PAOLO BONIFAZI – Curriculum Vitae

Ikerbasque Associate Research Professor

Neurobiology – Neurophysics – Neural circuits & networks

GENERAL INFO

CURRENT POSITION	*Tenured Position as Ikerbasque Research Associate ("equivalent to Associate professor") – Associate professor at the department of Physics and Astronomy of the University of Bologna (Italy)*
RESEARCH ADDRESS	*BioBizkaia HRI, Barakaldo (Basque Country), Spain – Ikerbasque Science Fundation, Bilbao (Basque Country), Spain*
CONTACT	*paol.bonifazi@gmail.com; paol.bonifazi@osakidetza.eus;*
TELEPHONE	*+34691944364*
ORCID ID.	*0000-0001-6374-8997*
WEBPAGE	*www.ikerbasque.net/es/paolo-bonifazi*
PERSONAL INFO	*born on the 7/6/1975 in Sassoferrato (AN, Italy), holding Italian nationality*

RECENT ACCOMPLISHMENTS

Highlighted publications (last 3 years)

1. J. *Martínez-Gardeazabal*, M. Moreno-Rodríguez, A. Llorente-Ovejero, E. González de San Román, L. Lombardero, I. Bengoetxea de Tena, J. Sustacha, C. Matute, I. Manuel,* ***P. Bonifazi****, R. Rodríguez-Puertas**. Cell lipotypes localization in brain by mass spectrometry imaging. *bioRxiv 2024.02.02.578599; doi: https://doi.org/10.1101/2024.02.02.578599 (under revision) - (*) corresponding authors*
2. *Jimenez-Marin A, Diez I, Erramuzpe A, Stramaglia S,* ***Bonifazi P****, Cortes JM.* Open datasets and code for multi-scale relations on structure, function and neuro-genetics in the human brain. *Sci Data. 2024 Feb 29;11(1):256. doi: 10.1038/s41597-024-03060-*
3. *Martin-Suarez S., Cortes JM,* ***Bonifazi P.*** Blockage of STAT3 during epileptogenesis prevents GABAergic loss and imprinting of the epileptic state. *BRAIN, awad055, https://doi.org/10.1093/brain/awad055*
4. *Diez I, Garcia-Moreno F, Carral-Sainz N, Stramaglia S, Nieto-Reyes A, D'Amato M, Cortes JM,* ***Bonifazi P.*** Linking hubness, embryonic neurogenesis, transcriptomics and diseases in human brain networks *2023, Biorxiv. Cold Spring Harbor Lab. https:// doi.org/10.1101/2022.04.01.486541 (****under revision*** *in Nature Communication)*
5. *M Chiappalone, V Rosa Cota, M Carè, M Di Florio, R Beaubois, S Buccelli, F Barban, M Brofiga, A Averna, F Bonacini, D J. Guggenmos, Y Bornat, P Massobrio,* ***P Bonifazi****, T Levi.* Neuromorphic-based neuroprostheses for brain rewiring: state-of-the art and perspectives in neuroengineering. *Review paper. Brain Sci 2022 Nov 19;12(11):1578. doi: 10.3390/brainsci12111578.*
6. *Fernandez-Iriondo I, Jimenez-Marin A, Sierra B, Aginako N,* ***Bonifazi P****, Cortes JM.* Brain Mapping of Behavioral Domains Using Multi-Scale Networks and Canonical Correlation

Analysis. *Front Neurosci. 2022 Jun 21;16:889725. doi: 10.3389/fnins.2022.889725. eCollection 2022.*

7. *Fernandez-Iriondo I, Jimenez-Marin A, Diez I,* ***Bonifazi P****, Swinnen SP, Muñoz MA, Cortes JM.* Small variation in dynamic functional connectivity in cerebellar networks. *Neurocomputing, Volume 461, 21 October 2021, Pages 751-761*
8. *Sierra-Torre V, Plaza-Zabala A,* ***Bonifazi P****, Abiega O, Díaz-Aparicio I, Tegelberg S, Lehesjoki AE, Valero J, Sierra A.* Microglial phagocytosis dysfunction in the dentate gyrus is related to local neuronal activity in a genetic model of epilepsy. *Epilepsia. 2020 Sep 17. doi: 10.1111/epi.16692. JIF:6.04 JR: 49/598 Q1*
9. *Mosbacher Y, Khoyratee F, Goldin M, Kanner S, Malakai Y, Silva M, Grassia F, Ben Simon Y, Cortes J, Barzilai A, Levi T,* ***Bonifazi P*** Toward neuroprosthetic real-time communication from in silico to biological neuronal network via patterned optogenetic stimulation. *Sci Rep. 2020 May 5;10(1):7512. doi: 10.1038/s41598-020-63934-4. JIF:4.00 JR: 9/145 Q1*
10. *Changchun He, Xujun Duan, Lucina Uddin, Asier Erramuzpe,* ***Paolo Bonifazi****, Xiaonan Guo, Jinming Xiao, Heng Chen, Wei Sheng, Wei Liao, Jesus M. Cortes, Huafu Chen.* Structure-Function Connectomics Reveal Aberrant Developmental Trajectories in the Developing Autistic Brain *Cereb Cortex. 2020 May 7. pii: bhaa098. doi: 10.1093/cercor/bhaa098. JIF:5.04 JR: 29/596 Q1*

Running grants (across last 3 years)

1. *Role*: ***Recipient Group Leader;*** *Funding Entity*: ***ISCIII-HEALTH*** *;* *Period*: ***June 2023 – May 2025*** *;* *Funded amount (€)*: ***135.196,30 ;*** *Project ID:* ***IHMC22/00042*** *Title*: **"*Closed-Loop optical connectivity between biological and artificial neural networks*"** ; *Complementary info: Marie Skłodowska-Curie Individual Fellowship recognized with seal of excellence; candidate Dr. Mayya Sundukova; funded within the Spanish Recovery, Transformation and Resilience Plan, support for the postdoctoral fellowships ("Sello de Excelencia ISCIII-HEALTH") by the Health Institute Carlos III as part of "la Acción Estratégica en Salud 2021-2023" financing EU Horizon 2020 applications with recognized excellence.*
2. *Role*: ***Principal Investigator ;*** *Funding Entity*: ***Maratoia EITB (Euskal Telebista-Basque TV)*** *;* *Period*: ***March 2023 – June 2026*** *;* *Funded amount (€)*: ***25.542 ;*** *Project ID:* ***BIO22/ALZ/010/BCB*** *;* *Title*: **"*Development of new biomarkers and neurolipid-based treatments for Alzheimer's dementia" ("Desarrollo de nuevos biomarcadores y tratamientos basados en neurolípidos para la demencia tipo Alzheimer")*** ; *Complementary info: consortium of 3 partners coordinated by Prof. R. Rodriguez (UPV, Leioa, Basque Country, Spain) where Biocruces contribute to the reconstruction of cell-type maps in brain circuits using lipidic signature from ass spectrometry; total consortium funding 176.682,00 €*
3. *Role*: ***Principal Investigator ;*** *Funding Entity*: ***Spanish Ministry of Science and Innovation (MICINN; RETOS y Excellencia)*** *;* *Period*: ***September 2022 – August 2025*** *;* *Funded amount (€)*: ***133.100 ;*** *Project ID:* ***PID2021-127163NB-I00*** *;* *Title*: **"*Dissecting the functional connectivity of GABAergic and hub neurons in healthy and epileptic conditions*"** ; *Complementary info: calcium imaging and optogenetics of animal epileptic models (DRAVET mice & drug-induced epileptic state), in-vitro and in-vivo conditions with special focus on GABAergic neurons and hub neurons*
4. *Role*: ***Principal investigator – project and visit at UNIBO;*** *Funding Entity*: ***Basque education department*** *;* *Period*: ***April 2022 – October 2022*** *;* *Funded amount (€)*: ***12.502 ;*** *Project ID:* ***MV_2022_1_0018*** *;* *Title*: **"*New measures of centrality and clustering with machine learning for human epileptic networks*"**

; Complementary info: *grant for carrying on project in collaboration with prof. Daniel Remondini in the department of applied physics at the University of Bologna (Italy); the project was aimed at applying complex networks and pattern recognition techniques to epileptic data from intra-cranial electrodes implanted in human epileptic patients (acquired within a previous grant lead by Dr. P. Bonifazi)*

5. Role: ***Principal investigator ;*** Funding Entity: ***Federación Española de Enfermedades Raras (FEDER)*** ; Period: ***January 2021 – June 2023*** ; Funded amount (€): ***25.000 ;*** Project ID: ***AI-2021-039*** ; Title: ***"Study of the functional connectivity of GABAergic Neurons in a mouse model of Dravet Syndrome" ("Estudio de la conectividad funcional de las Neuronas GABAérgicas en un modelo de ratón de Síndrome de Dravet")*** ; Complementary info: *GABAergic and neural hub connectivity in the DRAVET syndrome, revealed by calcium imaging and optogenetics in-vitro and in-vivo*
6. Role: ***Host Principal Investigator ;*** Funding Entity: ***Post-doctoral fellowship "Ayudas Juan De La Cierva-Formacíon", Spanish Ministry of Science and Innovation (MICINN)*** ; Period: ***June 2020 – May 2022*** ; Funded amount (€): ***50.000 ;*** Project ID: ***ID FJC2018-035496-I*** ; Title: ***"in-vivo imaging of neuronal circuitry activity and glial reactivity in epilepsy model"*** ; Complementary info: *postdoctoral fellowship granted to the Dr. Soraya Martin Suarez for a project to be carried on in the group of Dr. P. Bonifazi*
7. Role: ***Principal Investigator for Biocruces ;*** Funding Entity: ***Spanish Innovation Network ("redes de investigacion"), Spanish Ministry of Science and Innovation (MICINN)*** ; Period: ***September 2019 – August 2021*** ; Funded amount (€): ***20.000 ;*** Project ID: ***RED2018-102491-T*** ; Title: ***"Therapeutic applications of systems neuroscience in diseases of the central nervous system" ("Aplicaciones terapeuticas de la neurociencia de sistemas en enfermedades del sistema nervioso central")*** ; Complementary info: *acronym "Clysine", network coordinated by Dr. E. G. Rodriguez de Velasco (Universidad Autonoma de Barcelona, Spain).*

