

Pawan Faris



Date of Birth: 08 September 1985

Gender: Female

Home address: Vialle Camillo Golgi, 70, Pavia, Italy, 27100

Work address: Via Forlanini, 6, Pavia, Italy, 27100

Email address: faris.pawan@unipv.it, pawan.faris@yahoo.com, pawan.faris@su.edu.krd

Phone: +39-351-6993857

CURRENT POSITION

- Lecturer (2019-up to date)

Department of Biology, College of Science, Salahaddin University, Erbil, Iraq

- Post-doctoral Researcher (2019 - up to date)

Laboratory of General Physiology, Department of Biology and Biotechnology” L. Spallanzani”, University of Pavia, Pavia, Italy. Web: <https://dbb.unipv.it/assegnisti-e-borsisti>.

Responsibilities: Leading and conceiving variable scientific research projects, in the field of Molecular and Cellular Biology and Physiology by utilizing the following approach: Cell culturing, Cell signaling, live cell imaging (epifluorescence microscopy), membrane channels, immunohistochemistry (Confocal microscopy), pharmacological

manipulation, gene silencing, electrophysiological recordings, 3D spheroid formation, Flow cytometry, functional assays (proliferation, migration, tubulogenesis, apoptosis, toxicity and viability) at the cellular level (primary and immortalized cell lines), 3D spheroids, Transmission Electron Microscopy (membrane cross talk identification), primary mononuclear cell isolation and expansion (Endothelial colony-forming cells), protein expression (western blotting) experimental planning and data analysis in different pathophysiological and normal conditions including cardiovascular disorder, dementia, immune and cancer.

EDUCATION

- PhD in Molecular Physiology (Cancer Biology), 2019

Split _side PhD program, Salahaddin University-Erbil, Iraq in collaboration with the University of Pavia, Pavia, Italy, 2019 Thesis: Intracellular Ca²⁺ Signaling in human colorectal carcinoma: An alternative target for anticancer treatment. Supervisors: Assis. Prof. Francesco Moccia, Assis. Prof. Mudhir Shekha. Excellent final valuation.

- Master Degree in Blood Physiology, 2012-2015

Thesis: A prospective study of some blood biomarkers and incidence of coronary heart disease among male Type 2 diabetes mellitus patients in Erbil city

Supervisor: Assis. Prof. Sarbaz I. Muhammed

- Bachelor Degree in Biology, 2008

Salahaddin University-Erbil, Iraq

TEACHING EXPERIENCES AND ACADEMIC ACTIVITIES

- Thesis Correlator of Master Degree and Undergraduate - Department of Biology and Biotechnology "L.Spallanzanni", University of Pavia, Italy. Students: Giulia Cetrone in 2018-2019, Alessia Cianci in 2019-2020, Alessia Metallo 2020-2021, Giulia bendinelli (Current master student)

• Lecturer- Salahaddin University-Erbil, Iraq (2019): Left for research activity in Italy

• Assistant Lecturer- Salahaddin University-Erbil, Iraq (2014-2017)

Courses: Theory lessons in Genetics, Animal Physiology, Advanced Molecular Biology.

• Assistant Biology- Salahaddin University-Erbil, Iraq (2008-2012)

Courses: Practical teaching in Animal Physiology, Hematology, Histology for 2nd and 3rd stages

ANALYTICAL LABORATORY EXPERIENCES

Principle Biologist (Part-time) at Private sector Barco lab-Erbil, Iraq 2015-2017

Activities: Hematological analysis: Blood smear analysis, Complete blood count (CBC), ERS, HbA1C and Biochemical analysis: Lipid profile, Kidney enzymes, liver enzymes,

OTHER RESEARCH EXPERIENCES

• Visiting Professor- Department of Earth and Environmental Science, University of Pavia, Italy, 2015

Investigation of some bioactive compound extracted from *Eris persica* collected from Kurdistan mountain against some pathogenic fungi (6 months of research activities and training).

