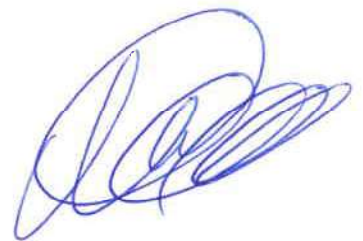


Curriculum Vitae

Miguel A Molina-Vila

A handwritten signature in blue ink, consisting of several overlapping loops and strokes, positioned above the date.

June 2020

Last Name: Molina Vila

First Name: Miguel Á.

Citizenship: Spain

Date of birth: July 23th, 1965

Phone: 665093851

E-mail: mamolina@panoncology. com

1.- EDUCATION

1988 B.S.: Biology Autonomous University of Barcelona

1989 M.S.: Biotechnology Autonomous University of Barcelona

1993 PhD: Biochemistry and Molecular Biology Autonomous University of Barcelona

2.- ACADEMIC AND PROFESSIONAL APPOINTMENTS

2014- Present: Technical Director, Laboratory of Oncology, Pangaea Oncology
Quirón Dexeus University Hospital, Barcelona, Spain

2007- 2014: R&D Scientist, Laboratory of Oncology, Pangaea Biotech
Quirón Dexeus University Hospital, Barcelona, Spain

2006-2007: Project Investigator, Department of Medical Oncology
“Germans Trias i Pujol” Hospital, Badalona, Spain

2005-2006: R+D Scientist.
Biokit, S. A., Lliçà d’Amunt, Barcelona, Spain

2002-2005: Project Manager, R+D Department.
Operon, S. A., Zaragoza, Spain

1999-2001: Postdoctoral Fellow, Department of Oncology
“Vall d’Hebron” Hospital, Barcelona

1997-1999: Postdoctoral Fellow, Department of Gastrointestinal Medical Oncology
MD Anderson Cancer Center, Houston, Texas, USA

1993-1997: Assistant Professor of Biochemistry and Molecular Biology, Dpt of Biology
University of Girona

1989-1992: Predoctoral Fellow (and fellowship recipient), Institute for Fundamental Biology
Autonomous University of Barcelona

3.- PUBLICATIONS

A) Published and accepted articles in refereed journals

- Molina, M. A.**, Avilés, F. X., Querol, E. (1992) Expression of a synthetic gene encoding potato carboxypeptidase inhibitor using a bacterial secretion vector. *Gene* 116:129-38.
- Molina, M. A.**, Marino, C., Oliva, B., Avilés, F. X., Querol, E. (1994) The C-tail valine is a key residue for stabilization of the complex between potato inhibitor and carboxypeptidase A. *J. Biol. Chem.* 269:21467-72.
- Marino, C., **Molina, M. A.**, Canals, F., Avilés, F. X., Querol, E. (1994) Overproduction of a recombinant carboxypeptidase inhibitor by optimization of fermentation conditions. *Appl. Biotech. Microbiol.* 41:632-637.
- Oliva, B, Marino, C., **Molina, M. A.**, Canals, F., Avilés, F. X., Querol, E. (1995) On the entropic an hydrophobic properties involved in the inhibitory mechanism of carboxypeptidase A by its natural inhibitor from potato. *J. Mol. Mod.* 1:54-67.
- *Blanco-Aparicio, C., ***Molina, M. A.**, Fernández-Salas, E., Frazier, M. L., Mas, J. M., Querol, E., Avilés, F. X., de Llorens, R. (1998) Potato carboxypeptidase inhibitor, a T-knot protein, is an epidermal growth factor antagonist that inhibits tumor cell growth. *J. Biol. Chem.* 273: 12370-7. (*First co-authors)
- Mas, J.M., Aloy, P., Martí-Renom, M. A., Oliva, B., Blanco-Aparicio, C., **Molina, M. A.**, de Llorens, R., Querol, E., Avilés, F. X. (1998) Protein similarities beyond disulphide bridge topology. *J. Mol.Biol.* 284:541-8.
- Molina, M. A.**, Sitja-Arnau, M., Lemoine, M. G., Frazier, M. L., Sinicrope, F. A. (1999) Increased cyclooxygenase-2 expression in human pancreatic carcinomas and cell lines: growth inhibition by NSAIDs. *Cancer Res.* 59:4356-62.
- Marino-Buslje, C., Venhudova, G., **Molina, M. A.**, Oliva, B., Jorba, X., Canals, F., Avilés, F. X., Querol, E. (2000) Contribution of C-tail residues of potato carboxypeptidase inhibitor to the binding to carboxypeptidase A. A mutagenesis analysis. *Eur. J. Biochem.* 267:1502-9.
- Molina, M. A.**, Codony-Servat, J., Albanell, J., Rojo, F., Arribas, J. and Baselga, J. (2001) Herceptin, a humanized anti-HER2 receptor monoclonal antibody, inhibits basal and

activated HER2 ectodomain cleavage. *Cancer Res.* 61:471-9.

-Baselga, J., Albanell, J., **Molina, M. A.** and Arribas, J. (2001) Mechanism of action of trastuzumab and scientific update. *Semin. Oncol.* 28: 4-11.

-**Molina, M.A.**, Sáez, R., Ramsey, E.E., García-Barchino, M.-J., Rojo, F., Evans, A.J., Albanell, J., Keenan, E.J., Lluch, A., García-Conde, J., Baselga, J., Clinton, G. M. (2002) NH2-terminal truncated HER-2 protein but not full-length receptor is associated with nodal metastasis in human breast cancer. *Clin. Cancer Res.* 8:347-53.

-Roig, J.M., **Molina, M.A.**, Cascante, A., Calbó, J., Wirtz, U., Sreedharan, S., Fillat, C., Mazo, A. (2004) Adenovirus-mediated Retinoblastoma 94 gene transfer induces human pancreatic tumor regression in a mouse xenograft model. *Clin Cancer Res*, 10: 1454-62.

-Gomez-Roman J.J., Saenz P., **Molina, M.A.**, Cuevas Gonzalez J., Escuredo K., Sa-Cruz S., Junquera C., Simon L., Martinez A., Gutierrez J.L., Lopez M., Esparza C., Val-Bernal J.F. (2005) Fibroblast growth factor receptor 3 is overexpressed in urinary tract carcinomas and modulates the neoplastic cell growth. *Clin Cancer Res*, 11: 459-65 (correction 11: 3149).

