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### Research Publications

- [26] Chromatin-associated YTHDC1 coordinates heat-induced reprograming of gene expression. Kalina Timcheva, Solenne Dufour, Leila Touat-Todeschini, Callum Burnard, Marie-Christine Carpentier, Florent Chuffart, Rémy Merret, Marion Helsmoortel, Sabrina Ferré, Aude Grézy, Yohann Couté, Sophie Rousseaux, Saadi Khochbin, Claire Vourc'h, Cécile Bousquet-Antonelli, Rosemary Kiernan, Daphné Seigneurin-Berny, and André Verdel. Cell Report, 2022.
- [25] SMYD3 impedes small cell lung cancer sensitivity to alkylation damage through RNF113A methylation-phosphorylation crosstalk. Valentina Lukinovic, Simone Hausmann, Gaël Roth, Clement Oyeniran, Tanveer Ahmad, Ning Tsao, Joshua Brickner, Alexandre Casanova, Florent Chuffart, Ana Morales Benitez, Jessica Vayr, Rebecca Rodell, Marianne Tardif, Pascal W.T.C. Jansen, Yohann Couté, Michiel Vermeulen, Pierre Hainaut, Pawel Mazur, Nima Mosammaparast, and Nicolas Reynoird. Cancer Discovery, 2022.
- [24] Ectopic expression of a combination of 5 genes detects high risk forms of T-cell acute lymphoblastic leukemia. Li-Jun Peng, Yue-Bo Zhou, Mei Geng, Ekaterina Bourova-Flin, Florent Chuffart, Wei-Na Zhang, Tao Wang, Meng-Qing Gao, Meng-Ping Xi, Zhong-Yi Cheng, Jiao-Jiao Zhang, Yuan-Fang Liu, Bing Chen, Saadi Khochbin, Jin Wang, Sophie Rousseaux, Jian-Qing Mi. BMC Genomics, 2022.
- [23] Chronic intermittent hypoxia increases cell proliferation in hepatocellular carcinoma. Lydie Carreres, Marion Mercey-Ressejac, Keerthi Kurma, Julien Ghelfi, Carole Fournier, Olivier Manches, Florent Chuffart, Sophie Rousseaux, Melanie Minovés, Thomas Decaens, Herve Lerat, Zuzana Macek Jilkov. Cells, 2022.
- [22] Direct visualization of pre-protamine 2 detects protamine assembly failures and predicts ICSI success. Maryam Rezaei-Gazik, Alexandra Vargas, Amir Amiri-Yekta, Anne-Laure Vitte, Arvand Akbari, Sophie Barral, Vahid Esmaeili, Florent Chuffart, Mohammad Ali Sadighi-Gilani, Yohann Coute, Poopak Eftekhari-Yazdi, Saadi Khochbin, Sophie Rousseaux and Mehdi Totonchi. MRH, 2022.
- [21] AKR1B10, one of the triggers of cytokine storm in SARS-Cov2 severe Acute Respiratory Syndrome. Clovis Chabert, Anne-Laure Vitte, Domenico Iuso, Florent Chuffart, Candice Trocme, Marlyse Buisson, Pascal Poignard, Benjamin Lardinois, Régis Debois, Sophie Rousseaux, Jean-Louis Pepin, Jean-Benoit Martinot, Saadi Khochbin. IJMS, 2022.
- [20] DEN-Induced Rat Model Reproduces Key Features of Human Hepatocellular Carcinoma. Keerthi Kurma, Olivier Manches, Florent Chuffart, Nathalie Sturm, Khaldoun Gharzeddine, Jianhui Zhang, Marion Mercey-Ressejac, Sophie Rousseaux, Arnaud Millet, Herve Lerat, Patrice N Marche, Zuzana Macek Jilkova and Thomas Decaens. Cancers (Basel), 2021.
- [19] Metabolically controlled histone H4K5 acylation/acetylation ratio drives BRD4 genomic distribution. Mengqing Gao, Jin Wang, Sophie Rousseaux, Minjia Tan, Lulu Pan, Lijun Peng, Sisi Wang, Wenqian Xu, Jiayi Ren, Yuanfang Liu, Martin Spinck, Sophie Barral, Tao Wang, Florent Chuffart, Ekaterina Bourova-Flin, Denis Puthier, Sandrine Curtet, Lisa Bargier, Zhongyi Cheng, Heinz Neumann, Jian Li, Yingming Zhao, Jian-Qing Mi and Saadi Khochbin. Cell Rep, 2021.
- [18] ATAD2 controls chromatin-bound HIRA turnover. Tao Wang, Daniel Perazza, Fayçal Boussouar, Matteo Cattaneo, Alexandre Bougdour, Florent Chuffart, Sophie Barral, Alexandra Vargas, Ariadni Liakopoulou, Denis Puthier, Lisa Bargier, Yuichi Morozumi, Mahya Jamshidikia, Isabel Garcia-Saez, Carlo Petosa, Sophie Rousseaux, André Verdel, Saadi Khochbin. Life Sci Alliance, 2021.

