Curriculum Vitae
DOSSI Elena

Date of birth: 07/03/1984 – Age: 38 – Nationality: Italian – 2 children (2017, 2022)

Neuroglial interactions in Cerebral Physiopathology
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Research interests

- Neuroglial interactions
- Network activity and plasticity in physiology and pathology, synaptic transmission, memory
- Brain disorders

Positions

Since 12/2020 **CR INSERM, Collège de France**, laboratory of N. Rouach (Paris, France)

07/2012-11/2020 **Postdoc**, **Collège de France**, laboratory of N. Rouach (Paris, France)
"Role of neuroglial interaction in physiology and pathology"

03-06/2012 **Postdoc**, **University of Milano-Bicocca**, laboratory of Pr. E. Wanke (Milan, Italy)
"Functional regeneration of the visual system, reconstructed *in vitro* as triple organotypic co-cultures of the rat retina, dorsolateral geniculate nucleus and primary visual cortex"

Education

2009-2011 **PhD in Biology**, University of Milano-Bicocca (Milan, Italy)
Thesis advisored by Pr. E. Wanke
"Functional regeneration of the mesocorticolimbic dopaminergic system as a model to study novel neuroreparative substances"

2006-2008 **Master of Science in Biology**, University of Milano-Bicocca (Milan, Italy)
"Investigation about the effects of amyloid B protein on the electrical activity of mouse cultured cortical networks with multielectrode arrays (MEAs)"

2003-2006 **Bachelor in Biological Sciences**, University of Milano-Bicocca (Milan, Italy)

Track record

- 22 peer-reviewed publications
- 27 abstracts/posters in national and international meetings
- 16 oral presentations in national and international meetings
- 948 citations, H index: 14 (as of 09/01/2023, source Google Scholar)

Technical skills and competences

- Ex vivo electrophysiology (Multi electrode array recordings and patch clamp of neurons and astrocytes)
- EEG recordings
- Imaging (confocal imaging on fixed tissues and two photon imaging on live tissues)
- Immunohistochemistry
- Molecular biology (PCR, genotyping)
- Cellular cultures and slices (primary neuronal cultures, organotypic cultures and co-cultures, acute slices of hippocampus and cortex)
- Mouse colony management
- Programming in Matlab and data analysis of neuronal network activity

Grants

12/2019-11/2020 Postdoc grant from GenSight Biologics "Study of the transfer of mitochondria in mice visual system"

12/2017-12/2019 Postdoc grant from ERC "Wiring synaptic circuits with astroglial connexins: mechanisms, dynamics and impact for critical period plasticity"

08/2016-12/2017 Postdoc grant from "Aviesan"

02-08/2016 Postdoc grant from 'Ligue francaise contre l'epilepsie (LFCE)
'Pannexins: new therapeutic targets against epilepsy?'

01/2014-12/2015 Postdoc grant from 'Programme-Emergence Recherche Medicale et Santé, Ville de Paris'
"Unraveling non conventional role for astroglial connexins in normal and pathological neuronal activity"

07/2012-12/2013 Postdoc grant from "Neuropole de Recherche Francilien" (France)
"Decoding the anti-epileptic effect of the ketogenic diet: a role for astrocytes"

2009-2011 PhD grant

Founding

2023-today ANR JCJC **"**Human astrocytes in the pathogenesis of epilepsy: maestros or accompanist?" (**354 820 €**)

2019-2021 Research grant from GenSight Biologics (**219 371 €**)

2018 Paris-Science-Lettre (PSL) University, Call for project « Prématuration »: "Treatment of epilepsy with probenecid: development of a new therapy (ProbEpi)", **70 000 €** (project initiator).

