Protein interactions and dynamics

Principal Investigator	Prof. Monika Fuxreiter Scopus 6601999581 Google Scholar Monika Fuxreiter
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Keywords	Protein interactions; Fuzziness; Phase Separation
Members	Monika Fuxreiter — Full professor Barrera Vilarmau Susana — Research fellow Correira Teixeira Joao Miguel — Post-Doc
Research projects	- *Aberrant condensates as drug-targets for cancer* (AIRC)
Publications	Hatos, Andras; Monzon, Alexander Miguel; Tosatto, Silvio C E; Piovesan, Damiano; Fuxreiter, Monika. (2022) FuzDB: a new phase in understanding fuzzy interactions. https://doi.org/10.1093/nar/gkab1060 Monzon, A. M.; Piovesan, D.; Fuxreiter, M.. (2022) Molecular Determinants of Selectivity in Disordered Complexes May Shed Light on Specificity in Protein Condensates. https://doi.org/10.3390/biom12010092 Fuxreiter, Monika. (2022) Electrostatics tunes protein interactions to context. https://doi.org/10.1073/pnas.2209201119 Hatos, Andras; Tosatto, Silvio C E; Vendruscolo, Michele; Fuxreiter, Monika. (2022) FuzDrop on AlphaFold: visualizing the sequence-dependent propensity of liquid-liquid phase separation and aggregation of proteins. https://doi.org/10.1093/nar/gkac386 Vendruscolo, Michele; Fuxreiter, Monika. (2022) Protein condensation diseases: therapeutic opportunities. https://doi.org/10.1038/s41467-022-32940-7 Vendruscolo, Michele; Fuxreiter, Monika. (2022) Protein condensation diseases: therapeutic opportunities. https://doi.org/10.1038/s41467-022-32940-7 Horvath, Attila; Vendruscolo, Michele; Fuxreiter, Monika. (2022) Sequence-based Prediction of the Cellular Toxicity Associated with Amyloid Aggregation within Protein Condensates. https://doi.org/10.1021/acs.biochem.2c00499 Barrera-Vilarmau, Susana; Teixeira, João M C; Fuxreiter, Monika. (2022) Protein interactions: anything new? https://doi.org/10.1042/EBC20220044

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
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Keywords	Immunology; Immune Response; Innate Immunity; Immunotherapy; Inflammasome; Angiogenesis; Stromal Cells
Members	Viola Antonella — Full professor Canton Marcella — Associate professor Molon Barbara — Associate professor Angioni Roberta — Research Fellow Ricardo Sanchez Rodriguez — Research Fellow Tchampda Dondjang Achille Homere — Research Fellow Carraro Eugenia — PhD Student Cigalotto Lavinia — PhD Student Cioccarelli Chiara — PhD Student Testa Alessandra Maria — PhD Student Marin Annachiara — PhD Student Orlando Gloria — PhD Student Venegas Celedon Francisca Carolina — PhD Student Munari Fabio — Technician
Research projects	- *MOBILISE: Monoamine oxidase B inhibitors as novel drugs targeting NLRP3 inflammasome* (ERC PoC) - *COVIDIamo: tracing the dynamics of COVID19 at single-cell multi-omic resolution for drug repurposing and biomarker identification* (Fondazione Human Technopole) - TAPES: Targeting Angiogenesis in Pediatric Ewing Sarcoma (Finanziamento Fondazione Istituto di Ricerca Pediatrica Città della Speranza) -MetaCAR: Raising Metabolism against suppressive microenvironment: new immunometabolic targets to improve CAR T cell fitness for Childhood B-Non-Hodgkin Lymphoma Treatment
Publications	Angioni, Roberta; Sasset, Lolita; Cioccarelli, Chiara; Sanchez-Rodrìguez,

	Ricardo; Bertoldi, Nicole; Putaggio, Cristina C; Viola, Antonella; Cattelan, Annamaria; Molon, Barbara. (2022) COVID-19 Vaccination Limits Systemic Danger Signals in SARS-CoV-2 Infected Patients. https://doi.org/10.3390/v14030565 Cioccarelli, Chiara; Molon, Barbara. (2022) MDSCs and T cells in solid tumors and non-Hodgkin lymphomas: an immunosuppressive speech. https://doi.org/10.1093/cei/uxac025 Sanchez-Rodrìguez, Ricardo; Tezze, Caterina; Agnellini, Andrielly H R; Angioni, Roberta; Venegas, Francisca C; Cioccarelli, Chiara; Munari, Fabio; Bertoldi, Nicole; Canton, Marcella; Desbats, Maria Andrea; Salviati, Leonardo; Gissi, Rosanna; Castegna, Alessandra; Soriano, Maria Eugenia; Sandri, Marco; Scorrano, Luca; Viola, Antonella; Molon, Barbara. (2022) OPA1 drives macrophage metabolism and functional commitment via p65 signaling. https://doi.org/10.1038/s41418-022-01076-y Orlando G, Molon B, Viola A, Alaibac M, Angioni R, Piaserico S. Psoriasis and Cardiovascular Diseases: An Immune-Mediated Cross Talk? Front Immunol. 2022 May 24;13:868277. doi: 10.3389/fimmu.2022.868277. PMID: 35686132; PMCID: PMC9170986. Calì, Bianca; Deygas, Mathieu; Munari, Fabio; Marcuzzi, Elisabetta; Cassará, Antonino; Toffali, Lara; Vetralla, Massimo; Bernard, Mathilde; Piel, Matthieu; Gagliano, Onelia; Mastrogiovanni, Marta; Laudanna, Carlo; Elvassore, Nicola; Molon, Barbara; Vargas, Pablo; Viola, Antonella. (2022) Atypical CXCL12 signaling enhances neutrophil migration by modulating nuclear deformability. https://doi.org/10.1126/scisignal.abk2552 Molon, Barbara; Liboni, Cristina; Viola, Antonella. (2022) CD28 and chemokine receptors: Signalling amplifiers at the immunological synapse. https://doi.org/10.3389/fimmu.2022.938004

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
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Keywords	PCR; Cell Biology; mRNA; DNA; Metastasis; Cancer Research; Matrix Metalloproteinase; Gelatinases; Zymography; ECM remodeling; Heparanase; inflammation; fibrosis; Tumor Invasion
Members	Onisto Maurizio — Full professor Spina Michele — Senior Greco Nicola — PhD Student Masola Valentina — RTD7A
Publications	Masola, V.; Greco, N.; Gambaro, G.; Franchi, M.; Onisto, M.. (2022) Heparanase as active player in endothelial glycocalyx remodeling. https://doi.org/10.1016/j.mbplus.2021.100097 Masola, Valentina; Franchi, Marco; Zaza, Gianluigi; Atsina, Francesca Mansa; Gambaro, Giovanni; Onisto, Maurizio. (2022) Heparanase regulates EMT and cancer stem cell properties in prostate tumors. https://doi.org/10.3389/fonc.2022.918419 Masola, Valentina; Bonomini, Mario; Borrelli, Silvio; Di Liberato, Lorenzo; Vecchi, Luigi; Onisto, Maurizio; Gambaro, Giovanni; Palumbo, Roberto; Arduini, Arduino. (2022) Fibrosis of Peritoneal Membrane as Target of New Therapies in Peritoneal Dialysis. https://doi.org/10.3390/ijms23094831 Franchi, Marco; Karamanos, Konstantinos-Athanasios; Cappadone, Concettina; Calonghi, Natalia; Greco, Nicola; Franchi, Leonardo; Onisto, Maurizio; Masola, Valentina. (2022) Substrate Type and Concentration Differently Affect Colon Cancer Cells Ultrastructural Morphology, EMT Markers, and Matrix Degrading Enzymes. https://doi.org/10.3390/biom12121786 Masola, Valentina; Greco, Nicola; Tozzo, Pamela; Caenazzo, Luciana; Onisto, Maurizio. (2022) The role of SPATA2 in TNF signaling, cancer, and

	spermatogenesis. https://doi.org/10.1038/s41419-022-05432-1

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
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Keywords	2D materials, human and environmental health, biomedical applications, air pollution, microplastics, single cell mass cytometry
Members	Delogu Lucia Gemma — Associate professor Giro Linda — Research Fellow Gazzi Arianna — Post-Doc Fusco Laura — Global Fellow, Post-Doc
Research projects	- "A universal strategic necessity: from molecule to drug", funded by the European Union Erasmus+ program (2022-1-TR01-KA220-VET-000088373). - "MX-MAP: Towards MXenes' biomedical applications by high-dimensional immune MAPping" by the European Commission under HORIZON work program (MSCA - Staff Exchange). - "DETECTION: DevelopmEnT of mxEne-based tracking and Therapeutic systems in bIOmediciNe" by the University of Padua (Italy), under "STARS". - "SEE: Mapping the skin-immune interactions of novel 2D materials: MXenes" by the European Commission, Marie Skłodowska-Curie Global Individual Fellowship (MSCA IF). - "WHISKIES: Wound healing in space: key challenges towards intelligent and enabling sensing platform" by the European Space Agency (ESA).
Publications	Fusco Laura, Arianna Gazzi, Christopher E Shuck, Marco Orecchioni, Dafne Alberti, Sènan Mickael D'Almeida, Darawan Rinchai, Eiman Ahmed, Ofer Elhanani, Martina Rauner, Barbara Zavan, Jean-Charles Grivel, Leeat Keren, Giulia Pasqual, Davide Bedognetti, Klaus Ley, Yury Gogotsi, and Lucia Gemma Delogu. 2022. Immune Profiling and Multiplexed Label-Free Detection of 2D MXenes by Mass Cytometry and High-Dimensional Imaging . Advanced materials (Deerfield Beach, Fla.) 34(45), e2205154. https://doi.org/10.1002/adma.202205154 (IF 32.09) Accepted for cover Claudia Fuoco, Xiangfeng Luan, Laura Fusco, Federica Riccio, Giulio Giuliani, Hazel Lin, Marco Orecchioni, Cristina Martín, Gianni Cesareni, Xinliang Feng, Yiyong Mai, Alberto Bianco, and Lucia Gemma Delogu. 2022. Graphene nanoribbons are internalized by human primary immune cell subpopulations maintaining a safety profile: A high-dimensional pilot study by single-cell mass

