Cornelius Gross

Interim Head of Unit, Senior Scientist

Epigenetics & Neurobiology Unit, EMBL Rome
European Molecular Biology Laboratory (EMBL)
Via Ramarini 32
00015 Monterotondo, Italy

email: gross@embl.it
https://twitter.com/Cornhelix
office: +39-0690091262
mobile: +39-3332619045
fax: +39-0690091272
lab: +39-0690091408, 228, 212
https://www.embl.org/groups/gross/

BIOGRAPHY & SCIENTIFIC ACHEIVEMENTS

Dr. Cornelius Gross has been a group leader at the Epigenetics & Neurobiology Unit of the European Molecular Biology Laboratory (EMBL) in Rome since 2003. In 2009 he was promoted to Senior Scientist and since 2020 he is Interim Head of Unit. His research aims to understand the neural circuit mechanisms controlling instinctive behaviors with a special focus on fear and anxiety. He has also carried out research into the developmental origins of behavioral traits and has worked extensively on the role of microglia in shaping the developing brain. In 2011 he published a landmark paper – cited over 2700 times – that establishing a role for microglia in the elimination of synapses. Dr. Gross was raised in the United States and received undergraduate training in biophysics at the University of California, Berkeley and then pursued doctoral research at Yale University studying transcriptional regulation by homeodomain factors with William McGinnis. Dr. Gross then joined the group of René Hen at Columbia University as a postdoctoral fellow where he discovered a developmental role for serotonin in determining life-long anxiety-related behavior and identified the serotonin receptor responsible for the therapeutic effects of antidepressants. In his early work at EMBL he showed how deficits in serotonin autoregulation can cause sudden infant death syndrome and how serotonin moderates the impact of maternal care on anxiety traits in adulthood. Since 2010 his laboratory is focused on characterizing the hypothalamic and brainstem circuits that regulate social and predator fear and understanding the role of microglia in determining the wiring of behavioral circuits during development. In 2013 he was awarded an Advanced Grant from the European Research Council (ERC) to study social and predator fear circuits in the brain. His team has shown that distinct subcortical circuits are recruited in response to different types of threat, with defensive responses to painful stimuli, predators, and conspecifics mediated by distinct pathways (Gross & Canteras, *Nat Rev Neurosci* 2012; Silva *et al*., *Nat Neurosci* 2013; Montardy *et al*., *Brain Struct Funct* 2020). These data argue that pathological fear comes in different flavours and is amenable to selective therapeutic treatment. Current work in the group is aimed at understanding how hypothalamic and brainstem circuits transform information about threat stimuli to trigger defensive behaviour, and how this process is remodelled by social experience and context (Masferrer *et al*., *J Neurosci* 2020; Krzywkowski *et al*., *eLife* 2020). Earlier in his career Dr. Gross served for two years as a science teacher at a public high school in New York City, where he gained an appreciation for the benefits and challenges of communicating science to a lay audience. He is married with three children and lives in Rome, Italy.

POSITIONS

2020-	**Interim Head of Unit**, EMBL Epigenetics & Neurobiology Unit, Monterotondo, Italy
2009-	**Senior Scientist and Deputy Head**, EMBL Mouse Biology Unit, Monterotondo, Italy
2003-	**Group Leader**, EMBL Mouse Biology Unit, Monterotondo, Italy; Joint appointment in Developmental Biology Unit, Heidelberg, Germany

EDUCATION

1998-2002	**Postdoctoral Fellow** with R. Hen, Center for Neurobiology & Behavior, Columbia University, NY – *identified serotonin receptor that mediates the behavioral effects of antidepressants* (Santarelli, Saxe, Gross et al., *Science* [2003] 301, 805-809 – **4751 citations**)*; showed that*

this receptor controls anxiety behavior via a developmental programming mechanism (Gross et al., [2002] *Nature* 416, 396-400 – **1034 citations**; Gross & Hen, [2004] *Nature Rev Neurosci* 5, 545-552 – **614 citations**)

1989-1995 **Predoctoral Fellow** with W. McGinnis, Department of Mol. Biophysics and Biochemistry, Yale University, CT; PhD thesis: "DEAF-1, a novel protein which binds an essential region in a *Dfd* response element" – *addressed the problem of poor homeodomain DNA binding specificity by identifying and cloning a cofactor that bound to a genetically defined regulatory target* (Gross, & McGinnis, [1996] *EMBO J* 15:1961-1970 – **188 citations**).

1988 B.A., Department of Biophysics, University of California, Berkeley, CA

GRANTS & FELLOWSHIPS

Supervised: 1 EMBO, 2 Marie Curie, 1 NARSAD, 3 EIPOD, 1 Branco Weiss, 1 IFCR, 1 SNF, 1 Croucher fellow since 2003

2020-2025 **Horizon 2020 International Training Network (261K EUR)** "Serotonin & Beyond", Co-Principal Investigator; funds one PhD fellow (ESR) working on the role of serotonin in social defeat

2019-2021 **EMBL Rome Interface Grant (250K EUR) "**Role of KRAB-ZnF in neuron identity", Co-Principal Investigator; funds one postdoctoral fellow developing *in vivo* neuron cell-type specific Cut & Run and knockout of KRAB-ZnF factors

2014-2019 **ERC Advanced Grant (2.5M EUR)** "COREFEAR", Principal Investigator; functional description of the hypothalamic defensive instinct behavior system

2011-2013 **NIH R21 Grant (120K USD)** "Pharmacogenetic tool for the manipulation of functional brain connectivity," Principal Investigators: C. Gross and J. Gordon (Columbia University, NY, USA); funded the design, construction, and validation of a novel hM4D receptor trafficked exclusively to axons as a pharmacogenetic tool to rapidly inhibit neurotransmitter release in genetically defined neurons in behaving mice

2010-2012 **IRSF Grant (100K USD)**, "A mouse model of CDKL5 Rett Syndrome," Principal Investigator; funded the construction, validation, and phenotying of a *Cdkl5* conditional knockout mouse, production of monoclonal antibodies against Cdkl5, and a biochemical screen for Cdkl5 targets

2008-2013 **EC FP7 Multi-PI Collaborative Grant (340K EUR)** NEUROCYPRES, Co-Principal Investigator; funded the production and validation of mice expressing a novel FRET-based genetically encoded chloride ion sensor

