

Prof. Roland Eils, PhD

1 | General information

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Current position: Chair and Full Professor for Digital Health (Berlin Institute of Health at Charité –
 Universitätsmedizin Berlin), Honorary Professor for Health Data Science (University of
 Heidelberg)

Researcher unique identifier(s): ORCID-ID: 0000-0002-0034-4036, Researcher ID B-6121-2009

2 | Academic education

1990 Diploma Mathematics and Informatics, RWTH Aachen

3 | Advanced academic qualifications:

1995 PhD thesis, Mathematics and Scientific Computing, "3D reconstruction, mathematical modeling and simulation of chromatin structures in cell nuclei", University of Heidelberg (Supervisors: Thomas Cremer, Willi Jäger and Hans Georg Bock)

4 | Postgraduate professional career:

Since 2018 Founding Director of the Digital Health Center at the Berlin Institute of Health (BIH) at the Charité – Universitätsmedizin Berlin and Professor for Digital Health
 Since 2018 Honorary Professor for Health Data Science at University of Heidelberg
 2011 – 2018 Acting Director BioQuant - Systems Biology Center, Heidelberg University
 2004 – 2018 Ordinarius of Bioinformatics & Functional Genomics, Heidelberg University
 2002 – 2018 Head of Division "Theoretical Bioinformatics" (B080), DKFZ Heidelberg
 2010 – 2011 Visiting Professor at Harvard Medical School, Harvard University, USA
 2000 – 2003 Head of the Biofuture Junior Group „Intelligent bioinformatics systems“ at the German Cancer Research Center (DKFZ), Heidelberg
 1996 – 1999 Group Head, "Structure & Function in Cell Biology", Heidelberg University
 1996 Guest Researcher at Université de Grenoble, France

5 | Other:

Awards/Honors

- Member of the National Academy of Sciences Leopoldina (since 2018)
- Member of the Human Cell Atlas initiative (since 2017)
- Coordinator of the HiGHmed consortium, Medical Informatics Initiative (since 2016)
- Heidelberg Molecular Life Sciences (HMLS) Investigator Award (2014, shared with Hellmut Augustin)
- Advisor of the Grand Prize Winner Team of iGEM (international Genetically Engineered Machine competition) (2013 & 2014)
- Microsoft Research Award "Computational Tools for Advancing Science" (2005)
- Award for New Innovative Research by the Helmholtz Association "Systems Biology of Complex Diseases" (2005)
- BioFuture Prize from the German Ministry for Education and Research (1999)

6 | Selected publications:

1. Tosti L, Hang Y, Debnath O, Tiesmeyer S, Trefzer T, Steiger K, Ten FW, Lukassen S, Ballke S, Kühl AA, Spieckermann S, Bottino R, Ishaque N, Weichert W, Kim SK, Eils R, Conrad C. Single-Nucleus and In Situ RNA-Sequencing Reveal Cell Topographies in the Human Pancreas. *Gastroenterology* 2021; 160(4):1330-1344.e11