	cytometry. Applied Materials Today 29: 101593. https://doi.org/10.1016/j.apmt.2022.101593 (IF 8.66) Cemile Gokce, Cansu Gurcan, Lucia Gemma Delogu, and Acelya Yilmazer. 2022. 2D Materials for Cardiac Tissue Repair and Regeneration. Frontiers in cardiovascular medicine 9: 802551. https://doi.org/10.3389/fcvm.2022.802551 (IF 6.05) Kamyar Shirvanimoghaddam, Bożena Czech, Ram Yadav, Cemile Gokce, Laura Fusco, Lucia Gemma Delogu, Açelya Yilmazer, Graham Brodie, Amani Al-Othman, Adil K. Al-Tamimi, Jarret Grout, and Minoo Naebe. 2022. Facemask Global Challenges: The Case of Effective Synthesis, Utilization, and Environmental Sustainability. Sustainability 14, 2: 737. https://doi.org/10.3390/su14020737 (IF 4.39) Marco Orecchioni, Laura Fusco, Raghvendra Mall, Valentina Bordoni, Claudia Fuoco, Darawan Rinchai, Shi Guo, Raquel Sainz, Martina Zoccheddu, Cansu Gurcan, Acelya Yilmazer, Barbara Zavan, Cécilia Ménard-Moyon, Alberto Bianco, Wouter Hendrickx, Davide Bedognetti, and Lucia Gemma Delogu. 2022. Graphene oxide activates B cells with upregulation of granzyme B expression: evidence at the single-cell level for its immune-modulatory properties and anticancer activity. Nanoscale 14, 2: 333–349. https://doi.org/10.1039/d1nr04355b (IF 8.31)

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
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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 Rocca Giulia — Research fellow Franchin Cinzia — Technician
Research projects	- *Unravelling the molecular and phenotypic effects of whole genome duplication and its impact on stress adaptation in plants* (PRIN)
Publications	Aita, Ada; Battisti, Ilaria; Contran, Nicole; Furlan, Serena; Padoan, Andrea; Franchin, Cinzia; Barbaro, Francesco; Cattelan, Anna Maria; Zambon, Carlo-Federico; Plebani, Mario; Basso, Daniela; Arrigoni, Giorgio. (2022) Salivary proteomic analysis in asymptomatic and symptomatic SARS-CoV-2 infection: Innate immunity, taste perception and FABP5 proteins make the difference. https://doi.org/10.1016/j.cca.2022.09.023 Vidović, Marija; Battisti, Ilaria; Pantelić, Ana; Morina, Filis; Arrigoni, Giorgio; Masi, Antonio; Jovanović, Sonja Veljović. (2022) Desiccation Tolerance in Ramonda serbica Panc.: An Integrative Transcriptomic, Proteomic, Metabolite and Photosynthetic Study. https://dx.doi.org/10.3390/plants11091199 Ilovino, Ludovica; Giusti, Veronica; Pischedda, Francesca; Giusto, Elena; Plotegher, Nicoletta; Marte, Antonella; Battisti, Ilaria; Di Iacovo, Angela; Marku, Algerta; Piccoli, Giovanni; Bandopadhyay, Rina; Perego, Carla; Bonifacino, Tiziana; Bonanno, Giambattista; Roseti, Cristina; Bossi, Elena; Arrigoni, Giorgio; Bubacco, Luigi; Greggio, Elisa; Hilfiker, Sabine; Civiero, Laura (2022) Trafficking of the glutamate transporter is impaired in LRRK2-related Parkinson's disease. https://dx.doi.org/10.1007/s00401-022-02437-0 Cogo, Susanna; Tomkins, James E; Vavouraki, Nikoleta; Giusti, Veronica; Forcellato, Federica; Franchin, Cinzia; Tessari, Isabella; Arrigoni, Giorgio; Cendron, Laura; Manzoni, Claudia; Civiero, Laura; Lewis, Patrick A; Greggio, Elisa. (2022) Cytosolic sequestration of spatacsin by Protein Kinase A and 14-3-3 proteins. https://dx.doi.org/10.1016/j.nbd.2022.105858 Scalcon, V; Folda, A; Lupo, Mg; Tonolo, F; Pei, N; Battisti, I; Ferri, N; Arrigoni, G; Bindoli, A; Holmgren, A; Coppo, L; Rigobello, Mp.(2022) Mitochondrial depletion

	of glutaredoxin 2 induces metabolic dysfunction associated fatty liver disease in mice.https://dx.doi.org/10.1016/j.redox.2022.102277 Pietrobono, Silvia; De Paolo, Raffaella; Mangiameli, Domenico; Marranci, Andrea; Battisti, Ilaria; Franchin, Cinzia; Arrigoni, Giorgio; Melisi, Davide; Poliseno, Laura; Stecca, Barbara. (2022) p38 MAPK-dependent phosphorylation of transcription factor SOX2 promotes an adaptive response to BRAF inhibitors in melanoma cells. https://dx.doi.org/10.1016/j.jbc.2022.102353 Munari, F.; Mollica, L.; Valente, C.; Parolini, F.; Kachoie, E. A.; Arrigoni, G.; D'Onofrio, M.; Capaldi, S.; Assfalg, M. (2022) Structural Basis for Chaperone-Independent Ubiquitination of Tau Protein by Its E3 Ligase CHIP. https://dx.doi.org/10.1002/anie.202112374 Celsi, F.; Monasta, L.; Arrigoni, G.; Battisti, I.; Licastro, D.; Aloisio, M.; Di Lorenzo, G.; Romano, F.; Ricci, G.; Ura, B. (2022). Gel-Based Proteomic Identification of Suprabasvin as a Potential New Candidate Biomarker in Endometrial Cancer. https://dx.doi.org/10.3390/ijms23042076 Ebinezer, Leonard Barnabas; Battisti, Ilaria; Sharma, Nisha; Ravazzolo, Laura; Ravi, Lokesh; Trentin, Anna Rita; Barion, Giuseppe; Panozzo, Anna; Dall'Acqua, Stefano; Vamerali, Teofilo; Quaggiotti, Silvia; Arrigoni, Giorgio; Masi, Antonio. (2022) Perfluorinated alkyl substances affect the growth, physiology and root proteome of hydroponically grown maize plants. https://dx.doi.org/10.1016/j.jhazmat.2022.129512

13 - Nano-biotechnology and nano-biomedicine

Principal Investigator	Prof. Emanuele Papini ORCID https://orcid.org/0000-0001-6033-4473 Scopus 7005536300
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Keywords	Nanoparticle uptake; Cell Culture; Nanobiotechnology; Macrophage; Membranes; Cytokines; Complement system; Corona protein
Members	Papini Emanuele — Associate professor Gandaglia Valentina — Project Manager Veloso Magahlaes Pedro Rafael — PhD Student Maria Morbidelli — PhD Student Tavano Regina — Researcher
Research projects	*- DIRNANO - Directing the immune response through designed nanomaterials* (MSCA ITN)
Publications	Castellani C, Radu CM, Morillas-Becerril L, Barison I, Menato F, Do Nascimento TM, Fedrigo M, Giarraputo A, Virzì GM, Simioni P, Basso C, Papini E, Tavano R, Mancin F, Vescovo G, Angelini A. Poly(lipoic acid)-based nanoparticles as a new therapeutic tool for delivering active molecules.Nanomedicine. 2022 Sep;45:102593. doi: 10.1016/j.nano.2022.102593. Bellini C, Antonucci S, Morillas-Becerril L, Scarpa S, Tavano R, Mancin F, Di Lisa F, Papini E. Nanoparticles Based on Cross-Linked Poly(Lipoic Acid) Protect Macrophages and Cardiomyocytes from Oxidative Stress and Ischemia Reperfusion Injury. Antioxidants (Basel). 2022 May 5;11(5):907. doi: 10.3390/antiox11050907.

14 - Peptides and Antibodies

Principal Investigator	Prof. Oriano Marin ORCID https://orcid.org/0000-0002-6175-4039 Scopus 7005583157	
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Keywords		
Members	Oriano Marin Ferro Stefania Fiorese Federico	Associate professor Technician Research fellow
Research projects		
Publications		

15 - Protein engineering

Principal Investigator	Prof. Alessandro Negro ORCID https://orcid.org/0000-0003-3142-7632 Google Scholar Alessandro Negro
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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	*DIRNANO - Directing the immune response through designed nanomaterials* (MSCA ITN)
Publications	Cannino, Giuseppe; Urbani, Andrea; Gaspari, Marco; Varano, Mariaconcetta; Negro, Alessandro; Filippi, Antonio; Ciscato, Francesco; Masgras, Ionica; Gerle, Christoph; Tibaldi, Elena; Brunati, Anna Maria; Colombo, Giorgio; Lippe, Giovanna; Bernardi, Paolo; Rasola, Andrea. (2022) The mitochondrial chaperone TRAP1 regulates F-ATP synthase channel formation. https://doi.org/10.1038/s41418-022-01020-0 Laura Acquasaliente, Giulia Pontarollo, Claudia Maria Radu, Daniele Peterle, Ilaria Artusi, Anna Pagotto, Federico Uliana, Alessandro Negro, Paolo Simioni, Vincenzo De Filippis, (2022) Exogenous human α-Synuclein acts in vitro as a mild platelet antiaggregant inhibiting α-thrombin-induced platelet activation https://doi.org/10.1038/s41598-022-12886-y

