

# ***CURRICULUM VITAE***

## **ADIMY Mostafa**

Senior Researcher (Directeur de Recherche) at INRIA (French National Institute for Computer Sciences and Applied Mathematics)

Head of the “DRACULA” Inria-team: “**Multi-scale modelling of cell dynamics: Application to hematopoiesis**” (23 researchers)

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### **Personal data**

Date of Birth:

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### **Academic positions**

- **Since 2009:** Senior Research Scientist (Directeur de Recherche) at the INRIA of Lyon head of the “DRACULA” Inria-team
- **2006:** Associate Scientist (Chargé de Recherche en détachement) at INRIA of Bordeaux
- **2005:** Associate Scientist (Chargé de Recherche en délégation) at CNRS (The French National Center for Scientific Research)
- **1999-2008:** Head of the team “Dynamical Systems” at the University of Pau - France
- **1992-2005:** Associate Professor (Maître de Conférences HDR) at the University of Pau – France
- **1990-1992:** Research and Teaching Assistant (ATER) at the University of Pau – France

### **Education**

- **Habilitation:** January 25, 1999: Applied Mathematics, University of Pau  
Referees: O. Arino (Pau), J.B. Baillon (Lyon I), A. Cañada (Grenade), R. Deville (Bordeaux I), H. Emamirad (Poitiers), M. Langlais (Bordeaux II, president), R. Nagel (Tübingen), M. Madaune-Tort (Pau), E. Sinestrari (Rome) and J. Wu (Toronto)
- **Ph.D:** October 15, 1991: Applied Mathematics, University of Pau  
Referees: O. Arino (Pau, advisor), W. Arendt (Besançon), Langlais (Bordeaux II), M. Madaune-Tort (Pau) and J-M. Thomas (Pau, president)

## Administrative activities

- **September 2018 - February 2019:** Member of the Committee for the Evaluation of the Espace-DEV UMR of the University of French Guyana (<http://www.espace-dev.fr>).
- **Since 2015:** Member of the Scientific Committee (CoS) of INRIA Grenoble-Rhône-Alpes.
- **Since 2016:** Member of the Scientific Committee of the Camille Jordan Institute (Mathematics Laboratory, University of Lyon 1).
- **Since 2016:** Member of the Thesis Committee of the Camille Jordan Institute (Mathematics Laboratory, University of Lyon 1).
- **Since 2013:** President of Selection Committee, Camille Jordan Institute, University of Lyon 1: Associate Professor (Maître de Conférences) position in Mathematical Modeling for Biology.
- **Since 2014:** Member of the Selection Committee, Mathematics and Applications of Mathematics, University of La Réunion: Associate Professor (Maître de Conférences) position in mathematics.
- **2010- 2015:** Scientific expert representing Inria to the National Alliance for Life Sciences and Health (AVIESAN): "Immunology, hematology, pneumology".
- **2004-2006:** Member of the Scientific Committee of the University of Pau.
- **1996-2000:** Member of the Selection Committee, Mathematics and Applications of Mathematics, University of Pau.
- **1999-2002:** Member of the Selection Committee, Mathematics and Applications of Mathematics, University of Le Havre.
- **1999-2008:** Head of the team "Dynamical Systems" at the University of Pau.
- **1993-1999:** Responsible for the ERASMUS-SOCRATES interuniversity exchange program, University of Pau.

## Supervision Activity

### • Ph.D students

- **Loïc Barbaroux** « *Contributions to the multiscale modeling of the CD8 immune response: design, analysis, simulation and calibration of mathematical models* », Ecole Centrale de Lyon, July 2017
- **Abdennasser Chekroun** « *Contribution to the mathematical analysis of age and space structured partial differential equations describing a cell population dynamics model* », Université Lyon, March 2016
- **Marine Jacquier** « *Mathematical modeling of the hormonal regulation of food intake and body weight: applications to caloric restriction and leptin resistance* » Université de Lyon, February 2016
- **Romain Yvinec** « *Probabilistic modeling in cellular and molecular biology* », Université Lyon, October 2012
- **Fabien Crauste** « *Mathematical study of hyperbolic partial differential equations modeling the regulation processes of blood cells - Applications to cyclic hematological diseases* », Université Pau, June 2005

- Laurent Pujo-Menjouet « Contribution à l'étude d'une équation de transport à retards décrivant une dynamique de population cellulaire », Université Pau, June 2001.
- Mostafa Laklach « Contribution à l'étude des équations aux dérivées partielles à retard et de type neutre », Université Pau, June 2001.

