

Jeremie GUEDJ

Research Director, INSERM

DoB: June 24th, 1980

Married, 3 children

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Researcher in Mathematical Modeling of Infectious Diseases

CV in research

2021	Research Director (INSERM, Paris)
2018	Habilitation (Univ Paris Diderot)
2012	Research scientist (INSERM, Paris)
2009 – 2012	Postdoctoral research fellow Supervision : Pr. Alan S. Perelson <i>Theoretical Biology & Biophysics, Los Alamos National Laboratory, NM, USA</i>
2007 – 2009	Postdoctoral research fellow Supervision : Pr. Avidan U. Neumann <i>Mina & Everard Goodman Faculty of Life Sciences, Bar-Ilan University, Tel-Aviv, Israel</i>
2003- 2006	PhD in biostatistics: “Inference in dynamical models of population: application to HIV & HCV” Supervision : Dr. Rodolphe Thiébaud & Pr. Daniel Commenges <i>ISPED, University Bordeaux II, France</i>

Publications (01/08/2021)

1. Burdet C, Bouscambert-Duchamp M, Hites M, Peiffer-Smadja N, Poissy J, Belhadi D, Diallo A, Lê MP, Peytavin P, Staub T, Greil R, **Guedj J**, Paiva JA, Costagliola D, Yazdanpanah Y, Burdet C, Mentré F. Remdesivir plus standard of care versus standard of care alone for the treatment of patients admitted to hospital with COVID-19 (DisCoVeRy): a phase 3, randomised, controlled, open-label trial. *Lancet Infectious Diseases* 2021.
2. Marc A, Kerioui M, Blanquart F, Bertrand J, Mitjà O, Corbacho-Monné M, Marks M, **Guedj J**. Quantifying the relationship between SARS-CoV-2 viral load and infectiousness. *Elife* 2021.
3. Cosentino G, Bernard M, Giannoli JM, **Guedj J**, Debarre F, Blanquart F. SARS-CoV-2 viral dynamics in infections with Alpha and Beta variants of concern in the French community. *Journal of Infection* 2021.
4. Maisonnasse P, Aldon Y, Marc A, Marlin R..., Montefiori DC, Wilson IA, Ginoux E, de Bree GJ, García-Sastre A, Schotsaert M, Coughlan L, Bukreyev A, van der Werf S, **Guedj J**, Sanders RW, van Gils MJ, Le Grand R. COVA1-18 neutralizing antibody protects against SARS-CoV-2 in three preclinical models. *Nature Communications* 2021.
5. Bonil L, Lingas G, Coupeau D, Lucet JC, **Guedj J**, Visseaux B, Muylkens B. Survival of SARS-CoV-2 on non-porous materials in an experimental setting representative of fomites. *Coatings* 2021.
6. Reynard S, Gloaguen E, Baillet N, Madelain V, **Guedj J**, Raoul H, de Lamballerie X, Mullaert J, Baize S. Early control of viral load by favipiravir promotes survival to Ebola virus challenge and prevents cytokine storm in non-human primates. *PLoS Neglected Tropical Diseases* 2021.
7. Gonçalves A, Maisonnasse P, Donati F, Albert M, Behillil S, Contreras V, Naninck T, Marlin R, Solas C, Pizzorno A, Lemaître J, Kahlaoui N, Terrier O, Ho Tsong Fang R, Enouf V, Dereuddre-Bosquet N,