Supervised by: Prof. ssa. Solveig Tosi

ORAL AND POSTER PRESENTATIONS

- **Pawan Faris**. Oxidative stress induces remodelling of the Ca²⁺ handling machinery in human aortic valve endothelial cells from patients with calcific aortic stenosis. 6TH SIRC FORUM 2022 Bari, Italy.
- **Pawan Faris**, Maione Angela Serena, Lara Lengo, Sharon Negri, Francesco Moccia. Oral presentation, 23rd Meeting of the Italian Society of Cardiovascular Research Imola, Italy, 28-30th October 2021 (XXIII CONGRESSO SIRC 2021). "Nicotinic acid adenine dinucleotide phosphate (NAADP) induces intracellular Ca²⁺ signals through activation of endo-lysosomal two-pore channels (TPCs) in cardiac mesenchymal stromal cells".
- **Pawan Faris**, Agnese Rumolo, Mauro Vismara, Matteo Tanzi, Sharon Negri, Alessia Metallo, Gianni Guidetti, Daniela Montagna, Francesco Moccia. (2021); Poster presentation at the 71th meeting SIF (Italian Physiological Society Conference) - Milan, Italy. "Hydrogen peroxide induces extracellular Ca²⁺ entry and apoptosis via transient receptor potential ankyrin 1 (TRPA1) channel activation in primary culture of metastatic colorectal carcinoma".
- **Pawan Faris**, Giorgia Pellavio, Federica Ferulli, Francesca Di Nezza, Mudhir Shekha, Dmitry Lim, Paolo Pedrazzoli, Umberto Laforenza, Daniela Montagna, Francesco Moccia, (2018); Oral presentation at the 69th meeting SIF (Italian Physiological Society Conference) - Florence, Italy. "Lysosomal Ca²⁺ signaling in metastatic colorectal carcinoma".
- **Pawan Faris**, Giorgia Pellavio, Federica Ferulli, Francesca Di Nezza, Mudhir Shekha, Dmitry Lim, Paolo Pedrazzoli, Umberto Laforenza, Daniela Montagna, Francesco Moccia, (2018); Poster presentation at Calcium day -Novara, Italy "Lysosomal Ca²⁺ Signaling in Metastatic Colorectal Carcinoma".
- **Pawan Faris** (2018); Oral presentation at the 2nd joint Annual Symposium (Life science 2018)- Pavia, Italy. " Lysosomal Ca²⁺ Signaling in Metastatic Colorectal Carcinoma".

AWARD, GRANTS AND FELLOWSHIPS

- Italian ministry of Foreign and Affairs scholarship (MAECI 2018-2019).
- Best 105 in history of Kurdish recognized women, Erbil/Iraq (2021). Hawler V1 book.
- Travel grant (SIRC Forum 2022, Bari, Italy)

OTHER ACTIVITIES

- Participation in XXIV School of Physiology and Biophysics 2021 NEURONAL BIOPHYSICS: FROM EXPERIMENTS TO MODELS, Pavia, July 5-7, 2021
- "ERN 2019 – European Research Night" – 26-29 Sept 2019
- Co-supervising 7 Italian Master Student (2018- Up to date)
- Teaching Methods and Research Methodology, Salahaddin University-Erbil (2016-2017).

MEMBERSHIPS

- Kurdistan Biology Syndicate (2008- Up to date)
- Italian Society of Cardiovascular Research, regular member (2021-Up to date)
- Global Burden of Disease Collaborator (2019-Up to date): University of Washington, USA
- European Association of Cancer Research, Member
- MDPI board reviewer (Cancers, Cells, IJMS and Nutrients).