- [17] CCM2 deficient endothelial cells undergo a mechano-dependent reprogramming into senescence associated secretory phenotype used to recruit endothelial and immune cells. Daphné Raphaelle Vannier, Apeksha Shapeti, Florent Chuffart, Emmanuelle Planus, Sandra Manet, Paul Rivier, Olivier Destaing, Corinne Albiges-Rizo, Hans Van Oosterwyck, Eva Faurobert. Angiogenesis 2021.
- [15] Chidamide inhibits the NOTCH1-MYC signaling axis in T-cell acute lymphoblastic leukemia. Mengping Xi, Shanshan Guo, Caicike Bayin, Lijun peng, Florent Chuffart, Ekaterina Bourova-Flin, Sophie Rousseaux, Saadi Khochbin, Jianqing Mi, Jin Wang. Frontiers in Medicine, under Revision,
- [14] The combined detection of Amphiregulin, Cyclin A1 and DDX20/Gemin3 expression predicts aggressive forms of Oral Squamous Cell Carcinoma. Ekaterina Bourova-Flin, Samira Derakhshan, Afsaneh Goudarzi, Tao Wang, Anne-Laure Vitte, Florent Chuffart, Saadi Khochbin, Sophie Rousseaux, Pouyan Aminishakib. British Journal of Cancer, accepted 28th May 2021,
- [13] Immediate and durable effects of maternal tobacco consumption alter placental DNA methylation in enhancer and imprinted gene-containing regions. Sophie Rousseaux, Emie Seyve, **Florent Chuffart**, Ekaterina Bourova-Flin, Meriem Benmerad, Marie-Aline Charles, Anne Forhan, Barbara Heude, Valérie Siroux, Remy Slama, Jorg Tost, Daniel Vaiman, Saadi Khochbin, Johanna Lepeule, EDEN Mother-Child Cohort Study Group. **BMC Med**, 2020.
- [12] PenDA, a Rank-Based Method for Personalized Differential Analysis: Application to Lung Cancer. Magali Richard, Clémentine Decamps, Florent Chuffart, Elisabeth Brambilla, Sophie Rousseaux, Saadi Khochbin, Daniel Jost. PLoS Comput Biol, 2020.
- [11] RNA-Guided Genomic Localization of H2A.L.2 Histone Variant. Naghmeh Hoghoughi Sophie Barral Sandrine Curtet, Florent Chuffart, Guillaume Charbonnier, Denis Puthier, Thierry Buchou, Sophie Rousseaux, Saadi Khochbin. Cells, 2020.
- [10] Extracellular Vesicles From Myelodysplastic Mesenchymal Stromal Cells Induce DNA Damage and Mutagenesis of Hematopoietic Stem Cells Through miRNA Transfer. Mathieu Meunier, Audrey Guttin, Sarah Ancelet, David Laurin, Johanna Zannoni, Christine Lefebvre, Sylvie Tondeur, Virginie Persoons, Mylène Pezet, Karin Pernet-Gallay, Florent Chuffart, Sophie Rousseaux, Quentin Testard, Julien Thevenon, Claire Jouzier, Jean-François Deleuze, Karine Laulagnier, Rémy Sadoul, Christine Chatellard, Pierre Hainaut, Benoît Polack, Jean-Yves Cahn, Jean-Paul Issartel, Sophie Park. Leukemia, 2020.
- [9] Guidelines for cell-type heterogeneity quantification based on a comparative analysis of reference-free DNA methylation deconvolution software. Clémentine Decamps, Florian Privé, Raphael Bacher, Daniel Jost, Arthur Waguet, **HADACA consortium**, Eugene Andres Houseman, Eugene Lurie, Pavlo Lutsik, Aleksandar Milosavljevic, Michael Scherer, Michael G. B. Blum Magali Richard. **BMC Bioinformatics**, 2020.
- [8] Nut Directs p300-Dependent, Genome-Wide H4 Hyperacetylation in Male Germ Cells. Shiota H, Barral S, Buchou T, Tan M, Couté Y, Charbonnier G, Reynoird N, Boussouar F, Gérard M, Zhu M, Bargier L, Puthier D, Chuffart F, Bourova-Flin E, Picaud S, Filippakopoulos P, Goudarzi A, Ibrahim Z, Panne D, Rousseaux S, Zhao Y, Khochbin S. Cell Rep, 2018.
- [7] Pregnancy exposure to atmospheric pollution and meteorological conditions and placental DNA methylation. Emilie Abraham, Sophie Rousseaux, Lydiane Agier, Lise Giorgis-Allemand, Jörg Tost, Julien Galineau, Agnès Hulin, Valérie Siroux, Daniel Vaiman, Marie-Aline Charles, Barbara Heude, Anne Forhan, Joel Schwartz, Florent Chuffart, Ekaterina Bourova-Flin, Saadi Khochbin, Rémy Slama, Johanna Lepeule. Environment International, 2018.
- [6] Assigning function to natural allelic variation via dynamic modeling of gene network induction. Richard M, Chuffart F, Duplus-Bottin H, Pouyet F, Spichty M, Fulcrand E, Entrevan M, Barthelaix A, Springer M, Jost D, Yvert G. Mol Syst Biol, 2018.
- [5] Exploiting single-cell quantitative data to map genetic variants having probabilistic effects. Chuffart F, Richard M, Jost D, Burny C, Duplus-Bottin H, Ohya Y, Yvert G. PLOS Genetics, 2016.