- Brisebarre A, Touret F, Chapon C, Hoen B, Lina B, Rosa Calatrava M, de Lamballerie X, Mentré F, Le Grand R, van der Werf S, **Guedj J**. SARS-CoV-2 viral dynamics in non-human primates. *PLoS Computational Biology* 2021.
8. Czuppon P, Débarre F, Goncalves A, Tenailon O, Perelson AS, **Guedj J***, Blanquart F*. Success of prophylactic antiviral therapy for SARS-CoV-2: predicted critical efficacies and impact of different drug-specific mechanisms of action. *PLoS Computational Biology* 2021.
 9. Driouch JS, Cochin M, Lingas G, Moureau G, Touret F, Remi Petit P, Piorkowski G, Barthélémy K, **Guedj J**, de Lamballerie X, Solas C, Nougairède A. Favipiravir antiviral efficacy against SARS-CoV-2 in a hamster model. *Nature Communications* 2021.
 10. Néant N, Lingas G, Le Hingrat Q, Ghosn J, Engelmann I, Lepiller Q, Gaymard A, Ferré V, Hartard C, Plantier JC, Thibault V, Marlet J, Montes B, Bouiller K, Lescure FX, Timsit JF, Faure E, Poissy J, Chidiac C, Raffi F, Kimmoun A, Etienne M, Richard JC, Tattevin P, Garot D, Le Moing V, Bachelet D, Tardivon C, Duval X, Yazdanpanah Y, Mentré F, Laouénan C, Visseaux B, **Guedj J**. Modeling SARS-CoV-2 viral kinetics and association with mortality in hospitalized patients: results from the French Covid-19 cohort. *PNAS* 2021.
 11. Best K, Barouch DH, **Guedj J**, Ribeiro RM, Perelson AS. Zika virus dynamics: Effects of inoculum dose, the innate immune response and viral interference. *PLoS Computational Biology* 2020
 12. Lingas G, Safronetz D, Rosenke K, **Guedj J**. Lassa viral dynamics in non-human primates treated with favipiravir or ribavirin. *PLoS Computational Biology* 2020.
 13. Gonçalves A, Lemenuel-Diot A, Cosson V, Jin Y, Feng S, Bo Q and **Guedj J**. What drives the dynamics of HBV RNA during treatment? *Journal of Viral Hepatitis* 2020.
 14. Mercier F, Kerioui M, Desmée S, **Guedj J**, Bruno R, Krieter O. Longitudinal analysis of individual tumor lesion size in metastatic colorectal cancer patients receiving first line standard chemotherapy in combination with anti-angiogenic treatment: A retrospective analysis. *Journal of pharmacokinetics and pharmacodynamics* 2020.
 15. Kerioui M, Mercier F, Bertrand J, Tardivon C, Bruno R, **Guedj J**, Desmée S. Bayesian inference using Hamiltonian Monte-Carlo algorithm for nonlinear joint modelling in the context of cancer immunotherapy. *Statistics in Medicine* 2020.
 16. Passaes C, Millet A, Madelain V, Monceaux V, David A, Versmisse P, Sylla N, Gostick E, Price DA, Blancher A, Dereuddre-Bosquet N, Desjardins D, Pancino G, Le Grand R, Lambotte O, Müller-Trutwin M, Rouzioux C, **Guedj J**, Avettand-Fenoel V, Vaslin B, Sáez-Ciri6n A. Optimal maturation of the SIV specific CD8+ T-cell response after primary infection is associated with natural control of SIV. *Cell reports* 2020.
 17. Maisonnasse P*, **Guedj J***, Contreras V*, Behillil S*, Solas C*, Marlin R, Naninck T, Pizzorno A, Lemaitre J, Gonçalves A, Kahlaoui N, Terrier O, Ho Tsong Fang R, Enouf V, Dereuddre-Bosquet N, Brisebarre A, Touret F, Chapon C, Hoen B, Lina B, Rosa-Calatrava M, van der Werf S, de Lamballerie X, Le Grand R. Hydroxychloroquine against SARS-CoV-2 infection in non-human primates. *Nature* 2020
 18. Guk J, **Guedj J**, Burdet C, Andremont A, de Gunzburg J, Ducher A, Mentré F. Modeling the effect of DAV132, a novel colon-targeted adsorbent, on fecal concentrations of moxifloxacin and gut microbiota diversity in healthy volunteers. *Clinical Pharmacology & Therapeutics* 2020
 19. Gonçalves A, Bertrand J, Ke R, Comets E, de Lamballerie X, Malvy D, Pizzorno A, Terrier O, Calatrava M, Mentré F, Smith P, Perelson AS, **Guedj J**. Timing of antiviral treatment initiation is critical to reduce SARS-CoV-2 viral load. *Clinical Pharmacology & Therapeutics: PSP* 2020.
 20. Lê M, Peiffer-Smadja N, **Guedj J**, Néant N, Mentré F, Ader F, Yazdanpanah Y, Peytavin G. Rationale of a loading dose initiation for hydroxychloroquine treatment in COVID-19 infection in DisCoVeRy trial. *Journal of Antimicrobial Chemotherapy* 2020.
 21. Eloy P, Solas C, Touret F, Mentré F, Malvy D, de Lamballerie X, **Guedj J**. Dose rationale for favipiravir use in patients infected with SARS-CoV-2 [letter]. *Clinical Pharmacology & Therapeutics* 2020.
 22. Madelain V, Duthey A, Mentré F, Jacquot F, Solas C, Lacarelle B, Vallvé A, Barron S, Barrot C, Munweiler S, Thomas D, Carbonnelle C, Raoul H, de Lamballerie X, **Guedj J**. Ribavirin does not potentiate favipiravir antiviral activity against Ebola virus in non-human primates. *Antiviral Research* 2020.
 23. Madelain V, Passaes C, Millet A, Avettand-Fenoel V, Djidjou-Demasse R, Dereuddre-Bosquet N, Le Grand R, Rouzioux C, Vaslin B, Saez-Cirion A, **Guedj J**. Modeling SIV kinetics supports that cytotoxic response drives natural control and unravels heterogeneous populations of infected cells. *BiorXiv* 2020.