-Sitjà-Arnau, M., **Molina, M.A.**, Blanco-Aparicio, C., Ferrer-Soler, A., Lorenzo, J., Avilés, F. X., Querol, E. and de Llorens, R. (2005) Mechanism of action of potato carboxypeptidase inhibitor (PCI) as an EGF blocker. *Cancer Letters*, 226: 169-84

-Sáez, R., **Molina, M.A.**, Ramsey, E.E., García, M.-J., Rojo, F., Evans, A.J., Albanell, J., Keenan, E.J., Lluch, A., García-Conde, J., Baselga, J., Clinton, M. (2006) p95 HER-2 predicts worse outcome in patients with HER-2 positive breast cancer. *Clin. Cancer Res*, 12: 424-31

-Rosell R, de Las Peñas R, Balaña C, Santarpia M, Salazar F, de Aguirre I, Reguart N, Villa S, Wei J, Ramirez JL, **Molina MA**, Ramon y Cajal S, Jablons D, Taron M. (2008) Translational research in glioblastoma multiforme: molecular criteria for patient selection. *Future Oncol.* 4:219-28.

-**Molina-Vila MA**, Bertran-Alamillo J, Reguart N, Taron M, Castellà E, Llatjós M, Costa C, Mayo C, Pradas A, Queralt C, Botia M, Pérez-Cano M, Carrasco E, Tomàs M, Mate JL, Moran T, Rosell R. A sensitive method for detecting EGFR mutations in non-small cell lung cancer samples with few tumor cells. *J Thorac Oncol.* 3:1224-35, 2008 (The four first authors contributed equally to the article)

- Costa C, **Molina MA**, Baró T, Aguilar A, De Las Heras P, Fusté P, Mancebo G, Carreras R, Serrano S, Alameda F. Could the truncated variant of ERBB2 be present in the squamous carcinomas of the cervix?. *Virchows Arch.* 453(5):535-6, 2008.
- Costa C, Espinet B, **Molina MA**, Salgado R, Salido M, Baró T, Fusté P, Mancebo G, Carreras R, Solé F, Serrano S, Alameda F. Analysis of gene status in cervical dysplastic lesions and squamous cell carcinoma using tissue macroarrays. *Histol Histopathol.* 24:821-9, 2009.
- Rosell R, Bertran-Alamillo J, **Molina MA**, Taron M. IL-6/gp130/STAT3 signaling axis in cancer and the presence of in-frame gp130 somatic deletions in inflammatory hepatocellular tumors. *Future Oncol.* 5:305-8, 2009.
- **Molina-Vila MA**, Bertran-Alamillo J, Mayo C, Rosell R. Screening for EGFR mutations in lung cancer. *Discov Med.* 8(43):181-4, 2009.
- Rosell R, Moran T, Queralt C, Porta R, Cardenal F, Camps C, Majem M, Lopez-Vivanco G, Isla D, Provencio M, Insa A, Massuti B, Gonzalez-Larriba JL, Paz-Ares L, Bover I, Garcia-Campelo R, Moreno MA, Catot S, Rolfo C, Reguart N, Palmero R, Sánchez JM, Bastus R, Mayo C, Bertran-Alamillo J, **Molina MA**, Sanchez JJ, Taron M; Spanish Lung Cancer Group. Screening for epidermal growth factor receptor mutations in lung cancer. *N Engl J Med.* 361:958-67, 2009.
- Rosell R, Viteri S, **Molina MA**, Benlloch S, Taron M. Epidermal growth factor receptor tyrosine kinase inhibitors as first-line treatment in advanced nonsmall-cell lung cancer. *Curr Opin Oncol.* 22:112-20, 2010.
- Garcia-Olivé I, Monsó E, Andreo F, Sanz-Santos J, Taron M, **Molina-Vila MA**, Llatjós M, Castellà E, Moran T, Bertran-Alamillo J, Mayo-de-Las-Casas C, Queralt C, Rosell R. Endobronchial ultrasound-guided transbronchial needle aspiration for identifying EGFR mutations. *Eur Respir J.* 35:391-5, 2010.
- Rosell R, Morán T, Carcereny E, Quiroga V, **Molina MA**, Costa C, Benlloch S, Tarón M. Non-small-cell lung cancer harbouring mutations in the EGFR kinase domain. *Clin Transl Oncol.* 12:75-80, 2010.
- Rosell R, Vergnenegre A, Liu B, Cobo M, Massuti B, Wei J, **Molina MA**, Costa C, Queralt C,

Taron M. Biomarkers in lung oncology. *Pulm Pharmacol Ther.* 23:508-14, 2010

- Salazar F, **Molina MA**, Sanchez-Ronco M, Moran T, Ramirez JL, Sanchez JM, Stahel R, Garrido P, Cobo M, Isla D, Bertran-Alamillo J, Massuti B, Cardenal F, Manegold C, Lianes P, Trigo JM, Sanchez JJ, Taron M, Rosell R. First-line therapy and methylation status of CHFR in serum influence outcome to chemotherapy versus EGFR tyrosine kinase inhibitors as second-line therapy in stage IV non-small-cell lung cancer patients. *Lung Cancer* 72:84-91, 2011

- Rosell R, Moran T, Cardenal F, Porta R, Viteri S, **Molina MA**, Benlloch S, Taron M Predictive biomarkers in the management of EGFR mutant lung cancer. *Ann N Y Acad Sci.* 1210:45-52, 2010.

- Simonetti S, **Molina MA**, Queralt C, de Aguirre I, Mayo C, Bertran-Alamillo J, Sanchez JJ, Gonzalez-Larriba JL, Jimenez U, Isla D, Moran T, Viteri S, Camps C, Garcia-Campelo R, Massuti B, Benlloch S, Ramon y Cajal S, Taron M, Rosell R. Detection of EGFR mutations with mutation-specific antibodies in stage IV non-small-cell lung cancer. *J Transl Med.* 8:135, 2010.

