Stanford



Pauline Brochet

Postdoctoral Scholar, Biomedical Informatics

Bio

BIO

Pauline Brochet is a French scientist from Souraide, France. She completed her undergraduate studies in Molecular, Cellular and Physiological Biology (BSc, Université Clermont-Auvergne) and earned a Master's degree in Software Development and Data Analysis (MSc, Aix-Marseille Université). Pauline pursued a PhD at TAGC (Theories and Approaches for Genomic Complexity) in Marseille, France.

Under the supervision of Dr. Christophe Chevillard and Dr. Lionel Spinelli, Pauline integrated multi-omics data from human heart tissue to investigate the pathogenic processes associated with Chagas Disease Cardiomyopathy (CCC). Notably, she contributed to the development of ChagasDB, the first database associating key features with the different stages of Chagas disease. Her research identified the involvement of mitochondrial DNA mutations, non-coding RNA, transcription factors, and DNA methylation in various pathogenic processes, all leading to the progression of CCC.

Currently, at Stanford University, under the guidance of Dr. Matthew Wheeler and Dr. Daniel Katz, Pauline is conducting postdoctoral research on multi-omics data analysis as part of the Molecular Transducers of Physical Activity Consortium (MoTrPAC). Her work focuses on identifying key covariable features associated with physical exercise, with the ultimate goal of discovering exercise-mimetic drugs that could help prevent heart diseases.

PROFESSIONAL EDUCATION

- Doctor of Philosophy, Universite D'Aix-Marseille (2024)
- Master of Science, Universite D'Aix-Marseille (2019)
- Bachelor of Science, Universite De Clermont (2018)
- PhD, Aix-Marseille Université, France , Doctor of Philosophy in Genomic and Bioinformatic (2023)
- MSc, Aix-Marseille Université, France , Software Development and Data Analysis (2019)
- BSc, Université Clermont-Auvergne, France , Cellular and Physiological Biology (2017)

STANFORD ADVISORS

- Daniel Katz, Postdoctoral Faculty Sponsor

Publications

PUBLICATIONS

- **Acute Exercise Drives Transient Immune Dysregulation: Immune Score Analysis in the MoTrPAC Cohort**
  Brochet, P., Smith, G., Jin, C., Jimenez-Morales, D., Many, G., Lindholm, M. E., Smith, K., Khatri, P., Sealfon, S., Walsh, M., Montgomery, S. B., Snyder, M., Wheeler, et al

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- **Endurance Exercise Opposes Cardiac Disease Programs and Modulates Haploinsufficient Cardiomyopathy Genes**
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- **Mapping Sedentary Human Fitness And Clinical Features: Multi-omic Baseline Architecture And Acute Exercise Dynamics In The Molecular Transducers Of Physical Activity Consortium (MoTrPAC) Project**
  Montalvo, S., Rao, P., Vetr, N. G., Sutton, K., Leslie, E., Brochet, P., Jin, C. A., Many, G. M., Iyer, G., Ahn, C., Taylor, T., Amar, D., Brandt, et al
  LIPPINCOTT WILLIAMS & WILKINS.2026

- **The Long Non-coding RNA Landscape of Endurance Exercise Training.** *Molecular metabolism*
  Bonilauri, B., Smith, G. R., Raja, A. N., Jimenez-Morales, D., Ahmed, A., Jin, C., Sparks, L. M., Walsh, M. J., Montgomery, S. B., Bodine, S. C., Ashley, E. A., Lindholm, M. E.
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- **Integrative analysis of MoTrPAC and LINCS transcriptomes identifies cardiovascular-relevant exercise-mimetic drugs**
  Brochet, P., Jimenez-Morales, D., Lindholm, M., Wheeler, M., Katz, D.
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- **Multi-omics analysis of endurance exercise reveals cardioprotective remodeling in rat heart**
  Brochet, P., Njoroge, J., Montalvo Hernandez, S., Lindholm, M., Smith, G., Amar, D., Gay, N., Zhao, B., Hung, C., Jin, C., Chavez, C., Nachun, D., Zaslavsky, et al
  LIPPINCOTT WILLIAMS & WILKINS.2025