24. Gonçalves A, Lemenuel-Diot A, Mentré F, **Guedj J**. Model Averaging in Viral Dynamic Models. *The AAPS Journal* 2020.
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26. Friberg L & **Guedj J**. Acute bacterial or viral infection – What's the difference? A perspective from PKPD modellers. *Clinical Microbiology & Infection* 2019.
27. Bruno R, Bottino D, de Alwis DP, Fojo T, **Guedj J**, Liu C, Swanson KR, Zheng JJ, Zheng Y, Jin JY. Progress and Opportunities to Advance Clinical Cancer Therapeutics Using Tumor Dynamics Models. *Clinical Cancer Research* 2019.
28. Burdet C, Nguyen TT, Duval X, Ferreira S, Andremont A, **Guedj J**, Mentré F. Impact of antibiotic gut exposure on the temporal changes in microbiome diversity. *Antimicrobial Agents & Chemotherapy* 2019; 63: e00820-19.
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35. Petit C, Samson A, Morita S, Ursino M, **Guedj J**, Jullien V, Comets E, Zohar S. Unified approach for extrapolation and bridging of adult information in early phase dose-finding paediatric studies. *Statistical Methods in Medical Research* 2018; 27(6): 1860-77.
36. Carrillo-Bustamante P, Nguyen THT, Oestereich L, Gunther S, **Guedj J**, Graw F. Determining Ribavirin's mechanism of action against Lassa virus infection. *Scientific Report* 2017; 7: e11693.
37. Nguyen THT, **Guedj J**, Uprichard SL, Kohli A, Kottlil S, Perelson AS. The paradox of highly effective sofosbuvir-based combination therapy despite slow viral decline: can we still rely on viral kinetics? *Scientific Report* 2017; 7: e10233.
38. Best K, **Guedj J**, Madelain V, Lamballerie X, Lim, SY, Osuna CE, Whitney J, Perelson AS. Zika plasma viral dynamics in non-human primates: insights into early infection and antiviral strategies. *PNAS* 2017; 114(33): 8847-8852.
39. Desmée S, Mentré F, Veyrat-Follet C, Sébastien B, **Guedj J**. Nonlinear joint models for individual dynamic prediction of risk of death using Hamiltonian Monte Carlo: Application to metastatic prostate cancer. *BMC Medical Research Methodology* 2017; 17: e105.
40. Cento et al. Improvement of ALT decay kinetics by all-oral HCV treatment: role of NS5A inhibitors and differences with IFN-based regimens. *PLoS One* 2017; 12(5):e0177352.
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42. Nguyen THT, **Guedj J**, Anglaret X, Laouénan C, Madelain V, Taburet AM, Baize S, Sissoko D, Pastorino B, Rodallec A, Piorkowski G, Carazo S, Conde MN, Gala JL, Bore JA, Carbonnelle C, Jacquot F, Raoul H, Malvy D, Lamballerie XD, Mentré F. Favipiravir pharmacokinetics in Ebola-infected patients of the JIKI trial reveals concentrations lower than targeted. *PLoS Neglected Tropical Diseases* 2017; 11(2):e0005389.
43. Madelain V, **Guedj J**, Mentré F, N'Guyen THT, Jacquot F, Oestereich L, Kadota T, Yamada K, Taburet AM, de Lamballerie X, Raoul H. Favipiravir pharmacokinetics in non-human primates: insights for

