

Benjamí Oller Salvia

EDUCATION AND ACADEMIC POSITIONS

- 2019-present* **Assistant Professor & Marie Skłodowska-Curie Fellow**
IQS School of Engineering – Ramon Llull University (IQS-URL)
- 18/01/2016* **MRC Postdoctoral Scientist & EMBO Fellow**
-15/01/2019 MRC Laboratory of Molecular Biology, Cambridge
- 06/06/2012* **PhD in Organic Chemistry** - University of Barcelona
- 29/06/2015 *Cum Laude*. International, Extraordinary, Margalef and Pioner awards
- 10/10/2010* **MSc in Organic Chemistry** - University of Barcelona
- 07/03/2012 Grade: 9.1/10
- 04/10/2005* **Five year degree in Chemistry** (Llicenciatura en Química) - IQS-URL
- 06/09/2010 Grade: 9.4/10. Valedictorian

PUBLICATIONS

- **B Oller-Salvia, J W Chin.** Efficient phage display with multiple distinct non-canonical amino acids via orthogonal ribosome mediated genetic code expansion. *Angewandte Chemie International Edition. In press*. DOI: 10.1002/anie.201902658
- C Díaz-Perlas, **B Oller-Salvia**, M Sánchez-Navarro, M Teixidó, E Giralt. Branched BBB-shuttle peptides. Chemoselective modification of proteins to enhance blood-brain barrier transport. *Chemical Science*. **2018**, *9*, 8409-8415.
- **B Oller-Salvia**. Genetic encoding of a cyclopropene derivative to generate antibody-drug conjugates through a rapid, site-specific, bioorthogonal ligation. *Journal of Visualised Experiments*. **2018**, *139*, e58066.
- **B Oller-Salvia, G Kym, J W Chin.** Rapid and efficient generation of stable antibody-drug conjugates via an encoded cyclopropene and an inverse electron demand Diels-Alder reaction. *Angewandte Chemie International Edition*. **2018**, *57*, 2831-2834.
- C Díaz-Perlas; M Sánchez-Navarro; **B Oller-Salvia**; M Moreno Raja; M Teixidó; E Giralt. Phage Display as a Tool to Discover BBB-Shuttle Peptides: Panning Against a Human Blood-Brain Barrier Cellular Model. *Biopolymers-Peptide Science*. **2017**, *108*, e22928. (Front cover picture).
- **B Oller-Salvia, M Sánchez-Navarro, E Giralt, M Teixidó.** BBB-shuttle peptides: an emerging paradigm for brain delivery. *Chemical Society Reviews*. **2016**, *45*, 4690-4707. (Inside cover picture).
- **B Oller-Salvia, M Sánchez-Navarro, S Ciudad, M Guiu, P Arranz-Gibert, C Garcia, R R Gomis, R Cecchelli, J Garcia, E Giralt, M Teixidó.** MiniAp-4: a venom-inspired peptidomimetic for brain delivery. *Angewandte Chemie International Edition*. **2016**, *55*, 572-575. (Hot article. Inside cover picture).
- R Prades, **B Oller-Salvia**, M S Schwarzmaier, J Selva, M Moros, M Balbi; V Grazú; J M de la Fuente, G Egea, N Plesnila, M Teixidó, E Giralt. Jumping hurdles: revisiting the retro-enantio approach to obtain a peptide able to overcome the blood-brain barrier. *Angewandte*

Chemie International Edition. 2015, *54*, 3967-3972. (Featured in the Spanish press: El País and Diario Médico, among others.).

- M Sánchez-Purrà, B Oller, B Albaigés, K Pickl, E Frölich, C Grandfils, S Borrós. A new method to functionalize thermosensitive nanoparticles for biomedical applications. **Journal of Nanopharmaceutics and Drug Delivery.** 2014, *2*, 266-279.
- B Oller-Salvia, M Teixidó, E Giralt. From Venoms to BBB Shuttles. Synthesis and Blood-Brain Barrier Transport Assessment of Apamin and a Non-Toxic Analog. **Biopolymers-Peptide Science.** 2013, *100*, 675-686. (Front cover picture).
- M Teixidó, E Zurita, L Mendieta, B Oller-Salvia, R Prades, T Tarragó, E Giralt. Dual System for the Central Nervous System Targeting and Blood-Brain Barrier Transport of a Selective Prolyl Oligopeptidase Inhibitor. **Biopolymers-Peptide Science.** 2013, *100*, 662-674.

