

CHLOÉ PASIN: CV

Postdoctoral Researcher, computational immunology & biostatistics

📍 Born 24.10.1991 in Toulouse, FR @ chloe.pasin@usz.ch ✉ Zurich, CH 🔗 <https://www.chloepasin.com/>
🔗 <https://scholar.google.com/citations?user=YcIJIR0AAAAJhl=en> 🌐 <https://github.com/chlpasin> 🐦 @ChloePasin
in <https://www.linkedin.com/in/chloe-pasin-736902a8/>

KEY WORDS

Biostatistics Machine learning Mechanistic models Optimal control Infectious diseases Immunology
Virology Dimension reduction Variable selection Longitudinal data Random forests Survival analysis
Ordinary differential equations Parameter estimation Piecewise deterministic Markov processes Vaccine
Ebola HIV Allogeneic hematopoietic cell transplantation SARS-CoV-2

EDUCATION AND EXPERIENCE

Junior Fellow

Collegium Helveticum

📅 sep 2022 – present

📍 Zurich, CH

- The Gendered Immune System: The Missing Component in Mental Health Research

Postdoctoral Researcher

Institute of Medical Virology, University of Zurich / Division of Infectious Diseases and Hospital Epidemiology, University Hospital Zurich

📅 oct 2020 – aug 2022

📍 Zurich, CH

Alexandra Trkola & Roger Kouyos groups.

- Determinants of the HIV-1 broadly neutralizing antibody induction
- SARS-CoV-2 seroprofiling in adults and children
- Antibody response to SARS-CoV-2 vaccination in patients following allogeneic hematopoietic cell transplantation
- Effect of hormone intake on the immune system in cis and trans women living with HIV

Postdoctoral Research Scientist

Columbia University Medical Center – Department of Pathology and Cell Biology

📅 jan 2019 – oct 2020

📍 New York, NY, USA

Andrew Yates group.

- Use of variable selection methods to identify cell subpopulations associated with the clinical state of patients following allogeneic hematopoietic cell transplantation
- Vitamin D deficiency signatures after allogeneic hematopoietic cell transplantation

PhD in Public Health, biostatistics option (defence: October 30th, 2018)

Modeling and optimizing the response to vaccine and immunotherapeutic interventions. Application to Ebola virus and HIV.

Université de Bordeaux

Bordeaux Population Health Research Center (INSERM U1219) / INRIA Bordeaux Sud Ouest – SISTM team

📅 oct 2015 – oct 2018

📍 Bordeaux, FR

Rodolphe Thiébaud & François Dufour groups.

- Modeling the humoral immune response to Ebola vaccine. European projects EBOVAC1/2. Collaboration with Janssen (Johnson&Johnson group)
- Optimizing IL-7 immune therapies in HIV-infected patients. Collaboration with the Vaccine Research Institute
- *In silico* trials to evaluate and predict the response to short-cycle strategies for HIV antiretroviral therapies
- Modeling the viral rebound kinetics following therapeutic vaccination in SIV/SHIV-infected non human primates. Collaboration with Harvard Program for Evolutionary Dynamics

Predoctoral research

Fred Hutchinson Cancer Research Center - Vaccine and Infectious Disease Division

📅 oct 2014 - may 2015

📍 Seattle, WA, USA

Peter Gilbert group, supervisor: Zoe Moodie. Effect of rainfall season on the efficacy of a dengue vaccine in Asia and Latin America. Collaboration with Sanofi Pasteur.

Master of Science

Université Paris Descartes

📅 sep 2013 - sep 2014

📍 Paris, FR - Bordeaux, FR

Applied Mathematics - Statistic modeling in Biology. Internship at INSERM U897, Bordeaux. Supervisors: Rodolphe Thiébaud and Daniel Commenges. Modeling the dynamics of CD4 T lymphocytes after HIV vaccine injection. Application to HVTN 068 clinical trial.

Master's degree

ENS Cachan / Université Paris Diderot

📅 sep 2012 - sep 2013

📍 Paris, FR - Canberra, AUS

Applied mathematics. Internship at NICTA (now CSIRO), Canberra, Australia. Supervisor: Robert Williamson. Elicitation and identification of properties.

Bachelor's degree

ENS Cachan / Université Paris Diderot

📅 sep 2011 - sep 2012

📍 Cachan, FR

Mathematics. Internship at CMLA, Cachan. Nicolas Vayatis group, supervisors: Themistoklis Stefanakis, David Buffoni. Project: active experimental design for tsunami modeling.

