

CURRICULUM VITAE

Part A. PERSONAL INFORMATION *

First name	Monica Andrea		
Family name	Musteanu		
Gender (*)			
Open Researcher and Contributor ID (ORCID) (*)	0000-0002-1753-3765		

(*) Mandatory

A.1. Current position

Position	Full Professor		
Initial date	10/03/2026		
Institution	Complutense University of Madrid		
Department/Center	Biochemistry and Molecular Biology	Faculty of Pharmacy	
Country	Spain	Teleph. number	693638007
Key words	Lung cancer, immune evasion, therapeutic strategies, KRAS, immunotherapy, IFN signaling		

A.2. Previous positions (research activity interruptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
2020 - 2026	"Ramon y Cajal" postdoctoral fellow, Complutense University of Madrid, Spain
2013 – 2020	Staff Scientist, Spanish National Cancer Research Centre, Madrid, Spain
2010 – 2012	Postdoctoral Scientist, Spanish National Cancer Research Centre, Madrid, Spain
2005 – 2010	Predocdoctoral Scientist, Ludwig Boltzmann Institute for Cancer Research, Vienna, Austria
2004 – 2005	Master Thesis and Contracted Scientist, Department of Human Genetics, Medical University of Vienna, Austria

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Doctor of Philosophy	Medical University of Vienna, Austria	2009
Master of Science	University of Vienna, Austria	2004
Bachelor of Science in Biology	Babes Bolyai University, Cluj-Napoca, Romania	2001

Part B. CV SUMMARY

Dr. Monica Musteanu studied B.Sc. in Biology at the University Babes-Bolyai, Cluj-Napoca, Romania (1997-2001). During the last year of her carrier, she got a fellowship for a bachelor's thesis at the Department of Botany and Biodiversity Research, University of Vienna, Austria. After, Monica moved to the University of Vienna to complete her M.Sc. studies, with specialization in Human-biology (2001-2004). During this time, she was working on her final thesis project at the Department of Human Genetics, Medical University of Vienna under the supervision of Dr. Rotraud Wieser. Monica completed her PhD thesis at the Ludwig Boltzmann Institute for Cancer Research, Vienna (2005-2009), in Dr. Robert Eferl's lab. During the thesis, Monica studied the role of Stat3 in tumorigenesis (Musteanu, M. et al., Gastroenterology 2010) and she developed a novel genetically engineered mouse model to test cooperativity between signaling pathways in tumor development (Musteanu, M. et al., Nature Methods 2012). Monica got her PhD degree from the Medical University of Vienna in November 2009.

In 2010 Monica was awarded with the CNIO-Caja Navarra post-doctoral fellowship and moved to Madrid to work in Dr. Manuel Hidalgo's lab at the Clinical Research Program of the Spanish National Cancer Research Centre (CNIO) focusing her research on translational studies in pancreatic and lung cancer in close collaboration with medical staff and the pharmaceutical industry. During this period, she was mainly interested in the mechanism of action of Abraxane (nab-paclitaxel) in the treatment of pancreatic cancer, drug that finally was approved as

standard of care treatment in combination with gemcitabine (Hidalgo, M. et al., Clinical Cancer Research 2015; Alvarez, R. et al., British Journal of Cancer 2013).

During 2013 - 2020 as Staff Scientist in the group of Dr. Mariano Barbacid at the CNIO, Monica was in charge of all the lung cancer related projects of the group. Monica focused on the identification of therapeutic strategies for mutant KRAS driven lung adenocarcinoma, deciphering the role of RAF1 in KRAS driven lung cancer progression (Sanclemente, M. et al., Cancer Cell 2018; Sanclemente, M. et al., Cancer Cell 2021; Esteban-Burgos, L. et al., PNAS 2020). In addition, Monica established and managed a "Mouse Clinic" of genetically engineered mouse models and patient derived xenograft models for lung adenocarcinoma as a platform for anti-cancer drug development. Taking advantage of the models, she led various collaborations with and funded by pharmaceutical companies aimed at novel drug testing in KRAS mutant lung adenocarcinomas. (ex. Pfizer, as principal investigator). Part of the results of this collaboration, specifically, the evaluation of the efficacy of palbociclib (CDK4/6 inhibitor) compared to PF3600 (CDK2/4/6 inhibitor) in lung cancer progression were published (Arora Mansi et al., Cell, 2023).