Mitochondrial Pathophysiology

16 - Mitochondria in Cell Death and Cancer

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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 Rasola Andrea Fracasso Giulio Carraro Michela Ferrone Lavinia La Spina Martina Laquatra Claudio Boscolo Nata Federica Ciscato Francesco Frigo Elena Ghasemi Firourabadi Shiva Komarov Denis Scantamburlo Francesca Tommasin Ludovica Masgras Ionica Trevisan Elena	Full professor Associate professor RTD/A RTD/A Post-Doc DBS RTD/A Post-Doc PhD Student CNR Researcher PhD Student Research fellow Research fellow PhD Student PhD Student CNR Researcher Technician

Research projects	- *Targeting Mitochondria to Treat Heart Disease* (Bernardi - Leducq) - *A TRAP on the road to tumor growth: targeting the pro-neoplastic functions of the mitochondrial chaperone TRAP1* (Rasola - AIRC) - *The dual function of F-ATP synthase in tumor cell metabolism and survival* (Bernardi - AIRC) - *Channel formation by mitochondrial ATP synthase: Mechanisms and regulation* (Bernardi - PRIN) - *TRAPping neurofibromas. Inibition of the mitochondrial chaperone TRAP1* (Rasola - CTF) - *TRAPping tumor growth: designing molecules to perturb the chaperon TRAP1, from enzymatic activities to cell-cell interactions (TRAP)* (Rasola - PRIN) - *UniPD 2022 - Finanziamento progetto "N-F1 RACE" - "Neurofibromatosis type 1: Role of Amino acids in Cancer Eradication* (Rasola/La Spina - MSCA SoE) *A mitochondrial therapy for muscular dystrophies* (Bernardi - Telethon)
Publications	Masgras, I.; Cannino, G.; Ciscato, F.; Sanchez-Martin, C.; Darvishi, F. B.; Scantamburlo, F.; Pizzi, M.; Menga, A.; Fregona, D.; Castegna, A.; Rasola, A.. (2022) Tumor growth of neurofibromin-deficient cells is driven by decreased respiration and hampered by NAD+ and SIRT3. https://doi.org/10.1038/s41418-022-00991-4 Cannino, Giuseppe; Urbani, Andrea; Gaspari, Marco; Varano, Mariaconcetta; Negro, Alessandro; Filippi, Antonio; Ciscato, Francesco; Masgras, Ionica; Gerle, Christoph; Tibaldi, Elena; Brunati, Anna Maria; Colombo, Giorgio; Lippe, Giovanna; Bernardi, Paolo; Rasola, Andrea. (2022) The mitochondrial chaperone TRAP1 regulates F-ATP synthase channel formation. https://doi.org/10.1038/s41418-022-01020-0 Bernardi, P., Carraro, M. and Lippe, G. (2022) The mitochondrial permeability transition: Recent progress and open questions, FEBS J. 289, 7051-7074; https://doi.org/10.1111/febs.16254 Brischigliaro, M., Frigo, E., Fernandez-Vizarra, E., Bernardi, P. and Viscomi, C. (2022) Measurement of mitochondrial respiratory chain enzymatic activities in Drosophila melanogaster samples, STAR Protocols 3, 101322; Kaiyrzhanov, R., Mohammed, S.E.M., Maroofian, R., Husain, R.A., Catania, A., Alahmad, A., Dutra-Clarke, M., Grønborg, S., Sudarsanam, A., Vogt, J., Arrigoni, F., Baptista, J., Haider, S., Feichtinger, R., Bernardi, P., Zulian, A., Gusic, M., Efthymiou, S., Bai, R., Bibi, F., Horga, A., Martinez-Agosto, J.A., Torraco, A., Lam, A., Manole, A., Pyle, A., Albash, B., Dionisi-Vici, C., Murphy, D., Martinelli, D., Bugiardini, E., Haude, K., Lamperti, C., Risom, L., Laugwitz, L., Di Nottia, M., McFarland, R., Vilarhino, L., Hanna, M., Prokisch, H., Mayr, J., Bertini, E.S., Ghezzi, D., Østergaard, E., Wortmann, S., Carrozzo, R., Haack, T.B., W. Taylor, R.W., Nowikovsky, K., and Houlden, H. (2022) Bi-allelic LETM1 variants perturb mitochondrial ion homeostasis leading to a clinical spectrum with predominant nervous system involvement, Am. J. Hum. Genet. 109, 1692-1712; https://doi.org/10.1016/j.ajhg.2022.07.007 Prag, H.A., Kula-Alwara, D., Bernardi, P., Di Lisa, F., Michael P. Murphy, M.P. and Krieg, T. (2022) Cyclophilin D knockout mice do not accumulate succinate during cardiac ischemia, J. Mol. Cell. Cardiol. 173, 73-74;

	https://doi.org/10.1016/j.yjmcc.2022.09.006 Bernardi, P. and Pavlov, E. (2022) Mitochondrial Permeability Transition – Editorial Cells 11, 3866; DOI: 10.3390/cells11233866

17 - Mitochondrial Calcium Signaling

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Keywords	Cell Signaling; Mitochondria; Ion Transporters; Skeletal Muscle; Macrophages; RNA-Based Therapy
Members	Rizzuto Rosario — Full Professor De Stefani Diego — Associate Professor Mammucari Cristina — Associate Professor Raffaello Anna — Associate Professor De Mario Agnese — Research fellow Gherardi Gaia — RTD/A Vecellio Reane Denis — Research fellow Az. Ospedaliera Vetralla Massimo — Post-Doc Barazzuol Lucia — Research fellow Mazzola Chiara — Research fellow Piazza Ilaria — PhD Student Turco Eloisa — Research fellow D'Angelo Donato — PhD Student Placa Federica — PhD Student Sbrissa Miriana — PhD Student Spinelli Francesca — PhD Student Pallafacchina Giorgia — CNR Researcher Ausoni Simonetta — Researcher Menegazzi Valentina — Technician Albanesi Marco — PhD Student
Research projects	- *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) - *Biochemical mechanisms and cellular consequences of mitochondrial cation flux: from bioenergetics to metabolic rewiring* (PRIN - De Stefani) - *The structural and functional role of the A-kinase anchoring protein*

	myospryn in striated muscle (PRIN - Raffaello) *- Eccellenza id 59583 "Mitochondrial ATP-sensitive potassium channels in health and disease - MitoKATP* (CARIPARO - De Stefani) *- Telethon Joint Call fo Applications" Prog. 2022-0574 "Deorphanizing and funcionalizing the mitochondrial protein TMEM65* (TELETHON - De Stefani)
Publications	Vecellio Reane, Denis; Cerqua, Cristina; Sacconi, Sabrina; Salviati, Leonardo; Trevisson, Eva; Raffaello, Anna. (2022) The Splicing of the Mitochondrial Calcium Uniporter Genuine Activator MICU1 Is Driven by RBFOX2 Splicing Factor during Myogenic Differentiation. https://doi.org/10.3390/ijms23052517 Grespi, F.; Vianello, C.; Cagnin, S.; Giacomello, M.; De Mario, A.. (2022) The Interplay of Microtubules with Mitochondria–ER Contact Sites (MERCs) in Glioblastoma. https://doi.org/10.3390/biom12040567 "Gherardi, Gaia; Corbioli, Giovanni; Ruzza, Filippo; Rizzuto, Rosario. (2022) CoQ10 and Resveratrol Effects to Ameliorate Aged-Related Mitochondrial Dysfunctions. https://doi.org/10.3390/nu14204326

18 - Mitochondrial medicine

Principal Investigator	Prof. Carlo Fiore Viscomi ORCID https://orcid.org/0000-0001-6050-0566 Scopus 57192336046 WoS ID R-1940-2016
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Keywords	Mitochondrial disease, gene therapy, mitochondria, animal models
Members	Viscomi Carlo Fiore — Associate professor Balmaceda Valdez Valeria Roxana — Post-Doc Brischigliaro Michele — Post-Doc Vogrig Enea — Post-Doc Giacchin Giacomo — PhD Student Zuppardo Alessandro — PhD Student Fernandez Vizarra Erika Maria — RTD/A Samantha Corrà — Post-Doc Achille Tchampada — Post-Doc
Research projects	- *Harnessing mitophagy to treat mitochondrial myopathies* (AFM Telethon) - *MitMed: identification and characterization of new disease genes for mitochondrial disorders* (Telethon) - *Study of the role of mitophagy and lysosomal biogenesis in COX deficiency: a new model for drug discovery* (MSCA IF - Beninca) - *Mitofight 2: Experimental strategies to combat Pearson's syndrome stage 2: moving from developing the tools to the proof of concept* (Associazione Luigi Comini Onlus) - *Pathological molecular mechanisms underlying APOPT1 loss of function* (Telethon-Cariplo Alliance - Fernandez-Vizarra)
Publications	Corrà S, Cerutti R, Balmaceda V, Viscomi C, Zeviani M. Double administration of self-complementary AAV9NDUFS4 prevents Leigh disease in Ndufs4-/- mice. Brain. 2022 Oct 21;145(10):3405-3414. doi: 10.1093/brain/awac182. PMID: 36270002; PMCID: PMC9586549. Falabella M, Minczuk M, Hanna MG, Viscomi C, Pitceathly RDS. Gene therapy for primary mitochondrial diseases: experimental advances and clinical challenges. Nat Rev Neurol. 2022 Nov;18(11):689-698. doi: 10.1038/s41582-022-00715-9. Epub 2022 Oct 18. PMID: 36257993. Szibor M, Heyne E, Viscomi C, Moore AL. Measuring the Mitochondrial Ubiquinone (Q) Pool Redox State in Isolated Respiring Mitochondria. Methods Mol Biol. 2022;2497:291-299. doi: 10.1007/978-1-0716-2309-1_19. PMID: 35771450. Viscomi C, Soriano ME. Molecular Research on Mitochondrial Dysfunction. Int J Mol Sci. 2022 Jun 20;23(12):6845. doi: 10.3390/ijms23126845. PMID: 35743286; PMCID: PMC9224555.