2008-2012 **EC FP7 Multi-PI Collaborative Grant (534K EUR)** DEVANX, Co-Principal Investigator; funded a series of experiments to dissect hippocampal and amygdala circuits controlling anxiety and fear using the Htr1a/8-OH-DPAT pharmacogenetic tool

2007-2011 **ESF Neuro-Network Grant (600K EUR)**, Co-Principal Investigator

2006-2008 **NIEHS R21 Grant (297K USD)**, Principal Investigator

2006-2007 **Fritz Thyssen Stiftung Award (67K EUR)**, extension, Principal Investigator

2006-2008 **NARSAD Young Investigator Award (60K USD)**, Principal Investigator

2004-2006 **Fritz Thyssen Stiftung Award (100K EUR)**, Principal Investigator

2004-2006 **NARSAD Young Investigator Award (60K USD)**, Principal Investigator

2002-2003 **NIH K01 Career Development Award (709K USD)**, Principal Investigator – declined due to rules barring transfer to a foreign institution

1999-2001 **NIH F32** Postdoctoral Fellowship

1998-1999 **NIH** Institutional Postdoctoral Fellowship

1990-1993 **NSF** Predoctoral Fellowship

MEMBERSHIP ON EXTERNAL ADVISORY/REVIEW BOARDS

2021- Chair, ERC Consolidator Grant LS5 Neuroscience study section

2021- SAB Member, Institute of Neuroscience, CSIC, Alicante, Spain

2020- SAC Member, DANDRITE, Danish Institute for Translational Neuroscience, Aarhus, Denmark

2019-	SAB Member, GIS Autism and Neurodevelopmental Disorders Foundation, Paris, France
2019-	Chair, International Scientific Committee, Braincity, EMBL-Nencki Partnership, Poland
2019	Member, Neurogenetics Search Committee, Human Technopole, Milano, Italy
2017	Simons Foundation for Research in Autism (SFARI) grant study section member
2017-19	ERC Consolidator Grant LS5 Neuroscience study section member
2017	Member, French National Scientific Review Board (hCERES) 5-year review & site visit – IGBMC, Strasbourg, France
2017	Chair, Lundbeck Foundation 5-year review & site visit – DANDRITE, Aarhus, Denmark
2016	Chair, EMBL-Poland Twining Proposal Committee
2014	Faculty review panel member, Italian Institute of Technology (IIT), Genova, Italy
2014	Search committee member for Neurobiology faculty search, DANDRITE, Aarhus, Denmark
2013	Search committee member for Neurobiology faculty search, DANDRITE, Aarhus, Denmark
2012	Review panel member for ERC Synergy Grants
2012	Search committee member for Neurophysiology faculty search, University of Basel, CH
2012	Member of Max Planck Society Presidential Private Colloquium – Future of Psychiatry, Frankfurt, Germany
2012	Review board member for Danish EMBL Node, Copenhagen, Denmark

SUPERVISION OF FELLOWS

Mentored 17 postdoctoral fellows, 15 PhD fellows, and >50 Masters students since 2003:

Name (year departed)	Position at EMBL	Current Position
Depino, Amaicha (2006)	Postdoctoral Fellow	Professor, University of Buenos Aires, Buenos Aires, Argentina
Maggi, Laura (2006)	Postdoctoral Fellow	Researcher, Sapienza University, Rome, Italy
Frazzetto, Giovanni (2007)	Postdoctoral Fellow	Science writer and novelist, Dublin, Ireland
Tsetsenis, Thodoris (2008)	PhD fellow	Research Associate, University of Pennsylvania, Philadelphia, USA
Lo Iacono, Luisa (2008)	PhD fellow	Researcher, Sapienza University, Rome, Italy
Mirabeau, Olivier (2008)	PhD fellow	Engineer, Curie Institute, Paris, France
Tiago Ferreira (2009)	PhD fellow	Research Staff Member, Janelia Research Campus, Ashburn, USA
Raffaella Bosurgi (2009)	Postdoctoral Fellow	Editor, BMC Neuroscience, London, UK
Valeria Carola (2010)	Postdoctoral Fellow	Tenured Researcher, Sapienza University, Rome, Italy
Olga Ermakova (2010)	Postdoctoral Fellow	Tenured Research Scientist, CNR, Monterotondo, Italy
Apar Jain (2010)	PhD fellow	Elected politician and entrepreneur, Heidelberg, Germany
Rosa Paolicelli (2011)	PhD fellow	Assistant Professor, University of Lausanne, CH
Enrica Audero (2011)	Postdoc/lab manager	Entrepreneur, Alentejo, Portugal
Lukasz Piszczek (2013)	PhD fellow	Postdoctoral fellow, IMP, Vienna, Austria
Elena Amendola (2013)	Postdoctoral fellow	Researcher, University of Naples, Naples, Italy
Yang Zhan (2014)	Postdoctoral fellow	Assistant Professor, SIAT, Shenzhen, PRC

Tamara Franklin (2014)	Postdoctoral fellow	Professor, University of Dalhousie, Dalhousie, Canada
Noelia Madroñal (2015)	Postdoctoral fellow	Senior Project Officer Roche, Basel, CH
Bianca Silva (2015)	PhD fellow	Assistant Professor, Humanitas University & CNR, Milan, Italy
Urte Neniskyte (2016)	Postdoctoral fellow	Group Leader, Life Science Centre, Vilnius, Lithuania
Alessandro Ciccarelli (2016)	Postdoctoral fellow	Light Sheet Specialist, Crick Institute, London, UK
Livia Marrone (2017)	PhD fellow	Senior Medical Advisor Oncology AstraZeneca, Milan. Italy
Laetitia Weinhard (2018)	PhD fellow	Postdoctoral fellow, Gan lab, NYU, New York, USA
Emmy Tsang (2018)	PhD fellow	Innovation Community Manager, eLife, Cambridge, UK
Francesca Zonfrillo (2018)	Animal Technician	Animal technician, Charles River Labs, Monterotondo, Italy
Angelo Raggioli (2019)	Technician	Head of Vectorology, Reithera, Rome, Italy
Piotr Krzywkowski (2019)	PhD fellow	Senior Data Scientist, IQVIA, Cambridge, UK
Daniel Rossier (2020)	Postdoctoral fellow	Staff Scientist, Rodriguez lab, University of Geneva, CH
Senthilkumar Devasigamani (2021)	Postdoctoral fellow	Researcher, Esya Labs, London, UK

