

Gil Vantomme



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Education

- Postdoctoral Fellow, Stanford University, CA, USA. Epilepsy and ASD research. February 2021 – current
- Senior FNS researcher, Lausanne University, Switzerland. Sleep research. July 2020 – January 2021
- PhD in Neurosciences, Lausanne University, Switzerland. Navigation and sleep research. March 2015 – February 2020
- MSc in Medical Biology, Lausanne University, Switzerland. September 2012 – January 2015
- Bachelor's in medicine, Mons University, Belgium. September 2009 – June 2012

Certifications

- Co-investigator in Clinical Research, CHUV, Switzerland, December 2014.
- Certificate for animal experimentation, Lausanne University, Switzerland, December 2013.

Languages

- French: mother tongue
- English: complete professional competency

Summary

Electrophysiologist and data analyst with a decade of experience, strong research background in **cognition, sleep, epilepsy, and autism spectrum disorders**. Proven ability to work independently while fostering **collaborative, multidisciplinary environments**. Eager to leverage my expertise in **electrophysiology** to drive innovative research in **neurology** and contribute to transformative advances in human biology.

Experience

Preclinical researcher, 9+ years

- Contributed to **paradigm shifts in sleep research** by revealing that sleep varies across local brain areas, challenging the brain-wide model and offering new avenues for treating major sleep disorders (Vantomme 2019, Fernandez 2018). Additionally, demonstrated that the locus coeruleus not only promotes wakefulness but also regulates sleep depth (Osorio-Forero 2021).
- Demonstrated that thalamocortical networks enhance the precision of our internal compass, **revealing a broader role in neural function** beyond classical sensory gating (Vantomme 2021).
- Discovered the critical role of membrane potential in cell-penetrating peptide translocation, **driving advancements in targeted drug delivery strategies** (Trofimenko 2021).
- **Grant:** led a successful application for the Swiss National Science Foundation Early Postdoc.Mobility grant (81'500 CHF) (2021-2022).
- **Publications:** authored and contributed to 8 articles in peer-reviewed journals and 2 BioRxiv manuscripts.
- **Skillset:** patch-clamp, electroencephalogram, Neuropixels probe, rodent handling and behavior, microscopy, immunostaining, stereotaxic surgery, viral vectors, optogenetics, chemogenetics.
- **Awards:**
 - Prize of the Faculty of Biology and Medicine, Lausanne, 2021
 - Poster prizes: 7th European Synapse Meeting 2019, Life Sciences Switzerland Annual Meeting 2016
 - Travel grants: Jean Falk-Vairant Fellowship 2018 (1,500CHF), Swiss Society for Neuroscience 2017 (700 CHF) and Life Sciences Switzerland 2016 (1,097 CHF).

Data analyst, 3+ years

- **Established a pipeline** for patch-clamp data analysis using custom MATLAB code, increasing **efficiency and reproducibility** within the lab.
- Analyzed and prepared data for publication using branded software (Plexon, MATLAB (Kilosort, Phy), R, Python, Office, Adobe Illustrator).

Leadership and management roles

- Laser safety manager establishing SOP, training employees and maintaining class 3 and 4 lasers (2021-now).
- Founder of the bimonthly Neurofeedback seminars (2021-now).
- Elected representative at the Biology and Medicine Faculty counsel (2017-2019).
- Co-organizer of departmental seminars and retreat (2016-2017).
- Elected PhD student representative for the department (2016-2019).

Teaching and mentoring roles

- Mentor for Stanford NeURO Community College program (2024).
- Teacher for Stanford yearly Electrophysiology Boot Camps (2021-now).
- Mentor for master students and research interns (2017-2019).
- Teacher for the human anatomy platform, Lausanne (2015-2016).