## Recent grants and Fellowships

- IFCAM project - Mathematical modeling of hematopoiesis process in application to chronic and acute myelogenous leukemia - Indo-French Center of Applied Mathematics, Presidency University, Kolkata (India)- 2018-2021
- Inria-India Associate Team - Mathematical modeling of hematopoietic stem cell dynamics in normal and pathological hematopoiesis with optimal control for drug therapy – Inria (France) – 2019-2022
- Inria-Brazil Associate Team - Modelling and Biological Control of Vector-Borne Diseases: the case of Malaria and Dengue – Inria (France)- 2020-2023
- French-Moroccan program CNRS/CNRST « Reduction of complexity in differential equations arising from population dynamics ». Partners: Marrakesh. 2008-2010.
- Inria Program: Euromediterranean « Mathematical Models and Methods in Cell Dynamics ». Marrakech, Tunis, Tlemcen (Algeria), Valladolid (Spain), Turin (Italy). 2012-2015.
- Research program PHC POLONIUM (2014-2015) « Applications of reaction-diffusion equations in biology and medicine ». Partners: Warsaw, Poland. 2012-2015.
- France Canada research fund (FCRF) - New research collaboration « Mathematical modelling of megakaryopoiesis and applications to platelet related diseases ». Partners: York University. 2014-2015.
- Association France Alzheimer Sciences Médicales: PAMELA « Prion et Alzheimer : Modélisation et Expérimentation d'une Liaison Aggressive ». Partners: UR0892 VIM (Virologie et Immunologie Moléculaires), INRA Domaine de Vilvert, Jouy-en-Josas. 2014-2017.
- Associate Teams Inria project, "Modelling Leukemia". Partners: This is joint with Center for Scientific Computing and Applied Mathematical Modeling (Doron Levy) at University of Maryland (USA). 2014-2017.
- French ministry scholarship : 5 times (2002-2005, 2009-2012, 2013-2016, 2014-2017, 2014-2017)

## Publications

1. M. Adimy , P.F.A. Mancera, D.S. Rodrigues, F.L.P. Santos & C.P. Ferreira. « Maternal Passive Immunity and Dengue Hemorrhagic Fever in Infants » Bull. Math. Biol., 82(2): 24 (2020).
2. M. Adimy, A. Chekroun & C.P. Ferreira. « Global dynamics of a differential-difference system: a case of Kermack-McKendrick SIR model with age-structured protection phase » Mathematical Biosciences and Engineering, 17(2): 1329-1354 (2020).
3. L. Boullu, M. Adimy, F. Crauste & L. Pujo-Menjouet. « Oscillations and asymptotic convergence for a delay differential equation modeling platelet production » Discrete Contin. Dyn. Syst. Ser. B., 24(6): 2417-2442 (2019).
4. L. Barbaroux, Ph. Michel, M. Adimy, & F. Crauste « A multiscale model of the CD8 T cell immune response structured by intracellular content » Discrete Contin. Dyn. Syst. Ser. B., 23(9): 3969-4002 (2018).