TEACHING EXPERIENCE

2021	University of Naples, “The Future of Molecular Biology” Lecture, Naples, Italy
2017-2019	Seminars at Adamascienza ‘Summer in Science' High School program, Rome, Italy
2017-	EMBL Neurobiology Module, Annual PhD Programme, Heidelberg, Germany
1997-1998	Science teacher, Landmark High School, Alternative High School Superintendency, New York, NY, USA

AWARDS AND HONORS

2020	promoted to Interim Head of Unit, EMBL Rome
2016	Adjunct Professor, Monash University, Melbourne, Australia
2014	EMBL Insight Lecturer
2013	ERC Investigator (2014-2019)
2009	promoted to Deputy Head of Unit, EMBL Rome
2009	awarded tenure (open-ended contract, currently held by 7% of EMBL staff)
2009	appointed member of EMBL Scientific Strategy and Management Advisory Committee

ORGANIZATION OF CONFERENCES OR SYMPOSIA

2020	Principal organizer, “EMBL-ESRF Meeting on X-ray Imaging”, Heidelberg/Grenoble, Germany/France
2018	Principal organizer, “Microglia 2018”, EMBO Workshop, Heidelberg, Germany
2016	Principal organizer, “Microglia – Guardians of the Brain”, EMBL Conference, Heidelberg, Germany
2016	Co-Principal Organizer, “Human-Animal Emotions”, International School of Ethology, Erice, Italy
2013	Principal Organizer, “Neural encoding of fear - hypothalamic and brainstem networks,” Mini-symposium, SfN Annual Meeting, San Diego, USA

2009 Principal Organizer, "Translating Behavior – Bridging Clinical and Animal Models", EMBL Workshop, Heidelberg, Germany

INVITED SEMINARS (SINCE 2012)

2021 BRAINCITY Symposium, Warsaw, Poland
2021 University of Geneva, Switzerland
2020 DANDRITE, Aarhus University, Denmark
2020 EMBO Workshop – Microglia 2020, Heidelberg, Germany
2020 Institute of Pharmacology - Polish Academy of Science, Krakow, Poland
2020 Nenski Institute, Warsaw, Poland
2019 EMBL Rome 20th Anniversary event, Rome, Italy
2019 TaraOceans Event, Rome, Italy
2019 Australian Neuroscience Meeting, Adelaide, Australia
2019 Neural Circuits of Emotions, Shenzhen, China
2019 NeuroFrance2019 Symposium, Marseille, France
2019 EMBO|EMBL Neural Dynamics/Behaviour Genetics Symposium, Heidelberg, Germany
2018 Keystone Meeting on Neuroinflammation, Keystone, CO, USA
2018 Glial Assembly: Seminar on Brain Function and Disorders, Tokyo, Japan
2018 Gaspar Symposium at ICM, Paris
2018 Cold Spring Harbour meeting on Neural Circuits, CSH, NY, USA
2018 EMBL Partnership Meeting Oslo, Norway
2018 NCCR Synapsy Conference, Geneva, Switzerland
2018 Sainsbury Wellcome Centre Conference at UCL, London
2018 Gordon Research Conference on Predator-Prey Interactions, Ventura, CA, USA
2017 Biocentrum Meeting, Helsinki, Finland
2017 Fear Conference, Aarhus Institute of Advanced Studies (AIAS) Åarhus, Denmark
2016 Nature Conference, Neural Circuits of Emotion Meeting, Shenzhen, China
2016 Keystone Meeting on Microglia, Keystone, CO, USA
2016 Bordeaux Neurocampus Conference on Beyond Glia, Bordeaux, France
2016 Max Planck Institute for Psychiatry, Munich, Germany
2016 Workshop on Translational Neuroscience & Mental Disorders, Erice, Italy
2016 ACHRI Annual Symposium Keynote Lecture, Calgary, Canada
2016 Keystone Meeting – Microglia in the Brain, Keystone, USA
2016 Erice Symposium on Human and Animal Emotions, Erice, Italy
2015 Department of Anesthesiology, Imperial College London, UK
2015 Neural Circuits of Emotion Meeting – SIAT, Shenzhen, China
2015 EMBL Conference – Personalized Medicine, Heidelberg, Germany
2015 Neuropharmacology Annual Meeting – Synaptopathy: from Biology to Therapy, Chicago
2015 Society for Neuroscience Annual Meeting mini-symposium – Understanding the Hypothalamus, Chicago
2015 Brain Conference Bordeaux – GliSyn, Bordeaux, France
2015 EBPS-EBBS Meeting symposium – Neurobiology of Anxiety, Verona, Italy
2015 Warsaw Neuroscience Symposium – The Emotional Brain, Warsaw, Poland
2015 Paris Neuroscience School – Frontiers in Molecular Psychiatry, Paris, France
2015 EMBL Australia PhD Course, Perth, Australia
2015 Beyond Neurons, Paris, France
2015 Champalimaud Centre for the Unknown, Lisbon, Portugal
2015 Bonner Forum Biomedizin Annual Meeting, Keynote Lecture, Bad Honnef, Germany

2014 EMBL 2014 Insight Lecture "Why do we do what we do?" – available at: http://emblog.embl.de/ells/eil
2014 Max Planck Institute for Neurobiology, Munich, Germany
2014 Chinese-German Symposium – Role of Glia in Physiology & Pathology, Keynote Lecture, Shenzhen
2014 RIKEN Neuroscience Summer School, Wako, Japan
2014 Mainz-Frankfurt Joint Neuro-Retreat, Keynote Lecture, Oberwesel, Germany
2014 Bilkent PhD Symposium, Ankara, Turkey
2014 EMBL–UKE Universität Klinikum Eppendorf, Joint meeting, Hamburg, Germany
2014 American Society of Neurochemistry Meeting, San Diego, USA
2014 La Sapienza School for Advanced Studies, Rome, Italy
2013 University of Marseille, Luminy, France
2013 Gordon Research Conference – The Amygdala, Eaton, MA
2013 European Society for Human Genetics, Paris, France
2012 Keynote Speaker – Fear and Anxiety SFB Meeting, Freudenstadt, Germany