Entry at Ecole Normale Supérieure de Cachan - now Ecole Normale Supérieure Paris Saclay (2011)

FUNDINGS

- Collegium Helveticum junior fellowship (Sep 2022 - Jun 2023)
- UZH GRC Short grant to support the organization of the workshop "Sex and gender in immunity" at the **Collegium Helveticum, Zurich** (May 5-6, 2022)
- Swiss HIV Cohort Study funding, 4-months project (approx. CHF 44,000): **Women and HIV: a spotlight on the role of oestrogens and progestogens on the immune system** (jul 2021).
- Philippe Foundation grant (support for research activities between France and the US, 2019-2020): \$9000
- PhD funding from French Ministry of Higher Education and Research (2015-2018).
- Travel fees for the conference Systems Approaches in Immunology and Infectious Diseases (2016): \$500.

MENTORING AND TEACHING ACTIVITIES

- Co-supervision of Master's and PhD students: Marco Labarile (from jan 2021), Nadia Neuner-Jehle (from mar 2022).
- Teaching in the block course *Quantitative Life Sciences: from Infectious Diseases to Ecosystems*, University of Zurich (2020, 2021).
- Total of 128h of teaching at ISPED (Institut de Santé Publique, d'Épidémiologie et de Développement) in the following courses: linear mixed models (MSC: epidemiology), linear regression & statistical tests (Master: Public Health), statistical modeling (Public Health residents). Softwares R and SAS.

INSTITUTIONAL RESPONSIBILITIES

- Elected at the **Equal Opportunities Commission** of University of Zurich (sep 2021 - jun 2022).
- Active member in the Columbia postdoctoral workers union (sep 2019 - sep 2020).
- PhD students' representative at the INSERM U1219 center committee (2018).
- PhD students' representative at the doctoral college of the University of Bordeaux (2017-2018).
- PhD students' representative at the doctoral school committee (2015-2016).
- Treasurer of the PhD student's association of the doctoral school (2015-2016).

MEMBERSHIPS AND SCIENTIFIC REVIEWING

- Member of WAVE group (Women Against Viruses in Europe) and EACS (European AIDS Clinical Society) (2021)
- Member of AAI (American Association of Immunologists), attendance to AAI Advanced Course in Immunology (2019)
- Member of 500 Women Scientists (since 2019)
- Member of SFdS (French Society of Statistics) and SMAI (Société de Mathématiques Appliquées et Industrielles) (2016-2018)
- Reviews: Plos Computational Biology (2020-2021), Plos Pathogens (2021), and Nature Computational Science (2021)

WORKSHOP ORGANISATION

- "Sex and gender in immunity" at the **Collegium Helveticum, Zurich**, on May 5-6, 2022
- "Communicating effectively online" with the Columbia University Postdoctoral Society (may 2020)

OUTREACH ACTIVITIES

- Scientific input for an article in El País by a scientific journalist (¿Por qué hablamos del 70% de población vacunada como 'cifra mágica' para acabar con la covid?, April 14th 2021)
- **Training in science communication:** SCOPE (Science Communication Online Programme from Northwestern University). Online class with 8 modules, designed by science-communication experts (2020).
- Data for the People (D4P), *Episode #6: Math, Models, and Social Mixing*. Presentation of a paper on modeling COVID-19 epidemic. Organised by RockEDU (science outreach program at Rockefeller University, NY). Replay available on Youtube. (2020)
- Member of the communication & outreach committee of CUPS - Columbia University Postdoctoral Society (2019 - 2020). Organisation of a workshop "Communicating effectively online" (may 2020) and trivia nights.
- Participation in outreach events (2019) : Girls' Science Day (Columbia University, Spring and Fall 2019), STEM expo (Harlem).
- Association "Women and Science". Interventions in mid and high schools (Bordeaux, 2017).