Brischigliaro M, Cabrera-Orefice A, Sturlese M, Elurbe DM, Frigo E, Fernandez-Vizarra E, Moro S, Huynen MA, Arnold S, Viscomi C, Zeviani M. CG7630 is the Drosophila melanogaster homolog of the cytochrome c oxidase subunit COX7B. EMBO Rep. 2022 Aug 3;23(8):e54825. doi: 10.15252/embr.202254825. Epub 2022 Jun 14. PMID: 35699132; PMCID: PMC9346487.

Brischigliaro M, Badocco D, Costa R, Viscomi C, Zeviani M, Pastore P, Fernández-Vizarra E. Mitochondrial Cytochrome c Oxidase Defects Alter Cellular Homeostasis of Transition Metals. Front Cell Dev Biol. 2022 May 19;10:892069. doi: 10.3389/fcell.2022.892069. PMID: 35663391; PMCID: PMC9160823.

Brischigliaro M, Frigo E, Fernandez-Vizarra E, Bernardi P, Viscomi C. Measurement of mitochondrial respiratory chain enzymatic activities in *Drosophila melanogaster* samples. STAR Protoc. 2022 Apr 15;3(2):101322. doi: 10.1016/j.xpro.2022.101322. PMID: 35479112; PMCID: PMC9036317.

Zeviani M, Viscomi C. Mitochondrial Neurodegeneration. Cells. 2022 Feb 11;11(4):637. doi: 10.3390/cells11040637. PMID: 35203288; PMCID: PMC8870525.

Dogan SA, Giacchin G, Zito E, Viscomi C. Redox Signaling and Stress in Inherited Myopathies. Antioxid Redox Signal. 2022 Aug;37(4-6):301-323. doi: 10.1089/ars.2021.0266. Epub 2022 Apr 18. PMID: 35081731.

Fernández-Vizarra E, López-Calcerrada S, Sierra-Magro A, Pérez-Pérez R, Formosa LE, Hock DH, Illescas M, Peñas A, Brischigliaro M, Ding S, Fearnley IM, Tzoulis C, Pitceathly RDS, Arenas J, Martín MA, Stroud DA, Zeviani M, Ryan MT, Ugalde C. Two independent respiratory chains adapt OXPHOS performance to glycolytic switch. Cell Metab. 2022 Nov 1;34(11):1792-1808.e6. doi: 10.1016/j.cmet.2022.09.005. Epub 2022 Oct 4. PMID: 36198313.

Fernández-Vizarra E, Ugalde C. Cooperative assembly of the mitochondrial respiratory chain. Trends Biochem Sci. 2022 Dec;47(12):999-1008. doi: 10.1016/j.tibs.2022.07.005. Epub 2022 Aug 10. PMID: 35961810.

Fernández-Vizarra E, Callegari S, Garrabou G, Pacheu-Grau D. Editorial: Mitochondrial OXPHOS System: Emerging Concepts and Technologies and Role in Disease. Front Cell Dev Biol. 2022 May 19;10:924272. doi: 10.3389/fcell.2022.924272. PMID: 35663395; PMCID: PMC9161708.

19 - Aging signaling pathways

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Keywords	Aging; Redox signaling ; Metabolism Epigenetics
Members	Giorgio Marco — Associate Professor Casciaro Francesca — Post-Doc
Research Projects	Disclosing the common epigenetic markers of aging and cognitive decline (RF-MS; BIRD-SID) Mechanisms of adaptation to dietary restriction and ketogenic diet (NIA-NIH)
Publications	Hillje, R., Luzi, L., Amatori, S., Persico, G., Casciaro, F., Rusin, M., Fanelli, M., Pelicci, P., & Giorgio, M. (2022). Time makes histone H3 modifications drift in mouse liver. Aging, 14(12), 4959–4975. https://doi.org/10.18632/aging.204107 Trinei, M., Carpi, A., Menabo', R., Storto, M., Fornari, M., Marinelli, A., Minardi, S., Riboni, M., Casciaro, F., DiLisa, F., Petroni, K., Tonelli, C., & Giorgio, M. (2022). Dietary intake of cyanidin-3-glucoside induces a long-lasting cardioprotection from ischemia/reperfusion injury by altering the microbiota. The Journal of nutritional biochemistry, 101, 108921. https://doi.org/10.1016/j.jnutbio.2021.108921 Bonora, B. M., Palano, M. T., Testa, G., Fadini, G. P., Sangalli, E., Madotto, F., Persico, G., Casciaro, F., Vono, R., Colpani, O., Scavello, F., Cappellari, R., Abete, P., Orlando, P., Carnelli, F., Berardi, A. G., De Servi, S., Raucci, A., Giorgio, M., Madeddu, P., … Spinetti, G. (2022). Hematopoietic progenitor cell liabilities and alarmins S100A8/A9-related inflammaging associate with frailty and predict poor cardiovascular outcomes in older adults. Aging cell, 21(3), e13545. https://doi.org/10.1111/acel.13545 Persico, G., Casciaro, F., Amatori, S., Rusin, M., Cantatore, F., Perna, A., Auber, L. A., Fanelli, M., & Giorgio, M. (2022). Histone H3 Lysine 4 and 27 Trimethylation Landscape of Human Alzheimer's Disease. Cells, 11(4), 734. https://doi.org/10.3390/cells11040734 Priami, C., Montariello, D., De Michele, G., Ruscitto, F., Polazzi, A., Ronzoni, S., Bertalot, G., Binelli, G., Gambino, V., Luzi, L., Mapelli, M., Giorgio, M., Migliaccio, E., & Pelicci, P. G. (2022). Aberrant activation of p53/p66Shc-mInsc axis

	increases asymmetric divisions and attenuates proliferation of aged mammary stem cells. Cell death and differentiation, 29(12), 2429–2444. https://doi.org/10.1038/s41418-022-01029-5 Baysa, A., Maghazachi, A. A., Sand, K. L., Campesan, M., Zaglia, T., Mongillo, M., Giorgio, M., Di Lisa, F., Gullestad, L., Mariero, L. H., Vaage, J., Valen, G., & Stensløkken, K. O. (2023). Toll-like receptor 9 signaling after myocardial infarction: Role of p66ShcA adaptor protein. Biochemical and biophysical research communications, 644, 70–78. https://doi.org/10.1016/j.bbrc.2022.12.085 Stendardo, M., Renzi, C., Pallavi, R., Roda, N., Gambino, V., Casciaro, F., Persico, G., & Giorgio, M. (2023). The early-life stress induced by oxytocin inhibition in p53 knockout mouse dams increases adulthood tumorigenesis in first and second generations. Cancer reports (Hoboken, N.J.), 6(1), e1625. https://doi.org/10.1002/cnr2.1625 Verrelli, D., Dallera, L., Stendardo, M., Monzani, S., Pasqualato, S., Giorgio, M., & Pallavi, R. (2022). Hydroxycitric Acid Inhibits Chronic Myelogenous Leukemia Growth through Activation of AMPK and mTOR Pathway. Nutrients, 14(13), 2669. https://doi.org/10.3390/nu14132669 Albiero, M., D'Anna, M., Bonora, B. M., Zuccolotto, G., Rosato, A., Giorgio, M., Iori, E., Avogaro, A., & Fadini, G. P. (2022). Hematopoietic and Nonhematopoietic p66Shc Differentially Regulates Stem Cell Traffic and Vascular Response to Ischemia in Diabetes. Antioxidants & redox signaling, 36(10-12), 593–607. https://doi.org/10.1089/ars.2021.0097

20 - Oxidative metabolism in cardiac disease

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Keywords	mitochondria; reactive oxygen species; cardiac biology; heart failure; diabetic cardiomyopathy; anthracycline cardiotoxicity; cardiomyopathies
Members	Di Lisa Fabio — Full professor Kaludercic Nina — RTD/B Arusei Ruth Jepchirchir — PhD Student Brugnaro Marco — Research fellow Valle Giorgia — Research fellow Rahhali Karim — PhD Student Menabo' Roberta — CNR Technician Mena Debora — PhD student (University of Coimbra)
Research projects	- *Targeting Mitochondria to Treat Heart Disease* (Fondazione Leducq)
Publications	Cagnin, Stefano; Brugnaro, Marco; Millino, Caterina; Pacchioni, Beniamina; Troiano, Carmen; Di Sante, Moises; Kaludercic, Nina. (2022) Monoamine Oxidase-Dependent Pro-Survival Signaling in Diabetic Hearts Is Mediated by miRNAs. https://doi.org/10.3390/cells11172697 Kaludercic, Nina; Di Lisa, Fabio. (2022) Cyclophilin D and p66Shc contribute to KCl-induced Ca2+ increase in pulmonary artery smooth muscle cells: a potentially relevant phenomenon awaiting a definite mechanism. https://doi.org/10.1093/cvr/cvab261 Wang Y, Zhao M, Xu B, Bahriz SMF, Zhu C, Jovanovic A, Ni H, Jacobi A, Kaludercic N, Di Lisa F, Hell JW, Shih JC, Paolocci N, Xiang YK. (2022) Monoamine oxidase A and organic cation transporter 3 coordinate intracellular β 1 AR signaling to calibrate cardiac contractile function. Basic Res Cardiol. 2022 Jul 17;117(1):37. doi: 10.1007/s00395-022-00944-5 Zhu G, Ueda K, Hashimoto M, Zhang M, Sasaki M, Kariya T, Sasaki H, Kaludercic N, Lee DI, Bedja D, Gabrielson M, Yuan Y, Paolocci N, Blanton RM, Karas RH, Mendelsohn ME, O'Rourke B, Kass DA, Takimoto E. The mitochondrial regulator PGC1α is induced by cGMP-PKG signaling and mediates the protective effects of phosphodiesterase 5 inhibition in heart failure. FEBS Lett. 2022 Jan;596(1):17-28. doi: 10.1002/1873-3468.14228 Prag HA, Kula-Alwar D, Bernardi P, Di Lisa F, Murphy MP, Krieg T. (2022)