2. Trump S, Lukassen S, Anker MS, Chua RL, Liebig J, Thürmann L, Corman VM, Binder M, Loske J, Klasa C, Krieger T, Hennig BP, Messingschlager M, Pott F, Kazmierski J, Twardziok S, Albrecht JP, Eils J, Hadzibegovic S, Lena A, Heidecker B, Bürgel T, Steinfeldt J, Goffinet C, Kurth F, Witzernath M, Völker MT, Müller SD, Liebert UG, Ishaque N, Kaderali L, Sander LE, Drosten C, Laudi S, **Eils R**, Conrad C, Landmesser U, Lehmann I. Hypertension delays viral clearance and exacerbates airway hyperinflammation in patients with COVID-19. **Nat Biotechnol** 2021; 39(6):705-716
3. Zapatka M, Borozan I, Brewer DS, Iskar M, Grundhoff A, Alawi M, Desai N, Sültmann H, Moch H; PCAWG Pathogens, Cooper CS, **Eils R**, Ferretti V, Lichter P; PCAWG Consortium. The landscape of viral associations in human cancers. **Nat Genet** 2020; 52(3):320-330
4. Chua RL, Lukassen S, Trump S, Hennig BP, Wendisch D, Pott F, Debnath O, Thürmann L, Kurth F, Völker MT, Kazmierski J, Timmermann B, Twardziok S, Schneider S, Machleidt F, Müller-Redetzky H, Maier M, Krannich A, Schmidt S, Balzer F, Liebig J, Loske J, Suttrop N, Eils J, Ishaque N, Liebert UG, von Kalle C, Hocke A, Witzernath M, Goffinet C, Drosten C, Laudi S, Lehmann I, Conrad C, Sander LE, **Eils R**. COVID-19 severity correlates with airway epithelium-immune cell interactions identified by single-cell analysis. **Nat Biotechnol** 2020; 38(8):970-979
5. Lukassen S, Chua RL, Trefzer T, Kahn NC, Schneider MA, Muley T, Winter H, Meister M, Veith C, Boots AW, Hennig BP, Kreuter M, Conrad C, **Eils R**. SARS-CoV-2 receptor ACE2 and TMPRSS2 are primarily expressed in bronchial transient secretory cells. **EMBO J** 2020; 39(10):e105114
6. Upmeier zu Belzen J, Bürgel T, Holderbach S, Bubeck F, Adam L, Gandor C, Klein M, Mathony J, Pfuderer P, Platz L, Przybilla M, Schwendemann M, Heid D, Hoffmann MD, Jendrusch M, Schmelas C, Waldhauer M, Lehmann I, Niopek D, **Eils R**. Leveraging implicit knowledge in neural networks for functional dissection and engineering of proteins. **Nature Machine Intelligence**. 2019; 1, 225-235
7. Northcott PA, Buchhalter I, Morrissy AS, Hovestadt V, Weischenfeldt J, Ehrenberger T, Gröbner S, Segura-Wang M, Zichner T, Rudneva VA, Warnatz HJ, Sidiropoulos N, Phillips AH, Schumacher S, Kleinheinz K, Waszak SM, Erkek S, Jones DTW, Worst BC, Kool M, Zapatka M, Jäger N, Chavez L, Hutter B, Bieg M, Paramasivam N, Heinold M, Gu Z, Ishaque N, Jäger-Schmidt C, Imbusch CD, Jugold A, Hübschmann D, Risch T, Amstislavskiy V, Gonzalez FGR, Weber UD, Wolf S, Robinson GW, Zhou X, Wu G, Finkelstein D, Liu Y, Cavalli FMG, Luu B, Ramaswamy V, Wu X, Koster J, Ryzhova M, Cho YJ, Pomeroy SL, Herold-Mende C, Schuhmann M, Ebinger M, Liau LM, Mora J, McLendon RE, Jabado N, Kumabe T, Chuah E, Ma Y, Moore RA, Mungall AJ, Mungall KL, Thiessen N, Tse K, Wong T, Jones SJM, Witt O, Milde T, Von Deimling A, Capper D, Korshunov A, Yaspo ML, Kriwacki R, Gajjar A, Zhang J, Beroukhi R, Fraenkel E, Korbel JO, Brors B, Schlesner M, **Eils R**, Marra MA, Pfister SM, Taylor MD, Lichter P. The whole-genome landscape of medulloblastoma subtypes. **Nature** 2017; 547(7663):311-317
8. Bauer T, Trump S, Ishaque N, Thürmann L, Gu L, Bauer M, Bieg M, Gu Z, Weichenhan D, Mallm JP, Röder S, Herberth G, Takada E, Mücke O, Winter M, Junge KM, Grützmann K, Rolle-Kampczyk U, Wang Q, Lawerenz C, Borte M, Polte T, Schlesner M, Schanne M, Wiemann S, Geörg C, Stunnenberg HG, Plass C, Rippe K, Mizuguchi J, Herrmann C, **Eils R**, Lehmann I. Environment-induced epigenetic reprogramming in genomic regulatory elements in smoking mothers and their children. **Mol Syst Biol** 2016; 12(3):861
9. Jäger N, Schlesner M, Jones DT, Raffel S, Mallm JP, Junge KM, Weichenhan D, Bauer T, Ishaque N, Kool M, Northcott PA, Korshunov A, Drews RM, Koster J, Versteeg R, Richter J, Hummel M, Mack SC, Taylor MD, Witt H, Swartman B, Schulte-Bockholt D, Sultan M, Yaspo ML, Lehrach H, Hutter B, Brors B, Wolf S, Plass C, Siebert R, Trumpp A, Rippe K, Lehmann I, Lichter P, Pfister SM, **Eils R**. Hypermethylation of the inactive X chromosome is a frequent event in cancer. **Cell** 2013; 155(3):567-81
10. Jones DT, Hutter B, Jäger N, Korshunov A, Kool M, Warnatz HJ, Zichner T, Lambert SR, Ryzhova M, Quang DA, Fontebasso AM, Stütz AM, Hutter S, Zuckermann M, Sturm D, Gronych J, Lasitschka B, Schmidt S, Seker-Cin H, Witt H, Sultan M, Ralser M, Northcott PA, Hovestadt V, Bender S, Pfaff E, Stark S, Faury D, Schwartzentruber J, Majewski J, Weber UD, Zapatka M, Raeder B, Schlesner M, Worth CL, Bartholomae CC, von Kalle C, Imbusch CD, Radomski S, Lawerenz C, van Sluis P, Koster J, Volckmann R, Versteeg R, Lehrach H, Monoranu C, Winkler B, Unterberg A, Herold-Mende C, Milde T, Kulozik AE, Ebinger M, Schuhmann MU, Cho YJ, Pomeroy SL, von Deimling A, Witt O, Taylor MD, Wolf S, Karajannis MA, Eberhart CG, Scheurlen W, Hasselblatt M, Ligon KL, Kieran MW, Korbel JO, Yaspo ML, Brors B, Felsberg J, Reifenberger G, Collins VP, Jabado N, **Eils R***, Lichter P*, Pfister SM*; International Cancer Genome Consortium PedBrain Tumor Project. Recurrent somatic alterations of FGFR1 and NTRK2 in pilocytic astrocytoma. **Nat Genet** 2013; 45(8):927-32

*contributed equally