
RESUME

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Date of birth: 11/03/1990
French Nationality

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Education

- 2014-present: **Massachusetts Institute of Technology**
Graduate student in the Shalek group, Chemistry department
- 2013-2014: **Pierre et Marie Curie University (Paris VI)**
Second year of MSc in Molecular and Cellular Biology, specialty: « Proteomique structurale et fonctionnelle » (Structural and functional proteomic)
- 2011-2012: **ENS de Cachan, Paris-sud 11 University (Orsay)**
First year of MSc in Chemistry
Second year of Magistère of Molecular Physico-Chemistry
- 2010-2011: **ENS de Cachan, Paris-sud 11 University (Orsay)**
BSc in Chemistry
First year of Magistère of Molecular Physico-Chemistry

Research experience

- November 2014-present: **Graduate student in the Shalek Lab (MIT):**
-Elucidating HIV reactivation mechanism via a Genome-scale CRISPR Knock-Out (GeCKO) screening
-Using CRISPR/Cas9 to encode cellular history
- November 2013-July 2013: **Internship in the Chin Group at the MRC, Laboratory of Molecular Biology: Screening for an alternative PylRS/PylT pair, investigating the context effect on amber suppression.**
-Use of the amber suppression system for incorporation of unnatural amino acid in vivo
-Design of a new fluorescent reporter to assess sequence context effect on amber suppression
- October 2012-August 2013: **Internship in the Nolan Group at MIT: Elucidating the metal-binding properties (Mn, Zn, Cu) of human antimicrobial proteins from the S100 family (Calprotectin and S100A12).**
-Expression and purification of recombinant proteins: PCR, FPLC
-Metal binding properties analysis: FPLC, circular dichroism, mass spectrometry, fluorimetry
- April-August 2012: **Internship in the Murray Group at the University of Florida: Synthesis and reactivity (sulfur and oxygen) of a new tri-Cu(I) complex as a model for the active site of the NOR (Nitrous Oxide Reductase) enzyme.**
-Synthesis and characterization of a new Copper Complex
-Techniques related to maintenance and use of an inert atmosphere glovebox
-Utilization of NMR, X-ray and MS techniques

Publications

“Dissecting the multicellular ecosystem of metastatic melanoma by single-cell RNA-seq” Benjamin Izar, Itay Tirosh, Sanjay M. Prakadan, Marc H. Wadsworth II, Daniel Treacy, John J. Trombetta, Asaf Rotem, Christopher Rodman, Christine Lian, George Murphy, Mohammad Fallahi-Sichani, Ken Dutton-Regester, Jia-Ren Lin, Ofir Cohen, Parin Shah, Diana Lu, Alex Genshaft, Travis K. Hughes, Carly G. K. Ziegler, Samuel W. Kazer, **Aleth Gaillard**, Kellie E. Kolb, Chloe Villani, Cory M. Johannessen, Aleksandr Y. Andreev, Elizer van Allen, Monica Bertagnolli, Peter K. Sorger, Ryan P. Sullivan, Keith T. Flaherty, Dennie T. Frederick, Judit Jané-Valbuena, Charles Yoon, Orit Rozenblatt-Rosen, Alex K. Shalek, Aviv Regev and Levi A. Garraway, *Science*, 352 (47): 189-196, 2016 - DOI: 10.1126/science.aad0501

“Multiplexed CRISPR-Cas9 Screening for Discovering Epigenetic Drug Combinations”, Alan Wong, Gigi Choi, Cheryl Cui, Gabriela Pregonig, Pamela Milani, Miriam Adam, Samuel Perli, Samuel Kazer, **Aleth Gaillard**, Mario Hermann, Alex Shalek, Ernest Fraenkel, Timothy K Lu, *PNAS*, 113(9): 2544–2549, 2016 - DOI: 10.1073/pnas.1517883113.

“Calcium Ions Tune the Zinc-Sequestering Properties and Antimicrobial Activity of Human S100A12”, Lisa S. Cunden, **Aleth Gaillard**, and Elizabeth M. Nolan, *Chem. Sci.*, 2016, 7: 1338-1348 - DOI: 10.1039/C5SC03655K

“Modeling Biological Copper Clusters: Synthesis of a Tricopper Complex, and Its Chloride- and Sulfide-Bridged Congeners”, Gianna N. Di Francesco, **Aleth Gaillard**, Ion Ghiviriga, Khalil A. Abboud, and Leslie J. Murray, *Inorg. Chem.*, 2014, 53 (9): 4647–4654 - DOI: 10.1021/ic500333p

“Contributions of the S100A9 C-Terminal Tail to High-Affinity Mn(II) Chelation by the Host-Defense Protein Human Calprotectin”, Megan Brunjes Brophy, Toshiki G. Nakashige, **Aleth Gaillard**, and Elizabeth M. Nolan, *Journal of the American Chemical Society*, 2013, 135 (47): 17804–17817 - DOI: 10.1021/ja407147d

Presentations at conferences

July 2013: **GRC, Cell biology of metals (Salve Regina University), Poster:**
Megan Brunjes Brophy, Toshiki G. Nakashige, **Aleth Gaillard**, and Elizabeth M. Nolan.
“Calprotectin: High-Affinity Mn(II) Coordination Is Calcium Dependent and Requires the C-Terminal Tail of S100A9”

May 2013: **Annual CEHS poster session (MIT), Poster:**
Megan Brunjes Brophy, Toshiki G. Nakashige, **Aleth Gaillard**, and Elizabeth M. Nolan.
“Elucidating the Manganese-binding Properties of the Human Antimicrobial Protein Calprotectin”

Awards and Honors

Geoges H. Büchi Summer Fellowship (Summer 2015)
MIT Robert Guenassia Award (Summer 2016)

Languages

French	Native language
English	Fluent
Spanish	Basic knowledge