SCIENTIFIC AND MANAGEMENT RELEVANT SKILLS

- Supervising young bursary, developing methods, organizing scientific meetings, conferences and making collaboration with foreign universities.
- Managing work staff and ability to work and lead a group.
- Extensive expertise in cell culture and assays with primary and immortal cell lines, including cell line maintenance, cells transfections, Live-cell Imaging, apoptotic signalling, PCR, q-RT-PCR, Gene silencing, Migration, proliferation and viability assay, angiogenesis, blood smear investigation, ECFCs isolation, DNA and RNA extraction, Flow Cytometry, 3D spheroid formation, Animal handling (few months of experiences) and Western blotting.
- Role as a GBD-collaborator: Collecting raw data, data analysis by GBD- analyser tools, access to the results and reviewing the manuscript.
- Extensive knowledge of Graph Pad Prism and Origin 7.0 statistical programs, Image J, all Microsoft office software programs.
- Fluent in English, Arabic, Kurdish, and intermediate in Italian.

RUNNING PROJECTS

- Tumour-infiltrating lymphocytes (TILs) activation and characterization in vitro isolated from metastatic colorectal cancer lesion. In collaboration with the Laboratory of Immunology Transplantation, Foundation IRCCS Policlinico San Matteo
- Effect of visible light on the efficacy of human endothelial colony-forming cells plated on P3HT polymer. EU Horizon 2020 FETOPEN-2018-2023 Program under Grant Agreement N. 828984, LION-HEARTED.
- Assessing the role of vascular endothelial calcium signalling in neurovascular coupling.
- Role of TRPA1 channels activation by AITC (garlic extract) on cancer hallmarks in primary culture of metastatic colorectal carcinoma.
- Role of endo-lysosomal TPC activation by NAADP in proliferation of cardiac mesenchymal stromal cells. In collaboration with Cardiology Center of Monzino

- Imbalance of calcium-dependent mechanisms in cardiac mesenchymal stromal cells from arrhythmogenic cardiomyopathy patients. In collaboration with Cardiology Center of Monzino
- Role of membrane Calcium signaling in cytotoxic effect of Tamoxifen in breast Cancer.
- Effect of novel Hadrontherapy on intracellular Ca²⁺ signaling in human melanoma. In collaboration with CNAO Hospital.
- Role of Calcium signaling in Tamoxifen induce apoptosis in Breast cancer.

Google scholar h-index:17, Scopus h-index:17 (ID: 57203120211)

LIST OF SCIENTIFIC PUBLICATIONS

ARTICLES:

- **Pawan Faris**, Agnese Rumolo, Laura Tapella, Matteo Tanz, Alessia Metallo, Filippo Conca, Sharon Negri, Konstantinos Lefkimmiatis, Paolo Pedrazzoli, Dmitry Lim, Daniela Montagna and Francesco Moccia. Store-Operated Ca²⁺ Entry Is Up-Regulated in Tumour-Infiltrating Lymphocytes from Metastatic Colorectal Cancer Patients. *Cancers* (MDPI). July 2022. <https://doi.org/10.3390/cancers14143312>.
- **Pawan Faris**, Claudio Casali, Sharon Negri, Lara Iengo, Marco Biggiogera, Angela Serena Maione, Francesco Moccia Nicotinic acid adenine dinucleotide phosphate (NAADP) induces intracellular Ca²⁺ signalling and stimulates proliferation in human cardiac mesenchymal stromal cells. *Frontiers in Cell and Developmental Biology*. 21 March 2022. <https://doi.org/10.3389/fcell.2022.874043>.
- Sharon Negri, **Pawan Faris**, Gabriele Tullii, Mauro Vismara, Alessandro F. Pellegata, Francesco Lodola, Gianni Guidetti, Vittorio Rosti, Maria Rosa Antognazza, Francesco Moccia. Conjugated polymers mediate intracellular Ca²⁺ signals in circulating

endothelial colony forming cells through the reactive oxygen species-dependent activation of Transient Receptor Potential Vanilloid 1 (TRPV1). *Cell Calcium*. Volume 101, 2022. <https://doi.org/10.1016/j.ceca.2021.102502>.