PATENT

- E Giralt, M Teixidó, B Oller. Actively transported and protease-resistant peptides as BBB shuttles and shuttle-cargo constructs. PCT/EP2014/064173. WO 2015/001015 A1. IRB Barcelona & University of Barcelona.

COMMUNICATIONS

Oral Presentations

October 2018 B. Oller-Salvia, G. Kym, J. W. Chin. Genetic encoding of a cyclopropene for the rapid and efficient generation of stable antibody conjugates

Invited lecture. European Antibody Congress 2018, Basel, Switzerland.

Nov. 2016 B. Oller-Salvia. Blood-brain barrier shuttles and the power of genetic code expansion.

Invited lecture. Masters course on Pharmaceutical Chemistry (IQS), Barcelona, Spain.

June 2015 B. Oller-Salvia, M. Teixidó, E. Giralt. Development of minimized apamin derivatives for brain delivery of antibodies and other cargoes.

Invited lecture. Neuromed closing workshop, Bellaterra, Spain.

June 2014 B. Oller-Salvia, M. Teixidó, E. Giralt. From bee venom to blood-brain barrier shuttles: apamin derivatives are capable of transporting antibodies across the barrier.

1st IRB PhD student retreat, Bellaterra, Spain

August 2014 B. Oller-Salvia, M. Teixidó, E. Giralt. From venoms to blood-brain barrier shuttles. Transport assessment of apamin-inspired shuttles and conjugates.

European Peptide Symposium, Sofia, Bulgaria.

July 2013 B. Oller-Salvia, M. Teixidó, E. Giralt. De verins a llançadores per creuar la BHE
Invited lecture. "Xarxa de Referència en Biotecnologia" annual meeting, Barcelona, Spain.

June 2013 B. Oller-Salvia, M. Sánchez-Navarro, M. Teixidó, E. Giralt. From venoms to BBB shuttles. Synthesis, protease stability and blood-brain barrier transport of apamin and a non-toxic analogue.

5th European Chemistry Conference for Life Sciences (ECCLS), Barcelona, Spain.

Poster Presentations

- August 2018* B. Oller-Salvia, G. Kym, J. W. Chin. Genetic encoding of a cyclopropene derivative for the efficient generation of antibody-drug conjugates
EMBO Chemical Biology Workshop 2018, Heidelberg, Germany
- Nov. 2015* B. Oller-Salvia, M. Sánchez-Navarro, M. Teixidó, E. Giralt. MiniAp-4: a venom-inspired peptidomimetic for brain delivery.
Barcelona Biomed Conference on the “Blood-brain barrier”, Barcelona, Spain
- October 2015* B. Oller-Salvia, M. Sánchez-Navarro, M. Teixidó, E. Giralt. Venom-inspired cyclic peptides for brain delivery of antibodies and other cargoes.
ECBS & ICBS (Chemical Biology Societies) meeting, Berlin, Germany.
- July 2014* B. Oller-Salvia, M. Sánchez-Navarro, M. Teixidó, E. Giralt. From bee venom to blood-brain barrier shuttles: non-toxic and protease-resistant peptides derived from apamin transport antibodies across the barrier.
EMBO Chemical Biology Conference 2014, Heidelberg, Germany.
- February 2013* B. Oller-Salvia, M. Teixidó, E. Giralt. From venoms to BBB shuttles. Synthesis and blood-brain barrier transport assessment of apamin and two analogues.
Beating the blood-brain and other barriers symposium, Lisbon, Portugal.

RESEARCH PROJECTS

- 01/07/2019* Reference number: Target GBM – GAP844441. **Amount awarded: 160.932 €**
- 01/07/2021* Title: Generating a targeted, brain-permeable and stable polymeric nanoparticle for systemic gene delivery to glioblastoma.
Funding body: Marie Skłodowska-Curie Actions – European Commission
Principal investigator (Institution): Benjamí Oller Salvia (IQS-URL)
- 01/02/2017* Reference number: ALTF 158-2016. **Amount awarded: 60.921 GBP**
- 15/01/2019* Title: Genetic encoding of phosphothreonine and its non-hydrolysable and photocaged derivatives.
Funding body: European Molecular Biology Organization (EMBO)
Principal investigator (Institution): Benjamí Oller Salvia (MRC-LMB)
- 31/12/2011* Reference number: PROVAT- 2011-013. **Amount awarded: 614.000 €**
- 01/01/2013* Title: Use of peptide shuttles for the delivery of monoclonal antibodies across the blood-brain barrier in brain tumours
Funding body: Generalitat de Catalunya
Principal investigator (Institution): Joan Seoane Suárez (Vall d’Hebron Institute of Oncology)

CONTRACT

- 18/01/2016* Title: Genetic code expansion for next generation protein therapeutics.
- 31/01/2017* PI: Jason Chin. Funding body: MRC-LMB.