Group compostion (across last 3 years)

Actual components:

- *Lucia Prado Perez (2023 – 2025):* hired with a two year contract for "Titulado superior" (funded by MICINN project), pre-admitted in the Biomedicine PhD program of the UPV (Leioa, Bizkaia, Spain); working on GABAergic neurons connectivity in epilepsy; currently under evaluation in grants for PhD fellowships possibly covering the overall PhD thesis (2023-2026/7)
- *Dr. Mayya Sundokova (2023-2025):* senior postdoc; Marie Skłodowska-Curie Individual Fellowship recognized with seal of excellence; funded within the Spanish Recovery, Transformation and Resilience Plan, support for the postdoctoral fellowships ("Sello de Excelencia ISCIII-HEALTH") by the Health Institute Carlos III as part of "la Acción Estratégica en Salud 2021-2023" financing EU Horizon 2020 applications with recognized excellence; working on real-time communication between artificial and biological neural networks through last generation ultra-fast optical sensors (optogenetics and GEVIs)
- *Carlota Garcia Fernandez (07/2023-06/2024)* double degree on Mathematics and Physics, university of Cantabria, final thesis for the Mathematics degree
- *Juan Sustacha (2019-2021; 2023-2025)* PhD student in Biomedicine, matriculated in the PhD of the UPV, Leioa; project title: multi-modal study of human epileptic brain networks; PhD starting Year, 2019, PhD suspended in September 2021 for paternity leave, and restarting in September 2023

Previous component:

- *Dr Soraya Martin-Suarez (2020 – 2022)* junior postdoc Funded by "Ayudas Juan De La Cierva-Formacíon", Spanish Ministry of Science and Innovation (MICINN); working on imaging of neuronal circuitry activity and glial reactivity in epilepsy model; research published in the IF journal BRAIN (followed by Basque and Spanish press coverage, also with TV and radio broadcasting)
- *Undergraduate student: Sergio Bolivar Gomez;* Title: multi-modal study of human epileptic networks biomarkers; Institution: University of Cantabria, Santander, Spain; Department: Mathematics department; Qualification: supervisor; Training: July 2021 - August 2021
- *Undergraduate student: Nayara Carral Sainz; Title*: "The older gets richer": structural brain networks hubs revealed by neurogenesis and complex networks; Institution: University of Cantabria, Santander, Spain; Department: Mathematics department; Qualification: co-supervisor; Thesis Defense Year: 2021
- *Master student: Borja Camino Pontes;* Title: Multi-modal machine learning classification of epileptogenic brain circuits; Institution: University of the Basque Country, Spain; Department: Department of Computer Science and Artificial Intelligence; Qualification: supervisor; Master Defense Year: October 2020

COMPLETE AND UPDATED (July 2025) CV INFORMATION

EDUCATION

PhD (2005): ***PhD cum laude in Neuroscience,*** *supervisor, Prof. V. Torre. Dissertation title: "Information processing in dissociated neuronal cultures of rat hippocampal neurons"; SISSA/ISAS, Trieste, Italy, December 2005.*

Master (2001) ***Master's Degree (Laurea) in Physics, 110/110 cum laude****. University of Perugia, Italy, May 2001; Title of the thesis: "Studies for the development of a neural electronic prosthesis"; Supervisors: prof. F.S. Pavone and prof. P. Fromherz (Max Planck Institute for Biochemistry, Martinsried, Germany)*

RESEARCH EXPERIENCES

01/2025 – present: *Associate professor (part-time) at the Department of Physics and Astronomy of the University of Bologna (Italy)*

07/2020 – present: *Ikerbasque Research Associate (permanent position equivalent to "professor titular" in the Spanish academic system) in the Computational Neuroimaging Group at the* ***Biocruces Bizkaia*** *(Bilbao, Spain);*

07/2015 – 06/2020: *Ikerbasque Fellow (temporary position equivalent to "professor asociado" in the Spanish academic system) in the Computational Neuroimaging Group at the **Biocruces Health Research Institute** (Bilbao, Spain).*

03/2013 – 06/2015: *Researcher in the group of Prof. Eshel Ben-Jacob and Prof. Ari Barzilai at the **Tel Aviv University** (Dept. of Physics and Life Science).*

03/2010 – 02/2013: *Senior PostDoc in the group of Prof. Eshel Ben-Jacob and Prof. Ari Barzilai at the **Tel Aviv University** (Dept. of Physics and Life Science).*

03/2007 – 02/2010: *PostDoc in the group of Dr. Cossart at **INMED, INSERM U29**, Parc Scientifique de Luminy, Marseille (France)*

02/2006 – 02/2007: *PostDoc in the lab. of Dr. Hugh P.C. Robinson in the Department of Physiology, Development and Neuroscience, **University of Cambridge** (UK).*

03/2002 – 01/2006: *Ph.D. student in the lab. of prof. Vincent Torre in the Neurobiology Sector of the **International School for Advanced Studies (ISAS/SISSA)**, Trieste (Italy).*

01/2000 – 01/2001: *Master Student the lab. of prof. Fromherz at the Department of Membrane and Neurophysics of the **Max Planck Institute for Biochemistry**, Martinsried (Germany)*

QUALIFICATIONS

*Italian "National Scientific Qualification" (**Abilitazione Scientifica Nazionale**) for Associate Professor ("Professore di II Fascia"):*

- *Physiology 05/D1, period 28/11/2014 – 28/11/2024*
- *Applied Physics 02/D1, period 18/12/2014 – 18/12/2024*

Published on the MIUR webpage at:
https://asn.cineca.it/ministero.php/public/esitoAbilitati/settore/05%252FD1/fascia/2
https://asn.cineca.it/ministero.php/public/esitoAbilitati/settore/02%252FB3/fascia/2

SYNOPSIS

My research is focused on neural circuits' structure and function, at multi-scale levels, with special focus on connectivity. I combine in-vitro and experimental approaches mostly based on calcium imaging, multi-electrode recordings, patterned optogenetics and immunochemistry, with computational and data science studies mostly based on

complex networks, information theory and classification analysis (unsupervised pattern recognition and most recently machine-learning).
More broadly, my research trajectory supported by a Master (Laurea) in Physics (Univ. of Perugia, Italy; final thesis at Max Planck-Institute, Martinsried, Germany) and a PhD in Neuroscience (SISSA, Trieste, Italy) spans from neuro-engineering (neuro-opto-electronic interfaces for real-time bio-artificial neural communication), to epileptic models of cultured brain circuits, to human brain networks studies through functional-diffusion MRI (resting-state and tractography) and intra-cranial electrodes (epileptic patients).
Indeed, linking bench neurobiology to clinical research keeping the main focus on neural circuits structural-functional connectivity is the main aim of my multi-disciplinary research.
In a pioneering study on developing hippocampal circuitries in 2007 (INSERM-INMED, Marseille, France), I contributed to demonstrate the existence and impact of hub neurons on circuits synchronization (in a series of research articles published in the journals Science, Neuron and reviewed in TINS).
Between 2010 and 2015, I joined the new-born Italy-Israel joint laboratory on Neuroscience (lead by late prof. E. Ben-Jacob, a world-wide known physicist of complex systems), at the Tel Aviv University. At that time, I developed my independent research as PI within the "BRAINBOW" project (FET-OPEN EU-FP7) studying optically in-vitro neural circuits' dynamics for neuro-prosthetic communication via a Neuromorphic chip, and astrocytic impact on circuits' functioning.
Since July 2015, I become an Ikerbasque Research Associate (tenured in 2020), joining the Computational Neuroimaging group at the Biocruces Bizkaia Health Research Institute (Bilbao, Spain).
Since then, I have been granted by national and local institutional fundings to study brain disorders with special focus on neural connectivity and epilepsy (Spanish Ministry of Science and Innovation, Carlos III Health Institute, Basque government, etc).
During this years, I contributed as first or last author to: a) the development of the Brain Hierarchical Atlas (BHA) partition which has been applied to aging and different pathological conditions (Sci. Rep. 2015, HBM 2018), b) the in-vitro demonstration of how astrocytes can restore connectivity and synchronization in dysfunctional networks (PNAS 2018), c) the implementation of real-time information transfer between artificial and biological neuronal networks using patterned optogenetics and multi-electrode recordings in-vitro (Sci. Rep. 2020) and d) the demonstration of how acute inhibition of the STAT3 pathway (involved in the neuroinflammatory response) during epileptogenesis, prevents GABAergic cells' loss, reactive gliosis and imprinting of epileptic state (BRAIN, 2023). In addition, thanks to international collaborations I could contribute on several major works focused on the role of GABAergic neurons in autism spectrum disorder and other diseases (Sci. Adv. 2019, Cereb. Cortex 2018 and other works).
In my last work on brain networks, I provide the basis for a multi-scale model of brain networks based on the neurogenesis time of the cerebral nodes, according to two major principles: "older gets richer" and "age preferential attachment", both experimentally validated and inspired to the pioneering model on complex networks from Barabasi and Albert. This model bridges adult healthy human brain networks, to embryogenesis, and transcriptomics and its conclusions have been validated on the genetics underlying major brain pathologies (under review in Nature Communications, available in Biorxiv at doi.org/10.1101/2022.04.01.486541).