	Cyclophilin D knockout mice do not accumulate succinate during cardiac ischemia. 2022 Dec;173:73-74. doi: 10.1016/j.yjmcc.2022.09.006. Schildknecht S, von Kriegsheim A, Vujacic-Mirski K, Di Lisa F, Ullrich V, Daiber A. (2022) Recovery of reduced thiol groups by superoxide-mediated denitrosation of nitrosothiols. Redox Biol 2022 Oct;56:102439. doi: 10.1016/j.redox.2022.102439. Bellini C, Antonucci S, Morillas-Becerril L, Scarpa S, Tavano R, Mancin F, Di Lisa F, Papini E. Nanoparticles Based on Cross-Linked Poly(Lipoic Acid) Protect Macrophages and Cardiomyocytes from Oxidative Stress and Ischemia Reperfusion Injury. Antioxidants (Basel) 2022 May 5;11(5):907. doi: 10.3390/antiox11050907. Trinei M, Carpi A, Menabo' R, Storto M, Fornari M, Marinelli A, Minardi S, Riboni M, Casciaro F, Di Lisa F, Petroni K, Tonelli C, Giorgio M. Dietary intake of cyanidin-3-glucoside induces a long-lasting cardioprotection from ischemia/reperfusion injury by altering the microbiota. 2022 Mar;101:108921. doi: 10.1016/j.jnutbio.2021.108921

21 - Regulation of the Mitochondrial Proteome

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Keywords	mitochondria, nuclear encoded mitochondrial genes, transcriptional regulation, cancer, muscle disease
Members	Szabadkai Gyorgy — Associate professor Ferreira Henriques Tiago Andre — Post-Doc Maino Martina — Post-Doc DISCOG-DSB Menegollo Michela — Post-Doc Suman Matteo — Research fellow Zampieri Sandra — Post-Doc DISCOG-DSB
Research projects	- *Exploiting mitochondrial biogenesis pathways to stratify and target different breast cancer subtypes* (AIRC)
Publications	Intracellular Chloride Channels Regulate Endothelial Metabolic Reprogramming in Pulmonary Arterial Hypertension. Alzaydi MM, Abdul-Salam VB, Whitwell HJ, Russomanno G, Glynos A, Capece D, Szabadkai G, Wilkins MR, Wojciak-Stothard B. Am J Respir Cell Mol Biol. 2023 Jan;68(1):103-115. doi: 10.1165/rcmb.2022-0111OC.PMID: 36264759 Constitutive activation of the PI3K-Akt-mTORC1 pathway sustains the m.3243 A > G mtDNA mutation.Chung CY, Singh K, Kotiadis VN, Valdebenito GE, Ahn JH, Topley E, Tan J, Andrews WD, Bilanges B, Pitceathly RDS, Szabadkai G, Yuneva M, Duchen MR.Nat Commun. 2021 Nov 4;12(1):6409. doi: 10.1038/s41467-021-26746-2.PMID: 34737295 Identification and functional validation of FDA-approved positive and negative modulators of the mitochondrial calcium uniporter. De Mario A, Tosatto A, Hill JM, Kriston-Vizi J, Ketteler R, Vecellio Reane D, Cortopassi G, Szabadkai G, Rizzuto R, Mammucari C. Cell Rep. 2021 Jun 22;35(12):109275. doi: 10.1016/j.celrep.2021.109275.PMID: 34161774 Apoptotic cell death in disease-Current understanding of the NCCD 2023.Vitale I, … Szabadkai G, …Kroemer G, Galluzzi L. Cell Death Differ. 2023 May;30(5):1097-1154. doi: 10.1038/s41418-023-01153-w. Epub 2023 Apr 26.PMID: 37100955

22 - Autonomic Control of Cardiac Function

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Keywords	Cell Physiology; Signal Transduction; Calcium Signaling; Calcium Imaging; GPCR Signaling; Protein Kinases; Molecular Pharmacology; Optogenetics; Cardiomyocytes; Cardiovascular Physiology
Members	Mongillo Marco — Associate professor Dokshokova Lolita — Post-Doc Scalco Arianna — Post-Doc Moro Nicola — PhD Student Ronfini Marco — Post-Doc Zaglia Tania — RTD/B
Publications	Dokshokova, Lolita; Franzoso, Mauro; Di Bona, Anna; Moro, Nicola; Sanchez Alonso, Jose Luis; Prando, Valentina; Sandre, Michele; Basso, Cristina; Faggian, Giuseppe; Abriel, Hugues; Marin, Oriano; Gorelik, Julia; Zaglia, Tania; Mongillo, Marco. (2022) Nerve growth factor transfer from cardiomyocytes to innervating sympathetic neurons activates TrkA receptors at the neuro-cardiac junction. https://doi.org/10.1113/JP282828 Franzoso, M.; Dokshokova, L.; Vitiello, L.; Zaglia, T.; Mongillo, M.. (2022) Tuning the Consonance of Microscopic Neuro-Cardiac Interactions Allows the Heart Beats to Play Countless Genres. https://doi.org/10.3389/fphys.2022.841740 Moro, Nicola; Dokshokova, Lolita; Perumal Vanaja, Induja; Prando, Valentina; Cnudde, Sophie Julie A; Di Bona, Anna; Bariani, Riccardo; Schirone, Leonardo; Bauce, Barbara; Angelini, Annalisa; Sciarretta, Sebastiano; Ghigo, Alessandra; Mongillo, Marco; Zaglia, Tania. (2022) Neurotoxic Effect of Doxorubicin Treatment on Cardiac Sympathetic Neurons. https://doi.org/10.3390/ijms231911098

23 - Chaperones in Muscle Differentiation and Disease

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Keywords	Muscle Proteins; Molecular Chaperones; Muscle Damage
Members	Gorza Luisa Associate professor
Publications	Fornasiero, Filippo; Scapin, Cristina; Vitadello, Maurizio; Pizzo, Paola; Gorza, Luisa. (2022) Active nNOS Is Required for Grp94-Induced Antioxidant Cytoprotection: A Lesson from Myogenic to Cancer Cells. https://doi.org/10.3390/ijms23062915

24 - Muscle Contractility And Plasticity

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Keywords	Exercise Physiology; Exercise Science; Exercise Performance; Biomechanics; Physiology; Resistance Training; Strength & Conditioning; Muscle Physiology; Human Physiology; Physical Fitness
Members	Narici Marco — Full Professor De Vito Giuseppe — Full Professor Blaauw Bert — Associate professor Murgia Marta — Associate professor Toniolo Luana — Associate professor Baraldo Martina — Post-Doc De Napoli Cosimo — Post-Doc Dumitras Ana Georgia — Research fellow Gonnelli Federica — Post-Doc Marcucci Lorenzo — RTD/B Motanova Evgeniia — PhD Student Nogara Leonardo — RTD/A Paganini Matteo — Research fellow Pratt Jedd — Post-Doc Dyne Mary Katharine — Research fellow Gasparella Francesca — Research fellow Sirago Giuseppe — Research fellow Zorzato Sabrina — Research fellow Geremia Alessia — PhD Student Sarto Fabio — PhD Student Valli Giacomo — PhD Student Franchi Martino — RTD/A Germinario Elena — Technician
Research projects	*- Ablation of the maladaptive ER stress response restores diaphragm function and insulin resistance in SEPN1-related myopathies* (RSF) *- The MDS on LDC: Tissue Sharing Programme* (ASI) *- Neuromuscular ageing: mechanisms and functional implications (NeuAge)* (PRIN) *- Heart Fi-Re - HEART Fine REgulation through mechanosensing in myosin filaments: merging theory and experiments into a multi-scale heart simulator* (MSCA IF - Paolocci) *- Neuromuscular impairment in aging: a longitudinal study of structural and functional mechanistic bases of age-related alterations (Trajector-AGE)* (PRIN - Franchi) *- Inactivity induced neuromuscular impairment through different ages:*

	from children, to young and middle age adults (InactivAge) (PRIN) - *SRX_SkM* (STARS - StG - Nogara)
Publications	Minnock, Dean; Annibalini, Giosué; Valli, Giacomo; Saltarelli, Roberta; Krause, Maurício; Barbieri, Elena; &, ; DE VITO, Giuseppe. (2022) Altered muscle mitochondrial, inflammatory and trophic markers and reduced exercise training adaptations in type 1 diabetes. https://doi.org/10.1113/JP282433 Giacomello, E.; Toniolo, L.. (2022) Nutrition, diet and healthy aging. https://doi.org/10.3390/nu14010190 Sirago, Giuseppe; Toniolo, Luana; Crea, Emanuela; Giacomello, Emiliana. (2022) A short-term treatment with resveratrol improves the inflammatory conditions of Middle-aged mice skeletal muscles. https://doi.org/10.1080/09637486.2022.2027889 Geremia, A.; Sartori, R.; Baraldo, M.; Nogara, L.; Balmaceda, V.; Dumitras, G. A.; Ciciliot, S.; Scalabrin, M.; Nolte, H.; Blaauw, B.. (2022) Activation of Akt-mTORC1 signalling reverts cancer-dependent muscle wasting. https://doi.org/10.1002/jcsm.12854 Murgia, Marta; Ciciliot, Stefano; Nagaraj, Nagarjuna; Reggiani, Carlo; Schiaffino, Stefano; Franchi, Martino V; Pišot, Rado; Šimunič, Boštjan; Toniolo, Luana; Blaauw, Bert; Sandri, Marco; Biolo, Gianni; Flück, Martin; Narici, Marco V; Mann, Matthias. (2022) Signatures of muscle disuse in spaceflight and bed rest revealed by single muscle fiber proteomics. https://doi.org/10.1093/pnasnexus/pgac086 Sirago, Giuseppe; Picca, Anna; Giacomello, Emiliana; Marzetti, Emanuele; Toniolo, Luana. (2022) The Contribution of Genetics to Muscle Disuse, Retraining, and Aging. https://doi.org/10.3390/genes13081378 Sarto, Fabio; Pizzichemi, Martina; Chiossi, Francesco; Bisiacchi, Patrizia S.; Franchi, Martino V; Narici, Marco V; Monti, Elena; Paoli, Antonio; Marcolin, Giuseppe. (2022) Physical active lifestyle promotes static and dynamic balance performance in young and older adults. https://doi.org/10.3389/fphys.2022.986881 Sarto, Fabio; Stashuk, Daniel W.; Franchi, Martino V.; Monti, Elena; Zampieri, Sandra; Valli, Giacomo; Sirago, Giuseppe; Candia, Julián; Hartnell, Lisa M.; Paganini, Matteo; Mcphee, Jamie S.; DE VITO, Giuseppe; Ferrucci, Luigi; Reggiani, Carlo; Narici, Marco V.. (2022) Effects of short-term unloading and active recovery on human motor unit properties, neuromuscular junction transmission and transcriptomic profile. https://doi.org/10.1113/JP283381 Franchi, M. V.; Badiali, F.; Sarto, F.; Müller, P; Müller N., G; Rehfeld, K; Monti, E.; Rankin, D; Longo, S; Lund, J.; Hökelmann, A.; Narici, M. (2022) Neuromuscular Aging: A Case for the Neuroprotective Effects of Dancing Geremia, Alessia; Sartori, Roberta; Baraldo, Martina; Nogara, Leonardo; Balmaceda, Valeria; Dumitras, Georgia Ana; Ciciliot, Stefano; Scalabrin, Marco; Nolte, Hendrik; Blaauw, Bert. (2022) Activation of Akt-mTORC1 signalling reverts cancer-dependent muscle wasting. https://doi.org/10.1002/jcsm.12854

