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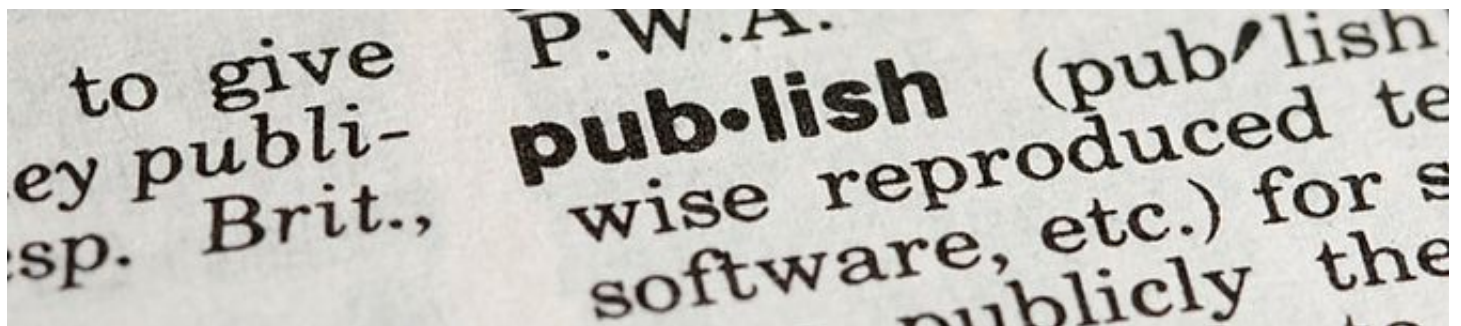


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The best Publications of the Year 2020



The Vision Research community has made its decision to choose the best publications of the year 2020.

The 'Publication of the Year' reflects the personal choice and preference of the community submitted by its members. This year again we had a tremendous feedback and received suggestions from all over the world. We are very happy about these results and the enthusiasm of the community.

We are very glad to present the top ten papers of the year 2020 with the highest scores.

1

[Cell Types of the Human Retina and Its Organoids at Single-Cell Resolution](#)

Author/s	Cowan CS, Renner M, De Gennaro M, Gross-Scherf B, Goldblum D, Hou Y, Munz M, Rodrigues TM, Krol J, Szikra T, Cuttat R, Waldt A, Papasaikas P, Diggelmann R, Patino-Alvarez CP, Galliker P, Spirig SE, Pavlinic D, Gerber-Hollbach N, Schuierer S, Srdanovic A, Balogh M, Panero R, Kusnyerik A, Szabo A, Stadler MB, Orgül S, Picelli S, Hasler PW, Hierlemann A, Scholl HPN, Roma G, Nigsch F, Roska B.
Journal	Cell. 2020 Sep 17;182(6):1623-1640.e34. doi: 10.1016/j.cell.2020.08.013. PMID: 32946783
Comment	This paper is a seminal resource for future work in characterization and treatment of eye diseases.

2

A gene therapy for inherited blindness using dCas9-VPR-mediated transcriptional activation

Author/s	Sybille Böhm , Victoria Splith , Lisa Maria Riedmayr , René Dominik Rötzer , Gilles Gasparoni , Karl J V Nordström , Johanna Elisabeth Wagner , Klara Sonnie Hinrichsmeyer , Jörn Walter , Christian Wahl-Schott , Stefanie Fenske , Martin Biel , Stylianos Michalakis , Elvir Becirovic
Journal	Sci Adv 2020 Aug 19;6(34):eaba5614. doi: 10.1126/sciadv.aba5614. eCollection 2020 Aug. doi: 10.1126/sciadv.aba5614
Comment	This is the first in vivo proof-of-concept study for a novel gene therapy principle of "trans-activation" of a functionally equivalent gene to restore a missing gene function and provide a therapeutic benefit in inherited retinal disorders.