CITATION INDEX (*updated 05/2022)*

GOOGLE SCHOLAR

	All	*Since 2018*
Citations	3036	1296
h-index	*24*	*21*
i10-index	*30*	*28*

SCOPUS

Citations *1989*
h-index *21*

PUBLICATIONS

equal authors contributions are in bold and underlined
Abbreviations: Journal impact factor JIF - journal ranking JR – quartile Q1, etc.-

1. *A Jimenez-Marin, I Diez, A Erramuzpe, S Stramaglia,* ***P Bonifazi****, JM Cortes.* Open datasets and code for multi-scale relations on structure, function and neuro-genetics in the human brain. *Sci Data. 2024 Feb 29;11(1):256. doi: 10.1038/s41597-024-03060-2.*

2. *J Martínez-Gardeazabal, M Moreno-Rodríguez, A Llorente-Ovejero, E Gonález de San Román, L Lombardero, I Bengoetxea de Tena, J Sustacha, C Matute, I Manuel,* ***P Bonifazi****[1], R Rodríguez-Puertas[1]* Cell lipotypes localization in brain by mass spectrometry imaging *2024, Biorxiv. Cold Spring Harbor Lab. https://doi.org/10.1101/2024.02.02.*578599 *(****under revision*** *in Science Advances) (****[1] equal senior author contribution****).*

3. *Martin-Suarez S., Cortes JM,* ***Bonifazi P.*** Blockage of STAT3 during epileptogenesis prevents GABAergic loss and imprinting of the epileptic state. *BRAIN, awad055, https://doi.org/10.1093/brain/awad055*

4. *Diez I, Garcia-Moreno F, Carral-Sainz N, Stramaglia S, Nieto-Reyes A, D'Amato M, Cortes JM,* ***Bonifazi P.*** Linking hubness, embryonic neurogenesis, transcriptomics and diseases in human brain networks *2023, Biorxiv. Cold Spring Harbor Lab. https:// doi.org/10.1101/2022.04.01.486541 (****under revision*** *in Nature Communication)*

5. *M Chiappalone, V Rosa Cota, M Carè, M Di Florio, R Beaubois, S Buccelli, F Barban, M Brofiga, A Averna, F Bonacini, D J. Guggenmos, Y Bornat, P Massobrio,* ***P Bonifazi****, T Levi.* Neuromorphic-based neuroprostheses for brain rewiring: state-of-the art and perspectives in neuroengineering. *Review paper. Brain Sci 2022 Nov 19;12(11):1578. doi: 10.3390/brainsci12111578.*

6. *Fernandez-Iriondo I, Jimenez-Marin A, Sierra B, Aginako N,* ***Bonifazi P****, Cortes JM.* Brain Mapping of Behavioral Domains Using Multi-Scale Networks and Canonical Correlation Analysis. *Front Neurosci. 2022 Jun 21;16:889725. doi: 10.3389/fnins.2022.889725. eCollection 2022.*

7. *Fernandez-Iriondo I, Jimenez-Marin A, Diez I,* ***Bonifazi P****, Swinnen SP, Muñoz MA, Cortes JM.* Small variation in dynamic functional connectivity in cerebellar networks. *Neurocomputing, Volume 461, 21 October 2021, Pages 751-761*

8. *Sierra-Torre V, Plaza-Zabala A, **Bonifazi P**, Abiega O, Díaz-Aparicio I, Tegelberg S, Lehesjoki AE, Valero J, Sierra A.* Microglial phagocytosis dysfunction in the dentate gyrus is related to local neuronal activity in a genetic model of epilepsy. *Epilepsia. 2020 Sep 17. doi: 10.1111/epi.16692. JIF:6.04 JR: 49/598 Q1*

9. *Mosbacher Y, Khoyratee F, Goldin M, Kanner S, Malakai Y, Silva M, Grassia F, Ben Simon Y, Cortes J, Barzilai A, Levi T, **Bonifazi P*** Toward neuroprosthetic real-time communication from in silico to biological neuronal network via patterned optogenetic stimulation. *Sci Rep. 2020 May 5;10(1):7512. doi: 10.1038/s41598-020-63934-4. JIF:4.00 JR: 9/145 Q1*

10. *Changchun He, Xujun Duan, Lucina Uddin, Asier Erramuzpe, **Paolo Bonifazi**, Xiaonan Guo, Jinming Xiao, Heng Chen, Wei Sheng, Wei Liao, Jesus M. Cortes, Huafu Chen.* Structure-Function Connectomics Reveal Aberrant Developmental Trajectories in the Developing Autistic Brain *Cereb Cortex. 2020 May 7. pii: bhaa098. doi: 10.1093/cercor/bhaa098. JIF:5.04 JR: 29/596 Q1*

11. *Buccelli S, Bornat Y, Colombi I, Ambroise M, Martines L, Pasquale V, Bisio M, Tessadori J, Nowak P, Grassia F, Averna A, Tedesco M, **Bonifazi P**, Difato F, Massobrio P, Levi T, Chiappalone M.* A Neuromorphic Prosthesis to Restore Communication in Neuronal Networks. *iScience. 2019 Sep 27;19:402-414. doi: 10.1016/j.isci.2019.07.046. Epub 2019 Aug 1. JIF:N/A JR: 6/145 Q1*

12. *Lozovaya N, Nardou R, Tyzio R, Chiesa M, Pons-Bennaceur A, Eftekhari S, Bui T, Billon-Grand M, Rasero J, **Bonifazi P**, Gaiarsa J-L, Ferrari DC and Ben-Ari Y.* Early alterations in a mouse model of Rett syndrome: the GABA developmental shift is abolished at birth. *Sci Rep. 2019 Jun 25;9(1):9276. doi: 10.1038/s41598-019-45635-9. JIF:4.00 JR: 9/145 Q1*

13. *R. Cloarec, B. Riffault, A. Dufour, H. Rabiei, L-A. Gouty-Colomer, C. Dumon, D. Guimond, A. Pons-Benaceur, **P. Bonifazi**, S. Eftekhari, N. Lozovaya, D. C. Ferrari, Y. Ben-Ari.* Pyramidal neuron growth and increased hippocampal volume during labor and birth in autism. *Science Advances 23 Jan 2019: Vol. 5, no. 1, eaav0394 DOI: 10.1126/sciadv.aav0394. JIF:13.12 JR: 3/145 Q1*

14. *Fernandez A, Dumon C, Guimond D, Tyzio R, **Bonifazi P**, Lozovaya N, Burnashev N, Ferrari DC, Ben-Ari Y.* The GABA Developmental Shift Is Abolished by Maternal Immune Activation Already at Birth. *Cereb Cortex. 2018 Nov 3. doi: 10.1093/cercor/bhy279. JIF:5.04 JR: 29/596 Q1*

15. *Luccioli S, Angulo-Garcia D, Cossart R, Malvache A, Modol L, Sousa VH, **Bonifazi P**[1] and Torcini A[1].* Modeling driver cells in developing neuronal networks. *PLoS Comput Biol. 2018 Nov 2;14(11):e1006551. doi: 10.1371/journal.pcbi.1006551. eCollection 2018 Nov. (**[1] equal senior author contribution**). JIF:4.7 JR: 34/596 Q1*

16. *Camino-Pontes B, Diez I, Jimenez-Marin A, Rasero J, Erramuzpe A, **Bonifazi P**, Stramaglia S, Swinnen S and Cortes JM.* Interaction Information Along Lifespan of the Resting Brain Dynamics Reveals a Major Redundant Role of the Default Mode Network. *Entropy 2018, 20(10), 742; https://doi.org/10.3390/e20100742. JIF:2.49 JR: 796/4116 Q2*

17. *Kanner S, Goldin M, Galron R, Hanein Y, Ben Jacob E, **Bonifazi P**[1] and Barzilai A[1].* Astrocytes restore connectivity and synchronization in dysfunctional cerebellar networks.

Proceedings of the National Academy of Sciences July 2018, 201718582; DOI: 10.1073/pnas.1718582115 ([1] ***equal senior author contribution).*** *JIF:9.41 JR: 4/195 Q1*

18. Bonifazi P[1]*, Erramuzpe A*[1]*, Diez I, Gabilondo I, Boisgontier M, Pauwels L, Stramaglia S, Swinnen S, Cortes J.* Structure–function multi-scale connectomics reveals a major role of the fronto-striato-thalamic circuit in brain aging. *Human Brain Mapping, doi.org/10.1002/hbm.24312 (*[1] ***equal first author contribution).*** *JIF:4.42 JR: 59/596 Q1*

19. *Levi T,* ***Bonifazi P,*** *Massobrio P and Chiappalone M.* Closed-loop systems for next-generation neuroprostheses (editorial article for a featured Research Topic with 27 papers and 196 authors). *Front. Neurosci. doi: 10.3389/fnins.2018.00026. JIF: 3.57 JR: 122/596 Q1*

20. *Lissek T,et al.* Building Bridges through Science. *Neuron. 2017 Nov 15;96(4):730-735. doi: 10.1016/j.neuron.2017.09.028.*

21. *Diez I., Drijkoningen D., Stramaglia S.,* ***Bonifazi P.,*** *Marinazzo D., Gooijers J., Swinnen S. P., Cortes J. M.* Enhanced pre-frontal functional-structural networks to support postural control deficits after traumatic brain injury in a pediatric population. *Netw Neurosci. 2017 Jun 1;1(2): 116-142. doi: 10.1162/NETN_a_00007. eCollection 2017 Spring. JIF: N/A JR: 141/596 Q2*

22. *Rasero J, Alonso-Montes C, Diez I, Olabarrieta-Landa L, Remaki L, Escudero I, Mateos B,* ***Bonifazi P****, Fernandez M, Arango-Lasprilla JC, Stramaglia S, Cortes JM.* Group-Level Progressive Alterations in Brain Connectivity Patterns Revealed by Diffusion-Tensor Brain Networks across Severity Stages in Alzheimer's Disease. *Front Aging Neurosci. 2017 Jul 7;9:215. doi: 10.3389/fnagi.2017.00215. eCollection 2017. JIF: 4.36 JR: 113/596 Q1*

23. *Bovetti S., Moretti C. Dal Maschio M., Zucca S.,* ***Bonifazi P.****, Fellin T.* Simultaneous fast imaging and optogenetic inhibition of neuronal networks in the intact mouse brain. *Sci Rep. 2017 Jan 5;7:40041. doi: 10.1038/srep40041. JIF:4.00 JR: 9/145 Q1*

24. *Soloperto A., Bisio M., Palazzolo G., Chiappalone M.,* ***Bonifazi P.***[1] *and Difato F.*[1] Modulation of Neural Network Activity through Single Cell Ablation: An in Vitro Model of Minimally Invasive Neurosurgery. *Molecules. 2016 Aug 5;21(8). pii: E1018. doi: 10.3390/molecules21081018. (*[1] ***equal senior author contribution).*** *JIF:3.28 JR: 242/769 Q1*