- Sharon Negri, **Pawan Faris**, Claudia Maniezzi, Giorgia Pellavio, Paolo Spaiardi, Laura Botta, Umberto Laforenza, Gerardo Biella. NMDA receptors elicit flux-independent intracellular Ca²⁺ signals via metabotropic glutamate receptors and flux-dependent nitric oxide release in human brain microvascular endothelial cells. *Cell calcium*. 17 August 2021. DOI: 10.1016/j.ceca.2021.102454.
- Valentina Balducci, **Pawan Faris**, Carolina Balbi, Ambra Costa, Sharon Negri, Vittorio Rosti, Sveva Bollini, Francesco Moccia. The human amniotic fluid stem cell secretome triggers intracellular Ca²⁺ oscillations, NF-κB nuclear translocation and tube formation in human endothelial colony-forming cells. *J Cell Mol Med*. 2021; 25: 8074–8086. DOI: <https://doi.org/10.1111/jcmm.16739>.
- Francesco Moccia, Estella Zuccolo, Francesca Di Nezza, Giorgia Pellavio, **Pawan S Faris**, Sharon Negri, Antonio De Luca, Umberto Laforenza, Luigi Ambrosone, Vittorio Rosti, Germano Guerra. Nicotinic acid adenine dinucleotide phosphate activates two-pore channel TPC1 to mediate lysosomal Ca²⁺ release in endothelial colony-forming cells. *Journal of Cellular Physiology*. Jan, 2021;236(1):688-705. DOI: <https://doi.org/10.1002/jcp.29896>.
- **Pawan Faris**, Federica Ferulli, Mauro Vismara, Matteo Tanzi, Sharon Negri, Agnese Rumol, Kostantinos Lefkimmatis, Marcello Maestri, Mudhir Shekha, Paolo Pedrazzoli, Gianni Francesco Guidetti, Daniela Montagna, and Francesco Moccia. Hydrogen sulfide-evoked intracellular Ca²⁺ signals in primary cultures of metastatic colorectal cancer cells. *Cancers*. Nov 2020. 2020, 12(11) 3338. DOI: <https://doi.org/10.3390/cancers12113338>.
- Mohammed Farhad Ibrahim, Francesco Saverio Robustelli Della Cuna, Carla Villa, Marco Corti, Hawraz Ibrahim M Amin, **Pawan Faris**, Pietro Grisoli, Gloria Brusotti. A chemometric assessment and profiling of the essential oils from *Hibiscus sabdariffa* L. from Kurdistan, Iraq. *Natural product research*. Octo 2020. 16;1-4. <https://doi.org/10.1080/14786419.2020.1833198>.

