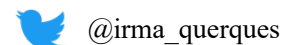


Irma Querques, PhD

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Research interests: Mobile genetic elements, CRISPR, DNA rearrangements mechanisms, Genome engineering

CURRENT POSITION

From **Assistant Professor and Group Leader** | Max Perutz Labs/University of Vienna, Austria
05/2023

EDUCATION AND PROFESSIONAL EXPERIENCE

04/2019-03/2023 **Postdoctoral Fellow** in the group of Prof. Martin Jinek, Department of Biochemistry, University of Zurich
Projects: Mechanistic and structural studies of CRISPR-associated transposons

04/2014-06/2018 **Ph.D.** Dr. rer. nat., Joint Degree by European Molecular Biology Laboratory (EMBL) and University of Heidelberg, Germany
Supervisor: Dr. Orsolya Barabas, Structural and Computational Biology Unit, EMBL Heidelberg
Thesis: Mechanisms and design of Tc1/mariner transposons for genome engineering

10/2011-12/2013 **M.Sc. in Pharmaceutical Biotechnology** | University of Bologna, Italy
Supervisors: Prof. Giovanni Capranico, University of Bologna and Dr. Orsolya Barabas, EMBL Heidelberg

10/2008-10/2011 **B.Sc. in Biotechnology** | University of Bologna, Italy
Supervisor: Prof. Giovanni Capranico, Department of Biochemistry, University of Bologna

LIST OF PUBLICATIONS

- 1) Schmitz M*, Querques I*, Oberli S, Chanez C and Jinek M. Structural basis for the assembly of the type V CRISPR-associated transposon complex. **Cell** 185(26):4999-5010.e17 (Dec 2022)
- 2) Querques I*, Schmitz M*, Oberli S, Chanez C and Jinek M. Target site selection and remodelling by type V CRISPR-transposon systems. **Nature** 599, 497-502 (Nov 2021)
- 3) Pacesa M, Loeff L*, Querques I*, Muckenfuss LM*, Sawicka M & Jinek M. R-loop formation and conformational activation mechanisms of Cas9. **Nature** 609, 191–196. (Aug 2022)
- 4) Miskey C*, Kesselring L*, Querques I, Abrusán G, Barabas O, and Ivics Z. Engineered Sleeping Beauty Transposase Redirects Transposon Integration Away from Genes. **Nucleic Acids Res.** 21;50(5):2807-2825 (Mar 2022)
- 5) Kesselring L, Miskey C, Zuliani C, Querques I, Kapitonov V, Laukó A, Fehér A, Palazzo A, Diem T, Lustig J, Sebe A, Wang Y, Dinnyés A, Izsvák Z, Barabas O, Ivics Z. A single amino acid switch converts the Sleeping Beauty transposase into an efficient unidirectional excisionase with utility in stem cell reprogramming. **Nucleic Acids Res.** 48(1):316-331 (Jan 2020)
- 6) Querques I*, Madés A*, Zuliani C*, Miskey C, Alb M, Grueso E, Machwirth M, Rausch T, Einsele H, Ivics Z, Hudecek M and Barabas O. A highly soluble Sleeping Beauty transposase improves control of gene insertion. **Nat Biotechnol** 37, 1502-1512 (Dec 2019)
- 7) Voigt F, Wiedemann L, Zuliani C, Querques I, Sebe A, Mátés L, Izsvák Z, Ivics Z, Barabas O. Sleeping Beauty transposase structure allows rational design of hyperactive variants for genetic engineering. **Nat Commun** Mar 30;7:11126 (Mar 2016)

*Equal contribution

INVENTIONS AND PATENTS

International Patent Application No. PCT/EP2018/072320 *Improved Transposase Polypeptide and Uses Thereof* (Co-inventor)

International Patent Application No. PCT/EP2020/054371 *Cell Penetrating Transposase* (Co-inventor)