25. *Diez I.*[1]*,* ***Bonifazi P.***[1]*,Escudero I., Mateos B., Muñoz M., Stramaglia S., Cortes J.* A novel brain partition highlights the modular skeleton shared by structure and function. *Sci Rep. 2015 Jun 3;5:10532. doi: 10.1038/srep10532. (*[1] ***equally contributed to the work).*** *JIF:4.00 JR: 9/145 Q1*

26. *Kanner S., Bisio M., Cohen G., Goldin M., Tedesco M., Hanein Y., Ben-Jacob E., Barzilai A., Chiappalone M. and* ***Bonifazi P.*** Design, surface treatment, cellular plating and culturing of modular neuronal networks composed of functionally inter-connected circuits. *J Vis Exp. 2015 Apr 15;(98). doi: 10.3791/52572. JIF:0.93 JR: 391/596 Q3*

27. *Luccioli S, Ben-Jacob E, Barzilai A,* ***Bonifazi P***[1]*, Torcini A*[1]*.* Clique of functional hubs orchestrates population bursts in developmentally regulated neural networks. *PLoS Comput Biol. 2014 Sep 25; 10(9): e1003823.* doi: 10.1371/journal.pcbi.1003823. ***(***[1] ***equal senior author contribution).*** *JIF:4.7 JR: 34/596 Q1*

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29. ***Bonifazi P.[1], Difato F.[1], Massobrio P.[1], Breschi G.L., Pasquale V., Levi T., Goldin M., Bornat Y., Tedesco M., Bisio M., Kanner S., Galron R., Tessadori J., Taverna S. and Chiappalone M.*** In vitro large-scale experimental and theoretical studies for the realization of bi-directional brain-prostheses. *Front Neural Circuits. 2013;7:40. doi: 10.3389/fncir.2013.00040.* ***([1] equally contributed to the work).*** *JIF:3.16 JR: 78 /596 Q1*

30. *Marissal T., **Bonifazi P.**, Picardo M., Nardou R., Petit L., Baude A. , Fishell G., Ben-Ari Y., Cossart R.* Pioneer glutamatergic cells develop into a morpho-functionally distinct population in the juvenile CA3 hippocampus. *Nat Commun. 2012; 3: 1316. doi: 10.1038/ncomms2318. JIF:12.12 JR: 59 /2169 Q1*

31. *Meshulam L., Galron R., Kanner S., De Pittà M., **Bonifazi P.**, Goldin M., Frenkel D., Ben-Jacob E. and Barzilai A.* The role of the neuro-astro-vascular unit in the etiology of ataxia telangiectasia. *Front Pharmacol. 2012;3:157. doi: 10.3389/fphar.2012.00157. JIF:4.4 JR: 96 /769 Q1*

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33. *Feldt S.[1], **Bonifazi P.[1]**, and Cossart R.* Dissecting functional connectivity of cortical microcircuits: experimental and theoretical insights. *TINS*, 2011 May;34(5):225-36. ***([1] equally contributed to the work).*** *JIF:12.89 JR: 16 /596 Q1*

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36. *Mazzoni A., Broccard F., Garcia E., **Bonifazi P.**, Ruaro M.E. and Torre V.* On the dynamics of the spontaneous activity in neuronal networks. *PLoS ONE*. 2007 May 9. *JIF:2.74 JR: 10 /145 Q1*

37. *Ban J., **Bonifazi P.**, Pinato G., Broccard F., Studer L., Torre V. and Ruaro M.E.* ES-derived neurons form functional networks in vitro. *Stem Cells*. 2006 Nov 16. *JIF:6.02 JR: 223 /2169 Q1*

38. ***Bonifazi P.[1], Ruaro M.E.[1] and Torre V.*** Statistical properties of information processing in neuronal networks. *Eur J Neurosci*. 2005 Dec. 22 (11): 2953-64 ***([1] equally contributed to the work).*** *JIF:3.12 JR: 149/596 Q2*

39. *Ruaro M.E.[2], **Bonifazi P.[2]**, Torre V.* Towards the neurocomputer: Image processing and pattern recognition with neuronal cultures. *IEEE Transactions on Biomedical Engineering*, vol. 52, pp. 371-383, 2005 ***([2] Paolo Bonifazi and Maria Elisabetta Ruaro equally contributed to the paper).*** *JIF:4.42 JR: 245 /4844 Q1*

40. ***Bonifazi P.**, Fromherz P.* Silicon Chip for Electronic Communication between Nerve Cells by Noninvasive Interfacing and Analog-Digital Processing. *Advanced Materials 14 (2002) 1190-1193. JIF:27.40 JR: 4 /4844 Q1*

PUBLICATIONS (*in preparation*)

41. *Piasetzky Y., Bisio M., Kanner S., Olivenbaum M., Ben-Jacob E., Chiappalone M., Barzilai A. and* ***Bonifazi P****.* The emergence of dynamical instantaneous memory in the spontaneous activity of spatially confined neuronal assemblies in-vitro. *Under revision and pre-published in BioRxiv in 2018; doi.org/10.1101/412320*

42. *Goldin M, Kanner S, Galron R, Hanein Y, Barzilai A, Ben-Jacob E,* ***Bonifazi P****.* Are hub neurons an innate functional feature of developing neuronal circuits? Experimental evidences from cultured circuits. *In preparation*

43. *Goldin M., Erramuzpe A., Gil-Nagel Rein A, Aledo A, Toledano R., Cortes J,* ***Bonifazi P.*** Multi-modal comparison of connectivity matrixes reconstructed from sEEG, rs-fMRI and dMRI in human epileptic subjects *In preparation*

44. *Erramuzpe A., Goldin M., Jimenez A., Aguilera Lopez U, Gil-Nagel Rein A, Aledo A, Toledano R., Cortes J,* ***Bonifazi P.*** Divergent functional connections states in sEEG identify epileptogenic nodes and links in human epileptic subjects. *In preparation*

GRANTS & AWARDS

1. *Role*: ***Hosting group and supervisor of PhD student***
Funding Entity: ***Fundación Tatiana Pérez de Guzmán el Bueno***
Period: ***January 2024 – December 2026***
Funded amount (€): ***80.000***
Title: ***"DISECCIÓN DE LA CONECTIVIDAD FUNCIONAL DE NEURONAS GABAÉRGICAS Y HUBS EN CONDICIONES SANAS Y EPILÉPTICAS"***
Complementary info: Fellowship funding the PhD candidate Lucia Prado-Perez under the supervision of Dr. P. Bonifazi and co-supervision of Dr. JM Encinas (Achucarro Neuroscience Center, Leioa, Spain)

2. *Role*: ***Recipient Group Leader***
Funding Entity: ***ISCIII-HEALTH***
Period: ***June 2023 – May 2025***
Funded amount (€): ***135.196,30***
Project ID: ***IHMC22/00042***
Title: ***"Closed-Loop optical connectivity between biological and artificial neural networks"***
Complementary info: Marie Skłodowska-Curie Individual Fellowship recognized with seal of excellence; candidate Dr. Mayya Sundukova; funded within the Spanish Recovery, Transformation and Resilience Plan, support for the postdoctoral fellowships ("Sello de Excelencia ISCIII-HEALTH") by the Health Institute Carlos III as part of "la Acción Estratégica en Salud 2021-2023" financing EU Horizon 2020 applications with recognized excellence.

3. Role: ***Principal Investigator***
   Funding Entity: ***Maratoia EITB (Euskal Telebista-Basque TV)***
   Period: ***March 2023 – June 2026***
   Funded amount (€): ***25.542***
   Project ID: ***BIO22/ALZ/010/BCB***
   Title: **"*Development of new biomarkers and neurolipid-based treatments for Alzheimer's dementia" ("Desarrollo de nuevos biomarcadores y tratamientos basados en neurolípidos para la demencia tipo Alzheimer")***
   Complementary info: *consortium of 3 partners coordinated by Prof. R. Rodriguez (UPV, Leioa, Basque Country, Spain) where Biocruces contribute to the reconstruction of cell-type maps in brain circuits using lipidic signature from ass spectrometry; total consortium funding 176.682,00 €*

4. Role: ***Principal Investigator***
   Funding Entity: ***Spanish Ministry of Science and Innovation (MICINN; RETOS y Excellencia)***
   Period: ***September 2022 – August 2025***
   Funded amount (€): ***133.100***
   Project ID: ***PID2021-127163NB-I00***
   Title: **"*Dissecting the functional connectivity of GABAergic and hub neurons in healthy and epileptic conditions"***
   Complementary info: *calcium imaging and optogenetics of animal epileptic models (DRAVET mice & drug-induced epileptic state), in-vitro and in-vivo conditions with special focus on GABAergic neurons and hub neurons*

5. Role: ***Principal investigator – project and visit at UNIBO***
   Funding Entity: ***Basque education department***
   Period: ***April 2022 – October 2022***
   Funded amount (€): ***12.502***
   Project ID: ***MV_2022_1_0018***
   Title: **"*New measures of centrality and clustering with machine learning for human epileptic networks"***
   Complementary info: *grant for carrying on project in collaboration with prof. Daniel Remondini in the department of applied physics at the University of Bologna (Italy); the project was aimed at applying complex networks and pattern recognition techniques to epileptic data from intra-cranial electrodes implanted in human epileptic patients (acquired within a previous grant lead by Dr. P. Bonifazi)*

6. Role: ***Principal investigator***
   Funding Entity: ***Federación Española de Enfermedades Raras (FEDER)***
   Period: ***January 2021 – June 2023***
   Funded amount (€): ***25.000***
   Project ID: ***AI-2021-039***
   Title: ***"Study of the functional connectivity of GABAergic Neurons in a mouse model of Dravet Syndrome" ("Estudio de la conectividad funcional de las Neuronas GABAérgicas en un modelo de ratón de Síndrome de Dravet"***)
   Complementary info: *GABAergic and neural hub connectivity in the DRAVET syndrome, revealed by calcium imaging and optogenetics in-vitro and in-vivo*

