

Biographical Sketch

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| Name | Dr Marcel Kool |
| Current Position | Group Leader at the Princess Máxima Center for Pediatric Oncology and at the Hopp Children's Cancer. Deputy division head Pediatric Neurooncology division at the German Cancer Research Center. |
| Institution | Princess Máxima Center for Pediatric Oncology in Utrecht, the Netherlands Hopp Children's Cancer and German Cancer Research Center in Heidelberg, Germany |

Education and Qualifications

Please provide details of your qualifications, starting at degree level including any post-graduate and professional training. Details should include the institution, date, level of qualification and area of study.

| INSTITUTION AND LOCATION | DEGREE | Completion Date | FIELD OF STUDY |
|--|--------------|-----------------|---------------------------|
| University of Wageningen, the Netherlands | MSC | 01/1989 | Molecular Sciences |
| University of Wageningen, the Netherlands | PhD | 06/1994 | Virology |
| Netherlands Cancer Institute, Amsterdam, the Netherlands | Postdoctoral | 06/1999 | Cancer Research |
| Academic Medical Center, Amsterdam, the Netherlands | Postdoctoral | 06/2001 | Pediatric Cancer Research |

Employment

2019 - present Group leader at the Princess Máxima Center for Pediatric Oncology, Utrecht, the Netherlands
 2011 - present Deputy division head Pediatric Neurooncology and Group leader, German Cancer Research Center DKFZ, Heidelberg, Germany
 2020 - 2022 Member of the research management board at the Princess Máxima Center for Pediatric Oncology, Utrecht, the Netherlands
 2001 - 2011 Staff member and group leader, Academic Medical Center, Amsterdam, the Netherlands
 2005 - 2011 Coordinator and lecturer Biomedical Molecular Sciences, University of Amsterdam
 1999 - 2001 Postdoc, Academic Medical Center, Amsterdam, the Netherlands
 1994 - 1999 Postdoc, Netherlands Cancer Institute, Amsterdam, the Netherlands

Contributions to Science

Please include your five greatest contributions to science. This can include peer reviewed papers, patents or patents pending, or any other contributions you would like to highlight.

I have published and co-authored >320 publications, including many papers on rhabdoid tumors. Several of these recent papers (see below for a few examples) are landmark papers in the field of pediatric neurooncology describing the identification of new molecular entities and/or molecular subtypes of known entities with their respective oncogenic drivers and mutational landscapes.

Selection of five important publications from the last couple years:

M. Kool, D.T. Jones, N. Jäger, P.A. Northcott, T.J. Pugh, V. Hovestadt, [...], R.J. Wechsler-Reya*, P. Lichter*, S.M. Pfister*, I.P.T. Project, Genome sequencing of SHH medulloblastoma predicts genotype-related response to smoothed inhibition, *Cancer Cell*, 25 (2014) 393-405.

K.W. Pajtler*, H. Witt*, M. Sill*, D.T. Jones, V. Hovestadt, F. Kratochwil, [...], A. Korshunov*, **M. Kool***, S.M. Pfister*, Molecular Classification of Ependymal Tumors across All CNS Compartments, Histopathological Grades, and Age Groups, *Cancer Cell*, 27 (2015) 728-743.

P.D. Johann*, S. Erkek*, M. Zapatka, K. Kerl, I. Buchhalter, V. Hovestadt, [...], M. Hasselblatt, S.M. Pfister*, **M. Kool***, Atypical Teratoid/Rhabdoid Tumors Are Comprised of Three Epigenetic Subgroups with Distinct Enhancer Landscapes, *Cancer Cell*, 29 (2016) 379-393.

D. Sturm*, B.A. Orr*, U.H. Toprak*, V. Hovestadt*, D.T. Jones, D. Capper, [...], D.W. Ellison*, A. Korshunov*, **M. Kool***, New Brain Tumor Entities Emerge from Molecular Classification of CNS-PNETs, *Cell*, 164 (2016) 1060-1072.

S. Lambo, S.N. Grobner, T. Rausch, S.M. Waszak, C. Schmidt, A. Gorthi, [...], S.M. Pfister*, A. Korshunov*, **M. Kool***, The molecular landscape of ETMR at diagnosis and relapse, *Nature*, 576 (2019) 274-280.

Complete List of Published Work in Google Scholar:

<https://scholar.google.com/citations?user=8Xzec98AAAAJ&hl=de>

Hirsch-index: 102

Total number of citations: 61151 (as of January 11th, 2023)

Personal Statement

I am a cancer biologist at the Hopp Children's Cancer Center Heidelberg (KiTZ) and the German Cancer Research Center (DKFZ) in Heidelberg, Germany (since 2011), and the Princess Máxima Center (PMC) for Pediatric Oncology in Utrecht, the Netherlands (since 2019). My research interests and expertises are the genomics and epigenomics of pediatric brain tumors and I have published several landmark papers in this field, which are highly cited. With my teams in Heidelberg and Utrecht we aim to (1) characterize pediatric brain tumor entities in full detail at the genomic and epigenomic level in order to identify clinically relevant subgroups; (2) to find the oncogenic driving events in these tumors and the best therapeutic targets; (3) to find diagnostic, prognostic and/or predictive biomarkers for these tumors and their subgroups for use in clinical settings; (4) to build a large repertoire of molecularly characterized tumor models (PDX, organoids and other preclinical models) representing all the different molecular subtypes of pediatric brain tumors and use them for preclinical studies in order to translate the genomic findings into new therapeutic options and ultimately to improve survival rates and quality of life for children with brain tumors.