THIRD PARTY FUNDING AND AWARDS

- 2022-present **Branco Weiss Fellowship** - Society in Science, ETH Zurich
 2022-present **UZH Postdoc Grant**, Faculty of Medicine, University of Zurich
 2021-present European Molecular Biology Organization (**EMBO**) Long Term Fellowship
 2020-2021 Federation of European Biochemical Societies (**FEBS**) Long Term Fellowship
 2014-2018 **EMBL Predoctoral Fellowship** | EMBL International PhD Programme
 2021 **Best Flash Talk Prize** at the EMBO workshop 'The Mobile Genome'
 2020 FEBS Letters **Poster Prize** at the FEBS LS² Annual Meeting 2020
 2018 Selected participant in 350th Anniversary Merck Innovation Cup competition and Curious2018 Future Insight Conference organized and funded by Merck KGaA, Darmstadt, Germany
 2017 Fuchs Special Opportunities Fund | Awarded to participate in ICMSE conference, Basel, Switzerland
 2013 Erasmus Placement Scholarship | European Union LLP Programme

SCIENTIFIC TALKS

- 07/2022 **FEBS congress 2022** 'The Biochemistry Global Summit', Selected talk | Lisbon, Portugal
 06/2022 **CRISPR Meeting 2022 (Boston, USA)**, Selected talk
 06/2022 **Innovative Genomics Institute (UC Berkeley, USA)** Seminar Series, Invited speaker
 04/2022 **Mosbacher Kolloquium** 'The world of RNAs', Invited speaker | Mosbach, Germany
 04/2022 **FEBS LS² Annual Meeting** 'Life Sciences in 2020s', Selected talk | University of Zurich, Switzerland
 08/2021 **EMBO Workshop** 'The Mobile Genome: Genetic and Physiological Impacts of Transposable Elements', Selected talk and Prize | EMBL Heidelberg, Germany
 02/2020 **FEBS LS² Annual Meeting** 'Cells, Molecules and Organisms', Selected talk and FEBS Letters Poster Prize | University of Zurich, Switzerland
 11/2018 **20th EMBL PhD Symposium** 'Game changers - Taking Life Sciences to the Next Level', Selected talk | EMBL Heidelberg, Germany
 10/2017 **EMBO/EMBL Symposium** 'The Mobile Genome: Genetic and Physiological Impacts of Transposable Elements', Selected talk | EMBL Heidelberg, Germany
 10/2017 **19th EMBL PhD Symposium** 'Bridging the gaps. Interdisciplinary Approaches in Life Science', Selected talk | EMBL Heidelberg, Germany
 11/2016 **Cold Spring Harbor Laboratory meeting** on Transposable Elements, Selected talk | Cold Spring Harbor, USA

TEACHING ACTIVITIES

List of courses

- 2019-present **Teaching assistant at the University of Zurich**, Department of Biochemistry
 2020 PIP/PHO (Basic measurement techniques and Photometry) course, Spring semester | Biochemistry practicals for Bachelor students of Medicine, Faculty of Medicine
 2019 PIP/PHO (Basic measurement techniques and Photometry) course, Fall semester | Biochemistry practicals for Bachelor students of Biochemistry, Faculty of Science
 2014-2017 **Instructor** in X-ray crystallography, EMBL Predoctoral Course, EMBL Heidelberg | 1 week per year
 2018 **Organiser and instructor** of the EMBL workshop 'Inventors of Proteins' | Molecular biology course and practicals for 20 selected High School students, High School Bonghi-Rosmini, Lucera, Italy

Mentorship

- 2020-present **Supervisor and mentor** of undergraduate students, Jinek group, **University of Zurich**
 2022 Katarzyna Speichert, Master thesis in Biochemistry, Faculty of Science, Fall semester (BCH501)
 2021 Seraina Oberli, Master thesis in Biochemistry, Faculty of Science, Fall semester (BCH501)
 2020 Stenija Anton-Joseph, Bachelor thesis in Biochemistry, Faculty of Science, Spring semester (BCH314)
 2020 Marco Blattmann, Bachelor thesis in Biochemistry, Faculty of Science, Spring semester (BCH314)
 2020 Alexander Walter, Master project, Faculty of Science, Fall semester (BCH408)
 2020 Seraina Oberli, Master project, Faculty of Science, Fall semester (BCH408)
 2016-2017 **Supervisor and mentor** of Master's student, Aukie Hooglugt, Master/**Erasmus placement** project (visiting from University of Twente), Barabas group, EMBL Heidelberg

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

FEBS (Federation of European Biochemical Societies)

GBM (Gesellschaft für Biochemie und Molekularbiologie)