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FRANCE

Dr. Pierre Martinez
Bioinformatics of Cancer Evolutionary Dynamics

Nationality: French
Birth date: July 6th 1984

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EDUCATION

- 2008-2011 **PhD** under the supervision of Prof. Franca Fraternali (Randall Division of Cell and Molecular Biophysics, King's College London, England).
"Computational Analysis of Transcription Factors Cooperation and Protein-Protein Interactions Structural Features". *CASE Award (EPSRC)* in collaboration with the Nestlé Research Centre (Dr James Holzwarth, Lausanne, Switzerland).
- 2007 **Master in Bioinformatics**
Sardegna Ricerche, Pula, Italy (directed by Prof. Anna Tramontano).
- 2001-2006 **Master in Information Technology**
EPITECH, Paris, France.

WORK EXPERIENCE

- 2018- **Chargé de Recherche (Permanent PI position)**
Inserm / Cancer Research Centre of Lyon, France.
Analysis of cancer evolution and diversity.
- 2016-2018 **Assistant Scientist**
Cancer Research Centre of Lyon / Centre Léon Bérard, Lyon, France.
Analysis of clonal evolution of tumours.
- 2014-2016 **Post-doctoral Research Assistant**
Evolution and Cancer, Dr Trevor Graham's lab, Barts Cancer Institute, Queen Mary University, London, UK.
Analysis of evolutionary processes and dynamics in tumours and pre-malignant conditions.
- 2011-2013 **Post-doctoral Research Assistant**
Translational Cancer Therapeutics, Prof. Charles Swanton's lab, Cancer Research UK, London, UK.
Analysis of intra-tumour heterogeneity and chromosomal instability.

AWARDS AND PRIZES

Barts Cancer Institute & School of Medicine and Dentistry travel grants awarded to attend IBECC 2016 in San Francisco, December 2016.

Wellcome Trust travel grant awarded to attend the Forecasting evolution conference in Lisbon, July 2015.

Jass prize for best article in the Journal of Pathology for the manuscript *Parallel evolution of tumor subclones mimics diversity between tumors* (2013), awarded in January 2015.

EMBO short-term fellowship awarded for a two-months stay with the Cancer Systems Biology group at the Technical University of Denmark, October 2014.

Prize for best scientific oral presentation at Research Progress in Barrett's Oesophagus 8th National Meeting, April 2014.

Jenny Fordham prize for fun and enthusiasm in the Randall Division for organizing informal scientific meetings amongst PhD students, July 2009.

SELECTED PUBLICATIONS

(Ψ for corresponding authors, * for joint-first authors)

Monteiro L, Da Silva L, Lipinski B, [...], **Martinez P^Ψ**. Assessing Cell Activities rather than Identities to Interpret Intra-Tumor Phenotypic Diversity and Its Dynamics. *iScience*, 2020.

Tokutomi N, Moyret-Lalle C, Puisieux A, Sugano S, **Martinez P^Ψ**. Quantifying the fitness of tissue-specific evolutionary trajectories by harnessing cancer's repeatability at the genetic level. *Evolutionary Applications*, 2019.

Martinez P, Mallo D, Paulson P, Li X, Sanchez C, Reid B, Graham TA, Kuhner M, Maley CC. Evolution of Barrett's Esophagus through space and time at single-crypt and whole-biopsy levels. *Nature Communications*, 2018.

Martinez P^Ψ, Kimberley C, Birkbak N, Marquard M, Szallasi Z, Graham TA. Quantification of within-sample genetic heterogeneity from SNP-array data. *Scientific Reports*, 2017.

Martinez P*, Timmer MR*, [...] Maley CC, Graham TA, Krishnadath KK. Dynamic clonal equilibrium and predetermined cancer risk in Barrett's oesophagus. *Nature Communications*, 2016.

Timmer MR*, **Martinez P***, [...] Maley CC, Graham TA, Bergman JJ, Krishnadath KK. Derivation of genetic biomarkers for cancer risk stratification in Barrett's Oesophagus: a prospective cohort study. *Gut*, 2015.