In 2020 Monica was awarded the "Ramón y Cajal" fellowship from the Ministry of Science, Innovation and Universities Spain and started her new position as professor and scientist at the Department of Biochemistry and Molecular Biology, Complutense University of Madrid where she is leading her own research group as an independent scientist. In 2022 she was granted a the PID2021-122797OB-I00, "Overcoming immune evasion in KRAS mutant lung cancer" project, financed with 229.900,00 €. (Fernández-García Fernando et al., PNAS, 2024). In 2024 Monica has fulfilled the requirements for the recognition of research capability and independence within the Spanish Science, Technology and Innovation System, and was granted the accreditation as an Established Researcher R3.

Up to date she finished directing three PhD thesis (Dr. M. Sanclemente, *cum laude*; currently senior scientist at Eli Lilly, Madrid; Dr. L. de Esteban, *cum laude*, currently Medical Affairs Professional Oncology at Eli Lilly, Madrid and Dr. F. Fernández, *cum laude*, currently postdoctoral scientist at CeMM Vienna, Austria) and two are ongoing. Dr. Musteanu authored 33 publications in international journals such as Cancer Cell (senior author), Nature Methods (first author), PNAS (senior author), Gastroenterology (first author), Hepatology, Clinical Cancer Research (corresponding author), British Journal of Cancer, etc.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications

= senior author * = corresponding author

1. Fernando Fernández-García,...**Monica Musteanu*** (20/20) (2024) *Type I interferon signaling pathway enhances immune-checkpoint inhibition in KRAS mutant lung tumors. PNAS* 3;121(36): e2402913121. doi: 10.1073/pnas.2402913121.

2. Salmon, Marina; Alvarez-Diaz, Ruth; Fustero-Torre,**Musteanu, Monica (20/22)**; Drosten, Matthias*; Barbacid, Mariano*. (2023). *Kras oncogene ablation prevents resistance in advanced lung adenocarcinomas. Journal of Clinical Investigation.* Apr 3;133 (7):e164413. doi: 10.1172/JCI164413

3. Mansi Arora, Justin Moser, Timothy E. Hoffman,Sabrina L. Spencer*. (2023). *Rapid adaptation to CDK2 inhibition exposes intrinsic cell-cycle plasticity. Cell.* 186(12):2628-2643.e21. doi: 10.1016/j.cell.2023.05.013. **Musteanu, Monica (6/18)**

4. Sanclemente M, Nieto P, Garcia-Alonso S,**Musteanu M#,* (11/12)**, Barbacid M#,* (2021). *RAF1 kinase activity is dispensable for KRAS/p53 mutant lung tumor progression. Cancer Cell.* Mar 8;39(3):294-296. doi: 10.1016/j.ccell.2021.01.008.

5. Esteban-Burgos L, Wang H, Nieto P,**Musteanu M#,* (18/19)**, Barbacid M#,* (2020). *Tumor regression and resistance mechanisms upon CDK4 and RAF1 inactivation in KRAS/P53 mutant lung adenocarcinomas. Proc Natl Acad Sci U S A.* Sep 29;117(39):24415-24426. doi: 10.1073/pnas.2002520117