5. M. Adimy, A. Chekroun, & B. Kazmierczak « Traveling waves in a coupled reaction-diffusion and difference model of hematopoiesis » *Journal of Differential Equations*, vol. 262, pp. 4085 - 4128 (2017).
6. M. Adimy, A. Chekroun, & T. Kuniya « Delayed nonlocal reaction-diffusion model for hematopoietic stem cell dynamics with Dirichlet boundary conditions » *Mathematical Modelling of Natural Phenomena*, vol. 12, no 6, pp. 1 - 22 (2017).
7. M. Adimy, A. Chekroun, & T. M. Touaoula « Global asymptotic stability for an age-structured model of hematopoietic stem cell dynamics » *Applicable Analysis*, Accepted p. 1-12, (2016).
8. M. Adimy, Y. Bourfia, & M.L. Hbid. Age-structured model of hematopoiesis dynamics with growth factor-dependent coefficients, *Electronic Journal of Differential Equations* 140 , June, 1 – 20 (2016).
9. M. Adimy, A. Chekroun & T. M. Touaoula. *Age structured and delay differential-difference model of hematopoietic stem cell dynamics.* *Discrete and Continuous Dynamical Systems – B.* Vol. 20, No 9, 2765–2791 (2015).
10. M. Adimy, K. Ezzinbi, & C. Marquet. *Ergodic and weighted pseudo-almost periodic solutions for partial functional differential equations in fading memory spaces.* *Journal of Applied Mathematics and Computing.* 44, No. 1-2, 147-165 (2014).
11. M. Adimy, O. Angulo, J. L Opez-Marcos, & M. L Opez-Marcos. *Asymptotic behaviour of a mathematical model of hematopoietic stem cell dynamics.* *International Journal of Computer Mathematics*, Vol. 91, No. 2, 198–208 (2014).
12. M. Adimy, O. Angulo, C. Marquet, & L. Sebaa. *A mathematical model of multistage hematopoietic cell lineages.* *Discrete and Continuous Dynamical Systems - Series B*, Vol. 19, No. 1, 1-26 (2014).
13. M. Adimy, K. Ezzinbi, & M. Alia. *Functional differential equations with unbounded delay in extrapolation spaces.* *Electronic Journal of Differential Equations*, No. 180, 16 p. (2014).
14. M. Adimy, & F. Crauste. *Delay Differential Equations and Autonomous Oscillations in Hematopoietic Stem Cell Dynamics Modeling.* *Mathematical Modelling of Natural Phenomena EDP Sciences*, 7, 1-22 (2012).
15. M. Adimy, K. Ezzinbi, & C. Marquet. *Center manifolds for some partial functional differential equations with infinite delay in fading memory spaces.* *Journal of Concrete & Applicable Mathematics.* 10, 168-185 (2012).
16. M. Adimy, & F. Crauste. *Delay differential equations and autonomous oscillations in hematopoietic stem cell dynamics modeling.* *Math. Model. Nat. Phenom.* 7, 1-22 (2012).
17. M. Adimy, F. Crauste, H. Hbid, & R. Qesmi. *Stability and Hopf bifurcation for a cell population model with state-dependent delay.* *SIAM J. Appl. Math* 70, 1611-1633 (2010).
18. M. Adimy, F. Crauste, & C. Marquet. *Asymptotic behavior and stability switch for a mature-immature model of cell differentiation.* *Nonlinear Anal. Real World Appl.* 11, 2913-2929 (2010).
19. M. Adimy, A. Elazzoui, & K. Ezzinbi. *Reduction principle and dynamic behaviors for a class of partial functional differential equations.* *Nonlinear Analysis, TMA*, 71, 1709-1727 (2009).
20. M. Adimy & F. Crauste. *Mathematical model of hematopoiesis dynamics with growth factor-dependent apoptosis and proliferation regulation.* *Mathematical and Computer Modelling*, 49, 2128-2137 (2009).
21. C. Kou, M. Adimy, & A. Ducrod. *On the dynamics of an impulsive model of hematopoiesis.* *Journal of Mathematical Modelling and Natural Phenomena*, 4(2), 89-112 (2009).
22. M. Adimy, F. Crauste, & A. El Abdllaoui. *Discrete maturity-structured model of cell differentiation with applications to acute myelogenous leukemia.* *Journal of Biological Systems*, Vol. 16 (3), 395-424, (2008).