RESEARCH EXPERIENCE

- 2019-present* **Marie Skłodowska-Curie Fellow and program leader** of the research line “Peptide and Protein Engineering for Targeted Nanotherapeutics” at the Bioengineering Department (Materials Engineering Group), **IQS – URL**, Spain.

- 01/02/2017 European Molecular Biology Organization (**EMBO**) **postdoctoral fellow**.
 - 15/01/2019 Incorporation of non-canonical amino acids into proteins of therapeutic interest using genetic code expansion.
 Prof. Jason Chin's laboratory. **Medical Research Council Laboratory of Molecular Biology (MRC-LMB)**, UK
- 18/01/2016 **MRC Postdoctoral Scientist**
 - 31/01/2017 Using genetic code expansion applied to new therapeutic protein generation.
 Advisor: Prof. Jason Chin. **MRC-LMB**, UK.
 Mentor: Dr. Sir Gregory Winter, Trinity College, University of Cambridge, UK.
- 06/06/2012 PhD thesis entitled "From bee venom to blood-brain barrier shuttles.
 - 29/06/2015 Development of minimized apamin derivatives for brain delivery of antibodies and other cargoes".
 Advisors: Prof. Ernest Giralt and Dr. Meritxell Teixidó. **Institute for Research in Biomedicine (IRB Barcelona)**
- 04/01/2015 Secondment to study the cell uptake and receptor binding of fluorophore-
 - 06/04/2015 BBB-shuttle peptide conjugates.
 Advisor: Prof. Kai Johnsson. **École Polytechnique Fédérale de Lausanne (EPFL)**, Switzerland
- 18/11/2013 Secondment to set up a stable human BBB cell-based model derived from
 - 22/11/2013 stem cells.
 Advisor: Prof. Roméo Cecchelli. **University of Artois**, France
- 16/06/2012 Secondment to learn about antibody-drug conjugation techniques.
 - 25/06/2012 Advisor: Prof. Dario Neri. **Eidgenössische Technische Hochschule Zurich (ETH Zurich)**, Switzerland
- 10/10/2010 MSc thesis entitled "From venoms to BBB shuttles. Synthesis and blood-brain
 - 07/03/2012 barrier transport assessment of apamin and two analogues".
 Advisors: Prof. Ernest Giralt and Dr. Meritxell Teixidó. **IRB Barcelona**, Spain
- 12/07/2010 Research stage to set up a dynamic BBB cell-based model in a hollow fibre
 - 10/10/2010 flow reactor.
 Advisors: Prof. Mercedes Balcells and Prof. Elazer R. Edelman.
Massachusetts Institute of Technology (MIT), USA
- 04/10/2009 Part time collaboration in the European project NanoBioPharmaceutics.
 - 16/06/2010 Advisor: Prof. Salvador Borrós. **IQS-URL**, Spain
- 01/07/2009 Internship to pursue research in plant extracts for plague control.
 - 30/09/2009 Advisor: Prof. Xavier Sorribas. **Universitat Politècnica de Catalunya**, Spain

TEACHING AND MENTORING

- 2019-present **Responsible for the "Advanced Drug Delivery" and "Biomaterials & Biomedical Applications" master's courses at IQS-URL.**
- Nov. 2018 Appointed **Fellow of the Higher Education academy**
- November 2016 **Supervisor for Biochemistry and Molecular Biology (2017/2018) and Biology of Cells (2016/2017) at Homerton College, University of Cambridge**
- June 2018