- [4] The complex pattern of epigenomic variation between natural yeast strains at single-nucleosome resolution. Fabien Filleton, Florent Chuffart, Muniyandi Nagarajan, Helene Bottin-Duplus, Gael Yvert. Epigenetics and Chromatin, 2015.
- [3] MyLabStocks: a web-application to manage molecular biology materials. Florent Chuffart and Gael Yvert. Yeast, 2014.
- [2] When Self-Stabilization Meets Real Platforms: an Experimental Study of a Peer-to-Peer Service Discovery System. Eddy Caron, Florent Chuffart, Cédric Tedeschi. Future Generation Computer Systems, 2013.
- [1] SimExplorer: Programming Experimental Designs on Models and Managing Quality of Modelling Process. Florent Chuffart, Nicolas Dumoulin, Thierry Faure, Guillaume Deffuant. International Journal of Agricultural and Environmental Information Systems, 2010.

#### **Software Production**

dmethr: Hunting DNA methylation repression of transcriptional activity and its reactivation in a demethylating context https://github.com/fchuffar/dmethr

medepir: DNA MEthylation DEconvolution PIpeline in R https://github.com/bcm-uga/medepir

methepic\_map: An R script that build a dictionary of probes according to array annotations https://github.com/fchuffar/methepic\_map

**pipeline\_mnase**: A set of scripts that orchestrate the analysis of MNase-Seq and ChIP-Seq data https://github.com/fchuffar/pipeline\_mnase

pipeline\_rrbs: A set of scripts that orchestrate the analysis of RRBS data https://github.com/fchuffar/pipeline\_rrbs

ectopy: A Python package that detects ectopic gene expression in cancer https://github.com/epimed/ectopy

ector: An R package that detects ectopic gene expression in cancer https://github.com/mpetrier/ector

deeptoolsr: DeepTools binding for R. https://github.com/fchuffar/deeptoolsr

**penda**: An R package that performs personalized differential analysis of omics data. https://github.com/bcm-uga/penda

**dmprocr**: a set of usefull functions organized around a workflow and performing differential methylation profiles clustering. https://github.com/bcm\T1\textendashuga/dmprocr

epimedtools: A package providing a set of useful statistical functions. This package relies on 'GEOquery' and 'affy' packages, R Reference Classes, caching features and memoisation to simplify, homogenize and speed up multi–omic analysis. https://github.com/fchuffar/epimedtools

methmybeachup: A package providing a set of functions allowing to easily convolves and visualize the methylome signal across genes and CpG islands. https://github.com/fchuffar/methmybeachup

