**Joeri Bordes, PhD**
Postdoc at University of Geneva, Switzerland

Neuroscientist using preclinical models to investigate stress-related disorders using machine learning for deep phenotyping of individual and social behaviors


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| Date of birth | 06th of September 1993 |
| Contact | |
| | joeri.bordes@unige.ch |
| ORCID | 0000-0003-2909-2976 |
| Publications | Google Scholar |
| Website | https://joeribordes.github.io/ |
| Languages | Dutch (native), English, German |


## PROFESIONAL EXPERIENCE

**Postdoctoral researcher**, advised by Prof. Dr. Camilla Bellone — Since 01/2026
University of Geneva, Geneva, Switzerland
*Dissecting neural circuits and complex social behaviors using machine learning in a mouse model*

**Guest researcher** with Prof. Dr. Marianne Müller — Since 02/2025
Leibniz Institute for Resilience Research, Mainz, Germany

**Postdoctoral researcher**, advised by Prof. Dr. Anna Beyeler — 10/2023–12/2025
Neurocentre Magendie U1215, INSERM, Bordeaux, France
*Early Life Stress Alters Social Behavior Through Insular Cortex Activity*

**PhD degree** (Summa cum laude), advised by PD. Dr. Mathias Schmidt — 10/2018–11/2023
Max Planck Institute of Psychiatry, Munich, Germany
*Deep behavioral phenotyping with brain region and cell type specific manipulations*

**Research Intern**, supervisor PD. Dr. Mathias Schmidt — 09/2017–05/2018
Max Planck Institute of Psychiatry, Munich, Germany
*Impact of early life stress on depression-like behavior in FKBP51-KO mice*

**Research Intern**, supervisor Prof. Dr. Ronald van Kesteren — 02/2017–08/2017
Free University, Center for Neurogenomics & Cognitive Research, Amsterdam, the Netherlands
*The effects of hibernation in mice on brain plasticity and fear memory formation*

**Research Intern**, supervisor Dr. Harm Krugers — 02/2016–07/2016
University of Amsterdam, Swammerdam Institute for Life Sciences, Amsterdam, the Netherlands
*The effects of mineralocorticoid receptor overexpression on chronic stress in mice*

## EDUCATION

**PhD degree** in Neuroscience (Summa cum laude, highest distinction) — 10/2018–11/2023
Ludwig-Maximilians-University, Faculty of Biology,
Max Planck Institute of Psychiatry, Munich, Germany

**Master of Science** in Neuroscience (GPA: 8/10) — 09/2016–09/2018
University of Amsterdam, the Netherlands

**Bachelor of Science** in Psychobiology (GPA: 7/10) — 09/2012–09/2016
University of Amsterdam, the Netherlands

## PRIZES AND AWARDS

- Selected member of the ECNP Early Career Academy (link) — 2025-2030
- Received the Junior Investigator Award at the 7th Annual Swiss Stress Meeting (link) — 02/2025
- Best poster award at the 10th International Symposium on Resilience Research — 09/2024
- Awarded highest grade (Summa cum laude) for PhD thesis and oral exam — 11/2023
- Selected speaker at the ECNP Conference in Vienna, Austria — 10/2023
- Selected speaker at the 3rd Munich Winter Conference on Stress, Germany (link) — 03/2022
- Awarded the travel grant at the 2021 conference of the European Brain and Behaviour Society (EBBS) in Lausanne, Switzerland — 09/2021
- Awarded the FENS-IBRO/PERC travel grant for the FENS 2020 Forum — 07/2020
- Selected for the Neuropsychopharmacology workshop from the European College of Neuropsychopharmacology (ECNP) in Nice, France — 03/2020
- Selected speaker and awarded the European Brain and Behaviour Society (EBBS) travel grant at the 2019 EBBS conference in Praque, Czech Republic — 09/2019