- Rosell R, **Molina MA**, Costa C, Simonetti S, Gimenez-Capitan A, Bertran-Alamillo J, Mayo C, Moran T, Mendez P, Cardenal F, Isla D, Provencio M, Cobo M, Insa A, Garcia-Campelo R, Reguart N, Majem M, Viteri S, Carcereny E, Porta R, Massuti B, Queralt C, de Aguirre I, Sanchez JM, Sanchez-Ronco M, Mate JL, Ariza A, Benlloch S, Sanchez JJ, Bivona TG, Sawyers CL, Taron M. Pretreatment EGFR T790M mutation and BRCA1 mRNA expression in erlotinib-treated advanced non-small-cell lung cancer patients with EGFR mutations. *Clin Cancer Res.* 17:1160-8, 2011

- Bover I, Rolfo C, Jantus-Lewintre E, Sirera R, Camps C, Chaib I, Ramirez-Serrano JL, Benlloch S, **Molina-Vila MA**, Simonetti S, Costa C, Gimenez-Capitan A, Mendez P, Taron M, Rosell R. Fifth Educational Symposium of the Spanish Lung Cancer Group: report on the Molecular Biology Workshop. *Lung Cancer* 74: 535-43, 2011.

- Santarpia M, Magri I, Sanchez-Ronco M, Costa C, **Molina-Vila MA**, Gimenez-Capitan A, Bertran-Alamillo J, Mayo C, Benlloch S, Viteri S, Gasco A, Mederos N, Carcereny E, Taron M, Rosell R. mRNA expression levels and genetic status of genes involved in the EGFR and NF- κ B pathways in metastatic non-small-cell lung cancer patients. *J Transl Med.* 9:163, 2011.

- Rosell R, Carcereny E, Gervais R, Vergnenegre A, Massuti B, Felip E, Palmero R, Garcia-Gomez R, Pallares C, Sanchez JM, Porta R, Cobo M, Garrido P, Longo F, Moran T, Insa A, De Marinis F, Corre R, Bover I, Illiano A, Dansin E, de Castro J, Milella M, Reguart N, Altavilla G, Jimenez U, Provencio M, Moreno MA, Terrasa J, Muñoz-Langa J, Valdivia J, Isla D, Domine M, Molinier O, Mazieres J, Baize N, Garcia-Campelo R, Robinet G, Rodriguez-Abreu D, Lopez-Vivanco G, Gebbia V, Ferrera-Delgado L, Bombaron P, Bernabe R, Bearz A, Artal A, Cortesi E, Rolfo C, Sanchez-Ronco M, Drozdowskyj A, Queralt C, de Aguirre I, Ramirez JL, Sanchez JJ, **Molina MA**, Taron M, Paz-Ares L; Spanish Lung Cancer Group in collaboration with Groupe Français de Pneumo-Cancérologie and Associazione Italiana Oncologia Toracica. Erlotinib versus standard chemotherapy as first-line treatment for European patients with advanced EGFR mutation-positive non-small-cell lung cancer (EURTAC): a multicentre, open-label, randomised phase 3 trial. *Lancet Oncol.* 13:239-46, 2012

- Rosell R, **Molina MA**, Serrano MJ. EGFR mutations in circulating tumour DNA. *Lancet Oncol.* 13:971-3, 2012

- Mayo C, Bertran-Alamillo J, **Molina-Vila MA**, Giménez-Capitán A, Costa C, Rosell R. Pharmacogenetics of EGFR in lung cancer: perspectives and clinical applications. *Pharmacogenomics.* 13:789-802, 2012.

- Karachaliou N, Mayo C, Costa C, Magrí I, Gimenez-Capitan A, Molina-Vila MA, Rosell R. KRAS Mutations in Lung Cancer. *Clin Lung Cancer.* 14:205-14, 2013.

- Karachaliou N, Costa C, Gimenez-Capitan A, **Molina-Vila MA**, Bertran-Alamillo J, Mayo C, Massuti B, Majem M, Carcereny E, Moran T, Sanchez JJ, Viteri S, Gasco A, Wannesson L, Souglakos J, Jimeno J, Rosell R; Spanish Lung Cancer Group. BRCA1, LMO4, and CtIP mRNA expression in erlotinib-treated non-small-cell lung cancer patients with EGFR mutations. *J Thorac Oncol.* 8:295-300, 2013

- Hubers AJ, Heideman DA, Yatabe Y, Wood MD, Tull J, Tarón M, Molina MA, Mayo C, Bertran-Alamillo J, Herder GJ, Koning R, Sie D, Ylstra B, Meijer GA, Snijders PJ, Witte BI, Postmus PE, Smit EF, Thunnissen E. EGFR mutation analysis in sputum of lung cancer patients: a multitechnique study. *Lung Cancer.* 82:38-43, 2013

- Wannesson L, Viteri S, Costa C, Karachaliou N, **Molina-Vila MA**, Rosell R. Signaling pathways modulating dependence of lung cancer on mutant epidermal growth factor receptor and mechanisms of intrinsic and acquired resistance to tyrosine kinase inhibitors.

Curr Pharm Des. 20:3883-93, 2014.

- **Molina-Vila** MA, Nabau-Moretó N, Tornador C, Sabnis AJ, Rosell R, Estivill X, Bivona TG, Marino-Buslje C. Activating mutations cluster in the "molecular brake" regions of protein kinases and do not associate with conserved or catalytic residues. *Hum Mutat.* 35:318-28, 2014.

- **Molina-Vila MA**, Bertran-Alamillo J, Gascó A, Mayo-de-las-Casas C, Sánchez-Ronco M, Pujantell-Pastor L, Bonanno L, Favaretto AG, Cardona AF, Vergnenègre A, Majem M, Massuti B, Morán T, Carcereny E, Viteri S, Rosell R. Nondisruptive p53 mutations are associated with shorter survival in patients with advanced non-small cell lung cancer. *Clin Cancer Res.* 20:4647-59, 2014.

- Simonetti FL, Tornador C, Nabau-Moretó N, **Molina-Vila MA**, Marino-Buslje C. Kin-Driver: a database of driver mutations in protein kinases. Database (Oxford). Nov 19;2014:bau104. doi: 10.1093/database/bau104.

- Reguart N, Rosell R, Cardenal F, Cardona AF, Isla D, Palmero R, Moran T, Rolfo C, Pallarès MC, Insa A, Carcereny E, Majem M, De Castro J, Queralt C, **Molina MA**, Taron M. Phase I/II trial of vorinostat (SAHA) and erlotinib for non-small cell lung cancer (NSCLC) patients with epidermal growth factor receptor (EGFR) mutations after erlotinib progression. *Lung Cancer.* 84 (2):161-7, 2014.