- future efficacy studies of haemorrhagic fever viruses. *Antimicrobial Agents & Chemotherapy* 2017; 61:e01305-16.
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 47. Sissoko et al. Favipiravir for treatment of Ebola virus disease (the JIKI Trial): A historically-controlled, single arm proof-of-concept trial in Guinea. *PLoS Medicine* 2016; 13: 1-36.
 48. Madelain V, Nguyen THT, Olivo A, de Lamballerie X, **Guedj J**, Taburet AM, Mentré F. Ebola Virus Infection: a review on the pharmacokinetic and pharmacodynamic properties of drugs considered for testing in human efficacy trials. *Clinical Pharmacokinetics* 2016; 55(8):907-23.
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 50. Canini L, **Guedj J**, Chatterjee A, Lemenuel-Diot A, Smith PF, Perelson AS. Modeling the interaction between danoprevir and mericitabine in the treatment of chronic HCV infection. *Antiviral Therapy* 2016; 21(4), 297-306.
 51. Madelain V, Oestereich L, Graw F, Nguyen THT, de Lamballerie X, Mentré F, Günther S, **Guedj J**. Ebola virus dynamics in mice treated with favipiravir. *Antiviral Research* 2015; 123:70-77.
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*: equal contributors

Invited speaker in international conferences

1. Pharmacometrics to support clinical investigation during COVID-19 pandemics. Page Meeting. Virtual Meeting, September 2021.

2. Modeling SARS-Cov-2 viral dynamics to optimize antiviral therapy. PK/UK. Virtual Meeting. November 2020.
3. Modeling SARS-Cov-2 viral dynamics to optimize therapy. ACOP. Virtual Meeting. November 2020
4. SARS-Cov-2 viral dynamics in NHPs and hospitalized patients. Modelling Heterogeneous Populations with applications in Biology. Grenoble. November 2020
5. Modeling SARS-Cov-2 viral dynamics to optimize therapy. AAPS. Virtual meeting. October 2020
6. Pitfalls of PK/PD of repurposed drugs. ESCMID Conference on Coronavirus Disease (ECCVID). Virtual Meeting. September 2020.
7. Ebola viral dynamics. HPV & microbiota dynamics. Montpellier. March 2019.
8. Mechanistic models in oncology. Recent advances in joint models for cancer and the new statistical challenge of immunotherapy clinical studies. Bordeaux. January 2019.
9. Ebola viral dynamics. Mathematical Biosciences Institute Workshop. Columbia. February 2018.
10. Joint modeling of tumor kinetic and OS. FDA-ISoP Public Workshop: Model Informed Drug Development (MIDD) for Oncology Products. FDA, February 2018.
11. Joint modeling in pharmacokinetics. Fort-Lauderdale. October 2017
12. PK/PD in infectious diseases. FIP Pharmaceutical Sciences World Congress. Stockholm. May 2017
13. The role of pharmacometrics in viral dynamics. Viral dynamics: past, present & future. Santa Fe. May 2017.
14. HCV modeling: insights on drug development. PK UK. London. November 2016.
15. HCV modeling: insights on drug development. Synergie & Résistances. Aix-en-Provence. October 2016.
16. Review on HCV modeling. Kinetic and Dynamic Complexity in Drug Transit-Response in the Human Body. PAGE meeting. Crete. June 2015
17. Viral Dynamic Modeling of DAAs. Journées du Groupement de Recherche Statistique et Santé. Rennes. September 2012.
18. Viral Dynamic Modeling of DAAs. 7th International Workshop on Clinical Pharmacology of Hepatitis Drug. Boston. June 2012
19. Understanding silibinin's modes of action against HCV using viral kinetic modeling. Workshop on Silibinin, Cologn. February 2012.

PhD supervision and cosupervision

1. Selma El Messaoudi, "Modeling to support HBV cure", since 2021
2. Aurélien Marc, "SARS-CoV-2 viral dynamics and transmission", since 2020
3. Guillaume Lingas, "Favipiravir as prevention and treatment of emerging viral diseases", since 2019
4. Marion Keroui, "Joint modeling for longitudinal and survival data in cancer clinical trials", since 2018
5. Antonio Gonçalves, "Development of a modeling framework to optimize combination therapy of new antiviral agents against HBV", since 2017
6. Vincent Madelain, "Viral dynamics during infection with Ebola virus and treatment with favipiravir", 2015-2018
7. Solène Desmée, "Modélisation conjointe de données longitudinales non-linéaires et de données de survie : applications au cancer de la prostate métastatique", 2013-2016
8. Tram Nguyen, "Handling data below the quantification limit in viral kinetic modeling for model evaluation and prediction of treatment outcome", 2011-2014
9. Cédric Laouénan, "Utilisation des modèles dynamiques pour l'évaluation des traitements de l'hépatite C", 2011-2014