## ORGANISATION OF INTERNATIONAL CONFERENCES

**2025-present**: Selected for the 2026 Brain Conference symposium, “BrainStress”, Bordeaux, France (link)
**2024-present**: Member of the organization committee for the 10th Resilience Symposium, Mainz, Germany (link)
**2019-2022**: Member of the local organizing committee for the 2nd and 3rd Munich Winter Conference on Stress (link)

PEER-REVIEWED PUBLICATIONS: **20 ARTICLES** * equally contributing author

**14 Research Articles (2 as 1st author) 2 submitted, 1 in preparation**

**17.** **Bordes**, Stont, Aman, Bittar, Soulat …, Beyeler (2025). Insular Cortex Corticotropin-Releasing Factor Signaling Mediates Social Alterations after Early Life Stress. **In preparation**. *[This research highlights that early life stress reshapes naturalistic social behavior via insular cortex dynamics, revealing sex-dependent effects and nominating the insula as a circuit target for normalizing social function.]*

**16.** **Bordes**, Stont, Bajaj, Chang, Ebert, Miranda, Schlegel, Reinhardt, …, 9 authors …, Beyeler, Gassen, Schmidt (2025) Loss of noradrenergic Fkbp5 disrupts social behavior and norepinephrine dynamics in the basolateral amygdala. **Submitted**. (Preprint link) *[By linking Noradrenergic Fkbp5 regulation to phasic basolateral amygdala norepinephrine and mitochondrial/synaptic remodeling, this study highlights a circuit-specific route to normalize social salience without broadly suppressing noradrenergic function.]*

**15.** **Bordes***, Ji*, Gasperoni, Sudre-Chinsky, Harbich, Flachskamm, Fontanet, Narayan, Uhr, Namendorf, Chen, Hausch, Lopez, Schmidt (2025). Pharmacological Inhibition of FKBP51 Mitigates Early Life Adversity-Induced Social Deficits. **Submitted**. (Preprint link) *[Early-life adversity disrupts social behavior and brain gene expression, which SAFit2 (an FKBP51 antagonist) can largely rescue]*

14. Yang, Narayan, **Bordes**, …, 11 authors…, Lopez, Schmidt (2025) Mineralocorticoid receptor in glutamatergic neurons modulates anxiety exclusively in male mice via regulation of the actin bundling factor FAM107a. Biological Psychiatry Global Open Science. (link) *[This work defines a cell-type–specific Mineralocorticoid Receptor pathway for stress-related behavior: male-selective baseline anxiety, associated hippocampal alterations, and a causal Fam107a mechanism capable of reversing the behavioral deficit]*

13. van Doeselaar, Abromeit, Stark, Menegaz, Mitra, Yang, Rehawi, Huettl, **Bordes**, …, 8 authors …, Schmidt (2025) FKBP51 in glutamatergic forebrain neurons promotes early life stress inoculation in female mice. Nature Communications (link) [*This research article highlights the importance of cell-type specific genetic stress risk markers on the early life stressed-induced behavioral alterations and brain genetic profile*]

**12.** **Bordes**, Bajaj, Miranda, …, 8 authors …, Gassen, Schmidt (2024) Sex-specific fear acquisition following early life stress is linked to amygdala and hippocampal purine and glutamate metabolism. Communications Biology (link) *[This research article shows that early life stress disrupts the HPA axis and machine-learning identified fear memory in a sex-specific manner, revealing differences in brain metabolism]*

11. Kovarova, **Bordes**, Mitra, Narayan, Springer, Brix, Deussing, Schmidt (2024) Deep phenotyping reveals CRH and FKBP51-dependent behavioral profiles following chronic social stress exposure in male mice. Neuropsychopharmacology (link) *[This research article highlights the importance of genetic stress risk markers on the social behavioral profile following chronic stress exposure]*

10. Miranda, **Bordes**, Pütz, Schmidt, Müller-Myhsok (2023) DeepOF: a Python package for supervised and unsupervised pattern recognition in mice motion tracking data. Journal of Open Source Software (link) *[This research article presents "DeepOF," an open-source Python package designed to analyze social behavior using AI and machine learning tools for both supervised and unsupervised classification]*