Additional Information

Please include any additional information you would like to highlight to the reviewers (e.g. any career breaks, additional roles, teaching or leadership experience etc.).

none

Publications

Please list your recent publications (maximum 10 publications).

A selection of 10 of my most recent publications (all from 2021 or 2022):

1: Korshunov A, Okonechnikov K, Stichel D, Schrimpf D, Delaidelli A, Tonn S, Mynarek M, Sievers P, Sahm F, Jones DTW, von Deimling A, Pfister SM, Kool M. Gene expression profiling of Group 3 medulloblastomas defines a clinically tractable stratification based on KIRREL2 expression. *Acta Neuropathol.* 2022 Jun 30. doi: 10.1007/s00401-022-02460-1. Online ahead of print. PMID: 35771282

2: Federico A, Thomas C, Miskiewicz K, Woltering N, Zin F, Nemes K, Bison B, Johann PD, Hawes D, Bens S, Kordes U, Albrecht S, Dohmen H, Hauser P, Keyvani K, van Landeghem FKH, Lund EL, Scheie D, Mawrin C, Monoranu CM, Parm Ulhøi B, Pietsch T, Reinhard H, Riemenschneider MJ, Sehested A, Sumerauer D, Siebert R, Paulus W, Frühwald MC, Kool M, Hasselblatt M. ATRT-SHH comprises three molecular subgroups with characteristic clinical and histopathological features and prognostic significance. *Acta Neuropathol.* 2022 Jun;143(6):697-711. doi: 10.1007/s00401-022-02424-5. Epub 2022 Apr 30. PMID: 35501487; PMCID: PMC9107423.

3: Calandrini C, van Hooff SR, Paassen I, Ayyildiz D, Derakhshan S, Dolman MEM, Langenberg KPS, van de Ven M, de Heus C, Liv N, Kool M, de Krijger RR, Tytgat GAM, van den Heuvel-Eibrink MM, Molenaar JJ, Drost J. Organoid-based drug screening reveals neddylation as therapeutic target for malignant rhabdoid tumors. *Cell Rep.* 2021 Aug 24;36(8):109568. doi: 10.1016/j.celrep.2021.109568. PMID: 34433038.

4: Coltin H, Sundaresan L, Smith KS, Skowron P, Massimi L, Eberhart CG, Schreck KC, Gupta N, Weiss WA, Tirapelli D, Carlotti C, Li KKW, Ryzhova M, Golanov A, Zheludkova O, Absalyamova O, Okonechnikov K, Stichel D, von Deimling A, Giannini C, Raskin S, Van Meir EG, Chan JA, Fults D, Chambless LB, Kim SK, Vasiljevic A, Faure-Conter C, Vibhakar R, Jung S, Leary S, Mora J, McLendon RE, Pollack IF, Hauser P, Grajkowska WA, Rubin JB, van Veelen MC, French PJ, Kros JM, Liau LM, Pfister SM, Kool M, Kijima N, Taylor MD, Packer RJ, Northcott PA, Korshunov A, Ramaswamy V. Subgroup and subtype-specific outcomes in adult medulloblastoma. *Acta Neuropathol.* 2021 Nov;142(5):859-871. doi: 10.1007/s00401-021-02358-4. Epub 2021 Aug 18. PMID: 34409497.

5: Sievers P, Henneken SC, Blume C, Sill M, Schrimpf D, Stichel D, Okonechnikov K, Reuss DE, Benzel J, Maaß KK, Kool M, Sturm D, Zheng T, Ghasemi DR, Kohlhof- Meinecke P, Cruz O, Suñol M, Lavarino C, Ruf V, Boldt HB, Pagès M, Pouget C, Schweizer L, Kranendonk MEG, Akhtar N, Bunkowski S, Stadelmann C, Schüller U, Mueller WC, Dohmen H, Acker T, Harter PN, Mawrin C, Beschorner R, Brandner S, Snuderl M, Abdullaev Z, Aldape K, Gilbert MR, Armstrong TS, Ellison DW, Capper D, Ichimura K, Reifenberger G, Grundy RG, Jabado N, Krskova L, Zapotocky M, Vicha A, Varlet P, Wesseling P, Rutkowski S, Korshunov A, Wick W, Pfister SM, Jones DTW, von Deimling A, Pajtler KW, Sahm F. Recurrent fusions in PLAGL1 define a distinct subset of pediatric-type supratentorial neuroepithelial tumors. *Acta Neuropathol.* 2021 Nov;142(5):827-839. doi: 10.1007/s00401-021-02356-6. Epub 2021 Aug 5. PMID: 34355256; PMCID: PMC8500895.