**BoT**: (stands for Bag of Tasks) is an R package allowing to distribute independent tasks over many cores and many computing nodes. https://github.com/fchuffar/bot

ptlmapper: a package which contains functions that are used to map single-cell Probabilistic Trait Loci (scPTL). The principle of scPTL mapping is to consider a distribution of single-cell traits as the phenotype of a (multicellular) individual, to acquire this phenotype in many individuals, and to scan the genome for DNA variants that change this phenotype. https://github.com/fchuffar/ptlmapper

# **Training**

- 2022: Formation interne FIJI. 29 septembre 2022, IAB, Grenoble.
- 2022: ANF Formation de Formateurs Internes CNRS. 20, 21 et 29 juin 2022, 11 et 12 juillet 2022, Grenoble.
- 2021: Atelier Statistique : Traitement statistique de données censurées en analyse de survie, 5, 6, 7 juillet 2021, distanciel.
- 2020: Single Cell: Génomique de la cellule unique. 8-9 octobre 2020, Lyon (69), France.
- 2019: Health data challenge (2nd edition), Matrix factorization and deconvolution methods to quantify tumor heterogeneity in cancer. November 29, 2019, Aussois (France), https://cancer-heterogeneity.github.io/data\_challenges.html
- 2018: Health Data Challenge: Matrix factorization and deconvolution methods to quantify tumor heterogeneity in cancer research, 10-14 decembre 2018, Aussois (73), France.
- 2018 : Biologie intégrative ou biologie des systèmes par Joëlle Henry-Berger, 5-9 novembre 2018, Lyon (69), France.
- 2018: Journée Campagnes de calculs reproductibles, 23 october, Lyon (69), France.
- 2017: Epigenetic & High-Dimension Mediation Data Challenge. 7-9 June, Aussois (73), France.
- 2017: Rencontres scientifiques des Grands Causses : Modélisation physique de l'organisation nucléaire et de ses pathologies. 9-12 Mai, Millau (12), France.
- 2016: Capture de conformation de chromosomes : vers l'analyse tridimensionnelle de la régulation des génomes. 2-4 Mai, Bordeaux (33), France.
- 2015: DU in statistics at University of Strasbourg. 19-23 January, 15-19 June, 16-20 November, Strasbourg (67), France.
- 2015: "R pour le calcul", R avancé et performances. 5-9 October, Aussois (73), France.
- 2015: Advanced Lecture Course on Computational Systems Biology. 6-11 April, Aussois (73), France.
- 2012: Advances Lecture Course Hybrid Multicore Parallel Programming, 8-12 October, Autrans (38), France.
- 2012: Wellcome Trust Advanced Course: In Silico Systems Biology. 23-27 April, Cambridge, UK.
- 2009: Mexico Advanced Course in Sensitivity Analysis. 11-14 May, Hyères (83), France.

#### Jobs

Since December 2015: Research Engineer (IR) at IAB, INSERM, Grenoble, France. Data analysis and modelling of biological systems.

September 2012 - November 2015: Post Doctoral position at LBMC, CNRS, Lyon, France. Dynamic simulation of a gene regulatory network in various wild genetic backgrounds of yeast. project SiGHT (ERC-StG2011-281359) (Systems Genetics of Heritable variaTions)

September 2009 - August 2012: Senior Engineer position at LIP, Inria, Lyon, France. Design and implementation of a peer-to-peer grid middleware supporting petascale architecture. SPADES project (08-ANR-SEGI-025) (Servicing Petascale Architectures and DistributEd System)

Janury 2008 - August 2009: Post Doctoral position at Irstea (ex-Cemagref), Clermont-Ferrand, France. Compared study, design and implementation of Individual Based Model (IBM) and Differential Equation Model (DEM). Application to predator-prey model that incorporates individual behavior of the predators.

Sensitivity analysis of from model parameters, impact on model behavior. LifeGrid / PatRes project (FP6-043268) (Pattern Resilience)

October 2004 - December 2007: Ph.D. position at France Telecom / University of Caen Basse-Normandie, Caen, France. Conception design and implementation of an ubiquitous services platform integrating distributed multimodal interfaces. AURORA Project (ITEA-03005)

### Education

2016: DU degree in statistics at University of Strasbourg, Strasbourg, France.