6. Manuel Sanclemente, Sarah Francoz, Laura Esteban-Burgos,**Monica Musteanu**^{#,*} **(10/11)**, Mariano Barbacid^{#,*}. (2018). *c-RAF Ablation Induces Regression of Advanced Kras/Trp53 Mutant Lung Adenocarcinomas by a Mechanism Independent of MAPK Signaling*. **Cancer Cell**. 12;33(2):217-228.e4. doi: 10.1016/j.ccell.2017.12.014
7. Herwig P. Moll, Klemens Pranz, **Monica Musteanu (3/25)**,Emilio Casanova*. (2018). *Afatinib restrains K-RAS–driven lung tumorigenesis*. **Science Translational Medicine**. Vol. 10, Issue 446, eaa02301. doi: 10.1126/scitranslmed.aao2301
8. Hidalgo M*, Plaza C, **Musteanu M* (3/14)**, Illei P,Von Hoff DD. (2015). *SPARC Expression Did Not Predict Efficacy of nab-Paclitaxel Plus Gemcitabine or Gemcitabine Alone for Metastatic Pancreatic Cancer in an Exploratory Analysis of the Phase III MPACT Trial*. **Clinical Cancer Research** 1;21(21):4811-8. doi: 10.1158/1078-0432.CCR-14-3222
9. **Monica Musteanu (1/18)**, Leander Blaas, Rainer Zenz,Robert Eferl*. (2012). *A mouse model to identify cooperating signaling pathways in cancer*. **Nature Methods** 9(9):897-900. doi: 10.1038/nmeth.2130
10. **Monica Musteanu (1/12)**, Leander Blaas, Markus Mair,Robert Eferl*. (2010). *Stat3 is a negative regulator of intestinal tumor progression in APC^{min} mice*. **Gastroenterology** 138(3):1003-11. doi: 10.1053/j.gastro.2009.11.049

C.2. Congress,

Poster. Jose Mazo-Varas, Robin Hoogervorst, Kika van Eck, **Monica Musteanu**. “Drug repurposing to improve immunotherapy response in KRAS-mutated lung adenocarcinomas”. Cell Symposia: The cancer-immunity cycle, 2-4/11/2025, Sitges, Spain. Organizing entity: Cell Press.

Oral presentation. Monica Musteanu: “Targeting KRAS-driven cancers: Restoring interferon signaling to enhance the efficacy of immunotherapy”. I iLUNG Simposio: Oncología Traslacional y Nanotecnología para la Medicina Personalizada en Cáncer de Pulmón. 24/09/2024. Organizing entity: Fundación Ramón Areces, Madrid.

Oral presentation. Monica Musteanu: “Preclinical evaluation of Sotorasib and Therapy-X combination for the treatment of lung cancer”. ERA PerMed Mini-Symposium “Unleashing the power of personalized medicine for the treatment of cancer: Different approaches, same goal” 05/10/2023, Mainz, Germany. Organizing entity: Institute of Translational Immunology, University Medical Center of the Johannes Gutenberg-University, Mainz.

Oral presentation. Monica Musteanu: “Avutometinib and FAK inhibitor concomitant treatment enhances antitumor efficacy of sotorasib in mice harboring KRASG12C;p53 mutant lung adenocarcinomas”. Targeting Ras Symposium, 14/09/2023, Salamanca, Spain. Organizing entity: Centro de Investigación del Cáncer, Salamanca.

Poster. Fernández-García F, Fernández-Rodríguez A, Fustero-Torre C, Piñeiro-Yañez E, Wang H, Lechuga CG, Callejas S, Álvarez R, López-García A, Esteban-Burgos L, Salmón M, San Román M, Guerra C, Ambrogio C, Drosten M, Santamaria D, Al-Shahrour F, Dopazo A, Barbacid M, **Musteanu M**. “Type I interferon signaling pathway enhances immune checkpoint inhibition in KRAS mutant lung tumors”. Targeting Ras Symposium, 14-15/09/2023, Salamanca, Spain. Organizing entity: Centro de Investigación del Cáncer, Salamanca.

Poster. Silvia Coma; **Monica Musteanu**; Cristina Caffara; et al; Alessia Mira. “The RAF/MEK clamp avutometinib (VS-6766) enhances antitumor efficacy of KRAS G12C and G12D inhibitors. through vertical inhibition of RAS, RAF and MEK”. Special Conference of the Advances in Cancer Research: TARGETING RAS 2023. Organizing entity: American-Association-for-Cancer-Research (AACR)

Poster. Silvia Coma; Sanjib Chowdhury; Julien Dilly; **Monica Musteanu**; Mariano Barbacid; Andrew J. Aguirre; Jonathan A. Pachter. “Dual RAF/MEK inhibitor VS-6766 enhances

antitumor efficacy of KRAS G12C inhibitors through vertical inhibition of RAS, RAF and MEK". Annual Meeting of the AACR 2022. Organizing entity: AACR.