3

Restoring light sensitivity using tunable near-infrared sensors

Author/s	Dasha Nelidova ^{1 2} , Rei K Morikawa ^{1 2} , Cameron S Cowan ^{1 2} , Zoltan
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[Raics](#) ^{1 2}, [David Goldblum](#) ³, [Hendrik P N Scholl](#) ^{1 3 4}, [Tamas Szikra](#) ^{1 2},
[Arnold Szabo](#) ⁵, [Daniel Hillier](#) ^{6 2 7 8 9}, [Botond Roska](#) ^{6 2 3}

Journal Science. 2020 Jun 5;368(6495):1108-1113.
doi: [10.1126/science.aaz5887](https://doi.org/10.1126/science.aaz5887).

Comment Enabling near-infrared light sensitivity in a blind human retina may supplement or restore visual function in patients with regional retinal degeneration.

4

Circuit Reorganization Shapes the Developing Human Foveal Midget Connectome toward Single-Cone Resolution

Author/s [Chi Zhang](#) ¹, [Yeon Jin Kim](#) ¹, [Ana R Silverstein](#) ¹, [Akina Hoshino](#) ¹,
[Thomas A Reh](#) ¹, [Dennis M Dacey](#) ², [Rachel O Wong](#) ³

Journal Neuron 2020 Dec 9;108(5):905-918.e3.
doi: [10.1016/j.neuron.2020.09.014](https://doi.org/10.1016/j.neuron.2020.09.014). Epub 2020 Oct 6.

Comment The human visual pathway is specialized for the perception of fine spatial detail. The neural circuitry that determines visual acuity begins in the retinal fovea, where the resolution afforded by a dense array of cone photoreceptors is preserved in the retinal output by a remarkable non-divergent circuit: cone → midget bipolar interneuron → midget ganglion cell (the "private line").

5

Loss of the Extracellular Matrix Molecule Tenascin-C Leads to Absence of Reactive Gliosis and Promotes Anti-inflammatory Cytokine Expression in an Autoimmune Glaucoma Mouse Model

Author/s [Susanne Wiemann](#) ¹, [Jacqueline Reinhard](#) ¹, [Sabrina Reinehr](#) ², [Zülal Cibir](#) ¹,
[Stephanie C Joachim](#) ², [Andreas Faissner](#) ¹

Journal Front Immunol 2020 Oct 9;11:566279.
doi: [10.3389/fimmu.2020.566279](https://doi.org/10.3389/fimmu.2020.566279). eCollection 2020.

Comment The fascinating point in this story is that loss of an extracellular matrix protein can lead to drastic changes in the immune response. This story can also teach us more about the positive and even negative features of proteins that persist or that are re-expressed after being essentially useful during embryonic development.

6

Perceptual saccadic suppression starts in the retina

Author/s [Saad Idrees](#)¹, [Matthias P Baumann](#)^{1 2}, [Felix Franke](#)³, [Thomas A Münch](#)^{4 5}, [Ziad M Hafed](#)^{6 7}

Journal Nat Commun 2020 Apr 24;11(1):1977.
doi: [10.1038/s41467-020-15890-w](https://doi.org/10.1038/s41467-020-15890-w).

Comment Demonstrates a retinal origin for a robust and well-known perceptual phenomenon in humans around the time of saccadic eye movements. Also allows recasting the role of extra-retinal mechanisms in the same phenomenon.

7

Behavioural responses to a photovoltaic subretinal prosthesis implanted in non-human primates

Author/s [Paul-Henri Prévot](#)¹, [Kevin Gehere](#)¹, [Fabrice Arcizet](#)¹, [Himanshu Akolkar](#)¹, [Mina A Khoei](#)¹, [Kévin Blaize](#)¹, [Omar Oubari](#)¹, [Pierre Daye](#)¹, [Marion Lanoë](#)¹, [Manon Valet](#)¹, [Sami Dalouz](#)¹, [Paul Langlois](#)¹, [Elric Esposito](#)¹, [Valérie Forster](#)¹, [Elisabeth Dubus](#)¹, [Nicolas Wattiez](#)², [Elena Brazhnikova](#)¹, [Céline Nouvel-Jaillard](#)¹, [Yannick LeMer](#)³, [Joanna Demilly](#)⁴, [Claire-Maëlle Fovet](#)⁴, [Philippe Hantraye](#)⁴, [Morgane Weissenburger](#)², [Henri Lorach](#)⁵, [Elodie Bouillet](#)⁶, [Martin Deterre](#)⁶, [Ralf Hornig](#)⁶, [Guillaume Buc](#)⁶, [José-Alain Sahel](#)^{1 3 7 8}, [Guillaume Chenegros](#)¹, [Pierre Pouget](#)^{# 2}, [Ryad Benosman](#)^{# 1 7}, [Serge Picaud](#)^{# 2}