2007: Ph.D. degree in computer science at University of Caen Basse-Normandie, Caen, France.

2004: DEA (master science) in computer science, artificial intelligence and algorithm at University of Caen Basse-Normandie, Caen, France.

2003: Maitrise (master's degree) in applied Mathematics at University of Rouen, Rouen, France.

2002: Licence (under graduate) in Mathematics at University of Rouen, Rouen, France.

1999: DUT (two-year university degree in technology) in Chemistry at IUT (University Institute of Technology) of Rouen, Rouen, France.

1997: Baccalauréat (French secondary school diploma), science major, Rouen, France.

# Other Communications

Comité d'organisation des Open Science Days@UGA, les 13 14 et 15, Grenoble (38).

Tutoriel Software Heritage et HAL: référencement de codes Lucie Albaret, Alexis Arnaud, Violaine Louvet, Maria-Grazia Santangelo, Florent Chuffart Open Science Days@UGA, 14 décembre 2022, Grenoble (38).

Construction of a clock to measure the impact of tobacco on the epigenetic age of whole blood. Florent Jossaud, Fabien Chuffart, Julien Thevenon. **3IA PhD students workshop**, 21 November 2022, Grenoble (38).

Methodological Pitfalls in the Construction of Epigenetic Clock Models. Florent Chuffart. LBBE seminar, 08 November 2022, Lyon (69).

DNA methylation repression of transcriptional activity and its reactivation in a demethylating context. F. Pittion, E. Bourova-Flin, S. Khochbin, S. Rousseaux, F. Chuffart. **JOBIM**, 06-09 july 2021, Paris (75).

Réflexion autour de l'analyse de variance dans le cadre d'un plan d'expérience incomplet. Florent Chuffart. Les Remues-Méninges du RIS, 26 novembre 2021, distanciel.

Analysis of RNA-seq data. Florent Chuffart. **Journée thematique 'statistique & genomique'**, 19 september 2019, Paris.

Snakemake as workflow engine. Florent Chuffart. Python working session. 20 june 2019, Grenoble.

Histone variants: critical determinants in tumour heterogeneity. Wang T, Chuffart F, Bourova-Flin E, Wang J, Mi J, Rousseaux S, Khochbin S. Front Med 13 (3), 289-297. Jun 2019.

ROCKs dependent contractility upon CCM depletion leads to a lossof endothelial cell identity and a gain in invasiv phenotype. Daphné Vannier et al. Poster. **Developmental and cell biology of the future conference**, 27-29 march 2019, Paris.

Utilisation des ressources CIMENT dans le cadre du projet epimed: les besoins spécifiques de la bioinformatique pour l'analyse des données d'exome. Quentin Testard, Julien Thevenon, Jean-François Taly, Laure Raymond, Florent Chuffart. JCAD 2018, 24-26 october, Lyon (69), France.

Intégration de données multi-omiques: RGCCA, Mix Omics. Florent Chuffart. Journée thematique 'statistique & genomique', 12 octobre 2018, Paris.

Retour d'expérience concernant le data challenge épigénétique et médiation à large échelle d'Aussois. Sophie Achard, Dylan Aïssi, Michael Blum, Kevin Caye, **Florent Chuffart**, Olivier François, Keurcien Luu, Florian Privé, Magali Richard. **CFIES2017**, septembre 2017, Grenoble, France. https://toltex.imag.fr/users/RCqls/Workshop/cfies2017/Submissions/subm44.pdf

The role of bromodomain testis-specific factor, BRDT, in cancer: a biomarker and a possible therapeutic target. Ekaterina Flin, **Florent Chuffart**, Sophie Rousseaux, Saadi Khochbin. **Cell J** (Yakhteh) Volume 19, Supplement 1, Spring 2017

Heterogenety in Carcinogenesis Mechanism (the lung cancer example) Florent Chuffart. Kick-off PITCHER. Lyon, 9 mach 2017.

execo (APP creation deposit). Matthieu Imbert, Laurent Pouilloux, Florent Chuffart. APP. 2015.