**9.** **Bordes***, Miranda*, Reinhardt, …, 11 authors …, Müller-Myhsok, Schmidt (2023) Automatically annotated motion tracking identifies a distinct social behavioral profile following chronic social defeat stress. Nature Communications (link) *[This research article utilizes the DeepOF open-source Python package, which employs machine learning to automate motion tracking and analyze stress-induced social behavior in freely interacting mice, enhancing precision and standardization in behavioral classification. The study demonstrates that DeepOF analysis reveals a more pronounced and robust stress-induced social behavioral phenotype]*

8. Kos, Lopez, **Bordes**, …, 13 authors …, Schmidt, Chen (2023) Early life adversity shapes social subordination and cell type–specific transcriptomic patterning in the ventral hippocampus. Science Advances (link) *[This research article employs advanced behavioral analysis tools and single-cell sequencing to investigate social behavior and hierarchy]*

7. van Doeselaar, Stark, Mitra, Yang, **Bordes**, …, 7 authors …, Lopez, Czisch, Schmidt (2023) Sex-specific and opposed effects of FKBP51 in glutamatergic and GABAergic neurons: Implications for stress susceptibility and resilience. PNAS (link) *[This research article emphasizes the impact of early life stress on cognitive function and brain structure volume, as assessed through mouse MRI]*

6. Brix, Monleon, Collado, Ederveen, Toksöz, **Bordes**, van Doeselaar, Engelhardt, Mitra, Narayan, Schmidt (2023) Metabolic effects of early life stress and pre-pregnancy obesity are longlasting and sex-specific in mice. European Journal of Neuroscience (link) *[This research article finds that early life stress affects male body weight long-term, while females adapt, possibly by stabilizing their microbiota]*

5. Brix, Toksöz, Aman, Kovarova, Springer, **Bordes**, …, 6 authors …, Deussing, Schmidt (2022) Contribution of the co-chaperone FKBP51 in the ventromedial hypothalamus to metabolic homeostasis in male and female mice. Molecular Metabolism (link) *[This research article shows that FKBP51 manipulation in SF1-expressing VMH cells has a mild impact on metabolism, indicating its subsidiary role compared to broader MBH-wide changes]*

4. Brix, Häusl, Toksöz, **Bordes**, …, 6 authors …, Chen, Schmidt (2022) The co-chaperone FKBP51 modulates HPA axis activity and age-related maladaptation of the stress system in pituitary proopiomelanocortin cells.

Psychoneuroendocrinology (link) *[This research article shows that FKBP51 deficiency in POMC-expressing pituitary cells enhances HPA axis negative feedback and protects against age-related disruptions in corticosterone rhythms]*

3. Engelhardt, Tang, Elkhateib, **Bordes**, …, 7 authors …, Deussing, Schmidt (2021) FKBP51 in the Oval Bed Nucleus of the Stria Terminalis Regulates Anxiety-Like Behavior. eNeuro (link) *[This research article underscores the impact of genetic risk factors on the development of stress-induced anxiety-like behavioral symptoms]*
2. Bonapersona, Hoijtink, RELACS Consortium: (Abbinck, Baram, Bolton, **Bordes**, ..., 12 authors), Sarabdjitsingh, Joëls (2021) Increasing the statistical power of animal experiments with historical control data. Nature Neuroscience (link) *[This research article illustrates the benefits of utilizing historical control data to minimize the number of animals used and improve statistical power in studies on early life stress-induced behavioral symptoms]*
1. van Doeselaar, Yang, **Bordes**, Brix, Engelhardt, Tang & Schmidt (2020) Chronic social defeat stress in female mice leads to sex-specific behavioral and neuroendocrine effects. Stress (link) *[This research article showed the importance of sex in studying the effects of chronic stress exposure]*

