

Deniz Dalkara, PhD

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PROFESSIONAL EXPERIENCE

Tenured researcher CR1 INSERM 2013-

Junior group leader (2012 - Present) *Institut de la Vision, Paris, France*

Department of Therapeutics - Team: Gene therapies and animal models for neurodegenerative diseases

Post-doc (2007- 2012) *University of California Berkeley, CA, USA*

Department of Chemical engineering and Helen Wills Institute of Neuroscience

With Pr. David Schaffer and Pr. John Flannery: Engineering AAV vectors for retinal gene delivery

Post-doc (2006--2007) *Max Planck Institute of Biophysics, Frankfurt, Germany*

Dept. of Biophysical Chemistry - With Pr. Ernst Bamberg: Investigating the structure and structure and function of Channelrhodopsin, a light activated ion channel

Doctoral research (2002- 2006) *Université Louis Pasteur, Strasbourg, France*

Faculty of Pharmacy, Laboratory of Genetic Chemistry -With Dr Jean-Paul Behr and Guy Zuber: Intracytoplasmic delivery of proteins to live cells using synthetic vectors

Undergraduate Internships (1999 and 2000) *Harvard Medical School,*

Massachusetts General Hospital, Charlestown, MA, U.S.A.

Department of Neurogenetics Neurology - Pr. Xandra Breakfield and Dr. Marcy Macdonald

EDUCATION

PhD, Cell and Molecular Biology *Université Louis Pasteur, Strasbourg, France*

Bachelor's degree in Biology *Middle East Technical University, Ankara, Turkey*

Summer school: Neurobiology *Harvard University, Cambridge, MA, U.S.A.*

Summer school: Principals and Techniques of Molecular Biology, *Harvard University, Cambridge, MA, U.S.A.*

AWARDS AND HONORS

- Euretina Science and Medicine Innovation Award (2013)
- Max Planck Fellowship (2006)
- Biovalley PhD thesis award Société de Biologie de Strasbourg (2006)
- Fellowship from the Ministry of Research and Technology (2002- 2005)

PATENTS

• DV Schaffer, JT Koerber, RR Klimczak, D Dalkara, JG Flannery, M Visel
Adeno-Associated Virus with Variant Capsid and Methods of Use Thereof, U.S. Application No: 61/478,355. WO2012145601 A3

• JA Sahel, S Picaud, T Leveillard, D Dalkara, J Duebel, B Roska,
Methods and compositions for treatment of retinal degenerative diseases. Application No : PCT/EP2013/053667. WO 2013124477 A1

INVITED CONFERENCES

2013 : *International AMD & Retina Congress, Dublin, Ireland*

2012 : *International Symposium on Eye Research, Berlin, Germany*

2012 : *International Congress of Parkinson's Disease and Movement Disorders, Dublin, Ireland*

TEACHING

2012-2013 : Master's class 'Ocular Gene Therapy' for European Master 2, Life sciences – Genetics Paris 5 -7

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PUBLICATIONS (*equal contribution, #corresponding author)