- 2017/2018 **Teaching Associates Programme, University of Cambridge**
- October 2017 **Lectureship accreditation by the “Agència de Qualitat Universitària”**
- March 2017 Cambridge Centre for Teaching and Learning Forum. University of Cambridge, UK
- October 2016 Efficient Undergraduate Supervision course. University of Cambridge, UK
- 2013 Mentor of the baccalaureate research work of Martí Domènech
Award from the Barcelona Science Park for the best research work
- January 2013 Course tutor at the workshop “Crazy about biomedicine” organized by IRB Barcelona for high-school students 16-17 year old
- July -Sept. 2012 **Laboratory co-supervision of the graduate student** Cristina Díaz-Perlas in the ‘Spend the summer at the Park’ by the Barcelona Science Park
- February 2012 Reviewer for the program “Joves i Ciència” organized by Catalunya Caixa
- October 2008 Instructor of high-school students (17 year old) for the European Scientific Olympics (EUSO) at Aula Escola Europea, Spain. Bronze medal in 2008
- & Oct. 2010

AWARDS AND HONOURS

- 2019 **Marie Skłodowska-Curie Actions Individual Fellowship** to pursue research at IQS-URL (2 years)
- 2016 **EMBO long-term fellowship** to pursue postdoctoral research at the MRC-LMB (2 years)
- 2016 **Research Associate position at Homerton college, University of Cambridge**
- 2016 **Ramon Margalef** award for the best research article derived from a PhD thesis - University of Barcelona
- 2016 **PhD thesis extraordinary prize 2016** – University of Barcelona
- 2015 Reviewer for the *Journal of Peptide Science*
- 2015 **“Pioner 2015” prize** for PhD thesis originality and translational value - CERCA
- 2015 Poster award - ECBS & ICBS meeting
- 2014 3-month travel grant to pursue research at EPFL - Boehringer Ingelheim Fonds
- 2014 **Award for the best talk** at the 1st IRB PhD student retreat
- 2014 Finalist at the Lilly prizes for PhD students
- 2014 Travel grant to attend the 33rd European Peptide Symposium
- 2014 Travel grant to attend the EMBO Chemical Biology conference 2014
- 2014 Fee waiver to attend the 1-week course 6th Summer School on Medicines in Barcelona
- 2010 **“La Caixa”/IRB Barcelona International PhD Program Fellowship (4 years)**
- 2010 MOBINT travel grant to pursue research at MIT - Catalan Government
- 2009 **Scholarship for collaboration** at the Bioengineering Department IQS-URL - Spanish Ministry of Education
- 2006 **Scholarship for Academic Excellency** - Francesc Castelló i Aleu foundation
Renewed 5 consecutive years
- 2005 University grant “Investigación y Sociedad de la Información” - Caixa Manresa
- 2005 Award for the **10th best university entry exam** in Catalonia - 23685 candidates
- 2005 Extraordinary High School award - Catalan Government
- 2005 **CIRIT award** for the final high school research project - Catalan Government

COMPLEMENTARY TRAINING

- Sept. 2018* **EMBO laboratory leadership course**, Heidelberg, Germany.
- April 2017* Epigeum Research Integrity Certification
- February 2017* Scientific and technical report writing course by the MRC, UK
- January 2017* MRC Postdoc symposium, UK
- July 2014* 6th Summer School on Medicines. Barcelona Science Park, Spain
- January 2014* **Course in laboratory animal science** (80h). University of Barcelona, Spain
Certificate to perform research with animals by the Catalan Government.
- Dec. 2013* Scientific communication training seminar by Esteve foundation

SELECTED OUTREACH & VOLUNTEERING ACTIVITIES

- October 2018* **Coordinator of action stations** at the Homerton 250 anniversary events.
& Feb. 2018 Cambridge, UK.
- Sept. 2018* Volunteer in activities organized by the MRC LMB as **part of the LifeLab European Researchers' Night MSCA** activity. Peterborough, UK.
- 2012-2014* Member of the **PhD Student Council** at IRB Barcelona.
- 2013* Member of the **organizing committee for the 3rd IRB PhD symposium** "The Clock of life"
- 2005-2011* Taekwondo instructor at the "Taekwondo Guinart" club

AFFILIATIONS

Research Associate at Homerton College, University of Cambridge
Real Sociedad Española de Química – Grupo de Jóvenes Químicos Investigadores
"Sociedad Española de Bioquímica y Biología Molecular" (SEBBM) – Spanish branch of FEBS
European Peptide Society
Higher Education Academy
"Claustre de doctors de la Universitat de Barcelona"

LANGUAGES

Catalan: mother tongue
Spanish: fluent (native speaker)
English: fluent (C2)
French: fluent (B2-C1)
German: basic level (B1)