INSTITUTIONAL RESPONSIBILITIES

As the senior neurobiology researcher at EMBL since 2009 I have overall responsibility for spearheading the strategy of the neurobiology program across all six sites of the laboratory

2021 Chair, Steering Committee for EMBL Partnership Conference
2020 Chair, Faculty Search Committee, Epigenetics & Neurobiology Unit, Rome
2019- Co-Chair, EMBL Human Ecosystems Theme Working Group
2020- Member of the EMBL Directorate
2017-2019 Chair, EMBL Equality & Diversity Committee
2014- Chair, EIPOD Postdoctoral Fellow recruitment panel
2015-2020 Co-Chair, Faculty Search Committee, Epigenetics & Neurobiology Unit, Rome
2013-2019 Organizer of the EMBL Neurobiology Retreat

Member on various EMBL Search Committees – Developmental Biology Unit Faculty, European Bioinformatics Institute Faculty, EMBL Hamburg Faculty, Administration

Member on various EMBL committees – Graduate Program, Courses & Conferences, Grants Office, Strategy & Communications, COVID-19 Contract Extension Evaluation Committee

PROFESSIONAL MEMBERSHIPS

SIBBM Società Italiana di Biofisica e Biologia Molecolare

SfN (Society for Neuroscience)

ECNP European College for Neuropsychopharmacology

PUBLICATIONS (ORCID 0000-0001-9129-1322; Google Scholar link)

Total publications = 90; *h*-index = 46

Publications garnering over 100 citations = 29 (of these 19 senior author)

Highest cited senior author paper: Paolicelli et al., (2011) **Science**, 333:1456-8. – **2764 citations**

Top-10 Selected Research Publications (as senior author):

1. Rossier, D., La Franca, V., Salemi, T., and Gross, C.T. (2020) A neural circuit for competing approach and avoidance underlying prey capture. **PNAS**, 118(15):e2013411118. – *role of periaqueductal grey in fear of novel prey in mice* [**3 citations**]
2. Krzywkowski, P., Penna, B., and Gross, C.T. (2020) Dynamic encoding of social threat and spatial context in the hypothalamus. **eLife**, 9:e57148. – *discovery of territory cells in mammalian hypothalamus* [**4 citations**]

3. Weinhard, L., di Bartolomei, G., Bolasco, G., Machado, P., Schieber, N.L., Neniskyte, U., Exiga, M., Vadisiute, A., Raggioli, A., Schertel, A., Schwab, Y., Gross, C.T. (2018) Microglia remodel synapses by presynaptic trogocytosis and spine head filopodia induction. **Nat Commun.** 9(1):1228. – *discovery that microglia promote spine 'switching' via trogocytosis* [**387 citations**]

4. Franklin, T.B., Perova, Z., Silva, B.A., Marrone, L., Masferrer, M.E., Zhan, Y., Kaplan, A., Greetham, L., Verrechia, V., Halman, A., Pagella, S., Vyssotski, A.L., Illarionova, A., Grinevich, V., Branco, T., and Gross, C.T. (2017) Prefrontal cortical control of a brainstem social behavior circuit. **Nat Neurosci.** 20:260-270. – *discovery that synaptic plasticity in the mouse prefrontal cortex dynamically controls defensive responses to social threat* [**100 citations**]

5. Madroñal N., Delgado-García J.M., Fernández-Guizán A., Chatterjee J., Köhn M., Mattucci C., Apar Jain, Tsetsenis T., Illarionova A., Grinevich V., *Gross, C.T., and Gruart A. (2016) Rapid erasure of hippocampal memory following inhibition of dentate gyrus granule cells. **Nat Commun.** 7:1, 1-10. *corresponding author. – *discovery of a synaptic input to hippocampus that promotes memory erasure and identification of a drug target that induces therapeutic memory loss* [**64 Citations**]

6. Zhan Y., Paolicelli R.C., Sforazzini F., Weinhard L., Bolasco G., Pagani F., Vyssotski A.L., Bifone A., Gozzi A., Ragozzino D., Gross C.T. (2014) Deficient neuron-microglia signaling results in impaired functional brain connectivity and social behavior. **Nat Neurosci**. 17:400-6. – *demonstration that neuron-microglia signaling has long-term impact on synaptic strength; proposed mechanism for weak functional connectivity in autism; first use of resting-state fMRI to examine global functional connectivity in mouse knockout* [**870 Citations**]

7. Silva, B.A., Mattucci, C., Krzywkowski, P., Murana, E., Illarionova, A., Grinevich, V., Canteras, N.S., Ragozzino, D., and Gross, C.T. (2013) Independent hypothalamic circuits for social and predator fear. **Nat Neurosci**. 16:1731-3. – *demonstration of double dissociation between function of VMHdm and VMHvl in predator and social fear* [**162 Citations**]

8. Paolicelli, R.C., Bolasco, G., Pagani, F., Maggi, L., Scianni, M., Panzanelli, P., Giustetto, M., Ferreira, T.A., Guiducci, E., Dumas, L., Ragozzino, D., Gross, C.T. (2011) Synaptic pruning by microglia is necessary for normal brain development. **Science**, 333:1456-8. – *discovery that microglia actively prune synapses and are essential for synaptic maturation during development* [**2764 citations**]

9. Gozzi, A., Jain, A., Giovanelli, A., Bertollini, C., Crestan, V. J. Schwarz, A.J., Tsetsenis, T., Ragozzino, D., *Gross, C.T., Bifone, A. (2010) A neural switch for active and passive fear. **Neuron**, 67:656-66. *corresponding author. – *identified a role for cholinergic-mediated arousal in active vs. passive fear responding; first application of genetically-encoded neural activity manipulation tool to map behavioral circuits by fMRI* [**196 citations**]

10. Audero, E., Coppi, E., Mlinar, B., Rossetti, T., Caprioli, A., Al Banchaabouchi, M., Corradetti, R., Gross, C. (2008) Sporadic autonomic dysregulation and death associated with excessive serotonin auto-inhibition. ***Science***, 321:130-133. – *first evidence that dysregulation of serotonin homeostasis can cause sudden death; identified sudden loss of sympathetic tone as possible underlying cause of Sudden Infant Death Syndrome (SIDS)* [**112 citations**]

Full Publication List:

1. Deivasigamani, S., Miteva, M.T., Natale, S., Gutierrez-Barragan, D., Basilico, B., Di Angelantonio, S., Pape, C., Bolasco, G., Galbusera, A., Gozzi, A. Ragozzino, D., Gross, C.T. (2021) Microglia complement signaling promotes neuronal elimination and normal brain functional connectivity. **BioRxiv**.