02-08/2016 Postdoc grant from "Ligue française contre l'épilepsie" (LFCE, **30 000 €**)

12/2012-2013 Postdoc grant from "Neuropole de Recherche Francilien" (France, **76 950 €**)

2009-2011 PhD fellowship from the Italian Ministry of Education (**41 000 €**)

Research experience

Since 12/2020 **Collège de France**, CIRB, CNRS UMR 7241/ INSERM U1050 (Paris, France)
CR INSERM in the laboratory "Neuroglial Interactions in Cerebral Physiopathology" (N. Rouach)

07/2012-11/2020 **Collège de France**, CIRB, CNRS UMR 7241/ INSERM U1050 (Paris, France)
Postdoc Fellow in the laboratory "Neuroglial Interactions in Cerebral Physiopathology" (N. Rouach)

01-06/2012 **University of Milano-Bicocca**, laboratory of Pr. E. Wanke (Milan, Italy)
Postdoc fellow, "Functional regeneration of the visual system, reconstructed *in vitro* as triple organotypic co-cultures of the rat retina, dorsolateral geniculate nucleus and primary visual cortex"

2009-2011 **University of Milano-Bicocca**, laboratory of Pr. E. Wanke (Milan, Italy)
PhD student, "Functional regeneration of the mesocorticolimbic dopaminergic system as a model to study novel neuroreparative substances"

Short visits in international institutes

2009 Rudolf-Boehm Institute for Pharmacology and Toxicology, University of Leipzig, Germany

(4 months) Laboratory of Pr. P.Illes/H. Franke
Learning of organotypic culture technique

Workshops

May 2019 Animal Surgery Formation (Paris, France)

Sept.-Oct. 2018 Animal Experimentation Level I (project creator)
CNRS workshop (Paris, France)

June 2014 ImageJ: introduction to treatment and analysis of images
Inserm workshop (Paris, France)

Dec. 2013 Animal Experimentation Level II
Inserm workshop (Paris, France)

Oct. 2013 Good laboratory practice
Inserm workshop (Paris, France)

March 2013 Microelectrode array workshop 2013: Neuronal applications on microelectrode arrays
Multi Channel Systems (Reutlingen, Germany)

March 2011 International Astrocyte School (Bertinoro, Italy)

Teaching

June 2016 **Collège de France** (Paris, France)
One-day workshop: "MCS Microelectrode array workshop 2016: Neuronal applications on microelectrode arrays", organized and sponsored by Multichannel Systems (Germany)

Nov. 2011 **University of Milano-Bicocca** (Milan, Italy)
20h of laboratory practical during "Experimental Biology Laboratory" course (Physiology section) of BSc in Biological Science

Jan. 2011 **University of Milano-Bicocca** (Milan, Italy)
4h introductory lesson on organotypic cultures and MEA recordings during "Integrated Laboratory" course (Physiology section) of BSc in Biological Science

Patents

July 2017 **Application n°/Patent n°: 17305934.6-1466**
"Probenecid for use in treating epileptic diseases, disorders or conditions"
Designation as inventor

Publications

1) Vasile F*, **Dossi E***, Moulard J, Ezan P, Lecoin L, Cohen-Salmon M, Mailly P, Le Bert M, Couillin I, Bemelmans A, Rouach N (**2022**) Astroglial pannexin 1 sets hippocampal neuronal network patterns, **Plos Biology**, 20(12):e3001891. ***Equal contribution**.

2) Gataullina S, Galvani G, Touchet S, Nous C, Lemaire E, Laschet J, Chiron C, Dulac O, **Dossi E**, Brion JD, Messaoudi S, Alami M, Huberfeld G (**2022**) GluN2C selective inhibition is a target to develop new antiepileptic compounds, **Epilepsia**, 00:1-14.

3) **Dossi E**, Rouach N (**2021**) Pannexin 1 channels and ATP release in epilepsy: two sides of the same coin, **Purinergic Signal**, 17(4):533-548.

4) Castellanos IM, **Dossi E**, Vion-Bailly J, Salette L, Chapelon JY, Carpentier A, Huberfeld G, N'Djin WA (**2021**) Spatio-temporal characterization of casual electrophysiological activity stimulated by single pulse Focused Ultrasound: an ex vivo study on hippocampal brain slices, **J Neural Eng**, 18(2), 026022.

5) Castellanos IM, Apoutou N, Vion-Bailly J, **Dossi E**, Carpentier A, Huberfeld G, Chapelon JY (**2019**) Microelectrode arraus (MEA) for measuring spatio-temporal neural activity generated by low-energy focused ultrasound (LEFUS) in ex vivo brain slices, **J Acoust Soc Am**, 146, 3030.