Journal Nat Biomed Eng 2020 Feb;4(2):172-180.
doi: [10.1038/s41551-019-0484-2](https://doi.org/10.1038/s41551-019-0484-2). Epub 2019 Dec 2.

Comment A study on non human primate validating perception with a retinal prosthesis prior to a clinical trial

8

Molecular classification of zebrafish retinal ganglion cells links genes to cell types to behavior

Author/s [Yvonne Kölsch](#)¹, [Joshua Hahn](#)², [Anna Sappington](#)³, [Manuel Stemmer](#)⁴, [António M Fernandes](#)⁴, [Thomas O Helmbrecht](#)⁴, [Shriya Lele](#)⁴, [Salwan Butrus](#)², [Eva Laurell](#)⁴, [Irene Arnold-Ammer](#)⁴, [Karthik Shekhar](#)⁵, [Joshua](#)

[R Sanes](#) ⁶, [Herwig Baier](#) ⁷

Journal	Neuron 2021 Feb 17;109(4):645-662.e9. doi: 10.1016/j.neuron.2020.12.003 . Epub 2020 Dec 23.
Comment	<ul style="list-style-type: none"> - Transcriptional profiling classifies >30 distinct retinal ganglion cell types - Molecular profiles of RGCs correlate with morphological and physiological features - Genome-engineered driver lines provide selective access to RGC types - Perturbation of a genetically defined visual pathway disrupts phototaxis

9

Expression Changes and Impact of the Extracellular Matrix on Etoposide Resistant Human Retinoblastoma Cell Lines

Author/s	Jacqueline Reinhard ¹ , Natalie Wagner ¹ , Miriam M Krämer ¹ , Marvin Jarocki ¹ , Stephanie C Joachim ² , H Burkhard Dick ² , Andreas Faissner ¹ , Vinodh Kakkassery ^{2 3}
Journal	Int J Mol Sci 2020 Jun 17;21(12):4322. doi: 10.3390/ijms21124322 .
Comment	The article contributes to a better understanding of the role of the extracellular matrix in the therapy resistance of retinoblastoma.

10

Interpretation of OCT and OCTA images from a histological approach: Clinical and experimental implications

Author/s	Nicolás Cuenca ¹ , Isabel Ortuño-Lizarán ² , Xavier Sánchez-Sáez ² , Oksana Kutsyr ² , Henar Albertos-Arranz ² , Laura Fernández-Sánchez ³ , Natalia Martínez-Gil ² , Agustina Noailles ² , José Antonio López-Garrido ⁴ , Maribel López-Gálvez ⁵ , Pedro Lax ² , Victoria Maneu ³ , Isabel Pinilla ⁶
Journal	Prog Retin Eye Res 2020 Jul;77:100828. doi: 10.1016/j.preteyeres.2019.100828 . Epub 2020 Jan 3.
Comment	An overview of how to interpret the OCT and OCTA images from the histological point of view and discuss important aspects regarding the clinical implications and experimental evaluations. New unpublished data are presented, to compare the histological pictures, obtained using immunohistochemistry, with OCT and OCTA images in human and animal models of retinal degeneration.

Congratulation and thank you


Our congratulation goes to all winners and we may thank all contributors for their constructive submissions.

We are looking forward for the best publications in 2021.

09.03.2021 Vision in the European Focus Vision Research and Ophthalmology

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