2. Basilico, B., Ferrucci, L., Ratano, P., Golia, M.T., Grimaldi, A., Rosito, M., Ferretti, V., Reverte, I., Sanchini, C., Marrone, M.C, Giubettini, M., De Turris, V., Salerno, D., Garofalo, S., St-Pierre, M.K., Carrier, M., Renzi, M., Pagani, F., Modi, B., Raspa, M., Scavizzi, F., Gross, C.T., Marinelli, S., Tremblay, M.-È., Caprioli, D., Maggi, L., Limatola, C., Di Angelantonio, S., Ragozzino, D. (2022) Microglia control glutamatergic synapses in the adult mouse hippocampus. **Glia**. 70(1):173-195.

3. Streich, L., Boffi, J.C., Wang, L., Alhalaseh, K., Barbieri, M., Rehm, R., Deivasigamani, S., Gross, C.T., Agarwal, A., Prevedel, R. (2021) High-resolution structural and functional deep brain imaging using adaptive optics three-photon microscopy. **Nat Methods** 18(10):1253-1258.

4. Natale, S., Esteban Masferrer, M., Deivasigamani, S., Gross, C.T. (2021) A role for cerebral cortex in the suppression of innate defensive behaviour. **Eur J Neurosci** 54(6):6044-6059.

5. Ciccarelli, A., Weijers, D., Kwan, W., Warner, C., Bourne, J., Gross, C.T. (2021) Sexually dimorphic perineuronal nets in the rodent and primate reproductive circuit. **J Comp Neurol** 529(13):3274-3291.
6. Rossier, D., La Franca, V., Salemi, T., and Gross, C.T. (2020) A neural circuit for competing approach and avoidance underlying prey capture. **PNAS**, 118(15):e2013411118.
7. Krzywkowski, P., Penna, B., and Gross, C.T. (2020) Dynamic encoding of social threat and spatial context in the hypothalamus. **eLife**, 9:e57148.
8. Masferrer, M.E., Silva, B.A., Nomoto, K., Lima, S.Q., and Gross, C.T. (2020) Differential encoding of predator fear in the ventromedial hypothalamus and periaqueductal grey. **J Neurosci**, 40(48):9283-9292.
9. Weinhard, L., di Bartolomei, G., Bolasco, G., Machado, P., Schieber, N.L., Neniskyte, U., Exiga, M., Vadisiute, A., Raggioli, A., Schertel, A., Schwab, Y., Gross, C.T. (2018) Microglia remodel synapses by presynaptic trogocytosis and spine head filopodia induction. **Nat Commun**, 9(1):1228.
10. Neniskyte, U., Gross, C.T. (2017) Errant gardeners: glial-cell-dependent synaptic pruning and neurodevelopmental disorders. **Nat Rev Neurosci.** 18(11):658-670.
11. Franklin, T.B., Perova, Z., Silva, B.A., Marrone, L., Masferrer, M.E., Zhan, Y., Kaplan, A., Greetham, L., Verrechia, V., Halman, A., Pagella, S., Vyssotski, A.L., Illarionova, A., Grinevich, V., Branco, T., and Gross, C.T. (2017) Prefrontal cortical control of a brainstem social behavior circuit. **Nat Neurosci**, 20:260-270.
12. Madroñal N, Delgado-García JM, Fernández-Guizán A, Chatterjee J, Köhn M, Mattucci C, Jain A, Tsetsenis T, Illarionova A, Grinevich V, Gross C.T.*, and Gruart A (2016) Rapid erasure of hippocampal memory following inhibition of dentate gyrus granule cells. **Nat Commun**, 7:10923. *corresponding author.
13. Samuels BA, Anacker C, Hu A, Levinstein MR, Pickenhagen A, Tsetsenis T, Madroñal N, Donaldson ZR, Drew LJ, Dranovsky A, Gross C.T., Tanaka KF, Hen R. (2015) 5-HT1A receptors on mature dentate gyrus granule cells are critical for the antidepressant response. **Nat Neurosci**, 18:1606-16.
14. Della Sala G., Putignano E., Chelini G., Melani R., Calcagno E., Michele Ratto G., Amendola E., Gross C.T., Giustetto M., Pizzorusso T. (2015) Dendritic Spine Instability in a Mouse Model of CDKL5 Disorder Is Rescued by Insulin-like Growth Factor 1. **Biol Psychiatry**, 3223:727.
15. Piszczek L., Piszczek A., Kuczmanska J., Audero E., Gross C.T. (2015) Modulation of anxiety by cortical serotonin 1A receptors, **Front in Behav Neurosci**, 9.
16. Pagani F., Paolicelli R.C., Murana E., Cortese B., Di Angelantonio S., Zurolo E., Guiducci E., Ferreira T.A., Garofalo S., Catalano M. et al. (2015) Defective microglial development in the hippocampus of Cx3cr1 deficient mice, **Front in Cell Neurosci**, 9.
17. Rivero O., Selten M.M., Sich S., Popp S., Bacmeister L., Amendola E., Negwer M., Schubert D., Proft F., Kiser D., Schmitt A.G., Gross C.T., Kolk S.M., Strekalova T., van den Hove D., Resink T.J., Nadif Kasri N., Lesch K.-P. (2015) Cadherin-13, a risk gene for ADHD and comorbid disorders, impacts GABAergic function in hippocampus and cognition, **Transl Psychiatry**, 5:e655.
18. Zhan Y., Paolicelli R.C., Sforazzini F., Weinhard L., Bolasco G., Pagani F., Vyssotski A.L., Bifone A., Gozzi A., Ragozzino D., Gross C.T**.** (2014) Deficient neuron-microglia signaling results in impaired functional brain connectivity and social behavior, **Nat Neurosci**,17:400-406.
19. Carola V., Zonfrillo F., Soini H.A., Novotny M.V., Gross C.T. (2014) Modulation of social behavior by the agouti pigmentation gene, **Front in Behav Neurosci**, 8.
20. Fuchs C., Trazzi S., Torricella R., Viggiano R., De Franceschi M., Amendola E., Gross C.T., Calza L., Bartesaghi R., Ciani E. et al. (2014) Loss of CDKL5 impairs survival and dendritic growth of newborn neurons by altering AKT/GSK-3 signaling, **Neurobiol of Dis**, 70:53-68
21. Amendola E., Zhan Y., Mattucci C., Castroflorio E., Calcagno E., Fuchs C., Lonetti G., Silingardi D., Vyssotski A.L., Farley D., Ciani E., Pizzorusso T., Giustetto M., Gross C.T. (2014) Mapping pathological phenotypes in a mouse model of CDKL5 disorder. **PLoSOne**, 9:e91613.
22. Baroncelli L., Alessandro M.G., Tola J., Putignano E., Migliore M., Amendola E., Gross C.T. Leuzzi V., Cioni G., Pizzorusso T. (2014) A novel mouse model of creatine transporter deficiency, **F1000Research**, 3.