7. Role: ***Host Principal Investigator***

Funding Entity: ***Post-doctoral fellowship "Ayudas Juan De La Cierva-Formacíon", Spanish Ministry of Science and Innovation (MICINN)***
Period: ***June 2020 – May 2022***
Funded amount (€): ***50.000***
Project ID: ***ID FJC2018-035496-I***
Title: ***"in-vivo imaging of neuronal circuitry activity and glial reactivity in epilepsy model"***
Complementary info: *postdoctoral fellowship granted to the Dr. Soraya Martin Suarez for a project to be carried on in the group of Dr. P. Bonifazi*

8. *Role*: ***Principal Investigator for Biocruces***
Funding Entity: ***Spanish Innovation Network ("redes de investigacion"), Spanish Ministry of Science and Innovation (MICINN)***
Period: ***September 2019 – August 2021***
Funded amount (€): ***20.000***
Project ID: ***RED2018-102491-T***
Title: ***"Therapeutic applications of systems neuroscience in diseases of the central nervous system" ("Aplicaciones terapeuticas de la neurociencia de sistemas en enfermedades del sistema nervioso central")***
Complementary info: *acronym "Clysine", network coordinated by Dr. E. G. Rodriguez de Velasco (Universidad Autonoma de Barcelona, Spain).*

9. *Role*: ***Principal Investigator for Biocruces***
Funding Entity: ***Spanish Ministry of Science and Innovation (MICINN; RETOS y Excellencia)***
Period: ***February 2016 – January 2020***
Funded amount (€): ***100.000***
Project ID: ***SAF2015-69484-R***
Title: ***"multi-scale epileptic networks"***
Complementary info: *longitudinal study with tractography and resting-state functional MRI from epileptic patients implanted with intra-cranial electrodes for epileptic surgery*

10. *Role*: ***Principal Investigator for Biocruces***
Funding Entity: ***Basque Health Department***
Period: ***May 2016 – January 2019***
Funded amount (€): ***58.500***
Project ID: ***COL/BCB/2016111096***
Title: ***"New combined profile of cognitive, lipidomics, inflammation and neuroimaging data to optimize the use of biomarkers for the early diagnosis of Alzheimer's disease" ("Nuevo perfil combinado de datos cognitivos, lipidómica, inflamación y neuroimagen para la optimización del uso de biomarcadores para el diagnóstico temprano de la enfermedad de Alzheimer")***
Complementary info: *responsible of data analysis of brain network connectivity in a project coordinated by Dr. Pablo Martinez-Lage Alvarez (CITA Alzheimer, San Sebastian, Spain).*

11. *Role*: ***External Collaborator***
Funding Entity: ***France's Agence Nationale de la Recherche***
Period: ***October 2014 – September 2017***

*Funded amount (€): **880.602,95***
*Project ID: **ANR-14-CE13-0021-01***
*Title: **"GABA developmental sequence in autism"***
Complementary info: responsible of data analysis of neuronal networks recordings (calcium imaging) in a project directed by Prof. Y. Ben-Ari (Principal Investigator and Funder of Neurochlore, Marseille, France).

12. *Role: **Principal Investigator for Tel Aviv University***
*Funding Entity: **European Commission, FP7 - FET Young Explorers***
*Period: **February 2012 – May 2015***
*Funded amount (€): **997.107***
*Project ID: **ICT-FET FP7/2007-2013, grant agreement n. 284772 BRAIN BOW***
*Title: **"Linking biological and artificial neuronal assemblies to restore lost brain functions: towards the design of innovative bi-directional neuroprostheses"***
Complementary info: Consortium composed by: Dr. Michela Chiappalone (IIT, Genova, Italy, coordinator), Prof. Timothee Levi (CNRS, University of Bordeaux, France), Dr. Paolo Massobrio (University of Genova, Italy) and Dr. Paolo Bonifazi (tel Aviv University, Israel). Assigned budget to TAU: 248.400 €. Role for characterization of structure and dynamics of patterned neuronal circuitries using calcium imaging, multi-electrode recordings, single neuron optogenetics and immunochemistry.

13. *Role: **Principal Investigator***
*Funding Entity: **European Commission, FP7 - Marie Curie Actions***
*Period: **March 2008 – February 2010***
*Funded amount (€): **162.509***
*Project ID: **PEOPLE-2007-2-1.IEF - Marie Curie Action: "Intra-European Fellowships for Career Development", grant agreement n. 219611 "circuit-hubs"***
*Title: **Functional connectivity of developing hippocampal networks: characterization of "circuit-hubs"***
Complementary info: beneficiary of the fellowship; characterization of dynamics and connectivity of developing hippocampal circuits using calcium imaging and complex networks analysis. Hosting Institutes: UNIVERSITE DE LA MEDITERRANEE D'AIX-MARSEILLE II - INMED, INSERM U901, Marseille, France. Supervisor: Dr. Rosa Cossart, INMED, INSERM U901, Marseille, France.

PATENT

1. Rafael Rodriguez-Puertas; Jonatan Martinez-Gardeazabal; Marta Moreno-Rodriguez; Paolo Bonifazi. P27352US00. ALGORITHM FOR THE SPATIAL LOCALIZATION OF CELL LIPOTYPES. United States of America. 03/02/2025. UNIVERSIDAD DEL PAÍS VASCO / EUSKAL HERRIKO UNIBERTSITATEA; ADMINISTRACIÓN GENERAL DE LA COMUNIDAD AUTÓNOMA DE EUSKADI.
2. Pub. No.: WO/2004/051560; International Application No.: PCT/IT2003/000317; Publication Date: 17.06.2004; International Filing Date: 23.05.2003; *"Method and device for image processing and learning with neuronal cultures"*. S.I.S.S.A. Scuola Internazionale Superiore di Studi Avanzati; Maria Elisabetta Ruaro, **Paolo Bonifazi** and Vincent Torre

BOOKS CHAPTERS

1. ***Paolo Bonifazi*** *and Paolo Massobrio*. "In vitro neuronal networks: from culturing methods to neuro-technological applications." *Chapter in the Springer volume: "In vitro neuronal networks: from culturing methods to neuro-technological applications" edited by Michela Chiappalone, Valentina Pasquale and Monica Frega; Springer International Publishing; ISBN 978-3-030-11135-9; 10.1007/978-3-030-11135-9*

2. *Luccioli S., Ben-Jacob E., Barzilai A.,* ***Bonifazi P.****, and Torcini A.*, "Functional Cliques in Developmentally Correlated Neural Networks". *Chapter in the Springer volume: "Nonlinear Dynamics in Computational Neuroscience: from Physics and Biology to ICT" of the series POLITO Lecture Notes (Springer) edited by F. Corinto and Torcini, doi: 10.1007/978-3-319-71048-8_5*

3. *P. Massobrio, V. Pasquale, M. Garofalo,* ***P. Bonifazi,*** *M. Chiappalone, S. Martinoia* "Dinamica e connettività funzionale in reti corticali in-vitro". Book: *Neuroinformatica, vol. 30, Patron editore (Bologna), 2011.*

CONFERENCES, WORKSHOPS and SCHOOLS

Speaker in conferences and workshops

1. ***Paolo Bonifazi.*** Linking hubness, embryonic neurogenesis, transcriptomics and diseases in human brain networks" ***Invited speaker.*** *Basque ASTROTECH Computational Neuroscience Meeting, June 4--6, 2024 Basque Center for Applied Mathematics (BCAM) Bilbao, The Basque Country, Spain.*

2. ***Paolo Bonifazi.*** Redes neuronales y circuitos epilépticos***. Invited Speaker****. IV Congreso de Investigación en Síndrome de Dravet y Epilepsias Raras (Madrid, 23-24 mayo 2024).*

3. ***Bonifazi P.*** "Linking hubness, embryonic neurogenesis, transcriptomics and diseases in human brain networks" ***Invited speaker.*** *"Complex networks: from socio-economic systems to biology and the brain" (July 3rd - July 9th, 2023), in Lipari Island, Italy*

4. ***Bonifazi P.*** "Linking hubs, embryonic neurogenesis, transcriptomics and diseases in human brain networks" ***Invited speaker.*** *"SM&FT 2022 - The XIX Workshop on Statistical Mechanics and nonpertubative Field Theory" Bari (Italy), December 19-21, 2022*

5. ***Bonifazi P.*** "Linking hubs, embryonic neurogenesis, transcriptomics and diseases in human brain networks" ***Invited speaker.*** *BIOPHYS 2022, organized by INFN (Italian Institute of Nuclear Physics). 14th – 16th September 2022, Palazzo Strozzi, Florence (Italy)*

6. ***Bonifazi P***. "Bridging the gap between structural and (dys)functional connectivity: a multi-scale approach¨. ***Invited Speaker***. *The interplay of complex and coherent dynamics in brain function 18-20 May 2022 Maison Internationale de la Recherche, Neuville-sur-Oise*

7. ***Paolo Bonifazi.*** "Human epileptogenic brain nodes share common divergent features: evidences from intra-cranial resting-state recordings". ***Invited Speaker***. *International congress on dravet syndrome and refractory epilepsy, 18-20 June 2021, Bilbao.*

8. ***Paolo Bonifazi.*** Patho-topologies in neuronal microcircuits: astrocytes impact and restore connectivity, a proof of principle from Ataxia-Telangiectasia. ***Invited Speaker***. *International congress on dravet syndrome and refractory epilepsy, 3-4 October 2019, Bilbao.*

9. ***Paolo Bonifazi.*** "Topological properties of neuronal circuits emerging from spontaneous dynamics: from hub neurons to cerebellar networks failures". ***Speaker*** *at the 18th Meeting of the Spanish Society of Neuroscience, Santiago de Compostela, 4-6th September 2019*

10. ***Bonifazi P***. "The brain is always active: what spontaneous activity can tell us about the structure and (dys)function of brain circuitries". ***Invited speaker***. *QBio 2019, QUANTITATIVE BIOMEDICINE FOR HEALTH AND DISEASE. BCAM-Basque Center for Applied Mathematics, February 13 - 14, 2019 - Bilbao, Spain.*