6: Schmitt-Hoffner F, van Rijn S, Toprak UH, Mauermann M, Rosemann F, Heit- Mondrzyk A, Hübner JM, Camgöz A, Hartlieb S, Pfister SM, Henrich KO, Westermann F, Kool M. FOXR2 Stabilizes MYCN Protein and Identifies Non-MYCN-Amplified Neuroblastoma Patients With Unfavorable Outcome. *J Clin Oncol.* 2021 Oct 10;39(29):3217-3228. doi: 10.1200/JCO.20.02540. Epub 2021 Jun 10. PMID: 34110923; PMCID: PMC8500564.

7: von Hoff K, Haberler C, Schmitt-Hoffner F, Schepke E, de Rojas T, Jacobs S, Zapotocky M, Sumerauer D, Perek-Polnik M, Dufour C, van Vuurden D, Slavic I, Gojo J, Pickles JC, Gerber NU, Massimino M, Gil-da-Costa MJ, Garami M, Kumirova E, Sehested A, Scheie D, Cruz O, Moreno L, Cho J, Zeller B, Bovenschen N, Grotzer M, Alderete D, Snuderl M, Zheludkova O, Golanov A, Okonechnikov K, Mynarek M, Juhnke BO, Rutkowski S, Schüller U, Pizer B, von Zezschwitz B, Kwicien R, Wechsung M, Konietzschke F, Hwang EI, Sturm D, Pfister SM, von Deimling A, Rushing EJ, Ryzhova M, Hauser P, Łastowska M, Wesseling P, Giangaspero F, Hawkins C, Figarella-Branger D, Eberhart C, Burger P, Gessi M, Korshunov A, Jacques TS, Capper D, Pietsch T, Kool M. Therapeutic implications of improved molecular diagnostics for rare CNS embryonal tumor entities: results of an international, retrospective study. *Neuro Oncol.* 2021 Sep 1;23(9):1597-1611. doi: 10.1093/neuonc/noab136. PMID: 34077956; PMCID: PMC8408859.

8: Lötsch D, Kirchhofer D, Englinger B, Jiang L, Okonechnikov K, Senfter D, Laemmerer A, Gabler L, Pirker C, Donson AM, Bannauer P, Korbelp P, Jaunecker CN, Hübner JM, Mayr L, Madlener S, Schmook MT, Ricken G, Maaß K, Grusch M, Holzmann K, Grasl-Kraupp B, Spiegl-Kreinecker S, Hsu J, Dorfer C, Rössler K, Azizi AA, Foreman NK, Peyrl A, Haberler C, Czech T, Slavic I, Filbin MG, Pajtler KW, Kool M, Berger W, Gojo J. Targeting fibroblast growth factor receptors to combat aggressive ependymoma. *Acta Neuropathol.* 2021 Aug;142(2):339-360. doi: 10.1007/s00401-021-02327-x. Epub 2021 May 27. PMID: 34046693; PMCID: PMC8270873.

9: Zheng T, Ghasemi DR, Okonechnikov K, Korshunov A, Sill M, Maass KK, Benites Goncalves da Silva P, Ryzhova M, Gojo J, Stichel D, Arabzade A, Kupp R, Benzel J, Taya S, Adachi T, Shiraishi R, Gerber NU, Sturm D, Ecker J, Sievers P, Selt F, Chapman R, Haberler C, Figarella-Branger D, Reifenberger G, Fleischhack G, Rutkowski S, Donson AM, Ramaswamy V, Capper D, Ellison DW, Herold-Mende CC, Schüller U, Brandner S, Driever PH, Kros JM, Snuderl M, Milde T, Grundy RG, Hoshino M, Mack SC, Gilbertson RJ, Jones DTW, Kool M, von Deimling A, Pfister SM, Sahm F, Kawauchi D, Pajtler KW. Cross-Species Genomics Reveals Oncogenic Dependencies in ZFTA/C11orf95 Fusion-Positive Supratentorial Ependymomas. *Cancer Discov.* 2021 Sep;11(9):2230-2247. doi: 10.1158/2159-8290.CD-20-0963. Epub 2021 Apr 20. PMID: 33879448.

10: Korshunov A, Okonechnikov K, Stichel D, Ryzhova M, Schrimpf D, Sahm F, Sievers P, Absalyamova O, Zheludkova O, Golanov A, Jones DTW, Pfister SM, von Deimling A, Kool M. Integrated molecular analysis of adult sonic hedgehog (SHH)-activated medulloblastomas reveals two clinically relevant tumor subsets with VEGFA as potent prognostic indicator. *Neuro Oncol.* 2021 Sep 1;23(9):1576-1585. doi: 10.1093/neuonc/noab031. PMID: 33589929; PMCID: PMC8408884.