6) Blauwblomme T, **Dossi E**, Pellegrino C, Goubert E, Gal Iglesias B, Sainte-Rose C, Rouach N, Nabbout R, Huberfeld G (**2019**) GABAergic transmission underlies interictal epileptogenicity in pediatric FCD, **Annals of Neurology**, 85(2):204-2017.

7) Pannasch U*, **Dossi E***, Ezan P, Rouach N (**2019**) Astroglial Cx30 sustains neuronal population bursts independently of gap-junction mediated biochemical coupling, **Glia**, 67(6):1104-1112. ***Equal 1st author**.

8) **Dossi E**, Blauwblomme T, Moulard J, Chever O, Vasile F, Guinard E, Le Bert M, Couillin I, Pallud J, Capelle L, Huberfeld G, Rouach N (**2018**) Pannexin1 channels as therapeutic target for controlling seizure generation in humans, **Science Translational Medicine**, 10(443), pii: eaar3796.

9) **Dossi E***, Vasile F*, Rouach N (**2018**) Human astrocytes in the diseased brain, **Brain Research Bulletin**, 136:139-156. ***Equal contribution**.

10) Vasile F*, **Dossi E***, Rouach N (**2017**) Human astroctes: structure and functions in the healthy brain, **Brain Structure and Function**, 222(5):2017-2029. ***Equal contribution**.

11) Wanke E, Gullo F, **Dossi E**, Valenza G, Becchetti A (**2016**) Neuron-glia crosstalk revealed in reverberating networks by simultaneous extracellular recording of spikes and astrocytes' glutamate transporter and K^+ currents. **Journal of Neurophysiology**, 116(6):2706-2719.

12) Chever O*, **Dossi E***, Rouach N (**2016**) Astrocyte control of neuronal synchrony: mind the GAP!, **Médecine/Sciences**, n°10, vol 32. ***Equal contribution**.

13) Depauw A, **Dossi E**, Kumar N, Fiorini-Debuisschert C, Huberfeld G, Ha-Thi MH, Rouach N, Leray I (**2016**) A highly selective potassium sensor for the detection of potassium in living tissues. **Chemistry-A European Journal**, 22:1-11.

14) Chever O, **Dossi E**, Pannasch U, Derangeon M, Rouach N (**2016**) Astroglial networks promote neuronal coordination. **Science Signaling**, 9(410):ra6.

15) **Dossi E**, Blauwblomme T, Nabbout R, Huberfeld G, Rouach N (**2014**) Multi-electrode array recordings of human epileptic postoperative cortical tissue. **Journal of Visualized Experiments**, 92:e51870.

16) Colombo L, Parravicini C, Lecca D, **Dossi E**, Heine C, Cimino M, Wanke E, Illes P, Franke H, Abbracchio MP (**2014**) Ventral tegmental area/substantia nigra and prefrontal cortex rodent organotypic brain slices as an integrated model to study the cellular changes induced by oxygen/glucose deprivation and reperfusion: effect of neuroprotective agents. **Neurochemistry International**, 66:43-54.

17) **Dossi E**, Heine C, Servettini I, Gullo F, Sygnecka K, Franke H, Illes P, Wanke E (**2013**) Functional regeneration of the *ex-vivo* reconstructed mesocorticolimbic dopaminergic system, **Cerebral Cortex**, 23(12):2905-22.

18) Puia G, Gullo F, **Dossi E**, Lecchi M, Wanke E (**2012**) Novel modulatory effects of neurosteroids and benzodiazepines on excitatory and inhibitory neurons excitability: a multi-electrode array recording study. **Frontiers in Neural Circuits** 6:94.

19) Becchetti A, Gullo F, Bruno G, **Dossi E**, Lecchi M, Wanke E (**2012**) Exact distinction of excitatory and inhibitory neurons in neural networks: a study with GAD67-GFP neurons optically and electrophysiologically recognized on multi-electrode arrays, **Frontiers in Neural Circuits**, 6:63.