PUBLICATIONS

*Shared first and last authorship are represented with * and §, respectively.*

Postdoctoral period:

1. Chammartin F, Kusejko K, Pasin C, Trkola A, Briel M, Amico P, Stoeckle MP, Eichenberger AL, Hasse B, Braun DL, Schuurmans MM, Müller T, Tamm M, Mueller NJ, Rauch A, Koller MT, Günthard HF, Bucher HC, Speich B, Abela IA, and the Swiss HIV Cohort Study. **Determinants of antibody response to SARS-CoV-2 mRNA vaccines in people living with HIV.** AIDS 36 (10), 1465-1468
2. Marconato M*, Abela A*, Hauser A*, Schwarzmueller M, Katzensteiner R, Braun DL, Epp S, Audigé A, Weber J, Rusert P, Schindler E, Pasin C, West E, Boeni J, Kufner V, Huber M, Zaheri M, Schmutz S, Frey BM, Kouyos RD[§], Günthard HF[§], Manz MG[§], Trkola A[§]. **Contribution of endogenous and exogenous antibodies to clearance of SARS-CoV-2 during convalescent plasma therapy.** Accepted in Journal of Clinical Investigation.
3. Chammartin F, Kusejko K, Pasin C, Trkola A, Briel M, Amico P, Stoeckle MP, Eichenberger AL, Hasse B, Braun DL, Schuurmans MM, Müller T, Tamm M, Mueller NJ, Rauch A, Koller MT, Günthard HF, Bucher HC, Speich B, Abela IA, and the Swiss HIV Cohort Study. **Determinants of antibody response to SARS-CoV-2 mRNA vaccines in people living with HIV.** Accepted in Journal of the International AIDS Society.
4. Huang A*, Cicin-Sain C*, Pasin C*, Epp S, Audigé A, Müller NJ, Nilsson J, Bankova A, Wolfensberger N, Vilinovszki O, Nair G, Hockl P, Schanz U, Kouyos RD, Hasse B, Zinkernagel AS, Trkola A, Manz MG, Abela IA[§], Müller AMS[§]. **Antibody Response to SARS-CoV-2 Vaccination in Patients Following Allogeneic Hematopoietic Cell Transplantation.** Transplantation and Cellular Therapy (2021).
5. Abela IA*, Pasin C*, Schwarzmüller M*, Epp S, Sickmann ME, Schanz ME, Rusert P, Weber J, Schmutz S, Audigé A, Maliqi L, Hunziker A, Hesselman MC, Niklaus CR, Gottschalk J, Schindler E, Wepf A, Karrer U, Wolfensberger A, Rampini SK, Meyer Sauteur PM, Berger C, Huber M, Böni J, Braun DL, Marconato M, Manz MG, Frey BM, Günthard HF[§], Kouyos RD[§], Trkola A[§]. **Multifactorial seroprofiling dissects the contribution of pre-existing human coronavirus responses to SARS-CoV-2 immunity.** Nat Communications 12, 6703 (2021).
6. Macedo R*, Pasin C*, Ganetsky A*, Harle D, Wang XK, Belay K, Richman LP, Huffman AP, Vonderheide RH, Yates AJ, Porter DL, Wang Y, Zhang Y, Reshef R. **Vitamin D deficiency after allogeneic hematopoietic cell transplantation**

promotes T-cell activation and is inversely associated with an EZH2-ID3 signature. Transplantation and Cellular Therapy, 2021.

7. Szabo PA, Dogra P, Gray JI, Wells SB, Connors TJ, Weisberg SP, Krupska I, Matsumoto R, Poon MML, Idzikowski E, Morris SE, [Pasin C](#), Yates AJ, Ku A, Chait M, Davis-Porada J, Zhou J, Steinle M, Mackay S, Saqi A, Baldwin MR, Sims PA, Farber DL. **Longitudinal profiling of respiratory and systemic immune responses reveals myeloid cell-driven lung inflammation in severe COVID-19.** Immunity, 2021.
8. [Pasin C](#), Moy RH, Reshef R, Yates AJ. **Variable selection methods for predicting clinical outcomes following allogeneic hematopoietic cell transplantation.** Scientific Reports, 2021.
9. Balelli I, [Pasin C](#), Prague M, Crauste F, Van Effelterre T, Bockstal V, Solfrosi L, Thiébaud R. **A model for establishment, maintenance and reactivation of the immune response after vaccination against Ebola virus.** Journal of Theoretical Biology, 2020.