23. John, J., Smith, H.R., Audero, E., Gross, C.T., Buchanan, G.F. (2013) The effects of acute serotonin neuron inactivation on seizure severity and mortality, **Scottish Med J**, 58:E49-E49.
24. Batti L., Mukhtarov M., Audero E., Ivanov A., Paolicelli R.C., Zuborg S., Gross C.T., Bregestovski P., Heppenstall P.A. (2013) Transgenic mouse lines for non-invasive ratiometric monitoring of intracellular chloride, **Front in Mol Neurosci**, 6:11.
25. Kuhn M., Al Banchaabouchi M., Campillos M., Jensen L.J., Gross C.T., Gavin A.-C. Bork P. (2013) Systematic identification of proteins that elicit drug side effects, **Mol Syst Biology**, 9:663.
26. Silva B.A., Mattucci C., Krzywkowski P., Murana E., Illarionova A., Grinevich V., Canteras N.S., Ragozzino D., Gross C.T. (2013) Independent hypothalamic circuits for social and predator fear, **Nat Neurosci**,16:1731-1733.
27. Audero E., Mlinar B., Baccini G., Skachokova Z.K., Corradetti R., Gross C.T. (2013) Suppression of serotonin neuron firing increases aggression in mice, **J Neurosci**, 33:8678-8688.
28. Gross C.T., Canteras N.S. (2012) The many paths to fear, **Nat Rev Neurosci**, 13:651-658.
29. Carnevali L., Mastorci F., Audero E., Graiani G., Rossi S., Macchi E., Callegari S., Bartolomucci A., Nalivaiko E., Quaini F. et al. (2012) Stress-induced susceptibility to sudden cardiac death in mice with altered serotonin homeostasis, **PLoS One**, 7:e41184.
30. Troisi A., Frazzetto G., Carola V., Di Lorenzo G., Coviello M., Siracusano A., Gross C.T. (2012) Variation in the mu-opioid receptor gene (OPRM1) moderates the influence of early maternal care on fearful attachment, **Soc Cog Affect Neurosci**, 7:542-547.
31. Baccini G., Mlinar B., Audero E., Gross C.T., Corradetti R. (2012) Impaired chemosensitivity of mouse dorsal raphe serotonergic neurons overexpressing serotonin 1A (Htr1a) receptors, **PLoS One**. 7(9):e45072.
32. Ermakova O., Salimova E., Piszczek L., Gross C.T. (2012) Construction and phenotypic analysis of mice carrying a duplication of the major histocompatibility class I (MHC-I) locus, **Mamm Genome**, 23:443-453.
33. Jain, A., Dvorkin, A., Fonio, E., Golani, I., Gross, C.T. (2012) Validation of the dimensionality emergence assay for the measurement of innate anxiety in laboratory mice. **Eur Neuropsychopharm**, 22(2):153-63.
34. Carola, V., Gross, C. (2012) Mouse Models of the 5-HTTLPR × Stress Risk Factor for Depression. **Curr Top Behav Neurosci**, 12:59-72
35. Troisi, A., Frazzetto, G., Carola, V., Di Lorenzo, G., Coviello, M., Siracusano, A., Gross, C. (2012) Variation in the mu-opioid receptor gene (OPRM1) moderates the influence of early maternal care on fearful attachment. **Soc Cogn Affect Neurosci**, 7(5):542-7.
36. Troisi, A., Frazzetto, G., Carola, V., Di Lorenzo, G., Coviello, M., D'Amato, F.R., Moles, A., Siracusano, A., Gross, C.T. (2011) Social hedonic capacity is associated with the A118G polymorphism of the mu-opioid receptor gene (OPRM1) in adult healthy volunteers and psychiatric patients. **Soc Neurosci**, 6:88-97.
37. Carola, V., Mirabeau, O., Gross, C.T. (2011) Hidden Markov model analysis of maternal behavior patterns in inbred and reciprocal hybrid mice. **PLoSOne**, 6:e14753.
38. Ermakova, O., Piszczek, L., Luciani, L., Cavalli, F.M., Ferreira, T., Farley, D., Rizzo, S., Paolicelli, R.C., Al-Banchaabouchi, M., Nerlov, C., Moriggl, R., Luscombe, N.M., Gross C. (2011) Sensitized phenotypic screening identifies gene dosage sensitive region on chromosome 11 that predisposes to disease in mice. **EMBO Mol Med**, 3(1):50-66.
39. Kas, M.J., Krishnan, V., Gould, T.D., Collier, D.A., Olivier, B., Lesch, K.-P., Domenici, E., Fuchs, E., Gross, C., Castrén E. (2011). Advances in multidisciplinary and cross-species approaches to examine the neurobiology of psychiatric disorders. **Eur Neuropsychopharm**, 21:532-44.
40. Paolicelli, R.C., Bolasco, G., Pagani, F., Maggi, L., Scianni, M., Panzanelli, P., Giustetto, M., Ferreira, T.A., Guiducci, E., Dumas, L., Ragozzino, D., Gross, C.T. (2011) Synaptic Pruning by Microglia Is Necessary for Normal Brain Development. **Science**, 333:1456-8.

