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# Thomas Bonacci

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## Overview

I was trained in cell biology and proteomics during my PhD, and biochemistry during my postdoc. My work focuses on the regulation of cell division by the ubiquitin-proteasome system, with an emphasis on deubiquitinating enzymes (DUBs). Despite their crucial role in preventing protein degradation, our understanding of the contribution of DUBs to cell physiology is still in its infancy. By combining state of the art ubiquitin biochemistry, in vitro reactions, systems level approaches as well as computational prediction and experimental validation, my research aims at understanding the functions and layers of DUBs regulation contributing to cancer cell proliferation.

## Education

- 2009 – 2013** PhD in Cancer Biology – *Aix-Marseille University – Marseille, France*  
**2007 – 2009** Master's degree in Biological Science – *Aix-Marseille University – Marseille, France*  
**2004 – 2007** B.Sc. in Biochemistry & Cell Biology – *Université du Sud Toulon Var – Toulon, France*

## Research Experience

- 2015 – Present** Postdoctoral fellow in the lab of Dr Michael Emanuele  
*Lineberger Comprehensive Cancer Center, University of North Carolina, Chapel Hill*
- 2013 – 2014** Postdoctoral fellow in the lab of Dr Juan Iovanna  
*Cancer Research Center of Marseille, Aix-Marseille University, France*
- 2009 – 2013** Graduate student in the lab of Dr Juan Iovanna  
*Cancer Research Center of Marseille, Aix-Marseille University, France*
- 2008 – 2009** Rotating student in the labs of Dr Juan Iovanna and Dr Maxime Lehmann  
*Aix-Marseille University, France*

## Publications

### Published

1. Welsh KA\*, Bolhuis DL\*, Nederstigt AE, Boyer J, Temple BRS, **Bonacci T**, et al. *Functional conservation and divergence of the helix-turn-helix of E2 ubiquitin-conjugating enzymes*. **EMBO J** (2022) (\*equal contribution)
2. Franks JL, Martinez-Chacin RC, Wang X, Tiedemann RL, **Bonacci T**, et al. *In silico APC/C substrate discovery reveals cell cycle-dependent degradation of UHRF1 and other chromatin regulators*. **PLOS Biology** 18(12):e3000975 (2020)
3. Martinez-Chacin RC, Bodrug T, Bolhuis DL, Kedziora KM, **Bonacci T**, et al. *Ubiquitin chain-elongating enzyme UBE2S activates the RING E3 ligase APC/C for substrate priming*. **Nat Struct Mol Biol** (2020)
4. **Bonacci T**, Emanuele MJ. *Dissenting degradation: deubiquitinases in cell cycle and cancer*. **Seminars in Cancer Biology** (2020)
5. Stanley N, **Bonacci T**, Kwitt R, Niethammer M, Mucha PJ. *Stochastic Block Models with Multiple Continuous Attributes*. **Applied Network Science** (2019)
6. **Bonacci T**, Emanuele MJ. *Impressionist portraits of mitotic exit: APC/C, K11-linked ubiquitin chains and Cezanne*. **Cell Cycle** (2019)