- Costa C, **Molina MA**, Drozdowskyj A, Giménez-Capitán A, Bertran-Alamillo J, Karachaliou N, Gervais R, Massuti B, Wei J, Moran T, Majem M, Felip E, Carcereny E, Garcia-Campelo R, Viteri S, Taron M, Ono M, Giannikopoulos P, Bivona T, Rosell R. The impact of EGFR T790M mutations and BIM mRNA expression on outcome in patients with EGFR-mutant NSCLC treated with erlotinib or chemotherapy in the randomized phase III EURTAC trial. *Clin Cancer Res.* 20 (7):2001-10, 2014.

- Reguart N, Rosell R, Cardenal F, Cardona AF, Isla D, Palmero R, Moran T, Rolfo C, Pallarès MC, Insa A, Carcereny E, Majem M, De Castro J, Queralt C, **Molina MA**, Taron M. Phase I/II trial of vorinostat (SAHA) and erlotinib for non-small cell lung cancer (NSCLC) patients with epidermal growth factor receptor (EGFR) mutations after erlotinib progression. *Lung Cancer.* 84 (2):161-7, 2014

- Peters S, Weder W, Dafni U, Kerr KM, Bubendorf L, Meldgaard P, O'Byrne KJ, Wrona A, Vansteenkiste J, Felip E, Marchetti A, Savic S, Lu S, Smit E, Dingemans AM, Blackhall FH,

- Baas P, Camps C, Rosell R, Stahel RA, Dafni U, Taron M, **Molina MÁ**, Weder W, Thunnissen E, *et al.* Lungscape: resected non-small-cell lung cancer outcome by clinical and pathological parameters. *J Thorac Oncol.* 9 (11):1675-84, 2014
- Karachaliou N, **Molina-Vila MA**, Rosell R. The impact of rare EGFR mutations on the treatment response of patients with non-small cell lung cancer. *Expert Rev Respir Med.* 9(3):241-4, 2015.
- Karachaliou N, Mayo-de-Las-Casas C, **Molina-Vila MA**, Rosell R. Real-time liquid biopsies become a reality in cancer treatment. *Ann Transl Med.* 3 (3):36, 2015
- Karachaliou N, Mayo-de Las Casas C, Queralt C, de Aguirre I, Melloni B, Cardenal F, Garcia-Gomez R, Massuti B, Sánchez JM, Porta R, Ponce-Aix S, Moran T, Carcereny E, Felip E, Bover I, Insa A, Reguart N, Isla D, Vergnenegre A, de Marinis F, Gervais R, Corre R, Paz-Ares L, Morales-Espinosa D, Viteri S, Drozdowskyj A, Jordana-Ariza N, Ramirez-Serrano JL, **Molina-Vila MA**, Rosell R; Spanish Lung Cancer Group. Association of EGFR L858R Mutation in Circulating Free DNA With Survival in the EURTAC Trial. *JAMA Oncol.* 1 (2):149-57, 2015.
- Karachaliou N, Pilotto S, Teixidó C, Viteri S, González-Cao M, Riso A, Morales-Espinosa D, **Molina MA**, Chaib I, Santarpia M, Richardet E, Bria E, Rosell R. Melanoma: oncogenic drivers and the immune system. *Ann Transl Med.* 3 (18):265, 2015.
- Pilotto S, **Molina-Vila MA**, Karachaliou N, Carbognin L, Viteri S, González-Cao M, Bria E, Tortora G, Rosell R. Integrating the molecular background of targeted therapy and immunotherapy in lung cancer: a way to explore the impact of mutational landscape on tumor immunogenicity. *Transl Lung Cancer Res.* 4(6):721-7, 2015. Review.
- Molina-Vila MA**, de-Las-Casas CM, Bertran-Alamillo J, Jordana-Ariza N, González-Cao M, Rosell R. cfDNA analysis from blood in melanoma. *Ann Transl Med.* 3(20):309, 2015. Review.
- Karachaliou N, Codony-Servat J, Teixidó C, Pilotto S, Drozdowskyj A, Codony-Servat C, Giménez-Capitán A, **Molina-Vila MA**, Bertrán-Alamillo J, Gervais R, Massuti B, Morán T, Majem M, Felip E, Carcereny E, García-Campelo R, Viteri S, González-Cao M, Morales-Espinosa D, Verlicchi A, Crisetti E, Chaib I, Santarpia M, Luis Ramírez J, Bosch-Barrera J, Felipe Cardona A, de Marinis F, López-Vivanco G, Miguel Sánchez J, Vergnenegre A, Sánchez Hernández JJ, Sperduti I, Bria E, Rosell R. BIM and mTOR expression levels

