

Emmanuelle Charpentier

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Curriculum vitae

Since 2016	Honorary professor, Humboldt-Universität zu Berlin
Since 2015	Director, Department of Regulation in Infection Biology, MPIIB, Berlin
Since 2014	Alexander von Humboldt Professorship
2014 – 2017	Lab head, visiting professor, Laboratory for Molecular Infection Medicine Sweden (MIMS), Umeå Centre for Microbial Research (UCMR), Department of Molecular Biology, Faculty of Medicine, Umeå University, SE
2013 – 2015	Department head, full professor (W3), Helmholtz Centre for Infection Research (HZI), Braunschweig; Department of Regulation in Infection Biology, Medizinische Hochschule Hannover
2013	Docent (Medical Microbiology), Faculty of Medicine, Umeå University, SE
2009 – 2014	Research group leader, associate professor, Laboratory for Molecular Infection Medicine Sweden (MIMS), Umeå Centre for Microbial Research (UCMR), Umeå University, SE
2006 – 2009	Research group leader, associate professor, Max F. Perutz Laboratories, Universität Wien, AT
2006	Venia legendi (Habilitation) in Microbiology, Universität Wien, AT
2004 – 2006	Research group leader, assistant professor, Department of Microbiology and Immunobiology, Universität Wien, AT
2002 – 2004	Research group leader, guest professor, Institute of Microbiology and Genetics, Universität Wien, AT
1999 – 2002	Research associate, Skirball Institute of Biomolecular Medicine, New York, US
1999	Research associate, St. Jude Children's Research Hospital, Memphis, US
1997 – 1999	Assistant research scientist, New York University Medical Center, New York, US
1996 – 1997	Postdoctoral associate, The Rockefeller University, New York, US
1995 – 1996	Postdoctoral assistant, Institute Pasteur, Paris, FR
1996	PhD in Microbiology, Pierre and Marie Curie University, Paris, FR
1993 – 1995	University teaching assistant, Pierre and Marie Curie University, Paris, FR
1986 – 1992	Studies in Microbiology, Biochemistry and Genetics, Pierre and Marie Curie University, Paris, FR

Research fields

Our group's research program focuses on:

- The bacterial adaptive immune system CRISPR-Cas and applications of the CRISPR-Cas9 genome editing technology in human medicine
- Molecular infection biology: molecular and cellular mechanisms governing physiology and infection-associated processes in gram-positive bacterial pathogens (regulatory RNAs and proteins, post-transcriptional and post-translational regulation, bacterial recognition by immune cells, host-pathogen interaction, etc.)

Activities in the scientific community, honors, awards

2009 – 2017 National and international recognition: Prizes and awards (45), Elected academy and society memberships (14), Doctor honoris causa (6), CRISPR-Cas9 breakthrough recognized in the broader community of biotechs, industries and world affairs

Selected publications

- Labuhn M, Adams FF, Ng M, Knoess S, Schambach A, Charpentier EM, Schwarzer A, Mateo JL, Klusmann JH, Heckl D. Refined sgRNA efficacy prediction improves large- and small-scale CRISPR-Cas9 applications. *Nucleic Acids Res* 2017. doi: 10.1093/nar/gkx1268
- Reimer J, Knoss S, Labuhn M, Charpentier EM, Gohring G, Schlegelberger B, Klusmann JH, Heckl D. CRISPR-Cas9-induced t(11;19)/MLL-ENL translocations initiate leukemia in human hematopoietic progenitor cells in vivo. *Haematologica* 2017; 102:1558-1566
- Richter F, Fonfara I, Bouazza B, Schumacher CH, Bratovic M, Charpentier E, Moglich A. Engineering of temperature- and light-switchable Cas9 variants. *Nucleic Acids Res* 2016; 44:10003-10014
- Eggenchwiler R, Moslem M, Fraguas MS, Galla M, Papp O, Naujock M, Fonfara I, Gensch I, Wahner A, Beh-Pajooch A, Mussolino C, Tauscher M, Steinemann D, Wegner F, Petri S, Schambach A, Charpentier E, Cathomen T, Cantz T. Improved bi-allelic modification of a transcriptionally silent locus in patient-derived iPSC by Cas9 nickase. *Sci Rep* 2016; 6:38198
- Fonfara I, Richter H, Bratovic M, Le Rhun A, Charpentier E. The CRISPR-associated DNA-cleaving enzyme Cpf1 also processes precursor CRISPR RNA. *Nature* 2016; 532:517-521
- Fonfara I, Le Rhun A, Chylinski K, Makarova KS, Lecrivain AL, Bzdrenga J, Koonin EV, Charpentier E. Phylogeny of Cas9 determines functional exchangeability of dual-RNA and Cas9 among orthologous type II CRISPR-Cas systems. *Nucleic Acids Res* 2014; 42:2577-2590
- Doudna JA, Charpentier E. Genome editing. The new frontier of genome engineering with CRISPR-Cas9. *Science* 2014; 346:1258096
- Chylinski K, Le Rhun A, Charpentier E. The tracrRNA and Cas9 families of type II CRISPR-Cas immunity systems. *RNA Biol* 2013; 10:726-737
- Jinek M, Chylinski K, Fonfara I, Hauer M, Doudna JA, Charpentier E. A programmable dual-RNA-guided DNA endonuclease in adaptive bacterial immunity. *Science* 2012; 337:816-821
- Deltcheva E, Chylinski K, Sharma CM, Gonzales K, Chao Y, Pirzada ZA, Eckert MR, Vogel J, Charpentier E. CRISPR RNA maturation by trans-encoded small RNA and host factor RNase III. *Nature* 2011; 471:602-607