PhD and prior:

10. [Pasin C](#), Balelli I, Van Effelterre T, Bockstal V, Solfrosi L, Prague M, Douoguih M, Thiébaud R, for the EBOVAC1 consortium. **Dynamics of the humoral immune response to a prime-boost Ebola vaccine: quantification and sources of variation.** Journal of Virology, 2019.
11. Villain L, Commenges D, [Pasin C](#), Prague M, Thiébaud R. **Adaptive protocols based on predictions from a mechanistic model of the effect of IL7 on CD4 counts.** Statistics in medicine, 2019.
12. [Pasin C](#), Dufour F, Villain L, Zhang H, Thiébaud R. **Controlling IL-7 injections in HIV-infected patients.** Bulletin of Mathematical Biology, 2018.
13. Gross L, Lhomme E, [Pasin C](#), Richert L, Thiébaud R. **Ebola vaccine development: Systematic review of pre-clinical and clinical studies, and meta-analysis of determinants of antibody response variability after vaccination.** International Journal of Infectious Diseases, 2018.
14. [Pasin C](#), Halloran ME, Gilbert PB, Langevin E, Ochiai RL, Pitisuttithum P, Capeding MR, Carrasquilla G, Frago C, Cortés M, Chambonneau L, Moodie Z. **Periods of high dengue transmission defined by rainfall do not impact efficacy of dengue vaccine in regions of endemic disease.** PLOS ONE, 2018.
15. Lhomme E, Richert L, Moodie Z, [Pasin C](#), Kalams SA, Morgan C, Self S, De Rosa SC, Thiébaud R. **Early CD4+ T cell responses are associated with subsequent CD8+ T cell responses to an rAd5-based prophylactic prime-boost HIV vaccine strategy.** PLOS ONE, 2016.

Contributions to books

16. Thiébaud R, Villain L, [Pasin C](#), Commenges D. **Modelling the response to Interleukin-7 Therapy in HIV-infected patients.**, chapter in Molina-Paris C & Lythe G. **Mathematical, Computational and Experimental T Cell Immunology**, Springer, 2020.

Peer-reviewed conference proceedings

17. Cicin-Sain C, Huang A, [Pasin C](#), Epp S, Mueller NJ, Nilsson J, Vilinovszki O, Nair G, Wolfensberger N, Hockl P, Schanz U, Trkola A, Kouyos R, Hasse B, Zinkernagel A, Manz MG, Abela IA, Mueller AMS. **Antibody Response to Sars-Cov-2 Vaccination in Patients Following Allogeneic Hematopoietic Cell Transplantation.** In Blood (2021) 138 (Supplement 1): 3894.
18. [Pasin C](#), Reshef R, Yates AJ. **Use of variable selection methods to identify clinical and immunologic factors associated with the clinical outcome of patients following allogeneic hematopoietic stem cell transplantation.** In Bone Marrow Transplantation 2020 Dec 1 (Vol 55, No suppl 1, pp. 793-794).
19. Steinwart I, [Pasin C](#), Williamson R, Zhang S. **Elicitation and identification of properties.** In Conference on Learning Theory 2014 May 29 (pp. 482-526).

Preprints/submitted manuscripts

20. Clairon Q, [Pasin C](#), Balelli I, Thiébaud R, Prague M. **Parameter estimation in nonlinear mixed effect models based on ordinary differential equations: an optimal control approach.** Available on ArXiv (2021).
21. Prague M, Jeffrey MG, Balelli I, [Pasin C](#), Li JZ, Barouch DH, Whitney JB, Hill AL. **Viral rebound kinetics following single and combination immunotherapy for HIV/SIV.** BioRxiv (2019): 700401.

ORAL CONTRIBUTIONS TO CONFERENCES

Talks in peer-reviewed international conferences:

1. [Pasin C](#), Villain L, Dufour F, Commenges D, Prague M, Thiébaud R. **Use of mathematical modeling for optimizing and adapting immunotherapy protocols in HIV-infected patients.** PAGE (Population Approach Group Europe) meeting, Montreux, Switzerland, 2018.
2. [Pasin C](#), Prague M, Eggo R, Van Effelterre T, Balelli I, Snape M, Anzala O, Praygod G, Anywaine Z, Solfrosi L, Verbruggen N, Bockstal V, Watson-Jones D, Edmunds J, Douoguih M, Thiébaud R. **Modelling the humoral immune**

response to Ebola vaccine. Results from EBOVAC1 project. Systems Immunology & Vaccine Design symposium, Heidelberg, Germany, 2017.

3. Pasin C, Richert L, Commenges D, Thiébaud R. **Modelling the immune response to HIV vaccine.** British Society for Immunology meeting, Cambridge, UK, 2015.

Talks in peer-reviewed french conferences:

4. Pasin C, Dufour F, Thiébaud R. **Optimisation des stratégies d'injection d'interleukine 7 pour des patients infectés par le VIH.** SMAI 2017, 8ème biennale des Mathématiques Appliquées et Industrielles, Ronce-les Bains, 2017.
5. Pasin C, Richert L, Commenges D, Thiébaud R. **Modélisation de la réponse à un vaccin VIH.** GDR Statistiques et Santé, Paris, 2015.