- predict outcome to erlotinib in EGFR-mutant non-small-cell lung cancer. *Sci Rep.* 5:17499, 2015.
- Gonzalez-Cao M, Mayo-de-Las-Casas C, **Molina-Vila MA**, De Mattos-Arruda L, Muñoz-Couselo E, Manzano JL, Cortes J, Berros JP, Drozdowskyj A, Sanmamed M, Gonzalez A, Alvarez C, Viteri S, Karachaliou N, Martin Algarra S, Bertran-Alamillo J, Jordana-Ariza N, Rosell R. BRAF mutation analysis in circulating free tumor DNA of melanoma patients treated with BRAF inhibitors. *Melanoma Res.* 25(6):486-95, 2015.
 - González-Cao M, Karachaliou N, Viteri S, Morales-Espinosa D, Teixidó C, Sánchez Ruiz J, **Molina-Vila MÁ**, Santarpia M, Rosell R. Targeting PD-1/PD-L1 in lung cancer: current perspectives. *Lung Cancer.* 31;6:55-70, 2015. Review.
 - Molina-Vila MA**, Mayo-de-Las-Casas C, Giménez-Capitán A, Jordana-Ariza N, Garzón M, Balada A, Villatoro S, Teixidó C, García-Peláez B, Aguado C, Catalán MJ, Campos R, Pérez-Rosado A, Bertran-Alamillo J, Martínez-Bueno A, Gil MD, González-Cao M, González X, Morales-Espinosa D, Viteri S, Karachaliou N, Rosell R. Liquid Biopsy in Non-Small Cell Lung Cancer. *Front Med (Lausanne).* 2016 Dec 23;3:69. doi: 10.3389/fmed.2016.00069. eCollection 2016. Review.
 - de Las Casas CM, Gonzalez-Cao M, Ramirez SV, Ariza NJ, Balada A, Garzón M, Teixidó C, Karachaliou N, Morales-Espinosa D, **Molina-Vila MÁ**, Rosell R. Usefulness of circulating free DNA for monitoring epidermal growth factor receptor mutations in advanced non-small cell lung cancer patients: a case report. *Transl Lung Cancer Res.* 5(5):532-537, 2016.
 - Molina-Vila MÁ**. Liquid biopsy in lung cancer: present and future. *Transl Lung Cancer Res.* 5(5):452-454, 2016.
 - Bonanno L, Costa C, Majem M, Sanchez JJ, Rodriguez I, Gimenez-Capitan A, **Molina-Vila MA**, Vergnenegre A, Massuti B, Favaretto A, Rugge M, Pallares C, Taron M, Rosell R. Combinatory effect of BRCA1 and HERC2 expression on outcome in advanced non-small-cell lung cancer. *BMC Cancer.* 16:312, 2016.
 - Chen LY, **Molina-Vila MA**, Ruan SY, Su KY, Liao WY, Yu KL, Ho CC, Shih JY, Yu CJ, Yang JC, Rosell R, Yang PC. Coexistence of EGFR T790M mutation and common activating mutations in pretreatment non-small cell lung cancer: A systematic review and meta-analysis. *Lung Cancer.* 94:46-53, 2016. Review.

- Mayo-de-Las-Casas C, Jordana-Ariza N, Garzón-Ibañez M, Balada-Bel A, Bertrán-Alamillo J, Viteri-Ramírez S, Reguart N, Muñoz-Quintana MA, Lianes-Barragan P, Camps C, Jantús E, Remon-Massip J, Calabuig S, Aguiar D, Gil ML, Viñolas N, Santos-Rodríguez AK, Majem M, García-Peláez B, Villatoro S, Pérez-Rosado A, Monasterio JC, Ovalle E, Catalán MJ, Campos R, Morales-Espinosa D, Martínez-Bueno A, González-Cao M, González X, Moya-Horno I, Sosa AE, Karachaliou N, Rosell R, **Molina-Vila MA**. Large scale, prospective screening of EGFR mutations in the blood of advanced NSCLC patients to guide treatment decisions. *Ann Oncol*. 28(9):2248-2255, 2017.

- Malapelle U, Mayo-de-Las-Casas C, **Molina-Vila MA**, Rosell R, Savic S, Bihl M, Bubendorf L, Salto-Tellez M, de Biase D, Tallini G, Hwang DH, Sholl LM, Luthra R, Weynand B, Vander Borcht S, Missiaglia E, Bongiovanni M, Stieber D, Vielh P, Schmitt F, Rappa A, Barberis M, Pepe F, Pisapia P, Serra N, Vigliar E, Bellevicine C, Fassan M, Rugge M, de Andrea CE, Lozano MD, Basolo F, Fontanini G, Nikiforov YE, Kamel-Reid S, da Cunha Santos G, Nikiforova MN, Roy-Chowdhuri S, Troncone G; Molecular Cytopathology Meeting Group. Consistency and reproducibility of next-generation sequencing and other multigene mutational assays: A worldwide ring trial study on quantitative cytological molecular reference specimens. *Cancer Cytopathol*. 125(8):615-626, 2017.

- Rosell R, Dafni U, Felip E, Curioni-Fontecedro A, Gautschi O, Peters S, Massutí B, Palmero R, Aix SP, Carcereny E, Früh M, Pless M, Popat S, Kotsakis A, Cuffe S, Bidoli P, Favaretto A, Froesch P, Reguart N, Puente J, Coate L, Barlesi F, Rauch D, Thomas M, Camps C, Gómez-Codina J, Majem M, Porta R, Shah R, Hanrahan E, Kammler R, Ruepp B, Rabaglio M, Kassapian M, Karachaliou N, Tam R, Shames DS, **Molina-Vila MA**, Stahel RA; BELIEF collaborative group. Erlotinib and bevacizumab in patients with advanced non-small-cell lung cancer and activating EGFR mutations (BELIEF): an international, multicentre, single-arm, phase 2 trial. *Lancet Respir Med*. 5(5):435-444, 2017.

- Malapelle U, Mayo de-Las-Casas C, Rocco D, Garzon M, Pisapia P, Jordana-Ariza N, Russo M, Sgariglia R, De Luca C, Pepe F, Martinez-Bueno A, Morales-Espinosa D, González-Cao M, Karachaliou N, Viteri Ramirez S, Bellevicine C, **Molina-Vila MA**, Rosell R, Troncone G. Development of a gene panel for next-generation sequencing of clinically relevant mutations in cell-free DNA from cancer patients. *Br J Cancer*. 116(6):802-810, 2017.

- Reguart N, Teixidó C, Giménez-Capitán A, Paré L, Galván P, Viteri S, Rodríguez S, Peg V, Aldeguer E, Viñolas N, Remon J, Karachaliou N, Conde E, Lopez-Rios F, Nadal E, Merkelbach-Bruse S, Büttner R, Rosell R, **Molina-Vila MA**, Prat A. Identification of ALK,