- Valentina Astesana, **Pawan Faris**, Beatrice Ferrari, Stella Siciliani, Dmitry Lim, Marco Biggiogera, Sandra Angelica De Pascali, Francesco Paolo Fanizzi, Elisa Roda, Francesco Moccia, Maria Grazia Bottone. [Pt(O,O'-acac)(γ -acac)(DMS)]: Alternative Strategies to Overcome Cisplatin-Induced Side Effects and Resistance in T98G Glioma Cell, May 2020, Cellular and Molecular Neurobiology. 41(3):563-587. DOI: <https://doi.org/10.1007/s10571-020-00873-8>.
- Sharon Negri, **Pawan Faris**, Giorgia Pellavio, Laura Botta, Matteo Orgiu, Greta Forcaia, Giulio Sancini, Umberto Laforenza, Francesco Moccia. Group 1 metabotropic glutamate receptors trigger glutamate-induced intracellular Ca²⁺ signals and nitric oxide release in human brain microvascular endothelial cells. June 2020. Cellular and Molecular Life Sciences. Aug 2019: 77(11):2235-2253. DOI: <https://doi.org/10.1007/s00018-019-03284-1>.
- Roberto Berra-Romani, **Pawan Faris**, Sharon Negri, Laura Botta, Tullio Genova, Francesco Moccia. Arachidonic acid evokes an increase in intracellular Ca²⁺ concentration and nitric oxide production in endothelial cells from human brain microcirculation. Cells. Jul 2019, 9;8(7):689. DOI: <https://doi.org/10.3390/cells8070689>.
- Roberto Berra-Romani, **Pawan Faris**, Giorgia Pellavio, Matteo Orgiu, Sharon Negri, Greta Forcaia, Verónica Var-Gaz-Guadarrama, Mario Garcia-Carrasco, Laura Botta, Giulio Sancini, Umberto Laforenza, Francesco Moccia. Histamine induces intracellular Ca²⁺ oscillations and nitric oxide release in endothelial cells from brain microvascular circulation. Journal of cellular physiology. Jul 2020. 235(2):1515-1530. DOI: <https://doi.org/10.1002/jcp.29071>.
- **Pawan Faris**, Giorgia Pellavio, Federica Ferulli, Francesca Di Nezza, Mudhir Shekha, Dmitry Lim, Marcello Maestri, Germano Guerra Luigi, Ambrosone, Paolo Pedrazzoli, Umberto Laforenza, Daniela Montagna and Francesco Moccia. Nicotinic Acid Adenine Dinucleotide Phosphate (NAADP) Induces Intracellular Ca²⁺ Release through the Two-Pore Channel TPC1 in Metastatic Colorectal Cancer Cells. Cancers. Apr 2019(4), 542; DOI: <https://doi.org/10.3390/cancers11040542>.

- Estella Zuccolo, Umberto Laforenza, Sharon Negri, Laura Botta, Roberto Berra-Romani, **Pawan Faris**, Giorgia Scarpellino, Greta Forcaia, Giorgia Pellavio, Giulio Sancini, Francesco Moccia. Muscarinic M5 receptors trigger acetylcholine- induced Ca²⁺ signals and nitric oxide release in human brain microvascular endothelial cells. Journal of cellular physiology. Sep 2018. 234:4540–4562. DOI: <https://doi.org/10.1002/jcp.27234>.
- Paola Rebuzzini, Estella Zuccolo, Cinzia Civello, Lorenzo Fassina, Juan Arechaga, Amaia Izquierdo, **Pawan Faris**, Maurizio Zuccotti, Francesco Moccia & Silvia Garagna. Polychlorinated biphenyls reduce the kinematics contractile properties of embryonic stem cells-derived cardiomyocytes by disrupting their intracellular Ca²⁺ dynamics. Scientific report. Dec 2018. 8:17909. DOI: <https://doi.org/10.1038/s41598-018-36333-z>.
- Estella Zuccolo, Umberto Laforenza, Federica Ferulli, Giorgia Pellavio, Giorgia Scarpellino, Matteo Tanzi, Ilaria Turin, **Pawan Faris**, Angela Lucariello, Marcello Maestri, Dizar Ali Kheder, Germano Guerra, Paolo Pedrazzoli, Daniela Montagna and Francesco Moccia. Stim and Orai mediate constitutive Ca²⁺ entry and control endoplasmic reticulum Ca²⁺ refilling in primary cultures of colorectal carcinoma cells. Jul 2018; 9:31098–31119. Oncotarget. 2018; 9:31098–31119. DOI: <https://doi.org/10.18632/oncotarget.25785>

REVIEW ARTICLES:

- Francesco Moccia, Sharon Negri, **Pawan Faris** and Tommaso Angelone. Targeting endothelial ion signalling to rescue cerebral blood flow in cerebral disorders. May 2022. Vascular Pharmacology 145(1):106997. <https://doi.org/10.1016/j.vph.2022.106997>.
- Francesco Moccia, Sharon Negri, **Pawan Faris**, Carlotta Ronchib and Francesco Lodola. Optical excitation of organic semiconductors as a highly selective strategy to induce vascular regeneration and tissue repair. May 2022. Vascular Pharmacology. <https://doi.org/10.1016/j.vph.2022.106998>.