20) Gullo F, Maffezzoli A, **Dossi E**, Wanke E (**2012**) Classifying heterogeneity of spontaneous Up-states: a method for revealing variations in firing probability, engaged neurons and fano factor", **Journal of Neuroscience Methods**, 203(2):407-417.

21) Gullo F, Mazzetti S, Maffezzoli A, **Dossi E**, Lecchi M, Amadeo A, Krajewski J and Wanke E (**2010**) Orchestration of '*presto*' and '*largo*' synchrony in up-down activity of cortical networks. **Frontiers in Neural Circuits**, 4:11.

22) Gullo F, Maffezzoli A, **Dossi E**, Wanke E (**2009**) Short-latency cross- and autocorrelation identify clusters of interacting cortical neurons recorded from multi-electrode array. **Journal of Neuroscience Methods**, 181(2):186-198.

Communications in international/national meetings

Lectures

1) "Astroglial pannexin 1 sets hippocampal neuronal network patterns through purinergic signaling", 1st French Purine Club Days, November 7th, **2022**, Tours, France

2) "Multifaceted modulation of neuronal activity by astrocyte networks", CIRB seminar, January 26th, **2021**, Collège de France, Paris, France

3) "Which role for astroglial connexins in epilepsy?", Society of Biology, Workshop «Connexins and neuroscience: from fundamental research to medical applications», June 16th, **2020**, Paris, France.

4) "Pannexin1 channels control seizure generation in human epileptic tissue", IBRO workshop, January 29th-30th, **2020**, Szeged, Hungary.

5) "Innovative universal anti-epileptic treatment targeting pannexins", Entrepreneurship meeting at PSL, November 18th, **2019**, Collège de France, Paris, France.

6) "Pannexins: channels with exciting effect", CIRB day, June 4th, **2019**, Collège de France, Paris, France.

7) "Pannexin1 channels control seizure generation in humans: a therapeutic target for epileptic conditions including brain tumors", January 17th, **2019**, Bonn University, Bonn, Germany (invited lecture).

8) "Astroglial regulation of neuronal coordination", Fyssen Foundation Paris, International workshop on « New insights into neuro-glia communication », December 3rd-4th, **2018**, Paris, France.

9) "Astroglial networks orchestrate neuronal synchrony", Society of Biology, Workshop «Decoding the multiple roles of glial cells in the brain», April 3rd, **2018**, Paris, France.

10) "Pannexin1 channels control seizures in humans: an efficient therapeutic target against epilepsy", CIRB seminar, Collège de France, March 16th, **2018**, Paris, France

11) "Pannexins: new therapeutic targets for epilepsies", 19th French days of Epilepsy, November 7th-10th **2016**, Toulouse, France (invited lecture for the presentation of the prizes from 'Ligue Française contre l'épilepsie').

12) "Contribution of Pannexin1 channels to the generation of epileptic activities", invited lecture at the laboratory of "Infantile Epilepsies and Brain Plasticity" (Inserm U663, C. Chiron), June 7th, **2016**, Institut Necker Enfants-Malades, Paris, France

13) "Pannexins: seizure promoters? Finding an answer in human brain", CIRB seminar, Collège de France, June 13th, **2014**, Paris, France

14) "Neuroglial interactions in cerebral physiopathology: from synapse to behavior", CIRB retreat for students and postdocs, June 17th-19th, **2013**, Saint Malo, France.

15) "Functional regeneration of the meso-cortico-limbic dopaminergic system as a model to study novel neuroreparative strategies", 318.5, Neuroscience Meeting, November 13th-17th **2010**, San Diego, CA, USA.

16) "Long-term recordings from organotypic co-cultures of VTA-SN/PFC", Riunione nazionale Dottorandi e Borsisti Italiani in Neuroscienze e Materie Affini, May 27th-28th, **2010**, Busto Arsizio, Italy.

Abstracts / Posters

1) **Dossi E**, Zonca L, Pivonkova H, Vargova L, Chever O, Holcman D, Rouach N "Astroglial gap junctions strengthen hippocampal network activity by sustaining afterhyperpolarization", Glia Meeting 2021, July 05th-09th, **2021**, virtual congress.