- ROS1, and RET Fusions by a Multiplexed mRNA-Based Assay in Formalin-Fixed, Paraffin-Embedded Samples from Advanced Non-Small-Cell Lung Cancer Patients. *Clin Chem*. 63(3):751-760, 2017.
- Jacobsen K, Bertran-Alamillo J, **Molina MA**, Teixidó C, Karachaliou N, Pedersen MH, Castellví J, Garzón M, Codony-Servat C, Codony-Servat J, Giménez-Capitán A, Drozdowskyj A, Viteri S, Larsen MR, Lassen U, Felip E, Bivona TG, Ditzel HJ, Rosell R. Convergent Akt activation drives acquired EGFR inhibitor resistance in lung cancer. *Nat Commun*. 8(1):410, 2017.
 - Codony-Servat C, Codony-Servat J, Karachaliou N, **Molina MA**, Chaib I, Ramirez JL, de Los Llanos Gil M, Solca F, Bivona TG, Rosell R. Activation of signal transducer and activator of transcription 3 (STAT3) signaling in EGFR mutant non-small-cell lung cancer (NSCLC). *Oncotarget*. 8(29):47305-47316, 2017.
 - Chaib I, Karachaliou N, Pilotto S, Codony Servat J, Cai X, Li X, Drozdowskyj A, Servat CC, Yang J, Hu C, Cardona AF, Vivanco GL, Vergnenegre A, Sanchez JM, Provencio M, de Marinis F, Passaro A, Carcereny E, Reguart N, Campelo CG, Teixido C, Sperduti I, Rodriguez S, Lazzari C, Verlicchi A, de Aguirre I, Queralt C, Wei J, Estrada R, Puig de la Bellacasa R, Ramirez JL, Jacobson K, Ditzel HJ, Santarpia M, Viteri S, **Molina MA**, Zhou C, Cao P, Ma PC, Bivona TG, Rosell R. Co-activation of STAT3 and YES-Associated Protein 1 (YAP1) Pathway in EGFR-Mutant NSCLC. *J Natl Cancer Inst*. 1;109(9), 2017. doi: 10.1093/jnci/djx014.
 - Teixidó C, Giménez-Capitán A, **Molina-Vila MÁ**, Peg V, Karachaliou N, Rodríguez-Capote A, Castellví J, Rosell R RNA Analysis as a Tool to Determine Clinically Relevant Gene Fusions and Splice Variants. *Arch Pathol Lab Med*. 142(4):474-479, 2018.
 - Aguado C, Gil MD, Yeste Z, Giménez-Capitán A, Teixidó C, Karachaliou N, Viteri S, Rosell R, **Molina-Vila MA**. Response to crizotinib in a non-small-cell lung cancer patient harboring an EML4-ALK fusion with an atypical LTBP1 insertion. *Onco Targets Ther*. 11:1117-1120, 2018.
 - Gonzalez-Cao M, Mayo de Las Casas C, Jordana Ariza N, Manzano JL, **Molina-Vila MÁ**, Soriano V, Puertolas T, Balada A, Soria A, Majem M, Montagut C, Muñoz E, Rodríguez-Abreu D, Perez E, Garcia A, Cortes J, Drozdowskyj A, Karachaliou N, Rosell R; Spanish Melanoma Group. Early evolution of BRAFV600 status in the blood of melanoma patients correlates with clinical outcome and identifies patients refractory to therapy. *Melanoma Res*.

28(3):195-203, 2018.

- Kerr KM, Dafni U, Schulze K, Thunnissen E, Bubendorf L, Hager H, Finn S, Biernat W, Vliegen L, Losa JH, Marchetti A, Cheney R, Warth A, Speel EJ, Blackhall F, Monkhurst K, Jantus Lewintre E, Tischler V, Clark C, Bertran-Alamillo J, Meldgaard P, Gately K, Wrona A, Vandenberghe P, Felip E, De Luca G, Savic S, Muley T, Smit EF, Dingemans AC, Priest L, Baas P, Camps C, Weder W, Polydoropoulou V, Geiger TR, Kammler R, Sumiyoshi T, **Molina MA**, Shames DS, Stahel RA, Peters S; ETOP Lungscape Consortium. Prevalence and clinical association of gene mutations through multiplex mutation testing in patients with NSCLC: results from the ETOP Lungscape Project. *Ann Oncol.* 29(1):200-208, 2018.

- Karachaliou N, Chaib I, Cardona AF, Berenguer J, Bracht JWP, Yang J, Cai X, Wang Z, Hu C, Drozdowskyj A, Servat CC, Servat JC, Ito M, Attili I, Aldeguer E, Capitan AG, Rodriguez J, Rojas L, Viteri S, **Molina-Vila MA**, Ou SI, Okada M, Mok TS, Bivona TG, Ono M, Cui J, Cajal SRY, Frias A, Cao P, Rosell R. Common Co-activation of AXL and CDCP1 in EGFR-mutation-positive Non-small cell Lung Cancer Associated With Poor Prognosis. *EBioMedicine.* 29:112-127, 2018.

- Karachaliou N, Gonzalez-Cao M, Crespo G, Drozdowskyj A, Aldeguer E, Gimenez-Capitan A, Teixido C, **Molina-Vila MA**, Viteri S, De Los Llanos Gil M, Algarra SM, Perez-Ruiz E, Marquez-Rodas I, Rodriguez-Abreu D, Blanco R, Puertolas T, Royo MA, Rosell R. Interferon gamma, an important marker of response to immune checkpoint blockade in non-small cell lung cancer and melanoma patients. *Ther Adv Med Oncol.* 2018 Jan 18;10:1758834017749748. doi: 10.1177/1758834017749748. eCollection 2018.

- Mayo-de-Las-Casas C, Garzón Ibáñez M, Jordana-Ariza N, García-Peláez B, Balada-Bel A, Villatoro S, Malapelle U, Karachaliou N, Troncone G, Rosell R, **Molina-Vila MA**. An update on liquid biopsy analysis for diagnostic and monitoring applications in non-small cell lung cancer. *Expert Rev Mol Diagn.* 18(1):35-45, 2018.

- van den Heuvel CNAM, Das AI, de Bitter T, Simmer F, Wurdinger T, **Molina-Vila MA**, Leenders WPJ. Quantification and localization of oncogenic receptor tyrosine kinase variant transcripts using molecular inversion probes. *Sci Rep.* 8(1):7072, 2018.

- Codony-Servat J, García-Roman S, **Molina-Vila MÁ**, Bertran-Alamillo J, Giménez-Capitán A, Viteri S, Cardona AF, D'Hondt E, Karachaliou N, Rosell R. Anti-Epidermal Growth Factor Vaccine Antibodies Enhance the Efficacy of Tyrosine Kinase Inhibitors and Delay the Emergence of Resistance in EGFR Mutant Lung Cancer Cells. *J Thorac Oncol.* 13(9):1324-

- Paré L, Pascual T, Seguí E, Teixidó C, Gonzalez-Cao M, Galván P, Rodríguez A, González B, Cuatrecasas M, Pineda E, Torné A, Crespo G, Martin-Algarra S, Pérez-Ruiz E, Reig Ò, Viladot M, Font C, Adamo B, Vidal M, Gaba L, Muñoz M, Victoria I, Ruiz G, Viñolas N, Mellado B, Maurel J, Garcia-Corbacho J, **Molina-Vila MÁ**, Juan M, Llovet JM, Reguart N, Arance A, Prat A. Association between PD1 mRNA and response to anti-PD1 monotherapy across multiple cancer types. *Ann Oncol*. 29(10):2121-2128, 2018.