- 1- Vacca O., Darche M., Schaffer DV, Flannery JC, Sahel JA, Rendon A, **Dalkara D**. AAV-mediated gene delivery in Dp71-null mouse model with compromised barriers. *Glia*. 2013, *in press*
- 2- **Dalkara D**, Byrne LC, Klimczak RR, Visel M, Yin L, Merigan WH, Flannery JG, Schaffer DV. In vivo-directed evolution of a new adeno-associated virus for therapeutic outer retinal gene delivery from the vitreous. *Sci Transl Med*. 2013 Jun 12;5(189):189ra76
- 3- **Dalkara D**[#], Byrne LC, Lee T, Hoffmann NV, Schaffer DV, Flannery JG. Enhanced gene delivery to the neonatal retina through systemic administration of tyrosine-mutated AAV9. *Gene Ther*. 2012 Feb;19(2):176-81.
- 4- **Dalkara D**, Kolstad KD, Guerin KI, Hoffmann NV, Visel M, Klimczak RR, Schaffer DV, Flannery JG. AAV mediated GDNF secretion from retinal glia slows down retinal degeneration in a rat model of retinitis pigmentosa. *Mol Ther*. 2011 Sep;19(9):1602-8.
- 5- Kolstad KD^{*}/**Dalkara D**^{*#}, Guerin K, Visel M, Hoffmann N, Schaffer DV, Flannery JG. Changes in adeno-associated virus-mediated gene delivery in retinal degeneration. *Hum Gene Ther*. 2010 May;21(5):571-8.
- 6- **Dalkara D**[#], Kolstad KD, Caporale N, Visel M, Klimczak RR, Schaffer DV, Flannery JG. Inner limiting membrane barriers to AAV-mediated retinal transduction from the vitreous. *Mol Ther*. 2009 Dec;17(12):2096-102.
- 7- **Dalkara D**, Chandrashekar C, Zuber G. Intracellular protein delivery with a dimerizable amphiphile for improved complex stability and prolonged protein release in the cytoplasm of adherent cell lines. *J Control Release*. 2006 Dec 1;116(3):353-9.
- 8- **Dalkara D**, Zuber G, Behr JP. Intracytoplasmic delivery of anionic proteins. *Mol Ther*. 2004 Jun;9(6):964-9.
- 9- Pernet V, Joly S, Jordi N, **Dalkara D**, Guzik-Kornacka A, Flannery JG, Schwab ME. Misguidance and modulation of axonal regeneration by Stat3 and Rho/ROCK signaling in the transparent optic nerve. *Cell Death Dis*. 2013 Jul 18;4:e734
- 10- Sahel JA, Léveillard T, Picaud S, **Dalkara D**, Marazova K, Safran A, Paques M, Duebel J, Roska B, Mohand-Said S. Functional rescue of cone photoreceptors in retinitis pigmentosa. *Graefes Arch Clin Exp Ophthalmol*. 2013 Jul;251(7):1669-77.
- 11- Pernet V, Joly S, **Dalkara D**, Jordi N, Schwarz O, Christ F, Schaffer DV, Flannery JG, Schwab ME. Long-distance axonal regeneration induced by CNTF gene transfer is impaired by axonal misguidance in the injured adult optic nerve. *Neurobiol Dis*. 2012 Nov 26 (12) 00374-9.
- 12- Dehay B, **Dalkara D**, Dovero S, Li Q, Bezdard E. Systemic scAAV9 variant mediates brain transduction in newborn rhesus macaques. *Sci Rep*. 2012;2:253. Epub 2012 Feb 9.
- 13- Mourot A, Fehrentz T, Le Feuvre Y, Smith CM, Herold C, **Dalkara D**, Nagy F, Trauner D, Kramer RH. Rapid optical control of nociception with an ion-channel photoswitch. *Nat Methods*. 2012 Feb 19 ;9(4):396-402.
- 14- Pernet V, Joly S, **Dalkara D**, Schwarz O, Christ F, Schaffer D, Flannery JG, Schwab ME. Neuronal Nogo-A upregulation does not contribute to ER stress-associated apoptosis but participates in the regenerative response in the axotomized adult retina. *Cell Death Differ*. 2011 Dec 23. [Epub ahead of print]
- 15- Caporale N, Kolstad KD, Lee T, Tochitsky I, **Dalkara D**, Trauner D, Kramer R, Dan Y, Isacoff EY, Flannery JG. LiGluR restores visual responses in rodent models of inherited blindness. *Mol Ther*. 2011 Jul;19(7):1212-9.
- 16- Yin L, Greenberg K, Hunter JJ, **Dalkara D**, Kolstad KD, Masella BD, Wolfe R, Visel M, Stone D, Libby RT, Diloreto D Jr, Schaffer D, Flannery J, Williams DR, Merigan WH. Intravitreal injection of AAV2 transduces macaque inner retina. *Invest Ophthalmol Vis Sci*. 2011 Apr 25;52(5):2775-83.
- 17- Klimczak RR, Koerber JT, **Dalkara D**, Flannery JG, Schaffer DV. A novel adeno-associated viral variant for efficient and selective intravitreal transduction of rat Müller cells. *PLoS One*. 2009 Oct 14;4(10):e7467.
- 18- Koerber JT, Klimczak R, Jang JH, **Dalkara D**, Flannery JG, Schaffer DV. Molecular evolution of adeno-associated virus for enhanced glial gene delivery. *Mol Ther*. 2009 Dec;17(12):2088-95. Epub 2009 Aug 11.
- 19- Courtête J, Sibler AP, Zeder-Lutz G, **Dalkara D**, Oulad-Abdelghani M, Zuber G, Weiss E. Suppression of cervical carcinoma cell growth by intracytoplasmic codelivery of anti-oncoprotein E6 antibody and small interfering RNA. *Mol Cancer Ther*. 2007 Jun;6(6):1728-35.
- 20- Fraley AW, Pons B, **Dalkara D**, Nullans G, Behr JP, Zuber G. Cationic oligonucleotide-peptide conjugates with aggregating properties enter efficiently into cells while maintaining hybridization properties and enzymatic recognition. *J Am Chem Soc*. 2006 Aug 23;128(33):10763-71