A General Method to map Single-cell Probabilistic Trait Loci of the Genome. (Short Talk). Florent Chuffart. Quatrièmes Rencontres R, 24-26 June 2015, Grenoble, France.

Functional Genetic Diversity of the Yeast Galactose Network. (Short Talk). Florent Chuffart. CompSysBio, 6-11 April 2015, Aussois, France.

NucleoMiner 2.0: Detecting intra-species quantitative epigenomic variation at single-nucleosome resolution. Florent Chuffart, Gael Yvert. (Poster). LyonSysBio, 19-21 November 2014, Villeurbanne, France.

Parallel Computing in R using the Bot Package. Florent Chuffart (Poster). Deuxièmes rencontres R. 27-28 Juin 2013, Lyon, France.

Optimization in a Self-stabilizing Service Discovery Framework for Large Scale Systems. (in Proceedings). Eddy Caron, Florent Chuffart, Anissa Lamani, Franck Petit. SSS. 2012. 239-252.

Large scale P2P discovery middleware demonstration. (in Proceedings). Eddy Caron, Florent Chuffart, Haiwu He, Anissa Lamani, Philippe Le Brouster, Olivier Richard. IEEE International Conference on Peer-to-Peer Computing (P2P), 1-2 September 2011, Kyoto, Japan. 152-153

Mise en oeuvre de la découverte de services pour des plateformes dynamiques à large échelle. (in Proceedings). Florent Chuffart, Haiwu He. RenPar'20, 10-13 May 2011, Saint-Malo, France. RSTI, serie TSI, 31:8-9-10, 1101-1119.

Implementation and Evaluation of a P2P Service Discovery System: Application in a Dynamic Large Scale Computing Infrastructure. (in Proceedings). Caron, E.; Chuffart, F.; Haiwu He; Tedeschi, C. IEEE 11th International Conference on Computer and Information Technology (CIT). 2011. 41-46.

Declarative task delegation in OpenMOLE. (in Proceedings). R Reuillon, F Chuffart, M Leclaire, T Faure, N Dumoulin, D Hill. International Conference on High performance computing and simulation (HPCS). 2010. 55-62.

Applying a Moment Approximation to a bacterial biofilm individual-based model. (in Proceedings). J-D. Mathias, **F. Chuffart**, N. Mabrouk, and G. Deffuant. **ICCGI 2009**: Proceedings of the 2009 Fourth International Multi-Conference on Computing in the Global Information Technology, pages 138-143, Washington, DC, USA, 2009. IEEE Computer Society.

Record & replay: expérimentation d'un service multimodal. (in Proceedings). Antoine Bouyer, Florent Chuffart. UbiMob '09 Proceedings of the 5th French-Speaking Conference on Mobility and Ubiquity Computing. 2009. 19-23.

The Design of a Multimodal Platform: Experimentation of Record & Replay. (in Proceedings). Bouyer, A.; Chuffart, F.; Courval, L. Second International Conferences on Advances in Computer-Human Interactions. 2009. 1-6.

Design and Analysis of Computer Experiments with SimExplorer. (in Proceedings). Florent Chuffart, Thierry Faure, Nicolas Dumoulin, Romain Reuillon, and Guillaume Deffuant. European Simulation and Modelling Conference (ESM2008). 27-29 October 2008, Le Havre, France. 575-577.

Conception d'une plate-forme de services ubiquitaires intégrant des interfaces multimodales distribuées. (PhD thesis). Florent Chuffart. Université de Caen Basse-Normandie. 2007.

Construction d'une application vocale pour la sélection d'objets à l'aide d'un modèle basé sur les hypergraphes. (in Proceedings). Cyril Bazin, Florent Chuffart, and Jacques Madelaine. 9ème Conférence Internationale sur le Document Numérique. 18-20 Septembre 2006, Fribourg, Suisse. 43-58.

Aurora, multimodal messaging framework for ubiquitous web context. (Communication). F. Chuffart, F. Van Gool, and L. Courval. W3C Ubiquitous Web Workshop, 2006.

Aurora, a framework enabling multimodal interactions. (in Proceedings). Florent Chuffart, Filip Van Gool, and Lionel Courval. In Workshop on International on Multimodal Multiparty Meeting Processing, ACM ICMI Workshop. 7 October 2005, Trento, Italy. 53-585.