23. M. Adimy, O. Angulo, F. Crauste, & J.C. Lopez-Marcos. *Numerical integration of a mathematical model of hematopoietic stem cell dynamics*. Computers & Mathematics with Applications, Vol. 56 (3), 594-60, (2008).
24. M. Adimy, K. Ezzinbi, & A. Ouhinou. *Behavior near hyperbolic stationary solutions for partial differential equations with infinite delay*. Nonlinear Analysis, TMA, 68, No. 8 (A), 2280-2302 (2008).
25. M. Adimy & F. Crauste. *Modelling and asymptotic stability of a growth factor-dependent stem cells dynamics model with distributed delay*. Discrete and Continuous Dynamical Systems Series B, 8(1), 19-38 (2007).
26. M. Adimy, A. Elazzoui, & K. Ezzinbi. *Bohr-Neugebauer type theorem for some partial neutral functional differential equations*. Nonlinear Analysis, TMA. 66, 1145-1160 (2007).
27. M. Adimy & K. Ezzinbi. *Existence and stability in the alpha-norm for partial functional differential equations of neutral type*. Annali di matematica pura ed applicata, 185(3), 437-460 (2006).
28. M. Adimy, F. Crauste, & A. El Abdllaoui. *Asymptotic behavior of a discrete maturity sturctured system of hematopoietic stem cell dynamics with several delays*. Journal of Mathematical Modelling and Natural Phenomena, 1(2), 1-19 (2006).
29. M. Adimy, F. Crauste, & S. Ruan. *Modelling hematopoiesis mediated by growth factors with applications to periodic hematological diseases*. Bulletin of Mathematical Biology, 68 (8), 2321-2351 (2006).
30. M. Adimy, F. Crauste, & S. Ruan. *Periodic Oscillations in Leukopoiesis Models with Two Delays*. Journal of Theoretical Biology, 242, 288-299 (2006).
31. M. Adimy, F. Crauste, A. Halanay, M. Neamtu, & D.Opris. *Stability of limit cycles in a pluripotent stem cell dynamics model*. Chaos, Solitons and Fractals, 27 (4), 1091-1107 (2006).
32. M. Adimy, K. Ezzinbi, & A. Ouhinou. *Variation of constants formula and almost periodic solutions for some partial functional differential equations with infinite delay*. Journal of Mathematical Analysis and Applications, 317, 668-689 (2006).
33. M. Adimy, K. Ezzinbi, & J. Wu. *Center manifold and stability in critical cases for some partial functional differential equations*. International Journal of Evaluation Equations, 2, 69-95 (2006).
34. M. Adimy, F. Crauste, & S. Ruan. *A mathematical study of the hematopoiesis process with applications to chronic myelogenous leukemia*. SIAM J. Appl. Math., 65 (4), 1328-1352 (2005).
35. M. Adimy, F. Crauste, & S. Ruan. *Stability and Hopf bifurcation in a mathematical model of pluripotent stem cell dynamics*. Nonlinear Analysis: Real World Applications, 6 (4), 651-670 (2005).
36. M. Adimy & F. Crauste. *Existence, positivity and stability for a nonlinear model of cellular proliferation*. Nonlinear Analysis: Real World Applications, 6 (2), 337-366 (2005).
37. M. Adimy, F. Crauste, & L. Pujo-Menjouet. *On the stability of a maturity structured model of cellular proliferation*. Dis. Cont. Dyn. Sys. Ser. A, 12 (3), 501-522 (2005).
38. M. Adimy & K. Ezzinbi. *Existence and stability of solutions for a class of partial neutral functional differential equations*. Hiroshima Mathematical Journal, 34, 251-294 (2004).
39. M. Adimy, H. Bouzahir, & K. Ezzinbi. *Local existence or a class of partial neutral functional differential equations with infinite delay*. Differential Equations and Dynamical Systems, Vol 12, N° 3 et 4, 353-370 (2004).
40. M. Adimy, H. Bouzahir, & K. Ezzinbi. *Existence and stability for some partial neutral functional differential equations with infinite delay*. Journal of Mathematical Analysis and Applications, 294, N° 2, 438-461 (2004).

