Lecture Prof.Dr. Ángela Martín-Serrano Ortiz

On **November 24th 2025 at 11 AM**, Prof.Dr. Ángela Martín-Serrano Ortiz (University of Alcalá, Madrid, Spain: https://www.uah.es/en/estudios/profesor/Angela-Martin-Serrano-Ortiz/) will give a lecture on ***Engineering innate immune killing of cancer cells by Antibody Recruiting Glycodendrimers***.

CV and abstract are attached.

Location: **Seminar Room 0.2** at the **Department of Pharmaceutics**.

No need to register. For further information: br.degeest@ugent.be

Best regards,

Bruno De Geest

CV Ángela Martín-Serrano Ortiz

Ángela Martín-Serrano Ortiz received her PhD in Chemistry from the University of Malaga in Spain (2018), where she worked on the development of chemical strategies to improve the in vitro diagnosis of allergies to beta-lactam antibiotics. In 2019, she joined the BioNanoDen Group at the University of Alcalá in Spain as a postdoctoral researcher. In this period, she developed carbosilane dendrimers with different peripheral functionalization for different biomedical applications. In 2021, she began her second postdoctoral position in the Multiglyco Group at the Université Grenoble-Alpes in France, where she worked on the ERC-PoC projects THERA-LEGO and PATHO-LEGO and specialized in the design and biological evaluation of multivalent antibody recruiting molecules against cancer and infections. In 2025 she started her independent career in the QuiBio Group at the University of Alcalá in Spain thanks to a Research Talent Attraction Program from the Community of Madrid, and her main objective is to develop a new generation of antibody recruiting molecules.

Ángela obtained funding from the French cystic fibrosis patient association “Vaincre la Mucoviscidose” to work on a new generation of antibody-recruiting molecules against Pseudomonas aeruginosa, as well as several internationally prestigious postdoctoral contracts (Juan de la Cierva Formación, Sara Borrell, and Research Talent Attraction Program from the Community of Madrid). She is co-author of 20 scientific publications, co-inventor of an international patent, and has received 6 awards for best communication at conferences. In addition, she is deeply committed to bringing science and research findings closer to society and has organized numerous scientific outreach activities.

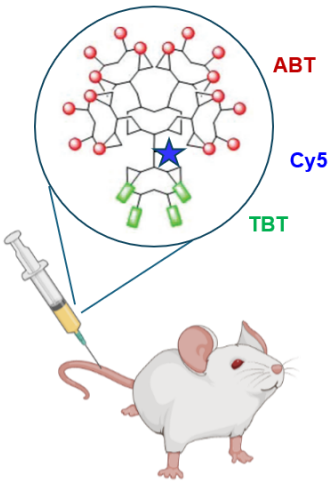
Abstract: Engineering innate immune killing of cancer cells by Antibody Recruiting Glycodendrimers

Cancer and infections are major public health problems affecting the entire world. Currently, immunotherapy with monoclonal antibodies (Abs) has become a promising strategy to fight cancer and infections. However, its use is difficult to standardize, expensive and can lead to intolerable toxicity events. There is therefore a need to develop more effective therapies with fewer side effects and mechanisms of action that differ from those of conventional therapies. What if we could develop a tailor-made therapy that could be adapted to the treatment of cancer and infections? Over the last fifteen years, synthetic chemistry has allowed the development of bifunctional molecules called Antibody Recruiting Molecules (ARMs). ARMs are composed by a target binding terminus (TBT) able to bind to specific receptors on cancer cells or to virulence factors of pathogens, and by an antibody binding terminus (ABT) able to gather endogenous antibodies. The ternary complex target cell-ARM-Abs leads

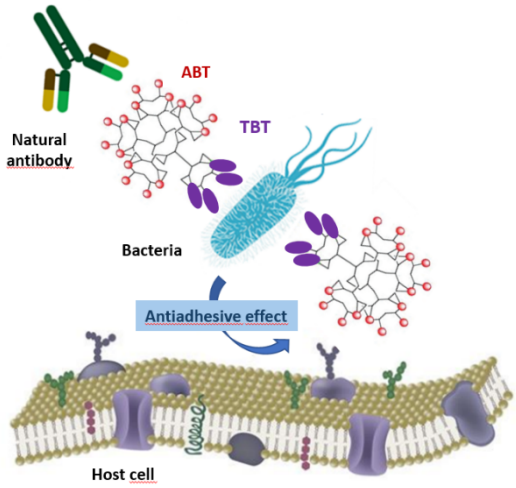
to the activation of different immunological mechanisms and, consequently, to target cell clearance without need for previous immunization [1].

By using supramolecular chemistry, molecular engineering, biochemistry immunochemistry and glycoscience approaches, we have designed two different kinds of Antibody Recruiting Glycodendrimers (ARGs). The first type, bearing four copies of RGD peptide as TBT and sixteen copies of rhamnose as ABT selectively target overexpressed integrins on tumor surface and recruit the natural anti-rhamnose Abs present in human serum [2]. They promote up to 60% of selective cytotoxicity towards cancer cells in vitro [3] and have good serum stability, blood compatibility and lack of toxicity in vivo. The second type, bearing four copies of α-Galactose as TBT and sixteen copies of rhamnose as ABT not only bind to LecA from Pseudomonas aeruginosa and recruit the natural anti-rhamnose Abs present in human serum, but also inhibit LecA adhesion to A549 pulmonary cells in vitro, proving a two-in-one approach to fight this pathogen.

The efficacy, specificity, and low toxicity of our ARGs represent a step forward toward tailor-made ARM-based immunotherapy to combat cancer and infections.



ARGs to fight cancer



ARGs to fight infections

References

[1] S. Achilli, N. Berthet, O. Renaudet. RSC Chemical Biology, 2021, 2., 713-724

[2] B. Liet, E. Laigre, D. Goyard, B. Todaro, C. Tiertant, D. Boturyn, N. Berthet, O. Renaudet. Chemistry a European, Journal, 2019, 25.,15508 –15515

[3] B. Todaro, S. Achilli, B. Liet, E. Laigre, C. Tiertant, D. Goyard, N. Berthet, O. Renaudet. Biomaterials Science, 2021, 9., 4076-4084