Shepherding precision gene editing with CRISPR-Cas9 variants and adenoviral vectors

Tasca, F.

Curriculum Vitae

Francesca Tasca was born on February 23, 1993, in Marostica, Italy. She holds a Bachelor's degree in Biotechnology from the University of Padova, Italy, which she obtained between 2012 and 2015. She then pursued a Master's degree in Cellular and Molecular Biotechnology at the University of Trento, Italy, from 2015 to 2017. As part of her master's studies, Francesca also had the opportunity to attend an Erasmus exchange program at the University of Coimbra in Portugal. Following her Erasmus exchange, Francesca completed a six-month research internship at the Leiden University Medical Center in the Laboratory of Genome Editing, under the supervision of Dr. M.A.F.V. Gonçalves. In September 2017, Francesca successfully graduated with first-class honors (110/110L) from her Master's program.

In March 2018, Francesca started her PhD as part of the Marie Skłodowska-Curie Doctoral Network IMGENE - Improving Genome Editing Efficiency (European Union's Horizon 2020 Programme). She worked under the supervision of Dr. M.A.F.V. Gonçalves in the Genome Editing laboratory, part of the Virus and Stem Cell Biology group of Prof. Dr. Rob Hoeben. The results of her research are presented in this thesis.

List of Publications

1. **Tasca F.***, Wang Q.*, Gonçalves M.A.F.V. Adenoviral Vectors Meet Gene Editing: A Rising Partnership for the Genomic Engineering of Human Stem Cells and Their Progeny. Cells. 2020; 9:953. doi: 10.3390/cells9040953. * Shared first co-authorship.

2. **Tasca F.**, Brescia M., Liu J., Janssen J.M., Mamchaoui K., Gonçalves M.A.F.V. High-capacity adenovector delivery of forced CRISPR-Cas9 heterodimers fosters precise chromosomal deletions in human cells. Molecular Therapy Nucleic Acids. 2023; 31:746-762. doi:10.1016/j.omtn.2023.02.025

3. **Tasca F.**, Brescia M., Wang Q., Liu J., Janssen J.M., Szuhai K., Gonçalves M.A.F.V. Large-scale genome editing based on high-capacity adenovectors and CRISPR-Cas9 nucleases rescues full-length dystrophin synthesis in DMD muscle cells. Nucleic Acids Res. 2022; 50:7761-7782. doi: 10.1093/nar/gkac567.

4. Chen X.*, **Tasca F.***, Wang Q., Liu J., Janssen J.M., Brescia M.D., Bellin M., Szuhai K., Kenrick J., Frock R.L., Gonçalves M.A.F.V. Expanding the editable genome and CRISPR-Cas9 versatility using DNA cutting-free gene targeting based on in trans paired nicking. Nucleic Acids Res. 2020; 48:974-995. doi: 10.1093/nar/gkz1121. * Shared first co-authorship.

5. Wang Q., Liu J., Janssen J.M., **Tasca F.**, Mei H., Gonçalves M.A.F.V. Broadening the reach and investigating the potential of prime editors through fully viral gene-deleted adenoviral vector delivery. Nucleic Acids Res. 2021; 49:11986-12001. doi: 10.1093/nar/gkab938.

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