	Baraldo, Martina; Zorzato, Sabrina; Dondjang, Achille Homère Tchampda; Geremia, Alessia; Nogara, Leonardo; Dumitras, Ana Georgia; Canato, Marta; Marcucci, Lorenzo; Nolte, Hendrik; Blaauw, Bert. (2022) Inducible deletion of raptor and mTOR from adult skeletal muscle impairs muscle contractility and relaxation. https://doi.org/10.1113/JP283686 Murgia, Marta; Brocca, Lorenza; Monti, Elena; Franchi, Martino V.; Zwiebel, Maximilian; Steigerwald, Sophia; Giacomello, Emiliana; Sartori, Roberta; Zampieri, Sandra; Capovilla, Giovanni; Gasparini, Mladen; Biolo, Gianni; Sandri, Marco; Narici, Matthias Mann and Marco V.. (2022) Plasma proteome profiling of healthy subjects undergoing bed rest reveals unloading-dependent changes linked to muscle atrophy.. https://doi.org/10.1002/jcsm.13146 Sirago, Giuseppe; Vaccari, Filippo; Lazzer, Stefano; D'Amuri, Andrea; Sanz, Juana M; Narici, Marco V; Reggiani, Carlo; Passaro, Angelina; Toniolo, Luana. (2022) Skeletal Muscle Mitochondrial and Perilipin Content in a Cohort of Obese Subjects Undergoing Moderate and High Intensity Training. https://doi.org/10.3390/metabo12090855 Toniolo, L.; Sirago, G.; Fiotti, N.; Giacomello, E.. (2022) Golgi Complex form and Function: A Potential Hub Role Also in Skeletal Muscle Pathologies? https://doi.org/10.3390/ijms232314989 Giacomello, E.; Toniolo, L.. (2022) Editorial: The fiber profile of skeletal muscles as a fingerprint of muscle quality. https://doi.org/10.3389/fphys.2022.1105252 Toniolo, Luana; Sirago, Giuseppe; Giacomello, Emiliana. (2022) Experimental models for ageing research. https://doi.org/10.14670/HH-18-576

25 - Pathophysiology of Striated Muscles

Principal Investigator	Prof. Pompeo Volpe ORCID https://orcid.org/0000-0003-0151-1585 Scopus 7102913853 Google Scholar Pompeo Volpe
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Keywords	Cell Biology; Muscle Contraction; Skeletal Muscle; Muscle; Skeletal Muscle Fibers; Muscular Dystrophy; Sarcoglycanopathy; Rare Diseases; Folding Defective Protein; Small Molecule Therapy; Animal Models; Heart Development;
Members	Volpe Pompeo — Associate professor Sandona' Dorianna — Associate professor Scano Martina — Post-Doc Dalla Barba Francesco — PhD Student Benetollo Alberto — PhD Student Ravara Barbara — Research fellow Campione Marina — CNR Researcher Nori Alessandra — Researcher Caccin Paola — Technician Carotti Marcello — Technician Furlan Sandra — CNR Technician
Research projects	- *CFTR correctors to treat sarcoglycanopathy, a repurposing story* (AFM Telethon Sandonà) - *Repurposing CFTR correctors in Allan Herndon Dudley syndrome* (Telethon Sandonà) - *3D modelling of rare muscular diseases, a powerful platform for basic studies and drug validation* (Telethon - Sandonà)
Publications	Scano, Martina; Benetollo, Alberto; Nogara, Leonardo; Bondi', Michela; DALLA BARBA, Francesco; Soardi, Michela; Sandra, Furlan; Akyurek, EYLEM EMEK; Caccin, Paola; Carotti, Marcello; Sacchetto, Roberta; Blaauw, Bert; Sandona', Dorianna. (2022) CFTR corrector C17 is effective in muscular dystrophy, in vivo proof of concept in LGMDR3. https://doi.org/10.1093/hmg/ddab260 Volpe, Pompeo; Bosutti, Alessandra; Nori, Alessandra; Filadi, Riccardo; Gherardi, Gaia; Trautmann, Gabor; Furlan, Sandra; Massaria, Gabriele; Sciancalepore, Marina; Megighian, Aram; Caccin, Paola; Bernareggi, Annalisa; Salanova, Michele; Sacchetto, Roberta; Sandona, Dorianna; Pizzo, Paola; Lorenzon, Paola. (2022) Nerve-dependent distribution of subsynaptic type 1 inositol 1,4,5-trisphosphate receptor at the neuromuscular junction. https://doi.org/10.1085/jgp.202213128 Maghin E, Carraro E, Boso D, Dedja A, Giagante M, Caccin P, Barna RA, Bresolin S, Cani A, Borile G, Sandrin D, Romanato F, Cecchinato F, Urciuolo A, Sandonà D, De Coppi P, Pavan PG, Piccoli M. Customized bioreactor enables

	the production of 3D diaphragmatic constructs influencing matrix remodeling and fibroblast overgrowth. NPJ Regen Med. (2022);7(1):25. doi: 10.1038/s41536-022-00222-x. IF 14 Fornetti, E.; Testa, S.; De Paolis, F.; Fuoco, C.; Bernardini, S.; Pozo Devoto, V.; Stokin, G. B.; Giannitelli, S. M.; Rainer, A.; Bigot, A.; Zoccali, C.; Baldi, J.; Sandona, D.; Rizzi, R.; Bearzi, C.; Forte, G.; Cannata, S.; Gargioli, C. Dystrophic Muscle Affects Motoneuron Axon Outgrowth and NMJ Assembly. ADVANCED MATERIALS TECHNOLOGIES (2022); 2101216 doi:10.1002/admt.202101216 8.43 Akyürek EE, Busato F, Murgiano L, Bianchini E, Carotti M, Sandonà D, Drögemüller C, Gentile A, Sacchetto R. Differential Analysis of Gly211Val and Gly286Val Mutations Affecting Sarco(endo)plasmic Reticulum Ca2+-ATPase (SERCA1) in Congenital Pseudomyotonia Romagnola Cattle. Int J Mol Sci. 2022 Oct 15;23(20):12364. doi: 10.3390/ijms232012364

26 - Signaling pathways that control protein homeostasis in muscles

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Keywords	Muscle wasting; muscle growth, mitochondria, autophagy, ubiquitin proteasome, ageing sarcopenia, cancer cachexia inherited muscle disease, neuromuscular junction
Members	Sandri Marco — Full Professor Armani Andrea — Post-Doc Franco Romero Anais — Post-Doc Sartori Roberta — Post-Doc Esposito Martina — Research fellow Ferrarese Giulia — Research fellow Tezze Caterina — Research fellow Steffan Davide — Post-Doc Masiero Giulio — PhD Student Pezzini Camilla — PhD Student Scalabrin Marco — PhD Student Romanello Vanina Natalia — RTD/B
Research projects	- *Dissecting the role of an uncharacterized FoxO-dependent gene that controls autophagy and ageing* (AFM Telethon) - *Understanding bmp signalling in cancer cachexia* (AIRC) - *Regulation of skeletal muscle function by PINK - 1 - Parkin mitophagy pathway* (McGill University) - *Myo_LysoZOOM: An insight into lysosomal signature in muscle wasting* (MSCA-IF - Armani) - *Progetto di Eccellenza id 59566 "Exploring the neglected genome to discover new longevity-related genes* (CARIPARO)
Publications	Romanello, V.; Sandri, M.. (2022) Implications of mitochondrial fusion and fission in skeletal muscle mass and health. https://doi.org/10.1016/j.semcdb.2022.02.011 Wyart E, Hsu MY, Sartori R, Mina E, Rausch V, Pierobon ES, Mezzanotte M, Pezzini C, Bindels LB, Lauria A, Penna F, Hirsch E, Martini M, Mazzone M, Roetto A, Geninatti Crich S, Prenen H, Sandri M, Menga A, Porporato PE. Iron supplementation is sufficient to rescue skeletal muscle mass and function in cancer cachexia EMBO Rep. 2022 Feb 24:e53746. doi: 10.15252/embr.202153746. Hong X, Isern J, Campanario S, Perdiguero E, Ramírez-Pardo I, Segalés J, Hernansanz-Agustín P, Curtabbi A, Deryagin O, Pollán A, González-Reyes JA, Villalba JM, Sandri M, Serrano AL, Enríquez JA, Muñoz-Cánoves P Mitochondrial dynamics maintain muscle stem cell