- Sharon Negri, **Pawan Faris** and Francesco Moccia. Reactive Oxygen Species and Endothelial Ca²⁺ Signaling: Brothers in Arms or Partners in Crime? International Journal of molecular science. Sep 2021. 22(18), 9821. DOI: <https://doi.org/10.3390/ijms22189821>.
- Sharon Negri, **Pawan Faris**, Teresa Soda and Francesco Moccia. Endothelial signaling at the core of neurovascular coupling: The emerging role of endothelial inward-rectifier K⁺ (Kir2.1) channels and N-methyl-D-aspartate receptors in the regulation of cerebral blood flow. The International Journal of Biochemistry & Cell Biology. 2021; 135; 105983. DOI: <https://doi.org/10.1016/j.biocel.2021.105983>.
- Sharon Negri, **Pawan Faris** and Francesco Moccia. Endolysosomal Ca²⁺ signaling in cardiovascular health and disease. International Review of Cell and Molecular Biology. 2021; 363; 203-269. DOI: <https://doi.org/10.1016/bs.ircmb.2021.03.001>.
- Francesco Moccia , Sharon Negri , **Pawan Faris** , Angelica Perna , Antonio De Luca , Teresa Soda , Roberto Berra-Romani , Germano Guerra. Targeting Endolysosomal Two-Pore Channels to Treat Cardiovascular Disorders in the Novel CoronaVirus Disease 2019. Frontiers in physiology. 2021 Jan 26; 1; 629119. DOI: <https://doi.org/10.3389/fphys.2021.629119>.
- **Pawan Faris**, Sharon Negri, Angelica Perna, Vittorio Rosti, Germano Guerra, Francesco Moccia. Therapeutic Potential of Endothelial Colony-Forming Cells in Ischemic Disease: Strategies to Improve their Regenerative Efficacy. 2020 Oct 7;21(19):7406. DOI: <https://doi.org/10.3390/ijms21197406>.
- Klara Komici, **Pawan Faris**, Sharon Negri, Vittorio Rosti, Mario García-Carrasco, Claudia Mendoza-Pinto, Roberto Berra-Romani, Ricard Cervera, Germano Guerra, Francesco Moccia. Systemic lupus erythematosus, endothelial progenitor cells and intracellular Ca²⁺ signaling: A novel approach for an old disease. Aug 2020. Journal of Autoimmunity. 112:102486. DOI: <https://doi.org/10.1016/j.jaut.2020.102486>.

- Sharon Negri, **Pawan Faris**, Vittorio Rosti, Maria Rosa Antognazza, Francesco Lodola, Francesco Moccia. Endothelial TRPV1 as an emerging molecular target to promote therapeutic angiogenesis. May 2020, *Cells* 9(6); 1341. DOI: <https://doi.org/10.3390/cells9061341>.
- Sharon Negri, **Pawan Faris**, Roberto Berra-Romani, Germano Guerra and Francesco Moccia. Endothelial Transient Receptor Potential Channels and Vascular Remodeling: Extracellular Ca²⁺ Entry for Angiogenesis, Arteriogenesis and Vasculogenesis. *Front. Physiol.*, 21 Jan 2020, V (10). DOI: <https://doi.org/10.3389/fphys.2019.01618>.
- Francesco Moccia, Sharon Negri, **Pawan Faris**, Roberto Berra-Romani. Targeting the Endothelial Ca²⁺ Toolkit to Rescue Endothelial Dysfunction in Obesity Associated-Hypertension. *Current Medicinal Chemistry*. Sep 2019; 27(2); 240- 257. DOI:10.2174/0929867326666190905142135.
- Francesco Moccia, Sharon Negri, Mudhir Shekha, **Pawan Faris**, and Germano Guerra Endothelial Ca²⁺ Signaling, Angiogenesis and Vasculogenesis: Just What It Takes to Make a Blood Vessel. *Int. J. Mol. Sci.* Aug 2019, 20(16), 3962. DOI: <https://doi.org/10.3390/ijms20163962>.
- **Pawan Faris**, Mudhir Shekha, Daniela Montagna, Germano Guerra, and Francesco Moccia. Endolysosomal Ca²⁺ Signalling and Cancer Hallmarks: Two-Pore Channels on the Move, TRPML1 Lags Behind! *Cancers*. Dec 2018, 11(1), 27. DOI: <https://doi.org/10.3390/cancers11010027>.