11. ***Paolo Bonifazi.*** Redes cerebrales estructurales y funcionales: redes multi-escala y complejas. ***Invited Speaker***. *V Congreso de la Sociedad Española de Epilepsia, Málaga - 25, 26 y 27 de Octubre de 2018.*

12. ***Paolo Bonifazi.*** Approaching epilepsy from the complex networks' framework: searching for critical nodes and links impacting seizures. ***Invited Speaker***. *International congress on dravet syndrome and refractory epilepsy, 4-5 October 2018, Bilbao.*

13. ***Paolo Bonifazi.*** Sparse synchronizations and neuronal network failures: astrocytes replacement recovers global synchronizations in Atm-deficient cerebellar circuits in-vitro. ***Invited speaker***. *Workshop on recent methods and analyses for neuronal population recordings, 26th Annual Computational Neuroscience Meeting (CNS), Antwerp, Belgium. July 15-20, 2017*

14. ***Paolo Bonifazi.*** Astrocytes Replacement Recovers Neuronal Synchronizations in ATM-Deficient Cerebellar Circuits in-Vitro. ***Invited Speaker***. *2nd International Symposium on Neuromorphic, non-linear, Neurofluidic Engineering. Laboratoire IMS, University of Bordeaux, Bordeaux, France. 2nd and 3rd, March, 2017.*

15. ***Bonifazi P****, Diez I, Escudero I, Mateos B, Muñoz MA, Stramaglia S and Cortes JM.* "Complex networks reveal structural-functional brain resting-state subnetworks: identification, description and application as biomarkers" ***Invited speaker***. *Neurogune, third Basque Neuroscience Meeting. Bilbao, June 27th 2016*

16. ***Bonifazi P**, Diez I, Escudero I, Mateos B, Muñoz MA, Stramaglia S and Cortes JM.* "Structural-functional brain resting-state subnetworks: identification, description and application as biomarkers". ***Invited speaker**. Italy-Israel conference on complex systems (in memory of Prof. Eshel Ben-Jacob). Simplifying Complex Biological Systems, Tel-Aviv University, May 31-June 1, 2016*

17. ***Bonifazi P**, Diez I, Escudero I, Mateos B, Muñoz MA, Stramaglia S and Cortes JM.* "Structural-functional brain resting-state subnetworks: identification, description and application as biomarkers". ***Invited speaker**. QBio 2016, QUANTITATIVE BIOMEDICINE FOR HEALTH AND DISEASE. BCAM-Basque Center for Applied Mathematics, February 24 - 25, 2016 - Bilbao, Spain.*

18. ***P. Bonifazi** "Breaking the complexity of brain circuits: Hub cells and chimera networks". **Invited speaker**. "Let the complex be simple: Theory and applications of natural and man-made complex systems" (Tel Aviv, 1-2 December 2014)*

19. ***P. Bonifazi,*** "Are hub neurons an innate functional feature of cortical circuits? Experimental evidences from cultured finite size circuits", ***invited speaker** at CNS 2013 workshop on "Network neuroscience structure and dynamics workshop", Paris 17-18 July 2013.*

20. ***P. Bonifazi**, M. E. Ruaro, and V. Torre.* ***Oral presentation***: "Rate and temporal coding in neuronal cultures from hippocampal rat neurons". *2nd European School on Neuroengineering "Massimo Grattarola", Genova 9-12 June 2004.*

21. ***P. Bonifazi**, M. E. Ruaro, and V. Torre.* ***Oral presentation***: "Parallel processing in natural neuronal networks: technological issues and neurobiological questions". *Young Neuroscientist Meeting, 24th may 2004, Trieste.*

22. ***P. Bonifazi**, M. E. Ruaro, and V. Torre.* ***Oral presentation***: "Towards the neurocomputer: Image processing and learning with neuronal cultures". *Workshop on Nonlinear Signal and Image Processing, June 8-11, 2003 GRADO – Italy.*

Posters

23. ***Bonifazi P,** Kanner S, Goldin M, Galron R, Hanein Y, Ben Jacob E, Barzilai A and De Pittá M.* Astrocytes restore connectivity and synchronization in dysfunctional cerebellar networks. *28th Annual Computational Neuroscience Meeting, CNS 2019, 13-17th July 2019, Barcelona, Spain*

24. ***Bonifazi P**, Erramuzpe A, Diez I, Gabilondo I, Boisgontier M, Pauwels L, Stramaglia S, Swinnen S, Camino-Pontes B, Jimenez-Marin A, Cortes J.* Structure-function multi-scale connectomics is an accurate predictor of brain aging. *28th Annual Computational Neuroscience Meeting, CNS 2019, 13-17th July 2019, Barcelona, Spain*

25. *Camino-Pontes B, Diez I, Jimenez-Marin A, Rasero J, Erramuzpe A,* ***Bonifazi P**, Stramaglia S, Swinnen S and Cortes JM.* Interaction Information Along Lifespan of the Resting Brain Dynamics Reveals a Major Redundant Role of the Default Mode

Network. *2019 Organization for Human Brain Mapping (OHBM) Annual Meeting; Rome, 9-13 June 2019.*

26. ***Bonifazi P**, Erramuzpe A, Diez I, Gabilondo I, Boisgontier M, Pauwels L, Stramaglia S, Swinnen S, Camino-Pontes B, Jimenez-Marin A, Cortes J.* Structure-function multi-scale connectomics is an accurate predictor of brain aging. *2019 Organization for Human Brain Mapping (OHBM) Annual Meeting; Rome, 9-13 June 2019.*

27. *Cortes JM, **Bonifazi P**, Escudero I, Mateos B, Muñoz MA, Stramaglia S, Camino-Pontes B, Jimenez-Marin A, Rasero J, Erramuzpe A, Swinnen S, Gabilondo I, Boisgontier MP, Pauwels L, Olabarrieta-Landa L, Fernandez Martinez M, Arango Lasprilla JC, Drijkoningen D, Marinazzo D, Gooijers J, Diez I.* Brain Hierarchical Atlas: Multi-Scale versus Optimal Strategies in the Pathological Brain. *2019 Organization for Human Brain Mapping (OHBM) Annual Meeting; Rome, 9-13 June 2019.*

28. *Fernandez A, Dumon C, Guimond D, Tyzio R, **Bonifazi P**, Lozovaya N, Burnashev N, Ferrari DC, Ben-Ari Y.* The GABA Developmental Shift Is Abolished by Maternal Immune Activation Already at Birth. *Neuroscience 2018, the Society for Neuroscience 48th Annual Meeting. San Diego (CA, USA), November 3-7, 2018.*

29. ***Paolo Bonifazi**, Asier Erramuzpe Aliaga, Ibai Diez, Iñaki Escudero, Beatriz Mateos, Miguel A. Muñoz, Sebastiano Stramaglia, Stephan Swinnen and Jesus M Cortes.* Complex networks analysis reveals structural-functional brain resting-state subnetworks: application as multi-variate biomarker for healthy aging. *Abstract and Poster, The 5th International Workshop on Complex Networks and their Applications, November 30 - December 02 2016, Milan, Italy*

30. *Bisio M, Piasetzky Y, Olivemboim M, Kanner S, Chiappalone M and **Bonifazi P.*** **"**Analysis of motifs' spontaneous and evoked dynamics in patterned cortical neuronal networks". *Neuroscience 2015, the Society for Neuroscience 45th Annual Meeting. Chicago (IL, USA), October 17-21, 2015.*

31. ***P. Bonifazi**, P. Massobrio, T. Levi, F. Difato, G. L. Breschi, V. Pasquale, M. Goldin, M. Ambroise, Y. Bornat, M. Tedesco, M. Bisio, M. Frega, J. Tessadori, P. Nowak, F. Grassia, S. Kanner, G. Ronit, S. Renaud, S. Martinoia, S. Taverna, M. Chiappalone. "*In vitro experimental and theoretical studies to restore lost neuronal functions: the Brain Bow experimental framework", *paper accepted at the 6th International Conference: IEEE EMBS Conference on Neural Engineering, 6-8 November 2013, San Diego, USA.*

32. *M Chiappalone, **P Bonifazi**, M Bisio, P Massobrio, F Difato, GL Breschi, V Pasquale, P Nowak, M Goldin, M Tedesco, F Grillo, S Taverna.* "In vitro and in silico interconnected neuronal assemblies: A multidisciplinary framework for the development of a novel bi-directional brain-prosthesis" *Neuroscience 2013, the Society for Neuroscience 43nd Annual Meeting. San Diego (CA, USA), November 9-13, 2013.*

33. *M Chiappalone, F Difato, GL Breschi, V Pasquale, M Bisio, Y Bornat, P Massobrio, T Levi, S Taverna and* ***P Bonifazi.*** "Linking biological and artificial neuronal assemblies to restore lost brain functions." *Neuroscience 2012, the Society for Neuroscience 42nd Annual Meeting. New Orleans (LO, USA), October 13-17, 2012.*

34. ***P Bonifazi,*** *M Goldin, N Herzog, R Galron, S Kanner, A Barzilai, Y Hanein and E Ben-Jacob.* "Functional connectivity and mechanisms of synchronization in finite-size neuronal networks". *Poster presented at the Israel Society for Neuroscience (ISFN), Eilat (Israel), December 15-18, 2012.*

35. *S Kanner,* ***P Bonifazi,*** *M Goldin, G Sekler, R Galron, E Ben-Jacob, and A Barzilai.* "The effect of malfunctioning DNA damage response on neuronal-glial circuits: altered neuronal synchronizations and atrophied astrocytic morphologies in cerebellar cultures from Atm-deficient mice". *Israel Society for Neuroscience (ISFN), Eilat (Israel), December 15-18, 2012.*

36. *M. Picardo,* ***P. Bonifazi****, R. Batista-Brito, P. Guigue, C. Allene, A. Ribas, A. Baude, G. Fishell, R. Cossart.* Fate mapping of GABAergic "hub cells" in the developing hippocampus. *Program No. 645.18/G12. San Diego, CA: Society for Neuroscience, 2010.*