41. Carola, V., Pascucci, T., Puglisi-Allegra, S., Cabib, S., Gross, C.T. (2011) Effect of the interaction between the serotonin transporter gene and maternal environment on developing mouse brain. **Behav Brain Res**, 217:188-94.
42. Carola, V., Gross C. (2010) BDNF moderates early environmental risk factors for anxiety in mouse. **Genes Brain Behav**, 9(4):379-89.
43. Zanettini, C., Carola, V., Lo Iacono, L., Moles, A., Gross, C., D'Amato, F.R. (2010) Postnatal handling reverses social anxiety in serotonin receptor 1A knockout mice. **Genes Brain Behav**, 9:26-32.
44. Bartolomucci, A., Carola, V., Pascucci, T., Puglisi-Allegra, S., Cabib, S., Lesch, K.-L., Parmigiani, S., Palanza, P., and Gross, C.T. (2010) Increased vulnerability to psychosocial stress in heterozygous serotonin transporter knockout mice. **Disease Models Mech**, 3:459-70.
45. Reuveni, E., Birney, E., Gross, C.T. (2010) The consequence of natural selection on genetic variation in the mouse. **Genomics**, 95:196-202.
46. Gozzi, A., Jain, A., Giovanelli, A., Bertollini, C., Crestan, V. J. Schwarz, A.J., Tsetsenis, T., Ragozzino, D., Gross, C.T.*, Bifone, A. (2010) A neural switch for active and passive fear. **Neuron**, 67:656-66. *corresponding author.
47. Carola, V., Scalera, E., Brunamonti, E., Gross, C., D'Amato, F. (2008) Mating-related interactions share common features with anxiety in the mouse. **Behav Brain Res**, 186:185-90.
48. Carola, V., Frazzetto, G., Pascucci, T., Audero E., Puglisi-Allegra, S., Cabib, S., Lesch, K.-P., and Gross, C. (2008) Identifying molecular substrates in a mouse model of the 5-HTT-by-environment risk factor for anxiety and depression. **Biol Psychiatry**, 63:840-6.
49. Lo Iacono, L. and Gross, C. (2008) αCaMKII contributes to the developmental programming of anxiety in serotonin receptor 1A knockout mice. **J Neurosci**, 28:6250-6257.
50. Depino, A.M., Tsetsenis, T., and Gross, C. (2008) GABA homeostasis contributes to the developmental programming of anxiety-related behavior, **Beh Brain Res**, 1210:189-99.
51. Audero, E., Coppi, E., Mlinar, B., Rossetti, T., Caprioli, A., Al Banchaabouchi, M., Corradetti, R., Gross, C. (2008) Sporadic autonomic dysregulation and death associated with excessive serotonin auto-inhibition. **Science**, 321:130-133.
52. Depino, A.M., Tsetsenis, T., and Gross, C. (2008) GABA homeostasis contributes to the developmental programming of anxiety-related behavior, **Beh Brain Res**, 1210:189-99.
53. Lo Iacono, L., Gross, C. (2008) aCaMKII contributes to the developmental programming of anxiety in serotonin receptor 1A knockout mice. **J Neurosci**, 28(24):6250-7.
54. Carola, V., Scalera, E., Brunamonti, E., Gross, C., D'Amato, F. (2008) Mating-related interactions share common features with anxiety in the mouse. **Beh Brain Res**, 186:185-90.
55. Carola, V., Frazzetto, G., Pascucci, T., Audero E., Puglisi-Allegra, S., Cabib, S., Lesch, K.-P., and Gross, C. (2008) Identifying molecular substrates in a mouse model of the 5-HTT-by-environment risk factor for anxiety and depression. **Biol Psychiatry**, 63(9):840-6.
56. Depino, A. and Gross, C. (2007) Simultaneous monitoring of autonomic and anxiety-related behavior in BALB/c and C57BL/6 mice. **Beh Brain Res**, 177, 254-60.
57. Mirabeau, O., Perlas, E. , Severini, C., Audero, E., Gascuel, O. , Possenti, R., Birney, E., Rosenthal, N., and Gross, C. (2007) Identification of novel peptide hormones in the human proteome by hidden Markov model screening. **Genome Res** 17:320-7.
58. Reuveni, E., Carola, V., Banchaabouchi, M.A., Rosenthal, N., Hancock, J.M., Gross, C. (2007) Phenostat: visualization and statistical tool for analysis of phenotyping data. **Mamm Genome**. 18:677-81.
59. Tsetsenis, T., Ma, X.-H., Lo Iacono, L. , Beck, S.G. and Gross, C. (2007) Suppression of conditioned responses to ambiguous cues by pharmacogenetic inhibition of dentate gyrus granule cells. **Nat Neurosci**, 10:896-902.
60. Frazzetto, G. and Gross, C. (2007) Beyond Susceptibility. **EMBO Reports**, 8:1-3.