GBD-PUBLICATIONS:

- GBD- collaborator, Adolescent transport and unintentional injuries: a systematic analysis using the Global Burden of Disease Study 2019. *The Lancet Public Health*. 29 June 2022. DOI:[https://doi.org/10.1016/S2468-2667\(22\)00134-7](https://doi.org/10.1016/S2468-2667(22)00134-7).
- GBD- collaborator, Anemia prevalence in women of reproductive age in low- and middle-income countries between 2000 and 2018. *Nature medicine*. 12 Oct 2021. (27)1761-1782. DOI: <https://doi.org/10.1038/s41591-021-01498-0>.

- GBD-collaborator, Measuring routine childhood vaccination coverage in 204 countries and territories, 1980–2019: a systematic analysis for the Global Burden of Disease Study 2020. *The Lancet*. 14 Jul 2021. DOI: [https://doi.org/10.1016/S0140-6736\(21\)00984-3](https://doi.org/10.1016/S0140-6736(21)00984-3).
- GBD-collaborator, Mapping inequalities in exclusive breastfeeding in low- and middle-income countries, 2000–2018. *The nature human behavior*. 2021; 5;1027–1045. DOI: <https://doi.org/10.1038/s41562-021-01108-6>.
- GBD-collaborators. Five insights from the Global Burden of Disease Study 2019. October 2020. *The lancet*. Oct 2020. 17;396(10258):1135–1159. DOI: [https://doi.org/10.1016/S0140-6736\(20\)31404-5](https://doi.org/10.1016/S0140-6736(20)31404-5).
- GBD-collaborators. Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019 October 2020. *The lancet*. 2020; 396: 1135–59. DOI: [https://doi.org/10.1016/S0140-6736\(20\)30752-2](https://doi.org/10.1016/S0140-6736(20)30752-2).
- GBD-collaborators. Global age-sex-specific fertility, mortality, healthy life expectancy (HALE), and population estimates in 204 countries and territories, 1950–2019: a comprehensive demographic analysis for the Global Burden of Disease Study 2019. October 2020. *The lancet*. 2020; 396: 1160–203. DOI: [https://doi.org/10.1016/S0140-6736\(20\)30977-6](https://doi.org/10.1016/S0140-6736(20)30977-6).
- GBD-collaborators. Global Burden of Cardiovascular Diseases and Risk Factors, 1990–2019: Update from the GBD 2019 Study. *Journal of the American College of Cardiology*. Dec 2020. 22;76(25):2982–3021. DOI: <https://doi.org/10.1016/j.jacc.2020.11.010>.
- GBD-collaborators. Estimating global injuries morbidity and mortality: methods and data used in the Global Burden of Disease 2017 study. August 2020. *Injury Prevention*. Aug. 2020;26;125–153. DOI: <http://dx.doi.org/10.1136/injuryprev-2019-043531>.
- GBD-collaborators. Measuring universal health coverage based on an index of effective coverage of health services in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. Aug 2020.

The Lancet, 396 (0258); P1250-1284, DOI: [https://doi.org/10.1016/S0140-6736\(20\)30750-9](https://doi.org/10.1016/S0140-6736(20)30750-9).

- GBD-collaborator. The global, regional, and national burden of oesophageal cancer and its attributable risk factors in 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. The Lancet Gastroenterology and Hepatology. April 2020. 5(6); 582–597. DOI: [https://doi.org/10.1016/S2468-1253\(20\)30007-8](https://doi.org/10.1016/S2468-1253(20)30007-8)