- Ochoa S, Martínez-Pérez E, Zea DJ, **Molina-Vila MA**, Marino-Buslje C. Comutation and exclusion analysis in human tumors: A tool for cancer biology studies and for rational selection of multitargeted therapeutic approaches. *Hum Mutat*. 2019 Apr;40(4):413-425.

- Han Y, Wu P, Wang Z, Zhang Z, Sun S, Liu J, Gong S, Gao P, Iwakuma T, **Molina-Vila MA**, Chen BP, Zhang Y, Ji T, Mo Q, Chen P, Hu J, Wang S, Zhou J, Lu H, Gao Q. Ubiquinol-cytochrome C reductase core protein II promotes tumorigenesis by facilitating p53 degradation. *EBioMedicine*. 2019 Feb;40:92-105

- Reyes R, Mayo-de-Las-Casas C, Teixidó C, Cabrera C, Marín E, Vollmer I, Jares P, Garzón M, **Molina-Vila MÁ**, Reguart N. Clinical Benefit From BRAF/MEK Inhibition in a Double Non-V600E BRAF Mutant Lung Adenocarcinoma: A Case Report. *Clin Lung Cancer*. 2019 May;20(3):e219-e223.

- Bertran-Alamillo J, Cattán V, Schoumacher M, Codony-Servat J, Giménez-Capitán A, Cantero F, Burbridge M, Rodríguez S, Teixidó C, Roman R, Castellví J, García-Román S, Codony-Servat C, Viteri S, Cardona AF, Karachaliou N, Rosell R, **Molina-Vila MA**. AURKB as a target in non-small cell lung cancer with acquired resistance to anti-EGFR therapy. *Nat Commun*. 2019 Apr 18;10(1):1812

- Pisapia P, Malapelle U, Roma G, Saddar S, Zheng Q, Pepe F, Bruzzese D, Vigliar E, Bellevicine C, Luthra R, Nikiforov YE, Mayo-de-Las-Casas C, **Molina-Vila MA**, Rosell R, Bihl M, Savic S, Bubendorf L, de Biase D, Tallini G, Hwang DH, Sholl LM, Vander Borcht S, Weynand B, Stieber D, Vielh P, Rappa A, Barberis M, Fassan M, Rugge M, De Andrea CE, Lozano MD, Lupi C, Fontanini G, Schmitt F, Dumur CI, Bisig B, Bongiovanni M, Merkelbach-Bruse S, Büttner R, Nikiforova MN, Roy-Chowdhuri S, Troncone G; Molecular Cytopathology Meeting Group. Consistency and reproducibility of next-generation sequencing in cytopathology: A second worldwide ring trial study on improved cytological molecular reference specimens. *Cancer Cytopathol*. 2019 May;127(5):285-296.

- Codony-Servat J, Viteri S, Codony-Servat C, Ito M, Bracht JWP, Berenguer J, Chaib I, **Molina-Vila MA**, Karachaliou N, Rosell R. Hsp90 inhibitors enhance the antitumoral effect of osimertinib in parental and osimertinib-resistant non-small cell lung cancer cell lines. *Transl Lung Cancer Res*. 2019 Aug;8(4):340-351.

- Bracht JWP, Karachaliou N, Bivona T, Lanman RB, Faull I, Nagy RJ, Drozdowskyj A, Berenguer J, Fernandez-Bruno M, **Molina-Vila MA**, Rosell R. BRAF Mutations Classes I, II, and III in NSCLC Patients Included in the SLLIP Trial: The Need for a New Pre-Clinical Treatment Rationale. *Cancers (Basel)*. 2019 Sep 17;11(9):1381.

- Villatoro S, Mayo-de-Las-Casas C, Jordana-Ariza N, Viteri-Ramírez S, Garzón-Ibañez M, Moya-Horno I, García-Peláez B, González-Cao M, Malapelle U, Balada-Bel A, Martínez-Bueno A, Campos R, Reguart N, Majem M, Blanco R, Blasco A, Catalán MJ, González X, Troncone G, Karachaliou N, Rosell R, **Molina-Vila MA**. Prospective detection of mutations in cerebrospinal fluid, pleural effusion, and ascites of advanced cancer patients to guide treatment decisions. *Mol Oncol*. 2019 Dec;13(12):2633-2645.

- Ito M, Codony-Servat C, Codony-Servat J, Lligé D, Chaib I, Sun X, Miao J, Sun R, Cai X, Verlicchi A, Okada M, **Molina-Vila MA**, Karachaliou N, Cao P, Rosell R. Targeting PKC α -PAK1 signaling pathways in EGFR and KRAS mutant adenocarcinoma and lung squamous cell carcinoma. *Cell Commun Signal*. 2019 Oct 28;17(1):137

- Molina-Vila MA**, Stahel RA, Dafni U, Jordana-Ariza N, Balada-Bel A, Garzón-Ibañez M, García-Peláez B, Mayo-de-Las-Casas C, Felip E, Curioni Fontecedro A, Gautschi O, Peters S, Massutí B, Palmero R, Ponce Aix S, Carcereny E, Früh M, Pless M, Popat S, Cuffe S, Bidoli P, Kammler R, Roschitzki-Voser H, Tsourti Z, Karachaliou N, Rosell R. Evolution and Clinical Impact of EGFR Mutations in Circulating Free DNA in the BELIEF Trial. *J Thorac Oncol*. 2020 Mar;15(3):416-425.