	regenerative competence throughout adult life by regulating metabolism and mitophagy. Cell Stem Cell. 2022 Sep 1;29(9):1298-1314.e10. doi: 10.1016/j.stem.2022.07.009. Murgia M, Ciciliot S, Nagaraj N, Reggiani C, Schiaffino S, Franchi MV, Pišot R, Šimunič B, Toniolo L, Blaauw B, Sandri M, Biolo G, Flück M, Narici MV, Mann M.. Share Signatures of muscle disuse in spaceflight and bed rest revealed by single muscle fiber proteomics. PNAS Nexus. 2022 Jun 11;1(3):pgac086. doi: 10.1093/pnasnexus/pgac086. Geremia, A.; Sartori, R.; Baraldo, M.; Nogara, L.; Balmaceda, V.; Dumitras, G. A.; Ciciliot, S.; Scalabrin, M.; Nolte, H.; Blaauw, B.. (2022) Activation of Akt-mTORC1 signalling reverts cancer-dependent muscle wasting. https://doi.org/10.1002/jcsm.12854 Murgia, Marta; Brocca, Lorenza; Monti, Elena; Franchi, Martino V.; Zwiebel, Maximilian; Steigerwald, Sophia; Giacomello, Emiliana; Sartori, Roberta; Zampieri, Sandra; Capovilla, Giovanni; Gasparini, Mladen; Biolo, Gianni; Sandri, Marco; Narici, Matthias Mann and Marco V.. (2022) Plasma proteome profiling of healthy subjects undergoing bed rest reveals unloading-dependent changes linked to muscle atrophy. https://doi.org/10.1002/jcsm.13146

27 - Paolocci's lab

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Keywords	
Members	Paolocci Nazareno Associate Professor
Publications	

Neuroscience

28 - Circuit formation and function in the brain

Principal Investigator	Dr. Claudia Lodovichi ORCID https://orcid.org/0000-0002-0490-4846 Scopus 6505957685
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Keywords	cAMP; Olfaction; Olfactory Perception; Signaling Pathways; Electrophysiology; Neurobiology; Calcium Imaging; In Vivo Electrophysiology; Adult Neurogenesis; Neural Plasticity
Members	Lodovichi Claudia — CNR Researcher Brondi Marco — CNR Post-Doc
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	

29 - Enlightening Brain Mechanisms

Principal Investigator	Dr. Marco Dal Maschio ORCID https://orcid.org/0000-0003-0150-6647 Scopus 650669295 WoS ID G-3871-2017
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Keywords	Systems Neuroscience; Sensori-motor integrations; Functional Brain Imaging; Psychophysics; Psychobiology; Light-based Technologies; Optogenetics
Members	Dal Maschio Marco — Associate professor Agrimi Jacopo — Post-Doc Archetti Anna — Post-Doc Salamanca Marco — PhD student (program in Neuroscience) Facchinello Nicola — Neuroscience) Ratto Gian Michele — CNR Researcher Canato Marta — CNR Researcher
Research projects	- *FLAMMES - On-chip metasurface-based neuroimaging platform toward high-throughput drug screening in freely behaving animal* (MSCA IF - Archetti) - *PINK: Intimate partner violence disrupts the brain-heart axis in women* (MSCA-IF - Agrimi)
Publications	Brondi, Marco; Bruzzone, Matteo; Lodovichi, Claudia; Dal Maschio, Marco. (2022) Optogenetic Methods to Investigate Brain Alterations in Preclinical Models. https://doi.org/10.3390/cells11111848 Automated synapse-level reconstruction of neural circuits in the larval zebrafish brain. Svara F, Förster D, Kubo F, Januszewski M, Dal Maschio M, Schubert PJ, Kornfeld J, Wanner AA, Laurell E, Denk W, Baier H. Nat Methods. 2022 Nov;19(11):1357-1366. doi: 10.1038/s41592-022-01621-0. Environmental enrichment decreases anxiety-like behavior in zebrafish larvae Elia Gatto,Marco Dadda,Matteo Bruzzone,Enrico Chiarello,Gaia De Russi,Marco Dal Maschio,Angelo Bisazza,Tyrone Lucon-Xiccato Developmetal Psycology, First published: 20 March 2022 https://doi.org/10.1002/dev.22255 Hypothalamic Galanin-producing neurons regulate stress in zebrafish through a peptidergic, self-inhibitory loop. Corradi L, Bruzzone M, Maschio MD, Sawamiphak S, Filosa A Curr Biol. 2022 Feb 19:S0960-9822(22)00233-0. doi: 10.1016/j.cub.2022.02.011. Effects of environmental enrichment on recognition memory in zebrafish larvae

	Elia Gatto, Matteo Bruzzone, Marco Dal Maschio, Marco Dadda Applied Animal Behaviour Science, Volume 247, February 2022

30 - Genetics of focal epilepsies

Principal Investigator	Dr. Nobile Carlo ORCID https://orcid.org/0000-0002-0634-2218 Scopus 7006001212
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Keywords	Genetic epilepsy; Temporal Lobe Epilepsy; ADLTE; Reelin; LGI1;
Members	Nobile Carlo — CNR Research Manager 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	

31 - Migraine Pathophysiology

Principal Investigator	Prof. Daniela Pietrobon ORCID https://orcid.org/0000-0002-5148-8670 Scopus 7003670065 Google Scholar Daniela Pietrobon
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Keywords	Neuroscience; Neurological Diseases; Neurobiology; Neurophysiology; Electrophysiology; Cellular Neuroscience; Synaptic Transmission;
Members	Pietrobon Daniela — Full Professor Cancedda Enzo — Research fellow Lashkari Saleh — Post-Doc Vitale Marina — PhD student Zarin Zadeh Maral — Research fellow Tottene Angelita — Technician
Research projects	- *Cellular and circuit mechanisms of migraine: a multiscale approach* (PRIN)
Publications	Marchionni, Ivan; Pilati, Nadia; Forli, Angelo; Sessolo, Michele; Tottene, Angelita; Pietrobon, Daniela. (2022) Enhanced Feedback Inhibition Due to Increased Recruitment of Somatostatin-Expressing Interneurons and Enhanced Cortical Recurrent Excitation in a Genetic Mouse Model of Migraine. https://doi.org/10.1523/JNEUROSCI.0228-22.2022 Meneghetti, Nicolo'; Cerri, Chiara; Vannini, Eleonora; Tantillo, Elena; Tottene, Angelita, Pietrobon, Daniela; Caleo, Matteo; Mazzoni, Alberto. (2022) Synaptic alterations in visual cortex reshape contrast-dependent gamma oscillations and inhibition-excitation ratio in a genetic mouse model of migraine. J Headache Pain; 23(1):125. doi: 10.1186/s10194-022-01495-9. Conti, Fiorenzo; Pietrobon, Daniela. (2022) Astrocytic Glutamate Transporters and Migraine. https://doi.org/10.1007/s11064-022-03849-w Pietrobon, Daniela (2022) Voltage-gated calcium channels and migraine. 10.1007/978-3-031-08881-0_19

32 - 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
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Keywords	Biochemistry; Prion Protein; Molecular Biology; Neuroscience; Protein Aggregation; Biotechnology; Neurodegeneration
Members	Bertoli Alessandro — Researcher Lopreiato Raffaele — Researcher Sartori Geppo — Researcher Peggion Caterina — Research fellow Granuzzo Sara — PhD Student Calderan Cristina — PhD Student Marchi Marco — PhD Student DSB Righetto Francesca — PhD Student Massimino Maria Lina — CNR Researcher Tonello Fiorella — CNR Researcher
University - Business collaborations	- *ITALIANA BIOTECNOLOGIE SRL "Creazione e caratterizzazione funzionale di ceppi di lievito geneticamente modificati per applicazioni fermentative industriali di tipo enologico"* (Lopreiato)
Publications	Peggion, Caterina; Scalcon, Valeria; Massimino, Maria Lina; Nies, Kelly; Lopreiato, Raffaele; Rigobello, Maria Pia; Bertoli, Alessandro. (2022) SOD1 in ALS: Taking Stock in Pathogenic Mechanisms and the Role of Glial and Muscle Cells. https://doi.org/10.3390/antiox11040614

33 - Neuronal networks physiology and neurotechnologies (NeuroChip lab)

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Keywords	Neuroscience; Neuron; Synapses; Neurobiology; Electrophysiology; Neurobiology and Brain Physiology; Synaptic Plasticity; Neurophysiology; Cellular Neuroscience; Neural Plasticity
Members	Vassanelli Stefano — Associate professor Bisio Marta — Post-Doc Cecchetto Claudia — RTD/A Morsello Barbara — Post-Doc Leparulo Alessandro — Tecnichian Maschietto Marta — Tecnichian
Research projects	- *SYNCH-A SYnaptically connected brain-silicon Neural Closed-loop Hybrid system* (FET- Proact) - *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	Leparulo, Alessandro; Bisio, Marta; Redolfi, Nelly; Pozzan, Tullio; Vassanelli, Stefano; Fasolato, Cristina. (2022) Accelerated Aging Characterizes the Early Stage of Alzheimer's Disease. https://doi.org/10.3390/cells11020238 Petschenig, Horst; Bisio, Marta; Maschietto, Marta; Leparulo, Alessandro; Legenstein, Robert; Vassanelli, Stefano. (2022) Classification of Whisker Deflections From Evoked Responses in the Somatosensory Barrel Cortex With Spiking Neural Networks. https://doi.org/10.3389/fnins.2022.838054