41. M. Adimy, K. Ezzinbi, & K. Laklach. *Nonlinear semigroup of a class of abstract semilinear functional differential equations with non-dense domain*. Acta Mathematica Sinica, 20, N° 5, 933-942 (2004).
42. M. Adimy & F. Crauste. *Global stability of a partial differential equation with distributed delay due to cellular replication*. Nonlinear Analysis, 54 (8), 1469-1491 (2003).
43. M. Adimy & L. Pujo-Menjouet. *Asymptotic behavior of a singular transport equation modelling cell division*. Dis. Cont. Dyn. Sys. Ser. B, 3 (3), 439-456 (2003).
44. M. Adimy et L. Pujo-Menjouet. *A mathematical model describing cellular division with a proliferating phase duration depending on the maturity of cells*. Electron. J. Diff. Equ. 2003, 107, 14p (2003).
45. M. Adimy, H. Bouzahir, & K. Ezzinbi. *Local existene and stability for some partial functional differential equations with infinite delay*. Nonlinear Analysis, TMA, 48A (3), 323-348 (2002).
46. M. Adimy, K. Ezzinbi, & K. Laklach. *Specytral decomposition for parial neutral functional differential equations*. Canad. Appl. Math. Quart., 9 (1), 1-34 (2001).
47. M. Adimy, H. Bouzahir, & K. Ezzinbi. *Existence for a class of partial functional differential equations with infinite delay*. Nonlinear Analysis, TMA, 46A (1), 91-112 (2001).
48. M. Adimy & K. Ezzinbi. *Existene and linearized stability for partial neutral functional differential equations with non-dense domains*. Diff. Equ. and Dyn. Syst., 7, 371-417 (1999).
49. M. Adimy & K. Ezzinbi. *Strict solutions of nonlinear hyperbolic neutral differential equations*. Applied Mathematics Letters, 12, p. 107-112, (1999).
50. M. Adimy & K. Ezzinbi. *Local existence and linearized stability for partial functional differential equations*. Dynamic Systems and Applications, 7, p. 389-404, (1998).
51. M. Adimy & K. Ezzinbi. *A Class of Linear Partial Neutral Functional differential Equations with Non-Dense Domain*. Journal of Differential Equations, 147, p. 285-332, (1998).
52. M. Adimy, A. Chekroun, & T. M. Touaoula. *A delay differential-difference system of hematopoietic stem cell dynamics*. Comptes Rendus Mathématique, 353 (4), 303-307 (2015).
53. M. Adimy & C. Marquet. *On the stability of hematopoietic model with feedback control*. C. R. Math. Acad. Sci. Paris 350, 173-176 (2012).
54. M. Adimy, F. Crauste, & A. El Abdllaoui. *Boundedness and Lyapunov Function for a Nonlinear System of Hematopoietic Stem Cell Dynamics*. Comptes Rendus Mathématiques 348, 373-377 (2010).
55. M. Adimy & K. Ezzinbi. *Existence, regularity, stability and boudedness for some partial functional differential equations*. Société Mathématique de France, 17, 157-188 (2009).
56. M. Adimy, S. Bernard, J. Clairambault, F. Crauste, S. Génieys, & L. Pujo-Menjouet. *Modélisation de la dynamique de l'hématopoïèse normale et pathologique*. Hématologie, 14 (5), 339-350 (2008).
57. K. Ezzinbi et M. Adimy. *The Basic Theory of Abstract Semilinear Functional Differential Equations with Non-Dense Domain*. "Delay Differential Equations with Applications", NATO Science Series II: Mathematics, Physics and Chemistry, Vol. 205, 590 p., Springer, Berlin (2006).
58. M. Adimy & F. Crauste. *Stability and instability induced by time delay in an erythropoiesis model*. Monografias del Seminario Matematico Garcia de Galdeano, 31, 3-12, (2004).
59. M. Adimy & F. Crauste. *Un modèle non-linéaire de prolifération cellulaire : extinction des cellules et invariance*. Comptes Rendus Mathématiques, 336, 559-564 (2003).
60. M. Adimy & L. Pujo-Menjouet. *A singular transport model describing cellular division*. C.R. Acad. Sci. Paris, 332 (12), 1071-1076 (2001).

61. M. Adimy & M. Laklach. *Local Hopf bifurcation for some class of partial differential equations*. Actes des 6èmes journées Zaragoza-Pau de mathématiques appliquées et de statistiques, 21-28, (2001).
62. F. Crauste & M. Adimy. *Bifurcation dans un modèle non-linéaire de production du sang*. Comptes-rendus de la 7ième Rencontre du Non-linéaire, Non-linéaire Publications, Paris, 73-78, (2004).
63. M. Adimy, K. Ezzinbi, & K. Laklach. *Existence of solution for a class of partial neutral differential equatations*. C.R. Acad. Sci. Paris, 330, 957-962 (2000).
64. M. Adimy. *On the compactness of the semigroup solution of abstract semilinear functional differential equations with a non-dense domain*. Publ. Semin. Mat. García de Galdeano, Serie II, 20, 45-52, (1999).
65. M. Adimy, & K. Ezzinbi. *Semi-groupes intégrés et équations à retard en dimension infinie*. C. R. Acad. Sci. Paris, t. 323, Série I, 481-486,(1996).
66. M. Adimy, & K. Ezzinbi. *Equations de type neutre et semi-groupes intégrés*. C. R. Acad. Sci. Paris t. 318, Série I, 529-534, (1994).
67. M. Adimy, & O. Arino. *Bifurcation de Hopf globale pour des équations à retard par des semi-groupes intégrés*. C. R. Acad. Sci. Paris, t. 317, Série I, 767-772, (1993).
68. M. Adimy. *Integrated semigroups and delay differential equations*. J. of Math. Anal. and Appl., 177, No.1, 125-134, (1993).
69. M. Adimy, & A. Agouzal. *Une méthode numérique de bifurcation de Hopf locale par des semi-groupes intégrés pour une équation à mémoire*. Actes des 2èmes Journées Saragosse-Pau de Mathématiques Appliquées, p. 37-46, (1992).
70. M. Adimy. *Bifurcation de Hopf locale par des semi-groupes intégrés*. C. R. Acad. Sci. Paris, t. 311, Série I, 423-428, (1990).

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