- Mayo-de-Las-Casas C, Velasco A, Sanchez D, Martínez-Bueno A, Garzón-Ibañez M, Gatiús S, Ruiz-Miró M, Gonzalez-Tallada X, Llordella I, Tresserra F, Rodríguez S, Aldeguez E, Roman-Canal B, Bertran-Alamillo J, García-Peláez B, Rosell R, **Molina-Vila MA**, Matias-Guiu X. Detection of somatic mutations in peritoneal lavages and plasma of endometrial cancer patients: A proof-of-concept study. *Int J Cancer*. 2020 Jul 1;147(1):277-284

- Gonzalez-Cao M, Morán T, Dalmau J, Garcia-Corbacho J, Bracht JWP, Bernabe R, Juan O, de Castro J, Blanco R, Drozdowskyj A, Argilaguet J, Meyerhans A, Blanco J, Prado JG,

Carrillo J, Clotet B, Massuti B, Provencio M, **Molina-Vila MA**, Mayo de Las Casa C, Garzon M, Cao P, Huang CY, Martinez-Picado J, Rosell R. Assessment of the Feasibility and Safety of Durvalumab for Treatment of Solid Tumors in Patients With HIV-1 Infection: The Phase 2 DURVAST Study. *JAMA Oncol.* 2020 Apr 9:e200465. doi: 10.1001/jamaoncol.2020.0465. Online ahead of print. PMID: 32271353

-Marin E, Teixido C, Carmona-Rocha E, Reyes R, Arcocha A, Viñolas N, Rodríguez-Mues M, Cabrera C, Sánchez M, Vollmer I, Castillo S, Muñoz S, Sullivan IG, Rodriguez A, Garcia M, Alos S, Jares P, Martinez A, Prat A, **Molina-Vila MÁ**, Reguart N. Usefulness of Two Independent DNA and RNA Tissue-Based Multiplex Assays for the Routine Care of Advanced NSCLC Patients. *Cancers (Basel)*. 2020 Apr 30;12(5):E1124

-Santarpia M, Aguilar A, Chaib I, Cardona AF, Fancelli S, Laguia F, Bracht JWP, Cao P, **Molina-Vila MA**, Karachaliou N, Rosell R. Non-Small-Cell Lung Cancer Signaling Pathways, Metabolism, and PD-1/PD-L1 Antibodies. *Cancers (Basel)*. 2020 Jun 5;12(6):E1475.

B) Patents

-Title: Metalocarboxypeptidase inhibitors and derived molecules as antitumor agents.

Inventors: de Llorens, R., Avilés, F. X, Querol, E., Frazier, M. L., Blanco, C., **Molina, M. A.**, Fernández, E.

Int. Application Number: PCT/ES97/00232.

Int. Publication Number: WO98/12317

Priority Date: September 20th, 1996.

Applicants (US Assignees): Universities of Girona and Autonomous of Barcelona.

-Title: In vitro method to detect bladder transitional carcinoma

Inventors: Martinez A., Simon L., Santa Cruz S., Saenz P., **Molina, M.A.**, Gomez-Roman J.J., Cuevas Gonzalez J.

Int. Application Number: PCT/EP04/003219

Int. Publication Number: WO2004/085676

Priority date: March 26th, 2003

Applicants (US Assignees): Medplant Genetics, S. L.

C) Book chapters

-Querol, E., **Molina, M. A.**, Daura, X., Oliva, B., Marino, C., Canals, F., Crane-Robinson, C., Tapia, O. (1993). Protease inhibitors from vegetables as a target for Protein Engineering: Application to the potato carboxypeptidase inhibitor. En Avilés, F. X. (Ed.): Innovations in Proteases and their inhibitors, pp 477-493, Walter de Gruyter, Berlín-New York

4.- TECHNICAL SKILLS

Biomedical research and cell biology

- Cell culture techniques, including the establishment of primary cultures
- Proliferation and cytotoxicity assays
- Transient and stable transfection
- Selection and validation of tumor markers and targets from Genomics and Proteomics data
- Identification and *in vitro* validation of antitumor drugs
- Animal models
 - Nude mice and xenografts
 - Transgenic mice maintenance and characterization
 - Validation *in vivo* of antitumor drugs
- Characterization of the mechanism of action of anticancer drugs
 - Binding, dimerization, immunocomplex kinase assays
 - Pulse-chase, biotin labelling
 - Enzymatic assays,...

Molecular Biology

- DNA and RNA purification
- Next Generation Sequencing (NSG)
- nCounter
- Northern and Southern transfer
- PCR and RT-PCR
- Gene cloning and mutagenesis
- Transcription regulatory elements mapping
- DNA sequencing, length analysis and Taqman assays
- Detection of genetic traits (mutations, SNPs,...) in human samples (fresh and paraffin-embedded tissue, serum, plasma,...)

Proteomics

- 2D electrophoresis of biological samples (tissues, body fluids, cell culture extracts,...)
- 2D gel staining and spot picking
- Image analysis by computer tools
- Spot digestion and mass spectrometry. Protein identification by comparison with databases

Protein Chemistry and Immunology

- Atmospheric and high-pressure chromatography (HPLC, FPLC):
- Dialysis, filtration and ultrafiltration
- Protein purification from biological samples
- Enzyme assays, electrophoresis, spectrophotometry
- Polyclonal antibody production and purification
- Western blotting
- ELISA
- Immunohistochemistry and immunocytochemistry
- Immunochromatography

Microbiology

- Identification, culture and long-time storage of microorganisms
- Fermentation techniques
- Recombinant protein production and purification

Quality Management (ISO15189)

- Implementation and maintenance of a comprehensive Quality Management System
- Quality control, quality assurance and quality improvement
- Quality Audits
- Validation of methods

Languages

- Spanish: Mother tongue
- Catalan: Mother tongue
- English: Written, spoken (two and a half years in english-speaking countries)
- French: Written, spoken

Computer skills

- MS Office
- SPSS
- PubMed and associated databases (OMIM, Genebank,...), Swissprot, EspaceNet,...

6.- SUPERVISORY TEACHING

-PhD supervisor for Carmen Blanco Thesis “Potato Carboxypeptidase Inhibitor, an EGF antagonist with antitumor properties”, Department of Biology, University of Girona, 1993-98

-M.Sc. supervisor for Cristina Marino M.Sc Thesis “Potato carboxypeptidase inhibitor production by fermentation techniques and site-directed mutagenesis analysis of Val 38”, Institute for Fundamental Biology, Autonomous University of Barcelona, 1991-93

7.- FORMAL TEACHING

As an Assistant Professor in the Dpt of Biology, University of Girona, taught courses for Biology, Chemistry and Environmental Sciences majors in

- General Biochemistry
- Molecular Biology
- Biochemical Techniques
- Cell Culture and Monoclonal Antibodies