Publication list

1. Gabrielle Devienne, **Gil Vantomme**, John R Huguenard, *Developmental progression of prefrontal circuit dysfunction in a Shank3^{-/-} mouse model of autism spectrum disorder*, bioRxiv, DOI: [10.1101/2024.05.31.596906](https://doi.org/10.1101/2024.05.31.596906), September 2024
2. **Gil Vantomme**, Gabrielle Devienne, Jacob M Hull, John R Huguenard, *Reuniens thalamus recruits recurrent excitation in medial prefrontal cortex*, bioRxiv, DOI: [10.1101/2024.09.09.612160](https://doi.org/10.1101/2024.09.09.612160), June 2024
3. Nóra Hádinger, Emília Bősz, Boglárka Tóth, **Gil Vantomme**, Anita Lüthi & László Acsády, *Region-selective control of the thalamic reticular nucleus via cortical layer 5 pyramidal cells*, Nature Neuroscience 26, pages116–130, DOI: [10.1038/s41593-022-01217-z](https://doi.org/10.1038/s41593-022-01217-z), January 2023
4. Evgeniya Trofimenko, Gianvito Grasso, Mathieu Heulot, Nadja Chevalier, Marco A Deriu, Gilles Dubuis, Yoan Arribat, Marc Serulla, Sébastien Michel, **Gil Vantomme**, Florine Ory, Linh Chi Dam, Julien Puyal, Francesca Amati, Anita Lüthi, Andrea Danani, Christian Widmann, *Genetic, cellular and structural characterization of the membrane potential-dependent cell-penetrating peptide translocation pore*, eLife, Volume 10, DOI: [10.7554/eLife.69832](https://doi.org/10.7554/eLife.69832), October 2021
5. Alejandro Osorio-Forero, Romain Cardis, **Gil Vantomme**, Aurélie Guillaume-Gentil, Georgia Katsioudi, Christiane Devenoges, Laura M.J. Fernandez, Anita Lüthi, *Noradrenergic circuit control of non-REM sleep substates*, Current Biology, Volume 31, Issue 22, DOI: [10.1016/j.cub.2021.09.041](https://doi.org/10.1016/j.cub.2021.09.041), October 2021
6. **Gil Vantomme**, Zita Rovó, Elidie Béard, Georgia Katsioudi, Romain Cardis, Angelo Guadagno, Virginie Perrenoud, Laura MJ Fernandez, Anita Lüthi, *A thalamic reticular circuit for head direction cell tuning and spatial navigation*, Cell Reports, Volume 31, Issue 10, 107747, DOI: [10.1016/j.celrep.2020.107747](https://doi.org/10.1016/j.celrep.2020.107747), June 2020
7. **Gil Vantomme**, Alejandro Osorio-Forero, Anita Lüthi, Laura MJ Fernandez, *Regulation of local sleep by the thalamic reticular nucleus*, Front. Neurosci. 13:576, DOI: [10.3389/fnins.2019.00576](https://doi.org/10.3389/fnins.2019.00576), June 2019
8. Laura MJ Fernandez, **Gil Vantomme**, Alejandro Osorio-Forero, Romain Cardis, Elidie Béard, Anita Lüthi, *Thalamic reticular control of local sleep in mouse sensory cortex*. eLife 2018;7:e39111, DOI: [10.7554/eLife.39111](https://doi.org/10.7554/eLife.39111), December 2018
9. Laura MJ Fernandez, Chiara Pellegrini, **Gil Vantomme**, Elidie Béard, Anita Lüthi & Simone Astori, *Cortical afferents onto the nucleus Reticularis thalami promote plasticity of low-threshold excitability through GluN2C-NMDARs*, Sci Rep, 7:12271, DOI: [10.1038/s41598-017-12552-8](https://doi.org/10.1038/s41598-017-12552-8), September 2017
10. Laura MJ Fernandez, Sandro Lecci, Romain Cardis, **Gil Vantomme**, Elidie Béard, Anita Lüthi, *Quantifying Infra-slow Dynamics of Spectral Power and Heart Rate in Sleeping Mice*. J. Vis. Exp. (126), e55863, DOI: [10.3791/55863](https://doi.org/10.3791/55863), August 2017