

Curriculum Vitae

Group Leader, Simons Initiative for the Developing Brain, University of Edinburgh

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Education and Training

- 2003-2006 **University of Pisa**, Pisa, Italy
 Laurea (B.S.) in Computer Engineering (110/110 cum laude)
 Advisors: Dr. Bruno Codenotti, Dr. Massimo Pappalardo
 Thesis title: *An analysis of the Lemke-Howson algorithm for the computation of Nash equilibria in bimatrix games*
- 2006-2009 **University of Pisa**, Pisa, Italy
 Laurea Specialistica (M.S.) in Control Engineering (110/110 cum laude)
 Advisors: Dr. Alberto Landi, Dr. Andrea Caiti, Dr. Davide Zoccolan, Dr. James DiCarlo
 Thesis title: *Study of a biologically inspired model for visual object recognition*
- 2003-2009 **Scuola Superiore Sant'Anna**, Pisa, Italy
 Diploma in Engineering (100/100 cum laude)
- 2007-2008 **Massachusetts Institute of Technology**, Cambridge, MA
 Research visiting student
 Advisors: Dr. James DiCarlo, Dr. Nicole Rust, Dr. Davide Zoccolan
- 2009-2014 **University of Pennsylvania**, Philadelphia, PA
 Ph.D. in Neuroscience
 Advisor: Dr. Nicole Rust
 Dissertation title: *The neural mechanisms underlying visual target search*
- 2015-2023 **Princeton University**, Princeton, NJ
 Postdoctoral research in the laboratory of Dr. Carlos Brody

Grants

- 2016-2019 Simons Collaboration on the Global Brain (SCGB) Postdoctoral Fellowship
 "Neural mechanisms underlying flexible decision-making"
- 2021-2022 NIMH R21 Grant (Carlos Brody, Marino Pagan)
 "Experimental platform to investigate the neural mechanisms underlying flexible decision-making"
- 2021-present Simons Foundation Autism Research Initiative (SFARI) Bridge To Independence (BTI) Award
 "High-throughput dissection of the neural mechanisms underlying cognitive inflexibility in autism"

Honors and Awards

- 2003-2009 Full Scholarship (room and board) for the full duration of undergraduate studies as a winner of nationwide competition, Scuola Superiore Sant'Anna
- 2012 Best oral presentation at BGSA Symposium, University of Pennsylvania
- 2012 Jameson-Hurvich Travel Award, University of Pennsylvania
- 2012 Admission to Computational Vision course, Cold Spring Harbor Laboratory
- 2013 Presenter's Travel Grant, CoSyNe
- 2020 Selected Speaker for NeuroLaunchpad Seminar Series
- 2022 Selected Speaker for Brown BrainExpo Seminar Series

Teaching experience

- 2011 Teaching Assistant for *Cellular Neurobiology* (BBB251), University of Pennsylvania
- 2016-2021 Mentorship of graduate and undergraduate students in the Brody Lab, Princeton University

Publications

Codenotti, B., De Rossi, S.M., **Pagan, M.** (2008). [An experimental analysis of Lemke-Howson algorithm](#). *arXiv:0811.3247*

Baldassi, C.*, Alemi-Neissi, A.*, **Pagan, M.***, DiCarlo, J.J., Zecchina, R., Zoccolan, D. (2013). [Shape similarity, better than semantic membership, accounts for the structure of visual object representations in a population of monkey inferotemporal neurons](#). *PLoS Computational Biology*. 9 (8), e1003167 (PMCID3738466)
*co-first author

Pagan, M., Urban, L.S., Wohl, M.P., Rust, N.C. (2013). [Signals in inferotemporal and perirhinal cortex suggest an untangling of visual target information](#). *Nature Neuroscience*. 16 (8), 1132-1139 (PMCID3725208)

Pagan, M., Rust, N.C. (2014). [Quantifying the signals contained in heterogeneous neural responses and determining their relationships with task performance](#). *Journal of Neurophysiology*. 112 (6), 1584-1598 (PMCID4137243)

Pagan, M., Rust N.C. (2014). [Dynamic target match signals in perirhinal cortex can be explained by instantaneous computations that act on dynamic input from inferotemporal cortex](#), *Journal of Neuroscience*. 34 (33), 11067-11084 (PMCID4131017)

Pagan, M., Simoncelli E.P., Rust N.C. (2016). [Neural Quadratic Discriminant Analysis: Nonlinear Decoding with V1-Like Computation](#), *Neural Computation*. 28 (11), 2291-2319 (PMCID6395528)

Duan, C.A.*, **Pagan, M.***, Piet, A.T.*, Kopec, C.D., Akrami, A., Riordan, A.J., Erlich, J.C., Brody, C.D. (2021) [Collicular circuits for flexible sensorimotor routing](#), *Nature Neuroscience*. 24 (8), 1110-1120 (PMCID34083787)
*co-first author

Pagan, M., Tang, V., Aoi, M.C., Pillow, J.W., Mante, V., Sussillo, D., Brody, C.D. (2022) [A new theoretical framework jointly explains behavioral and neural variability across subjects performing flexible decision-making](#), *bioRxiv*. <https://doi.org/10.1101/2022.11.28.518207>

Pagan, M., Valente, A., Ostojic, S., Brody, C.D. (2023), [Brief technical note on linearizing recurrent neural networks \(RNNs\) before vs after the pointwise nonlinearity](#), *arXiv:2309.04030*

Selected meetings and presentations

- 2011 From luminance to semantics: how images of natural objects are represented in IT cortex, *CoSyNe*
- 2012 The neural mechanisms involved in finding specific objects and switching between targets, *CoSyNe*
- 2013 Visual target signals are computed via a dynamic “and-like” mechanism in IT and PRh cortex, *CoSyNe*
- 2014 Maximum Variance Differentiation (MVD) explains the transformation from IT to PRh cortex, *CoSyNe*
- 2016 A collicular mechanism for flexible sensorimotor gating during task switching, *CoSyNe*
- 2016 Neural mechanisms underlying flexible decision-making, *SCGB Annual Meeting* (invited talk)
- 2017 Flexible decision-making in rats, *CoSyNe*
- 2018 Flexible feature selection for decision-making in rats, *SCGB Annual Meeting*
- 2019 Representations and causal contributions of frontal cortex during flexible decision-making, *CoSyNe*
- 2019 Neural mechanisms underlying flexible decision-making, *PNI In-house seminar* (invited talk)
- 2020 Heterogeneous recurrent mechanisms underlying context-dependent computation in rats, *CoSyNe*
- 2020 Individual variability in the neural mechanisms underlying context-dependent decision-making, *NeuroLaunchpad Seminar series* (invited talk)
- 2020 Individual variability in the neural mechanisms underlying context-dependent decision-making, *HHMI Cognitive and Systems Neuroscience meeting*
- 2021 Individual variability of neural mechanisms underlying flexible decision-making, *CoSyNe*
- 2021 High-throughput electrophysiology and optogenetics in freely-moving rats performing cognitive tasks, *IEEE NER 2021*
- 2022 Neural sources of individual variability in cognitive behavior, *SCGB Annual Meeting*
- 2022 High-throughput characterization of cognitive flexibility in rat models of autism, *SFARI Annual Meeting*
- 2022 Flexible decision-making in rat models of autism, *SFARI Autism Rat Consortium Meeting* (invited talk)
- 2023 Neural sources of individual variability in cognitive behavior, *SIDB Annual Research Retreat*