Talks in invited conferences and seminars:

6. Pasin C, Thiébaud R. **Modelling the humoral immune response to Ebola vaccine.** Joint EBOVAC1 & EBOVAC2 1st, 2nd and 3rd annual meetings (Paris 2016, Windsor 2016, Amsterdam 2018).
7. Pasin C, Dufour F, Thiébaud R. **Optimal administration of IL-7 in HIV-infected patients.** Séminaires de Probabilités et Statistiques, Montpellier, France, 2017.
8. Pasin C, Thiébaud R. **Modelling the humoral immune response to Ebola vaccine.** Bordeaux Modelling Workshop, Bordeaux, France, 2016.
9. Pasin C, Dufour F, Thiébaud R. **Optimal administration of IL-7 in HIV-infected patients.** Bordeaux Modelling Workshop, Bordeaux, France, 2016.
10. Pasin C, Commenges D, Jarne A, Richert L, Lhomme E, Thiébaud R. **Mechanistic modelling of CD4+ T cell response to rAd5/DNA HIV vaccine.** Bordeaux Modelling Workshop, Bordeaux, France, 2014.

Posters in peer-reviewed international conferences:

11. Pasin C, Abela I, Garcia Nuñez D, Kusejko K, Aebi-Popp K, Hachfeld A, Buvelot H, Cavassini M, Damonti L, Fux C, Martinez de Tejada B, Vernazza P, Trkola A, Günthard H, Kouyos R, and the Swiss HIV Cohort Study. **Hormone intake differentially affects the immune system of HIV-positive cis and trans women.** International Workshop on HIV and Hepatitis Observational Databases, 2022.
12. Pasin C, Reshef R, Yates AJ. **Use of variable selection methods to identify clinical and immunologic factors associated with the clinical outcome of patients following allogeneic hematopoietic stem cell transplantation.** 46th Annual Meeting of the European Society for Blood and Marrow Transplantation, online, 2020.
13. Pasin C, Villain L, Dufour F, Thiébaud R. **Optimal administration of IL-7 in HIV-infected patients.** Systems Approaches in Immunology and Infectious Diseases, Santa Fe, NM, USA. 2016.

Second authorship in talks and posters in peer-reviewed international conferences:

14. Huang A*, Cicin-Sain C*, Pasin C, Epp S, Mueller NJ, Nilsson J, Viliinovszki O, Nair G, Wolfensberger N, Hockl P, Schanz U, Trkola A, Kouyos R, Hasse B, Zinkernagel A, Manz MG, Abela IA, Müller AMS. **Antibody Response to SARS-CoV-2 Vaccination in Patients Following Allogeneic Hematopoietic Cell Transplantation.** Poster at the ASH (American Society of Hematology) Annual Meeting by Cicin-Sain C, dec 2021.
15. Huang A*, Cicin-Sain C*, Pasin C, Mueller NJ, Nilsson J, Viliinovszki O, Nair G, Wolfensberger N, Hockl P, Schanz U, Trkola A, Kouyos R, Hasse B, Zinkernagel A, Manz MG, Abela IA, Müller AMS. **Antikörperantwort auf SARS-CoV-2 Impfungen in Patienten nach allogener Stammzelltransplantation (allo-HCT).** Talk at the DGHO (German, Austrian and Swiss Societies for Hematology and Medical Oncology) conference by Huang A, Young Investigator Award, sep 2021.
16. Balelli I, **Modelling the humoral immune response to Ebola vaccine.** Talk at IMI 10th Anniversary Scientific Symposium, 2018.
17. Prague M, Pasin C, Wittkop L, Duffau P, Lazaro E, Cazanave C, Vareil M, Bonnet F, Thiébaud R. **In silico clinical trials for evaluation of HIV short-cycle strategies.** Poster at CROI (Conference on Retroviruses and Opportunistic Infections) by Prague M, 2018.
18. Gerold JM, Pasin C, Balelli I, Lim S, Osuna C, Whitney JB, Barouch DH, Prague M, Hill A. **SIV rebound kinetics following TLR7-agonist & therapeutic vaccine administration.** Poster at CROI (Conference on Retroviruses and Opportunistic Infections) by Gerold JM, 2018.