Poster. Herwig P. Moll; Klemens Pranz; **Monica Musteanu**; Luka Brcic; Helmut Popper; Judit Moldvay; Balazs Dome; Emilio Casanova. "Afatinib restrains K-RAS driven lung tumorigenesis". Annual Meeting of the American-Association-for-Cancer-Research (AACR) 2018. Organizing entity: AACR

Poster. L. Blaas; **M. Musteanu**; R. Zenz; et al; E. Eferl. Identification of cooperating Ras effector pathways in lung cancer. Frontiers in tumour progression. Nature-CNIO conference 2010. Madrid, Spain.

Poster. **Monica Musteanu**; Leander Blaas; Markus Mair; et al; Robert Eferl Eferl. "Stat3 is a negative regulator of intestinal tumor progression in APCmin mice". Frontiers in Basic Cancer Research. AACR Conference 2009. Boston, United States of America.

C.3. Research projects

Project: PID2021-122797OB-I00, "Overcoming immune evasion in KRAS mutant lung cancer (IMUNCAN)". Proyectos de Generación de Conocimiento 2021, Agencia Estatal de Investigación (AEI), Ministerio de Ciencia, Innovación y Universidades. (Universidad Complutense de Madrid). 01/09/2022 - 31/08/2025. 229.900 €. **Principal investigator.**

Project: S2022/BMD-7437, "Oncología y nanotecnología traslacional para la medicina personalizada en cáncer de Pulmón". Financed by Comunidad de Madrid (Universidad Complutense de Madrid). 01/01/2023 - 31/12/2026. 894.000,50 €. Coordinating PI: Luis Paz-Ares Rodriguez. **Member of the investigation team.**

Project: AC20/00114, "Personalized multimodal therapies for the treatment of lung cancer". Financed by Instituto de Salud Carlos III (ISCIII) and Fundación Científica AECC. (Centro Nacional de Investigaciones Oncológicas). 01/01/2021 - 31/12/2023. 324.845,00 €. Coordinating PI: Ernesto Bockamp; PI: Mariano Barbacid. **Member of the investigation team.**

Project: RTI2018-094664-B-I00, "c-RAF, un mediador clave en tumores inducidos por el oncogén K-RAS: Estrategias terapéuticas". Agencia Estatal de Investigación (AEI), Ministerio de Ciencia, Innovación y Universidades. (Centro Nacional de Investigaciones Oncológicas). 01/01/2019 - 31/12/2021. 411.100 €. **Principal investigator 2.**

Project: "THERACAN. Novel therapeutic strategies to treat pancreatic and lung cancer" Comisión Europea. Programa H2020/ERC-AdG (695566). (Centro Nacional de Investigaciones Oncológicas) 01/01/2017 - 31/12/2022. 2.499.500,00 €, PI: Mariano Barbacid. **Member of the investigation team.**

Project: i-Lung. Terapias personalizadas y nanotecnología en cáncer de Pulmón. Concedido por la Comunidad de Madrid (B2017/BMD-3884). (Centro Nacional de Investigaciones Oncológicas) 01/01/2018 - 30/06/2022. 822.307,50 €. Coordinating PI: Marcos Malumbres; PI: Mariano Barbacid. **Member of the investigation team**

C.4. Contracts, technological or transfer merits

Contract.

Co-Principal Investigator in the Collaborative Research Agreement Pfizer- CNIO. Starting date 01/10/2018. Duration: 3 years. Budget: \$1,465,800.00.

Patent.

Title: Method for the generation of a non-human animal model with an oncogene

Inventors: Eferl Robert, Casanova Hevia Emilio; Stoiber-Sakaguchi Dagmar; Morrigl Richard; Schmid Johannes; Kenner Lukas; Zenz Rainer; **Musteanu Monica**; Blaas Leander.