2) **Dossi E**, Vasile F, Moulard J, Le Bert M, Couillin I, Bemelmans A, Rouach N "Astroglial pannexin 1 sets hippocampal neuronal network patterns", IBRO workshop, January 29th-30th, **2020**, Szeged, Hungary

3) **Dossi E**, Vasile F, Moulard J, Rouach N "Astroglial Px1 channnels gate neuronal network activity", French Club of Glial Cells, October 9th, **2018**, Paris, France.

4) **Dossi E**, Blauwblomme T, Moulard J, Chever O, Vasile F, Guinard E, Le Bert M, Couillin I, Pallud J, Capelle L, Huberfeld G, Rouach N "Pannexin1 channels control seizure generation in humans", FENS forum 2018, July 7th-11th, **2018**, Berlin, Germany.

5) **Dossi E**, Blauwblomme T, Chever O, Pallud J, Capelle L, Huberfeld G, Rouach N, "Pannexin1 hemichannels promote epileptic seizures in humans", Gordon Research Conference, Mechanisms of epilepsy and neuronal synchronization, August 21st-26th, **2016**, Girona, Spain.

6) **Dossi E**, Chever O, Pannasch U, Derangeon M, Rouach N, "Astroglial networks modulation of bursting activity dynamics", XII European Meeting on glial cells in health and disease, July 15th-18th, **2015**, Bilbao, Spain.

7) **Dossi E**, Chever O, Lee C, Blauwblomme T, Pallud J, Huberfeld G, Rouach N, "Role of pannexin1 channels in human epileptic tissue", Brain beyond Neurons, May 11th-12th, **2015,** Paris, France.

8) **Dossi E**, Lee C, Blauwblomme T, Pallud J, Huberfeld G, Rouach N, "Role of pannexin1 channels in human epileptic tissue", 1st International Meeting on Astrocytes, October 1st -3rd, **2014**, Paris, France.

9) **Dossi E**, Chever O, Derangeon M, Rouach N, "Astroglial networks modulate bursting activity dynamics", FENS Meeting, July 5th-9th, **2014**, Milan, Italy.

10) Chever O, **Dossi E**, Rouach N, "Astroglial networks set the dynamics of neuronal bursting activity", XI European Meeting on glial cells in health and disease, July 03rd-06th **2013**, Berlin, Germany.

11) **Dossi E**, Heine C, Servettini I, Colombo L, Gullo F, Maffezzoli A, Abbracchio MP, Franke H, Illes P, Wanke E, "Developmental and regeneration features of the in vitro reconstructed meso-cortico-limbic dopaminergic system: functionality evaluated with the Multi Electrode Array (MEA) technique", 440.07, Neuroscience Meeting, 41st Annual Meeting, November 12th-16th, **2011**, Washington, DC, USA.

12) **Dossi E**, Heine C, Gullo F, Maffezzoli A, Abbracchio MP, Franke H, Illes P, Wanke E, "Functional regeneration of the meso-cortico-limbic dopaminergic system as a model to study novel neuroreparative strategies", International Astrocyte school", March 27th-April 3rd, **2011**, Bertinoro, Italy.

13) **Dossi E**, Heine C, Colombo L, Gullo F, Maffezzoli A, Abbracchio MP, Franke H, Illes P, Wanke E, "Functional regeneration of the meso-cortico-limbic dopaminergic system as a model to study novel neuroreparative strategies", 318.5, Neuroscience Meeting, 40th Annual Meeting, November 13th-17th **2010,** San Diego, CA, USA.

14) **Dossi E**, Heine C, Colombo L, Gullo F, Maffezzoli A, Abbracchio MP, Franke H, Illes P, Wanke E, "Functional regeneration of the meso-cortico-limbic dopaminergic system as a model to study novel neuroreparative strategies", P56, 61st National Congress of the Italian Physiological Society, September 15th-17th, **2010**, Varese, Italy.

15) Gullo F, **Dossi E**, Maffezzoli A, Wanke E, "Roles of ion channels, neurotransmitter transporters and GABA receptors in up- and down- states", P64, 61st National Congress of the Italian Physiological Society, September 15th-17th, **2010**, Varese, Italy.