61. Tsetsenis, T., Ma, X.-H., Lo Iacono, L. , Beck, S.G. and Gross, C. (2007) Suppression of conditioned responses to ambiguous cues by pharmacogenetic inhibition of dentate gyrus granule cells. **Nat Neurosci**, 10:896-902.
62. Frazzetto, G., Di Lorenzo, G., Carola, V., Proietti, L., Sokolowska, E., Siracusano, A., Gross, C., and Troisi, A. (2007) Early trauma and increased risk for physical aggression during adulthood: the moderating role of MAOA genotype. **PLoSOne**, 2:e486.
63. Reuveni, E., Carola, V., Al Banchaabouchi, M., Rosenthal, N., Hancock, J.M., and Gross, C. (2007) Phenostat – visualization and statistical tool for analysis of phenotyping data, **Mam Genome**, 18:677-81.
64. Mirabeau, O., Perlas, E. , Severini, C., Audero, E., Gascuel, O. , Possenti, R., Birney, E., Rosenthal, N., and Gross, C. (2007) Identification of novel peptide hormones in the human proteome by hidden Markov model screening. **Genome Res**, 17:320-7.
65. Stark, K.L., Gross, C., Richardson-Jones, J., Zhuang, X., Hen, R. (2007) A novel conditional knockout strategy applied to serotonin receptors. **Handb Exp Pharmacol**, 178:347-63.
66. Reuveni, E., Ramensky, V., and Gross, C. (2007) Mouse SNP Miner: An annotated database of mouse functional single nucleotide polymorphisms. **BMC Genomics**, 8, 24.
67. Depino, A. and Gross, C. (2007) Simultaneous monitoring of autonomic and anxiety-related behavior in BALB/c and C57BL/6 mice. **Beh Brain Res**, 177, 254-60.
68. Carola, V., Frazzetto, G., Gross, C. (2006) Identifying interactions between genes and early environment in the mouse. **Genes Brain Beh**, 5, 189-199.
69. Ragazzino, D., Di Angelantonio, S., Trettel, F., Bertollini, C., Gross, C., Limatola, C., and Eusebi, F. (2006) Chemokine fractalkine/CX_3CL1 negatively modulates active glutamatergic synapses in rat hippocampal neurons. **J Neurosci**, 26, 10488-98.
70. Bertollini C., Ragozzino D., Gross C., Limatola C., Eusebi F. (2006) Fractalkine/CX3CL1 depresses central synaptic transmission in mouse hippocampal slices. **Neuropharmacology**, 51, 816-21.
71. Gutknecht, L., Jacob, C., Strobel, A., Müller, J., Reif, A., Mössner, R., Zeng, Y., Escher, A., Gross, C., Brocke, B., Lesch, K.-P. (2006) Tryptophan hydroxylase-2 gene variation influences personality traits and disorders related to emotional dysregulation. **Int J Neuropsychopharm**, 19, 1-12.
72. Carola, V., Frazzetto, G., Gross, C. (2006) Identifying interactions between genes and early environment in the mouse. **Genes Brain Behav**, 5, 189-199.
73. Klemenhagen, K., Gordon, J., David, D., Hen, R., Gross, C. (2006) Increased fear response to contextual cues in mice lacking the 5-HT1A receptor. **Neuropsychopharm**, 31, 101-111.
74. Walitza, S., Renner, T.J., Dempfle, A., Konrad K., Wewetzer, C., Halbach, A., Herpertz-Dahlmann, B., Remschmidt, H., Smidt, J., Linder, M., Flierl, L., Knölker U., Friedel, S., Schäfer, H., Gross, C., Hebebrand, J., Warnke, A., Lesch, K.-P. (2005) Transmission disequilibrium of polymorphic variants in the tryptophan hydroxylase-2 gene in attention-deficit/hyperactivity disorder. **Mol Psychiatry**, 10, 1126-32.
75. Gross, C. and Hen, R. (2004). Genetic and Environmental Factors Interact to Influence Anxiety. **Neurotox Res**, 6(3), 1-10.
76. Wolff, M., Costet, P., Gross, C., Hen, R., Segu, L., Buhot, M-C. (2004) Age-Dependent Effects of Serotonin-1A Receptor Gene Deletion in Spatial Learning Abilities in Mice. **Mol Brain Res** 12:53, 49.
77. Gross, C. and Hen, R. (2004). The Developmental Origins of Anxiety. **Nat Rev Neurosci** 5, 545-552.
78. Gross, C. (2004). Book review: Nature via Nurture, by Matt Ridley. **New Engl J Med**, 350(4), 422.
79. Santarelli, L., Saxe, M., Gross, C., Surget, A., Battaglia, F., Dulawa, S., Weisstaub, N., Lee, J., Duman, R., Arancio, O., Belzung, C., and Hen, R. (2003). Requirement of Hippocampal Neurogenesis for the Behavioral Effects of Antidepressants. **Science**, 301, 805-809.
80. Gross, C., Zhuang, X., Stark, K., Ramboz, S., Oosting, R., Kirby, L., Beck, S., and Hen, R. (2002) Serotonin 1A Receptor is Required During Development to Establish Normal Emotional Behavior. **Nature** 416, 396-400.

81. Gross, C., Santarelli, L., Brunner, D., Zhuang, X., and Hen, R. (2000) Altered Fear Circuits in 5-HT1A Receptor KO Mice. **Biol Psychiatry** 48:12, 1157-63.

82. Dulawa, S.C., Gross, C., Stark, K., Hen, R., and Geyer, M.A. (2000) Knockout Mice Reveal Opposite Roles for Serotonin 1A and 1B Receptors in Prepulse Inhibition. **Neuropsychopharm** 22:6, 650-659.

83. Pederson, J.A., LaFollette, J.W., Gross, C., Veraksa, A., McGinnis, W., Mahaffey, J.W. (2000) Regulation by Homeoproteins: a Comparison of Deformed-Responsive Elements. **Genetics** 156:2, 677-86.

84. Zhuang, X., Gross, C., Santarelli, L., Compan, V., Trillat, A.-C., and Hen, R. (1999) Altered Emotional States in Knockout Mice Lacking 5-HT1A or 5-HT1B Receptors. **Neuropsychopharm** 21:2S, 52S-60S.

85. Gross, C.T. and McGinnis, W. (1996) DEAF-1, a Novel Cofactor Involved in *Deformed* Regulation. **EMBO J** 15:8, 1961-1970.

86. Gross, C.T. and McGinnis, W. (1996) The Function of Homeodomain Proteins in Drosophila Development, in **Eukaryotic Gene Transcription - Frontiers in Molecular Biology**, Hames, B.D. and Glover, D.M. (eds). IRL Press, Oxford, UK.

87. Dessain, S., Gross, C.T., Kuziora, M.A., and McGinnis, W. (1992) Antp-type Homeodomains Have Distinct DNA Binding Specificities that Correlate with their Different Regulatory Functions in Embryos. **EMBO J** 11:3, 991-1002.

88. Gross, C.T., Salamon, H., Hunt, A.J., Macey, R.I., Orme, F. and Quintanilha, A.T. (1991) Hemoglobin Polymerization in Sickle Cells Studied by Circular Polarized Light Scattering. **Bioch Bioph Acta** 1079:2, 152-160.

89. Gross, C.T. and Baker, R.A. (1989) Prevention of *Pneumocystis carinii* Pneumonia (PCP). **Bulletin of Exp Treat for AIDS**, San Francisco AIDS Foundation and San Francisco Dept. of Public Health, November, 7-9.

90. Gross, C.T., Kiess, J., Mayer, A. and Keilmann, F. (1987) Pulsed High-Power Far-Infrared Gas Lasers: Performance and Spectral Survey. **IEEE J Quant Elect** 23:4, 377-384.