- **Sex Differences in Chagas Cardiomyopathy: a Comprehensive Review.** *Current heart failure reports*
  Mansur, A. d., Cunha-Neto, E., Bestetti, R. B., Brochet, P., Chevillard, C., Pereira-Barretto, A. C., Bocchi, E. A.
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- **Endurance Training Enhances Sex-Specific Cardioprotective Metabolism.** *Circulation research*
  Brochet, P., Montalvo, S., Lindholm, M. E., Jimenez-Morales, D., Jin, C. A., Rasmussen, B. B., Kraus, W. E., Yan, Z., Wheeler, M. T., Katz, D. H.
  2025

- **Cardiac and Digestive Forms of Chagas Disease: An Update on Pathogenesis, Genetics, and Therapeutic Targets** *MEDIATORS OF INFLAMMATION*
  Frade, A., Guerin, H., Nunes, J., Souza e Silva, L., Roda, V., Madeira, R., Brochet, P., Andrieux, P., Kalil, J., Chevillard, C., Cunha-Neto, E.
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- **ChagasDB: 80 years of publicly available data on the molecular host response to Trypanosoma cruzi infection in a single database.** *Database : the journal of biological databases and curation*
  Brochet, P., Mouren, J. C., Hannouche, L., Lopez, F., Ballester, B., Cunha-Neto, E., Spinelli, L., Chevillard, C.
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- **Mitochondrial DNA Haplogroups and Variants Predispose to Chagas Disease Cardiomyopathy** *Hearts*
  Gallardo, F., Brochet, P.
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- **Blood DNA methylation marks discriminate Chagas cardiomyopathy disease clinical forms.** *Frontiers in immunology*
  Brochet, P., Ianni, B., Nunes, J. P., Frade, A. F., Teixeira, P. C., Mady, C., Ferreira, L. R., Kuramoto, A., Pissetti, C. W., Saba, B., Cândido, D. D., Dias, F., Sampaio, et al
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- **Chagas Disease Megaesophagus Patients Carrying Variant MRPS18B P260A Display Nitro-Oxidative Stress and Mitochondrial Dysfunction in Response to IFN-γ Stimulus.** *Biomedicines*
  Silva, K. D., Nunes, J. P., Andrieux, P., Brochet, P., Almeida, R. R., Kuramoto Takara, A. C., Pereira, N. B., Abel, L., Cobat, A., Zaniratto, R. C., Levy, D., Bydlowski, S. P., Cecconello, et al
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- **Epigenetic regulation of transcription factor binding motifs promotes Th1 response in Chagas disease cardiomyopathy.** *Frontiers in immunology*

Brochet, P., Ianni, B. M., Laugier, L., Frade, A. F., Silva Nunes, J. P., Teixeira, P. C., Mady, C., Ferreira, L. R., Ferré, Q., Santos, R. H., Kuramoto, A., Cabantous, S., Steffen, et al

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- **Prevalence of Inflammatory Pathways Over Immuno-Tolerance in Peripheral Blood Mononuclear Cells of Recent-Onset Type 1 Diabetes** *FRONTIERS IN IMMUNOLOGY*

  Santos, A., Cunha-Neto, E., Gonfinetti, N., Bertonha, F., Brochet, P., Bergon, A., Moreira-Filho, C., Chevillard, C., da Silva, M.

  2022; 12: 765264

- **Co-Exposure of Cardiomyocytes to IFN-γ and TNF-α Induces Mitochondrial Dysfunction and Nitro-Oxidative Stress: Implications for the Pathogenesis of Chronic Chagas Disease Cardiomyopathy.** *Frontiers in immunology*

  Nunes, J. P., Andrieux, P., Brochet, P., Almeida, R. R., Kitano, E., Honda, A. K., Iwai, L. K., Andrade-Silva, D., Goudenège, D., Alcântara Silva, K. D., Vieira, R. d., Levy, D., Bydlowski, et al

  2021; 12: 755862

- **miRNAs may play a major role in the control of gene expression in key pathobiological processes in Chagas disease cardiomyopathy.** *PLoS neglected tropical diseases*

  Laugier, L., Ferreira, L. R., Ferreira, F. M., Cabantous, S., Frade, A. F., Nunes, J. P., Ribeiro, R. A., Brochet, P., Teixeira, P. C., Santos, R. H., Bocchi, E. A., Bacal, F., Cândido, et al

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