37. *T. Marissal,* ***P. Bonifazi****, I. Jorquera, G. J. Fishell, R. Cossart, Y. Ben-Ari.* Functional organization of the developing hippocampus in the absence of GABAergic transmission. *Program No. 150.12/I25. San Diego, CA: Society for Neuroscience, 2010.*

38. *H.P.C. Robinson,* ***P. Bonifazi****, C. Carmeli, and M. Small*. Synchronisation during electrically-stimulated gamma oscillation bursts in mouse somatosensory cortex in vitro. *Neuroscience meeting (Japan, 2010).*

39. *M. Small, C. Carmeli,* ***P. Bonifazi*** *and H.P.C. Robinson.* Spatial organisation and synchronisation patterns during gamma oscillation in the rat cortex. *World Congress on Bioengineering 2009 (Hong Kong, 26-29 July 2009).*

40. ***Bonifazi P.****, Goldin M., Picardo M., Jorquera I., Bianconi G., Represa A., Ben-Ari Y. and Cossart R.* Identification of cellular network hubs driving oscillations in the developing hippocampus. *Program No. 42.8/P3. Washington, DC: Society for Neuroscience, 2008.* (The work was selected for press release)

41. *C. Allene, J. B. Ackman,* ***P. Bonifazi****, A. Cattani, L. Aniksztejn, Y. Ben-Ari, R. A. Cossart.* Sequential generation of two distinct synapse-driven network patterns in developing neocortex. *Program No. 42.10/P5. Washington, DC: Society for Neuroscience, 2008.*

42. ***Bonifazi P.****-, Goldin M., Picardo M., Jorquera I., Bianconi G., Represa A., Ben-Ari Y. and Cossart R.* Identification of cellular network hubs driving oscillations in the developing hippocampus. *Workshop on Network Synchronization: from dynamical systems to neuroscience. Lorentz Center, Leiden, 19-30 May 2008.*

43. *C. Carmeli, **P. Bonifazi**, M. Small and H. Robinson*. Synchronization patterns in somatosensory cortex of rats in vitro during gamma oscillations. *6th Forum on European Neuroscience (FENS) (Geneva, Switzerland, 12-16 July 2008).*

44. ***P. Bonifazi**, M. E. Ruaro, and V. Torre.* "Towards the neurocomputer: Image processing and learning with neuronal cultures". *1st European School on Neuroengineering "Massimo Grattarola", Venice 16-20 June 2003.*

Invited speaker for seminars in universities and research institutions

45. ***Bonifazi P.*** "A multi-scale link between the structure and function of brain circuitries: from neuronal hubs to transcriptomics and diseases in brain networks". *University of Haifa (Israel), dept. of Neurobiology. Invited by prof. Shlomo Wagner and Amit Zeisel. 2nd August 2023*

46. ***Bonifazi P.*** "A multi-scale link between the structure and function of brain circuitries: from neuronal hubs to transcriptomics and diseases in brain networks". *University of Tel Aviv (Israel), school of Medicine. Invited by prof. Arseny Finkelstein. 26th July 2023*

47. ***Bonifazi P.*** "From structural-(dys)functional connectomics to clinical science: linking hubs, transcriptomics and diseases (epilepsy) in human brain networks". *Lectio Magistralis, 18th October, Bellaria Hospita, Bologna, Italy. Invited br Dr. R Lodi (scientific director of Neurological Science Institute)*

48. ***Bonifazi P***. "Linking hubs, embryonic neurogenesis, transcriptomics and diseases in human brain networks¨. *European Laboratory for Non-Linear Spectroscopy, Florence (Italy). Invited by prof. FS Pavone. 12th July 2022*

49. ***Bonifazi P***. ***PISA*** "Bridging the gap between structural and (dys)functional connectivity: a multi-scale approach¨. *The Biorobotics Institute Sant'Anna School of Advanced Studies; Invited seminar within the Cycles of talk on "Bioelectronics and Neuroengineering", 6th July 2022*

50. ***Bonifazi P***. "Bridging the gap between structural and (dys)functional connectivity: a multi-scale approach¨. *Krembil Research Institute (Toronto, Canada), KCN hub Seminar Series. Invited seminar from Dr. M. De Pitta'. 22th March 2022*

51. ***Bonifazi P***. "Bridging the gap between structural and (dys)functional connectivity: a multi-scale approach¨. *University of Ferrara (Italy), Italian Institute of Technology; Invited seminar by prof. Luciano Fadiga. 25th May 2022*

52. ***Bonifazi P***. "Bridging the gap between structural and (dys)functional connectivity: a multi-scale approach¨. *University of Padova (Italy), Dept. Of Biomedical Science & Padova Neuroscience Center, Invited seminar, 15th November 2021*

53. ***Bonifazi P***. "Browsing the brain multi-scale networks: from structural to functional connectivity¨. *University of Camerino (Italy), Invited Inter-Disciplinary seminar, 13th October 2021*

54. ***Bonifazi P***. "Bridging the gap between structural and (dys)functional connectivity¨. *SISSA/ISAS, Invited Neuroscience seminar, 30th September 2021*

55. ***Bonifazi P***. "the brain is always active: what spontaneous activity can tell us about the structure and (dys)function of brain circuitries¨. *Invited by Dr. Montserrat Arrasate for a seminar at "Centro de Investigación Médica Aplicada" (CIMA), 26th April 2019, Pamplona.*

56. ***Bonifazi P***. "the brain is always active: what spontaneous activity can tell us about the structure and (dys)function of brain circuitries¨. *Invited by Dr. Liset Menendez de La Prida for a seminar at "Instituto Cajal" (CSIS), 14th December 2018, Madrid*

57. ***Paolo Bonifazi.*** Astrocytes replacement recovers global neuronal synchronizations in Atm-deficient cerebellar circuits in-vitro. *Invited Speaker at the Achucarro Institute (Bilbao), 4th April 2017.*

58. ***Paolo Bonifazi.*** *Bridging the gap between structural and functional connectivity in neuronal microcircuits experimental and theoretical insights. Invited Speaker at the Biocruces Bizkaia, 17th November 2016*

59. ***Paolo Bonifazi.*** *Bridging the gap between structural and functional connectivity in neuronal microcircuits experimental and theoretical insights. Invited Speaker at the "Berripill" plenary sessions for innovation for medical doctors. Biocruces Bizkaia, 6th May 2015*

60. ***Paolo Bonifazi.*** *Bridging the gap between structural and functional connectivity in neuronal microcircuits: experimental and theoretical insights. Invited Speaker at the Basque Center for Applied Mathematics (BCAM), 30th May 2014*

Others (workshop participation/organization)

61. **Paolo Bonifazi organized the symposium** "NEW HORIZONS ON BRAIN DISORDERS: FROM CLINICAL DIAGNOSIS TO CELL THERAPY AND THE IMPACT ON NEURO-GLIAL CIRCUITS STRUCTURE AND DYNAMICS" *at the 18th Meeting of the Spanish Society of Neuroscience, Santiago de Compostela, 4-6th September 2019*

62. 15th Brain Connectivity Workshop, Marseille 2016, June 22th-24th

63. **P. Bonifazi organized the Italy-Israel conference on complex systems***"Let the complex be simple: Theory and applications of natural and man-made complex systems" (Tel Aviv, 1-2 December 2014)*

64. *School and Workshop on Structure and Function of Complex Networks.* ICTP 16th – 28th May 2005, Trieste.

MEMBERSHIP IN PROFESSIONAL/SCIENTIFIC SOCIETIES

Member of the Spanish Neuroscience Society (2018-2019)

STUDENTS' SUPERVISION AND TUTORING

Postdoctoral fellows

PostDoctoral fellow: Dr. Mayya Sundukova
Funding: Carlos III health research insitute
Institution: Biocrues Bizkaia (Bilbao, Spain)
Starting-ending year: 2023-2025

PostDoctoral fellow: Dr. Soraya Martin Suarez
Funding: AYUDAS JUAN DE LA CIERVA-FORMACIÓN 2018
Institution: Biocrues Bizkaia (Bilbao, Spain)
Starting-ending year: 2020-2022

PostDoctoral fellow: Dr. Miri Goldin
Funding: FET-OPEN EU-FP7
Institution: Tel Aviv University
Department: Physics
Starting-ending year: 2014-2015

PhD students

PhD student: Lucia Prado Pérez;
Title: Dissection of the functional connectivity of GABAergic neurons and hubs in healthy and epileptic conditions
Institution: University of the Basque Country (UPV), Bilbao
Department: Biomedicine
Qualification: supervisor
PhD starting Year: 2023 (pre-admitted in July)

PhD student: Juan Sustacha;
Title: multi-modal study of human epileptic brain networks
Institution: University of the Basque Country (UPV), Bilbao
Department: Biomedicine
Qualification: supervisor
PhD starting Year: 2019 (suspended in September 2021 for paternity leave, and restarting in September 2023)

PhD student: Sivan Kanner;
Title: Analysis of neuronal glial - circuits
Institution: Tel Aviv University
Department: Neurobiology
Qualification: co-supervisor
PhD Defense Year: 2018

PhD student: Marta Bisio

Title: Network dynamics of modular neuronal assemblies: a novel perspective for neurorobotics and neuroprosthetics
Institution: Istituto Italiano di Tecnologia, Genova, Italy
Department: Doctoral School in Life and Humanoid Technologies Course in "Neuroscience and Brain Technologies"
Qualification: co-supervisor
PhD Defense Year: 2016

Master students

Master student: Borja Camino Pontes
Title: Multi-modal machine learning classification of epileptogenic brain circuits
Institution: University of the Basque Country, Spain
Department: Department of Computer Science and Artificial Intelligence
Qualification: supervisor
Master Defense Year: 2020

Master student: Moises Martin Silva Choque
Title: Studying the real-time communication from an artificial neuronal network to a biological neuronal network
Institution: University of the Basque Country, Spain
Department: Department of Computer Science and Artificial Intelligence
Qualification: supervisor
Master Defense Year: 2017