Kanu N*, Grönroos E*, **Martinez P***, Burrell RA, Goh XY, [...], Swanton C. SETD2 loss of function promotes DNA replication stress and renal cancer genome instability. *Oncogene*, 2015.

Martinez P, Graham T. Evolution and cancer. Book chapter from *Why does Evolution Matter? The Importance of Understanding Evolution*, Cambridge Scholars, 2014.

Martinez P, McGranahan N, Birkbak NJ, Gerlinger M, Swanton C. Computational optimisation of targeted DNA sequencing for cancer detection. *Scientific Reports*, 2013.

Martinez P*, Birkbak NJ*, Gerlinger M*, McGranahan N, Burrell RA, Rowan AJ, Joshi T, Fisher R, Larkin J, Szallasi Z, Swanton C. Parallel evolution of tumor subclones mimics diversity between tumors. *The Journal of Pathology*, 2013.

Gerlinger M*, Rowan AJ*, Horswell S*, Larkin J*, Endesfelder D*, Gronroos E*, **Martinez P***, Matthews N*, Stewart A*, [...], Swanton C. Intratumor heterogeneity and branched evolution revealed by multiregion sequencing. *New England Journal of Medicine*, 2012.

OTHER PUBLICATIONS

Pommier RM, Sanlaville A, Tonon L, Kielbassa J, Thomas E, Ferrari A, Sertier AS, Hollande F, **Martinez P**, Tissier A, Morel AP, Ouzounova M & Alain Puisieux. Comprehensive characterization of claudin-low breast tumors reflects the impact of the cell-of-origin on cancer evolution. *Nature Communications*, 2020.

Roche B, **Martinez P**. Separating the Local and Malignant Dimensions of Cancer Adaptation. *Cancer Informatics*, 2019.

Cross WCH, Kovac M, Mustonen V, Temko D, Davis H, Baker AM, [...], **Martinez P**, [...], Sottoriva A, Leedham SJ, Graham TA, Tomlinson IPM and The S:CORD Consortium. The evolutionary landscape of colorectal tumorigenesis. *Nature Ecology & Evolution*, 2018.

Uchuya-Castillo J, Aznar N, Frau C, **Martinez P**, [...], Plateroti M. Increased expression of the thyroid hormone nuclear receptor TRα1 characterizes intestinal tumors with high Wnt activity. *Oncotarget*, 2018

Baker AM, Cross W, Curtius K, Al Bakir I, Choi CR, [...], **Martinez P**, [...], Hart AL, Leedham SJ, Graham TA. Evolutionary history of human colitis-associated colorectal cancer. *Gut*, 2018.

DL Lavery, **P Martinez**, LJ Gay, B Cereser, MR Novelli, M Rodriguez-Justo, [...], Jansen M. Evolution of oesophageal adenocarcinoma from metaplastic columnar epithelium without goblet cells in Barrett's oesophagus *Gut*, 2015.

Gulati S, **Martinez P**, Joshi T, [...], Bates PA, Swanton C, Gerlinger M. Systematic Evaluation of the Prognostic Impact and Intratumour Heterogeneity of Clear Cell Renal Cell Carcinoma Biomarkers. *European Urology*, 2014.

Gerlinger M, Horswell S, Larkin J, Rowan AJ, Salm MP, [...] **Martinez P**, [...], Swanton C. Genomic architecture and evolution of clear cell renal cell carcinomas defined by multiregion sequencing. *Nature Genetics*, 2014.

Pagano B, Jama A, **Martinez P**, Akanho E, Bui T, Drake A, Fraternali F, Nikolova P. Structure and stability insights into tumour suppressor p53 evolutionary related proteins. *PLoS One*, 2013.

Gerlinger M, Santos CR, Spencer-Dene B, **Martinez P**, [...], Swanton C. Genome-wide RNA interference analysis of renal carcinoma survival regulators identifies MCT4 as a Warburg effect metabolic target. *The Journal of Pathology*, 2012.