PhD reviewer

1. Denis Rustand, "Modèles conjoints pour un biomarqueur semi-continu et un évènement terminal avec application aux essais cliniques en cancérologie", Dr Virginie Rondeau, 2020.
2. Thibault Etienne, « Modélisation mathématique de la dégradation des ARNm bactériens et intégration de données omiques », Dr Delphine Roppers, 2020.
3. Ronan Duchesne, "Erythroid differentiation in vitro under the lens of mathematical modelling", ENS Lyon, Dr Fabien Crauste, 2019.

4. Vincent Aranzana-Climent, « Apport de la modélisation semi-mécanistique dans l'étude PK/PD des antibiotiques seuls et en combinaison dans la lutte contre les bactéries résistantes », Université de Poitiers, Prof. Nicolas Grégoire, 2019.
5. R. Raja, "Modelling and optimization of novel therapies for HIV and hepatitis C virus infections", Indian Institute of Science, Prof. Narendra Dixit, 2018.
6. L. Villain, "Analyse et modélisation de l'effet des injections d'interleukine 7 sur les patients infectés par le VIH", University Bordeaux 2, Prof R. Thiébaud. 2018.

Reviewer

Biostatistics & Biomathematics

Bioinformatics. Bulletin of Mathematical Biology, Epidemics, International Journal of Biostatistics, CPT: Pharmacometrics & System Pharmacology, Journal of Statistical Planning & Inference, Journal of Pharmacokinetics & Pharmacodynamics, Journal of the Royal Statistical Society C, Journal of Theoretical Biology, Mathematical Biosciences, Mathematical Medicine & Biology, Philosophical Transactions of the Royal Society B, PLoS Computational Biology, Statistical Methods & Applications

Medicine

AAPS Journal, Antiviral Therapy, Antiviral Research, BMC Infectious Diseases, British Journal of Clinical Pharmacology, Eur. Jour. Gastro. Hepat., Expert Opinion on Investigational Drugs, Journal of Hepatology, Journal of Viral Hepatitis, Journal of Medical Virology, Journal of Virology, Hepatology, Lancet Infectious Diseases, Microbiome, Nature Communications, Nature Medicine, PLoS One, PLoS Biology, PLoS Pathogens, Science

Editorial Board

Journal of Hepatology

Scientific & Educational Societies

Since 2021	AC ANRS « Modélisation des maladies infectieuses »
Since 2020	Expert in the preclinical group on SARS-CoV-2, Reacting
Since 2020	Drug expert committee, EU Response
Since 2020	Groupe d'évaluation des mAbs anti-Covid, Reacting
Since 2019	Conseil de l'école doctorale ED393 Pierre Louis de Santé Publique
2012-2016	ANRS CSS3 « Recherches cliniques et thérapeutiques sur le VIH »
Since 2014	AC34 (since 2014) « HBV Cure »

Grant as PI (or WP PI)

2021-2024	Multiscale modeling in HBV, PI, Roche.
2020-2023	Therapeutics accelerator for Covid-19, PI, Bill & Melinda Gates Foundation
2020-2022	Viral dynamics modeling, PI, ANR
2020-2022	HIV modeling control, WP leader, NIH
2020-2022	Phage therapy, WP leader, French-German ANR
2020-2023	Nipah pathogenesis, WP leader, MESRI.
2018-2021	Modeling immune-oncology, PI, Genentech.
2017-2020	HBV Modeling, PI, Roche.
2014-2017	Prostate cancer therapeutic optimization, PI, Sanofi.
2014-2016	Favipiravir against Ebola, WP leader, EU H2020

Prize & Fellowship

2015-2018	Laureate APHP "Contrat d'Interface"
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2012-2024	INSERM « Prime d'Excellence »
2009-2012	Los Alamos Postdoctoral Fellowship
2008-2009	French Consulate in Tel-Aviv, « Volontaire-International Chercheur »
2007	Postdoctoral Fellowship « Fondation de la recherche médicale »
2003-2006	PhD fellowship from the National Agency for Research in AIDS (ANRS)
