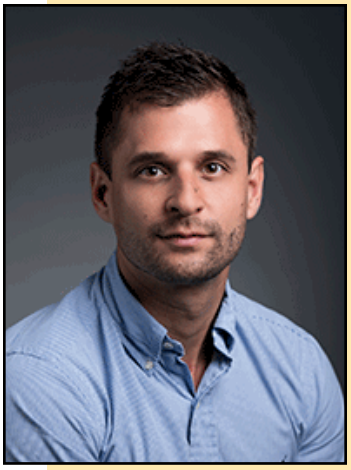

Remi Veneziano, PhD

Assistant Professor, Department of Bioengineering

Education

PhD, Health Biology, University of Montpelier, France

Key Interests

DNA Origami | Nanotechnology | Biomaterials | Self-Assembly | DNA Hydrogels | Vaccine Platform | Drug Delivery | Model Lipid Bilayer | Protein/Membrane Interactions

CONTACT

Phone: 703-993-7176 | Email: rvenezia@gmu.edu

Website: https://volgenau.gmu.edu/profile/view/570321

SELECT PUBLICATIONS

- R. Veneziano *et al.*, Designer nanoscale DNA assemblies programmed from the top down. *Science* 352, 6293 (2016).
- R. Veneziano *et al.*, In vitro synthesis of gene-length single-stranded DNA. *Scientific Reports* 8, Article number: 6548 (2018).
- R. Veneziano *et al.*, *Bordetella pertussis* adenylate cyclase toxin translocation across a tethered lipid bilayer. *PNAS* 110(51), 20473-20478 (2013).
- R. Veneziano *et al.*, One step synthesis of gold-loaded radial mesoporous silica nanospheres and supported lipid bilayer functionalization: towards bio-multifunctional sensors. *Small* 8, 3674 (2012).

Research Focus

Nanoscale organization of bio-macromolecules is crucial for numerous key biological mechanisms, including antigen recognition by B-cell receptors as part of the adaptive immune response, pathogen entry into cells, and cell signaling, among others. The ability to organize macromolecules at the nanometer scale to mimic specific protein assemblies will both enable a better understanding of natural molecular mechanisms, and allow the synthesis of new biomimetic system and biomedical devices.

The main goal of my laboratory is to investigate fundamental questions about the role of Bio-macromolecules nanoscale organization in cell membrane interaction. We are developing biomimetic DNA-based nanoarchitectures to examine the role of antigen valency and organization in B-cell activation, which will aid the development of novel, efficacious vaccines. We are also designing nanoparticles and nanostructured hydrogels that mimic the presentation of virus targeting moieties for the efficient delivery of various therapeutic cargos, and for control of cell behavior.

Current Projects

- Design, assembly and functionalization of DNA based nanoparticles for spatially controlled antigen presentation toward vaccine platform development.
- Design of synthetic biology tools for nanoscale study of protein/membrane interactions.
- Development of nanostructured DNA hydrogels for biomedical applications.
- Multifunctional nanoparticles for targeted nucleic acids delivery.