34 – Neuron and Glia signaling in brain function and dysfunction

Principal Investigator	Dr. Gabriele Deidda ORCID https://orcid.org/0000-0002-0721-4971 Google Scholar Gabriele Deidda Scopus 55332049100
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Keywords	cerebral stroke, plasticity, behaviour, GABA, in vivo, electrophysiology, calcium imaging
Members	Deidda Gabriele — RTD/A Beretta Emanuela — Research fellow Varani Stefano — Post-Doc Speggiorin Michele — PhD Student Vignozzi Livia — PhD Student Allegra Manuela — CNR Researcher Gomez-Gonzalo Marta — CNR Researcher Mariotti Letizia — CNR Researcher Zonta Micaela — CNR Researcher Annamaria Lia — CNR Post-Doc Chiavegato Angela — Technician
Research projects	- *Modulation of neuron-astrocyte signalling combined with motor training as an innovative approach to enahance recovery after stroke -aSTROke* (CARIPARO) - *Physiological neuronal activity in the control of glioma progression and tumor microenvironment* (PRIN)
Publications	Biazzo, Manuele; Allegra, Manuela; Deidda, Gabriele. (2022) Clostridioides difficile and neurological disorders: New perspectives https://doi.org/10.3389/fnins.2022.946601 Biazzo, M; Deidda, G. (2022) Fecal Microbiota Transplantation as New Therapeutic Avenue for Human Diseases https://doi.org/10.3390/jcm11144119 Rosa Mastrogiacomo, Gabriella Trigilio, Céline Devroye, Daniel Dautan, Valentina Ferretti, Gabriele Losi, Lucia Caffino, Genny Orso, Roberto Marotta, Federica Maltese, Enrica Vitali, Gessica Piras, Alessia Forgiarini, Giada Pacinelli, Annamaria Lia, Debora A. Rothmond, John L. Waddington, Filippo Drago, Fabio Fumagalli, Maria Antonietta De Luca, Gian Marco Leggio, Giorgio Carmignoto, Cynthia S. Weickert, Francesca Managò and Francesco Papaleo (2022) Dysbindin-1A Modulation of Astrocytic Dopamine and Basal Ganglia Dependent Behaviors Relevant to Schizophrenia. Molecular Psychiatry. 10.1038/s41380-022-01683-8

	Arnst Nikita, Nelly Redolfi, Annamaria Lia, Martina Bedetta, Elisa Greotti and Paola Pizzo (2022) Mitochondrial Ca2+ Signaling and Bioenergetics in Alzheimer's Disease. Biomedicines. 10, 3025. https://doi.org/10.3390/biomedicines10123025 Linda Maria Requie, Marta Gómez-Gonzalo, Michele Speggiorin, Francesca Managò, Marcello Melone, Mauro Congiu, Angela Chiavegato, Annamaria Lia, Micaela Zonta, Gabriele Losi, Vanessa Jorge Henriques, Arianna Pugliese, Giada Pacinelli, Giovanni Marsicano, Francesco Papaleo, Anna Lisa Muntoni, Fiorenzo Conti and Giorgio Carmignoto (2022) Long-lasting synaptic regulation of dopamine neurons by astrocytes in the Ventral Tegmental Area. Nature Neuroscience. 10.1038/s41593-022-01193-4 Henriques VJ, Chiavegato A, Carmignoto G, Gómez-Gonzalo M. Astrocytes Modulate Somatostatin Interneuron Signaling in the Visual Cortex. Cells. 2022; 11(9):1400. https://doi.org/10.3390/cells11091400 Goisis RC, Chiavegato A, Gomez-Gonzalo M, Marcon I, Requie LM, Scholze P, Carmignoto G and Losi G (2022) GABA tonic currents and glial cells are altered during epileptogenesis in a mouse model of Dravet syndrome. Front. Cell. Neurosci. 16:919493. doi: 10.3389/fncel.2022.919493

35 - Neuroparalysis and Neuroregeneration Lab

Principal Investigator	Prof. Ornella Rossetto ORCID https://orcid.org/0000-0002-6113-3857 Scopus 7003372229 Google Scholar Rossetto Ornella
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Keywords	Botulinum neurotoxins, neuromuscular junction, peripheral nerve regeneration, peripheral neuropathies, Drosophila Neurophysiology and Behavior
Members	Rossetto Ornella — Associate professor Megighian Aram — Associate professor Rigoni Michela — Associate professor Richter Sandy — Post-Doc Zanetti Giulia — Post-Doc Rabaioli Rebecca — Research fellow Stazi Marco — Research fellow Tonellato Marika — PhD Student Amoretti Stefano — PhD Student D'Este Giorgia — Post-Doc Fabris Federico — PhD Student Menti Giulio Maria — PhD Student Schiavone Giorgia — PhD Student Tonellato Marika — PhD Student Zainotto Marica — PhD Student Pirazzini Marco — RTD/B Simonato Morena — CNR Technician Montecucco Cesare — Emeritus
Research projects	- *Modulating synaptic neurotransmission to reactivate the immune reaction against brain tumors* (PRIN - Rossetto/Caleo) - *CRAFTER* (STARS - CoG - Pirazzini) - Boosting REgeneration in ALS motor neurons by tArgeTing the peripHery (ARISLA - Rigoni) - CXCR4: a marker of neurotransmission failure and a target for neuromuscular function recovery (CARIPARO - Rigoni)
University - Business collaboration	- *Fastox Pharma SA Rep. 1/2021 "Effect of postsynaptic inhibitors on bont action"*
Publications	Stazi, Marco; Fabris, Federico; Yi Tan, Kae; Megighian, Aram; Rubini, Alessandro; Mattarei, Andrea; Negro, Samuele; D'Este, Giorgia; Lista, Florigio; Rossetto, Ornella; Hock Tan, Choo; Montecucco, Cesare. (2022) An Agonist of the CXCR4 Receptor is therapeutic for the neuroparalysis induced by Bungarus

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36 - 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
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Keywords	Neurodegenerative Diseases; Neurobiology; Steroid hormones; cancer; post-translational modifications; aging.
Members	Pennuto Maria — Associate Professor Zuccaro Emanuela — RTDA Marchioretti Caterina — Post-doc Falconieri Antonella — Post-doc Bincoletto Giacomo — PhD student Boarolo Giulia — PhD student Andreotti Roberta — PhD Student Aravamudhan Aishwarya — PhD Student Boschelle Chiara — PhD Student Bregolin Elisa — PhD Student
Research projects	- *Targeting AR CO-Regulators to attenuate spinal and bulbar muscular atrophy* (AFM Telethon) - *The interplay between the "RNA/protein quality control system" and "exosomes" as a spreading mechanism in amyotrophic lateral sclerosis [EX_ALS]* (PRIN) - *Alternative translation initiation as a novel strategy to block toxicity of the mutant Androgen Receptor in SBMA* (TELETHON) - *MOSAIC - Decoding diversity and eclectic vulnerability of alpha motor neuron classes in the adult spinal cord* (STARS - Zuccaro) - *Targeting von Hippel Lindau protein/androgen receptor functional interaction to tackle renal cell carcinoma* (AIRC)
University - Business collaborations	- *CNCCS esecuzione quote di ricerca Progetto B-"Centro per la Ricerca di nuovi farmaci per Malattie Rare, Trascurate e della Povertà"* - *Arvinas Androgen Receptor, Inc. (USA)"Testing ARV110 in the animal model generated by Prof Maria Pennuto and described in CHivet et al., 2020"*
Publications	Turco EM, Giovenale AMG, Sireno L, Mazzoni M, Cammareri A, Marionette M,

	Goracci L, Di Veroli A, D'Andrea D, Marchesan E, Torres B, Bernardini L, Magnifico M, Paone A, Rinaldo S, Della Monica M, D'Arrigo S, Postorivo D, Nardone AM, Zampino G, Onesimo R, Leoni C, Caicci F, Raimondo D, Binda E, Trobiani L, De Jaco A, Tata AM, Ferrari D, Cutruzzolà F, Mazzoccoli G, Ziviani E, Pennuto M*, Vescovi A*, Rosati J*. 2022. Retinoic acid-induced 1 gene haploinsufficiency alters lipid metabolism and causes autophagy defects in Smith-Magenis syndrome. Cell Death & Disease 13:981. Pennuto M*, Montopoli M, Rinaldi C. 2022. Editorial comment to Castration-resistant prostate cancer diagnosed during leuprorelin treatment for spinal and bulbar muscular atrophy. IJUCR 5:254. Marchioretti C, Zuccaro E, Pandey UB, Rosati J, Basso M, Pennuto M*. 2022. Skeletal muscle pathogenesis in polyglutamine diseases. Cells 11:2105. Rocca MS, Minervini G, Vinanzi C, Bottacin A, Lia F, Foresta C, Pennuto M, Ferlin A. 2022. Mutational screening of androgen receptor gene in 8224 men of infertile couples. J Clin Endocrinol Metab :dgac671. Forouhan M, Lim WF, Zanetti-Domingues LC, Tynan CJ, Roberts TC, Malik B, Manzano R, Speciale AA, Ellerington R, Garcia-Guerra A, Fratta P, Sorarú G, Greensmith L, Pennuto M, Wood MJA, Rinaldi C. 2022. AR cooperates with SMAD4 to maintain skeletal muscle homeostasis. Acta Neuropathol. 143:713-731.

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
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Research projects	- *ACTLIFE: is active lifestyle enough for health and wellbeing?* (PRIN)
University - Business collaborations	- Consorzio del Formaggio Parmigiano Reggiano Rep 145/2020 "*Effetti del Parmigiano Reggiano nella risposta muscolare all'esercizio con sovraccarichi nell'anziano*" (Moro) - GIANLUCA MECH SPA Rep. 25/2018 per "attività di ricerca nel campo della nutrizione e dell'esercizio fisico con particolare riguardo verso le diete a basso contenuto di carboidrati"(Paoli)
Publications	Paganini, Matteo; Moon, Richard E; Boccalon, Nicole; Melloni, Giorgio E M; Giacon, Tommaso Antonio; Camporesi, Enrico M; Bosco, Gerardo. (2022) Blood Gas Analyses in Hyperbaric and Underwater Environments: A Systematic

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Adaptive Immunity

38 - Reactive Oxygen Species and Cytotoxic Immunity

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Keywords	
Members	Martinvalet Denis Associate Professor
Research projects	- *Characterization of the mechanism of hyper production of proinflammatory* (CARIPARO - Martinvalet)
Publications	

Credits

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Data on staff members:

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