**6 Review & Commentary articles (2 as 1st author)**

6. Bittar, **Bordes**, Nicolas, Calhoon, Beyeler (2025) Chapter 30. Pre-Clinical Models of Emotional Dysregulations. Handbook of Human Affective Neuroscience, 2nd edition (link) *[This book chapter describes how animal models help elucidate emotional processing and psychiatric disorders, stressing the need for advanced computational tools to improve insights and treatment development]*
5. Albayrak, de Fátima da Silva Vaz, **Bordes**, Ünlü, Sep, Vinkers, Pinto, Yapıcı Eser (2024) Translational models of stress and resilience: An applied neuroscience methodology review Neuroscience Applied (link) *[This review describes the complexity of resilience to stress and explains how translational models, including cell cultures and rodents, are used to study stress and resilience mechanisms, highlighting the need for improved models]*
4. Voulgaropoulou, Bastiaanssen, Alves, Viglione, **Bordes**, Jurek, Paribello, Sep (2024) Editorial: An interdisciplinary perspective on resilience - A special section in Neuroscience Neuroscience Applied (link) *[This editorial outlines the mission of the Resilience Network from the European College of Neuropsychopharmacology, focusing on its interdisciplinary approach to resilience research through various key pillars]*
3. **Bordes**, Miranda, Müller-Myhsok, Schmidt (2023) Advancing social behavioral neuroscience by integrating ethology and comparative psychology methods through machine learning. Neuroscience & Biobehavioral Reviews (link) *[This review highlights the historical impact of behavioral neuroscience and emphasizes the crucial role of cutting-edge machine learning tools in computational neuroscience for advancing the analysis of social behavior in the context of stress exposure]*
2. Miranda*, **Bordes***, Gasperoni, Lopez (2023) Increasing resolution in stress neurobiology: from single cells to complex group behaviors. Stress (link) *[This commentary highlights the latest molecular tools in stress neuroscience and underscores the importance of computational neuroscience in advancing this field]*
1. von Mücke-Heim, Urbina-Treviño, **Bordes**, Ries, Schmidt, Deussing (2023) Introducing a depression-like syndrome for translational neuropsychiatry: a plea for taxonomical validity and improved comparability between humans and mice. Molecular Psychiatry (link) *[This review highlights the difficulties in translating preclinical stress models to clinical settings, emphasizing the need for advanced computational tools and better alignment with clinical symptoms. This is relevant to the current research proposal, as similar issues affect preclinical models of anxiety disorders]*

## SUPERVISING AND MENTORING ACTIVITIES

**02/2025-11/2025 (Bordeaux) MSc thesis and scientist contract at present**:
Ms. Aman (listed on 1 manuscript) Subsequent career: Scientist, applying for PhD positions.
**06/2025-08/2025 (Bordeaux) BSc thesis**:
Ms. Soulat (listed on 1 manuscript) Subsequent career: MSc student.
**06/2024-12/2024 (Bordeaux) MSc thesis**:
Ms. Stont (listed on 2 manuscripts) Subsequent career: MSc internship student, applying for PhD positions.
**07/ 2022-12/2022 (Munich) MSc thesis and scientist contract Jan 2023-July 2023**:
Ms. Dillman (listed on 1 publication) Subsequent career: PhD student at Harvard University, Boston, USA.
**06/2021-11/2021 (Munich) MSc thesis**:
Ms. Elkhateib (listed on 1 publication) Subsequent career: Research Analyst at Eurofins BioPharma, Munich, Germany
**10/2020-03/2021 (Munich) MSc thesis**:
Ms. Reinhardt (listed on 2 publications). Subsequent career: Project manager at Eurofins BioPharma, Munich, Germany

## COMMUNITY ACTIVITIES

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| • Member of Diversity, Equity & Inclusion (DEI) Committee, Neurocentre Magendie, Bordeaux, FR | Since 2024 |
| • Member of ALBA Network for Diversity in Neurosciences | Since 2024 |
| • Member of the French Neuroscience Society | Since 2024 |
| • Active member of the European College of Neuropsychopharmacology Resilience Network (link) | Since 2023 |
| • Member of the European Brain and Behaviour Society (EBBS) | Since 2018 |
| • Member of the Federation of European Neurosciences (FENS) | Since 2018 |