1st Degree students

Undergraduate student: Carlota García Fernández
Title: Reconocimiento de patrones en datos de epilepsia
Institution: University of Cantabria, Santander, Spain
Department: Mathematics department
Qualification: co-supervisor
Thesis Defense Year: September 2023 – forecast end February 2025

Undergraduate student: Fernando Frias Garcia-Lago
Title: multi-variate analysis of structural-functional brain networks
Institution: University of Cantabria, Santander, Spain
Department: Mathematics department
Qualification: co-supervisor
Thesis Defense Year: February 2021 – forecast end February 2022

Undergraduate student: Sergio Bolivar Gomez
Title: multi-modal study of human epileptic networks biomarkers
Institution: University of Cantabria, Santander, Spain
Department: Mathematics department
Qualification: supervisor
Training: July 2021 - August 2021

Undergraduate student: Nayara Carral Sainz

Title: "The older gets richer": structural brain networks hubs revealed by neurogenesis and complex networks
Institution: University of Cantabria, Santander, Spain
Department: Mathematics department
Qualification: co-supervisor
Thesis Defense Year: 2021

Undergraduate ERASMUS student: Thomas Faure
Title: Analysis of in-vivo neuronal circuits' dynamics using calcium imaging
Institution: University of Bordeaux, France
Department: Electrical Engineering and Industrial Computing
Qualification: supervisor
Thesis Defense Year: 2019

Undergraduate ERASMUS student: Giannoula Potsi
Title: Multi-modal study of human epileptic networks
Institution: University of Crete, Greece
Department: School of Medicine
Qualification: supervisor
Thesis Defense Year: 2019

Undergraduate ERASMUS student: Antoine Lestang
Title: Optical stimulation and recording of in-vivo neuronal circuits
Institution: University of Bordeaux, France
Department: Electrical Engineering and Industrial Computing
Qualification: supervisor
Thesis Defense Year: 2018

Undergraduate ERASMUS student: Yenehaetra Malakai
Title: Extraction of bio-hybrid experimental data
Institution: University of Bordeaux, France
Department: Electrical Engineering and Industrial Computing
Qualification: supervisor
Thesis Defense Year: 2017

Undergraduate student: Unai Aguilera Lopez
Title: brain connectivity analysis of epileptic human patients
Institution: University Carlos III, Madrid, Spain
Department: Bioengineering and Aerospace engineering department
Qualification: supervisor
Thesis Defense Year: 2018

Undergraduate student: Yonatan Piasetzky
Title: Electrical characterization of patterned neuronal networks: spontaneous and electrically evoked dynamics
Institution: Tel Aviv University, Israel
Department: Physics
Qualification: supervisor
Thesis Defense Year: 2016

Undergraduate student: Joe Mosbacher
Title: DMD based illumination system for optogenetics
Institution: Tel Aviv University, Israel
Department: Physics
Qualification: supervisor
Thesis Defense Year: 2015

Undergraduate student: Robi Birenboim
Title: From Biology to simulations: study of complex neural networks dynamics
Institution: Tel Aviv University, Israel
Department: Physics
Qualification: supervisor
Thesis Defense Year: 2014

Undergraduate student: Gal Selke
Title: Burst Propagation Analysis
Institution: Tel Aviv University, Israel
Department: Physics
Qualification: supervisor
Thesis Defense Year: 2014

PhD THESIS COMMITTEE

PhD student: Vito Paolo Pastore;
Title: Development of statistical and computational methods to estimate functional connectivity and topology in large-scale neuronal assemblies
Supervisors: Prof. Sergio Martinoia and Prof. Paolo Massobrio
Institution: University of Genova,
Department: Dept. Of Informatics, Bioengineering, robotics and System Engineering
Qualification: external examiner
PhD Defense Year: 2018

PhD student: Diletta Pozzi;
Title: The spontaneous activity of organotypic and dissociated neuronal networks
Supervisors: Prof. Vincent Torre
Institution: SISSA/ISAS, Trieste, Italy
Department: Neurobiology
Qualification: external examiner
PhD Defense Year: 2018

LANGUAGE SKILLS

Italian: – *native language*
English: written & oral – *very good*
Spanish: oral, *very good*; written, *good*;
French: oral, *good*; written, *basic*;

Hebrew: oral, *basic*; reading, *basic*;

SELECTED RECENT PRESS COVERAGE

PRESS COVERAGE of the BRAIN paper on impact of STAT3 on epilepsy (2023)
Spain and Basque country

- https://www.euskadi.eus/gobierno-vasco/-/noticia/2023/un-estudio-epilepsia-biocruces-bizkaia-abre-nuevas-posibilidades-tratamiento-prevencion-esta-enfermedad-neurologica/
- https://www.elcorreo.com/sociedad/salud/cientificos-biocruces-descubren-rutas-utiliza-epilepsia-danar-cerebro-20230717193152-nt.html
- https://www.europapress.es/euskadi/noticia-estudio-epilepsia-biocruces-bizkaia-abre-nuevas-posibilidades-tratamiento-prevenir-enfermedad-20230717104337.html
- https://www.kaixo.com/noticias/un-estudio-sobre-epilepsia-de-biocruces-bizkaia-abre-nuevas-posibilidades-de-tratamiento-para-prevenir-la-enfermedad
- https://fuentesinformadas.com/biocruces-bizkaia-abre-nuevas-vias-de-tratamiento-la-epilepsia
- https://diarioenfermero.es/tag/biocruces/
- https://neurologia.com/noticia/9232/nuevas-posibilidades-de-tratamiento-en-la-prevencion-de-la-epilepsia
- https://www.lavanguardia.com/local/paisvasco/20230717/9114361/estudio-sobre-epilepsia-biocruces-bizkaia-abre-nuevas-posibilidades-tratamiento-prevenir-enfermedad.html
- https://bizkaiairratia.eus/2023/07/biocrucesek-epilepsia-prebenitzeko-tratamendu-barriak-sortu-dauz/ (RADIO broadcast)
- https://twitter.com/i/status/1686052018031411204 (TV broadcast)

PRESS COVERAGE of the Scientific Report paper on opto-neuro-prosthesis (2020)
Spain

- https://www.efe.com/efe/espana/efefuturo/disenan-unas-protesis-neuronales-que-reemplazan-partes-del-cerebro-danadas/50000905-4238392
- https://www.lavanguardia.com/vida/20200505/48990463756/disenan-unas-protesis-neuronales-que-reemplazan-partes-del-cerebro-danadas.html?facet=amp
- https://www.elperiodico.com/es/ciencia/20200505/investigadores-disenan-protesis-neuronales-que-reemplazan-partes-del-cerebro-danadas-7951033
- https://www.eldiario.es/tecnologia/Disenan-protesis-neuronales-reemplazan-cerebro_0_1023997810.html

France

- https://www.mlactu.fr/les-neurones-artificiels-utilisent-la-lumiere-pour-communiquer-avec-de-vrais-neurones/

In English Language

- https://eurekalert.org/pub_releases/2020-05/iois-apo051920.php

- https://bioengineeringcommunity.nature.com/badges/356-contributor/posts/advanced-opto-neuro-prosthetics-on-the-cheap-artificial-neurons-communicate-with-biological-neurons-via-trashed-video-projector
- https://www.sciencedaily.com/releases/2020/05/200519101322.htm
- https://www.iis.u-tokyo.ac.jp/en/news/3300/ (Japan)
- https://medicalxpress.com/news/2020-05-artificial-pieces-brain-real-neurons.html

Italy

- https://notiziescientifiche.it/neuroni-artificiali-usano-luce-per-comunicare-con-neuroni-reali/

China

- https://0xzx.com/202005202140643916.html

Vietnam

- https://tuonggo.info/cac-manh-nao-nhan-tao-su-dung-anh-sang-de-giao-tiep-voi-cac-te-bao-than-kinh-thuc-su-scienced-daily/

Israel

- https://www.askwala.com/Info.php?InfoPage=1

Brazil

- https://sciam.uol.com.br/usando-estimulacao-luminosa-pesquisadores-conseguem-estabelecer-comunicacao-entre-chips-e-neuronios/

Slovakia

- https://fontech.startitup.sk/bizsie-k-umelej-mozgovej-hmote-vedci-pomocou-svetla-a-umelych-neuronov-komunikovali-s-biologickymi-neuronmi/
-

Poland

- http://naukawpolsce.pap.pl/aktualnosci/news%2C82323%2Csztuczne-neurony-swiatlem-komunikuja-sie-z-prawdziwymi.html

Turkey

- https://popsci.com.tr/gercek-sinirlerle-isik-kullanarak-konusan-yapay-sinirler/

Netherland

- https://www.bnr.nl/podcast/wetenschap-vandaag/10410993/kunstmatig-brein-gebruikt-licht-om-met-echte-neuronen-te-praten

Korea

- https://www.sciencetimes.co.kr/news/%EB%B9%9B%EC%9C%BC%EB%A1%9C-%EB%87%8C%EC%84%B8%ED%8F%AC-%EC%96%B8%EC%96%B4%EB%A5%BC-%ED%8C%8C%EC%95%85%ED%96%88%EB%8B%A4/

PRESS COVERAGE of the Science Advances paper on autism (2019)

Spain

- https://www.lavanguardia.com/vida/20190123/454277146367/describen-el-mecanismo-que-desencadena-el-autismo-en-el-parto.html

PRESS COVERAGE of the PNAS paper on Ataxia-Telangiectasia (2018)

Spain

- http://agencias.abc.es/agencias/noticia.asp?noticia=2889955
- https://www.deia.eus/2018/08/09/sociedad/euskadi/osakidetza-participa-en-un-estudio-sobre-la-reversion-de-la-degeneracion-neuronal

PRESS COVERAGE of the HBM paper on brain aging (2018)

Italia

- https://www.lastampa.it/2017/09/22/scienza/nasce-il-software-per-scoprire-la-veraet-biologica-del-proprio-cervello-G05I6GV2sIgHYj3JwefwfN/premium.html
- http://bio.uniroma2.it/page/18/

Bilbao, 17/01/2024

Paolo Bonifazi