16) **Dossi E**, Heine C, Colombo L, Gullo F, Maffezzoli A, Abbracchio MP, Franke H, Illes P, Wanke E, "Functional regeneration of the meso-cortico-limbic dopaminergic system: long-term recordings from organotypic VTA-SN/PFC co-cultures", P05, 21st Ion Channel Meeting, September 12th-15th, **2010**, Presqu'ile de Giens, France.

17) **Dossi E**, Gullo F, Heine C, Franke H, Abbracchio MP, Illes P, Wanke E, "Long-term recordings from organotypic co-cultures of VTA-SN/PFC", Proceedings of the MEA Meeting 2010, 7th International Meeting on Substrate-Integrated Micro Electrode Arrays, June 29th-July 2nd, **2010**, Reutlingen, Germany.

18) Gullo F, Maffezzoli A, **Dossi E**, Wanke E, "Up/Down states synchrony studied in cortical networks: roles of ion channels, neurotransmitter transporters and GABA receptors", Proceedings of the MEA Meeting 2010, 7th International Meeting on Substrate-Integrated Micro Electrode Arrays, June 29th-July 2nd, **2010**, Reutlingen, Germany.

19) Gullo F, Maffezzoli A, **Dossi E**, Wanke E, "Identification of burst synaptic connectivity and short-term latency from local filed potentials and spikes on MEA256 platforms", Proceedings of the MEA Meeting 2010, 7th International Meeting on Substrate-Integrated Micro Electrode Arrays, June 29th-July 2nd, **2010**, Reutlingen, Germany.

20) **Dossi E**, Heine C, Franke H, Abbracchio MP, Illes P, Wanke E, "Long-term recordings from organotypic co-cultures of VTA-SN/PFC", Riunione Nazionale Dottorandi e Borsisti Italiani in Neuroscienze e Materie Affini (ISN), May 27th -28th, **2010**, Busto Arsizio, Italy.

21) Colombo L, Ceruti S, Magni G, Boccazzi M, **Dossi E**, Wanke E, Illes P, Abbracchio MP, "Role of ATP and ATP-metabolizing enzymes in neuroreparative processes after hypoxic-ischemic injury in rodent organotypic brain slices", Riunione Nazionale Dottorandi e Borsisti Italiani in Neuroscienze e Materie Affini (ISN), May 27th -28th, **2010**, Busto Arsizio, Italy.

22) **Dossi E,** Gullo F, Wanke E, "Early Aβ amyloid actions in cortical neurons networks", XIII ISN Congress, October 2nd-5th, **2009**, Milan, Italy.

23) Gullo F, **Dossi E**, Wanke E, "Micro electrode array recordings of cortical neural network as high throughput method to evaluate the hypoxic and ischemic events", XIII ISN Congress, October 2nd-5th, **2009**, Milan, Italy.

24) Colombo L, Ceruti S, Kittel A, Wanke E, **Dossi E**, Illes P, Abbracchio MP, "Involvement of ATP-metabolizing enzymes in brain neuroreparative processes", XIII ISN Congress, October 2nd-5th, **2009**, Milan, Italy.

25) Gullo F, Mazzetti S, Maffezzoli A, **Dossi E**, Amadeo A, Wanke E, "Short-latency cross- and auto-correlation identify clusters of cortical neurons recorded from multi-electrode array", XIII ISN Congress, October 2nd-5th, **2009**, Milan, Italy.

26) Gullo F, **Dossi E**, Alfieri A, Brachini I, Lecchi M, Wanke E, "Functional pharmacology in long-term cultured neocortical networks", Neuroscience Meeting, November 15th-19th, **2008**, Washington, DC, USA.

27) Gullo F, **Dossi E**, Alfieri A, Brachini I, Maffezzoli A, Leone S, Amadeo A, Wanke E, "Functional pharmacology in cultured neocortical networks", Molecular mechanisms in Neuroscience, 5th meeting, PS3.36, University of Milan, June 19th-20th, **2008**, Milan, Italy.

Other Interests

Cooking blog: cucinandoconele.blogspot.com
Running: participation to several runs (10K, half-marathon and marathons)