Fornili A, Autore F, Chakroun N, **Martinez P** and Fraternali F. Protein-water interactions in MD simulations: POPS/POPSCOMP solvent accessibility analysis, solvation forces and hydration sites. Book chapter from *Computational Drug Discovery and Design*, Springer Protocols 2012.

TEACHING

Demonstrations for **structural bioinformatics courses**, undergraduates: 6 hours (2009).

Lectures on cancer evolution, year 1 medical students: 3 hours (2014-2016).

Problem-based learning, Human Science and Public Health module, year 2 medical students: 14 hours (2016).

Supervision of **4 Master students** in Bioinformatics and **1 undergraduate student** (laboratory technician).

SCIENTIFIC COMMUNICATIONS

Member of the organising committee for the "**Mathematical Models of Cancer Evolution and Ecology**" symposium during the Mathematical Models of Evolution and Ecology conference, Lyon, France, July 2019.

The **Cancer Mosaic, Traits, Strategies and Adaptations Workshop**, August 2018, Montpellier, France:

"Mapping pre-neoplastic development using contingency-based fitness". *Invited speaker*.

Member of the organising committee for the **3rd International Symposium of the Cancer Research Centre of Lyon**, Lyon, France, September 2017.

International Society for Evolution, Ecology and Cancer Conference, Tempe AZ, USA, 2017: "Evolution of Barrett's Esophagus through space and time at whole-biopsy and single-crypt levels". *Contributed talk*.

Systems Biology Conference, November 2016, Lyon, France: "Quantification of within-sample genetic heterogeneity from SNP-array data". *Poster*.

European Conference on Mathematical and Theoretical Biology, July 2016, Nottingham, UK:

"Predetermined malignant potential in Barrett's Oesophagus". *Invited speaker (satellite meeting)*.

Nottingham Pathology 2016, June 2016, Nottingham, UK: "Predetermined malignant potential in Barrett's Oesophagus". *Contributed talk*.

Research Progress in Barrett's Oesophagus 9th National Meeting, April 2016, London, UK: "Measuring and modelling evolutionary clonal dynamics in Barrett's Oesophagus to predict cancer risk". *Contributed talk*.

From gene to phenotype: recent advances in biology and medicine workshop, March 2016, Warsaw, Poland. "Pan-cancer analysis of intratumoral heterogeneity". *Invited Speaker*.

Third International Biannual Evolution and Cancer Conference, December 2015, San Francisco, USA: "Predetermined malignant potential in Barrett's Oesophagus". *Contributed talk*.

Cancer Research Centre of Toulouse seminar, November 2015, Toulouse, France: "Quantifying cancer evolution and intratumour heterogeneity". *Invited speaker*.

National Cancer Research Institute (NCRI) Cancer Conference, November 2015, Liverpool, UK:

"Longitudinal single cell clonal analysis reveals evolutionary stasis and predetermined malignant potential in non-dysplastic Barrett's Oesophagus". *Contributed talk*.

Forecasting Evolution Conference, July 2015, Lisbon, Portugal:

"Single-cell genetics and evolution of clonal diversity by multicolor FISH analysis in Barrett's esophagus". *Poster*.

Evolution and Cancer Conference, Mars 2015, Montpellier, France:

"Tracking clonal evolution over time in Barrett's Oesophagus". *Invited speaker*.

Research Progress in Barrett's Oesophagus 8th National Meeting, April 2014, London, UK:

"Measuring the pattern of clonal evolution in Barrett's Oesophagus using single-cell FISH data in a large longitudinally-followed cohort". *Contributed talk*.

Second International Biannual Evolution and Cancer Conference, June 2013, San Francisco, USA:

"Parallel evolution of tumor subclones mimics diversity between tumors". *Poster*.

European Conference of Computational Biology, September 2010, Ghent, Belgium:

"Computational analysis of transcription factor binding co-localization". *Poster*.

FUNDING

2020: Cancéropôle Lyon Auvergne Rhône Alpes: Oncostarter numérique (Project manager: €40,000).

2019: Plan Cancer Single-Cell (Project and Team 1 manager: €360,000).

2019: Plan Cancer Maths, Informatics & Cancer (Team 2 manager: €370,000).