7. Arceci A, **Bonacci T**, Wang X, Stewart K, Hoadley KA, Emanuele MJ. *FOXMI deubiquitination by USP21 regulates cell cycle progression and paclitaxel sensitivity in basal-like breast cancer*. **Cell Reports** (2019)
8. Kernan J\*, **Bonacci T**\*, Emanuele MJ. *Who guards the guardian? Mechanisms that restrain APC/C during the cell cycle*. **Biochimica Biophysica Acta - Molecular Cell Research** (2018) (\*equal contribution)
9. **Bonacci T**, Suzuki S, Grant GD, Stanley N, Cook JG, Brown NG, Emanuele MJ. *Cezanne/OTUD7B is a cell cycle regulated deubiquitinase that antagonizes the degradation of APC/C substrates*. **EMBO J** (2018)
10. Gray KM, Kaifer KA, Baillat D, Wen Y, **Bonacci TR**, et al. *Self-oligomerization regulates stability of Survival Motor Neuron (SMN) proteins by sequestering an SCF(Slmb) degron*. **Molecular Biology of the Cell** 29, 96-110 (2017)
11. Choudhury R, **Bonacci T**, Wang X, Truong A, Arceci A, Zhang Y, Mills CA, Kernan JL, Liu P, Emanuele MJ. *The E3 Ubiquitin Ligase SCF(Cyclin F) Transmits AKT Signaling to the Cell-Cycle Machinery*. **Cell Reports** 20, 3212-3222 (2017)
12. **Bonacci T**, Audebert S, Camoin L, Baudelet E, Iovanna JL, Soubeyran P. *Regulation of NUB1 Activity through Non-Proteolytic Mdm2-Mediated Ubiquitination*. **PLOS One** 12:e0169988 (2017)
13. Neira JL, Bintz J, Arruebo M, Rizzuti B, **Bonacci T**, & al. *Identification of a Drug Targeting an Intrinsically Disordered Protein Involved in Pancreatic Adenocarcinoma*. **Scientific Reports** 7:39732 (2017)
14. Choudhury R, **Bonacci T**, Arceci A, Lahiri D, Mills CA, Kernan JL, Branigan TB, DeCaprio JA, Burke DJ, Emanuele MJ. *APC/C and SCF cyclin F Constitute a Reciprocal Feedback Circuit Controlling S-Phase Entry*. **Cell Reports** 16, 3359-3372 (2016)
15. Alomairi J, **Bonacci T**, Ghigo E, Soubeyran P. *Alterations of host cell ubiquitination machinery by pathogenic bacteria*. **Frontiers in cellular and infection microbiology** 5:17 (2015)
16. **Bonacci T**, Peugeot S, Soubeyran P, Iovanna J, Dusetti NJ. *Redox-sensitive TP53INP1 SUMOylation as an oxidative stress sensor to activate TP53*. **Molecular & Cellular Oncology** 1, e964044 (2014)
17. Peugeot S\*, **Bonacci T**\*, et al. *Oxidative stress induced p53 activity is enhanced by a redox-sensitive TP53INP1 SUMOylation*. **Cell Death & Differentiation** 21, 1107-18 (2014) (\*equal contribution)
18. **Bonacci T**, et al. *Identification of new mechanisms of cellular response to chemotherapy by tracking changes in post-translational modifications by ubiquitin and ubiquitin-like proteins*. **Journal of Proteome Research** 13, 2478-94 (2014)
19. Roignot J, **Bonacci T**, Ghigo E, Iovanna JL, Soubeyran P. *Oligomerization and phosphorylation dependent regulation of ArgBP2 adaptive capabilities and associated functions*. **PLoS One** 9:e87130 (2014)
20. **Bonacci T**, Roignot J, Soubeyran P. *Protein ubiquitylation in pancreatic cancer*. **ScientificWorldJournal** 10, 1462-72 (2010)

#### In preparation:

1. **Bonacci T**, Stanley N, Martinez-Chacin RC, Brown NG, Emanuele MJ. *Computational analysis of public data identifies the uncharacterized DUB USP41 as a regulator of Skp2 and a driver of S-phase entry*. **(In preparation)**

#### Former trainees

**2017 – 2018**

Jack Sanford (rotation graduate student, August 2017 – November 2017), Taylor Enrico (rotation graduate student, November 2017 – February 2018), Andy Lui (undergraduate student, June 2017 – April 2018)

**2011 – 2014**

Sebastien Martinez (rotation graduate student, January 2011 – June 2011), Jeremy Sogno (undergraduate student, April 2011 – June 2011), Amelie Dard (rotation graduate student, September 2011 – January 2012), María Arruebo (visiting graduate student, April 2014 – June 2014)

#### Funding acquired

**2010 – 2012**

**Three-year PhD fellowship**. Awarded by *La Ligue Nationale contre le Cancer*.